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CEO pay-performance and board independence: the impact of earnings management in China

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Keywords

CEO, pay, performance, board, independence, impact, earnings, management, China

Disciplines

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Abstract

This paper examines the impact of board characteristics and CEO compensation on firm performance when firm performance is adjusted for the effect of earnings management. Results from regression analysis indicates that the CEO pay-performance relation is substantially lower when firm performance is adjusted for the effect of earnings management than when firm performance is measured as reported performance. That is, the positive effect of executive compensation on firm performance disappears when firm performance is measured as adjusted firm performance excluding earnings management in Chinese listed firms, and as a result, we can identify that the evident executive pay-performance relation is largely cosmetic. We also find that the proportion of independent directors on board is significantly positively associated with firm performance only when the firm performance is adjusted for the effect of earnings management. Similar results are found in ownership concentration too. These results suggest that independent directors are shown as more effective governance mechanism in Chinese listed firms when true firm performance is considered while the positive effect of CEO compensation disappears concerning true firm performance.

Keywords: CEO pay-performance, board independence, earnings management

1. Introduction

Corporate governance has been concerned in Asia after the 1997 Asia economic crisis. Corporate scandals globally, for example, WorldCom, Enron, Adelphia, and Tyco, have also highlighted deficiencies in corporate governance systems, more specifically, the role of board of directors. Therefore, the China Securities Regulatory Commission (CSRC) released a new corporate governance code in 2002 suggesting many additional requirements and recommendations for listed Chinese firms, say, for example, Chinese boards are required to have independent directors².

In the mean time, China has become the second-largest economy in the world following US in 2006 based on purchasing power parity (PPP) (CIA, 2007). In terms of the report from the Economist (2008), China's gross domestic product (GDP) increased 11.4% on average at yearly bases to 24.66 trillion yuans (or approximately 3.43 trillion US dollars) in 2007. Thus, how the governance mechanisms improve China's economy, or more specifically, the performance of individual firms, become an open question and accordingly need more empirical evidence.

The specific characteristics of corporate governance which differentiate China from its Western counterparts are highly concentrated ownership, mainly control of State, insufficient long-term incentives for CEOs, and less independent boards. Additionally, institutional investors are believed to play an important role in western countries (Chung et al., 2002) while they basically hold a small amount of shares in Chinese listed firms and thus cannot play any important role in monitoring management like their western counterparts. Therefore, whilst institutional ownership was fully investigated to see if institutional investors improve firm performance, we focus on board characteristics, with particular interest of the corporate governance code 2002 which requires certain percentage of independent directors on board.

Extant literature suggests that corporate governance structures such as board independence and executive compensation can significantly impact both corporate performance and earnings management. Lai (2005) investigates the relation between Chinese board independence and earnings management and finds that firms voluntarily adopt board independence decline to manage their earnings while others do not experience similar results. Cornett et al. (2008) argue if

² In August 2001, the China Securities Regulatory Commission (CSRC) released statement 102 "Guidelines for establishing an independent directors system for listed companies" in which one third independent directors are required for listed firms by June, 2003.

both earnings management and corporate performance are likewise impacted by governance mechanisms then the influence of these governance mechanisms on reported firm performance is probably partly cosmetic. In China, most of the firms only keep two thirds of independent directors on board according to the minimum board independence requirements of CSRC (China Securities Regulatory Commission). Therefore, whether the independent directors are still effective when the minimum proportion of independent directors on board is mandated by CSRC remains unanswered. Additionally, whether the independent directors are still effective when the firm performance was deprived of the effects of earnings management also makes China a good example to be investigated. In response to the specific governance structures in China, we extend the prior studies on CEO pay-performance, board characteristics and earnings management to China's sample. Specifically, there is no evidence ever provided on Chinese firms regarding adjusted firm performance (reported firm performance-earnings management), our studies fill the void and offer empirical evidence from emerging economy.

This study empirically examines the relation between board composition, CEO compensation and reported firm performance after taking account of the effect of earnings management. We found that the coefficient on CEO compensation, which is .0104 when firm performance is measured as pre-managed performance (reported firm performance), decreased to .0032 when the firm performance is adjusted performance (reported firm performance-earnings management). The estimates of coefficient on CEO compensation are significantly positive for the reported firm performance, but no significant influence is found for the adjusted firm performance. Therefore, the positive effect of executive compensation on firm performance disappears when firm performance is measured as adjusted firm performance, and as a result, we can identify that the evident executive pay-performance relation is largely cosmetic. On the other hand, prior literature has emphasized the key role played by the board in arranging executive compensation and enhancing firm performance. For example, Bebchuk and Fried (2003, 2004) suggest that lack of board oversight can contribute to CEO overcompensation. However, prior empirical evidence on board independence provides mixed results. In our analysis, the coefficient on the proportion of independent directors on board almost doubles from 0.0153 for reported firm performance to 0.0294 when adjusted firm performance is considered, and the coefficient also changes from insignificant when reported firm performance is employed to positively significant at better than 5% level when adjusted firm performance is computed. Thus, independent directors are shown as more effective governance mechanism when true firm performance is considered. Our results suggest that the CEO compensation may be not as effective as we used to think to enhance firm

value while Chinese boards in fact significantly improve firm performance when real performance is considered.

The paper proceeds in five sections. The next section reviews the literature on corporate governance such as the monitoring role of boards of directors and earnings management. Section 3 introduces the data used in our study, presents the methods to identify earnings management, and discusses the empirical approach. Section 4 presents empirical results and further robustness tests. A final section concludes and discusses directions for future research.

2. Corporate governance and earnings management

2.1 Earnings management

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

With regard to the different incentives for managers to manage earnings, academic research normally supports that the "bonus hypothesis" (managerial compensation) and the "debt hypothesis" (debt contracts) are the main motivations for earnings management among various contracting theories (see, Watts and Zimmerman, 1990). The use of accruals, more specifically the discretionary accruals, to increase or decrease reported income temporarily is one normal way to manage earnings. Total accruals are components of earnings that are not reflected in current cash flows, and considerable managerial discretion determines their accruals.

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

Bedard et al. (2004) found that the proportion of independent directors on audit committee decreases the magnitude of discretionary accruals.

2.2 Corporate governance mechanisms

Extant literature on both how corporate governance affects corporate performance and how corporate governance influences earnings management is numerous in Western economies. For example, Dechow et al. (1996) and Beasley (1996) examine the impact of board on financial fraud while they do not focus on the use of discretionary accruals. In the meantime, corporate governance in emerging markets as China has not been studied as intensively as in developed markets, take Lai (2005) for example, earnings management decreased when Chinese boards voluntarily adopted larger proportion of independent directors.

