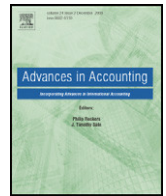




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Quality of reported earnings by Chinese firms: The influence of ownership structure

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ABSTRACT

This paper examines the influence of ownership structure on earnings quality of firms listed on the Chinese Stock Exchanges. We empirically test four contemporary earnings quality measures, including volatility of earnings, variability of earnings over cash flows, correlations between accruals and cash flows, and level of discretionary accruals, for 1438 firms listed on Shenzhen Stock Exchange and Shanghai Stock Exchange. We find that although state-owned firms are bigger in size and appear more profitable based on reported earnings; privately-owned firms, foreign-owned firms and society-owned firms outperform the state-controlled firms in earnings quality; and foreign-owned firms have the highest earnings quality among all types of ownership groups. We find that there is not much difference in earnings quality between collectively-owned firms and state-owned firms and employee-owned firms exercise least discretion in earnings management. The findings in particular will have direct policy implications for the China Securities Regulatory Committee (CSRC).

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1. Introduction

The economy of China has undergone a significant transformation in the last three decades. Industries have been reorganized and corporations and many state owned enterprises have been partially or totally privatized. [Chen, Firth, and Rui \(2006\)](#) investigated the impact of the effectiveness of the privatizations on firms' operating efficiency and performance. They found an overall decline in efficiency and asset utilization in the 5 years after privatization. This finding is in stark contrast to similar studies from other countries where the results show a marked improvement in both profitability and efficiency. Some studies suggested that part of the reason for poor profitability could be due to the state retaining control in some companies. However, [Chen, Firth, and Xu \(2009\)](#) stated that these studies fail to properly identify and distinguish among the different types of owners or ownership structures. [Chen et al. \(2009\)](#) found that operating efficiency was a function of who controls the firm after its listing. In particular, when private investors control the firm, there is a marked improvement in efficiency relative to when the firm is state controlled. [Jensen and Meckling \(1976\)](#) argued that when private investors manage the business there is an incentive for them to increase the "wealth" of the firm. Is this wealth "increase" real or manipulated? This issue has not been examined with respect to Chinese firms. However, this is important because China currently attracts significant amounts of capital from western investors. Hence, any study contributing to knowledge about reported earnings quality by Chinese firms and factors that

enhance or reduce reported earnings quality is relevant to investors and regulators.

The objective of this paper is to examine the influence of ownership structure on earnings quality of firms listed on the Chinese Stock Exchanges. Limited research has been done on earnings quality and earnings management by Chinese firms. [Chui, Lau, and Ip \(2001\)](#), in one of the early studies, observed that there were many incentives and potential opportunities for earnings management during the process of corporatization. Subsequent research attempted to examine if earnings management existed and what factors contributed to earnings management (if any) including studies examining the association between earnings management and corporate governance ([Liu & Lu, 2007](#)), earnings management and regulatory requirements set by the Chinese government ([Yu, Du, & Sun, 2006](#)), local government intervention on earnings management ([Chen, Lee, & Li, 2008](#)) and even how different ownership structures influenced choice of auditor ([Wang, Wong, & Xia, 2008](#)). Finally, [Wang, Wu, and Yang \(2009\)](#) concluded that reported earnings numbers were not fully trusted by investors due to suspicions of poor quality.

In summary, while papers have provided evidence of earnings management, and studied the impact of types of ownership on operating performance, no paper has examined if the type of ownership is associated with earnings management and/or earnings quality. Our paper, therefore, adds to the extant literature and attempts to fill this vacuum in the literature. Specifically, our paper contributes to the extant literature by examining if and how ownership structure influences potential earnings management behavior and, thereby, quality of reported earnings. By empirically testing four contemporary earnings quality measures for 1438 firms listed on Shenzhen Stock Exchange and Shanghai Stock Exchange during the period of 1999 to 2006, we find that although

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state controlled firms (which account for almost three quarters of the total listed firms in China), are bigger in size and more profitable based on reported earnings, private firms (firms owned predominantly by private investors), foreign firms (firms owned predominantly by foreign investors) and society owned firms outperform the state-controlled firms in earnings quality. Our results also indicate that predominantly foreign owned firms have the highest earnings quality among all types of ownership structure groups and the employee-owned firms exercise most discretion in earnings management and rank last in all earnings quality tests. In addition, although collectively-owned firms are claimed to be more efficiently operated, we do not find that this reflects on their earnings quality (possibly due to the heavy intervention of government). The findings in particular will have direct policy implications for the China Securities Regulatory Committee (CSRC).

