

Excess Compensation: Agency Cost or Performance Motivator?

Perspectives from Governance Structures in Korea

Abstract: Excess compensation does not by itself impose a significant problem. However, a serious business ethical violation would incur if excess compensation is related to a large extraction of rent. In this study, we investigate how governance structures are associated with excess cash compensation, which is defined as observed cash compensation less expected cash compensation derived from the standard economic determinants. Five measures of governance structures are examined in this study as follows: (1) owner-managers; (2) block-holders; (3) foreign shareholders; (4) financial institutions; and (5) *chaebols*, business conglomerates in Korea controlled by family.

Based on 6,823 observations in Korea from 2000 to 2009, the results indicate that governance structures differentially affect excess cash compensation depending on the views on the role of excess cash compensation. Specifically, financial institutions are negatively related to excess cash compensation, implying that they consider excess cash compensation as an agency cost consistent with Core et al. (1999). By contrast, owner-managers, foreign shareholders, and *chaebols* are positively related to excess cash compensation, implying that they consider excess cash compensation as a performance motivator consistent with Fama (1980). An additional test suggests that excess cash compensation is positively associated with the current financial performance of firms.

Keywords: Excess cash compensation, Governance structures, Agency costs, Performance motivator

1. INTRODUCTION

Excess compensation is one of the important dimensions in business ethics (Weiss 2005). Excess compensation would not by itself create significant problems in business. However, a significant business ethical violation would incur if there is widespread recognition that excess compensation is more likely to reflect a large extraction of rents than an improvement in corporate financial performance. For example, Tom Engibous, who was a CEO of Texas Instrument, had a salary and bonus of \$1.3 million with a grant of \$44 million when the company's stock lost 40 percent in 2002. Many criticize this incident and blame him for obtaining excessive amounts of compensation (Weiss 2005). From 1999 to 2001, Kenneth Lay, who was chairman of Enron, collected approximately \$200 million in compensation. Several months prior to the bankruptcy of Enron, he unloaded \$25.7 million in Enron stock as the price fell from \$80 to less than \$50 (Time 2002). Leonard Kozlowski, who was chairman of Tyco, called for an immediate payout of about \$135 million if he was dismissed, and an annual retainer of \$3.4 million for the rest of his life (Forbes 2007). Since the corporate scandals such as Enron and Tyco, the link between governance structures and an executive director's compensation that is not necessarily related to firm performance has generated great concern from regulators and practitioners.

Despite these concerns, prior studies generally focus on the effects of governance structures on regular compensation contracts (Ramaswamy et al. 2000; Hartzell and Starks 2003). Little evidence exists on how various governance structures influence *excess* cash compensation.¹ To fill this void in the literature, this study examines the association between governance structures and excess cash compensation (hereafter, excess compensation).

¹ Excess cash compensation is the difference between the actual and expected cash compensations based on managerial performance. In this study, excess cash compensation is measured as the residual from the expected cash compensation model that controls the standard economic determinants.

Specifically, five governance structures are investigated as follows: (1) owner-managers (Jung and Kwon 2002); (2) block-holders (Chang 2003); (3) foreign shareholders (Hanafi and Rhee 2004); (4) financial institutions (Ahn and Choi 2009); and (5) *chaebols*, business conglomerates in Korea controlled by family (Chang 2003).

There are two alternative views regarding excess compensation, which lead to two different expectations for the association between excess compensation and governance structures. On the one hand, excess compensation may represent agency costs (Bebchuk et al. 2001). The managerial power hypothesis suggests that executive directors have substantial influence over their own compensation, and thus it would be difficult to prevent them from obtaining a favorable compensation contract that is not necessarily correlated with their performances (Bebchuk and Fried 2003). Under this view, excess compensation has negative influence on firm performance, exacerbating agency problems. Governance structures are generally designed to reduce agency costs (Dalton et al. 1998). Therefore, under the agency cost view of excess compensation, governance structures are expected to play a role in constraining excess compensation, thereby helping reduce agency costs.

On the other hand, excess compensation may represent a means to enhance executive directors' motivation to improve the financial performance of firms (Fama 1980). The optimal contracting hypothesis suggests that compensation is not only a factor for attracting or retaining talented executive directors but also a significant performance motivator (Bebchuk et al. 2001). Therefore, if a firm supports this view, the firm should attempt to pay more than executive directors' opportunity costs so that they can produce more desirable outcomes (Bebchuk et al. 2001). Governance structures have general interests in the profit maximization of firms (Shleifer and Vishny 1997). Therefore, under the performance motivator view of excess compensation,

governance structures are expected to play a role in encouraging excess compensation, thereby helping maximize firm performance.

Given these alternative views regarding the association between excess compensation and governance structures, we expect that governance structures differentially affect excess compensation depending on their motivations toward excess compensation. Consequently, we hypothesize that the predicted association between excess compensation and each governance structure would be different across various governance mechanisms such as owner-managers, block-holders, foreign shareholders, financial institutions, and *chaebols*. A negative (positive) association implies that excess compensation is viewed as an agency cost (a motivator of superior financial performance).