2.2.1 Executive compensation

Aiming at aligning CEO's interests with shareholder and maximizing shareholder wealth, the CEO compensation should be tied to firm performance (Fung et al., 2001), or in other words, the pay-performance sensitivity³ should be high. Baker (1992), Dechow and Sloan (1991) and Kaplan (1994) all suggest that the CEO pay-performance relation is the essence of principal-agent theory. In order to confirm the relation, empirical studies have been done in different contexts. For example, Kato et al. (2007) document a significant positive relation between executive cash compensation and stock market performance in Korean listed firms. Evidence also is provided from China, most prior literature shows a significant positive relation between CEO compensation and firm performance (e.g., Kato and Long, 2006).

According to Healy and Wahlen (1999), accounting data (for example, the accounting performance) are used to assist monitor the contracts between the shareholders and managers. Explicit and implicit executive compensation contracts are employed to align the interests of shareholders and management, resulting in the use of accounting judgment by managers to increase earnings-based bonus awards. Particularly, the CEOs of Chinese firms do not have long-term incentives such as stock options until recently, thus, executive managers in China are more likely to employ earnings management to increase their cash compensation such as bonus.

³ Pay-performance sensitivity is defined as the dollar change in the CEO's compensation associated with a dollar change in the wealth of shareholders.

Prior studies in accounting literature have concentrated on earnings management by managers aiming to meet explicit bonus-linked targets for reported earnings or increase their bonuses. For example, Degeorge et al. (1999) find that accruals management is higher when the pre-managed earnings are below zero if executive compensation is linked to earnings. Likewise, Gaver et al. (1995) and Burgstahler and Dichev (1997) report evidence of earnings management consistent with income smoothing, which makes sense for managers whose bonus-linked incentives are focused on exceeding explicit earnings thresholds. Darrough et al. (1998) provide evidence from Japan and find that managers use income-increasing accruals to increase their bonus, which is similar to their U.S. counterparts. Several prior studies have also examined earnings management as well as CEO compensation in Chinese firms. For example, Aharony et al. (2000) find the existence of earnings management pre-IPO (initial public offerings) in Chinese listed firms. Moreover, Kato and Long (2006) document a significant relation between CEO cash compensation and firm performance, however they do not provide further evidence that if the strong CEO pay-performance relation still exists after adjusting firm performance for earnings management.

Overall, existing research suggests that the level of discretionary accruals (as a proxy for earnings management) is associated with the level of management incentives. More specifically, discretionary accruals increase in response to the stock option compensation of CEOs. However, prior findings of the relation between executive compensation and reported earnings are inconclusive and incomplete, especially in China. In response to the findings of Cornett et al. (2008), we will also expect a positive association between earnings management and executive compensation and hence less impact of executive compensation on firm performance after adjusting for the effects of earnings management in Chinese listed firms, compared with prior research in China.

2.2.2 Ownership structure

China has a complex political economy representing a hybrid of private ownership and state control. If the state owns controlling shareholdings of the firm, it is not surprising that politicians and directors controlled by the state sit on most board, leading to different governance structures. In China, the majority of publicly listed firms are state-owned firms (Claessens and Fan, 2002). In 2005, the State still owned as much as two-thirds of all shares on Shanghai and Shenzhen securities exchange. Furthermore, Demsetz and Lehn (1985) state that shareholders with large

concentrated shareholdings have numerous economic incentives to mitigate agency costs⁴ and hence to monitor managers. This can reduce the free-rider problem usually accompanied with small dispersed shareholders. As a result, the concentrated large shareholders are likely to monitor management effectively and thus constrain the ability of managers to manage earnings. However, highly concentrated State ownership is largely different from highly concentrated private ownership. That is, the benefits of having a concentrated controlling shareholder to better monitor managers may not exist when the controlling owner is the state. In terms of the concentrated State ownership in China, several studies provide empirical evidence on the impact of state ownership upon some variables such as corporate performance. Prior research shows that corporate accounting performance is inversely related to the level of direct state ownership (e.g., Qi et al., 2000; Hovey et al., 2003), while the sample period of their dataset is mostly pre 2003.

To sum up, prior studies on ownership structure emphasize the important role ownership structure plays in determining firm performance and earnings management. This idea leads to our expectations that ownership structure, e.g., state ownership, and ownership concentration, significantly impacts corporate performance, even when the performance is adjusted for the effects of earnings management.

2.2.3 Board characteristics

2.2.3.1 Board independence

Boards of directors are generally believed to play an important role in corporate governance, specifically in monitoring managers (Fama and Jensen, 1983), reviewing and approving strategic decisions (Adams and Ferreira, 2007). First of all, Beasley (1996) and Dechow et al (1996) claim that independent directors are more likely to oversee and disclose due to their desire to maintain their reputations. Therefore, the board of directors, more specifically the outside directors on the board, is believed to monitor top management and hence to constrain earnings management. Secondly, Oxelheim and Randoy (2003) argue that outside directors on board can enhance good reputation of the firm they serve in the financial market, resulting in higher financial performance.

Basically the serious issues of China's corporate governance since last decade are the weak independent directors and subcommittees in listed firms (see, Tam, 2002; Tenev and Zhang,

⁴ When the shareholders and the board make poor decisions due to managed biased accounting numbers, earnings management is classified as agency cost (Davidson et al., 2004).

2002). In order to resolve those issues, the new corporate governance code released in 2002 requires each listed firm to have at least one third of independent directors on the board by June 2003.

There is huge literature on the role of the boards as well as outside directors on the board. Outsider-dominated boards are arguably better in monitor and control management (Dechow et al., 1996; Weisbach, 1988). Hence, extant papers provide evidence suggesting that board independence is associated with effective governance and good firm performance (Brickley et al., 1994; Weisbach, 1988) when others document a negative relation between outside directors and the incidence of earnings management (Dechow et al., 1996; Beasley, 1996). For example, Klein (2002) shows that not only board independence is inversely related to discretionary accruals but also reductions in board independence are accompanied by large increase in discretionary accruals. Peasnell et al. (2000) likewise find that the proportion of outsiders on the board is negatively associated with the level of income-increasing discretionary accruals to avoid reporting loss or earnings reductions. On the other hand, boards composed of more executive directors may be more willing to conceal poor corporate performance from stakeholders to gain private benefits (Anderson et al., 2004). Moreover, Lefort and Urzua (2008) study the relation between board characteristics and corporate performance in Chilean firms and find an increase in the proportion of outside directors enhances firm value. Evidence is also provided from China that the improvement of boards' monitoring role can reduce the occurrence of earnings management. For example, Lai (2005) suggests that Chinese firms which choose to voluntarily increase their board independence to a larger proportion than required are less likely to manage their earnings.