2. Background and literature review

2.1. Institutional Background

Commencing in 1978, the Chinese government turned the previously central-command economic system into a market economy. The transition period was characterized by the emergence and rapid development of a private sector. The establishment of the Shanghai Stock Exchange in 1990 and the Shenzhen Stock Exchange in 1991 marked an important milestone in Chinese economic reform. The Chinese stock market, despite its short history, is a good example of a developing capital market with highly concentrated ownership. Most of the listed companies are transformed state-owned enterprises (SOEs). The development of privately-owned firms, however, has not been as rapid since the government appears to favor SOEs relative to non-SOEs.

There are five major categories of ownership structures based on their ultimate controllers' identities: (1) state-owned firms; (2) privately-owned firms; (3) foreign-owned firms; (4) collectively-owned firms; and (5) employee-owned firms.¹ The possibility of principal-agent conflict differs between state-owned firms and privately-owned firms. Firms that have predominantly private investors as their controlling shareholders are actively monitored by those shareholders. In contrast, when a firm is state controlled, the "controller" being the State Assets Management Bureau (SAMB), has neither strong incentive nor ability to monitor the listed firms. This is because, first, SAMB's principal objective, which is to implement governmental functions, differs from that of a private shareholder. SAMB is in charge of all state-owned equity within its administrative region and one of its principal functions is to ensure state asset preservation and appreciation. The function of improving performance of the firms it controls is not within its purview. Moreover, SAMB does not receive any cash flow from its shares thus reducing its incentive to actively monitor performance. Cash flows from an SAMB such as dividends or sales revenues of the shares are submitted to the Ministry of Finance or to local state asset management funds for future state asset investment.

Since SAMB remains a government branch, it is prohibited from acting as a listed company. SAMB is also prohibited from direct contact with the firms (other than the basic functions such as selecting the board of directors and attending shareholders' meetings).² This accentuates the information asymmetry between the listed company and SAMB. In addition, SAMB officials are selected through political processes. Usually, they are not chosen for their management experience or specific industry knowledge. Their promotions are based more on their commitment to government policies, instead of performance (Groves, Hong, McMillan, & Naughton, 1995). This further reduces SAMB's ability to perform normal shareholder's duties.

Unlike state-owned firms, non-state firms are operated predominantly on market mechanisms (Jin & Qian, 1998). Since 1992, foreign direct investment has increased and played an increasingly important role; China has now become the second largest country in the world

to attract direct foreign investment since 1993 (the United States being the largest) according to Cao, Qian, and Weingast (1999). Except for foreign-owned firms, collectively-owned firms that transformed from town-village enterprises and private firms also expanded since 1992. Although collectively-owned firms are relatively more effectively operated by community governments as compared to state-owned enterprises, there is frequent government intervention to achieve public objectives (examples of public objectives include but are not limited to increasing employment for the purpose of maintaining social stability). Overall, Jin and Qian (1998) argued private enterprises are more market-oriented compared to collectively-owned firms. We now discuss the relevant literature in this area pertinent to our study.

2.2. Studies examining earnings management behavior and relevant causes

In chronological order initial studies examined if earnings management occurred during the initial public offering process. In related studies the Chinese government required minimum targets of performance prior to rights issues. Researchers examined if targets set by the government instigated earnings management behavior. The government subsequently made efforts to increase levels of corporate governance. Subsequently research examined if tendency to manage earnings was constrained by corporate governance. However, local governments in China could play a role in earnings management. The Chinese central government tends to distribute funding based on the performance of local firms. Subsequent research examined a pertinent issue; namely, does the local government intervene to encourage earnings management behavior? Research pertinent to this study also examined the perceived informativeness of reported accounting numbers given the suspicion that reported numbers are being managed. The findings of these studies are now discussed below.

2.2.1. Earnings management in presence of rights issue legislation

Even though this line of literature is not directly related to our study, we include this to provide a greater understanding of factors contributing to earnings management by Chinese firms. Using a distribution approach, Yu et al. (2006) examined whether Chinese firms manipulated their earnings to meet the regulatory requirements. Their findings indicated that Chinese firms were heavily engaged in earnings management to meet the rights issue thresholds for their sample covering the period 1994–2002. The authors showed that firms changed their behavior in response to changes in regulatory requirements. The authors also found that this behavior is pervasive. Chen and Yuan (2004) show that for the period in their sample (1996 to 1998) listed companies managed their earnings to achieve the minimum required rate of return on equity (ROE) of ten percent that was required by regulators to enable companies to issue additional shares. Even though Chinese regulators scrutinize listed companies, the authors found that many of these firms underperformed after the issue indicating perhaps that they may have engaged in earnings management prior to the issue. This finding is in accordance with positive accounting theory (Watts & Zimmerman, 1986), which predicts that regulations based on accounting numbers create incentives for managers to manipulate their accounting numbers.