Using Korean data from 2000 to 2009, we examine how governance structures differentially affect excess compensation depending on the views on the role of excess compensation. Institutional and cultural environments in Korea offer an interesting setting for examining this issue. Prior research on excess compensation in the U.S. setting generally focuses on public firms *without* controlling shareholders (Bebchuk and Fried 2003). Unlike the U.S. setting, the ownership structure of many Korean firms is characterized by the existence of powerful controlling shareholders (Chang 2003), allowing us to examine the influence of controlling shareholders on excess compensation. In addition, business culture, which significantly influences managerial work values (Ralston et al. 2008) and compensation structure (Schuler and Rogovsky 1998), is quite distinctive in Korea. People in individualism, such as in the U.S., are more likely to appreciate and value individual performances (Schwartz 1994). On the other hand, people in collectivism, such as in Korea, are more likely to sacrifice their individual interests and value harmony among groups (Schwartz 1994). If an executive director's

compensation arrangement is significantly higher compared with other employees, the stakeholders of the firm consider the compensation arrangement as breaking the harmony between executive directors and employees. Consequently, in many cases, the unusually high level of compensation is not socially acceptable in Korea, providing executive directors with incentives to conceal the level of their compensation. We take advantage of this institutional and cultural distinctiveness to investigate how corporate governance structures affect a firm's excess compensation behavior.

The major findings of this study are as follows. The magnitudes of debts from financial institutions are negatively associated with excess compensation, consistent with the view that excess compensation represents an agency cost. By contrast, ownership by owner-managers, foreign ownership, and *chaebols* are positively associated with excess compensation, consistent with the view that excess compensation represents a motivator to improve firm performance. Furthermore, we document a positive association between financial performance of firms and excess compensation, suggesting that, on average, excess compensation represents a motivator of superior performance rather than an agency cost in Korea. Overall, the results of this study demonstrate that governance structures differentially affect excess compensation depending on their views regarding the role of excess compensation.

This study has the following contributions. First, this study focuses on the excess level of compensation rather than on the overall level of compensation. Despite the importance of excess compensation in the business world, little empirical evidence exists regarding the role of governance structures in determining the excess level of compensation. We attempt to fill this void in the literature by providing empirical evidence on how governance structures affect the level of excess compensation.

Second, this study provides evidence that excess compensation is not always associated with agency costs, implying that it is not always considered negative. The findings of this study indicate that excess compensation can also be used as a motivator for a superior firm performance, suggesting that the role of excess compensation is not one-way, but is circumstantial. Therefore, when evaluating a firm with excess compensation, information users need to carefully consider the role of excess compensation because the directors of firms with excess compensation are not necessarily acting against the interests of other stakeholders.

Finally, this study examines how corporate governance structures influence excess compensation in the developing market. Traditional corporate governance theories are generated from developed economies where they have an agency problem between managers (agents) and owners (principals) (Lu et al. 2009). However, corporations in Korea are characterized by having an agency problem between block-holders (principal) and minority shareholders (principal) (Lu et al. 2009). Such principal and principal conflict may create different corporate governance processes and remedies compared with developed economies (Young et al. 2008), implying that the association between compensation and governance structures in Korea would be different from that of developed countries. Moreover, most empirical studies on excess compensation are limited to the U.S and U.K (Buck et al. 2008) so that the literature requires more research in an international setting (Denis and McConnell 2003). By examining the association between corporate governance and excess compensation in Korea, this study responds to the call for this request.

The remainder of this paper is organized as follows. In Section 2, we provide background information and related literature on excess compensation. Hypotheses are developed in Section 3. Section 4 describes the research models and sample selection procedures.

Section 5 presents the empirical results and examines the association between excess compensation and firm performance. Finally, Section 6 concludes the paper.

2. BACKGROUNDS AND RELATED LITERATURE

Executive Directors in Korea

Becoming an executive director (hereafter, a director) in Korea is extremely difficult.² For example, Hyundai Automobile and Samsung Electronics have 287 and 98 employees per director in 2010, respectively (Jong and Heo 2010). Only 0.6 percent of incoming employees can become a director, which takes approximately 23.6 years. The average tenure of directors is less than 3 years. Directors need significant time to understand their tasks, but their time is limited. According to a survey with regard to directors in Korea, directors need at least 3 months to understand their tasks and another 15 months to have competitive advantages in their fields (Yi 2006).

Most directors in Korea generally need to prove their abilities within 3 years; otherwise, they are likely to be terminated. Once directors are terminated or retired, their careers become uncertain. At most, 5 percent of the directors in Korea are likely to find a meaningful career once they retire or are terminated. However, more than 65 percent of directors do not have a retirement plan at all prior to their retirement (Yi 2006). Thus, directors in Korea generally have strong incentives to receive a high level of compensation during their tenure, whether their compensation contracts are necessarily correlated with their performance or not.

In Korea, the compensation of directors mostly consists of cash compensations and employee benefits: 53 percent of the compensation is comprised of fixed cash compensation, 33

² In this study, an executive director represents full-time directors, excluding the members of outside boards of directors, audit committees, and part-time directors.

percent employee benefits, and 14 percent annual bonuses (Jong and Heo 2010). Stock options are rarely used to compensate directors in Korea. According to New Yorker (2002) and New York Times (2003), accounting scandals at Enron, WorldCom, and Global Crossing have been significantly related to excessive fixation on stock prices, which is allegedly caused by the stock option grants for top executives. As stock option compensations have become increasingly controversial, many listed firms in the U.S have stopped providing stock options to directors. For example, Boeing and Microsoft stopped providing stock options to their directors in 2004. Similarly, many listed firms in Korea including Samsung have stopped providing stock options to their directors (Jong and Heo 2010).

