

## INTERNATIONAL REAL ESTATE REVIEW

2016 Vol. 19 No. 1: pp. 51 – 97

# The Helping Hand of the State in Chinese Real Estate Firms: Anti-corruption and Liberalization

### **Gang-Zhi Fan**

Konkuk University, the Department of Real Estate, Seoul, South Korea. Email: fanganzhi@gmail.com.

### **Zsuzsa R. Huszár**

Department of Finance, 15 Kent Ridge Drive, NUS Business School. Affiliated with the NUS Risk Management Institute (RMI) and NUS Institute of Real Estate Studies (IRES). Email: bizhxr@nus.edu.sg.

### **Weina Zhang\***

Department of Finance, 15 Kent Ridge Drive, NUS Business School. Affiliated with the NUS Risk Management Institute (RMI) and NUS Institute of Real Estate Studies (IRES), Singapore. Email: weina@nus.edu.sg. Tel: +65 65168120; Fax: +65 67792083.

We show that traditional western style corporate governance tools are ineffective in Chinese real estate firms by using data from 2000 to 2012. Instead, we find evidence of effective state governance, such as corruption cleanups and financial market liberalization. Specifically, firms with fewer state connections experience better performance in provinces with greater corruption prosecutions and after 2006 with accelerated stock market liberalization. Overall, our results suggest that the Chinese real estate industry is becoming more market-oriented with assistance from the state.

### **Keywords**

China, Corporate Governance, Corruption, Emerging Market, Executive Compensation, Financial Market Liberalization, Real Estate, State-owned Enterprises, State Governance

---

\* Corresponding author

*“ ... a majority of heads at state-owned business will receive pay cuts .... Grey incomes for Chinese officials are becoming harder to come by and the risks for corruption are rising,”*

Asia, Wall Street Journal, 5-7 September 2014.

## 1. Introduction

The finance theory suggests that effective corporate governance mechanisms are essential to alleviating agency conflicts between shareholders and managers (Jensen and Mecking, 1976; Shleifer and Vishny, 1997). The extensive literature on corporate governance (e.g., Gompers et al., 2003; Edmans and Gabaix, 2009) suggests a wide array of governance tools to reduce agency conflicts through better monitoring or incentive alignment. Nevertheless, the empirical evidence is often mixed on how and when these tools improve firm performance and enhance shareholder value (Coles et al., 2012). One possible explanation for the inconclusive result is that the effectiveness of different governance tools varies across countries due to the differences in market development, religion and jurisdiction (Aggarwal et al., 2009; Dyck, 2000). Aggarwal et al. (2009) empirically document the variation in effectiveness and use of alternative governance practices while Gibson (2003) proposes a hybrid corporate governance system for emerging markets.

Corporate governance in the real estate industry is potentially more challenging than that in other industries because of the heightened information frictions as a result of high transaction costs, illiquidity, and the heterogeneity of real assets (Sirmans, 1999; Fan et al., 2013). More importantly, corruption, political intervention and bribery are particularly prevalent in the real estate and construction sectors (EC, 2014).<sup>1</sup> The first global Organisation for Economic Co-operation and Development (OECD) foreign bribery report (2014) shows that 57% of the bribery is related to public procurement which is often related to major infrastructure and real estate development projects. The extant literature (e.g., Clarke and Colin, 2004; Daizy and Das, 2014) focuses on bribery “sensitive” industries, such as mining, oil/gas and utilities, and construction (e.g., Clarke and Colin, 2004). Beck and Maher (1989) and Zeume (2013) also suggest that firms benefit from bribery in industries where corruption plays a considerable role and anti-bribery laws and restrictions can reduce the local firms competitiveness internationally if they cannot behave (or engage in bribery) like their foreign competitors.

While numerous studies examine the corporate governance of real estate investment trusts (REITs) and in real estate firms (e.g., Pennathur and Shelor, 2002; Ghosh and Sirmans, 2003; Sing and Sirmans, 2008; Kohl and Schaefer, 2008),

---

<sup>1</sup> “More than half of all companies say that corruption in public procurement, managed by national (56%) or regional/local authorities (60%) is widespread.” (EC, 2014)

2012; Lecomte and Ooi, 2013), there is little if any attention paid to the role of legal systems and corruption. A notable exception is the study by Edelstein et al. (2011), which find that real estate returns are closely related to the quality of a country's legal and corporate governance systems, and the relation is more prevalent in the Asia-Pacific region. However, their study does not test the direct role of corporate governance at the firm level or state governance, and to our knowledge, no academic study has explicitly examined the role of corruption in the link between corporate governance and firm performance in the context of the real estate industry in emerging markets. Our study fills this void.

We explore the role of corporate governance in real estate firms in the emerging Chinese economy where the legal and financial systems are still under development. We focus on the real estate industry because it is more prone to market imperfections and corruptions. More importantly, the value of state connections and bribery is likely to be substantial in this context because of real estate related public procurement projects. The public projects, which often entice bribery, are very common and economically significant (Cheung et al., 2012) during our sample period when significant economic transition occurs.

Our study aims to offer a new way of thinking about corporate governance beyond the firm boundary. We consider the role of the state as that of a “helping hand”, where we use changes in government policies to measure the economic impact of this “helping hand”. Specifically, we consider the government's corruption cleanups and financial market liberalization in examining the link between Chinese real estate firm performance and corporate governance. Our findings are threefold. First, we find that traditional western style corporate governance tools, such as independent boards, board size, and executive compensation, are still ineffective in improving firm performance in the Chinese real estate industry. More interestingly, we find that state governance proxied by provincial-level corruption cleanups is associated with better firm performance, such as a higher return-on-asset (ROA) and return-on-equity (ROE). The value creation of corruption cleanups is most concentrated in firms with fewer state connections. These are firms that are non-state-owned enterprises or have limited state ownership. This result suggests that corruption cleanups may reduce the use of political connections by state owned enterprises (SOEs), thereby improving the competitiveness of firms with fewer state connections.<sup>2</sup> The results are much stronger after 2006 when the government accelerated financial market liberalization.

Third, we find that corporate incentive alignment has significantly improved after 2006. Executives are rewarded for positive stock performance in firms with fewer state connections. This result suggests that an effective corporate governance mechanism in the real estate industry is increasingly related to

---

<sup>2</sup> See Appendix 1 for relevant news article from China Daily on the corruption issues in the real estate industry.

financial market price signals, consistent with the continuous effort by the Chinese government to develop the stock market.

Our study contributes to the literature in two ways. First, our findings add to the extant governance literature by providing new evidence on the impact of state-level governance on firm performance in conjunction with firm-level governance tools. Second, our findings also suggest that it is important to continue to develop legal and financial infrastructures to enhance the competitiveness of firms, especially those in more corruption-prone industries, such as the real estate industry.

The remainder of this paper is organized as follows. Section 2 discusses the recent developments in the Chinese economy and real estate sector. Section 3 presents our testable hypotheses. Section 4 describes the data and governance measures. Section 5 presents the empirical findings and Section 6 concludes.

## **2. Background on Chinese Financial Market Development and Real Estate Industry**

### **2.1 Recent Developments in the Chinese Financial Market: Stock Market Liberalization**

The Chinese government has liberalized the financial market since 1978 as part of the overall plan to develop a market-based economy. After 2001 when China entered the World Trade Organization (WTO), the liberalization started to gain momentum. To regulate the development in securities and derivative trading, and support the informativeness of stock prices, the Chinese Securities Regulatory Commission (CSRC) issued more than 100 new regulations during 1999-2009 (Lam and Zhang, 2015). In April 2005, the CSRC issued a new guideline to reform the split share structure by converting non-tradeable shares (non-floating shares) into tradeable (floating) shares to support the informativeness of share prices and market liquidity (Li et al., 2011; Lou et al., 2013). This policy movement is quite dramatic given that the majority of more than 1,200 public listed firms on two stock exchanges (i.e., Shanghai and Shenzhen) have been controlled or held by the state in terms of non-tradeable shares since they are the spinoffs of SOEs with a small fraction of ownership held by the general public (Liu and Sun, 2006; Firth et al., 2007). Hou et al. (2012) provide empirical evidence that supports the governmental efforts on market liberalization, by showing an increase in the sensitivity of the wealth of shareholders to the “more informative” share prices. They suggest that more informative share prices are likely to improve the corporate governance in Chinese firms by reducing information asymmetry between shareholders and managers.

Another part of the financial reform related to corporate governance is the governmental effort to promote performance-based compensation for top

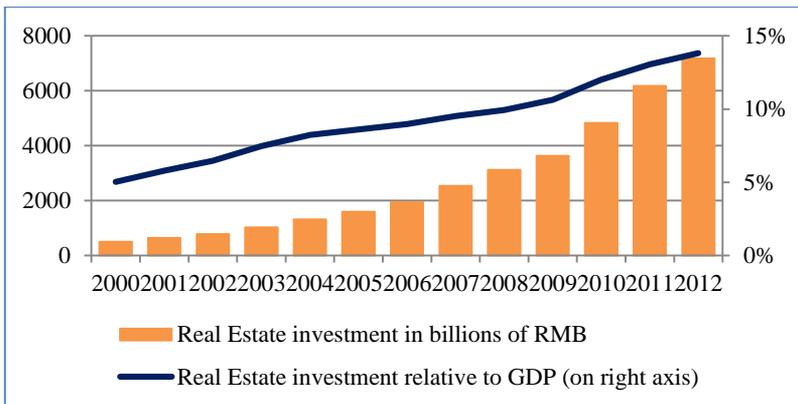
managers to align incentives. Dynamic compensation packages for Chinese CEOs have already been introduced in 1992 under the executive compensation reform. However, the implementation of the reform has been rather slow due to an extensive state ownership and indirect/direct government control in the financial system (Kato and Long, 2005). Kato and Long (2005) find that cash bonus compensation for good performance is only partially adopted while stock option compensation packages have yet to be accepted market-wide. New policies related to stock-option based compensations have been introduced and modified to encourage incentive alignment since 2006 (Lam and Zhang, 2015).

These new developments have made our testing ground—the Chinese economy—interesting as the liberalization is accelerated by frequent policy shifts from the state.

## 2.2 Recent Developments in the Chinese Real Estate Industry

The Chinese real estate industry has experienced rapid growth in recent decades. Given systematically low real interest rates, frequent government stimulus programs and limited investment alternatives, stock and property prices have both continued to rise beyond sustainable levels (de Bondt et al., 2010). The aggregate nation-wide real estate investment relative to total GDP has increased from about 5% in 2000 to 14% in 2012 (see Figure 1). This trend corresponds to an increase in aggregate spending from RMB 0.5 trillion to 7 trillion. Moreover, the total outstanding real estate loans have increased by five times from about RMB 2 trillion in 2005 to 11.5 trillion in 2012. The rapid growth indicates an insatiable demand for housing which can only be realized with external financing (ECB, 2013).

**Figure 1 Time-series of Investment in Real Estate Sector**

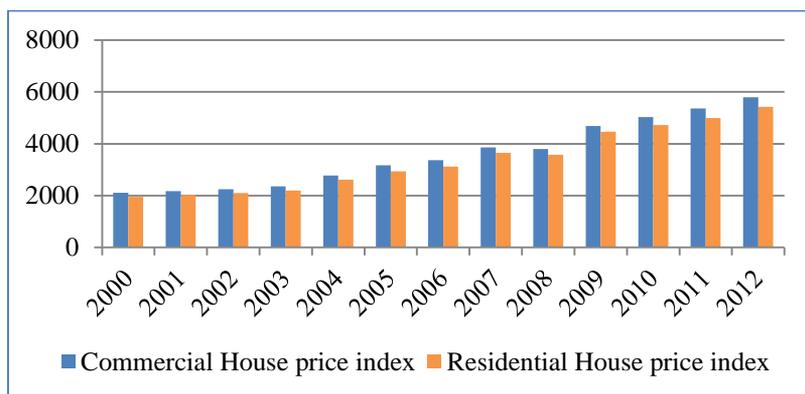


*Source:* National Bureau of Statistics of China (2014a)

In Figure 2, we present the time series of commercial real estate and house price index levels in China during our sample period. We find that house prices on average increased each year, with the exception of 2008. The continuous

increases in housing prices have likely encouraged new entrants into the real estate industry as the number of publicly listed real estate companies has increased from 41 firms in 2000 to 132 firms in 2012 in our sample.<sup>3</sup> This rapid growth in the real estate industry makes our study economically relevant.

**Figure 2 Time-series of Commercial and Residential House Indexes**



*Source:* National Bureau of Statistics of China (2014b)

### 2.3 Corruption Cleanups

In a country with strong economic growth, active state participation in reforming the legal and financial infrastructures inevitably creates a situation where the bureaucracy has much power in determining the rules of the game. Corruption has gradually become a concern for the public. In annual surveys conducted among 100 officials trained at the Central Party School from 1999 to 2004, the respondents ranked “corruption” as either the most serious or second most serious social problem (Pei, 2007). In late 2006, the State Council’s Development Research Center asked 4,586 business executives (87 percent in non-state firms) to rate their local officials, and almost 25 percent said that their local officials are “bad” and 12 percent said they are “very bad” (Pei, 2007).

The state is increasingly aware of the pressing issue of corruption and its adverse effect on the economy and political stability. In 2004, the Chinese Communist Party (CCP) devised stricter regulations on forbidding government officials from assuming posts in businesses and enterprises. More recently, after President Xi Jinping took over the office in 2012, the pace of corruption crackdowns has been accelerated. A work report of the Supreme People’s Court (SPC) shows that Chinese courts in 2013 convicted and punished 31,000 criminals in 29,000 cases of embezzlement, bribery and breach of duty. There

<sup>3</sup> The number of firms per year are not reported here. The information is available upon request.

were 51,306 persons investigated for work-related crimes in 37,551 cases, an annual increase of 8.4 percent and 9.4 percent, respectively. A total of 5,515 bribers were prosecuted for criminal offenses, up by 18.6 percent from the previous year. Within our sample period, we find that the total number of prosecuted corruption cases is over 400,000 from 2000 to 2009.

Examining the impact of corruption in the real estate industry is both politically and economically important because this industry is inherently more exposed to corruption and one of the major contributors to the GDP in recent years. In China, where land belongs to the state and real estate prices continue to increase, the high profit opportunities are likely to encourage more corruption. Hence, it is particularly interesting to examine how corruption cleanups affect corporate governance in real estate firms.

### **3. Hypothesis Development**

In this section, we develop three empirical hypotheses. According to the agency theory, performance-based corporate governance mechanisms are fundamental for value creation by aligning the interests of shareholders and managers. However, the selection of an effective governance tool depends on a number of factors, such as firm structure, the industry, market development and jurisdiction (Dyck, 2000; Aggarwal et al. 2009). Specifically, our contribution is to offer a new way of thinking about corporate governance beyond the boundary of the firm. Consistent with a social political view, we consider the role of the state as that of a “helping hand” to firms. To be able to measure the economic impact of this “helping hand”, we examine firm performance and effective executive compensation in relation to corruption cleanups and financial liberalization.

When we develop testable hypotheses about the role of corporate governance in relation to firm performance and executive compensation for Chinese real estate firms, we also introduce the state-level governance tools proxied by corruption crackdowns and financial market liberalization. We aim to infer whether Western practices or state intervention is an effective governance tool in emerging market economies, like China.

#### **3.1 Firm Performance and Firm-level Corporate Governance**

By following the extant literature (e.g., Gompers et al., 2003), we consider three western governance tools in real estate firms: (1) board composition; (2) ownership structure; and (3) executive compensation.