2.2.2. Earnings management and corporate governance

Liu and Lu (2007) examined the relation between earnings management and corporate governance by Chinese firms. They observed systematic differences in earnings management across China's listed companies over their sample covering the period 1999–2005. They demonstrated that firms with higher corporate governance levels have lower levels of earnings management.

2.2.3. Earnings management and influence of local governments

As the socialist system in China embraces the market economy, it has created many conflicts of interests and collusion between firms and different layers of governments. The central government in China sets regulations to ensure the quality of firms listed in the capital market, while local governments engage in inter-jurisdictional competition for more capital; their interests are aligned with listed firms through the stringent IPO quota system. [Chen et al. \(2008\)](#) examined how local governments in China help listed firms engage in earnings management to circumvent the central government's regulation. They found that local governments provide subsidies to help firms boost their earnings above the regulatory threshold of rights offering and delisting. Moreover, this collusion between government and listed firms in earnings management exists mainly in firms controlled by local governments.

2.2.4. Informativeness of reported accounting numbers by Chinese listed firms

[Wang et al. \(2009\)](#) conclude that, overall, stock prices contained very little extra information about the future operating performance of firms.

2.3. Studies examining influence of ownership structure on firm performance

[Fan and Wong \(2002\)](#) examined the ownership structure of 977 companies in seven East Asian countries (Hong Kong, Indonesia, Malaysia, Singapore, South Korea, Taiwan and Thailand). They found that managers who had controlling interests report accounting information for self-interested purposes causing reported earnings to lose credibility to outside investors. They concluded that concentrated ownership is associated with low earnings informativeness because they prevent leakage of information about a firm's activities. However, their study did not include companies from mainland China. This maybe because the ownership structures in China are more complex and not easily amenable to analysis. [Chen et al. \(2009\)](#) conducted an extensive study on the influence of ownership structure on performance of companies in mainland China. They traced the identity of large shareholders and grouped China's listed companies into (a) those controlled by state asset management bureaus (SAMBs), (b) state owned enterprises (SOEs) affiliated to the central government (SOECGs), (c) SOEs affiliated to the local government (SOELGs) and (d) private investors. They argued that these distinct types of owners have different objectives and motivations and this will affect how they exercise their control rights over the firms they invest in. In particular, they contended that private ownership of listed firms in China is not necessarily superior to certain types of state ownership. To test their arguments they investigated the relative efficiency of state versus private ownership of listed firms and the efficiency of various forms of state ownership. The empirical results indicated that the operating efficiency of Chinese listed companies varied across the type of controlling shareholder. SOECG controlled firms performed best and SAMB and private controlled firms performed the worst. SOELG controlled firms were in the middle.

Overall, the research finds that increased corporate governance (where it exists) has a dampening effect on earnings management by listed firms on the Chinese stock market. The Chinese government implemented two key regulations (one providing incentives and the other imposing penalties). However, the regulations had conflicting impact on earnings management (the regulation imposing penalties being more effective). The Chinese government has encouraged private investment. However, private ownership is not necessarily superior to state ownership with respect to overall performance. Finally, irrespective of the type of investment (private or public) the reported accounting information is not considered to be value relevant or "informative" to investors. As shown, while papers have provided

evidence of earnings management, and studied the impact of type of ownership on operating performance, no paper has examined if the type of ownership (private versus state controlled) is associated with earnings management. Our paper adds to the extant literature and attempts to fill this vacuum in the literature.

3. Research design and methodology

3.1. Measurement of ownership structure

According to the China Center for Economic Research (CCER), the firms listed in China are commonly classified into seven categories based on their ultimate controllers' identities, where the ultimate controller is defined as the owner who has substantial voting rights in listed companies, either directly or indirectly through a chain of holdings.³ In this study, we code the ownership structures accordingly:

OWN¹—"State": State-owned firms. These firms are controlled by the government and managed by the State Assets Management Bureau.

OWN²—"Private": Privately-owned firms. These shares are controlled by individuals or families that could be founders of the firms or have purchased controlling stake of shares from state owners.

OWN³—"Foreign": Foreign-owned firms. These firms are controlled by foreign investors.

OWN⁴—"Collect": Collectively-owned firms. These firms are owned collectively or are controlled by collectively-owned enterprises. Collectively-owned firms are transformed from town or village firms and are usually managed by the various departments of the municipal government, the municipality-level institutions, and the municipal state-owned enterprises.

OWN⁵—"Society": Society-organization-owned firms. These firms are controlled by social organizations.