Managerial Power versus Optimal Contracting

There are two alternative theoretical foundations regarding excess compensation. First, excess compensation supports the managerial power hypothesis. Under the managerial power hypothesis, managers have power to influence their own compensation contracts and thus, managers are more likely to use the power to extract rents (Bebchuk et al. 2001). According to this hypothesis, boards that design compensation contracts often fail to create optimal contracts because they are more likely to be influenced by managers or feel sympathy toward managers (Bebchuk et al. 2001). Because of this deviation from optimal contracting, managers can receive pay in excess of the level that would hurt shareholders' value, causing excess compensation constitutes rents (Bebchuk et al. 2001). Bebchuk and Fried (2003) suggest several reasons why the excess compensation of CEO is not necessarily correlated with an increase in financial performance. First, CEOs generally dominate the nomination process of directors. Thus, CEOs are more likely to hire the directors who are more favorable to CEOs. Second, board meeting and

process are characterized by an emphasis on courtesy and politeness to the CEOs. Finally, the benefits of reducing the CEO's salary are minimal in many cases, whereas the costs of doing so might be considerable. Prior studies including Dalton and Daily (1994), Conyon and Peck (1998), and Conyon (2006) have supported the managerial power hypothesis of excess compensation.

The other stream of research posits that excess compensation supports the optimal contracting hypothesis. Under the optimal contracting hypothesis, compensation contract should maximize shareholders' value and minimize the agency costs between managers and shareholders (Fama 1980). No contract is perfectly align the interests of managers and shareholders (Bebchuck et al. 2001), but one of the most cost-effective ways to achieve optimal contracting is to create outcome-based compensation contracts focusing on objective firm-level operation and market performance (Fama 1980). Under this approach, boards that design compensation contracts should try to attract and retain high quality executives by providing executives with incentives to exert sufficient efforts, thereby serving shareholders' interests (Bebchuk et al. 2001). Shareholders should keep providing values to managers until the incremental benefits of compensation exceed the incremental costs of doing so (Bebchuk et al. 2001). Prior studies including Johnson (1978), Wolfson (1979), Fischel (1982), and Easterbrook (1984) have supported the optimal contracting hypothesis of excess compensation.

Business Ethics, Corporate Social Responsibility, and Excess Compensation

Directors are ultimately responsible for the economic viability and profitability of their corporations (Combs and Skill 2003). Therefore, their high ethical standards are necessary for the success of corporations (Collins 2001; Weiss 2005). Directors are generally considered in violation of the codes of business ethics when excess compensation supports the managerial

power hypothesis rather than the optimal contracting hypothesis. Directors should not maximize their private benefits at the expense of other stakeholders, being responsible for distributing a firm's profits properly (Weiss 2005). However, when directors receive excess compensation despite poor corporate performances, they may have incentives to camouflage their economic rents and dispose of other stakeholder's interests by influencing their own compensation contracts (Bebchuk et al. 2001; Bebchuk and Fried 2003). The amount of excess compensation often relies on the director's ethical will because few effective mechanisms can be used to significantly reduce the excess compensation (Weiss 2005). For example, Bebchuk et al. (2001) argue that boards have strong incentives to fire CEOs who perform poorly, but they do not have economic incentives to reduce the CEO's compensation. They also argue that independent compensation consultants do not play a significant role in the reduction of excess compensation because they are hired by managers and eager to please managers. Consequently, reducing excess compensation when directors demand it is difficult. With regard to the difficulty in reducing executive compensation, Warren Buffett states that "In judging whether corporate America is serious about reforming itself, CEO pay remains the acid test. To date, the results are not encouraging" (The Economist 2007).

A firm's compensation structure is also related to corporate social responsibility. Corporate social responsibility is defined as "corporate integrated responsibilities encompassing the economic, legal, ethical, and discretionary expectation that society has of organizations" (Carroll 1979). It receives considerable attention from media and academic research (Dawkins and Lewis 2003; Oh et al. 2011). Corporate social responsibility is influenced by various factors, such as countries (Kim and Choi 2013), industries (Hackston and Milne 1996), and types of directors (Ibrahim et al. 2003). Compensation can be a potentially important mechanism for

guiding managerial attention to corporate social responsibility because they share the common goal of evaluating how well firms have met the expectations of stakeholders (McGuire et al. 2003). In general, an excessively high level of director's compensation leads to poor corporate social responsibility. Berman (1999) finds that a high level of compensation diverts managerial attention away from a wider range of stakeholders. Hayward and Hambrick (1997) argue that a high level of director's compensation may encourage managerial hubris.

In summary, academic and anecdotal evidence suggests that a firm's compensation structure is closely related to the firm's business ethics and corporate social responsibility, especially when the level of compensation is significantly high. These findings imply that corporate governance mechanisms may need to be carefully designed to incorporate the implications from the compensation structure, thereby protecting the wealth of stakeholders, reducing agency costs, and improving firm performance.

3. HYPOTHESES

As stated, prior studies offer two alternative explanations regarding excess compensation, which lead to two different expectations for the association between excess compensation and governance structures: a *performance motivator* versus an *agency cost*. The performance motivator explanation is related to a positive role of excess compensation. According to Shleifer and Vishny (1997), governance structures are designed for the suppliers of finance to assure a return on their investments. To obtain a positive return on their investments, governance structures have a direct interest in the financial well-being of companies (Shleifer and Vishny 1997). Directors generally play a significant role in achieving the financial well-being of companies (Finkelstein and Boyd 1998), and thus governance structures aim to ensure that

directors take value-increasing actions for the company, rather than maximizing their private benefits (Shleifer and Vishny 1997). To motivate directors to take value-increasing actions for companies, various types of rewards can be used. These rewards include excess compensation (Fama 1980), long-term stock options (Jensen and Murphy 1990), high levels of compensation (Boschen et al. 2003), and perks (Rajan and Wulf 2006). Among these rewards, we focus on the role of excess compensation as a director's motivator to achieve the financial well-being of firms. Indeed, throughout the past decade, shareholders have often accepted excess compensation as the price of motivating directors (Bebchuk and Fried 2004). In this case, governance structures are expected to allow firms to increase excess compensation to enhance the financial performance of a firm and assure the positive return on investments.