Therefore, if the independent directors perform effectively in China's listed firms, then we can expect that earnings management decreases in response to more board independence. Moreover, we investigate the relation between the proportion of independent directors on board and adjusted firm performance (pre-managed performance) and expect a stronger relation between board independence and true firm performance.

2.2.3.2 Audit committees

The CSRC released a new corporate governance code in 2002 suggesting many additional requirements and recommendations for listed Chinese firms due to recent surge of corporate scandals, say, Chinese boards are required to have independent directors. Furthermore, audit

committees, while commonplace, are not mandatory and did not exist before 2000, are also increasing significantly in China's listed firms. The CSRC recommends to have all or mostly independent directors on audit committee and to have at least one financial expert on audit committee. The audit committee mainly oversees the firm's financial reporting process. It meets regularly with outside auditors and financial managers to review the financial statements, audit process and internal controls.

Audit committees have turned into an important means for firms to monitor the reliability of the financial reporting process. However, the findings of extant literature on the relation between audit committee and fraudulent financial reporting have been mixed. For example, Peasnell et al. (2000) are unable to find evidence that the presence of an audit committee impacts the magnitude of earnings management (either income-increasing or income-decreasing). However, McMullen (1996) reports that the presence of audit committee is associated with a decreased occurrence of errors, irregularities and unreliable financial reporting. Klein (2002) supports the findings of McMullen (1996) by the evidence that discretionary accruals are reduced with a larger proportion of independent directors on the audit committee. Overall, previous studies suggest that the role of the audit committee is to reduce the level of positive or negative discretionary accruals (Klein, 2002). Therefore we also predict that the positive relation between the presence of audit committee and firm performance will be stronger when the reported firm performance is adjusted for the effects of earnings management.

3. Data and methodology

3.1 Sample

Prior research finds that earnings management is more prevalent in poorly performing firms (e.g., Kothari et al., 2005) and when applied to firms with extreme corporate performance the standard models of discretionary accruals may not be reliable (Dechow et al., 1995). Here, following Cornett et al. (2008), we look at factors affecting earnings management in "normal" times when even good performing firms are influenced. That is, firms which received special treatment (ST) and particular transfer (PT)⁵ during the sample window are deleted. Thus, here the potential

⁵ CSRC released the Special Treatment (ST) regulation in 1998 that firms are specially treated if they make losses for two successive years. Additionally, one more year of loss makes the ST firms "Particular Transfer" (PT) firms. PT regulation was effective over the period 1999 to 2001. After 4th Dec 2001, firms with consecutive three year losses will be suspended and if it persists until the first midterm reports those firms would be delisted (CSRC, 2001).

limitations of empirical discretionary accruals models can be ignored in this study because the sample of firms is free of financial distress.

Specifically, we constructed the dataset by merging the following three separate databases. First, we used accounting and other corporate governance data from the database developed by SinoFin Information Services⁶. Second, we assembled basic data on stock returns from CCFR database developed by Tsinghua University. Thirdly, we employed CEO compensation data from China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company.

We then exclude all financial firms (Standard Industrial Classification of CSRC China Securities Regulatory Commission codes I01-I99) because they are subject to fundamentally different regulatory regimes and internal governance structures. The final sample consists of data on 21 non-financial industries in terms of standard industrial classification codes of CSRC during the time periods from 2000 to 2007.

We then delete observations without the availability of executive compensation, accounting and financial data, and corporate governance data that this study needs. After these adjustments, we are left with a sample of 7327 firm-years over sample period 2000-2007. Like the study of Cornett et al. (2008), the variables of the economic determinants of firm performance and earnings management were lagged one year to reduce potential endogeneity. Table 1 defines all the variables in our regression analysis.

3.2 Discretionary accruals

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

⁶ Prior research has used SinoFin data set in their studies on China’s corporate governance, for example, see, Kato and Long, 2006.

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

Where TA_{jt} is total accruals for firm j in year t . Total accruals are calculated as earnings before interests and tax (EBIT)⁷. $Assets_{jt}$ is total assets for firm j in year t , $\Delta Sales_{jt}$ is change in sales for firm j in year t , and PPE_{jt} is property, plant, equipment for firm j in year t .

In response to the research of Hribar and Collins (2002), compared with balance sheet, cash flow statement is preferred in computing total accruals when there are events such as mergers and acquisitions which change balance sheet but not income statement. Following Cornett et al. (2008), we also compute total accruals as operating income (proxy for earnings before extraordinary items and discontinued operations) minus operating cash flows from continuing operations. Discretionary accruals as a portion of the book value of assets, %DA, are calculated as:

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

Where hats refer to as estimated values from regression Eq.1. Modified Jones model adds $\Delta Receivables_{jt}$, which attempts to identify the amounts of aggressive recognition of questionable sales in sales changes, to the original Jones model. Following prior research on earnings management (e.g., Bergstresser and Philippon, 2006), the value of discretionary accruals is normally used as a proxy for the magnitude of earnings management. Like the study of Bartov et al. (2001), we run cross-sectional regressions for each year in the sample period when the results of pooled time-series cross-sectional regressions will be discussed in detail in later section.

In Table 2, we present summary statistics concerning earnings management, CEO compensation, board and firm-specific measures. A spearman correlation table among independent variables is given in Panel B of Table 2. Correlations between each individual variables are less than 0.5, thus the statistics suggest that multicollinearity is not a major problem in our models.

⁷ EBIT is not required to be reported in income statement of China's listed firms. Therefore, we employ operating income as proxy for EBIT.

Panel C of Table 2 presents descriptive statistics of firm performance over 2000-2007. The average signed value and absolute value of discretionary accruals are both showed because discretionary accruals must be reversed at some point. The signed value is only 0.027% on average, even smaller than the signed discretionary accruals in the US while the average absolute value is about 7%, much higher than their US counterparts (0.61%⁸). Although the absolute value is significantly greater than the signed value, we still focus on signed value in examining the effects of other corporate governance, like Carter et al. (2005). The reason behind is that executive compensation is found to have different effects on discretionary accruals when they are positive or negative (Carter et al., 2005).