OWN⁶—"Employee": Employee-owned firms. Shares are sold to firm's employees individually or to an organization owned by employees.

OWN⁷—"Other": Other firms.

We explore and contrast earnings quality across these seven categories by using the four measures discussed below with particular interest in the first 3 types of ownership structure due to the significance in firm size/population and distinct difference in ownership type. As discussed before, we expect higher earnings quality from non-state-owned firms (especially privately-owned firms and foreign-owned firms), as compared to state-owned firms since the former is operated more in accordance with market mechanisms. We, however, do not expect to evidence a significant difference between state-owned firms and collectively-owned firms due to frequent government intervention to these types of firms.

3.2. Measurement of earnings quality

To test the influence of ownership structure on earnings quality, we adapted four measures that have been used in contemporary accounting literature (e.g. [Lang, Raedy, & Wilson, 2006](#); [Leuz, Dhananjay, & Wysocki, 2003](#); [Machuga & Teitel, 2007](#); [Schipper & Vincent, 2003](#)) to evaluate earnings quality across different ownership structure samples. These measures are volatility of earnings, variability of change in earnings over change in cash flow, correlation between accruals and cash flows, and levels of discretionary accruals.

3.2.1. Volatility of earnings

Volatility of earnings is a very straightforward measure of earnings smoothing, and if firms are managing their earnings, the residual change in earnings from period to period (after controlling for the fundamental factors that may induce changes to net income) will be

lower as compared to the firms with less earnings management. In our study, similar to the Lang et al. (2006) approach, we define volatility of earnings as the variance of residuals (ε^1_t) from the following regression where we regress change in net income on a series control variables that could potentially affect earnings:

$$\Delta NI_t = \text{Grow}_t + \text{Debt}_t + \text{Levg}_t + \text{AsTn}_t + \text{Size}_t + \varepsilon^1_t \quad (1)$$

where:

ΔNI_t = change in net income from year $t-1$ to year t deflated by average total assets

Grow_t = growth, equal to percentage change in total annual net sales revenues from year $t-1$ to year t

Debt_t = percentage change in total liabilities from year $t-1$ to year t

Levg_t = leverage ratio for year t , equals to total liabilities over total equity

AsTn_t = asset turnover for year t , equals to total annual net sales over total assets

Size_t = natural log of total assets at the end of year t in millions of Chinese Yuan.

All test/control variables are winsorized at 2% (top 1%, bottom 1%), All residuals are winsorized at 1% (top .5%, bottom .5%).

3.2.2. Variability of earnings over cash flows

As suggested by Lang et al. (2006) and Machuga and Teitel (2007), among others, the volatility of earnings can be affected by the volatility of cash flows that might not be captured by the financial variables used to control for the variability of net income. To exclude such effects and examine the magnitude of management's manipulation on earnings, we compute variability of earnings deflated by variability of cash flows as an additional measure of earnings smoothing. Ceteris paribus, the firms with higher magnitude of earnings management should have lower ratios. In this study, we use the same set of control variables to control for other factors that may affect changes in cash flows and define this second earnings quality measure as the ratio of the variances of the residuals ε^1_t obtained from regression model (1) discussed above and ε^2_t obtained from regression model (2) specified below:

$$\Delta CFO_t = \text{Grow}_t + \text{Debt}_t + \text{Levg}_t + \text{AsTn}_t + \text{Size}_t + \varepsilon^2_t \quad (2)$$

where:

ΔCFO_t = change in operating cash flows from year $t-1$ to year t deflated by average total assets

All test/control variables are winsorized at 2% (top 1%, bottom 1%), All residuals are winsorized at 1% (top .5%, bottom .5%).

3.2.3. Correlations between accruals and cash flows

Leuz et al. (2003) and Mayers, Mayers, and Skinner (2007) argued that management would use their discretion to smooth earnings and conceal shocks to cash flows. This "buffering effect" of accounting accruals should result in a negative correlation between accounting accruals and cash flows. Although negative correlation is a result of accrual accounting, a significant negative number could indicate earnings smoothing and poor earnings quality. Consistent with prior studies, we define this measure as Spearman correlation between regression residuals of accrual ε^3_t and residuals of cash flows ε^4_t obtained from the following regression models (3) and (4) after inclusion of our control variables.

$$\text{TAC}_t = \text{Grow}_t + \text{Debt}_t + \text{Levg}_t + \text{AsTn}_t + \text{Size}_t + \varepsilon^3_t \quad (3)$$

$$\text{CFO}_t = \text{Grow}_t + \text{Debt}_t + \text{Levg}_t + \text{AsTn}_t + \text{Size}_t + \varepsilon^4_t \quad (4)$$

where:

TAC_t = total accruals in year t , equals to net income less operating cash flows deflated by average total assets

CFO_t = operating cash flows in year t deflated by average total assets,

All test/control variables are winsorized at 2% (top 1%, bottom 1%), All residuals are winsorized at 1% (top .5%, bottom .5%).