On the other hand, the agency-cost explanation is related to a negative role of excess compensation. Under this explanation, excess compensation represents agency costs (Core et al. 1999). Agency costs generally have negative effects on firm value, and thus firms have incentives to reduce agency costs. A major role of governance structure is to resolve agency problems, and prior research documents that effective governance structures can help firms to mitigate agency problems (Dalton et al. 1998). Consequently, if excess compensation represents an agency cost, governance structures are expected to constrain excess compensation to reduce the overall level of agency costs.

This study examines how corporate governance structures influence excess compensation. Specifically, we investigate the following corporate governance structures: owner-managers, block-holders, foreign shareholders, financial institutions, and *chaebols*.³ Considering

³ We focus on these governance structures because these exhibit significant variations among firms in Korea. Other governance structures have little variation across firms, making our inferences difficult. For example, little variation exists in the proportion of outside boards of directors in Korea due to the regulation requiring a certain number of outside boards of directors in the corporate board.

the different characteristics of these governance structures, we expect that each governance structure differentially affects excess compensation depending on its view on the role of excess compensation. If a certain governance structure views excess compensation as a performance motivator (a positive role), we expect a positive association between a governance structure and the level of excess compensation. By contrast, if a certain governance structure views excess compensation as an agency cost (a negative role), we expect a negative association.

Owner-Managers

Owner-managers have greater stakes in the success or failure of firms than any other shareholders because their wealth is directly tied to the well-being of firms (Douma et al. 2006). In this regard, owner-managers have strong incentives to generate profits and maintain financial well-being of firms, suggesting that owner-managers are more likely to appreciate superior financial performance. Consequently, they are more likely to regard excess compensation as positive when they believe that excess compensation represents a means to motivate them.

Excess compensation is likely to be more convenient to be used by owner-managers compared with regular compensation. For example, the level of compensation is often visible to the public. Therefore, owner-managers might be perceived as lacking in discipline and in pursuit of their own interests if they have a significantly high level of compensation (LaFond and Roychowdhury 2008). Unlike regular compensation, the amount of *excess* compensation is generally invisible to outsiders of firms (Bebchuk et al. 2001), providing owner-managers with stronger incentives to seek invisible excess compensation, rather than visible regular compensation, to avoid criticism from other parties and motivate themselves. Accordingly, the

following hypothesis is proposed regarding how owner-managers respond to excess compensation.

H1: *Owner-managers positively affect the level of excess compensation.*

Block-Holders

Prior studies have documented that block-holders play a significant role in Korea (Chang and Hong 2000; Chang 2003; Joh 2003; Kim and Lee 2003). Corporate ownership structure in Korea is characterized by a large wedge between voting rights and cash flow rights of block-holders. Therefore, block-holders often exert significant influence on business decisions, including compensation for directors. For instance, block-holders are generally able to implement effective monitoring (Kaplan and Minton 1994; Shleifer and Vishny 1997) and play a significant role in creating pay-per-performance compensation contracts (Mehran 1995). Mangel and Singh (1993) find that effective monitoring from block-holder can significantly limit or reduce the CEO compensation. Considering their interests in creating a compensation contract that is positively related with performances and their ability to monitor the behavior of directors, we expect that block-holders are prone to constrain the excessive level of compensation that is not related to firm performance. Accordingly, the hypothesis regarding how block-holders respond to excess compensation is as follows:

H2: *Block-holders negatively affect the level of excess compensation.*

Foreign Shareholders

Foreign shareholder at the Korea Stock Exchange has grown from 11.97 percent of the total market capitalization in 1995 to 41.97 percent in 2004, suggesting that foreign shareholders

grow important in Korean capital market. Foreign shareholders in Korea are known to have superior investment strategies and monitoring abilities based on their global net works and rich experiences (Park and Kim 2008).

Foreign shareholders often have direct interests in the superior financial performance of firms that they own (Kalev et al. 2008) to compensate for information asymmetry between their home countries and foreign countries. For example, they are associated with positive cumulative abnormal returns (Hanafi and Rhee 2004), suggesting that they have direct interests in superior financial performance. In this regard, the expected relationship between foreign shareholders and excess compensation would be positive if foreign shareholders believe that excess compensation brings superior financial performance by motivating directors.

On the other hand, the association between foreign shareholders and excess compensation is expected to be negative if they consider excess compensation as an agency cost. Foreign shareholders are generally known as sophisticated investors with superior monitoring abilities (Douma et al. 2006). Their superior monitoring abilities allow them to effectively see through opportunistic behaviors of directors, thereby reducing agency costs (Park and Kim 2008). Considering the preference for superior performance on the one hand and the monitoring abilities to constrain opportunistic behavior on the other hand, the hypothesis regarding the effect of foreign shareholders on excess compensation is non-directional as follows:

H3: *Foreign shareholders significantly affect the level of excess compensation.*

Financial Institutions

Banks, insurance companies, securities brokerage firms, investment trust companies, and small-scale savings and loans are classified as financial institutions in Korea (Jung and Kwon

2002). Financial institutions can exercise significant influence over companies as creditors because Korean firms are heavily relied on banks as the major source of corporate financing (Kang et al. 2010).⁴

Financial institutions, such as banks, have significant interests in reducing credit risks (Diamond 1984) and thus perform monitoring on borrowing firms. Financial institutions, especially banks, are generally known to be effective monitors because of their informational advantages (Diamond 1984; Fama 1985; Ahn and Choi 2009). They perform monitoring activities to reduce agency costs, fulfilling their fiduciary duties. Based on these arguments, we expect that financial institutions are more likely to be interested in creating an efficient compensation contract rather than excess compensation to minimize agency costs. Accordingly, the following hypothesis is proposed regarding how financial institutions respond to excess compensation.