Under board composition, we review three characteristics, which are independent directors, board size, and CEO duality as a board director. In developed markets, the presence of independent board directors, a smaller board size, and an independent board chairman can be value enhancing because these ensure better monitoring and advising (e.g., Yermack, 1996; Dalton et al.,

1998; Adams and Ferreira, 2007; Masulis et al., 2012). However, in China, a larger board size may be beneficial for cultivating important political connections. Tian and Lau (2001) also question the “value enhancing role” of external board members in large Chinese firms where government control/ownership is still a key factor. Lastly, the effect of CEO duality is also not clear in China, given that the interests of board members may be predetermined by the state.

Our second governance tool is ownership structure. Despite the well documented value-enhancing benefits of a high degree of CEO ownership in developed countries, in China, CEO ownership is still in its infancy. Since state ownership of listed firms is still a dominant phenomenon (Chen et al, 2006; Cao et al., 2012), we focus on state ownership rather than CEO ownership. We use two measures to proxy for state involvement: (1) the percentage of shares held by the state (which is a continuous variable) and (2) state-owned enterprise (SOE) status (which is a dummy variable that equals one if it is an SOE). While Sun and Tong (2003) find a negative effect of state ownership on firm performance in Chinese listed companies, Haveman et al. (2013) argue that the value of political connections increases over time as China is delaying the complete opening of the economy.

Lastly, we consider the role of incentive alignment in terms of executive compensation. An extensive amount of work in the literature, which emanates from Jensen and Murphy (1990), promotes dynamic performance-based compensation for CEOs (see Rosen, 1992; Murphy, 2000; Murphy and Zábojník, 2004; Edmans and Gabaix, 2009). This makes accounting profits as the primary determinant of executive bonuses. Dechow and Sloan (1991) suggest that accounting measures are inherently backward-looking and sensitive to earnings management. Managers may be inclined to smooth earnings to receive more bonuses, which may be value destroying for the firm. More importantly, Cao et al. (2012) suggest that CEOs and top managers in state owned or state related firms may be rewarded by political promotion, thus monetary compensation may be less relevant.

Overall, we formalize the following hypotheses about the effectiveness of conventional corporate governance measures on firm performance. They include three board structure measures (board composition, board size, and independent directors), two ownership structure measures (state ownership and SOE status) and one executive compensation measure. *Hypothesis 1* and its three sub-components (i.e., *H1A*, *H1B*, and *H1C*) are defined as follows:

***Hypothesis 1:*** *Good corporate governance is related to better future firm performance.*

***Hypothesis 1A:*** *Good board structure (proxied by a smaller board, more independent directors and non-CEO chairman) is related to better future firm performance.*

***Hypothesis 1B:*** Larger state ownership or SOE status is related to better future firm performance.

***Hypothesis 1C:*** Larger executive compensation is related to better future firm performance.

### 3.2 Firm Performance and State Governance

Our second hypothesis focuses on the role of state governance. In emerging economies, like China, the legal and financial systems are still under development. In this study, we focus on the real estate industry in particular to examine the involvement of the state as an alternative governance mechanism. Our choice of the real estate industry is motivated by the fact that market frictions (due to market incompleteness) and corruption are particularly prevalent in this industry (even in developed countries). Corruption opportunism arises from the fact that access to land rights and land usage is often obtainable through “political connections”.

We focus on two state governance tools. First, we consider the effort of the Chinese government in corruption cleanups, which may reduce the value of political connections and help to improve the competitiveness of firms with fewer state connections. Second, from the numerous governmental efforts in liberalizing financial markets, we focus on the 2005-2006 stock market liberalization where non-tradeable shares are converted into tradeable shares to support price informativeness. This reform is expected to reduce the conflict of interest in SOEs (e.g., Beltratti et al., 2012). *Hypothesis 2* and its two subcomponents (in terms of the two state governance tools, *Hypotheses 2A* and *2B*) are given as follows:

***Hypothesis 2:*** Better state governance is related to better future firm performance. The benefit accrues more to firms with fewer state connections.

***Hypothesis 2A:*** More corruption cleanups at the provincial level lead to better future performance for firms located in those provinces. The link is stronger for firms with fewer state connections.

***Hypothesis 2B:*** The value enhancing effect of corruption cleanups is more pronounced in recent years when stock market liberalization has been accelerated. The link is stronger for firms with fewer state connections.

### 3.3 The Relation between Corporate Governance and State Governance

After understanding how firm-level corporate governance and state governance are related to firm performance, we next consider the direct relation between firm-level corporate governance tools and state governance tools. This question is important because of the deliberate efforts by the state to promote a more

market-oriented economy. We shall verify whether firm-level corporate governance is becoming more market-oriented with the presence of assistance from the state. Specifically, we focus on the sensitivity of executive compensation to firm performance as a result of improved state governance. Our third empirical hypothesis is as follows:

***Hypothesis 3:** Executive compensation is becoming more market-oriented with the assistance of state governance.*

## 4. Data

For our empirical analyses, we collect both financial and corporate governance data for Chinese publicly listed real estate companies from the China Stock Market and Accounting Research (CSMAR) Financial Database. The database is compiled by Shenzhen GTA Information Technology Co. and the most comprehensive database of listed Chinese firms. While the data coverage goes back to the beginning of the 1990s, we restrict our analysis to the sample period of 2000 to 2012, when executive compensation and ownership information became readily available for most firms.<sup>4</sup>

### 4.1 Firm-level Variables

In order to measure board independence, we use board size (i.e., number of board directors), the number of outside directors who sit on the board, and CEO/chairman duality measures (i.e., the CEO also acts as the chairman of the board). Table 1 shows that the average board size is about 9.2 with 3.2 outside directors. While the aggregate board size is relatively stable throughout the sample period, we do note a slight increasing trend from 2.9 to 3.4 in the number of outside directors in Panel B of Table 1. In addressing the “entrenched” board structure, we note that in about 31% of our sample observations, the CEO serves a dual role, that is, the CEO also acts as the chairman of the board.

One of our main ownership structure measures, the ratio of state-owned shares to total shares, is about 17% on average. We also note a trend here that is consistent with privatization, as the average state-ownership, about 26% from 2000 to 2006, declined to 11% from 2007 to 2012. We also note that 58% of the firms are SOEs in the earlier part of the sample, but only 50% in the latter part of the sample as more private firms are becoming listed after the acceleration of the liberalization of the financial market.

### Table 1 Summary Statistics of Chinese Real Estate Firms

This table reports the summary statistics of variables used in this analysis from

---

<sup>4</sup> The CSMAR database has been employed by recent studies such as Bai et al. (2004), Kato and Long (2005) and Liu and Lu (2007).

2000 to 2012. *ROA* and *ROE* are the annual return on asset and on equity in decimal place. *StockRet* is the annual stock return in decimal place. *Board\_size* is the number of board members. *Outside\_directors* is the number of board members who are non-firm related. *D\_CEO\_chairman* is a dummy variable that equals one if the CEO is also the board's chairman and zero otherwise. *SOEdummy* is a dummy variable that equals one for state-owned enterprises and zero otherwise. *State\_ownership* is the fraction of state ownership of the total shares outstanding. *Firm\_age* is the age of the firm since its establishment in years, while the *List\_age* is the number of years that the firm is listed on the exchange. *Firmsize* is the natural logarithm of the total assets of the firm. *CEOGender* is a dummy variable that equals one if the CEO is a male and zero otherwise. *LogCEOage* is the natural logarithm of the age of the CEO. *Log\_Execcomp* is the natural logarithm of the total executive compensation of the top three executives as reported in the CSMAR in renminbi. *Gdp/cap* is the provincial level GDP per capita, reported in renminbi (in the analyses, we use the log term). *Relcorr* is the number of corruption cases from the Procuratorial annual report divided by the provincial level population in ten thousands.

#### Panel A. Pooled Summary Statistics

| Variable                 | Obs | Mean    | Std.    | Min   | Max   |
|--------------------------|-----|---------|---------|-------|-------|
| <b>ROA</b>               | 925 | 0.03    | 0.03    | -0.03 | 0.07  |
| <b>ROE</b>               | 897 | 0.08    | 0.06    | -0.01 | 0.18  |
| <b>StockRet</b>          | 925 | 0.11    | 0.61    | -0.54 | 1.38  |
| <b>Board_size</b>        | 925 | 9.22    | 2.14    | 3.00  | 19.00 |
| <b>Outside_directors</b> | 925 | 3.18    | 0.95    | 0.00  | 8.00  |
| <b>D_CEO_chairman</b>    | 925 | 0.31    | 0.46    | 0.00  | 1.00  |
| <b>SOEdummy</b>          | 925 | 0.54    | 0.50    | 0.00  | 1.00  |
| <b>Stateownership</b>    | 925 | 0.17    | 0.24    | 0.00  | 0.80  |
| <b>Firm_age</b>          | 925 | 14.14   | 4.78    | 1.00  | 29.00 |
| <b>List_age</b>          | 925 | 11.01   | 4.61    | 1.00  | 22.00 |
| <b>Firmsize</b>          | 925 | 21.68   | 1.41    | 15.42 | 26.41 |
| <b>CEOGender</b>         | 925 | 0.82    | 0.11    | 0.44  | 1.00  |
| <b>LogCEOage</b>         | 924 | 3.84    | 0.07    | 3.61  | 4.09  |
| <b>Log_Execcomp</b>      | 925 | 12.60   | 1.07    | 9.44  | 16.36 |
| <b>Gdp/cap</b>           | 925 | 39693.0 | 21606.9 | 3257  | 93173 |
| <b>Relcorr(corr/Pop)</b> | 925 | 0.25    | 0.11    | 0.06  | 0.70  |
| <b>Chncorr</b>           | 925 | 0.00    | 0.09    | -0.47 | 0.47  |
| <b>Highcorr</b>          | 925 | 0.41    | 0.49    | 0.00  | 1.00  |

(Continued...)

*(Table 1 Continued)***Panel B. Summary Statistics in Sub-Periods**

|                          | <b>Earlier sample: 2000-2006 (392 obs)</b> |                  |            |            | <b>Later sample : 2007-2012 (533 obs)</b> |                  |            |            |
|--------------------------|--|------------------|------------|------------|---|------------------|------------|------------|
|                          | <b>Mean</b>                                | <b>Std. Dev.</b> | <b>Min</b> | <b>Max</b> | <b>Mean</b>                               | <b>Std. Dev.</b> | <b>Min</b> | <b>Max</b> |
| <b>ROA</b>               | 0.02                                       | 0.03             | -0.03      | 0.07       | 0.03                                      | 0.02             | -0.03      | 0.07       |
| <b>ROE</b>               | 0.05                                       | 0.05             | -0.01      | 0.18       | 0.09                                      | 0.06             | -0.01      | 0.18       |
| <b>StockRet</b>          | -0.03                                      | 0.44             | -0.54      | 1.38       | 0.21                                      | 0.70             | -0.54      | 1.38       |
| <b>Board_size</b>        | 9.39                                       | 2.03             | 3.00       | 15.00      | 9.10                                      | 2.21             | 5.00       | 19.00      |
| <b>Outside_directors</b> | 2.92                                       | 1.01             | 0.00       | 5.00       | 3.38                                      | 0.86             | 2.00       | 8.00       |
| <b>D_CEO_chairman</b>    | 0.31                                       | 0.46             | 0.00       | 1.00       | 0.31                                      | 0.46             | 0.00       | 1.00       |
| <b>SOEdummy</b>          | 0.58                                       | 0.49             | 0.00       | 1.00       | 0.50                                      | 0.50             | 0.00       | 1.00       |
| <b>Stateownership</b>    | 0.26                                       | 0.25             | 0.00       | 0.75       | 0.11                                      | 0.20             | 0.00       | 0.80       |
| <b>Firm_age</b>          | 11.13                                      | 3.66             | 1.00       | 23.00      | 16.34                                     | 4.27             | 3.00       | 29.00      |
| <b>List_age</b>          | 8.11                                       | 3.40             | 1.00       | 16.00      | 13.15                                     | 4.21             | 1.00       | 22.00      |
| <b>Logsize</b>           | 21.11                                      | 1.01             | 17.97      | 23.81      | 22.10                                     | 1.51             | 15.42      | 26.41      |
| <b>CEOgender</b>         | 0.84                                       | 0.10             | 0.50       | 1.00       | 0.81                                      | 0.11             | 0.44       | 1.00       |
| <b>LogCEOage</b>         | 3.82                                       | 0.08             | 3.61       | 4.02       | 3.86                                      | 0.06             | 3.70       | 4.09       |
| <b>Log_Execcomp</b>      | 11.94                                      | 0.94             | 9.44       | 14.98      | 13.08                                     | 0.90             | 9.72       | 16.36      |
| <b>Gdp/cap</b>           | 25738.24                                   | 14300.53         | 3257       | 58837      | 49956.23                                  | 20284.48         | 7273       | 93173      |
| <b>Relcorr(corr/Pop)</b> | 0.28                                       | 0.10             | 0.17       | 0.70       | 0.23                                      | 0.11             | 0.06       | 0.61       |
| <b>Chncorr</b>           | 0.00                                       | 0.10             | -0.40      | 0.41       | 0.00                                      | 0.08             | -0.47      | 0.47       |
| <b>Highcorr</b>          | 0.40                                       | 0.49             | 0.00       | 1.00       | 0.41                                      | 0.49             | 0.00       | 1.00       |

In China, stock options have not yet become an extensively used compensation form and cash compensation is still the dominant form of executive compensation and makes up the largest component of total executive compensation (Kato and Long, 2005; Firth et al., 2006). The disclosure of top executive compensation in Chinese listed firms has been required in annual reports since 1998 in terms of total cash compensation such as base salary, bonuses, and commissions. We rely on the total cash compensation of the top three executives (the three highest-paid executives) from the CSMAR, as it is the most readily available. Table 1 shows that the compensation of the three highest-paid executives of Chinese real estate companies has undergone tremendous growth during our sample period. Based on the average *LogExeccomp* of 11.9 in earlier years and 13.1 in later years, the executive compensation grew from approximately RMB 147K to RMB 489K, which is a threefold increase.

For control variables, we include firm age and size as Tian and Lau (2001) suggest that they are important in understanding the performance and corporate governance mechanisms of Chinese firms. Compared with younger firms, older Chinese firms are usually richer and/or have greater industry experience, but may be more affected by traditional operation and management styles. As a result, firm age can probably produce significant impacts on corporate performance and governance mechanisms. Similar arguments can also be made with firm size as firm age and firm size are generally strongly correlated. In our sample, the average firm age is 14 years, and the firm size is RMB 2.6 billion (as *logFirmsize* is 21.68). These two control variables are especially of interest in examining CEO compensation because larger companies are generally more likely to offer larger compensation packages given the larger resource base and better growth opportunities, and potentially better government connections (Firth et al., 2006).

We also include executive age as another control variable as it is highly related to executive compensation due to the career development of the executive. Ryan and Wiggins (2001) explore the complex relation between managerial horizon and executive compensation and provide supporting evidence that executive age has a significant impact on executive compensation.

Finally, given that the personal characteristics of corporate executives usually play an important role in affecting their managerial performance (e.g., Rapaport, 1995; Mohan and Ruggiero, 2003), we also include the gender of executives as a control variable. The gender dummy may be especially relevant in the uncertain market environment as recent studies find significant differences in risk taking and managerial behavior across male and female CEOs in the global financial crisis (Nelson, 2012; Van Staveren, 2014).