3.2.4. Level of discretionary accruals

Discretionary accruals have been regarded as a traditional tool for detecting earnings management in empirical accounting studies over the past decades. In this study, we use the modified Jones model (Dechow et al., 1995) to estimate discretionary accruals after controlling for asymmetrically timely loss recognition. This is based on Ball and Shivakumar (2006). The residual term of this regression model represents the estimated discretionary accrual (DA) which is a surrogate for earnings quality (higher DA implying a lower quality of reported earnings and vice versa).

$$\text{TAC}_{it} = \alpha_1 + \alpha_2(\Delta \text{REV}_{it} - \Delta \text{REC}_{it}) + \alpha_3 \text{PPE}_{it} + \alpha_4 \Delta \text{CFO}_{it} + \alpha_5 \text{LOSS} + \alpha_6 \text{LOSS} * \Delta \text{CFO}_{it} + \text{DA}_{it} \quad (5)$$

where

TAC_{it} = total accounting accruals;

ΔREV_{it} = change in sales revenues;

ΔREC_{it} = change in total accounts receivables;

PPE_{it} = total property plant equipments;

ΔCFO_{it} = change in operating cash flows;

LOSS = dummy variable that equals to 1 if change in operating cash flows is negative, 0 otherwise; and

DA_{it} = residual term of this regression, representing the estimated discretionary accruals.

All variables are deflated by average total assets and are winsorized at 2% (top 1%, bottom 1%), except for LOSS and DA

Residuals (DA) are winsorized at 1% (top .5%, bottom .5%).

4. Data and sample

4.1. Data collection

We obtain the financial data and ownership structure data necessary for this study from the WIND financial database. Since Chinese listed firms were not required to provide Cash Flow Statements until 1998, we set our sample period commencing 1999 through 2006. We begin with 9761 firm-year observations, representing 1438 firms listed on the Shenzhen Stock Exchange and Shanghai Stock Exchange. Observations with missing values, negative total revenues, negative total assets, liabilities or equity are then deleted. We thus end up with 8710 observations. As detailed in our Research Design section, all test and control variables are then winsorized at 2% to control for outliers; the regression residuals necessary for constructing our earnings quality measures are all winsorized at 1%. Distributions of the observations across types and over time are presented in Table 1.

In our sample, state-owned firms (OWN¹) have the largest stake and explain 75% of total observations, followed by about 19% of private-owned firms (OWN²). Although private firms are less than

Table 1
Sample distribution.

	OWN ¹ State	OWN ² Private	OWN ³ Foreign	OWN ⁴ Collect	OWN ⁵ Society	OWN ⁶ Employee	OWN ⁷ Other	Total
1999	668	62	9	25	6	7	24	801
2000	733	86	9	29	7	6	27	897
2001	835	104	8	32	5	8	30	1022
2002	852	164	7	27	5	6	31	1092
2003	861	234	8	26	6	8	9	1152
2004	864	287	6	20	19	11	–	1207
2005	902	331	6	16	5	11	–	1271
2006	851	376	7	14	4	13	3	1268
Pooled	6,566	1,644	60	189	57	70	124	8710

one-third of state firms in total, the absolute number of listed private firms has increased dramatically over the past years from 62 in year 1999 to 376 in year 2006.

Table 2
Descriptive statistics.

