This is the peer reviewed author accepted manuscript (post print) version of a published work that appeared in final form in:

Ullah, Farid, Jiang, Ping, Shahab, Yasir, Li, Hai-Xia & Xu, Lei 2019 'Block ownership and CEO compensation - Does board gender diversity matter?', *Applied economics* online, pp. 1-15

This un-copyedited output may not exactly replicate the final published authoritative version for which the publisher owns copyright. It is not the copy of record. This output may be used for non-commercial purposes.

The final definitive published version (version of record) is available at:

https://doi.org/10.1080/00036846.2019.1659490

General Rights
Copyright and moral rights for the publications made accessible in the Research Outputs Repository are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the persistent link identifying the publication in the Research Outputs Repository

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Block ownership and CEO compensation: Does board gender diversity matter?

Farid Ullah
Assistant Professor,
School of Accounting, Xijing University
Xi'an, Shaanxi, China
faridkhattak34@yahoo.com; 20180224@xijing.edu.cn

Ping Jiang **(Corresponding author)**
Associate Professor
School of International Trade and Economics,
University of International Business and Economics,
Beijing, China
Phone: +86 10 6449 3522
Ping.jiang@uibe.edu.cn

Yasir Shahab
Assistant Professor,
School of Accounting, Xijing University
Xi'an, Shaanxi, China
roulett360@yahoo.com; 20180223@xijing.edu.cn

Hai-Xia Li
Associate Professor
School of Accounting, Xijing University
Xian, Shanxi, China
lihaixia@xijing.edu.cn

Lei Xu
Senior Lecturer
School of Commerce, University of South Australia
Adelaide, Australia
Lei.Xu@unisa.edu.au

Block ownership and CEO compensation: Does board gender diversity matter?

Abstract

This study investigates the effect of block ownership (institutions and state) on CEO compensation and the extent to which gender diversity in the corporate board moderates this nexus during the period from 2008 to 2016 in all Chinese A-share listed firms. The empirical findings of our study are twofold. First, our results indicate that institutional ownership has a positive and significant impact on CEO compensation, while state ownership has a negative and significant impact on CEO compensation. Second, by analyzing the moderating role of gender diversity, our results show that gender diversity negatively (positively) moderates the relationship between institutional (state) ownership and CEO compensation. These findings are robust with the use of an alternative measure of CEO compensation and estimation techniques. Overall, our study supports the resource dependence perspective of the moderating role of board gender diversity.

Keywords: institutional ownership; state ownership; gender diversity; CEO compensation; China

1. Introduction

The determinants of CEO compensation in both developed and developing markets have been extensively debated in light of different theoretical perspectives (Chhaochharia and Grinstein 2009; Core, Holthausen, and Larcker 1999; Sheikh, Shah, and Akbar 2017; Yermack 1996). However, as mentioned by Jiang and Kim (2015), it might be suitable for studies in the Chinese context to use Western theories and concepts to elaborate upon their empirical findings only occasionally because the Chinese economy entirely differs from other markets due to its diverse legal, financial, social, and institutional environments. Therefore, following these recommendations, recently, CEO compensation in China has received considerable attention due to the large emphasis on corporate governance (board of directors and ownership) reforms (Chen, Ezzamel, and Cai 2011; Conyon and He 2012; Conyon, He, and Zhou 2015; Firth, Fung, and Rui 2007). Evidently, these previous studies focused on whether the key determinants of CEO compensation emerging in other economies based on almost similar corporate governance issues also apply in China.

While extending the previous empirical literature (Chen, Ezzamel, and Cai 2011; Conyon and He 2011; Firth, Fung, and Rui 2007), the purpose of this study is to investigate the effect of institutional and state ownership on CEO compensation by collecting data related to A-share listed firms over the period from 2008 to 2016. In addition, we further explore how gender diversity, which has been acknowledged as an effective corporate governance mechanism (Adams and Ferreira 2009; Liu, Wei, and Xie 2014; McGuinness, Vieito, and Wang 2017), moderates the aforementioned relationship. The theoretical insights of our study are drawn from the agency and resource dependence perspectives (Hillman, Cannella, and Harris 2002; Jensen and Meckling 1976; Pfeffer and Salancik's 1978). In contrast to developed markets, we provide the following arguments in support of the importance of our research questions.

First, the agency perspective (Jensen and Meckling 1976) emphasizes the substantial role of corporate governance mechanisms (including institutional ownership) in protecting shareholders' interest by efficiently and effectively monitoring the management of firms. The agency view (Hartzell and Starks 2003; Jensen and Meckling 1976) claims that institutional investors can effectively monitor managers as they are professionals who are well informed about firm dynamics and hold a significant amount of money belonging to other people to whom they are liable to increase their return. Drawing upon agency theory, previous studies have shown that institutional ownership enhances (deteriorates) CEO compensation in different economies (Croci, Gonenc, and Ozkan 2012; Fernandes et al. 2012; Hartzell and Starks 2003). On the one hand, it is argued that institutional investors enhance the monitoring quality of firms and link CEO compensation to firm performance (Hartzell and Starks 2003). On the other hand, Fernandes et al. (2012) highlighted that institutional investors, who are believed to enhance corporate governance by providing strong monitoring, might appear counterintuitive because they can also enhance the CEO expected pay. Similarly, institutional investors are important contributors to the Chinese stock market (Firth et al. 2016; Jiang and Kim 2015). However, Jiang and Kim (2015) argued that compared to developed markets, the turnover ratio of institutional investors in China is very high, suggesting that these investors switch their interests very quickly and do not hold the stock of a firm for a long period. In addition, Jiang and Kim (2015) and Wen et al. (2019) stated that in China, institutional investors play no role in reducing agency problems by not efficiently monitoring managers and enhancing corporate governance due to their short term interest and minority shareholding in a firm. Thus, based on these

diverse findings regarding institutional investors in developed markets (in which institutional investors might enhance corporate governance) and their short term interest in the Chinese market, we further extend the discussion and determine how institutional ownership affects CEO compensation in China.

Second, a key difference between firms in other countries and those in China is the ultimate ownership of firms. In many markets (e.g., US), most listed firms have a dominant shareholder who can play an important role in firm activities by controlling the firms' strategies and policies through various means, such as board representation and voting rights (La Porta, Lopez-de-Silanes, and Shleifer 1999; Shleifer and Vishny 1986, 1997). However, in China, the state is a dominant shareholder. Moreover, in contrast to developed markets in which dominant shareholders significantly reduce agency problems, the empirical literature concerning the Chinese context suggests that state-owned firms face severe corporate governance and agency problems (Chen et al. 2017; Conyon and He 2011). Therefore, to reduce state ownership and improve the corporate governance of firms, the Chinese government introduced various plans during different periods (e.g., the opening of the stock market in 1990). In addition to the other plans, the split share reform in 2005 achieved tremendous success and reduced state ownership to a great extent. However, most firms in China continue to be owned by the state (Jiang and Kim 2015). Regarding CEO compensation in state-owned firms, previous studies (Conyon and He 2012; Firth, Fung, and Rui 2007) have shown that the CEOs of state-owned firms are government employees (bureaucrats) who are appointed for a specific duration and provided a fixed salary. These studies (Conyon and He 2011; Firth, Fung, and Rui 2007) have analyzed the relationship between state ownership and CEO compensation by collecting data from the pre-reform period (before 2005). However, Jiang and Kim (2015) found that CEO compensation in state-owned firms in China has rapidly and dramatically changed after the split share reforms. As the data in our study were collected during the period from 2008 to 2016, considering the argument proposed by Jiang and Kim (2015), we investigate how state ownership affects CEO compensation in China.