H4: *Financial institutions negatively affect the level of excess compensation.*

Chaebols

Chaebols are a unique business group that can be found in Korea. They are family-controlled conglomerates clustered around parent companies (Lee and Gaur 2012). They have many subsidiary firms under the same name and are more likely to be controlled by owner family (Kim and Lee 2003). With their unique business characteristics, the financial performance of *chaebols* is significant in Korea.⁵

⁴ Korea is classified as a bank-centered economy, whereas the U.S. is classified as a market-centered economy.

⁵ The 30 largest *chaebols* produced 40 percent of Korea's total outputs as of 1996 (Chang and Hong 2000) and 28.9 percent of Korea's gross domestic product (GDP) in 2009 (Lee and Gaur 2012).

Chaebols are known to have low transparency between controlling shareholders and other shareholders (Joh 2003; Young et al. 2008). Joh (2003) finds that controlling shareholders in *chaebols* have almost full control over all the subsidiary firms, implying that they can easily expropriate minority shareholders. He also finds that controlling shareholders in *chaebols* are more likely to make business decisions that maximize their own benefits, rather than maximize the overall wealth of shareholders. *Chaebols* generally prefer excess compensation over visible compensation because excess compensation is less transparent to shareholders, politicians, the media, or others who would criticize the excessive level of compensation. In addition, there are few effective internal and external monitoring mechanisms that would prevent *chaebols* from paying excess compensation to directors. Campbell and Keys (2002) find that internal corporate governance structures seem to be much more effective for firms that are not related to top five *chaebols*.

In summary, *chaebols* are interested in seeking controlling shareholder's benefits, but monitoring that helps to constrain such behavior is ineffective in *chaebols*. For *chaebols*, excess compensation is a convenient and effective way to motivate directors, thereby increasing the wealth of controlling shareholders. Therefore, the following hypothesis is proposed regarding how *chaebols* respond to excess compensation:

H5: *the level of excess compensation for chaebols is higher than non-chaebol firms.*

4. RESEARCH DESIGN AND SAMPLE

Calculation of Excess Compensation

Equation (1) presents the traditional model of expected compensation derived from standard economic determinants. Excess compensation is the *residual* of the regression (Core et al. 1999).

$$LNCOMP_{i,t} = \alpha_0 + \alpha_1 LNASSET_{i,t-1} + \alpha_2 RD_{i,t-1} + \alpha_3 SALEG_{i,t-1} + \alpha_4 ROA_{i,t-1} + \alpha_5 RET_{i,t-1} + \sum IND_{i,t} + \sum YEAR_{i,t} + e_{i,t} \quad (1)$$

where

LNCOMP: the natural log of average cash compensation per director;

LNASSET: the natural log of book value of total assets;

RD: research and development expenses scaled by total assets;

SALEG: sales growth measured as sales from current year minus sales from prior year scaled by sales from prior year;

ROA: return on assets measured as income before taxes scaled by total assets;

RET: annual stock returns;

IND: industry dummies;

YEAR: year dummies;

e: excess compensation (error term); and

i, t: a firm and year index, respectively.

Similar to prior research, all variables, with the exception of *LNCOMP*, are lagged one year since current compensation is usually based on the prior year's performance. The natural log of the assets (*LNASSET*) is used to control firm size. According to Cadman et al. (2010), the expected coefficient on *LNASSET* is positive, implying that larger firms are more likely to have more complex operations and thus offer higher wages to attract higher-quality directors. *RD* and *SALEG* are included to control growth rates. High growth firms are characterized by high research and development expenses and rapid sales growth rates, and the directors of high growth firms are more likely to face significant difficulties in managing firms (Govindarajan and

Shank 1992). Therefore, firms with greater growth opportunities are more likely to pay higher wages to attract highly capable directors, implying that the expected coefficients on *RD* and *SALEG* are positive. The return on assets (*ROA*) and annual stock return (*RET*) are included to control a firm's financial performance. According to Smith and Watts (1992), the coefficients on both *ROA* and *RET* are expected to be positive, implying that better financial performance is positively associated with higher compensation. Industry and year dummy variables are included to control possible industry- and year-effects.

Excess Compensation and Governance Structures

The main purpose of this study is to examine the influences of various governance structures on excess compensation. The hypotheses are tested in the following estimation model:

$$\begin{aligned}
 EX_COMP_{i,t} = & \alpha_0 + \alpha_1 OWN_{i,t-1} + \alpha_2 BLOCK_{i,t-1} + \alpha_3 FORE_{i,t-1} + \alpha_4 FINST_{i,t-1} \\
 & + \alpha_5 CHAEVOL_{i,t-1} + \alpha_6 LNASSET_{i,t-1} + \alpha_7 OP_{i,t-1} + \alpha_8 ROA_{i,t-1} + \alpha_9 RD_{i,t-1} + \alpha_{10} LEV_{i,t-1} \\
 & + \alpha_{11} PPE_{i,t-1} + \alpha_{12} DIV_{i,t-1} + \alpha_{13} RET_{i,t-1} + \sum IND_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t}
 \end{aligned} \tag{2}$$

where

EX_COMP: the residual from Equation (1) where the dependent variable is the natural log of the average cash compensation per director and independent variables are economic determinants for the compensation;

OWN: the number of shares owned by owner-managers scaled by the total number of shares outstanding;

BLOCK: the number of shares owned by block-holders scaled by the total number of shares outstanding;

FORE: the number of shares owned by foreign shareholders scaled by the total number of shares outstanding;

FINST: the natural log of debts from financial institutions;

CHAEBOL: a dummy variable that takes the value of one if a firm belongs to *chaebols* as defined by Korea Fair Trade Association(KFTA), and zero otherwise;⁶
LNASSET: the natural log of book value of total assets;
OP: the natural log of operating sales;
ROA: return on assets measured as income before taxes scaled by total assets;
RD: research and development expenses scaled by total assets;
LEV: financial leverage calculated as total debts scaled by total assets;
PPE: property, plant, and equipment scaled by total assets;
DIV: cash dividends scaled by total assets.
RET: annual stock returns;
IND: industry dummies;
YEAR: year dummies; and
i, t: a firm and year index, respectively.