	FULL sample					OWN ¹ -state				
	N	Mean	Min.	Max.	Std. Dev.	N	Mean	Min.	Max.	Std. Dev.
ΔNi_t	8710	0.001	-0.225	0.258	0.061	6,566	0.002	-0.225	0.258	0.056
ΔCFO_t		0.010	-0.306	0.315	0.096		0.011	-0.306	0.315	0.093
TAC _t		-0.027	-0.295	0.226	0.086		-0.028 ^{##}	-0.295	0.226	0.083
CFO _t		0.052	-0.209	0.286	0.083		0.055 ^{##}	-0.209	0.286	0.082
EP _t		0.012	-0.317	0.112	0.058		0.014 ^{##}	-0.317	0.112	0.054
Grow _t		0.223	-0.737	3.306	0.531		0.210 ^{##}	-0.737	3.306	0.475
Debt _t		0.251	-0.621	3.177	0.557		0.239 ^{##}	-0.621	3.177	0.547
Levg _t		1.334	0.088	12.094	1.611		1.249 ^{##}	0.088	12.094	1.443
AsTn _t		0.593	0.043	2.447	0.445		0.615 ^{##}	0.043	2.447	0.454
Size _t		7.321	5.332	9.969	0.914		7.413 ^{##}	5.332	9.969	0.921
	OWN ² Private					OWN ³ Foreign				
ΔNi_t	1,644	0.001	-0.225	0.258	0.074	60	-0.001	-0.225	0.258	0.077
ΔCFO_t		0.007	-0.306	0.315	0.108		0.014	-0.153	0.159	0.064
TAC _t		-0.026	-0.295	0.226	0.096		-0.051	-0.295	0.141	0.068
CFO _t		0.040 ^{**}	-0.209	0.286	0.087		0.063	-0.117	0.275	0.075
EP _t		0.003 ^{**}	-0.317	0.112	0.074		-0.010 ^{**}	-0.317	0.112	0.085
Grow _t		0.270 ^{**}	-0.737	3.306	0.686		0.181	-0.737	3.306	0.613
Debt _t		0.283	-0.621	3.177	0.582		0.155	-0.485	1.951	0.500
Levg _t		1.685 ^{**}	0.088	12.094	2.081		2.153 ^{**}	0.091	11.419	2.798
AsTn _t		0.525 ^{**}	0.043	2.447	0.412		0.499	0.043	2.447	0.454
Size _t		6.991 ^{**}	5.332	9.488	0.816		7.468	5.468	9.969	1.017
	OWN ⁴ Collect					OWN ⁵ Society				
ΔNi_t	189	0.001	-0.225	0.258	0.053	57	-0.009	-0.225	0.258	0.087
ΔCFO_t		0.010	-0.306	0.315	0.089		-0.022	-0.306	0.315	0.118
TAC _t		-0.012	-0.295	0.209	0.083		-0.012	-0.295	0.226	0.111
CFO _t		0.053	-0.155	0.249	0.071		0.028	-0.209	0.286	0.087
EP _t		0.021	-0.317	0.107	0.049		-0.010 ^{**}	-0.317	0.055	0.098
Grow _t		0.240	-0.717	3.306	0.494		0.249	-0.737	3.306	0.634
Debt _t		0.366 ^{**}	-0.621	3.177	0.657		0.315	-0.621	1.890	0.517
Levg _t		0.848 ^{**}	0.088	5.810	0.808		1.224	0.088	10.111	1.889
AsTn _t		0.576	0.077	2.153	0.390		0.518	0.043	1.821	0.343
Size _t		7.211 ^{**}	5.332	9.008	0.795		7.150	5.541	8.169	0.670
	OWN ⁶ Employee					OWN ⁷ Other				
ΔNi_t	70	0.004	-0.156	0.258	0.045	124	0.001	-0.225	0.258	0.090
ΔCFO_t		0.022	-0.306	0.315	0.116		-0.003	-0.306	0.315	0.105
TAC _t		-0.028	-0.231	0.226	0.086		-0.004 ^{**}	-0.295	0.226	0.093
CFO _t		0.064	-0.209	0.286	0.088		0.019 ^{**}	-0.209	0.249	0.085
EP _t		0.026	-0.044	0.079	0.018		0.000	-0.168	0.051	0.039
Grow _t		0.301	-0.737	3.306	0.692		0.209	-0.737	3.306	0.779
Debt _t		0.357	-0.385	3.177	0.576		0.253	-0.621	3.177	0.573
Levg _t		1.099	0.103	2.903	0.579		1.736 ^{**}	0.118	12.094	2.274
AsTn _t		0.548	0.043	2.447	0.451		0.411 ^{**}	0.043	2.447	0.394
Size _t		7.582	5.852	8.979	0.730		6.819 ^{**}	5.332	9.616	0.872

^{##} indicates the value is significantly different from at least one of the other type of ownership structure at 0.05 level (two tailed).

^{**} indicates the value is significantly different from State-owned firms at 0.05 level (two tailed).

All variables are winsorized at 2%: top 1%, bottom 1%.

4.2. Descriptive statistics

Table 2 shows the descriptive statistics of our test and control variables in the full sample as well as for each individual ownership structure sub-samples.

From the descriptive statistics shown in Table 2, we can see that “State” firms and “Private” firms differ significantly in almost all aspects but the descriptive statistics of “Employee” owned firms are similar to those of “State” firms. When we compare to the private sector, state owned firms are bigger in size, report higher cash flows and appear to be more profitable in terms of price scaled earnings and asset turnover; however, “Private” firms have a higher growth in revenues and higher leverage ratios than “State” firms. Also, on average, firms of all ownership types report positive earnings growth over the sample period except for foreign owned and society owned firms. This could be indicative of lower earnings management and higher earnings quality. Further, across all types of ownership structure,

Table 3
Volatility of earnings.