Third, resource dependence theory (Pfeffer and Salancik's 1978; Hillman, Cannella, and Harris 2002) highlights the importance of female directors in maximizing the corporate governance mechanism protecting shareholders' interest by efficiently and effectively monitoring the management of firms. The resource dependence view

(Hillman, Cannella, and Harris 2002; Pfeffer and Salancik's 1978) claims that the presence of a female on the corporate board plays a significant role in reducing agency problems and achieving the desired objectives of firms through the following four different channels: (a) advice and counsel, (b) legitimacy, (c) access to information, and (d) commitment or support from outside elements. Thus, considering the importance of female directors, legislation regarding gender quotas has been introduced worldwide. For example, the Norwegian parliament passed a law in 2003 that requires all listed firms to have at least 40% female directors by 2008. Similarly, in 2018, policymakers in California enacted a bill stating that financial penalties will be imposed on listed companies if they fail to have at least one female director by the end of 2019[1]. Moreover, in addition to these legislations and theoretical importance, the empirical literature suggests that female directors play an important role in enhancing the monitoring quality, improving corporate governance, and protecting shareholder and stakeholder interests (Adams and Ferreira 2009; Cumming, Leung, and Rui 2015; Gul, Srinidhi, and Ng 2011), specifically in China (Liu, Wei, and Xie 2014). Thus, based on these studies (Chen et al. 2017; Conyon and He 2012; Jiang and Kim 2015), which argue that institutional and state ownership have some serious issues in improving corporate governance, we investigate whether the presence of female directors, which is believed to improve corporate governance in China (Liu, Wei, and Xie 2014; McGuinness, Vieito and Wang 2017), can moderate the relationship between the ownership structure (institutional and state) and CEO compensation.

Consequently, we contribute to the existing literature in the following different ways. *First*, in China, institutional owners are short term investors who are not interested in firm monitoring; thus, previous studies have not analyzed how institutional ownership affects CEO compensation. Therefore, this pioneer study is the first to analyze the impact of institutional ownership on CEO compensation in China. *Second*, as the compensation of CEOs has rapidly increased after the split share reforms, by collecting data during the post-reform period, we examine how state ownership affects CEO compensation. *Third*, we investigate how female directors who are expected to enhance the monitoring quality and improve the corporate governance of a firm can moderate the relationship between the ownership structure (institutional and state) and CEO compensation. The empirical findings of this study show that institutional

[1] http://www.ntmarkets.com/ (see Ye et al., 2019)

ownership has a positive and significant impact on CEO compensation, while state ownership has a negative and significant impact on CEO compensation. From the female director's perspective, the empirical findings suggest that female directors enhance the monitoring quality and reduce agency problems by negatively (positively) moderating the relationship between institutional (state) ownership and CEO compensation.

The remainder of this paper is organized as follows. Section two discusses the hypotheses of the study. Section three presents the data and variables. Section four provides the empirical results, while section five concludes the study.

2. Hypothesis Development

Theoretically, Jensen and Meckling's (1976) agency view focuses on the relationship between shareholders and CEOs of firms. According to this theory, CEOs are agents of shareholders whose main responsibility is to protect and maximize the shareholders' interests. However, conflicts of interest arise when CEOs attempt to maximize their own benefits (compensation/empire building) rather than maximize the shareholders' wealth. Consistent with this view, both the theoretical and empirical literature recommend the adoption of best corporate governance practices to reduce agency problems and maximize shareholders' wealth (Chizema et al. 2015; Shleifer and Vishny 1986, 1997). In addition to other governance factors, institutional investors have been highlighted as an important tool for improving corporate governance by effectively monitoring the management of firms (Bebchuk and Fried 2004; Hartzell and Starks 2003). It has been suggested that compared to other investors, their title as institutional investors does not provide them more power, but generally, institutional investors have significant holdings and a fiduciary duty to increase the returns of their investors. Thus, institutional investors are expected to monitor management more effectively than others by playing an important role in limiting the CEO's power in compensation setting (Bebchuk and Fried 2004; David, Kochhar and Levitas 1998; Khan, Dharwadkar, and Brandes 2005).

Evidently, few empirical studies have tested the relationship between institutional ownership and CEO compensation in both the US and other countries. On the one hand, Hartzell and Starks (2003) analyzed the relationship between institutional investors and executive compensation in the US context. These authors argued that institutional

investors play an important monitoring role in mitigating agency problems by linking executive compensation to firm performance. Similarly, Khan, Dharwadkar, and Brandes (2005) found that the largest institutional investors have a negative and significant impact on CEO compensation, while institutional investor dispersion has a positive and significant impact on CEO compensation. On the other hand, by investigating the relationship between institutional ownership and CEO pay in the US and worldwide, Fernandes et al. (2012) found that institutional investors help increase CEO compensation. These authors further argue that using institutional ownership as a tool for strong monitoring seems counterintuitive because their shareholding leads to increases in CEO pay. Similarly, Croci, Gonenc, and Ozkan (2012) analyzed the impact of institutional ownership on CEO compensation in continental Europe and found a positive and significant relationship between institutional ownership and CEO compensation. These authors also stated that institutional ownership does not provide effective monitoring because most European firms are owned by family members.

However, in contrast to developed countries, institutional investors do not have large shareholdings or long term interest in Chinese firms (Jiang and Kim, 2015). Although Firth et al. (2016) found that institutional investors can exert a positive influence over firms, Jiang and Kim (2015) criticize such findings by highlighting that it might be possible that such studies did not properly address the reverse causality issue. Therefore, rather than simply drawing their recommendations based on above average profitability, researchers should determine the specific channels through which these investors can affect firm outcomes. In addition, Jiang and Kim (2015) and Wen et al. (2019) stated that institutional investors in China hold stocks for a short duration due to stock market volatility and vibrancy. Hence, such actions (short term holding) of institutional investors does not provide the incentives to exert oversight over firms. Therefore, drawing upon previous empirical studies (Croci , Gonenc, and Ozkan 2012; Fernandes et al. 2012; Jiang and Kim 2015; Wen et al. 2019), we argue that institutional investors may not be an effective governance tool for monitoring management (specifically CEOs of firms) in China for two reasons. First, institutional investors do not have the power to monitor CEOs because they hold a small percentage of shares. Second, institutional investors are buy-and-sell speculators rather than buy-and-hold investors as they hold stock for a short duration, suggesting that such investment behaviors do not provide efficient monitoring incentives. If institutional investors do

not provide effective monitoring, we could expect firms with greater institutional ownership to have managerial compensation greater than expected given their performance, size, industry, investment opportunities and age. Following these arguments, we develop the following hypothesis:

Hypothesis 1: There is a positive and significant relationship between institutional ownership and CEO compensation.

Following the agency theory perspective, the corporate governance literature has also acknowledged ownership concentration as a prominent determinant mitigating agency problems by improving the monitoring quality of firms (Demsetz 1986; Shliefer and Vishney 1997). Shliefer and Vishney (1997) contend that concentrated owners mitigate agency problems by dictating firm decisions because they have both power (high voting rights) and incentives, which could help them effectively monitor the management of firms. However, it has been argued that concentrated ownership might reflect poor governance because they also expropriate the wealth of minority shareholders while maximizing their own benefits (Fama and Jensen 1983).