## 4.2 State-level Variables

We posit that in the presence of political, financial and economic uncertainty, the governance role of the government may be essential. Specifically, in the real estate and construction industries, political connections may give “unfair” advantages to state connected firms in gaining information to land development and infrastructure projects. If the state/government allows corruption to thrive, then non-state enterprises are going to suffer and the move towards a market-based economy will slow down. We obtain information about corruption from the Procuratorial Yearbook of China from 2001 to 2011, which reports the number of prosecuted corruption cases in the prior year. These data have been considered by academics and the World Bank as the most accurate information on corruption cleanups in China. For the last 2 years of 2011 and 2012, in the absence of available data, we extrapolate the number of corruption cases based on the average change in the prior three years.<sup>6</sup> We define the variable *Relcorr* as the ratio of the provincial level corruption cases divided by the provincial level population. This measure aims to capture the level of corruption crack-down. To proxy for the activity or engagement of the state in “cracking-down” on corruption, we define the variable *Chncorr*, which is the yearly change in *Relcorr*. A higher value of *Chncorr* implies that there is an increase in the prosecuted corruption cases in a province, which is associated with higher penalty for corruption. Hence, firms may tend to reduce their exploration activities via political connection.

In examining firm performance in China, we also consider the geographical differences in a vast country with more than a billion people. Moreover, in promoting economic development, the government often shifts geographical focus every five years. Initially, the focus of economic development and infrastructure modernization was on eastern cities and ports. Gradually, the governmental efforts shifted to the western regions. In our sample, the economic development (in terms of aggregate and change in GDP) is strikingly different across provinces. To address these important geographical variations, we adopt provincial level controls, such as GDP per-capita, changes in the GDP per-capita, and population numbers for each province from the CSMAR and annual fact books from the China National Bureau of Statistics. Table 2 presents the yearly average of these provincial level variables.

## 5. Empirical Results

In this section, we examine the effectiveness of firm-level corporate governance and state governance in Chinese listed real estate firms by testing *Hypotheses 1* and *2*. We also verify *Hypothesis 3* by examining the link between corporate governance and state governance.

---

<sup>6</sup> In robustness analyses, we exclude the last two years of the data (2011 and 2012 where corruption data are not available) and find that our results are robust.

**Table 2 Time Series Average of GDP Per-Capita, Corruption, and Population by Province**

This table reports the time series average of GDP-per-capita, corruption and population by province from 2000 to 2012. Avepopulation is the time series average of the population as reported by the National Bureau of Statistics of China in millions. Corruption Cases is the time series average of the annually filed and prosecuted corruption cases as reported in the annual Chinese Procuratorial Yearbooks. Average GDP per-capita is the time series average of the GDP divided by the population as reported by the National Bureau of Statistics of China in renminbi.

| <b>Province</b> | <b>Avepopulation<br/>(millions)</b> | <b>Corruption Cases<br/>(unscaled)</b> | <b>Average GDP<br/>Per-capita</b> |
|-----------------|-------------------------------------|--|-----------------------------------|
| Anhui           | 61.09                               | 1469.95                                | 12233.93                          |
| Beijing         | 16.34                               | 352.56                                 | 50934.93                          |
| Chongqing       | 28.59                               | 951.75                                 | 16371.50                          |
| Fujian          | 35.64                               | 1095.26                                | 24742.93                          |
| Gansu           | 25.46                               | 547.48                                 | 9929.43                           |
| Guangdong       | 93.88                               | 1690.89                                | 29001.57                          |
| Guangxi         | 47.55                               | 1198.16                                | 12037.43                          |
| Guizhou         | 36.78                               | 1070.10                                | 7712.21                           |
| Hainan          | 8.31                                | 203.30                                 | 14805.57                          |
| Hebei           | 69.10                               | 2638.57                                | 18012.93                          |
| Heilongjiang    | 38.20                               | 1647.68                                | 17604.86                          |
| Henan           | 94.77                               | 3025.66                                | 14587.07                          |
| Hubei           | 57.21                               | 1872.49                                | 16345.36                          |
| Hunan           | 65.21                               | 1610.86                                | 14585.00                          |
| Jiangsu         | 76.08                               | 1969.09                                | 31623.21                          |
| Jiangxi         | 43.31                               | 1265.25                                | 12740.64                          |
| Jilin           | 27.17                               | 1322.57                                | 18840.86                          |
| Liaoning        | 42.69                               | 1856.91                                | 25719.79                          |
| Neimenggu       | 24.19                               | 706.38                                 | 25585.57                          |
| Ningxia         | 5.98                                | 179.59                                 | 15369.14                          |
| Qinghai         | 5.44                                | 167.27                                 | 14235.00                          |
| Shaanxi         | 36.93                               | 3169.60                                | 15440.07                          |
| Shandong        | 92.88                               | 407.93                                 | 24943.21                          |
| Shanghai        | 19.55                               | 1323.82                                | 54906.64                          |
| Shanxi          | 33.86                               | 1332.47                                | 15920.57                          |
| Sichuan         | 81.71                               | 1829.86                                | 12666.71                          |
| Tianjin         | 11.22                               | 456.34                                 | 44994.50                          |
| Xinjiang        | 20.27                               | 617.91                                 | 16081.79                          |
| Xizang          | 2.82                                | 46.17                                  | 10957.29                          |
| Yunnan          | 44.50                               | 1317.62                                | 10232.79                          |
| Zhejiang        | 50.38                               | 1349.44                                | 32753.00                          |

## 5.1 Firm Performance and Firm-Level Corporate Governance

In analyzing the relation between corporate governance and firm performance, we use ROA and ROE as the key performance measures. We primarily rely on accounting based performance measures because these measures are less sensitive to investor sentiment and market frictions that are still prevalent in the Chinese stock market. We employ three regression models to examine the role of board structure (*BoardVar*), ownership (*OwnerVar*), and compensation (*Execcomp*). Within the board structure, we use three alternative variables, which are board size (*Board\_size*), the number of outside directors (*Outside\_directors*), and the CEO/chairman duality dummy (*D\_CEO\_chairman*). Ownership variables include the SOE status dummy (*SOEdummy*) and the percentage of state ownership (*Stateownership*), while our compensation variable is the compensation of the top executives (*Execcomp*). The three model specifications for testing *Hypothesis 1* (in terms of H1A, H1B and H1C) are given as follows:

$$H1A: Perf_{i,j,t+1} = \alpha + \sum \beta_k BoardVar_{i,k,t} + Controls + \varepsilon$$

$$H1B: Perf_{i,j,t+1} = \alpha + \sum \gamma_l OwnerVar_{i,l,t} + Controls + \varepsilon$$

$$H1C: Perf_{i,j,t+1} = \alpha + \lambda Execcomp_i + Controls + \varepsilon$$

In the last model (*H1\_comb*), we examine three sets of governance tools together:

*H1comb*:

$$Perf_{i,j,t+1} = \alpha + \sum \beta_k BoardVar_{i,k,t} + \sum \gamma_l OwnerVar_{i,l,t} + \lambda Execcomp_i + Controls + \varepsilon$$

The firm *i* performance is measured in province *j* in year *t*+1 while the governance and control variables are measured in year *t*. We employ panel data regression analyses.<sup>7</sup> We include firm and year fixed-effects and cluster the standard errors at the firm level (Petersen, 2009). Table 3 reports the regression results.

Table 3 shows that none of the three sets of governance tools is significantly related to future performance in real estate firms from 2000 to 2012. With both performance measures, *ROA* and *ROE*, we find insignificant relations with the western style governance tools at the 10% significance level. Overall, the results in Table 3 do not provide support for *Hypothesis 1*. Traditional corporate governance tools, such as board independence and executive compensation, are not related to better performance in these real estate firms.

---

<sup>7</sup> Multivariate linear regression analysis has been utilized in the extant literature to investigate corporate governance-related issues of various categories of listed firms due to the shortage of corporate governance data with time.

**Table 3 Real Estate Firm Performance with Corporate Governance**

The dependent variables are the firm performance measures ROA and ROE in year  $t+1$ . The independent variables are from year  $t$ . *Board\_size* is the number of board members. *Outside\_directors* is the number of board members who are non-firm related. *D\_CEO\_chairman* is a dummy variable that equals one if the CEO is also the board's chairman and zero otherwise. *SOEdummy* is a dummy variable that equals one for state-owned enterprises and zero otherwise. *State\_ownership* is the fraction of state ownership of the total shares outstanding. *Firm\_age* is the age of the firm since its establishment in years, while *Firmsize* is the natural logarithm of the total assets of the firm. *CEOGender* is a dummy variable that equals one if the CEO is a male and zero otherwise. *LogCEOage* is the natural logarithm of the age of the CEO. *Log\_Execcomp* is the natural logarithm of the total executive compensation of the top three executives as reported in the CSMAR in renminbi. We include firm and year fixed effect, and cluster the standard errors by firm. The t-statistics are reported in parenthesis. We denote statistical significance of 1 percent, 5 percent and 10 percent with \*\*\*, \*\* and \* respectively.

|                                       | (H1A)<br>ROA      | (H1B)<br>ROA      | (H1C)<br>ROA      | (H1Comb)<br>ROA   | (H1A)<br>ROE      | (H1B)<br>ROE      | (H1C)<br>ROE      | (H1Comb)<br>ROE   |
|---------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b>Boardsize<sub>-1</sub></b>         | -0.001<br>(-0.91) | -0.001<br>(-0.92) | -0.001<br>(-0.86) | -0.001<br>(-0.83) | -0.000<br>(-0.24) | -0.001<br>(-0.28) | -0.000<br>(-0.24) | -0.000<br>(-0.26) |
| <b>Outside_directors<sub>-1</sub></b> | 0.000<br>(0.14)   | 0.000<br>(0.14)   | 0.000<br>(0.13)   | 0.000<br>(0.08)   | -0.002<br>(-0.42) | -0.002<br>(-0.41) | -0.002<br>(-0.41) | -0.002<br>(-0.38) |
| <b>D_CEO_chairman<sub>-1</sub></b>    | 0.001<br>(0.23)   | 0.001<br>(0.23)   | 0.001<br>(0.24)   | 0.001<br>(0.25)   | 0.008<br>(1.17)   | 0.008<br>(1.16)   | 0.008<br>(1.18)   | 0.008<br>(1.18)   |
| <b>SOEdummy<sub>-1</sub></b>          |                   | 0.001<br>(0.12)   | -0.002<br>(-0.43) | -0.002<br>(-0.45) |                   | 0.006<br>(0.50)   | 0.002<br>(0.21)   | 0.002<br>(0.22)   |

(Continued)

*(Table 3 Continued)*

|                                    | <b>(H1A)</b><br><b>ROA</b> | <b>(H1B)</b><br><b>ROA</b> | <b>(H1C)</b><br><b>ROA</b> | <b>(H1Comb)</b><br><b>ROA</b> | <b>(H1A)</b><br><b>ROE</b> | <b>(H1B)</b><br><b>ROE</b> | <b>(H1C)</b><br><b>ROE</b> | <b>(H1Comb)</b><br><b>ROE</b> |
|------------------------------------|----------------------------|----------------------------|----------------------------|-------------------------------|----------------------------|----------------------------|----------------------------|-------------------------------|
| <b>Stateownership<sub>-1</sub></b> |                            |                            | 0.012<br>(1.56)            | 0.012<br>(1.50)               |                            |                            | 0.013<br>(0.87)            | 0.014<br>(0.90)               |
| <b>Log_Execcomp<sub>-1</sub></b>   |                            |                            |                            | 0.001<br>(0.73)               |                            |                            |                            | -0.002<br>(-0.45)             |
| <b>Firm_age<sub>-1</sub></b>       | -0.015<br>(-1.31)          | -0.015<br>(-1.32)          | -0.012<br>(-1.07)          | -0.012<br>(-1.06)             | -0.030<br>(-1.03)          | -0.031<br>(-1.06)          | -0.028<br>(-0.97)          | -0.028<br>(-0.98)             |
| <b>Firmsize<sub>-1</sub></b>       | -0.002<br>(-1.07)          | -0.002<br>(-1.11)          | -0.002<br>(-1.17)          | -0.002<br>(-1.46)             | 0.006<br>(1.43)            | 0.006<br>(1.38)            | 0.006<br>(1.36)            | 0.007<br>(1.45)               |
| <b>CEO_gender<sub>-1</sub></b>     | -0.010<br>(-0.63)          | -0.010<br>(-0.62)          | -0.008<br>(-0.51)          | -0.007<br>(-0.44)             | -0.011<br>(-0.36)          | -0.010<br>(-0.32)          | -0.008<br>(-0.25)          | -0.009<br>(-0.30)             |
| <b>LogCEOage<sub>-1</sub></b>      | -0.070**<br>(-2.32)        | -0.071**<br>(-2.32)        | -0.073**<br>(-2.37)        | -0.072**<br>(-2.34)           | -0.196***<br>(-3.27)       | -0.198***<br>(-3.29)       | -0.201***<br>(-3.31)       | -0.202***<br>(-3.32)          |
| <b>Constant</b>                    | 0.375***<br>(3.17)         | 0.376***<br>(3.19)         | 0.378***<br>(3.17)         | 0.367***<br>(3.06)            | 0.749***<br>(3.09)         | 0.758***<br>(3.12)         | 0.764***<br>(3.13)         | 0.777***<br>(3.12)            |
| <b>Observations</b>                | 924                        | 924                        | 924                        | 924                           | 896                        | 896                        | 896                        | 896                           |
| <b>R-squared</b>                   | 0.404                      | 0.404                      | 0.407                      | 0.408                         | 0.478                      | 0.478                      | 0.479                      | 0.480                         |

## 5.2 Firm Performance and State Governance

In this section, we consider the role of state governance tools, such as corruption cleanups and financial market liberalization, by testing *Hypothesis 2*. We differentiate between firms with fewer or more state connections because corruption cleanups and financial market modernization are expected to have different impacts on these two types of firms. As the state focuses on cracking down on corruptions, less politically connected firms would likely do better in a more competitive environment. Empirically, we include the interaction of these state governance tools with state ownership which proxies for state connectivity. In testing *Hypothesis 2A* by considering provincial-level corruption cleanups, we employ two corruption measures, *Chncorr* and *Relcorr*, and two state ownership measures, *StateOwn* and *SEODummy*. We have four alternative regression models for *H2A*, specified as follows:

*H2A\_v1*:

$$Perf_{i,j,t+1} = \alpha + \delta Chncorr_{j,t+1} + \beta StateOwn_{i,t} \times Chncorr_{j,t+1} + \rho StateOwn_{i,t} \\ \mathbf{f} \mathbf{f} \mathbf{f} \mathbf{f} \mathbf{f} \mathbf{Controls} + \varepsilon$$

*H2A\_v2*:

$$Perf_{i,j,t+1} = \alpha + \delta Chncorr_{j,t+1} + \beta SEODummy_{i,t} \times Chncorr_{j,t+1} + \omega SEODummy_{i,t} \\ \mathbf{f} \mathbf{f} \mathbf{f} \mathbf{f} \mathbf{f} \mathbf{Controls} + \varepsilon$$

*H2A\_v3*:

$$Perf_{i,j,t+1} = \alpha + \delta Chncorr_{j,t+1} + \beta SEODummy_{i,t} \times Chncorr_{j,t+1} + \omega SEODummy_{i,t} \\ + \rho StateOwn_{i,t} + \mathbf{J} StateOwn_{i,t} \times Chncorr_{j,t+1} + \mathbf{Controls} + \varepsilon$$

*H2A\_v3*:

$$Perf_{i,j,t+1} = \alpha + \delta Chncorr_{j,t+1} + \beta SEODummy_{i,t} \times Chncorr_{j,t+1} + \omega SEODummy_{i,t} \\ + \rho StateOwn_{i,t} + \mathbf{J} StateOwn_{i,t} \times Chncorr_{j,t+1} + \varphi Relcorr_{j,t} \\ + \mathbf{Controls} + \varepsilon$$

We continue to employ the two firm performance measures, *ROE* and *ROA*. In testing *Hypothesis 2B*, we repeat the above four regression models in two sub-periods. We split the sample into two subsamples before and after 2006, where the latter sample coincides with the period when the state accelerated efforts in financial market liberalization. Our results are reported in Panels A and B in Table 4, respectively.