3.3 Firm performance and executive compensation

Closest to our paper is the work by Cornett et al. (2008), therefore we also measure the reported firm performance as ROA, operating income/assets, mostly used in prior research as measurement of firm performance. However, as a result of managers' influence over accruals (for example, accounts receivable) as well as the treatment of amortization, ROA is likely to be manipulated by CEO (Dechow et al., 1996). In order to measure true firm performance without management manipulation, we use the difference between operating income/assets and %DA as proxy for adjusted performance. Therefore, exclusion of discretionary components makes this firm performance a more true performance compared with reported ROA, which might be cosmetic due to management discretion in accounting treatment.

We focus on cash compensation because we are interested in the reward portion of total compensation. Hence, the cash compensation can be viewed as ex-post compensation depending on past and current performance (see, for example, Gaver and Gaver, 1998; Comprix and Mueller, 2006). Following Leone et al. (2006), we use the sum of bonus and salary, which is the total cash compensation, as the measurement of executive compensation. Moreover, we employ the nature log of cash compensation like most prior studies (see, e.g., Lambert and Larcker, 1987). The nature log can mitigate the difference in executive compensation across firms and hence reduce heteroskedasticity. Among the alternative measures of executive compensation provided in the SinoFin database, average pay of all CEOs and directors, which composes of the salary and bonus, is more likely to identify the whole profile of executive compensation in China's listed firms and thus will be the focus of our study.

⁸ See Cornett et al. (2008) for details.

Descriptive statistics for CEO compensation are summarized in Panel A of Table 2 where all compensations are in 2000-constant yuans. Over the sample period of 2000-2007 average cash compensation of executive managers was on average about 119,743 yuans (or approximately 14,968 US dollars) of 2000-constant yuans, which is much lower than that of their counterparts in the U.S. and Japan⁹. The mean CEO compensations are 33,200 yuans, 45,631 yuans, 59,317 yuans, 74,349 yuans, 87,144 yuans, 85,652 yuans, 246,845 yuans and 325,801 yuans in 2000, 2001, 2002, 2003, 2004, 2005, 2006, and 2007, respectively. That is, the average CEO compensation almost increased by 10 times in 8 years. The pay ranges from 1,600 to 329,100 yuans, 3,046 to 290,286 yuans, 3,648 to 425,466 yuans, 5,570 to 1,211,048 yuans, 5,479 to 1,516,119 yuans, 0 to 1,655,976 yuans, 6,000 to 3,016,200 yuans, and 0 to 4,700,000 yuans in 2000, 2001, 2002, 2003, 2004, 2005, 2006 and 2007, respectively.

Two measurements of firm performance were reported in Table 2, Panel C: operating income/assets and (operating income/assets)-%DA. The average operating income/assets based on reported earnings is 2.65%, and the mean performance measurement based on adjusted earnings (i.e., the effect of discretionary accruals on reported performance is removed) is 2.61%, very similar to performance adjusted for earnings management.

Then we investigate whether industry adjustment makes any difference in firm performance. For each firm, we identify industry comparison firms as all firms listed on CCER with the same three-digit SIC code of CSRC China. Industry-adjusted performance is the firm's operating income in any year minus the average industry value for that year. We measure firm performance alternatively as reported ROA, operating income/Assets, or performance adjusted for discretionary accruals, operating income/Assets-%DA. Industry adjusted performance is zero either by using operating income/assets or by using operating income/assets-%DA

3.4 Ownership structure and board characteristics

To examine our hypotheses in terms of board characteristics, we collect data on the board characteristics. In particular, we determine the proportion of independent directors, board size, and the existence of audit committee.

⁹ For example, Core et al. (1999) report an average of cash compensation of USD 614,000 for a sample of 205 firms between 1982 and 1984.

Because free-riding problems among directors increase with board size (Jensen, 1993), smaller boards are expected to be more effective monitors than large boards. However, large boards are likely to be more effective monitors than small boards because they are harder controlled by management and thus can more effectively protect shareholders' interests (Zahra and Pearce, 1989). Moreover, larger boards of firms with several committees allow for fewer committee assignments for each director, devoting more time and effort to monitor management (Monks and Minow, 1995), and provide better monitoring of the financial reporting process (Anderson et al., 2004).

Most prior U.S. studies use two proxies for board independence, the proportion of outside directors, and a dummy variable showing whether the board has a majority of outside directors (He et al., 2008; Klein, 2002; Bedard et al, 2004; Abbott et al., 2004). However, the percentage of independent directors on the board of China's listed firms is seldom greater than 50%, which is quite different from their U.S. counterparts, therefore we only use the proportion of independent directors as proxy for board independence.

Standard setters and scholars focus more on the role of audit committee after corporate scandals such as Enron, and practitioners suggest that audit committees play an important role in overseeing the financial reporting process. However, inconclusive results were provided for the effectiveness of audit committee. For example, neither Peasnell et al (2005) nor Beasley (1996) find any evidence that the presence of audit committee reduces the magnitude of earnings management. To test whether audit committee reduces earnings management, we include a dummy variable (AC) in our models.

In order to investigate China's data, two common features of China's listed firms should be concerned, the highly concentrated ownership and predominance of state ownership (Kato and Long, 2006). Accordingly, we employ two dummy variables to represent the ultimate owners, that is, State-owned, and Family-owned. In addition, one of the specific characteristics of Chinese firms is having a stockholder whose stockholdings far exceed the second largest stockholder (Xu, 2004). The propensity to manage earnings (including financial fraud) may be higher or lower for the largest stockholder according to the percent of shares they owned. Additionally, other large stockholders are likely to affect the likelihood of earnings management. To control the effects of ownership structure, we use an ownership concentration variable (CR_5), the sum of the first to fifth largest shareholders' shareholding percent in our regressions.

Panel D of Table 2 presents summary statistics on board characteristics and ownership variables. On average, the boards of directors seat 9.71 members when these seats are filled by 2.33 independent directors, which is much less than the US firms. 75 percentile of the firms have about 33% independent directors on the board and the minimum percent of independent directors is 0%. Thus, unlike their western counterparts, the China's listed firms normally do not have a majority of independent directors. In terms of audit committee, 37% publically-traded firms formed their audit committees.

77% of the listed firms are owned by state, which is the main ownership characteristic in China. In addition, the average Cr_5 is 0.58, representing that 58% of the shareholdings are held by the first largest shareholders.

3.5 Other variables

We include several control variables in the regression analysis to account for firm-specific characteristics that influence firm performance. First, firm size is measured by $\ln(\text{assets})$. Prior literature has shown that firm size is positively associated with firm performance significantly (for example, Cornett et al., 2008). Thus, we use lagged $\ln(\text{assets})$ as our proxy for firm size.