Empirically, Mehran (1995) analyzed the relationship among executive compensation, ownership structure, and firm performance. He stated that block holders who own more that 5 percent of the shares of a firm have a negative impact on executive compensation. Similarly, Core, Holthausen, and Larcker (1999) found that both inside and outside block holders negatively affect executive compensation.

However, the discussion regarding the role of block holding is entirely different from that in other markets because in China, the state is still a major blockholder despite various reforms during different periods. Previous empirical studies (Conyon and He 2011, 2012; Firth, Fung, and Rui 2007) in the Chinese context show that state ownership has a negative and significant impact on CEO compensation. Firth, Fung, and Rui (2007) argued that this negative relationship does not imply that state-owned firms have an effective corporate governance structure and highlight the fact that the CEOs of state owned firms are state employees who are appointed for a specific duration with a fixed salary. In addition, Jiang and Kim (2015) highlighted that although CEO compensation in state-owned firms has recently dramatically increased, CEOs of state-owned firms still receive a lower pay than those of private firms of the same size. However, Xu et al. (2014) stated that in addition to monetary benefits, CEOs of state-

owned firms are more interested in perks (such as travel, business entertainment, and car allowances). Thus, based on these findings, we argue that even though recent reforms have increased CEO compensation to a great extent, CEOs of state-owned firms receive a lower compensation than those of private-owned firms. Accordingly, we developed the following hypothesis:

Hypothesis 2: There is a negative and significant relationship between state ownership and CEO compensation.

A possible solution to mitigating the agency problem is creating an effective corporate board such that the opportunistic actions of managers can be monitored more efficiently (Fama and Jensen 1983). Fama (1980) also stated that the corporate board is an important internal governance tool that can be used to efficiently monitor management and protect shareholder interests by providing impartial advice based on their knowledge and experience. Based on this view, the theoretical literature (Hillman, Cannella, and Harris 2002; Hillman, Shropshire, and Cannella 2007; Pfeffer and Salancik's 1978) concerning resource dependence theory demonstrates that gender diversity on corporate boards can improve the monitoring quality by providing four types of benefits and resources, namely, "advice and counsel", "legitimacy", "information channels between external organizations and firms", and "professional access to commitments or support from important elements outside the firm". Hillman, Cannella, and Harris (2002) argued that female directors are inclined to be more educated than their male counterparts; therefore, female directors are expected to have diverse cognitive frames at the board level due to differences in experience and knowledge.

Consequently, the empirical literature related to developed markets concerning board gender diversity suggests that board gender diversity positively affects the monitoring quality (Adams and Ferreira 2009; Gul, Srinidhi, and Ng 2011), minimizes the occurrence and severity of fraud (Cumming, Leung, and Rui 2015), and reduces earnings management (Gull et al. 2018). In addition, regarding the relationship between gender diversity and CEO compensation in the USA, Bugeja, Matolcsy, and Spiropoulos (2016) found a negative association between gender diversity in compensation committees and CEO compensation. Lucas-Perez et al. (2015) analyzed

the relationship between board gender diversity and manager pay in Spanish firms. These authors found that board gender diversity has a positive and significant impact by linking manager compensation to firm performance.

Similarly, in China, the impact of gender diversity on various financial and non-financial outcomes has also been analyzed, and gender diversity has been found to increase firm performance (Liu, Wei, and Xie 2014) and enhance CSR activities (McGuinness, Vieito and Wang 2017). Moreover, Usman et al. (2018) utilized data from Chinese firm during the 2006–2015 period and argued that the presence of females in compensation committees reduces CEO pay. Hence, the empirical findings in both developed and emerging markets, such as China, show that gender diverse boards not only play an important role in corporate financial and non-financial outcomes but also improve the monitoring quality of firms (Adams and Ferreira 2009; Gul, Srinidhi, and Ng 2011; McGuinness, Vieito and Wang 2017; Liu, Wei, and Xie 2014).

Based on these findings, we further extend the empirical literature concerning the role of female directors and argue that female directors can be used as an essential tool to moderate the relationship between institutional (state) ownership and CEO compensation. Following the argument of the resource dependence perspective (Hillman, Shropshire, and Cannella 2007; Pfeffer and Salancik's 1978), we hypothesize that female directors can play a beneficial substitutional role in enhancing the monitoring quality and negatively moderating the relationship between institutional ownership and CEO compensation. Therefore, we developed the following hypothesis regarding the moderating role of gender diverse boards in the relationship between institutional ownership and CEO compensation.

Hypothesis 3: A higher proportion of female directors negatively moderates the relationship between institutional ownership and CEO compensation.

However, in state-owned firms with CEOs who already have a lower compensation, it seems illogical that gender diverse boards could further reduce the negative relationship between SOEs and CEO compensation. As discussed by Lucas-Perez et al. (2015), female directors attempt to link CEO compensation to firm performance. Similarly, Buck, Liu, and Skovoroda (2008) argued that in China, the board of listed firms are free to appoint an executive and set their compensation. Therefore, considering these findings, we argue that if boards of directors are free to appoint

executives, it might be possible for female directors (who are believed to enhance the governance quality) in SOEs to play a significant role by linking CEO compensation to firm performance. In addition, we expect female directors in SOEs (in which CEOs already receive a lower compensation) to positively moderate the relationship between SOEs and CEO compensation. In light of the above argument, we develop the following hypothesis:

Hypothesis 4: A higher proportion of female directors positively moderates the relationship between state ownership and CEO compensation.

3. Data and Variables

Data

This study uses firm-level panel data of all A-Share firms listed on the Shenzhen and Shanghai Stock Exchanges during the 2008–2014 period. The data of all variables used in this study are collected from the China Stock Market and Accounting Research (CSMAR) database. The CSMAR database is a well-known financial database that contains accounting and corporate governance data and has been largely used in corporate governance studies in China (Conyon and He 2012; Conyon, He, and Zhou 2015). Furthermore, we removed firms that (a) do not report CEO compensation or (b) have different accounting information, such as financial institutions. Finally, by winsorizing the variables at 1 percent, we obtained 17,056 observations during the specified period.

CEO Compensation

We followed the approach described by Conyon and He (2012) and Conyon, He, and Zhou (2015) and measured CEO compensation by the total salaries provided to CEOs. In developed markets, CEO compensation is measured as the sum of salaries, ownership of stocks, and stock options. However, CEO compensation is measured by the total salaries because the concept of other forms of compensations, such as stocks and equity-based compensation, is still at a nascent stage in China, and for most firms, the data are either missing or insufficient for conducting a panel study of the stated period. Furthermore, according to previous studies (Conyon, He, and Zhou 2015; Chen, Ezzamel, and Cai 2011), the total salaries of CEOs include the base salaries, bonuses, and commissions, and such studies suggest that CEO salaries represent the best measure covering compensation-related issues.

Institutional and SOE ownership

According to the previous literature (Conyon and He 2011; Wen et al. 2019), we measured institutional and state ownership as follows. First, institutional ownership is measured by the sum of the total proportion of outstanding shares held by different institutions, such as mutual funds, insurance companies, qualified foreign institutional investors (QFIIs), social security funds, and all other institutions at the end of the firm year. Second, state ownership is measured by a dummy variable equal to '1' if the state is the ultimate controller of the firm and '0' otherwise.