	OWN ¹ State	OWN ² Private	OWN ³ Foreign	OWN ⁴ Collect	OWN ⁵ Society	OWN ⁶ Employee	OWN ⁷ Other
N	6566	1644	60	189	57	70	124
ΔNI_t Mean	0.002	0.001	-0.001	0.001	-0.009	0.004	0.001
ε_t^1 Var.	0.0029	0.0049	0.0050	0.0023	0.0065	0.0018	0.0083
$f_{OWN1, OWNn}$	-	1.0655 **	1.3230 **	1.1979 **	1.3319 **	1.3578 **	1.2212 **
$f_{OWN2, OWNn}$	1.0655 **	-	1.3292	1.2055 **	1.3380 **	1.3627 **	1.2292 **
$f_{OWN3, OWNn}$	1.3230 **	1.3292	-	1.3923 **	1.5467	1.5094 **	1.4693 **

** indicates volatility is significantly different from the nth ownership group at <0.05 level (F-test).

Volatility of earnings is defined as variance of the residuals of change in net income (ε_t^1) obtained from regressing

ΔNI_t on the set of control variables including $Grow_t$, $Debt_t$, $Levg_t$, $AsTn_t$, and $Size_t$.

All test/control variables are winsorized at 2%, residuals are winsorized at 1%.

Table 4
Variability of earnings over cash flows.

	OWN ¹ State	OWN ² Private	OWN ³ Foreign	OWN ⁴ Collect	OWN ⁵ Society	OWN ⁶ Employee	OWN ⁷ Other
N	6,566	1,644	60	189	57	70	124
ε_t^1 Var.	0.003	0.005	0.005	0.002	0.007	0.002	0.008
ε_t^2 Var.	0.008	0.011	0.004	0.008	0.013	0.013	0.011
Var. ratio	0.348	0.435	1.327	0.290	0.491	0.135	0.77

Residuals of change in net income (ε_t^1) and residuals of change in cash flows from operating activities (ε_t^2) are obtained from regressing ΔNI_t and ΔCFO_t , respectively, on the set of control variables including $Grow_t$, $Debt_t$, $Levg_t$, $AsTn_t$, and $Size_t$.

All test/control variables are winsorized at 2%, residuals are winsorized at 1%.

“Foreign” firms have the highest leverage ratio with a mean of 2.153 (significantly higher than from State firms) whereas “Collectively” owned firms have the lowest debt to equity ratio with a mean of 0.848 (significantly lower than State firms).

5. Discussion of results

5.1. Test results for volatility of earnings

Table 3 provides the test results of volatility of earnings across different ownership structure sub-samples. Consistent with our expectations, the variances of controlled net income (ε_t^1) for “Private”, “Foreign”, and “Society” sectors are significantly higher than those for “State”, “Collect”, and “Employee” sectors, suggesting the former firms might have higher earnings quality since their reported earnings are more volatile (i.e., less “managed”).

5.2. Test results for variability of earnings over cash flows

Test results of variability of earnings over cash flows are presented in Table 4. This measure is defined as the ratio of variance of change in net income [Model (1)] regression residuals (ε_t^1) over the variance of change in cash flows from operating activities [model (2)] regression residuals (ε_t^2). The results show that the variance ratios differ considerably among ownership structure subsamples and ranges from 0.135

(“Employee” sector) to 1.327 (“Foreign” sector). This is indicative of the foreign-owned firms engaging in lower smoothing of earnings if at all, whereas the earnings of employee-owned firms' earnings appear to be the most “managed”. Consistent with prior tests, we find “Private”, “Foreign” and “Society” firms have higher ratio values compared to “State”, “Collect”, and “Employee” firms, implying that the former group of firms engage in lower income smoothing and have higher earnings quality relative to the latter group of firms.

5.3. Test results for correlations between accruals and cash flows

Table 5 provides the analysis of Spearman correlations between accruals and cash flows, which are defined as total accounting accruals and cash flows from operating activities after controlling for the set of fundamental financial variables (ε_t^3 and ε_t^4), as previously discussed. Consistent with prior studies and conservative accounting theory, significant negative correlations are evident for all sub-samples with the “Foreign” sector having the least negative correlation (-0.547), and “Employee” sector having the most negative value (-0.809). We further compute z values (z_n) and the observed z value (z_{obs}) to test the significance of the differences in the correlation coefficients across different ownership structure groups and find that “State” firms have significantly lower correlation coefficient as compared to “Private” or “Foreign” firms, but the value is significantly higher than “Employee” sector. Such findings are consistent with our

Table 5
Correlations between accruals and cash flows.