Panel A in Table 4 shows a significantly positive coefficient on the change of corruption cleanups, *Chncorr*, at the 5% significance level. This suggests that better state governance helps to improve firm performance. We also find negative but statistically insignificant coefficients on the interaction terms, *SOE* × *Chncorr* and *Stateown* × *Chncorr*. Economically, these negative coefficients offset the positive coefficient on *Chncorr*. These results imply that firms with fewer state connections experience on average a 4.8% (9.8%) increase in terms of ROA and ROE. The firms with more state connections do not benefit as much as the other firms.

**Table 4 Firm Performance with Corporate Governance and State Governance**

The dependent variables are the firm performance measures ROA or ROE in year  $t+1$ . The control variables are from year  $t$  defined in Table 3. Additional explanatory variables include *RelCorr* and *Chncorr*. *RelCorr* is the number of prosecuted corruption cases divided by the provincial-level population in year  $t$  and *Chncorr* is the change in the *RelCorr* from year  $t$  to year  $t+1$ . Panel A tests the effectiveness of state governance – corruption cleanups. Panel B test the effectiveness of state governance – accelerated financial market liberalization after 2006. We include firm and year fixed effect, and cluster the standard errors by firm. The t-statistics are reported in parenthesis. We denote statistical significance of 1 percent, 5 percent and 10 percent with \*\*\*, \*\* and \* respectively.

**Panel A. State Governance – Corruption Cleanups**

|  | (H2A_v1)           | (H2A_v2)          | (H2A_v3)          | (H2A_v4)          | (H2A_v1)          | (H2A_v2)          | (H2A_v3)          | (H2A_v4)          |
|--|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|  | ROA                | ROA               | ROA               | ROA               | ROE               | ROE               | ROE               | ROE               |
| <b>Stateownership<sub>-1</sub></b>         | 0.012<br>(1.54)    | 0.012<br>(1.58)   | 0.012<br>(1.55)   | 0.012<br>(1.54)   | 0.014<br>(0.93)   | 0.016<br>(1.02)   | 0.015<br>(1.00)   | 0.015<br>(0.99)   |
| <b>SOEdummy<sub>-1</sub></b>               | -0.003<br>(-0.46)  | -0.003<br>(-0.52) | -0.003<br>(-0.48) | -0.003<br>(-0.47) | 0.003<br>(0.23)   | 0.002<br>(0.14)   | 0.002<br>(0.18)   | 0.002<br>(0.18)   |
| <b>Stateownership<sub>-1</sub>×Chncorr</b> | -0.066<br>(-1.54)  |                   | -0.057<br>(-1.29) | -0.058<br>(-1.26) | -0.126<br>(-1.14) |                   | -0.085<br>(-0.86) | -0.086<br>(-0.85) |
| <b>SOE<sub>-1</sub>×Chncorr</b>            |                    | -0.030<br>(-0.96) | -0.013<br>(-0.39) | -0.013<br>(-0.39) |                   | -0.099<br>(-1.25) | -0.075<br>(-0.96) | -0.074<br>(-0.96) |
| <b>Chncorr</b>                             | 0.048***<br>(3.26) | 0.052**<br>(2.10) | 0.056**<br>(2.27) | 0.054**<br>(2.18) | 0.098**<br>(2.23) | 0.138**<br>(2.03) | 0.144**<br>(2.08) | 0.140**<br>(2.12) |
| <b>Relcorr<sub>-1</sub></b>                |                    |                   |                   | 0.006<br>(0.31)   |                   |                   |                   | 0.015<br>(0.33)   |

*(Continued...)*

(Table 4 Continued)

|                            | (H2A_v1)<br>ROA     | (H2A_v2)<br>ROA     | (H2A_v3)<br>ROA     | (H2A_v4)<br>ROA     | (H2A_v1)<br>ROE      | (H2A_v2)<br>ROE      | (H2A_v3)<br>ROE      | (H2A_v4)<br>ROE      |
|----------------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Boardsize-1</b>         | -0.001<br>(-0.72)   | -0.001<br>(-0.90)   | -0.001<br>(-0.73)   | -0.001<br>(-0.71)   | -0.000<br>(-0.21)    | -0.001<br>(-0.38)    | -0.001<br>(-0.26)    | -0.000<br>(-0.24)    |
| <b>Outside_directors-1</b> | -0.000<br>(-0.03)   | 0.000<br>(0.10)     | -0.000<br>(-0.03)   | -0.000<br>(-0.03)   | -0.002<br>(-0.43)    | -0.001<br>(-0.32)    | -0.002<br>(-0.43)    | -0.002<br>(-0.43)    |
| <b>D_CEO_chairman-1</b>    | 0.001<br>(0.38)     | 0.001<br>(0.34)     | 0.001<br>(0.37)     | 0.001<br>(0.38)     | 0.008<br>(1.28)      | 0.008<br>(1.22)      | 0.008<br>(1.24)      | 0.008<br>(1.26)      |
| <b>Log_Execcomp-1</b>      | 0.001<br>(0.54)     | 0.001<br>(0.54)     | 0.001<br>(0.53)     | 0.001<br>(0.51)     | -0.002<br>(-0.59)    | -0.003<br>(-0.60)    | -0.003<br>(-0.61)    | -0.003<br>(-0.63)    |
| <b>Firm_age-1</b>          | -0.008<br>(-0.77)   | -0.008<br>(-0.77)   | -0.008<br>(-0.78)   | -0.007<br>(-0.70)   | -0.019<br>(-0.73)    | -0.019<br>(-0.73)    | -0.020<br>(-0.74)    | -0.018<br>(-0.67)    |
| <b>Firmsize-1</b>          | -0.002<br>(-1.48)   | -0.002<br>(-1.49)   | -0.002<br>(-1.48)   | -0.002<br>(-1.49)   | 0.006<br>(1.43)      | 0.006<br>(1.42)      | 0.006<br>(1.42)      | 0.006<br>(1.43)      |
| <b>CEO_gender-1</b>        | -0.009<br>(-0.54)   | -0.007<br>(-0.42)   | -0.009<br>(-0.52)   | -0.008<br>(-0.50)   | -0.013<br>(-0.40)    | -0.009<br>(-0.27)    | -0.011<br>(-0.35)    | -0.010<br>(-0.32)    |
| <b>LogCEOage-1</b>         | -0.074**<br>(-2.43) | -0.078**<br>(-2.54) | -0.075**<br>(-2.45) | -0.075**<br>(-2.45) | -0.206***<br>(-3.34) | -0.212***<br>(-3.45) | -0.208***<br>(-3.37) | -0.208***<br>(-3.37) |
| <b>Constant</b>            | 0.374***<br>(3.15)  | 0.388***<br>(3.27)  | 0.377***<br>(3.17)  | 0.374***<br>(3.19)  | 0.787***<br>(3.21)   | 0.816***<br>(3.30)   | 0.799***<br>(3.25)   | 0.792***<br>(3.26)   |
| <b>Observations</b>        | 924                 | 924                 | 924                 | 924                 | 896                  | 896                  | 896                  | 896                  |
| <b>R-squared</b>           | 0.417               | 0.415               | 0.417               | 0.417               | 0.486                | 0.486                | 0.487                | 0.487                |

(Continued...)

*(Table 4 Continued)***Panel B. State Governance – Accelerated Financial Market Liberalization**

|  | (H2B_v1)                         | (H2B_v2) | (H2B_v3) | (H2B_v4) | (H2B_v1)                       | (H2B_v2) | (H2B_v3) | (H2B_v4) |
|--|----------------------------------|----------|----------|----------|--------------------------------|----------|----------|----------|
|  | ROA                              | ROA      | ROE      | ROE      | ROA                            | ROA      | ROE      | ROE      |
|  | <b>Earlier years (2000-2006)</b> |          |          |          | <b>Later years (2007-2012)</b> |          |          |          |
| <b>Stateownership<sub>-1</sub></b>         | -0.021*                          | -0.021*  | -0.045** | -0.044*  | 0.006                          | 0.006    | -0.002   | -0.001   |
|  | (-1.80)                          | (-1.70)  | (-2.02)  | (-1.95)  | (0.65)                         | (0.63)   | (-0.09)  | (-0.05)  |
| <b>SOEdummy<sub>-1</sub></b>               | 0.002                            | 0.002    | -0.000   | -0.001   | 0.009                          | 0.009    | 0.039    | 0.038    |
|  | (0.29)                           | (0.22)   | (-0.01)  | (-0.04)  | (1.11)                         | (1.11)   | (1.33)   | (1.28)   |
| <b>Stateownership<sub>-1</sub>×Chncorr</b> | -0.057                           | -0.066   | -0.046   | -0.050   | 0.020                          | 0.019    | 0.035    | 0.041    |
|  | (-0.64)                          | (-0.71)  | (-0.22)  | (-0.23)  | (0.52)                         | (0.49)   | (0.33)   | (0.39)   |
| <b>SOE<sub>-1</sub>×Chncorr</b>            | 0.011                            | 0.012    | 0.024    | 0.024    | -0.040                         | -0.040   | -0.170*  | -0.169*  |
|  | (0.16)                           | (0.17)   | (0.26)   | (0.26)   | (-1.08)                        | (-1.09)  | (-1.91)  | (-1.94)  |
| <b>Chncorr</b>                             | 0.058                            | 0.057    | 0.085    | 0.085    | 0.057*                         | 0.058*   | 0.195**  | 0.189**  |
|  | (1.33)                           | (1.29)   | (1.16)   | (1.17)   | (1.73)                         | (1.72)   | (2.30)   | (2.36)   |
| <b>Relcorr<sub>-1</sub></b>                |                                  | 0.048    |          | 0.017    |                                | -0.004   |          | 0.025    |
|  |                                  | (0.73)   |          | (0.15)   |                                | (-0.14)  |          | (0.36)   |
| <b>Boardsize<sub>-1</sub></b>              | -0.001                           | -0.001   | -0.004   | -0.004   | 0.002                          | 0.002    | 0.002    | 0.002    |
|  | (-0.45)                          | (-0.50)  | (-1.58)  | (-1.56)  | (1.11)                         | (1.10)   | (0.41)   | (0.41)   |
| <b>Outside_directors<sub>-1</sub></b>      | 0.004                            | 0.004    | 0.002    | 0.002    | -0.006                         | -0.006   | -0.007   | -0.007   |
|  | (1.28)                           | (1.35)   | (0.44)   | (0.46)   | (-1.31)                        | (-1.29)  | (-0.71)  | (-0.72)  |

*(Continued...)*

(Table 4 Continued)

|                                    | (H2B_v1)                  | (H2B_v2)            | (H2B_v3)            | (H2B_v4)            | (H2B_v1)                | (H2B_v2)          | (H2B_v3)           | (H2B_v4)           |
|------------------------------------|---------------------------|---------------------|---------------------|---------------------|-------------------------|-------------------|--------------------|--------------------|
|                                    | ROA                       | ROA                 | ROE                 | ROE                 | ROA                     | ROA               | ROE                | ROE                |
|                                    | Earlier years (2000-2006) |                     |                     |                     | Later years (2007-2012) |                   |                    |                    |
| <b>D_CEO_chairman<sub>-1</sub></b> | -0.000<br>(-0.06)         | -0.000<br>(-0.01)   | 0.003<br>(0.25)     | 0.003<br>(0.25)     | -0.001<br>(-0.18)       | -0.001<br>(-0.18) | 0.008<br>(0.82)    | 0.008<br>(0.81)    |
| <b>Log_Execcomp<sub>-1</sub></b>   | 0.001<br>(0.49)           | 0.001<br>(0.55)     | -0.002<br>(-0.37)   | -0.002<br>(-0.36)   | -0.001<br>(-0.28)       | -0.001<br>(-0.28) | -0.001<br>(-0.17)  | -0.001<br>(-0.16)  |
| <b>Firm_age<sub>-1</sub></b>       | -0.021<br>(-1.20)         | -0.016<br>(-0.84)   | -0.060*<br>(-1.89)  | -0.059*<br>(-1.79)  | 0.021<br>(0.56)         | 0.021<br>(0.56)   | 0.030<br>(0.36)    | 0.031<br>(0.38)    |
| <b>Firmsize<sub>-1</sub></b>       | -0.005<br>(-0.88)         | -0.005<br>(-0.86)   | 0.002<br>(0.11)     | 0.002<br>(0.13)     | -0.000<br>(-0.05)       | -0.000<br>(-0.05) | 0.005<br>(0.82)    | 0.005<br>(0.83)    |
| <b>CEO_gender<sub>-1</sub></b>     | -0.026<br>(-1.09)         | -0.028<br>(-1.16)   | -0.027<br>(-0.59)   | -0.027<br>(-0.60)   | 0.030<br>(1.44)         | 0.030<br>(1.43)   | 0.062<br>(1.19)    | 0.064<br>(1.24)    |
| <b>LogCEOage<sub>-1</sub></b>      | -0.082**<br>(-2.00)       | -0.084**<br>(-2.03) | -0.195**<br>(-2.32) | -0.196**<br>(-2.32) | -0.087<br>(-1.56)       | -0.087<br>(-1.55) | -0.214*<br>(-1.85) | -0.216*<br>(-1.86) |
| <b>Constant</b>                    | 0.497**<br>(2.35)         | 0.478**<br>(2.27)   | 0.951**<br>(2.40)   | 0.943**<br>(2.38)   | 0.294<br>(1.05)         | 0.294<br>(1.06)   | 0.661<br>(1.16)    | 0.656<br>(1.15)    |
| <b>Observations</b>                | 392                       | 392                 | 374                 | 374                 | 532                     | 532               | 522                | 522                |
| <b>R-squared</b>                   | 0.677                     | 0.679               | 0.672               | 0.672               | 0.432                   | 0.432             | 0.557              | 0.557              |

Panel B of Table 4 presents the effect of corruption cleanups before and after 2006 when the government accelerated the liberalization of the stock market (e.g., 2005–2006 split share class reform). The reform has likely improved the transparency and liquidity of the stock market and amplified the effect of corruption cleanups. We find that the benefit of corruption cleanups is statistically significant after 2006 at the 10% significance level with a positive coefficient on *Chncorr* at 0.058 in Model *H2B\_v2* and 0.189 in Model *H2B\_v4*. We also find a significantly negative coefficient of -0.169 on the interaction term *SOE* × *Chncorr* at the 10% significance level in Model *H2B\_v4*. These results further support our earlier conjecture that firms with more state connections benefit less (or even suffer) from corruption cleanups whereas firms with fewer state connections benefit more. The financial market liberalization enhances the benefit of corruption cleanups for firms with fewer state connections.

Overall, we find supporting evidence for *Hypothesis 2* (in terms of *H2A* and *H2B*) that state governance is effective in the context of Chinese real estate firms.

### 5.3 Corporate Governance and State Governance

In this section, we empirically test our *Hypothesis 3* by examining the link between two tools, corporate governance and state governance. Given the vast literature on the compensation structure and firm performance (e.g., Rosen, 1981; Murphy, 1985; Jensen and Murphy, 1990; Rosen, 1992), we focus on executive compensation as the corporate governance tool in this part. To disentangle the effect of firm characteristics and effective corporate governance, we use the change in executive compensation in relation to past accounting and financial market firm performance. As for the state governance tool, we employ accelerated market liberalization after 2006.

Moreover, we also test whether state ownership plays a different role for executive compensation after the reform. Before the reform, Li et al. (2007) find that state ownership is significantly and negatively related to executive compensation in Chinese listed firms. Similarly, Conyon and He (2011) find that executive compensation is lower in SOEs than non-SOEs. We compare this link before and after the reform.