Firm risk is a measure of the firm's information environment and the risk of its operating environment (Core et al., 1999) and thus is a potential determinant of the value of firm performance. In our study, firm risk is defined as the standard deviation of the monthly stock returns over the previous 12 months.

Auditors are believed to play an important role in deterring earnings management. Palmrose (1988) suggests that the "Big Eight" (now "Big Four") auditing firms provide higher quality audits so that they are less frequently sued. However, in China independent audits are quite new and thus audit quality may be more variable in China and help explain the incidence of fraud. It's very difficult to measure audit quality, specifically in China (DeAngelo, 1981). A possible method is to deem accounting firms as firms providing high audit quality when they have joint ventures with the international Big 4.

Leverage is also expected to play an important role in executive pay-performance relation in terms of the potential agency costs of debt (Iyengar et al, 2005). We therefore include leverage

rate as control variable, which is measured as the book value of debt to the book value of shareholders' equity.

Panel D of Table 2 represents the summary statistics of firm-specific characteristics. On average, leverage is 1.31, and the average natural log of assets is 21.22. The standard deviation of the monthly stock returns is averagely 0.1. However, only 7% listed firms are served by Big 4 accounting firms in China.

4. Empirical results

4.1 Earnings management

Table 3 shows empirical results of the earnings management proxied by discretionary accruals. Discretionary accruals are computed from the modified Jones model, using Eq. 2 above. Column 1 describes coefficient estimates and standard errors of a pooled time-series cross-sectional regression model. Column 2 manifests Fama-MacBeth¹⁰ estimates of Eq. 2. We can see from the table that the pooled regressions result in higher significance levels than the Fama and MacBeth (1973) estimates.

The point estimates of the coefficients from pooled model and Fama-MacBeth model in Table 3 are similar. As shown by Table 3, earnings management is significantly increased by CEO compensation (β is 0.0072 and 0.0060, respectively), which is consistent with past research as well as our expectations. Both coefficients are significant at better than the 10% level. The estimates of coefficients are also economically significant. For example, using a coefficient estimate of .0072 for $\ln(\text{CEO pay})$, an increase of one sample standard deviation of $\ln(\text{CEO pay})$ (i.e., in Panel D of Table 2, an increase in $\ln(\text{CEO pay})$ of 0.89) would increase the magnitude of assets-weighted discretionary accruals by approximately $0.0072 \times 0.89 = 0.0064$, or 0.64 percent. Likewise, state-owned firms decrease the earnings management significantly ($\beta = -.0088$ and $-.0101$ in pooled and Fama-MacBeth models), possibly resulting from the persistent corporate

¹⁰ Fama-Macbeth (1973) designed and implemented a basic two-step regressions that is used in most of the empirical results and become a standard methodology in the financial literature in terms of its simplicity and clarity. The procedure is as follows: In the first step, for each single time period a cross-sectional regression is performed. Then, in the second step, the final coefficient estimates are obtained as the average of the first step coefficient estimates. Fama-Macbeth regression is expected to minimise the cross-sectional variance.

governance improvement of the state-owned companies. All other corporate governance variables do not show any significant influence on the magnitude of earnings management.

4.2 Firm performance

Table 4 and 5 indicates regression results of firm performance on CEO compensation, board characteristics and ownership variables. We use reported firm performance (ROA), operating income/assets, which can be referred to as unadjusted performance, as the dependent variable in Table 4. The pre-managed performance reflects managers' discretionary accounting treatments. Then we employ adjusted performance, which is computed as the difference between operating income/assets and %DA, as the dependent variable in Table 5. The adjusted performance is expected to exclude management discretions. We also include firm size (log of book value of assets), equity structure (leverage), firm risk (standard deviation of the last year monthly stock returns), and accounting quality (whether has a Big4 accounting firm) as control variables for firm performance in these regressions.

In Table 4, point estimates of all coefficients are almost identical whether a pooled time-series cross sectional or a Fama-MacBeth approach is used. The log of the executive compensation can explain the reported performance to a large extent. The coefficient of the variable is positive in each regression (0.0104 and 0.0108, respectively) and is significant at better than the 1% level in both specifications. This coefficient implies that one sample standard deviation increase in this variable starting from its mean value would increase reported ROA by 0.93%. These results suggest that higher lagged executive compensation is associated with improved firm performance in the next period, consistent with prior research that CEO compensation is an effective incentive to managers to improve firm performance.

However, the coefficient on the proportion of independent directors on board is 0.0153 and 0.0106 in the two regressions, respectively, and is statistically insignificant for both specifications. Thus, an increase of the proportion of independent directors on board does not tend to result in improved reported firm performance as we predict. The alternative explanation is that most Chinese boards do not have majority of independent directors and hence cannot be as effective as their Western counterparts in enhancing reported firm performance. Likewise, the coefficients on other two board characteristics are statistically insignificant in those two regressions, either pooled regression or Fama-MacBeth regression.

In terms of the ownership variables, the coefficient of ownership concentration (CR_5) is statistically and economically significant in both regressions ($\beta=0.05$ and 0.06 , respectively), supporting our expectation that higher ownership concentration is likely to mitigate the free-rider problem from individual investors and hence improve firm performance.

Also take a look at the coefficients on the control variables. The coefficient on the firm size is both positively significant in two regressions at better than 1% level. In contrast, the point estimates of leverage are significantly negative in those two regressions, suggesting that higher leverage increases the default risk and hence devalues the firm. The estimates of coefficient on firm risk (STDRET) is negatively significant ($\beta=-0.18$) at better than 5% level in Fama-MacBeth regression whilst insignificant in the pooled regression ($\beta=0.03$). The economic impact of firm risk is relatively modest, suggesting a higher risk normally associates with worse firm performance. The coefficient on Big4 is only significant in Fama-MacBeth regression ($\beta=.01$), resulting in a 0.26% increase in reported ROA for one sample standard deviation increase in this variable starting from its mean value.

Overall, the results of Table 4 are consistent with our hypotheses of firm performance and corporate governance. That is, increased executive compensation as well as ownership concentration improves firm performance. However, the expected positive effect of board independence is not influential when the firm performance is measured as reported ROA.