Gender Diversity

We used female directors as a moderator to investigate how gender diversity moderates the relationship between institutional (state) ownership and CEO compensation. We followed a previously described method (McGuinness, Vieito and Wang 2017) and measured female directors as the proportion of total female directors on the corporate board.

Control Variables

In this study, based on previous studies, we also controlled for some variables representing firm characteristics, board of directors and CEO characteristics that are expected to affect CEO compensation (Chizema et al. 2015; Conyon and He 2012; Conyon, He, and Zhou 2015; Firth, Fung, and Rui 2007). The firm characteristics variables include return on assets (*ROA*), leverage (*Leverage*), firm size (*Firmsize*), market to book ratio (*MTB*), and firm age (*Firmage*). '*ROA*' is measured by earnings before interest and taxes divided by the total assets, '*Leverage*' is calculated by the total debt divided by the total assets, '*Firmsize*' is defined as the natural log of a firm's total assets, and '*Firmage*' is calculated as the years that have elapsed since a firm's foundation. The board of directors variables include board size and board independence. We controlled for these variables because previous empirical studies in the Chinese context suggest that these two variables do not play an important role in reducing the agency problem and improving the monitoring quality. '*B_size*' is measured by the total number of board of directors in the firm. '*B_ind*' is measured by the proportion of independent directors on the board. In addition, the CEO characteristics variables include CEO duality, COE age (*CEO_age*), CEO gender (*CEO_gender*), CEO foreign experience (*CEO_exp*), and CEO political connections (*CEO_policonnec).* '*CEO_dual*'

is calculated by a dummy variable equal to '1' if the CEO is also the chairman of the board and '0' otherwise. '*CEO_age*' is measured by the age of the CEO. '*CEO_gender*' is a dummy variable equal to '1' if the CEO is a male and '0' if the CEO is a female. '*CEO_exp*' is a dummy variable equal to '1' if the CEO has either worked or studied in a foreign country and '0' otherwise. '*CEO_policonnec*' is a dummy variable equal to '1' if the CEO is a former government employee and '0' otherwise. However, regarding the CEO characteristics variables, we only used *CEO_dual* in all empirical analyses, while the remaining variables were used to assess the bias due to the omitted variables.

4. Empirical Results

Descriptive Statistics

Table 1 shows the descriptive statistics of our main variables by year. This table indicates that there is a marginal increase in the sample size over time. The CEO compensation values exhibit a consistent increase during the specific period and range from a mean value of US dollar 68,016.82 in 2008 to US dollar 1,18,221.62 in 2016. The yearly average values of institutional ownership show marginal increases and decreases during the stated period, and the yearly average values of state ownership exhibit a constant decrease from 60 percent in 2008 to 37 percent in 2016. In addition, the yearly average values of gender diversity, which is our moderating variable, also show that the presence of females on corporate boards in China increased (from 11 percent in 2008 to 17 percent in 2016) over time.

<Insert Table 1 about Here>

Table 2 presents the descriptive statistics of all variables included in this study. The mean value of CEO compensation shows that on average, a CEO earns approximately 97,987 US dollar, which seems quite low compared to the compensation of CEOs in developed markets. However, by converting CEO compensation from US dollars to RMB, the mean value in our study is quite similar to that reported by Conyon, He, and Zhou (2015). The mean value of institutional ownership shows that on average, institutional owners hold 5 percent of firms' outstanding shares, which is quite low compared to developed markets. The mean value of state ownership indicates that on average, 43 percent of firms in China are owned by the state. This finding shows that despite the various reforms, the state is still a dominant shareholder in most firms in

China. The mean value of female directors is almost consistent with that in a previous study (McGuinness, Vieito and Wang 2017) and shows that on average, 15 percent of directors on corporate boards are females. Moreover, the mean values of the control variables related to firm characteristics show that on average, each firm has an *ROA* of .039, *Leverage* of 44 percent, a size (log of the firm's total assets) of 21.93, an *MTB* of .51, and *Firmage* of approximately 16 years. The mean values of the corporate governance variables, which are also used as control variables, show that on average, each firm has 9 board of directors, and 37 percent of the directors are independent. The mean value of *CEO_dual* shows that on average, 23 percent of CEOs in Chinese listed firms hold dual (both CEO and Chairman) positions simultaneously.

<Insert Table 2 about Here>

Regression Results

Table 3 shows the regression results of our first and second hypotheses, including the control variables, industry, and year fixed effects. The first two models show the relationship between institutional ownership and CEO compensation, while the third and fourth models show the association between state ownership and CEO compensation. In models 1 and 2, the coefficient values between institutional ownership and CEO compensation are positive and significant (coefficients (0.014, 0.013), p-value (0.000)). This finding indicates that an increase in institutional ownership could lead to higher CEO compensation. Moreover, in models 3 and 4, regarding hypothesis 2, we found that state ownership is negatively and significantly related (coefficients (-0.055, -0.069), p-value (0.000)) to CEO compensation, suggesting that compared to private firms, CEOs of state-owned firms are more likely to receive lower compensation. In models 2 and 4, based on previous research investigating CEO compensation (Conyon and He 2012; Conyon, He, and Zhou 2015), we also controlled for some additional variables to determine whether the inclusion of these variables in our regression model affects our main results. However, the findings suggest that our main results remain similar after controlling for these variables.

The above empirical findings support our first and second hypotheses. Thus, the policy implication of our findings is that firms with high institutional (state) ownership are more likely to increase (decrease) CEO compensation. The findings of our study regarding institutional ownership are consistent with previous studies (Jiang and Kim 2015; Wen et al. 2019) arguing that institutional investors in China are not interested in

enhancing the monitoring quality of firms due to their short term investment behaviors, which could ultimately lead to higher CEO compensation. However, regarding state-owned firm, based on previous findings (Conyon and He 2012; Firth, Fung, and Rui 2007), we argue that although it might be possible that the split shares reforms in China increased CEO compensation in state-owned firms, the CEOs of such firms still receive a lower compensation than those of private firms.

<Insert Table 3 about Here>

Moderating effect of gender diversity

Based on the resource dependency perspective (Pfeffer and Salancik's 1978; Hillman, Shropshire, and Cannella 2007) and other empirical studies (Adams and Ferreira 2009; Gul, Srinidhi, and Ng 2011; Liu, Wei, and Xie 2014) arguing that gender diverse boards enhance the monitoring quality and improve overall corporate governance of firms, we developed the third and fourth hypotheses to determine whether gender diversity at the board level moderates the relationship between institutional (state) ownership and CEO compensation. To test these hypotheses, we add the interactive variables of gender diversity and institutional (state) ownership to table (4). Models 1 and 3 in table (4) show the individual effects, while models 2 and 4 represent the interactive effect of gender diversity and institutional (state) ownership on CEO compensation. Here, the individual effect of institutional (state) ownership on CEO compensation is similar to that found in table 3, while the individual effect of gender diversity shows that gender diversity has a negative and significant (coefficients (-0.185, -0.214), and p-value (0.000)) impact on CEO compensation. Considering gender diversity a moderator, the empirical findings of models 2 and 4 indicate that gender diversity negatively and significantly moderates the relationship between institutional ownership and CEO compensation while positively and significantly moderating the relationship between state ownership and CEO compensation. Thus, based on these findings and previous theoretical and empirical studies (Pfeffer and Salancik's 1978; Hillman, Cannella, and Harris 2002; Hillman, Shropshire, and Cannella 2007; Liu, Wei, and Xie 2014; McGuinness, Vieito and Wang 2017), we argue that a high proportion of gender diversity on boards can be used as an effective governance tool to enhance the monitoring quality, thereby negatively moderating the positive impact of poor corporate governance variables (e.g., institutional ownership) on CEO compensation. In addition, it is not logical for female directors to further reduce CEO compensation in

organizations (state-owned firms) in which CEOs already receive a lower compensation. Based on Lucas-Perez et al. (2015), who suggest that gender diverse boards mostly prefer performance-based CEO compensation to reduce agency conflicts, we argue that it might be possible for gender diversity to positively moderate the negative relationship between state ownership and CEO compensation to reduce agency problems.