For the control variables, we include other governance measures mentioned above (such as board measures), firm performance measures (ROA and ROE), and the firm characteristics (Jensen and Meckling, 1976; Ghosh and Sirmans, 2003; 2005). In addition, we also include a market-based performance measure—stock returns, as the literature shows that they are importantly related to the compensation (Pennathur and Shelor, 2002; Ghosh and Sirmans, 2005; Sudarshan and Milbourn, 2012). We employ two dummy variables, *PosRet* and *NegRet*, to differentiate between positive and negative stock returns in the prior year, respectively.

Panel A of Table 5 shows the results before and after 2006 when the state accelerated market liberalization. The empirical model for the estimation is given as follows:

$$\Delta Execcomp_{i,j,t+1} = \alpha + \beta Perf_{i,t} + \rho StateOwn_{i,t} + \omega SEODummy_{i,t} + Controls + \varepsilon$$

The independent performance measure variable, *Perf*, is either an accounting based measure, such as *ROA* or *ROE*, or stock market based measure, such as *PosRet* and *NegRet*. In each regression, we use only one type of performance measure at the time to find out which measures are predictive for compensation, without influence from the other measures. We find that the change in executive compensation is significantly positively related to positive stock performance (*PosRet*) after 2006. On average, executives receive a 16% ( $16\% \approx e^{0.152} - 1$ ) increase in compensation for positive stock returns from 2007 to 2012. The coefficient on positive stock return is negative (but insignificant) in earlier years.

Panel B of Table 5 considers the changing role of state involvement after 2006. The model specifications for *H3\_v1* through *H3\_v3* are given as follows:

$$\Delta Execcomp_{i,j,t+1} = \alpha + \beta Perf_{i,t} + \rho StateOwn_{i,t} + \gamma StateOwn_{i,t} Perf_{i,t} + Controls + \varepsilon$$

Model specifications for *H3\_v4* through *H3\_v6* are as follows:

$$\Delta Execcomp_{i,j,t+1} = \alpha + \beta Perf_{i,t} + \omega SEODummy_{i,t} + \zeta SEODummy_{i,t} Perf_{i,t} + controls + \varepsilon$$

The results in Panel B are statistically and economically similar to those in Panel A of Table 5. We find that the coefficient on positive stock performance is positively significant at the 5% significance level from 2007 to 2012. Moreover, the coefficients on the *SOE* × *PosRet* and *StateOwn* × *PosRet* are significantly negative at the 5% significance level. This result suggests that executives in firms with more state connections are not compensated for positive firm performance as much as firms with fewer state connections.

#### 5.4 Robustness Tests

We conduct several robustness tests. First, we explicitly control for the variation in economic development across provinces by including provincial level GDP-per-capita and the annual GDP-per-capita growth rates in our empirical analyses. In Appendix II, we present the robustness results by replicating Tables 3 and 4 by including these additional control variables. Our results are robust. In Appendix III, we replicate the analysis in Table 5 with the full sample and find robust results as well. We also consider additional provincial level controls, such as population level and growth in population, and find robust results.

**Table 5 Determinants of Executive Compensation**

The dependent variable,  $\Delta Execcomp$ , is the change in the natural logarithm of the executive compensation (for the top three executives) reported in renminbi in year  $t+1$ . The key independent variables are firm performance measures (*ROA*, *ROE*, *PosRet*, and *NegRet*) and two sets of corporate governance measures: ownership structure (state ownership and SOE dummy) and board composition measures (board size, number of outside directors, and CEO duality dummy). All the independent variables are from year  $t$ . In Panel B, we also include the interaction of the two ownership structure measures with the alternative performance measures. Control variables include firm age, firm size, CEO gender, and CEO age as defined in Table 1. We include firm and year fixed effect, and cluster the standard errors by firm. The t-statistics are reported in parenthesis. We denote statistical significance of 1 percent, 5 percent and 10 percent with \*\*\*, \*\* and \* respectively.

**Panel A. Before and After 2006**

|   | (H3_v1)                         | (H3_v2)           | (H3_v3)            | (H3_v1)                       | (H3_v1)           | (H3_v3)           |
|---|---------------------------------|-------------------|--------------------|-------------------------------|-------------------|-------------------|
| <b>Dependent Variable: <math>\Delta Execcomp</math></b> |                                 |                   |                    |                               |                   |                   |
|   | <b>Earlier years: 2000-2006</b> |                   |                    | <b>Later years: 2007-2012</b> |                   |                   |
| <b>ROA<sub>-1</sub></b>                                 | 2.829<br>(1.39)                 |                   |                    | 0.502<br>(0.48)               |                   |                   |
| <b>ROE<sub>-1</sub></b>                                 |                                 | 1.545<br>(1.46)   |                    |                               | 0.165<br>(0.33)   |                   |
| <b>PosRet<sub>-1</sub></b>                              |                                 |                   | -0.328<br>(-0.43)  |                               |                   | 0.152*<br>(1.76)  |
| <b>NegRet<sub>-1</sub></b>                              |                                 |                   | 0.110<br>(0.30)    |                               |                   | 0.006<br>(0.03)   |
| <b>Stateownership<sub>-1</sub></b>                      | 0.412<br>(0.83)                 | 0.341<br>(0.68)   | 0.375<br>(0.66)    | -0.078<br>(-0.41)             | -0.075<br>(-0.40) | -0.084<br>(-0.46) |
| <b>SOEdummy<sub>-1</sub></b>                            | -0.363*<br>(-1.97)              | -0.238<br>(-1.49) | -0.377*<br>(-1.95) | -0.014<br>(-0.04)             | -0.020<br>(-0.06) | -0.074<br>(-0.23) |
| <b>Boardsize<sub>-1</sub></b>                           | 0.003<br>(0.08)                 | 0.020<br>(0.50)   | 0.004<br>(0.10)    | -0.026<br>(-0.65)             | -0.030<br>(-0.70) | -0.024<br>(-0.59) |
| <b>Outside_directors<sub>-1</sub></b>                   | -0.003<br>(-0.04)               | 0.026<br>(0.32)   | 0.002<br>(0.03)    | 0.048<br>(0.43)               | 0.043<br>(0.39)   | 0.048<br>(0.42)   |
| <b>D_CEO_chairman<sub>-1</sub></b>                      | -0.093<br>(-0.72)               | -0.116<br>(-0.78) | -0.097<br>(-0.72)  | 0.024<br>(0.29)               | 0.012<br>(0.14)   | 0.025<br>(0.29)   |
| <b>Firm_age<sub>-1</sub></b>                            | 0.715<br>(1.16)                 | 0.791<br>(1.24)   | 0.667<br>(1.08)    | -0.999<br>(-1.13)             | -0.971<br>(-1.09) | -0.950<br>(-1.09) |
| <b>Firmsize<sub>-1</sub></b>                            | -0.004<br>(-0.02)               | -0.186<br>(-0.72) | 0.006<br>(0.02)    | 0.026<br>(0.50)               | 0.037<br>(0.59)   | 0.030<br>(0.56)   |
| <b>CEO_gender<sub>-1</sub></b>                          | 0.726<br>(0.82)                 | 0.864<br>(0.96)   | 0.597<br>(0.59)    | 0.194<br>(0.37)               | 0.171<br>(0.31)   | 0.178<br>(0.35)   |
| <b>LogCEOage<sub>-1</sub></b>                           | -1.872<br>(-1.58)               | -1.654<br>(-1.41) | -1.901<br>(-1.61)  | 0.818<br>(0.84)               | 0.882<br>(0.79)   | 0.926<br>(1.01)   |
| <b>Constant</b>   | 4.881<br>(0.70)                 | 7.328<br>(1.07)   | 5.092<br>(0.71)    | -0.862<br>(-0.20)             | -1.369<br>(-0.27) | -1.477<br>(-0.34) |
| <b>Observations</b>                                     | 305                             | 295               | 305                | 493                           | 480               | 493               |
| <b>R-squared</b>  | 0.344                           | 0.375             | 0.340              | 0.214                         | 0.212             | 0.223             |

*(Continued...)*

(Table 5 Continued)

Panel B. Executive Compensation and State Ownership Before and After 2006

|   | (H3_v1)                  | (H3_v2)              | (H3_v3)             | (H3_v4)            | (H3_v5)           | (H3_v6)             | (H3_v1)                | (H3_v2)           | (H3_v3)           | (H3_v4)           | (H3_v5)           | (H3_v6)            |
|---|--------------------------|----------------------|---------------------|--------------------|-------------------|---------------------|------------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| Dependent Variable: ΔExeccomp                   |                          |                      |                     |                    |                   |                     |                        |                   |                   |                   |                   |                    |
|   | Earlier years: 2000-2006 |                      |                     |                    |                   |                     | Later years: 2007-2012 |                   |                   |                   |                   |                    |
| ROA <sub>-1</sub>                               | 2.797<br>(1.35)          |                      |                     | 2.924<br>(1.44)    |                   |                     | 0.610<br>(0.64)        |                   |                   | 0.600<br>(0.62)   |                   |                    |
| ROE <sub>-1</sub>                               |                          | 1.610<br>(1.44)      |                     |                    | 1.598<br>(1.44)   |                     |                        | 0.201<br>(0.40)   |                   |                   | 0.169<br>(0.34)   |                    |
| PosRet <sub>-1</sub>                            |                          |                      | 0.781<br>(1.64)     |                    |                   | -0.922<br>(-1.10)   |                        |                   | 0.235**<br>(2.40) |                   |                   | 0.281***<br>(2.76) |
| NegRet <sub>-1</sub>                            |                          |                      | 0.105<br>(0.26)     |                    |                   | 0.280<br>(0.65)     |                        |                   | -0.046<br>(-0.23) |                   |                   | -0.133<br>(-0.56)  |
| Stateownership <sub>-1</sub>                    | 0.393<br>(0.83)          | 0.378<br>(0.77)      | 0.587<br>(0.69)     | 0.391<br>(0.78)    | 0.352<br>(0.70)   | 0.616<br>(0.94)     | 0.166<br>(0.64)        | 0.010<br>(0.04)   | 0.357<br>(1.03)   | -0.047<br>(-0.25) | -0.070<br>(-0.37) | 0.022<br>(0.12)    |
| SOEdummy <sub>-1</sub>                          | -0.358*<br>(-1.97)       | -0.252<br>(-1.59)    | -0.425**<br>(-2.40) | -0.359*<br>(-1.94) | -0.226<br>(-1.35) | -0.520**<br>(-2.06) | 0.081<br>(0.33)        | 0.019<br>(0.06)   | -0.073<br>(-0.24) | 0.093<br>(0.34)   | 0.007<br>(0.02)   | 0.063<br>(0.18)    |
| Stateownership <sub>-1</sub> ×ROA <sub>-1</sub> | 1.321<br>(0.37)          |                      |                     |                    |                   |                     | -5.562<br>(-1.42)      |                   |                   |                   |                   |                    |
| Stateownership <sub>-1</sub> ×ROE <sub>-1</sub> |                          | -0.217***<br>(-3.29) |                     |                    |                   |                     |                        | -0.797<br>(-0.50) |                   |                   |                   |                    |

(Continued )

(Table 5 Continued)

|  | (H3_v1)                  | (H3_v2) | (H3_v3) | (H3_v4) | (H3_v5) | (H3_v6) | (H3_v1)                | (H3_v2) | (H3_v3) | (H3_v4) | (H3_v5) | (H3_v6) |
|--|--------------------------|---------|---------|---------|---------|---------|------------------------|---------|---------|---------|---------|---------|
| Dependent Variable: $\Delta$ Execcomp              |                          |         |         |         |         |         |                        |         |         |         |         |         |
|  | Earlier years: 2000-2006 |         |         |         |         |         | Later years: 2007-2012 |         |         |         |         |         |
| Stateownership <sub>-1</sub> ×PosRet <sub>-1</sub> | -2.959***<br>(-3.05)     |         |         |         |         |         | -0.608**<br>(-2.53)    |         |         |         |         |         |
| Stateownership <sub>-1</sub> ×NegRet <sub>-1</sub> | -0.546<br>(-0.32)        |         |         |         |         |         | 0.441<br>(0.68)        |         |         |         |         |         |
| SOEdummy <sub>-1</sub> ×ROA <sub>-1</sub>          | 0.867<br>(0.97)          |         |         |         |         |         | -1.741<br>(-1.31)      |         |         |         |         |         |
| SOEdummy <sub>-1</sub> ×ROE <sub>-1</sub>          | 0.070<br>(1.38)          |         |         |         |         |         | -0.164<br>(-0.62)      |         |         |         |         |         |
| SOEdummy <sub>-1</sub> ×PosRet <sub>-1</sub>       | 1.170<br>(1.41)          |         |         |         |         |         | -0.278***<br>(-2.82)   |         |         |         |         |         |
| SOEdummy <sub>-1</sub> ×NegRet <sub>-1</sub>       | -0.280<br>(-0.43)        |         |         |         |         |         | 0.351<br>(1.14)        |         |         |         |         |         |
| Observations                                       | 305                      | 289     | 305     | 305     | 289     | 305     | 493                    | 480     | 493     | 493     | 480     | 493     |
| R-squared  | 0.344                    | 0.355   | 0.373   | 0.346   | 0.354   | 0.352   | 0.223                  | 0.213   | 0.243   | 0.220   | 0.212   | 0.242   |

## 6. Conclusion

As China is the world's largest emerging economy, the effectiveness of corporate governance has attracted much attention from academics, practitioners, and regulators alike. In this study, we focus on the role of governance for two reasons. First, the real estate industry is one of the most corruption ridden industries worldwide where the state role in public procurement can offer billions in profits for companies that successfully probe or lobby for projects/services. Second, the fast-growing Chinese real estate industry and heightened real estate prices are likely to encourage more risk taking behaviors and corruption.

In analyzing the firm performance and executive compensation of 144 Chinese real estate firms from 2000 to 2012, we have three main results. First, we find that western style corporate governance tools, such as board structure, ownership structure and executive compensations, do not affect the performance of real estate firms. Second, we show that state governance, such as corruption cleanups and accelerated market liberalization, is positively related to firm performance. Lastly, we find that incentive alignment, that is, executive compensation, is more closely related to market-based firm performance with the assistance of state governance. The last two results are more pronounced in firms with fewer state connections, thus suggesting that corruption cleanups and market liberalization improve the competitiveness of firms with fewer state connections by limiting the benefits enjoyed by firms with more state connections.

Overall, we identify unique governance features in Chinese real estate firms which may be relevant to other emerging economies where the state is actively involved in market liberalization. In countries where the financial and the legal systems are still in transition, traditional market-based corporate governance tools may only be effective in conjunction with state governance. Our results imply that the Chinese real estate industry increasingly relies on market-based governance tools to discipline managers with the assistance of the state. Based on these findings, the state can improve the competitiveness of corruption prone industries with ongoing financial reforms and cracking down on corruption. State assistance can increase the effectiveness of traditional firm-level governance tools in affecting firm performance.

## Acknowledgements

The authors thank Jon Wiley (discussant) and the conference participants at the 2014 International AREUEA Meeting in Reading, UK, and the 2014 Global Chinese Real Estate Congress (GREC), in Nanjing, China.