Table 5 represents the regression results by using the same model as Table 4, but the dependent variable is measured as the adjusted performance, operating income/assets-%DA. The coefficient on $\ln(\text{CEO pay})$, which was .0104 in the pre-managed earnings regression (Table 4), decreased to .0032 in the pooled regression in Table 5. The estimates of coefficient on $\ln(\text{CEO pay})$ are significantly positive in the pooled regression in Table 4, but no significant influence is found in the pooled regression in Table 5. In stark contrast to the analysis results in Table 4 when firm performance is measured as reported ROA, the effect of executive compensation on firm performance disappears in Table 5 when firm performance is measured as adjusted ROA. That is, the original significant CEO pay-performance relation disappears taking account of adjusted performance, and as a result, we can identify the similar results from Cornett et al. (2008) that the evident executive pay-performance relation is largely cosmetic.

On the other hand, the coefficient on the proportion of independent directors on board almost doubles from 0.0153 in Table 4 to 0.0294 in Table 5 when the coefficient also changes from

insignificant in Table 4 to positively significant at better than 5% level in Table 5. The economic impact of the variables increases commensurately like the study of Cornett et al. (2008). Interestingly, the coefficient on ownership concentration (CR_5) reduces from 0.05 in Table 4 to 0.0345 in Table 5, all significant at better than 1% level. Therefore, the board independence does improve true firm performance after excluding earnings management while the impact of ownership concentration weakens in response the adjusted firm performance. Our results extend the study of Cornett et al. (2008) by showing that only the board independence can improve true performance in China when the effects of other governance variables lower if earnings management is considered. Specifically, after adjusting for the impact of discretionary accruals, adjusted performance shows no relation with executive cash compensation.

4.3 Robustness tests

With respect to CG Code 2002, at least one third independent directors on the board are required by the end of 2003 for Chinese listed firms. Thus, most listed firms are willing to keep at least one third independent directors on their boards from 2003 onwards, resulting in changes, specifically improvement, in governance structure in China's listed firms. These changes have the potential to alter the monitoring of the board of directors and hence the firm performance to some extent. After the CG code 2002 was introduced, governance structures were expected to enhance firm performance in a more effective way. Thus, we evaluate the governance practice of 2003, the first year since the 2002 code, and investigate whether the results are robust to our previous results.

We investigate again the same regressions of firm performance on corporate governance variables like in Table 4 and Table 5 to see if the new requirement of board independence since CG code 2002 could have affected our results. In response to the fact that CG code 2002 was introduced in 2002, we focus on the results for 2003, the first full year after CG code 2002. As it is shown from Table 6, the consistency of the regressions in 2003 provides support to our previous empirical evidence. Table 6 indicates our additional results for that year. The first column uses operating income/assets as the dependent variable when the second column employs adjusted performance, (operating income/assets)-%DA as the dependent variable. The results we obtain for this year are highly consistent with those for the full sample period (2000-2007). More specifically, the effects of governance variables are increasingly evident in 2003, compared with the pre-CG code period (2000-2002). For example, CEO compensation is positively significantly associated with pre-managed performance ($\beta=0.01$) while it is insignificantly related with adjusted performance

($\beta=0.003$). The coefficient of independent directors on board doubles from 0.0685 for pre-managed performance to 0.1271 for adjusted performance, significance are both better than 5%. However, the estimate of coefficient on ownership concentration (CR_5) increases from 0.08 for pre-managed performance to 0.1 for adjusted performance. An alternative explanation is that corporate governance reform in 2002 enhanced the protection of minority shareholders as well as the incentives for large shareholders, leading to more significant relation between ownership concentration and firm performance. Surprisingly, the coefficient on Big4 dummy also increases from 0.0251 to 0.0317, both are significant at better than 10% level, also resulting from the governance reform.

In order to examine the sample firms in more details, we use one indicator variable to indicate whether the ROA is the highest (in the highest half of ROA) or lowest (in the lowest half of ROA), resulting in two sub-samples. The results in Table 7 show a substantial increase in the coefficient on board independence in well performing firms while their poor performing counterparts do not. Moreover, the results on CEO compensation provide consistent results supporting our previous analysis. Of particular interest is the ownership concentration (CR_5), it is significantly positively associated with firm performance in well performing firms while the relation is not found in poor performing firms. That is, board independence as well as ownership concentration are more likely to improve true firm performance in well performing firms.

At last, started from 2005, non-tradable shares reform aims at changing the status of non-tradable shares to tradable shares. These changes are supposed to meliorate the governance structure of most Chinese listed firms which characterized with highly concentrated ownership of State. Therefore, it is reasonable to expect closer pay-for-performance after the commencement of non-tradable shares reform. Figure 1 shows the coefficients on CEO cash compensation from the year-by-year regressions on reported ROA (operating income/assets). There seems to be an increase in the impact of executive compensation from 2005. This trend is statistically and economically significant, consistent with the non-tradable shares in this period.

5. Conclusions

Our analysis suggests that management compensation in Chinese listed firms modestly affects the magnitude of earnings management (proxied by discretionary accruals). It also suggests that the significant positive influence of CEO compensation on reported firm performance may be mostly cosmetic, which is merely the results of management discretion on accounting treatments. In stark

contrast, the proportion of independent directors on board increasingly improves firm performance if true performance is considered even though most Chinese boards have less than 50% independent directors. Moreover, unlike board independence, we found that the impact of ownership concentration reduces if the adjusted firm performance is computed, as well as other governance variables. Overall, the quality of true firm performance improves significantly with board monitoring while the strong positive CEO pay-performance relation disappears after adjusting firm performance for earnings management.

In order to investigate China's data in more detail, more firm observations should be included in the study, nonetheless, samples in our analysis are only limited to publically traded firms when the fact is that more firms in China with strong earnings manipulation incentives are not yet publically traded. Therefore, samples should be extended by including non-publically traded firms that have normal earnings management, therefore their data can shed us more light on management discretion as well as the impact of corporate governance structure on true firm performance.