<Insert Table 4 about Here>

Endogeneity Issue

Although we considered additional variables in models 2 and 4 in table (3) to address the issue of bias due to omitted variables, we cannot completely ignore the issue of reverse causality and potential endogenous relationships that could affect our main findings. Therefore, to minimize the problem of reverse causality, we considered all independent variables at lag 1 and assessed the individual and interactive effects of gender diversity and the ownership structure (institutional and state) on CEO compensation. The empirical results of the interactive lagged effects of institutional ownership and gender diversity also confirm the main findings by showing that gender diversity negatively moderates the relationship between institutional ownership and CEO compensation. Similarly, by considering state ownership and gender diversity at lag 1 as shown in table (4), our results in table (5) further indicate that gender diversity positively and significantly moderates the relationship between state ownership and CEO compensation. Hence, these findings further strengthen our argument that the presence of female directors on corporate boards enhances the monitoring quality and reduces agency problems at the board level.

<Insert Table 5 about Here>

In Table 6, we employed the generalized method of moment (GMM) to further reduce the issue of potential endogeneity. By following Reed (2015), we used a lagged value of institutional (state) ownership as an instrumental variable for our endogenous variables (institutional and state ownership). Table 6 shows the results of the endogeneity check (both first and second stages) of the relationship between the ownership structure and CEO compensation. By using this technique, our results further show that gender diversity negatively moderates the relationship between institutional ownership and CEO compensation, while simultaneously, gender diversity positively

moderates the relationship between state ownership and CEO compensation. Therefore, these findings further validate the arguments developed in hypotheses 3 and 4.

<Insert Table 6 about Here>

Additional Analyses

Table (7) shows additional analyses performed by considering a different proxy for CEO compensation. Firth, Fung, and Rui (2007) stated that data regarding individual CEO compensation is difficult to find. Therefore, to measure CEO compensation, we followed Conyon and He (2011) and Usman et al. (2018) and measured CEO compensation by the total average salaries provided to the top three executives in a fiscal year. We considered the natural log of the top three executives' salaries to further analyze the impact of institutional and state ownership on CEO compensation and the moderating role of gender diversity in this relationship. The empirical findings presented in table (7) reveal that institutional (state) ownership has the same impact (positive/negative) on CEO compensation as that shown in the previous tables. Similarly, a higher proportion of gender diversity on boards negatively (positively) and significantly moderates the relationship between institutional (state) ownership and CEO compensation.

<Insert Table 7 about Here>

5. Conclusion

This study examines the relationship among institutional ownership, state ownership, and CEO compensation. In addition, based on resource dependence theory, we expected the presence of female directors on corporate boards to modify the relationship between institutional (state) ownership and CEO compensation because such directors can be used as an effective tool to improve corporate governance and enhance the monitoring quality.

While using data f Chinese listed firms, our findings suggest that institutional ownership has a positive and significant impact on CEO compensation, while state ownership has a negative and significant impact on COE compensation. By testing the moderating effect of gender diversity, we found that a high proportion of gender diversity on boards negatively (positively) moderates the relationship between

institutional (state) ownership and CEO compensation. In addition, we found similar results using more robust techniques to assess reverse causality, omitted-variable bias, and endogeneity. Overall, the findings of our study support the argument that institutional investors are unable to reduce agency problems in China because they are short term investors who are not interested in efficiently monitoring mangers. Additionally, our study supports the findings of the resource dependence perspective and other empirical studies showing that female directors reduce agency problems by efficiently monitoring managers of firms.

Despite its unique contributions, this study has certain limitations that need to be addressed in the future. First, this study measures CEO compensation by the total salary provided to CEOs of firms. In addition to salaries, CEOs are compensated in some other forms, such as equity, stocks, and options, but data regarding these variables were not sufficient to conduct a comprehensive study. Hence, it is also advised that the effect of ownership (institutional and state, etc.) variables should be assessed when executives are compensated in these forms (equity, stock, and options). Second, future studies can extend the existing evidence regarding institutional and state ownership and CEO compensation by integrating more governance variables, e.g., board of directors' foreign experience, board of directors' financial expertise, board busyness, etc.

This study attempted to extend the prior literature by revealing the determinants of CEO compensation in an emerging market. The policy implications of our study from the firm perspective is that firms should focus more on reducing agency problems to best protect their interests. Firms should encourage the representation of female directors as such directors will improve corporate governance and perform monitoring tasks more effectively and efficiently.

References

Adams, R., and D. Ferreira. 2009. "Women in the Boardroom and Their Impact on Governance and Performance." *Journal of Financial Economics* 94: 291–309.

Bebchuk, L. A., and J. M. Fried. 2004. "*Pay Without Performance: The Unfulfilled Promise of Executive Compensation*." Cambridge, MA: Harvard University Press.

Buck, T., X. Liu, and R. Skovoroda. 2008. "Top executive pay in China: a new laboratory for research." *Journal of International Business Studies* 39: 833-850.

Bugeja, M., Z. Matolcsy, and H. Spiropoulos. 2016. "The Association Between Gender-Diverse Compensation Committees and CEO Compensation." *Journal of Business Ethics* 139: 375–390.

Chen, J., M. Ezzamel, and Z. Cai. 2011. "Managerial Power Theory, Tournament Theory, and Executive Pay in China." *Journal of Corporate Finance* 17: 1176–1199.

Chen, R., S. El Ghoul., O. Guedhami, and H. Wang. 2017. "Do State and Foreign Ownership Affect Investment Efficiency? Evidence from privatizations." *Journal of Corporate Finance* 42: 408-421.

Chhaochharia, V., and Y. Grinstein. 2009. "CEO Compensation and Board Structure." *The Journal of Finance* 64: 231–261.

Chizema, A., X. Liu, J. Lu, and L. Gao. 2015. "Politically Connected Boards and Top Executive Pay in Chinese Listed Firms." *Strategic Management Journal* 36: 890-906.

Conyon, M., and L. He. 2011. "Executive Compensation and Corporate Governance in China." *Journal of Corporate Finance* 17: 1158–1175.

Conyon, M. J., and L. He. 2012. "CEO Compensation and Corporate Governance in China." *Corporate Governance: An International Review* 20: 575–592.

Conyon, M. J., L. He, and X. Zhou. 2015. "Star CEOs or Political Connections? Evidence from China's Publicly Traded Firms." *Journal of Business Finance & Accounting* 42: 412–443.

Core, J. E., R. W. Holthausen, and D. F. Larcker. 1999. "Corporate Governance, Chief Executive Officer Compensation, and Firm Performance." *Journal of Financial Economics* 51: 371–406.

Croci, E., H. Gonenc, and N. Ozkan. 2012. "CEO compensation, Family Control, and Institutional Investors in Continental Europe." *Journal of Banking and Finance* 36: 3318-3335.