	OWN ¹ State	OWN ² Private	OWN ³ Foreign	OWN ⁴ Collect	OWN ⁵ Society	OWN ⁶ Employee	OWN ⁷ Other
N	6566	1644	60	189	57	70	124
Spearman Corr.	-0.745**	-0.708**	-0.547**	-0.719**	-0.753**	-0.809**	-0.664**
z scores (z-n)	-0.962	-0.883	-0.614	-0.906	-0.980	-1.124	-0.800
$z_{OWN1, OWNn}$	-	-2.84***	-2.61***	-0.75	0.13	1.32*	-1.76**
$z_{OWN1, OWNn}$	2.84***	-	-2.00***	0.29	0.70	1.93**	-0.88
$z_{OWN3, OWNn}$	2.61***	2.00***	-	1.93**	1.93**	2.83***	1.16

*, **, and *** indicates correlation coefficient is significantly different between the ownership groups at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed).

Residuals of total accruals (ε_t^3) and residuals of cash flows from operating activities (ε_t^4) are obtained from regressing TAC_t and CFO_t , respectively, on the set of control variables including $Grow_t$, $Debt_t$, $Levg_t$, $AsTn_t$, and $Size_t$.

All test/control variables are winsorized at 2%, residuals are winsorized at 1%.

Table 6
Discretionary accruals.

OWN ¹ State	OWN ² Private	OWN ³ Foreign	OWN ⁴ Collect	OWN ⁵ Society	OWN ⁶ Employee	OWN ² Other
Number of observations						
6566	1644	60	189	57	70	124
Mean discretionary accrual						
−0.001	0.001	−0.024	0.011	−0.004	0.005	0.008
Mean difference between OWN ₁ and OWN ₃						
−0.023*	−0.025**	–	0.035***	−0.019	−0.028	−0.031**

*, **, and *** indicates mean discretionary accrual value is significant different between Foreign firms and other ownership types at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed).

prior two test results, indicating earnings reported by private and foreign companies have higher quality than state owned firms, with the earnings quality from employee-owned firms being the lowest.

5.4. Test results for variations in level of abnormal accruals

Table 6 provides the analysis results where we estimate and compare the discretionary accounting accruals [Model (5)], a most popular detector of earnings management in accounting literature. As shown in Table 6, consistent with other tests results, we find foreign-owned firms has the most negative mean value (−0.024) in abnormal accrual, and is statistically lower than state-owned, privately-owned or collectively-owned firms. It implies this ownership group is the most conservative among all groups. Collectively-owned firms have the highest positive discretionary accruals (0.011) followed by employee-owned firms (0.005), both indicate upward earnings management. Mean values from state-owned firms are not significantly different from private-owned, collectively-owned, society-owned or employee-owned firms in this test (results unreported).

6. Conclusions

The objective of this paper is to examine the influence of ownership structure on earnings quality of firms listed on the Chinese Stock Exchanges, an area in which there has been sparse research. By empirically testing four contemporary earnings quality measures for 1438 firms listed on Shenzhen Stock Exchange and Shanghai Stock Exchange during the period of 1999 to 2006, we find that although state-owned firms, which account for almost three quarters of the total listed firms in China, are bigger in size and appear more profitable, private firms, foreign firms and society owned firms outperform the state controlled firms in earnings quality as measured by volatility of earnings, variability of earnings over cash flows, correlations between accruals and cash flows, and discretionary accruals. This finding is not surprising since the controller of the state owned firms, State Assets Management Bureau (SAMB), has neither a strong incentive nor ability to monitor the listed firms whereas the non-state firms are operated based more on market mechanisms. The results also indicate that foreign-owned firms have the highest earnings quality among all types of ownership structure groups, and employee-owned firms exercise most discretion in earnings management and rank least in all four earnings quality tests. In addition, although collectively-owned firms are claimed to be more efficiently operated, we do not find any significant improvement in their earnings quality, possibly due to government intervention.

In conclusion, our paper contributes to the extant earnings quality literature in accounting research by examining if and how ownership structure influences quality of reported earnings. The findings in particular will have direct policy implications for the China Securities Regulatory Committee (CSRC).

Notes

¹ See “Research Design and Methodology” for ownership structure classifications used in this study.

² In the 1984 “Decision on reform of the economic structure”, it is declared that government departments are not allowed to manage or operate enterprises directly (Cao, 2000).

³ Based on CCEER database dictionary definition for variable On 3=through 6.

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