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Table 1. Definitions of variables

This table provides variable definitions and lag structure used in the empirical analysis

Variable	Definition
<i>Firm performance</i>	
ROA (lagged one year)	The average roa, which is calculated as EBIT divided by the book value of assets of the current year
<i>CEO compensation</i>	
Ln(CEOcom) (lagged one year)	the logarithm of average annual compensation of CEOs and paid directors, calculated by dividing the sum of annual CEOs and directors' compensation by the number of CEOs and paid directors
<i>Board characteristics</i>	
boardind (lagged one year)	Proportion of independent directors on board
AC (lagged one year)	equal to 1 if audit committee exists under the board of directors, 0 otherwise
Ln(boardsize) (lagged one year)	Natural log of the total number of directors serving on the board
<i>Ownership structure</i>	
State-owned(lagged one year)	equal to 1 if state is the controlling shareholder, 0 otherwise
Cr_5 (lagged one year)	CR_5 is the sum of the first to fifth largest shareholders' shareholding percent
<i>Firm-level control variables</i>	
Ln(Assets) (lagged one year)	Natural log of the book value of assets
Lev (lagged one year)	leverage rate (total debt/total assets)
Stdret (lagged one year)	Standard deviation of stock returns over the year
Big4 (lagged one year)	equal to 1 if financial statements are audited by Big 4 accounting firms, 0 otherwise
industry	Dummy variables, 21 industries according to Standard Industrial Classification of CSRC China Securities Regulatory Commission

Table 2. Summary statistics

Panel A: CEO compensation						
	Year	No.	Mean	S.D.	Minimum	Maximum
Ceocom	2000	476	33,200.9	32,733.1	1,600	329,100
	2001	545	45,631.3	40,031.1	3,046.1	290,286.8
	2002	857	59,317.9	50,374.0	3,648.3	425,466.9
	2003	950	74,349.3	71,138.1	5,570.7	1,211,048
	2004	1021	87,144.2	90,641.8	5,479.2	1,516,119
	2005	1104	85,652.0	91,707.0	0	1,655,976
	2006	1156	246,844.8	216,665.2	6,000	3,016,200
	2007	1086	325,800.5	324,395	0	4,700,000

Summary of statistics for the sample firms listed on Shanghai and Shenzhen stock exchange during the years 2000-2007. Compensation amounts are expressed in 2000-constant Yuan.

Variables are as defined in table 1.

Panel B: Spearman correlations among variables

Variable	Ln(ceocom)	Boardind	Ln(boardsize)	Ln(assets)	LEV	Big4	stateown	AC	stdret	CR_5
Ln(ceocom)	1.0000									
Boardind	0.4094	1.0000								
Ln(boardsize)	-0.0064	-0.0403	1.0000							
Ln(assets)	0.3716	0.1668	0.1819	1.0000						
LEV	0.1303	0.1641	0.0371	0.2753	1.0000					
Big4	0.1622	0.0223	0.1172	0.2773	-0.0480	1.0000				
stateown	-0.0710	-0.1581	0.1221	0.1476	-0.0628	0.0780	1.0000			
AC	0.3094	0.4312	0.0908	0.1242	0.0946	0.0520	-0.0263	1.0000		
stdret	-0.0304	0.0340	-0.0373	-0.1029	0.1122	-0.037	-0.0432	0.0184	1.0000	
CR_5	-0.0486	-0.0872	0.0421	0.0515	-0.1429	0.1323	0.1615	-0.0350	-0.0799	1.0000

Panel C: Descriptive statistics on accruals and average performance					
Variable	Mean	Median	Standard deviation	25 th percentile	75 th Percentile
$\%DA = \frac{\text{Discretionary_accruals}}{\text{Assets}}$.00027	.00014	.12175	-.04806	.04561
Abs(%DA)	.07154	.04689	.09851	.02082	.08979
<i>Performance measures</i>					
Reported: ROA=operating income/assets	.02651	.02996	.12856	.00747	.06002
Unmanaged: operating income/assets-%DA	.02614	.02865	.15666	-.02036	.08301
<i>Industry-adjusted performance</i>					
Reported: ROA=operating income/assets	-0.00000	.00509	.12547	-.02208	.03502
Unmanaged: operating income/assets-%DA	-0.00000	.00266	.15379	-.04593	.05566

Financial statement data are obtained from CCER database for each year, 2000-2007. For each firm, we identify industry comparison firms as all firms listed on CCER with the same three-digit SIC code of CSRC China. Industry-adjusted performance is the firm's operating income in any year minus the average industry value for that year. We measure firm performance alternatively as reported ROA, operating income/Assets, or performance adjusted for discretionary accruals, operating income/Assets-%DA. Normal discretionary accruals are computed as Eq. 2. %DA (percentage discretionary accruals) are residuals between accrual accruals and normal accruals as a fraction of assets defined by the modified Jones model.

Variables are as defined in table 1.

Panel D: Descriptive statistics on board characteristics and ownership variables					
Variable	Mean	Median	Standard deviation	25 th percentile	75 th Percentile
<i>CEO compensation</i>					
Ln(CEOcom) (lagged one year)	10.83	10.87	.89	10.27	11.44
<i>Board characteristics</i>					
Boardind (lagged one year)	.24	.33	.15	.09	.33
AC (lagged one year)	.37	0	.48	0	1
Board size	9.71	9	2.26	9	11
Ln(boardsize) (lagged one year)	2.24	2.20	.23	2.20	2.40
<i>Ownership structure</i>					
State-owned(lagged one year)	.77	1	.42	1	1
Cr_5 (lagged one year)	.58	.59	.14	.49	.68
<i>Firm-level control variables</i>					
Natural log of assets (lagged one year)	21.22	21.12	.93	20.59	21.76
Lev (lagged one year)	1.31	.96	2.78	.54	1.61
Stdret (lagged one year)	.10	0.10	.04	.08	.12
Big4 (lagged one year)	.07	0	.26	0	0

Variables are as defined in table 1.

Table 3. Discretionary accruals computed by modified Jones model

The dependent variable is discretionary accruals divided by assets, computed by Eq. 2.

Variable	Pooled time-series/cross-sectional regression	Fama-MacBeth regression
Ln(CEOcom) (lagged)	.0072*** (.0019)	.0060 ⁺ (.0026)
boardind (lagged)	-.0132 (.0115)	-.0118 (.0233)
AC(lagged)	-.0007 (.0034)	.0060 (.0058)
Ln(board size) (lagged)	-.0042 (.0063)	-.0053 (.0044)
State-owned (dummy) (lagged)	-.0088* (.0036)	-.0101* (.0041)
CR_5 (lagged)	.0162 (.0106)	.0122 (.0124)
Ln(assets) (lagged)	-.0041* (.0018)	-.0040* (.0012)
LEV (lagged)	-.0029*** (.0005)	-.0053* (.0021)
Stdret (lagged)	-.0267 (.0322)	-.0938 (.0623)
Big4 (dummy) (lagged)	-.0011 (.0060)	-.0025 (.0047)
Adjusted R-squared [#]	0.007	0.023

***:P<0.001, **:P<0.01, *: P<0.05, ⁺: P<0.1

[#]: In Fama-MacBeth regressions, R-squared is the average R-squared of year-by-year regressions.

Standard errors are listed below coefficient estimates.

Table 4. Determinants of reported performance (ROA)

The dependent variable is ROA (operating income/assets) for firm *j* in year *t*. The sample period is 2000-2007. Column 1 regression is estimated as pooled time-series cross sectional regression. Column 2 shows Fama-MacBeth regression results, adjusted for serial correlation using the method employed in Pontiff (1996).