## References

- Adams, R. and Ferreira, D. (2007) A Theory of Friendly Boards. *Journal of Finance* 62 (1), 217-250.
- Aggarwal, R. Erel, I., Stulz, R. and Williamson, R. (2009) Differences in Governance Practices between U.S. and Foreign Firms: Measurement, Causes, and Consequences, *Review of Financial Studies*, 22(8), 3131-3169
- Bai, C.E., Liu, Q., Lu, J., Song, F.M. and Zhang, J. (2004) Corporate Governance and Market Valuation in China. *Journal of Comparative Economics* 32, 599-616.
- Beck, P.J. and Maher, M.W. (1989) Competition, Regulation and Bribery, *Managerial and Decision Economics*, 10, 1-12.
- Beltratti, A., Bortolotti, B. and Caccavaio, M. (2012) The Stock Market Reaction to the 2005 Split Share Structure Reform in China. *Pacific-Basin Finance Journal* 20 (4), 543-560.
- Brickley, J.A., Coles, J.L. and Jarrell, G. (1997) Leadership Structure: Separating the CEO and Chairman of the Board. *Journal of Corporate Finance* 3, 189-220.
- Cao, J., Lemmon, M., Pan, X., Tian G. and Qian, M. (2012) Political Promotion, CEO Incentives, and the Relationship between Pay and Performance. Working Paper.
- Chen, G.M., Firth, M., Gao, D.N. and Rui, O.M. (2006) Ownership Structure, Corporate Governance, and Fraud: Evidence from China. *Journal of Corporate Finance* 12, 424-448.
- Cheung, Y.L., Raghavendra Rau, R. and Stouraitis, A. (2012) How Much Do Firms Pay as Bribes and What Benefits Do They Get? Evidence from Corruption Cases Worldwide. NBER Working Paper Series # 17981.
- Chinese Procuratorial Yearbook (2000-2010), Chinese Procuratorial Press. Source: South East Asian Studies Library, closed resources, Singapore.
- Conyon, M.J. and He, L. (2011) Executive Compensation and Corporate Governance in China. *Journal of Corporate Finance* 17 (4), 58-1175.
- Clarke, G.R.G. and Colin, X.L. (2004) Privatization, Competition, and Corruption: How Characteristics of Bribe Takers and Payers Affect Bribes to Utilities, *Journal of Public Economics* 88(9-10), 2067-2097.

Coles, J.L., Lemmon, M.L. and Meschke, F.J. (2012) Structural Models and Endogeneity in Corporate Finance: The Link between Managerial Ownership and Corporate Performance. *Journal of Financial Economics* 103 (1), 149-68.

D'Souza, A.E. and Kaufmann, D. (2011) Who Bribes in Public Contracting and Why? Worldwide Evidence from firms, SSRN Working Paper.

EC (2014) European Commission EU Anti-Corruption Report, <http://bit.ly/LqQQJn>

ECB (2013) China's Economic Growth and Relabancing. European Central Bank (ECB), Occasional Paper Series #142, <http://www.ecb.europa.eu/pub/pdf/scpops/ecbocp142.pdf>

Daizy, D. and Das, N. (2014) Sustainable Development for Indian Mining Sector, *OIDA International Journal of Sustainable Development* 6/7, 71-82.

Dalton, D.R., Daily, C., Ellstrand, A. and Johnson, J. (1998) Meta-analytic Reviews of Board Composition, Leadership Structure, and Financial Performance. *Strategic Management Journal* 19, 269-290.

de Bondt, Gabe J., Peltonen, T.A. and Santabárbara, D. (2010) Booms and Busts in China's Stock Market: Estimates Based on Fundamentals. European Central Bank (ECB), Working paper #1190.

Dechow, P.M. and Sloan, R.G. (1991) Executive Incentives and the Horizon Problem: an Empirical Investigation. *Journal of Accounting and Economics* 14, 51-89.

Dyck, A.I.J. (2000) Ownership Structure, Legal Protections and Corporate Governance. World bank, working paper.

Edelstein, R., Qian, W. and Tsang, D. (2011) How Do Institutional Factors Affect International Real Estate Returns? *Journal of Real Estate Finance and Economics* 43 (1-2), 130-151.

Edmans, A. and Gabaix, X. (2009) Is CEO Pay Really Inefficient? A Survey of New Optimal Contracting Theories. *European Financial Management* 15 (3), 486-496.

Fan, J. P.H., Wong, T.J. and Zhang, T. (2007) Politically Connected CEOs Corporate Governance, and Post-IPO Performance of China's Newly Partially Privatized Firms. *Journal of Financial Economics* 84 (2), 330-357.

Fan, J. P. H., Wong, T. J. and Zhang, T. (2007) Politically Connected CEOs, Corporate Governance, and Post-IPO Performance of China's Newly Partially Privatized Firms, *Journal of Financial Economics* 84 (2), 330-357.

- Fan, G-Z, Huszár, R.Z. and Zhang, W. (2013) The Relationships between Real Estate Price and Expected Financial Asset Risk and Return: Theory and Empirical Evidence. *Journal of Real Estate Finance and Economics* 46 (4), 568-595.
- Firth, M., Fung, P. and Rui, O. (2006) Corporate Performance and CEO Compensation in China. *Journal of Corporate Finance* 12, 693-714.
- Firth, M., Fung, P. and Rui, O. (2007) How Ownership and Corporate Governance Influence Chief Executive Pay in China's Listed Firms. *Journal of Business Research* 60, 776-785.
- Ghosh, C. and Sirmans, C. F. (2003) Board Independence, Ownership Structure and Performance: Evidence from Real Estate Investment Trusts. *Journal of Real Estate Finance and Economics* 26, 287-318.
- Ghosh, C. and Sirmans, C. F. (2005) On REIT CEO Compensation: Does Board Structure Matter? *Journal of Real Estate Finance and Economics* 30 (4), 397-428.
- Gibson, M.S. (2003) Is Corporate Governance Ineffective in Emerging Markets? *Journal of Financial and Quantitative Analysis* 38, 231-250.
- Gompers, P.A., Ishii, J. L. and Metrick, A. (2003) Corporate Governance and Equity Prices. *Quarterly Journal of Economics* 118 (1), 107-155.
- Goyal, V.K. and Park, C. W. (2002) Board Leadership Structure and CEO Turnover. *Journal of Corporate Finance* 8, 49-66.
- Gov.cn (2011) China to Set Up National Blacklist of Bribers to Prevent Corruption. Chinese Government, Official Web Portal, September 19, 2011. [http://www.gov.cn/english/2011-09/19/content\\_1950630.htm](http://www.gov.cn/english/2011-09/19/content_1950630.htm)
- Haveman, H., Jia, N., Shi, J. and Wang, Y. (2013) China's Economic Transition and the Value of Firms' Political Connections: A Longitudinal Study of Publicly Listed Firms (June 24, 2013).
- Hou, W., Kuo, J-M, Lee E. (2012) The impact of state ownership on share price informativeness: The case of the Split Share Structure Reform in China, *The British Accounting Review* 44 (4), 248-261.
- Jensen, M. (1993) The Modern Industrial Revolution, Exit and The Failure of Internal Control Systems, *Journal of Finance* 48 (3), 831-880.

- Jensen, M.C. and Meckling, W.H. (1976) Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics* 3, 305-360.
- Jensen, M.C. and Murphy, K.J. (1990) Performance Pay and Top-Management Incentives. *Journal of Political Economy* 98 (2), 225-264.
- Kato, T. and Long, C. (2005) Executive Compensation, Firm Performance, and Corporate Governance in China: Evidence from Firms Listed in the Shanghai and Shenzhen Stock Exchanges. *Economic Development and Cultural Change* 54, 945-983.
- Kohl, N. and Schaefer, W. (2012) Corporate Governance and Market Valuation of Publicly Traded Real Estate Companies: Evidence from Europe. *Journal of Real Estate Finance and Economics* 44, 362-393.
- Lam, S-S. and Zhang, W. (2015) The Moderating Effect of Bureaucratic Quality in the Pricing of Policy Instability. *China Finance Review International*, forthcoming.
- Lecomte, P. and Ooi, J. T. L. (2013) Corporate Governance and Performance of Externally Managed Singapore REITs. *Journal of Real Estate Finance and Economics* 44, 664-684.
- Li, D.H., Moshirian, F., Nguyen, P. and Tan, L.W. (2007) Corporate Governance or Globalization: What Determines CEO Compensation in China? *Research in International Business and Finance* 21, 32-49.
- Li, H., Meng, L., Wang, Q. and Zhou, L-A. (2008) Political Connections, Financing and Firm Performance: Evidence from Chinese Private Firms. *Journal of Development Economics* 87 (2), 283-299.
- Li, L. and Xiaoy, W. (2013) Housing Price and Entrepreneurship in China. *Journal of Comparative Economics*, Forthcoming.
- Li, K., Wang, T., Cheung, Y. and Jiang, P. (2011) Privatization and Risk Sharing: Evidence from The Split Share Structure Reform in China. *Review of Financial Studies* 24 (7), 2499-2525.
- Liu, J. and Lin, B. (2012) Government Auditing and Corruption Control: Evidence from China's Provincial Panel Data. *China Journal of Accounting Research* 5 (2), 163-186
- Liu, Q. and Lu, Z. (2007) Corporate Governance and Earnings Management in the Chinese Listed Companies: A Tunneling Perspective, *Journal of Corporate Finance* 13, 881-906.

Liu, G.S. and Sun, P. (2006) State-Dominated Corporate Governance System in Transition: the Case of China. *Handbook on International Corporate Governance: Country Analyses*, edited by Christine Mallin, Edward Elgar.

Lou, F., Wang, J. and Yuan, H. (2013) Stock Liquidity and the Pricing of Earnings: A Comparison of China's Floating and Non-floating Shares. *Emerging Markets Finance and Trade*, forthcoming.

Mehran, H. (1995) Executive Compensation Structure, Ownership, and Firm Performance. *Journal of Financial Economics* 38, 163-184.

Mohan, N. and Ruggiero, J. (2003) Compensation Differences between Male and Female CEOs for Publicly Traded Firms: a Nonparametric Analysis. *Journal of the Operational Research Society* 54, 1242-1248.

Ma, S-Y. (2008) China's privatization. From Gradualism to Shock Therapy? *Asian Survey* 48 (2), 199-214.

Masulis, R.W., Wang, C. and Xie, F. (2012) Globalizing the Boardroom the Effects of Foreign Directors on Corporate Governance and Firm Performance. *Journal of Accounting and Economics* 53, 527-554.

Murphy, K.J. (1985) Corporate Performance and Managerial Remuneration: An Empirical Analysis. *Journal of Accounting and Economics* 7, 11-42.

Murphy, K.J. (2000) Performance Standards in Incentive Contracts. *Journal of Accounting and Economics* 30 (3), 245-278

Murphy, K. J. and Zábojník, J. (2004) CEO Pay and Appointments: A Market-Based Explanation for Recent Trends, *American Economic Review* 94 (2), Papers and Proceedings of the One Hundred Sixteenth Annual Meeting of the American Economic Association, 192-196.

National Bureau of Statistics of China (2014a) Investment in Real Estate Development. Yearly data report of National Bureau of Statistics of China

National Bureau of Statistics of China (2014b) Price indices: Commercial and Residential House prices, Yearly data report of National Bureau of Statistics of China

Nelson, J.A. (2012) Would Women Leaders Have Prevented the Global Financial Crisis? Implications for Teaching about Gender, Behavior, and Economics, Global development and Environment Institute, Working paper 11-03.

OECD Foreign Bribery Report (2014). An Analysis of the Crime of Bribery of Foreign Public Officials, Published on December 02, 2014, DOI: 10.1787/9789264226616-en

- Pei, M. (2007) Corruption threatens China's future. *Carnegie Endowment for International Peace*, Policy Brief No. 55, October.
- Petersen, M.A. (2009) Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches. *Review of Financial Studies* 22 (1), 435-480.
- Pennathur, A.K. and Shelor, R.M. (2002) The Determinants of REIT CEO Compensation. *Journal of Real Estate Finance and Economics* 25(1), 99-113.
- Rajagopalan, N. and Zhang, Y. (2008) Corporate Governance Reforms in China and India: Challenges and Opportunities. *Business Horizons* 51, 55-64.
- Rapaport, C. (1995) Apparent Wage Discrimination When Wages are Determined by Non-discriminatory Contracts, *American Economic Review* 85 (5), 1263-1277.
- Rosen, S. (1981) The Economics of Superstars. *American Economic Review* 71, 845-858.
- Rosen, S. (1992) Contracts and The Market for Executives. *Main Currents in Contract Economics*. Blackwell Press.
- Ryan, H. and Wiggins, A. (2001) The Influence of Firm and Manager Specific Characteristics on The Structure of Executive Compensation. *Journal of Corporate Finance* 7, 101-123.
- Shleifer, A. and Vishny, R.W. (1997) A Survey of Corporate Governance. *Journal of Finance* 52 (2), 737-783.
- Sing, T.F. and Sirmans, C.F. (2008) Does Real Estate Ownership Matter in Corporate Governance? *Journal of Property Research* 25 (1), 23-43.
- Sirmans, C.F., (1999) Governance Issues in Real Estate investing: the Case of REITs, RICS research conference.
- Sun, Q. and Tong, H.S. (2003) China Share Issue Privatization: The Extent of Its Success. *Journal of Financial Economics* 70, 183-222.
- Sudarshan, J. and Milbourn, T. (2012) The Role of Stock Liquidity in Executive Compensation. *Accounting Review* 87, 537-564.
- Tian, J. J. and Lau, C. (2001) Board Composition, Leadership Structure and Performance in Chinese Shareholding Companies. *Asia Pacific Journal of Management* 18, 245-263.
- Van Staveren, I. (2014) The Lehman Sisters hypothesis, *Cambridge Journal of Economics*. Forthcoming.

WorldBank, (2006) China Governance, Investment Climate and Harmonious Society: Competitiveness Enhancement for 120 cities, Report No. 37759-CN.

Xavier, G. and Landier, A. (2008) Why Has CEO Pay Increased So Much? *Quarterly Journal of Economics* 123, 49-100.

Yermack, D. (1996) Higher Market Valuation of Companies with A Small Board of Directors. *Journal of Financial Economics* 40, 185-212.

Yong, G. (2008) Corruption in Transitional China: An Empirical Analysis, *The China Quarterly* 194, 349-364.

Zeume, S. (2013) Bribes and Firm Value - Evidence from Anti-Bribery Regulation, Australasian Finance and Banking Conference Paper.

Zheng, S., Fu, Y. and Liu, H. (2009) Demand for Urban Quality of Living in China: Evolution in Compensating Land-Rent and Wage-Rate Differentials, *Journal of Real Estate Finance and Economics* 38 (3), 194-213.

## **Appendix I      Corruption in Real Estate**

(China Daily) Updated: 2010-10-08 07:52

“Of all factors behind the ever-rising housing prices, corruption should never be ignored. The fact that nearly 2,000 cases of corruption have been cracked in this area, from August last year to August this year, has justified the consensus that real estate has become a hotbed of corruption.

Nearly 200 officials above the county governor level were found to be involved in these cases. It is now quite common for a string of officials to be involved in a single case.

The abuse of power has resulted in a series of problems in the real estate market. When real estate developers bribe officials to get a piece of land for development, or bribe officials to get a housing project approved, or pay officials to get this or that done, they don't pay from their own pockets, they raise the housing prices so consumers pay for the bribes.

With a lot of money going into the pockets of these corrupt officials, real estate developers don't spend as much as they should on the construction of their buildings. They then bribe the supervisors into turning a blind eye to the poor quality of the houses. That is why real estate developers in some cities have been found using sub-standard re-bars or even bamboo as substitutes for re-bars to lower construction costs. As a result, some new buildings have quality problems, and complaints about housing quality have been on the rise in recent years.

So corruption has turned out to be one of the major problems seriously affecting the healthy development of the real estate industry and market.

The central government has realized how serious the problem is. It made the decision in August last year to implement a crackdown that would target corruption in this area for two years. Now more than a year has elapsed, and prosecutors have weeded out quite a number of bad apples. But it seems that the cases uncovered have become increasingly complicated and the amounts of money involved increasingly large.

There is enough reason to believe in the central government's unswerving determination to fight corruption. Yet, the complexities of the anticorruption battle, particularly in the real estate area, should never be underestimated. In addition to further intensifying the crackdown, the government must act to improve the transparency of business deals and to tighten supervision, so as to make the abuse of power much more difficult.”

## Appendix II

Robustness results for Table 3, replicated to include additional provincial level economic controls.