Cumming, D., T. Y. Leung, and O. Rui. 2015. "Gender Diversity and Securities Fraud." *Academy of Management Journal* 58: 1572–1593.

David, P., R. Kochhar, and E. Levitas. 1998. "The Effect of Institutional Investors on the Level and Mix of CEO Compensation." *Academy of Management Journal* 41: 200-208.

Demsetz, H. 1986. "Corporate Control, Insider Trading, and Rates of Return." *The American Economic Review* 76: 313-316.

Fama, E. F. 1980. "Agency Problems and the Theory of the Firm." *Journal of Political Economy* 88: 288–307.

Fama, E. F., and M. C. Jensen. 1983. "Separation of Ownership and Control." *The Journal of Law and Economics* 26: 301–325.

Firth, M., P. M. Fung, and O. M. Rui. 2007. "How Ownership and Corporate Governance Influence Chief Executive Pay in China's Listed Firms." *Journal of Business Research* 60: 776–785.

Firth, M., J. Gao., J. Shen, and Y. Zhang. 2016. "Institutional Stock Ownership and Firms' Cash Dividend Policies: Evidence from China." *Journal of Banking and Finance, 65*, 91-107.

Fernandes, N., M. A. Ferreira, P. Matos, and K. J. Murphy. 2012. "Are US CEOs Paid More? New International Evidence." *The Review of Financial Studies* 26: 323-367.

Gull, A. A., M. Nekhili., H. Nagati, and T. Chtioui. 2018. "Beyond Gender Diversity: How Specific Attributes of Female Directors Affect Earnings Management." *The British Accounting Review* 50: 255-274.

Gul, F. A., B. Srinidhi, and A. C. Ng. 2011. "Does Board Gender Diversity Improve the Informativeness of Stock Prices?" *Journal of Accounting and Economics* 51: 314–338.

Hartzell, J. C., and L. T. Starks. 2003. "Institutional Investors and Executive Compensation." *The Journal of Finance* 58: 2351-2374.

Hillman, A. J., Jr. A. A. Cannella, and I. C. Harris. 2002. "Women and Racial Minorities in the Boardroom: How do Directors Differ?." *Journal of Management* 28: 747-763.

Hillman, A. J., C. Shropshire, and A. A. Cannella Jr. 2007. "Organizational Predictors of Women on Corporate Boards." *Academy of Management Journal* 50: 941-952.

Jensen, M. C., and W. H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3: 305–360.

Jiang, F., and K. A. Kim. 2015. "Corporate Governance in China: A Modern Perspective." *Journal of Corporate Finance* 32: 190-216.

Khan, R., R. Dharwadkar, and P. Brandes. 2005. "Institutional Ownership and CEO Compensation: A Longitudinal Examination." *Journal of Business Research* 58: 1078–1088.

La Porta, R., F. Lopez-de-Silanes, and A. Shleifer. 1999. "Corporate Ownership Around the World." *The Journal of Finance* 54: 471-517.

Liu, Y., Z. Wei, and F. Xie. 2014. "Do Women Directors Improve Firm Performance in China?" *Journal of Corporate Finance* 28: 169–184.

Lucas-Pérez, M. E., A. Mínguez-Vera., J. S. Baixauli-Soler., J. F. Martín-Ugedo, and G. Sánchez-Marín. 2015. "Women on the Board and Managers' Pay: Evidence from Spain." *Journal of Business Ethics* 129: 265-280.

McGuinness, P. B., J. P. Vieito, and M. Wang. 2017. "The Role of Board Gender and Foreign Ownership in the CSR Performance of Chinese Listed Firms." *Journal of Corporate Finance* 42: 75–99.

Mehran, H. 1995. “Executive Compensation Structure, Ownership, and Firm Performance.” *Journal of Financial Economics* 38: 163–184.

Pfeffer, J., and G. R. Salancik. 1978. “*The External Control of Organizations: A Resource Dependence Perspective*.” New York: Harper & Row.

Reed, W. R. 2015. “On the Practice of Lagging Variables to Avoid Simultaneity.” *Oxford Bulletin of Economics and Statistics* 77: 897-905.

Sheikh, M. F., S. Z. A. Shah, and S. Akbar. 2018. “Firm Performance, Corporate Governance and Executive Compensation in Pakistan.” *Applied Economics* 50: 2012–2027.

Shleifer, A., and R. W. Vishny. 1986. “Large shareholders and corporate control.” *Journal of Political Economy* 94: 461-488.

Shleifer, A., and R. W. Vishny. 1997. “A Survey of Corporate Governance.” *The Journal of Finance* 52: 737-783.

Usman, M., J. Zhang, F. Wang, J. Sun, and M. A. M. Makki. 2018. “Gender Diversity in Compensation Committees and CEO Pay: Evidence from China.” *Management Decision* 56: 1065–1087.

Wen, F., L. Xu., B. Chen., X. Xia, and J. Li. 2019. “Heterogeneous Institutional Investors, Short Selling and Stock Price Crash Risk: Evidence from China.” *Emerging Markets Finance and Trade*: 1-14.

Xu, N., X. Li., Q. Yuan, and K. C. Chan. 2014. “Excess Perks and Stock Price Crash Risk: Evidence from China.” *Journal of Corporate Finance* 25: 419-434.

Yermack, D. 1996. “Higher Market Valuation of Companies with a Small Board of Directors.” *Journal of Financial Economics* 40: 185–211.

Table 1: Sample distribution by year

This table presents the sample distribution of the mean values CEO compensation (CEO_comp), institutional ownership (Inst_own), state ownership (State_own), and gender diversity (Gender_div) variables by year.

Year	*Frequency*	*Percent*	*CEO_comp (US-dollar)*	*Inst_own*	*State_own*	*Gender_div*
2008	966	5.66	68016.820	0.066	0.610	0.115
2009	1302	7.63	68375.578	0.054	0.606	0.118
2010	1722	10.10	79544.269	0.055	0.506	0.146
2011	1998	11.71	91359.969	0.049	0.435	0.152
2012	2169	12.72	96641.331	0.043	0.413	0.155
2013	2174	12.75	105775.675	0.043	0.409	0.153
2014	2227	13.06	111276.429	0.045	0.389	0.169
2015	2236	13.11	117526.417	0.048	0.383	0.170
2016	2262	13.26	118221.624	0.050	0.379	0.177
Total	17,056	100	95193.124	0.050	0.439	0.155

Table 2: Descriptive Statistics

This table depicts the descriptive statistics for the main dependent, independent, and control variables. CEO_comp measures the total average salary paid to the CEO. Inst_own measure share held by institutional investors divided by total shares of the firm. State_own is a dummy variable equal to '1' if state is the ultimate controller of the firm and '0' otherwise. Gender_div is the total number of female directors divided by total directors. ROA is the earnings before interest and taxes divided by total assets. Leverage is equal to total debt divided by total assets. Firmsize is the natural log of firm total assets and MTB measures the market value of shares divided by total assets. Firmage is the year that has been elapsed since a firm foundation. B_size measures the total number of board of directors in a firm. B_ind is the proportion of independent directors on the board. CEO_dual equal to '1' if CEO is also chairman of the board, '0' otherwise.