Variable	Pooled time-series/cross-sectional regression	Fama-MacBeth regression
Ln(CEOcom) (lagged)	.0104*** (.0018)	.0108** (.0029)
boardind (lagged)	.0153 (.0108)	.0106 (.0201)
AC(lagged)	-.0032 (.0032)	-.0068 (.0041)
Ln(board size) (lagged)	-.0031 (.0059)	-.0043 (.0029)
State-owned (dummy) (lagged)	-.0036 (.0034)	-.0041 (.0025)
CR_5 (lagged)	.0500*** (.0101)	.0642** (.0130)
Ln(assets) (lagged)	.0134*** (.0017)	.0079** (.0022)
LEV (lagged)	-.0197*** (.0005)	-.0121** (.0030)
Stdret (lagged)	.0348 (.0304)	-.1762* (.0709)
Big4 (dummy) (lagged)	.0084 (.0056)	.0114 ⁺ (.0057)
No.	7327	7327
Adjusted R-squared [#]	0.20	0.15

***:P<0.001, **:P<0.01, *: P<0.05, ⁺: P<0.1

#: In Fama-MacBeth regressions, R-squared is the average R-squared of year-by-year regressions.

Standard errors are listed below coefficient estimates.

Table 5. Determinants of unmanaged performance

The dependent variable is unmanaged performance (operating income/assets-%DA) for firm j in year t . The sample period is 2000-2007. Column 1 regression is estimated as pooled time-series cross sectional regression. Column 2 shows Fama-MacBeth regression results, adjusted for serial correlation using the method employed in Pontiff (1996).

Variable	Pooled time-series/cross-sectional regression	Fama-MacBeth regression
Ln(CEOcom) (lagged)	.0032 (.0024)	.0048* (.0014)
boardind (lagged)	.0294* (.0140)	.0257 (.0382)
AC(lagged)	-.0032 (.0041)	-.0132 (.0075)
Ln(board size) (lagged)	.0021 (.0077)	.0019 (.0047)
State-owned (dummy) (lagged)	.0055 (.0044)	.0060 (.0041)
CR_5 (lagged)	.0345** (.0131)	.0522* (.0153)
Ln(assets) (lagged)	.0173*** (.0022)	.0118** (.0025)
LEV (lagged)	-.0169*** (.0006)	-.0068 ⁺ (.0030)
Stdret (lagged)	.0654 ⁺ (.0394)	-.0760** (.0185)
Big4 (dummy) (lagged)	.0092 (.0074)	.0133 ⁺ (.0056)
No.	7239	7239
Adjusted R-squared [#]	0.10	0.10

***: $P < 0.001$, **: $P < 0.01$, *: $P < 0.05$, ⁺: $P < 0.1$

[#]: In Fama-MacBeth regressions, R-squared is the average R-squared of year-by-year regressions.

Standard errors are listed below coefficient estimates.

Table 6. Determinants of reported performance (ROA) and unmanaged performance, 2003

The dependent variable is ROA, operating income/assets, in column 1, and unmanaged performance, (operating income/assets-%DA), in column 2, for firm j in 2003.

Regressions are estimated as cross-sectional regressions.

Variable	Dependent variable=operating income/assets	Dependent variable=(operating income/assets)-%DA
Ln(CEOcom) (lagged)	.0068* (.0033)	.0036 (.0057)
boardind (lagged)	.0685* (.0316)	.1271* (.0541)
AC(lagged)	-.0003 (.0054)	-.0061 (.0093)
Ln(board size) (lagged)	-.0043 (.0116)	.0009 (.0198)
State-owned (dummy) (lagged)	-.0055 (.0063)	.0042 (.0108)
CR_5 (lagged)	.0799*** (.0182)	.0980** (.0312)
Ln(assets) (lagged)	.0102** (.0033)	.0070 (.0056)
LEV (lagged)	-.0097*** (.0027)	-.0073 (.0046)
Stdret (lagged)	-.3297*** (.0925)	-.1264 (.1586)
Big4 (dummy) (lagged)	.0251* (.0099)	.0317 ⁺ (.0170)
No.	953	943
Adjusted R-squared	0.10	0.03

***:P<0.001, **:P<0.01, *: P<0.05, ⁺: P<0.1

Standard errors are listed below coefficient estimates.

Table 7. Determinants of reported performance (ROA) and unmanaged performance, high and low performance (ROA) subsets (2000-2007)

Variable	Low performance subset		High performance subset	
	Dependent variable=operating income/assets	Dependent variable=(operating income/assets)-%DA	Dependent variable=operating income/assets	Dependent variable=(operating income/assets)-%DA
Ln(CEOcom) (lagged)	.0060 ⁺ (.0034)	.0022 (.0036)	.0034*** (.0010)	-.0025 (.0030)
boardind (lagged)	.0367* (.0185)	.0321 (.0198)	.0214*** (.0060)	.0393* (.0187)
AC(lagged)	-.0097 ⁺ (.0055)	-.0057 (.0058)	.0015 (.0017)	-.0009 (.0054)
Ln(board size) (lagged)	-.0016 (.0102)	-.0058 (.0109)	-.0014 (.0032)	.0123 (.0102)
State-owned (dummy) (lagged)	.0012 (.0058)	.0046 (.0062)	-.0001 (.0018)	.0108 ⁺ (.0058)
CR_5 (lagged)	.0213 (.0174)	.0071 (.0186)	.0368*** (.0056)	.0377* (.0176)
Ln(assets) (lagged)	.0195*** (.0031)	.0196*** (.0034)	.0020* (.0009)	.0108*** (.0029)
LEV (lagged)	-.0244*** (.0007)	-.0217*** (.0007)	-.0018*** (.0004)	.0001 (.0012)
Stdret (lagged)	-.0257 (.0564)	.0688 (.0602)	.0694*** (.0157)	.0537 (.0490)
Big4 (dummy) (lagged)	-.0048 (.0118)	.0144 (.0126)	.0119*** (.0028)	.0050 (.0087)
No.	3665	3626	3662	3613
Adjusted R-squared	0.26	0.20	0.05	0.01

***:P<0.001, **:P<0.01, *: P<0.05, +: P<0.1

Standard errors are listed below coefficient estimates.

Fig.1. Results of yearly cross-sectional regressions.

This figure represents the coefficient of average CEO compensation from year-by-year estimation of the regression in Table 4. The dependent variable is reported performance, ROA=operating income/assets.