Similar to Equation (1), all variables, with the exception of *EX_COMP*, are lagged one year. The variables of interest are owner-managers (*OWN*), block-holders (*BLOCK*), foreign shareholders (*FORE*), financial institutions (*FINST*), and *chaebols* (*CHAEBOL*). We define *OWN*, *BLOCK*, and *FORE* as the ownership by owner-manager (Jung and Kwon 2002), block-holders (Kim and Lee 2003) and foreign shareholders (Black et al. 2006), respectively. We define *FINST* as the natural log of debts from financial institutions to measure the strength of a firm's tie to financial institutions. We define *CHAEBOL* as a dummy variable that equals one if a firm belongs to one of top 30 largest business groups, zero otherwise (Kim and Lee 2003; Black et al. 2006; Kang et al. 2010).

The expected coefficients on α_1 (H1) and α_5 (H5) are significantly positive, supporting the performance motivator view of excess compensation. The expected coefficients on α_2 (H2)

⁶ KFTA defines a *chaebol* as a business group that the group's controlling shareholder and its affiliated firms own more than 30 percent of shares. Every year the KFTA ranks business groups based on the size of total assets. It also ranks top 30 largest business groups, which is known as top 30 *chaebols*. Samsung, Hyundai, and LG are the examples of top 30 *chaebols*.

and α_4 (H4) are significantly negative, supporting the agency cost view of excess compensation. The expected coefficient on α_3 (H3) is significant, but non-directional.

Sample Selection

The sample consists of firms listed on the Korea Composite Stock Price Index (KOSPI: comparable to NYSE in the U.S.) and Korea Securities Dealers Automated Quotation (KOSDAQ: comparable to NASDAQ in the U.S.) between 2000 and 2009. The variables are obtained from the electronic databases, such as Total Solution 2000 (TS 2000), Financial Guide (FN Guide), and Data Analysis, Retrieval and Transfer (DART).⁷ We have hand-collected information on cash compensation of executive directors from the annual reports available in DART. The average cash compensation of an executive director per firm is used to calculate excess compensation. Ownership information is obtained from TS 2000, which is provided by the Korea Listed Companies Association. All other financial variables are obtained from the FN Guide.

The final sample should meet the following criteria. First, firms are listed in the stock market. Second, average cash compensation per director, information about governance structures, and financial variables are available. Third, firms are non-financial institutions and non-utility companies. Finally, the end of the fiscal year is December. Using these criteria, 6,823 observations are obtained over the ten-year period from 2000 to 2009.

5. EMPIRICAL RESULTS

Descriptive Statistics

⁷ These databases are comparable to Compustat, CRSP, and EDGAR in the U.S. Specifically, TS2000 and FN Guide have been frequently used in prior studies (e.g., Black et al. 2006; Ahn et al. 2008) for financial data of Korean listed firms.

Table 1 presents the basic descriptive statistics. All continuous variables at the top and bottom 1 percent are winsorized to avoid the possible influences of outliers. The mean and median values of *EX_COMP* are 0.000 and -0.012, respectively. The mean (median) value of *LNCOMP* is 18.482 (18.394), indicating that the compensation variable is not significantly skewed. The average ownership of owner-managers (*OWN*), block-holders (*BLOCK*), and foreign shareholders (*FORE*) are 13.5 percent, 31.8 percent, and 6.1 percent, respectively. On average, 12.4% of the sample firms belong to *chaebols*. The mean (median) sales growth rate (*SALEG*) and return on assets (*ROA*) are 0.169 (0.059) and -0.014 (0.028), respectively. Firms spend on average 0.8% of total assets as research and development expenses. The mean leverage (*LEV*) and dividend-to-total assets ratio (*DIV*) are 0.422 and 0.007, respectively. Finally, firms have positive annual stock returns, on average.

[Insert Table 1]

Table 2 presents the Pearson correlation matrix. Foreign shareholders (*FORE*) and *chaebols* (*CHAEBOL*) are positively correlated with excess compensation, whereas the magnitude of loans from financial institutions (*FINST*) is negatively correlated with excess compensation. In general, the correlations are not significantly high, mitigating our concern about multicollinearity. Nevertheless, we formally test for multicollinearity in the estimation model using variance inflation factor (VIF) scores. We find that the VIF scores for all variables are less than 5, indicating that there is no significant multicollinearity problem in the estimation model.

[Insert Table 2]

Excess Compensation and Governance Structures

Table 3 provides the results for the calculation of excess compensation described in Equation (1). The coefficient on *LNASSET* is significant and positive, implying that larger firms attract higher quality directors and pay for such quality (Chhaochharia and Grinstein 2009). The significantly positive coefficient on *RD* indicates that firms with more research and development expenses pay a higher level of compensation. The coefficients on *SALESG* and *ROA* exhibit a positive and significant association with the compensation of directors, implying that the compensation of directors would increase with sales growth and financial performance (Lambert and Larcker 1987). The results in Table 3 are generally consistent with the traditional compensation model.