Variable	*N*	*Mean*	*S.D*	*P25*	*P50*	*P75*
CEO_comp(US-dollar)	17056	97987	111000	43085	72299	115000
Inst_own	17056	0.049	0.048	0.015	0.036	0.068
State_own	17055	0.439	0.496	0	0	1
Gender_div	17002	0.155	0.148	0	0.111	0.222
ROA	17056	0.039	0.054	0.014	0.036	0.066
Leverage	17056	0.446	0.219	0.271	0.443	0.616
Firmsize	17056	21.93	0.431	21.78	21.78	22.05
MTB	17056	0.511	0.247	0.313	0.483	0.688
Firmage	17056	15.97	5.002	12	16	19
B_size	17003	8.840	1.792	8	9	9
B_ind	17002	0.371	0.055	0.333	0.333	0.400
CEO_dual	16869	0.235	0.424	0	0	0

Table 3: The impact of institutional and state ownership on CEO compensation

This table presents the regression results for the effect of institutional and state ownership on CEO compensation. Ln(CEO_comp) measures the natural log of total average salary paid to the CEO. Inst_own measure share held by institutional investors divided by total shares of the firm. State_own is a dummy variable equal to '1' if state is the ultimate controller of the firm and '0' otherwise. Gender_div is the total number of female directors divided by total directors. ROA is the earnings before interest and taxes divided by total assets. Leverage is equal to total debt divided by total assets. Firmsize is the natural log of firm total assets and MTB measures the market value of shares divided by total assets. Firmage is the year that has been elapsed since a firm foundation. B_size measures the total number of board of directors in a firm. B_ind is the proportion of independent directors on the board. CEO_dual equal to '1' if CEO is also chairman of the board, '0' otherwise. CEO_age Total age of CEO. CEO_gender equals '1' if CEO is a male and '0' otherwise. CEO_exp takes the value of '1' if CEO has foreign education or working experience and 0 otherwise. CEO_policonnec equals '1' if the CEO is a member NPC or CPPCC party 0 otherwise. The p-values have been reported in the brackets. ***, ** and * denotes 1%, 5% and 10% significance levels respectively.

	(1)	(2)	(3)	(4)
Variables	*Ln(CEO_comp)*	*Ln(CEO_comp)*	*Ln(CEO_comp)*	*Ln(CEO_comp)*
Inst_own	0.014***	0.013***		
	[0.000]	[0.000]		
State_own			-0.055***	-0.069***
			[0.000]	[0.000]
ROA	4.712***	4.665***	4.952***	4.896***
	[0.000]	[0.000]	[0.000]	[0.000]
Leverage	0.190***	0.198***	0.245***	0.256***
	[0.000]	[0.000]	[0.000]	[0.000]
Firmsize	2.379***	2.420***	2.612***	2.652***
	[0.000]	[0.000]	[0.000]	[0.000]
MTB	0.583***	0.564***	0.570***	0.555***
	[0.000]	[0.000]	[0.000]	[0.000]
Firmage	0.009***	0.009***	0.010***	0.009***
	[0.000]	[0.000]	[0.000]	[0.000]
B_size	0.048***	0.046***	0.052***	0.050***
	[0.000]	[0.000]	[0.000]	[0.000]
B_ind	0.424***	0.374***	0.464***	0.417***
	[0.000]	[0.002]	[0.000]	[0.001]
CEO_dual	0.084***	0.051***	0.071***	0.035**
	[0.000]	[0.001]	[0.000]	[0.028]
CEO_age		0.010***		0.011***
		[0.000]		[0.000]
CEO_gender		-0.002		0.004
		[0.957]		[0.883]
CEO_exp		0.211***		0.205***
		[0.000]		[0.000]
CEO_policonnec		0.012		0.009
		[0.461]		[0.579]

Constant	-40.030***	-41.321***	-44.981***	-46.299***
	[0.000]	[0.000]	[0.000]	[0.000]
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Observations	16,370	16,369	16,369	16,368
R-squared	0.179	0.188	0.174	0.184

Table 4: Moderating effect of gender diversity.

This table presents the regression results for the moderating effect of gender diversity on the relationship between institutional and state ownership on CEO compensation. Ln(CEO_comp) measures the natural log of total average salary paid to the CEO. Inst_own measure share held by institutional investors divided by total shares of the firm. State_own is a dummy variable equal to '1' if state is the ultimate controller of the firm and '0' otherwise. Gender_div is the total number of female directors divided by total directors. ROA is the earnings before interest and taxes divided by total assets. Leverage is equal to total debt divided by total assets. Firmsize is the natural log of firm total assets and MTB measures the market value of shares divided by total assets. Firmage is the year that has been elapsed since a firm foundation. B_size measures the total number of board of directors in a firm. B_ind is the proportion of independent directors on the board. CEO_dual equal to '1' if CEO is also chairman of the board, '0' otherwise. The p-values have been reported in the brackets. ***, ** and * denotes 1%, 5% and 10% significance levels respectively.

	(1)	(2)	(3)	(4)
Variables	*Ln(CEO_comp)*	*Ln(CEO_comp)*	*Ln(CEO_comp)*	*Ln(CEO_comp)*
Inst_own	0.013***	0.034***		
	[0.000]	[0.002]		
State_own			-0.064***	-0.388***
			[0.000]	[0.001]
Gender_div	-0.185***	-0.184***	-0.214***	-0.213***
	[0.000]	[0.000]	[0.000]	[0.000]
Inst_own× Gender_div		-0.132*		
		[0.051]		
State_own × Gender_div				2.082***
				[0.004]
ROA	4.712***	4.708***	4.948***	4.959***
	[0.000]	[0.000]	[0.000]	[0.000]
Leverage	0.181***	0.181***	0.237***	0.241***
	[0.000]	[0.000]	[0.000]	[0.000]
Firmsize	2.368***	2.386***	2.601***	2.606***
	[0.000]	[0.000]	[0.000]	[0.000]
MTB	0.574***	0.573***	0.563***	0.567***
	[0.000]	[0.000]	[0.000]	[0.000]
Firmage	0.009***	0.009***	0.010***	0.009***
	[0.000]	[0.000]	[0.000]	[0.000]
B_size	0.047***	0.047***	0.051***	0.051***
	[0.000]	[0.000]	[0.000]	[0.000]
B_ind	0.416***	0.418***	0.458***	0.475***
	[0.001]	[0.000]	[0.000]	[0.000]
CEO_dual	0.089***	0.088***	0.075***	0.076***
	[0.000]	[0.000]	[0.000]	[0.000]
Constant	-39.736***	-40.150***	-44.689***	-44.870***
	[0.000]	[0.000]	[0.000]	[0.000]

Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Observations	16,370	16,370	16,369	16,369
R-squared	0.180	0.180	0.176	0.176

Table 5: Reverse causality

This table presents the reverse causal results for the moderating effect of gender diversity on the relationship between institutional and state ownership, and CEO compensation. Ln(CEO_comp) measures the natural log of total average salary paid to the CEO. Inst_own measure share held by institutional investors divided by total shares of the firm. State_own is a dummy variable equal to '1' if state is the ultimate controller of the firm and '0' otherwise. Gender_div is the total number of female directors divided by total directors. ROA is the earnings before interest and taxes divided by total assets. Leverage is equal to total debt divided by total assets. Firmsize is the natural log of firm total assets and MTB measures the market value of shares divided by total assets. Firmage is the year that has been elapsed since a firm foundation. B_size measures the total number of board of directors in a firm. B_ind is the proportion of independent directors on the board. CEO_dual equal to '1' if CEO is also chairman of the board, '0' otherwise. The p-values have been reported in the brackets. ***, ** and * denotes 1%, 5% and 10% significance levels respectively.