Robustness results for firm performance regression in relation to corporate governance measures, including provincial-level GDP growth (ChngGDP) and GDP per capita levels (LogGDP).

|                                       | (H1A)<br>ROA      | (H1B)<br>ROA      | (H1C)<br>ROA      | (H1Comb)<br>ROA   | (H1A)<br>ROE      | (H1B)<br>ROE      | (H1C)<br>ROE      | (H1Comb)<br>ROE   |
|---------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b>Boardsize<sub>-1</sub></b>         | -0.001<br>(-0.81) | -0.001<br>(-0.82) | -0.001<br>(-0.80) | -0.001<br>(-0.79) | -0.000<br>(-0.18) | -0.000<br>(-0.22) | -0.000<br>(-0.20) | -0.000<br>(-0.21) |
| <b>Outside_directors<sub>-1</sub></b> | 0.000<br>(0.08)   | 0.000<br>(0.08)   | 0.000<br>(0.09)   | 0.000<br>(0.06)   | -0.002<br>(-0.47) | -0.002<br>(-0.46) | -0.002<br>(-0.45) | -0.002<br>(-0.41) |
| <b>DCEO_chairman<sub>-1</sub></b>     | 0.001<br>(0.24)   | 0.001<br>(0.24)   | 0.001<br>(0.23)   | 0.001<br>(0.24)   | 0.008<br>(1.18)   | 0.008<br>(1.16)   | 0.008<br>(1.17)   | 0.008<br>(1.17)   |
| <b>SOEdummy<sub>-1</sub></b>          |                   | 0.001<br>(0.12)   | -0.002<br>(-0.36) | -0.002<br>(-0.37) |                   | 0.005<br>(0.47)   | 0.003<br>(0.24)   | 0.003<br>(0.26)   |
| <b>Stateownership<sub>-1</sub></b>    |                   |                   | 0.011<br>(1.34)   | 0.010<br>(1.31)   |                   |                   | 0.011<br>(0.69)   | 0.012<br>(0.72)   |
| <b>Lagsalary</b>                      |                   |                   |                   | 0.001<br>(0.55)   |                   |                   |                   | -0.003<br>(-0.58) |

*(Continued...)*

*(Robustness Results for Table 3 Continued)*

|                                | <b>(H1A)</b><br><b>ROA</b> | <b>(H1B)</b><br><b>ROA</b> | <b>(H1C)</b><br><b>ROA</b> | <b>(H1Comb)</b><br><b>ROA</b> | <b>(H1A)</b><br><b>ROE</b> | <b>(H1B)</b><br><b>ROE</b> | <b>(H1C)</b><br><b>ROE</b> | <b>(H1Comb)</b><br><b>ROE</b> |
|--------------------------------|----------------------------|----------------------------|----------------------------|-------------------------------|----------------------------|----------------------------|----------------------------|-------------------------------|
| <b>ChngGDP</b>                 | -0.003<br>(-1.39)          | -0.003<br>(-1.39)          | -0.003<br>(-1.33)          | -0.003<br>(-1.32)             | -0.003<br>(-0.83)          | -0.003<br>(-0.84)          | -0.003<br>(-0.80)          | -0.003<br>(-0.83)             |
| <b>LogGDP</b>                  | 0.014<br>(1.22)            | 0.013<br>(1.20)            | 0.011<br>(0.91)            | 0.010<br>(0.81)               | 0.019<br>(0.76)            | 0.018<br>(0.72)            | 0.015<br>(0.56)            | 0.017<br>(0.64)               |
| <b>Firm_age<sub>-1</sub></b>   | -0.015<br>(-1.28)          | -0.015<br>(-1.29)          | -0.013<br>(-1.06)          | -0.012<br>(-1.05)             | -0.030<br>(-1.03)          | -0.031<br>(-1.05)          | -0.028<br>(-0.97)          | -0.029<br>(-0.98)             |
| <b>Firmsize<sub>-1</sub></b>   | -0.002<br>(-1.10)          | -0.002<br>(-1.14)          | -0.002<br>(-1.18)          | -0.002<br>(-1.41)             | 0.006<br>(1.47)            | 0.006<br>(1.42)            | 0.006<br>(1.40)            | 0.007<br>(1.53)               |
| <b>CEO_gender<sub>-1</sub></b> | -0.010<br>(-0.58)          | -0.009<br>(-0.57)          | -0.008<br>(-0.49)          | -0.007<br>(-0.44)             | -0.009<br>(-0.29)          | -0.008<br>(-0.26)          | -0.007<br>(-0.21)          | -0.008<br>(-0.26)             |
| <b>LogCEOage<sub>-1</sub></b>  | -0.073**<br>(-2.45)        | -0.073**<br>(-2.44)        | -0.075**<br>(-2.48)        | -0.074**<br>(-2.45)           | -0.199***<br>(-3.35)       | -0.201***<br>(-3.36)       | -0.203***<br>(-3.37)       | -0.204***<br>(-3.39)          |
| <b>Constant</b>                | 0.254*<br>(1.66)           | 0.255<br>(1.65)            | 0.284*<br>(1.79)           | 0.285*<br>(1.79)              | 0.573*<br>(1.76)           | 0.587*<br>(1.78)           | 0.623*<br>(1.81)           | 0.619*<br>(1.80)              |
| <b>Observations</b>            | 924                        | 924                        | 924                        | 924                           | 896                        | 896                        | 896                        | 896                           |
| <b>R-squared</b>               | 0.408                      | 0.408                      | 0.411                      | 0.411                         | 0.479                      | 0.480                      | 0.480                      | 0.481                         |

Robustness results for Panel A in Table 4 which examines the role of state governance, replicated to include additional provincial level economic controls.

|                           | (H2_v1)<br>ROA    | (H2_v2)<br>ROA     | (H2_v3)<br>ROA    | (H2_v4)<br>ROA    | (H2_v1)<br>ROE    | (H2_v2)<br>ROE    | (H2_v3)<br>ROE    | (H2_v4)<br>ROE    |
|---------------------------|-------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b>Stateownership-1</b>   | 0.011<br>(1.41)   | 0.011<br>(1.39)    | 0.011<br>(1.40)   | 0.011<br>(1.40)   | 0.014<br>(0.89)   | 0.013<br>(0.82)   | 0.014<br>(0.89)   | 0.015<br>(0.90)   |
| <b>SOEdummy-1</b>         | -0.003<br>(-0.46) | -0.002<br>(-0.41)  | -0.002<br>(-0.44) | -0.002<br>(-0.43) | 0.002<br>(0.17)   | 0.003<br>(0.24)   | 0.002<br>(0.19)   | 0.002<br>(0.19)   |
| <b>Stateown-1xChncorr</b> | -0.027<br>(-0.87) |                    | -0.014<br>(-0.42) | -0.014<br>(-0.41) | -0.095<br>(-1.19) |                   | -0.075<br>(-0.97) | -0.074<br>(-0.97) |
| <b>SOE-1xChncorr</b>      |                   | -0.058<br>(-1.34)  | -0.049<br>(-1.10) | -0.050<br>(-1.09) |                   | -0.118<br>(-1.06) | -0.076<br>(-0.79) | -0.079<br>(-0.78) |
| <b>Chncorr</b>            | 0.047*<br>(1.83)  | 0.043***<br>(2.72) | 0.051**<br>(1.99) | 0.050*<br>(1.96)  | 0.133*<br>(1.91)  | 0.094**<br>(2.06) | 0.140*<br>(1.95)  | 0.137**<br>(2.00) |
| <b>Relcorr-1</b>          |                   |                    |                   | 0.005<br>(0.24)   |                   |                   |                   | 0.013<br>(0.26)   |
| <b>GDPchange</b>          | -0.002<br>(-0.92) | -0.002<br>(-0.79)  | -0.002<br>(-0.81) | -0.002<br>(-0.82) | -0.001<br>(-0.37) | -0.001<br>(-0.20) | -0.001<br>(-0.26) | -0.001<br>(-0.28) |
| <b>LogGDP</b>             | 0.007<br>(0.58)   | 0.005<br>(0.42)    | 0.005<br>(0.41)   | 0.004<br>(0.30)   | 0.011<br>(0.40)   | 0.008<br>(0.29)   | 0.007<br>(0.28)   | 0.005<br>(0.17)   |
| <b>Boardsize-1</b>        | -0.001<br>(-0.85) | -0.001<br>(-0.71)  | -0.001<br>(-0.72) | -0.001<br>(-0.72) | -0.001<br>(-0.34) | -0.000<br>(-0.19) | -0.000<br>(-0.24) | -0.000<br>(-0.24) |

(Continued...)

*(Robustness Results for Panel A in Table 4 Continued)*

|                            | (H2_v1)<br>ROA      | (H2_v2)<br>ROA      | (H2_v3)<br>ROA      | (H2_v4)<br>ROA      | (H2_v1)<br>ROE       | (H2_v2)<br>ROE       | (H2_v3)<br>ROE       | (H2_v4)<br>ROE       |
|----------------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Outside_directors-1</b> | 0.000<br>(0.08)     | -0.000<br>(-0.02)   | -0.000<br>(-0.03)   | -0.000<br>(-0.02)   | -0.002<br>(-0.35)    | -0.002<br>(-0.44)    | -0.002<br>(-0.44)    | -0.002<br>(-0.43)    |
| <b>DCEO_chairman-1</b>     | 0.001<br>(0.33)     | 0.001<br>(0.36)     | 0.001<br>(0.34)     | 0.001<br>(0.35)     | 0.008<br>(1.22)      | 0.008<br>(1.28)      | 0.008<br>(1.24)      | 0.008<br>(1.24)      |
| <b>Log_Execcomp-1</b>      | 0.001<br>(0.44)     | 0.001<br>(0.46)     | 0.001<br>(0.45)     | 0.001<br>(0.46)     | -0.003<br>(-0.66)    | -0.003<br>(-0.63)    | -0.003<br>(-0.65)    | -0.003<br>(-0.64)    |
| <b>Firm_age-1</b>          | -0.009<br>(-0.79)   | -0.009<br>(-0.77)   | -0.009<br>(-0.79)   | -0.008<br>(-0.70)   | -0.020<br>(-0.75)    | -0.020<br>(-0.74)    | -0.020<br>(-0.74)    | -0.018<br>(-0.67)    |
| <b>Firmsize-1</b>          | -0.002<br>(-1.46)   | -0.002<br>(-1.45)   | -0.002<br>(-1.45)   | -0.002<br>(-1.46)   | 0.007<br>(1.46)      | 0.007<br>(1.46)      | 0.006<br>(1.45)      | 0.006<br>(1.45)      |
| <b>CEO_gender-1</b>        | -0.007<br>(-0.42)   | -0.009<br>(-0.53)   | -0.009<br>(-0.51)   | -0.008<br>(-0.50)   | -0.008<br>(-0.25)    | -0.012<br>(-0.37)    | -0.011<br>(-0.33)    | -0.010<br>(-0.31)    |
| <b>LogCEOage-1</b>         | -0.079**<br>(-2.59) | -0.075**<br>(-2.48) | -0.076**<br>(-2.50) | -0.076**<br>(-2.50) | -0.213***<br>(-3.47) | -0.207***<br>(-3.36) | -0.209***<br>(-3.39) | -0.209***<br>(-3.39) |
| <b>Constant</b>            | 0.325**<br>(2.04)   | 0.330**<br>(2.10)   | 0.333**<br>(2.11)   | 0.341**<br>(2.06)   | 0.717**<br>(2.12)    | 0.716**<br>(2.16)    | 0.731**<br>(2.18)    | 0.748**<br>(2.14)    |
| <b>Observations</b>        | 924                 | 924                 | 924                 | 924                 | 896                  | 896                  | 896                  | 896                  |
| <b>R-squared</b>           | 0.417               | 0.418               | 0.418               | 0.418               | 0.487                | 0.486                | 0.487                | 0.487                |

Replicate of Panel B in Table 4

|                                      | (9)               | (10)              | (13)                | (14)                | (11)              | (12)              | (15)               | (16)               |
|--------------------------------------|-------------------|-------------------|---------------------|---------------------|-------------------|-------------------|--------------------|--------------------|
|                                      | ROA               | ROA               | ROE                 | ROE                 | ROA               | ROA               | ROE                | ROE                |
| <b>Stateownership<sub>-1</sub></b>   | -0.018<br>(-1.34) | -0.017<br>(-1.28) | -0.049**<br>(-2.20) | -0.048**<br>(-2.15) | 0.007<br>(0.77)   | 0.007<br>(0.80)   | 0.003<br>(0.17)    | 0.005<br>(0.25)    |
| <b>SOEdummy<sub>-1</sub></b>         | 0.002<br>(0.23)   | 0.001<br>(0.16)   | 0.001<br>(0.04)     | 0.000<br>(0.02)     | 0.009<br>(1.27)   | 0.009<br>(1.21)   | 0.039<br>(1.52)    | 0.038<br>(1.45)    |
| <b>Stateown<sub>-1</sub>xChncorr</b> | -0.057<br>(-0.62) | -0.066<br>(-0.68) | -0.045<br>(-0.21)   | -0.048<br>(-0.22)   | 0.001<br>(0.02)   | 0.002<br>(0.06)   | -0.024<br>(-0.21)  | -0.016<br>(-0.14)  |
| <b>SOE<sub>-1</sub>xChncorr</b>      | 0.003<br>(0.04)   | 0.004<br>(0.05)   | 0.037<br>(0.38)     | 0.036<br>(0.38)     | -0.039<br>(-1.07) | -0.038<br>(-1.04) | -0.162*<br>(-1.70) | -0.159*<br>(-1.73) |
| <b>Chncorr</b>                       | 0.060<br>(1.29)   | 0.059<br>(1.25)   | 0.078<br>(1.00)     | 0.078<br>(1.02)     | 0.056*<br>(1.87)  | 0.053*<br>(1.71)  | 0.221**<br>(2.30)  | 0.206**<br>(2.35)  |
| <b>Relcorr<sub>-1</sub></b>          |                   | 0.046<br>(0.69)   |                     | 0.016<br>(0.15)     |                   | 0.010<br>(0.36)   |                    | 0.050<br>(0.69)    |
| <b>GDPchange</b>                     | -0.001<br>(-0.42) | -0.001<br>(-0.39) | 0.000<br>(0.08)     | 0.000<br>(0.09)     | -0.002<br>(-0.59) | -0.003<br>(-0.65) | 0.006<br>(0.67)    | 0.004<br>(0.49)    |
| <b>LogGDP</b>                        | -0.044<br>(-0.62) | -0.043<br>(-0.62) | 0.054<br>(0.43)     | 0.053<br>(0.43)     | -0.026<br>(-1.37) | -0.027<br>(-1.35) | -0.077*<br>(-1.70) | -0.082*<br>(-1.74) |
| <b>Boardsize<sub>-1</sub></b>        | -0.000<br>(-0.37) | -0.001<br>(-0.41) | -0.004<br>(-1.57)   | -0.004<br>(-1.54)   | 0.002<br>(0.97)   | 0.002<br>(0.97)   | 0.001<br>(0.22)    | 0.001<br>(0.22)    |

(Continued...)