[Insert Table 3]

Table 4 presents the results from the main estimation model, Equation (2).⁸ All the coefficients on the variables of interest, except that on block-holders, are statistically significant, implying that excess compensation is significantly influenced by governance structures. However, the signs are different across governance variables. The coefficients on *OWN* (0.094) and *FORE* (0.155) are positive and statistically significant at the 5% significance level, suggesting that excess compensation is increasing in ownership by owner-managers and foreign shareholders. These results support Hypothesis 1 and 3, consistent with the performance motivator view of excess compensation. The findings imply that owner-managers and foreign shareholders have incentives to enhance firm performance using excess compensation, and prefer invisible and irregular excess compensation to regular compensation.

⁸ We obtain *t-statistics* and *p-values* with two-way clustering by firm and year.

The coefficient on *CHAEBOL* (0.145) is also positive and significant at the 1% significance level, which supports Hypothesis 5. Consistent with the notion that *chaebols* may seek their own benefits and motivate themselves by paying high level of compensation, the level of excess compensation for *chaebols* is higher than that for non-*chaebol* firms. This finding may also imply that *chaebols* prefer invisible excess compensation to avoid public criticism. Overall, the results suggest that owner-managers, foreign shareholders, and *chaebols* support the performance motivator view of excess compensation, and regard excess compensation as positive.

Unlike *OWN*, *FORE*, and *CHAEBOL*, the coefficient on *FINST* (-0.133) is negative and statistically significant at the 10% significance level, implying that excess compensation is decreasing in the strength of a firm's tie to a bank. This result supports Hypothesis 4, suggesting that financial institutions view excess compensation as an agency cost rather than as a motivator of superior financial performance. Therefore, they perform monitoring activities to reduce excess compensation, thereby reducing agency costs.

The coefficient on *BLOCK* is negative but statistically insignificant, suggesting that block-holders do not significantly influence excess compensation. This result is not consistent with Hypothesis 2. Among the other control variables, the coefficients on *LNASSET*, *ROA*, and *RET* are negative and significant, whereas the coefficients on *OP* and *DIV* are positive and significant. These coefficients suggest that excess compensation decreases as firm size, return on assets and stock returns increase, whereas it increases as operating sales and cash dividends increase.

In summary, the results indicate that a firm's level of excess compensation is generally influenced by the firm's governance structures. The direction of the influence, however, is not

one-way but is circumstantial, depending on the view of each governance structure regarding excess compensation.⁹

[Insert Table 4]

Excess Compensation and Firm Performance

In this section, we examine whether and how excess compensation is actually related to firm performance in Korea. With size controlled, there is little or weak association between firm performance and compensation in most prior research (Tosi et al. 2000). The purpose of this test is to examine the general association between excess compensation and firm performance in Korea without considering the effect of each governance structure. The following estimation model is used to examine the association between excess compensation and the various measures of financial performance.

$$PERS_{i,t} = \alpha_0 + \alpha_1 EX_COMP_{i,t} + \alpha_2 LEV_{i,t-1} + \alpha_3 SALEG_{i,t-1} + \alpha_4 LNASSET_{i,t-1} + \sum IND_{i,t} + \sum YEAR_{i,t} + \epsilon_{i,t} \quad (3)$$

where

PERS: financial performance such as gross profits scaled by sales, net income scaled by total assets, net income scaled by net sales, operating income scaled by average equity, net income scaled by average equity, net income scaled by capital, and operating income scaled by capital;
EX_COMP: the residual from Equation (1) where the dependent variable is the natural log of the average cash compensation per director and independent variables are economic determinants for the compensation;

LEV: financial leverage calculated as total debts scaled by total assets;

⁹ A caveat on the interpretation of the results is that the two views on excess compensation are not mutually exclusive (Bebchuk et al. 2001). Each governance structure might have both views at the same time. Therefore, the findings of this study represent the effect of a governance structure on excess compensation, *on average*.

SALEG: sales growth measured as sales from current year minus sales from prior year scaled by sales from prior year;

LNASSET: the natural log of book value of total assets;

IND: industry dummies;

YEAR: year dummies; and

i, t : a firm and year index, respectively.

The variable of interest is *EX_COMP*. If excess compensation can enhance the financial performance of firms as suggested by Fama (1980), the coefficient on *EX_COMP* would be positive. If excess compensation is not related to a firm's financial performance, the coefficient on *EX_COMP* would be negative or insignificant. The results from Table 5 show that, regardless of the performance measures, the coefficients on *EX_COMP* are all positive and statistically significant, ranging from 0.023 (*t-statistics* = 5.39) to 0.079 (*t-statistics* = 3.58). These positive coefficients suggest that excess compensation can play a role of a performance motivator, consistent with Johnson (1978) and Fama (1980) who find that providing excess compensation to directors has a positive effect on the financial performance of a firm. This result suggests that excess compensation is not always associated with agency costs. Instead, excess compensation is a part of an optimal incentive that motivates directors to enhance the financial performance of a firm (Fama 1980).

[Insert Table 5]

6. CONCLUSIONS

This study investigates how governance structures differentially affect excess compensation depending on their views on the role of excess compensation in Korea. Considering different motivations of governance structures, we predict that each governance

structure interprets excess compensation as either a performance motivator or an agency cost. The major difference between regular and excess compensation is that excess compensation is irregular. Directors receive regular compensation on a regular basis even though their job performance does not produce sufficient results. By contrast, directors do not receive excess compensation on a regular basis. Such irregularity of excess compensation is suitable for a short-term contract to motivate directors. According to Compensation and Benefits Report (2002), the majority of companies in the U.S have stopped providing Christmas bonuses to their employees on a regular basis because employees “expect” to get bonuses every Christmas. Compensation and Benefits Report (2002) suggests that irregular incentives are more effective in improving short-term performance compared with regular incentives. The findings of this study add to controversy over the costs and benefits of excess compensation from the perspective of corporate governance.