	(1)	(2)	(3)	(4)
Variables	*Ln(CEO_comp)*	*Ln(CEO_comp)*	*Ln(CEO_comp)*	*Ln(CEO_comp)*
Inst_own	0.013***	0.040***		
	[0.000]	[0.001]		
State_own			-0.040**	-0.382***
			[0.011]	[0.002]
Gender_div	-0.137***	-0.137***	-0.152***	-0.151***
	[0.005]	[0.005]	[0.002]	[0.002]
Inst_own× Gender_div		-0.170**		
		[0.023]		
State_own × Gender_div				2.194***
				[0.005]
ROA	4.005***	4.001***	4.225***	4.240***
	[0.000]	[0.000]	[0.000]	[0.000]
Leverage	0.086**	0.084**	0.131***	0.136***
	[0.046]	[0.049]	[0.002]	[0.002]
Firmsize	2.296***	2.331***	2.575***	2.576***
	[0.000]	[0.000]	[0.000]	[0.000]
MTB	0.660***	0.660***	0.642***	0.646***
	[0.000]	[0.000]	[0.000]	[0.000]
Firmage	0.009***	0.009***	0.009***	0.009***
	[0.000]	[0.000]	[0.000]	[0.000]
B_size	0.046***	0.046***	0.049***	0.049***
	[0.000]	[0.000]	[0.000]	[0.000]
B_ind	0.539***	0.540***	0.571***	0.587***
	[0.000]	[0.000]	[0.000]	[0.000]
CEO_dual	0.068***	0.068***	0.059***	0.060***
	[0.000]	[0.000]	[0.000]	[0.000]
Constant	-38.065***	-38.836***	-44.007***	-44.100***
	[0.002]	[0.001]	[0.000]	[0.000]

Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Observations	13,347	13,347	13,346	13,346
R-squared	0.156	0.156	0.151	0.152

Table 6: Endogeneity results

This table presents the endogeneity results for the moderating effect of gender diversity on the relationship between institutional and state ownership, and CEO compensation. Ln(CEO_comp) measures the natural log of total average salary paid to the CEO. Inst_own measure share held by institutional investors divided by total shares of the firm. State_own is a dummy variable equal to '1' if state is the ultimate controller of the firm and '0' otherwise. Gender_div is the total number of female directors divided by total directors. ROA is the earnings before interest and taxes divided by total assets. Leverage is equal to total debt divided by total assets. Firmsize is the natural log of firm total assets and MTB measures the market value of shares divided by total assets. Firmage is the year that has been elapsed since a firm foundation. B_size measures the total number of board of directors in a firm. B_ind is the proportion of independent directors on the board. CEO_dual equal to '1' if CEO is also chairman of the board, '0' otherwise. The p-values have been reported in the brackets. ***, ** and * denotes 1%, 5% and 10% significance levels respectively.

	(1)	(2)	(3)	(4)
	First stage		*Second stage*	
Variables	*Inst_own*	*State_own*	*Ln(CEO_comp)*	*Ln(CEO_comp)*
L. Inst_own	0.497***			
	[0.000]			
L. State_own		0.238***		
		[0.000]		
Inst_own			0.024***	
			[0.000]	
State_own				-0.838***
				[0.004]
Gender_div			-0.017	-0.204***
			[0.853]	[0.000]
Inst_own× Gender_div			-0.031**	
			[0.041]	
State_own × Gender_div				4.814***
				[0.009]
ROA	1.658***	0.034***	4.720***	5.075***
	[0.002]	[0.001]	[0.000]	[0.000]
Leverage	0.359***	0.009***	0.177***	0.260***
	[0.005]	[0.001]	[0.000]	[0.000]
Firmsize	17.017***	-0.035	2.326***	2.919***
	[0.000]	[0.468]	[0.000]	[0.000]
MTB	-1.253***	0.013***	0.606***	0.594***
	[0.000]	[0.000]	[0.000]	[0.000]
Firmage	0.008*	-0.001***	0.010***	0.010***
	[0.087]	[0.000]	[0.000]	[0.000]
B_size	0.020	0.001***	0.043***	0.049***
	[0.179]	[0.000]	[0.000]	[0.000]
B_ind	0.729	0.030***	0.335**	0.432***
	[0.113]	[0.001]	[0.012]	[0.001]

CEO_dual	-0.031	-0.001	0.091***	0.073***
	[0.545]	[0.425]	[0.000]	[0.000]
Constant	-364.71***	0.0686	-38.648***	-51.395***
	[0.000]	[0.516]	[0.003]	[0.000]
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Observations	13329	13327	13,329	13,327
R-squared			0.164	0.164

Table 7: Robustness Check

This table presents the robust results for the moderating effect of gender diversity on the relationship between institutional and state ownership, and CEO compensation. The dependent variable is Ln(Top3_comp), which measures the natural log of total salaries paid to top three executives of the firm. The key independent variables are Inst_ownand State_own. Inst_own measure share held by institutional investors divided by total shares of the firm. State_own is a dummy variable equal to '1' if state is the ultimate controller of the firm and '0' otherwise. The moderating variable is Gender_div, which is the total number of female directors divided by total directors. ROA is the earnings before interest and taxes divided by total assets. Leverage is equal to total debt divided by total assets. Firmsize is the natural log of firm total assets and MTB measures the market value of shares divided by total assets. Firmage is the year that has been elapsed since a firm foundation. B_size measures the total number of board of directors in a firm. B_ind is the proportion of independent directors on the board. CEO_dual equal to '1' if CEO is also chairman of the board, '0' otherwise. The p-values have been reported in the brackets. ***, ** and * denotes 1%, 5% and 10% significance levels respectively.

	(1)	(2)	(3)	(4)
Variables	*Ln(Top3_comp)*	*Ln(Top3_comp)*	*Ln(Top3_comp)*	*Ln(Top3_comp)*
Gender_div	-0.252***	-0.252***	-0.263***	-0.262***
	[0.000]	[0.000]	[0.000]	[0.000]
Inst_own	0.013***	0.031***		
	[0.000]	[0.000]		
State_own			-0.012	-0.309***
			[0.329]	[0.001]
Inst_own× Gender_div		-0.112**		
		[0.036]		
State_own × Gender_div				1.910***
				[0.002]
ROA	4.383***	4.380***	4.616***	4.624***
	[0.000]	[0.000]	[0.000]	[0.000]
Leverage	0.215***	0.214***	0.252***	0.256***
	[0.000]	[0.000]	[0.000]	[0.000]
Firmsize	2.174***	2.194***	2.380***	2.390***
	[0.000]	[0.000]	[0.000]	[0.000]
MTB	0.553***	0.552***	0.525***	0.529***
	[0.000]	[0.000]	[0.000]	[0.000]
Firmage	0.008***	0.008***	0.008***	0.008***
	[0.000]	[0.000]	[0.000]	[0.000]
B_size	0.054***	0.054***	0.056***	0.056***
	[0.000]	[0.000]	[0.000]	[0.000]
B_ind	0.701***	0.703***	0.723***	0.740***
	[0.000]	[0.000]	[0.000]	[0.000]
CEO_dual	0.065***	0.065***	0.062***	0.063***
	[0.000]	[0.000]	[0.000]	[0.000]
Constant	-34.710***	-35.177***	-39.084***	-39.384***

	[0.000]	[0.000]	[0.000]	[0.000]
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Observations	16,809	16,809	16,808	16,808
R-squared	0.248	0.248	0.242	0.242