*(Replicate of Panel B in Table 4 Continued)*

|                            | (9)                 | (10)                | (13)                | (14)                | (11)              | (12)              | (15)               | (16)               |
|----------------------------|---------------------|---------------------|---------------------|---------------------|-------------------|-------------------|--------------------|--------------------|
|                            | ROA                 | ROA                 | ROE                 | ROE                 | ROA               | ROA               | ROE                | ROE                |
| <b>Outside_directors-1</b> | 0.004<br>(1.26)     | 0.004<br>(1.33)     | 0.002<br>(0.41)     | 0.002<br>(0.44)     | -0.006<br>(-1.26) | -0.006<br>(-1.27) | -0.006<br>(-0.59)  | -0.006<br>(-0.62)  |
| <b>DCEO_chairman-1</b>     | -0.001<br>(-0.10)   | -0.000<br>(-0.05)   | 0.003<br>(0.27)     | 0.003<br>(0.28)     | -0.002<br>(-0.37) | -0.002<br>(-0.38) | 0.006<br>(0.60)    | 0.005<br>(0.57)    |
| <b>Log_Execcomp-1</b>      | 0.001<br>(0.43)     | 0.001<br>(0.50)     | -0.002<br>(-0.35)   | -0.002<br>(-0.34)   | -0.000<br>(-0.13) | -0.000<br>(-0.12) | -0.000<br>(-0.06)  | -0.000<br>(-0.03)  |
| <b>Firm_age-1</b>          | -0.021<br>(-1.23)   | -0.017<br>(-0.84)   | -0.060*<br>(-1.82)  | -0.059*<br>(-1.75)  | 0.023<br>(0.64)   | 0.024<br>(0.65)   | 0.036<br>(0.45)    | 0.038<br>(0.48)    |
| <b>Firmsize-1</b>          | -0.006<br>(-0.96)   | -0.006<br>(-0.93)   | 0.002<br>(0.15)     | 0.002<br>(0.16)     | -0.000<br>(-0.02) | -0.000<br>(-0.02) | 0.005<br>(0.76)    | 0.005<br>(0.78)    |
| <b>CEO_gender-1</b>        | -0.025<br>(-1.03)   | -0.027<br>(-1.10)   | -0.029<br>(-0.63)   | -0.030<br>(-0.64)   | 0.024<br>(1.17)   | 0.024<br>(1.19)   | 0.049<br>(0.97)    | 0.052<br>(1.02)    |
| <b>LogCEOage-1</b>         | -0.083**<br>(-2.02) | -0.085**<br>(-2.05) | -0.193**<br>(-2.30) | -0.194**<br>(-2.31) | -0.087<br>(-1.59) | -0.088<br>(-1.59) | -0.215*<br>(-1.91) | -0.218*<br>(-1.94) |
| <b>Constant</b>            | 0.924<br>(1.33)     | 0.899<br>(1.30)     | 0.423<br>(0.35)     | 0.421<br>(0.35)     | 0.568<br>(1.49)   | 0.577<br>(1.49)   | 1.502*<br>(1.81)   | 1.549*<br>(1.84)   |
| <b>Observations</b>        | 392                 | 392                 | 374                 | 374                 | 532               | 532               | 522                | 522                |
| <b>R-squared</b>           | 0.679               | 0.681               | 0.673               | 0.673               | 0.438             | 0.438             | 0.563              | 0.564              |

**Replicate of Panel A in Table 5**

|                                       | (H3 v1)            | (H3 v2)           | (H3 v3)            | (H3 v1)           | (H3 v2)           | (H3 v3)           |
|---------------------------------------|--------------------|-------------------|--------------------|-------------------|-------------------|-------------------|
| <b>Dependent Variable: ΔExeccomp</b>  |                    |                   |                    |                   |                   |                   |
| <b>ROA<sub>-1</sub></b>               | 2.964<br>(1.23)    |                   |                    | 0.418<br>(0.39)   |                   |                   |
| <b>ROE<sub>-1</sub></b>               |                    | 1.576<br>(1.37)   |                    |                   | 0.113<br>(0.23)   |                   |
| <b>PosRet<sub>-1</sub></b>            |                    |                   | 0.135<br>(0.31)    |                   |                   | 0.010<br>(0.05)   |
| <b>NegRet<sub>-1</sub></b>            |                    |                   | -0.399<br>(-0.46)  |                   |                   | 0.150*<br>(1.74)  |
| <b>Stateownership<sub>-1</sub></b>    | 0.385<br>(0.72)    | 0.312<br>(0.59)   | 0.360<br>(0.63)    | -0.085<br>(-0.44) | -0.087<br>(-0.45) | -0.093<br>(-0.50) |
| <b>SOEdummy<sub>-1</sub></b>          | -0.368*<br>(-1.88) | -0.243<br>(-1.43) | -0.390*<br>(-1.81) | -0.008<br>(-0.02) | -0.014<br>(-0.04) | -0.067<br>(-0.22) |
| <b>GDPchange</b>                      | 0.028<br>(0.13)    | 0.025<br>(0.12)   | 0.038<br>(0.17)    | -0.054<br>(-0.74) | -0.067<br>(-0.91) | -0.054<br>(-0.75) |
| <b>LogGDP</b>                         | 0.247<br>(0.17)    | 0.270<br>(0.16)   | 0.001<br>(0.00)    | 0.165<br>(0.43)   | 0.181<br>(0.47)   | 0.164<br>(0.43)   |
| <b>Boardsize<sub>-1</sub></b>         | 0.003<br>(0.07)    | 0.020<br>(0.49)   | 0.003<br>(0.07)    | -0.023<br>(-0.56) | -0.026<br>(-0.62) | -0.020<br>(-0.50) |
| <b>Outside_directors<sub>-1</sub></b> | -0.000<br>(-0.00)  | 0.027<br>(0.30)   | 0.005<br>(0.05)    | 0.040<br>(0.36)   | 0.034<br>(0.30)   | 0.040<br>(0.35)   |
| <b>D_CEO_chairman<sub>-1</sub></b>    | -0.090<br>(-0.69)  | -0.112<br>(-0.74) | -0.098<br>(-0.72)  | 0.032<br>(0.40)   | 0.018<br>(0.22)   | 0.032<br>(0.41)   |
| <b>Firm_age<sub>-1</sub></b>          | 0.716<br>(1.05)    | 0.786<br>(1.10)   | 0.691<br>(1.02)    | -1.003<br>(-1.13) | -0.961<br>(-1.08) | -0.958<br>(-1.09) |
| <b>Firmsize<sub>-1</sub></b>          | -0.002<br>(-0.01)  | -0.184<br>(-0.68) | -0.000<br>(-0.00)  | 0.029<br>(0.54)   | 0.044<br>(0.68)   | 0.033<br>(0.60)   |
| <b>CEO_gender<sub>-1</sub></b>        | 0.735<br>(0.80)    | 0.863<br>(0.93)   | 0.616<br>(0.57)    | 0.178<br>(0.33)   | 0.159<br>(0.28)   | 0.161<br>(0.30)   |
| <b>LogCEOage<sub>-1</sub></b>         | -1.891<br>(-1.56)  | -1.672<br>(-1.40) | -1.917<br>(-1.57)  | 0.758<br>(0.75)   | 0.833<br>(0.73)   | 0.870<br>(0.92)   |
| <b>Constant</b>                       | 2.348<br>(0.13)    | 4.581<br>(0.24)   | 5.201<br>(0.29)    | -2.501<br>(-0.46) | -3.352<br>(-0.55) | -3.110<br>(-0.59) |
| <b>Observations</b>                   | 305                | 295               | 305                | 493               | 480               | 493               |
| <b>R-squared</b>                      | 0.344              | 0.375             | 0.341              | 0.217             | 0.215             | 0.225             |

Replicate of Panel B in Table 5<sup>8</sup>

|  | (H3 v1)                  | (H3 v2)              | (H3 v3)             | (H3 v4)            | (H3 v5)           | (H3 v6)            | (H3 v1)                | (H3 v2)           | (H3 v3)             | (H3 v4)           | (H3 v5)           | (H3 v6)           |
|--|--------------------------|----------------------|---------------------|--------------------|-------------------|--------------------|------------------------|-------------------|---------------------|-------------------|-------------------|-------------------|
| Dependent variable: ΔExeccomp                      |                          |                      |                     |                    |                   |                    |                        |                   |                     |                   |                   |                   |
|  | Earlier years: 2000-2006 |                      |                     |                    |                   |                    | Later years: 2007-2012 |                   |                     |                   |                   |                   |
| ROA <sub>-1</sub>                                  | 2.955<br>(1.23)          |                      |                     |                    | 3.060<br>(1.25)   |                    | 0.524<br>(0.54)        |                   |                     | 0.513<br>(0.53)   |                   |                   |
| ROE <sub>-1</sub>                                  |                          | 1.632<br>(1.35)      |                     |                    | 1.630<br>(1.35)   |                    |                        | 0.150<br>(0.30)   |                     | 0.118<br>(0.24)   | 0.122<br>(0.24)   |                   |
| PosRet <sub>-1</sub>                               |                          |                      | 0.203<br>(0.47)     |                    |                   | 0.430<br>(0.69)    |                        |                   | -0.042<br>(-0.21)   |                   |                   |                   |
| NegRet <sub>-1</sub>                               |                          |                      | 0.728<br>(1.32)     |                    |                   | -1.204<br>(-1.00)  |                        |                   | 0.234**<br>(2.40)   |                   |                   |                   |
| Stateownership <sub>-1</sub>                       | 0.352<br>(0.66)          | 0.379<br>(0.73)      | 0.528<br>(0.63)     | 0.366<br>(0.67)    | 0.332<br>(0.62)   | 0.620<br>(0.98)    | 0.159<br>(0.62)        | -0.004<br>(-0.02) | 0.358<br>(1.03)     | -0.054<br>(-0.28) | -0.082<br>(-0.43) | -0.042<br>(-0.22) |
| SOEdummy <sub>-1</sub>                             | -0.365*<br>(-1.89)       | -0.262<br>(-1.53)    | -0.465**<br>(-2.17) | -0.367*<br>(-1.89) | -0.233<br>(-1.31) | -0.596*<br>(-1.79) | 0.087<br>(0.37)        | 0.025<br>(0.09)   | -0.065<br>(-0.22)   | 0.097<br>(0.37)   | 0.007<br>(0.02)   | 0.049<br>(0.15)   |
| Stateownership <sub>-1</sub> ×ROA <sub>-1</sub>    | 1.931<br>(0.50)          |                      |                     |                    |                   |                    | -5.564<br>(-1.45)      |                   |                     |                   |                   |                   |
| Stateownership <sub>-1</sub> ×ROE <sub>-1</sub>    |                          | -0.222***<br>(-2.95) |                     |                    |                   |                    |                        | -0.779<br>(-0.49) |                     |                   |                   |                   |
| Stateownership <sub>-1</sub> ×PosRet <sub>-1</sub> |                          |                      | -3.428**<br>(-2.43) |                    |                   |                    |                        |                   | -0.621**<br>(-2.49) |                   |                   |                   |

(Continued...)

<sup>8</sup> To save space, the firm controls and the coefficient on the constant (insignificant) are not shown (results are available upon request).



## Appendix III

Replicate of Table 5, which examines the changes in executive compensation for the whole sample.

|  | (H3 v1)            | (H3 v2)             | (H3 v3)             | (H3 v1)            | (H3 v2)           | (H3 v3)             |
|--|--------------------|---------------------|---------------------|--------------------|-------------------|---------------------|
| <b>Dependent variable: ΔExeccomp</b>                   |                    |                     |                     |                    |                   |                     |
| <b>ROA<sub>-1</sub></b>                                | -0.043<br>(-0.05)  |                     |                     | -0.239<br>(-0.28)  |                   |                     |
| <b>ROE<sub>-1</sub></b>                                |                    | -0.013<br>(-0.04)   |                     |                    | -0.072<br>(-0.20) |                     |
| <b>PosRet<sub>-1</sub></b>                             |                    |                     | 0.222**<br>(2.46)   |                    |                   | 0.233**<br>(2.37)   |
| <b>NegRet<sub>-1</sub></b>                             |                    |                     | -0.121<br>(-0.81)   |                    |                   | -0.290*<br>(-1.80)  |
| <b>Stateownership<sub>-1</sub></b>                     | 0.103<br>(0.79)    | 0.098<br>(0.91)     | 0.233<br>(1.06)     | 0.070<br>(0.59)    | 0.080<br>(0.72)   | 0.118<br>(1.05)     |
| <b>SOEdummy<sub>-1</sub></b>                           | -0.179*<br>(-1.86) | -0.106<br>(-1.12)   | -0.188**<br>(-2.00) | -0.174*<br>(-1.81) | -0.094<br>(-0.95) | -0.085<br>(-0.72)   |
| <b>Stateownership<sub>-1</sub>×ROA<sub>-1</sub></b>    | -0.271<br>(-0.14)  |                     |                     |                    |                   |                     |
| <b>Stateownership<sub>-1</sub>×ROE<sub>-1</sub></b>    |                    | -0.136**<br>(-3.78) |                     |                    |                   |                     |
| <b>Stateownership<sub>-1</sub>×PosRet<sub>-1</sub></b> |                    |                     | -0.611**<br>(-2.37) |                    |                   |                     |
| <b>Stateownership<sub>-1</sub>×NegRet<sub>-1</sub></b> |                    |                     | -0.133<br>(-0.24)   |                    |                   |                     |
| <b>SOEdummy<sub>-1</sub>×ROA<sub>-1</sub></b>          |                    |                     |                     | 0.853<br>(1.18)    |                   |                     |
| <b>SOEdummy<sub>-1</sub>×ROE<sub>-1</sub></b>          |                    |                     |                     |                    | 0.031<br>(1.11)   |                     |
| <b>SOEdummy<sub>-1</sub>×PosRet<sub>-1</sub></b>       |                    |                     |                     |                    |                   | -0.221**<br>(-2.47) |
| <b>SOEdummy<sub>-1</sub>×NegRet<sub>-1</sub></b>       |                    |                     |                     |                    |                   | 0.306<br>(1.45)     |
| <b>Boardsize<sub>-1</sub></b>                          | 0.004<br>(0.20)    | 0.005<br>(0.22)     | 0.006<br>(0.26)     | 0.006<br>(0.26)    | 0.005<br>(0.23)   | 0.004<br>(0.18)     |
| <b>Outside_directors<sub>-1</sub></b>                  | 0.006<br>(0.11)    | 0.003<br>(0.06)     | -0.000<br>(-0.00)   | 0.001<br>(0.02)    | 0.002<br>(0.04)   | 0.007<br>(0.12)     |
| <b>D_CEO_chairman<sub>-1</sub></b>                     | -0.051<br>(-1.02)  | -0.036<br>(-0.74)   | -0.054<br>(-1.13)   | -0.050<br>(-1.00)  | -0.040<br>(-0.79) | -0.055<br>(-1.20)   |
| <b>Firm_age<sub>-1</sub></b>                           | 0.065<br>(0.26)    | -0.025<br>(-0.10)   | 0.122<br>(0.49)     | 0.071<br>(0.28)    | -0.015<br>(-0.06) | 0.109<br>(0.44)     |
| <b>Firmsize<sub>-1</sub></b>                           | 0.039<br>(1.29)    | 0.030<br>(0.92)     | 0.045<br>(1.47)     | 0.046<br>(1.47)    | 0.034<br>(1.00)   | 0.047<br>(1.54)     |
| <b>CEO_gender<sub>-1</sub></b>                         | 0.028<br>(0.09)    | 0.059<br>(0.19)     | 0.085<br>(0.30)     | 0.058<br>(0.19)    | 0.057<br>(0.18)   | 0.083<br>(0.29)     |
| <b>LogCEOage<sub>-1</sub></b>                          | -0.463<br>(-0.90)  | -0.617<br>(-1.16)   | -0.632<br>(-1.26)   | -0.456<br>(-0.89)  | -0.650<br>(-1.22) | -0.654<br>(-1.29)   |
| <b>Constant</b>  | 0.799<br>(0.39)    | 1.815<br>(0.84)     | 1.071<br>(0.52)     | 0.583<br>(0.28)    | 1.833<br>(0.86)   | 1.108<br>(0.52)     |
| <b>Observations</b>                                    | 798                | 769                 | 798                 | 798                | 769               | 798                 |
| <b>R-squared</b>                                       | 0.146              | 0.148               | 0.169               | 0.150              | 0.147             | 0.157               |