The findings of this study suggest that governance structures significantly influence excess compensation. Specifically, our results indicate that owner-managers, foreign shareholders, and *chaebols* are positively associated with excess compensation, implying that they consider excess compensation as a performance motivator. On the other hand, financial institutions are negatively associated with excess compensation, implying that they consider excess compensation as an agency cost. In addition, we demonstrate a positive association between excess compensation and overall financial performance of a firm, suggesting that excess compensation can be used as a motivator for superior firm performance.

The results of this study indicate that excess compensation is not always associated with an agency cost (Core et al. 1999). Instead, excess compensation can be used as a motivator for directors to improve the financial performance of firms (Fama 1980). Our results suggest that

directors are more likely to be successful in raising their compensation when they involve the compensation contract with owner-managers and foreign shareholders than financial institutions. Because owner-managers and foreign shareholders believe that excess compensation is an important mechanism for attracting or retaining talented directors, they would be willing to pay the excess level of compensation to produce desirable outcome. On the other hand, financial institutions are more likely to consider the increased level of compensation as a sign of increasing agency costs and thus perform monitoring activities to reduce it. Overall, the findings of the current study suggest that excess compensation plays a distinctive role in firm performance.

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Table 1: Descriptive Statistics

<i>Variable</i>	<i>Mean</i>	<i>Std.Dev.</i>	<i>Median</i>	<i>1st Percentile</i>	<i>99th Percentile</i>
<i>EX_COMP</i>	0.000	0.453	-0.012	-1.078	1.166
<i>LNCOMP</i>	18.482	0.653	18.394	17.437	19.935
<i>OWN</i>	0.135	0.164	0.046	0.000	0.598
<i>BLOCK</i>	0.318	0.193	0.313	0.000	0.755
<i>FORE</i>	0.061	0.119	0.005	0.000	0.558
<i>FINST</i>	0.156	0.164	0.122	0.000	0.590
<i>CHAEVOL</i>	0.124	0.330	0.000	0.000	1.000
<i>LNASSET</i>	25.350	1.235	25.117	23.597	28.165
<i>SALEG</i>	0.169	0.683	0.059	-0.795	2.389
<i>OP</i>	18.239	1.381	18.100	15.939	21.130
<i>ROA</i>	-0.014	0.233	0.028	-0.915	0.243
<i>RD</i>	0.008	0.013	0.001	0.000	0.048
<i>LEV</i>	0.422	0.190	0.424	0.105	0.762
<i>PPE</i>	0.283	0.173	0.271	0.016	0.611
<i>DIV</i>	0.007	0.009	0.005	0.000	0.028
<i>RET</i>	0.183	0.721	0.003	-0.688	2.057

EX_COMP: the residual from the regression where the dependent variable is the natural log of the average cash compensation per director compensation and independent variables are economic determinants for the compensation; *LNCOMP*: the natural log of average cash compensation per director; *OWN*: the number of shares owned by owner-managers scaled by the total number of shares outstanding; *BLOCK*: the number of shares owned by block-holders scaled by the total number of shares outstanding; *FORE*: the number of shares owned by foreign shareholders scaled by the total number of shares outstanding; *FINST*: the natural log of debts from financial institutions; *CHAEVOL*: a dummy variable that takes the value of one if a firm belongs to *chaebols* as defined by Korea Fair Trade Association(KFTA), and zero otherwise; *LNASSET*: the natural log of book value of total assets; *SALEG*: sales growth measured as sales from current year minus sales from prior year scaled by sales from prior year; *OP*: the natural log of operating sales; *ROA*: return on assets measured as income before taxes scaled by total assets; *RD*: research and development expenses scaled by total assets; *LEV*: financial leverage calculated as total debts scaled by total assets; *PPE*: property, plant, and equipment scaled by total assets; *DIV*: cash dividend scaled by total assets; and *RET*: annual stock returns.

Table 2: Pearson Correlation Matrix

	<i>LNCOMP</i>	<i>OWN</i>	<i>BLOCK</i>	<i>FORE</i>	<i>FINST</i>	<i>CHAEVOL</i>	<i>LNASSET</i>	<i>SALEG</i>	<i>OP</i>	<i>ROA</i>	<i>RD</i>	<i>LEV</i>	<i>PPE</i>	<i>DIV</i>	<i>RET</i>
<i>EX_COMP</i>	0.6941***	0.0153	-0.0005	0.0500***	-0.0542***	0.0801***	0.0001	0.0003	0.0472***	-0.0078	0.0004	-0.0111	-0.0072	0.0849***	-0.0009
<i>LNCOMP</i>		-0.0495***	0.0521***	0.3162***	-0.1189***	0.3026***	0.4450***	0.0893***	0.4340***	0.1806***	0.0380***	-0.0163	0.0391***	0.1998***	0.0758***
<i>OWN</i>			0.2360***	-0.1145***	0.0486***	-0.1839***	-0.2081***	-0.0091	-0.1875***	0.0759***	0.0536***	-0.1253***	-0.0427***	0.0841***	-0.0238**
<i>BLOCK</i>				0.0434***	0.0654***	0.0242**	0.0527***	-0.0420***	0.0924***	0.1443***	-0.1001***	-0.0419***	0.1219***	0.1369***	-0.0435***
<i>FORE</i>					-0.1535***	0.2338***	0.4321***	-0.0606***	0.3952***	0.1214***	-0.0140	-0.0624***	0.0300**	0.2212***	0.0387***
<i>FINST</i>						-0.0556***	-0.0199	-0.0021	0.0242**	-0.1276***	-0.0873***	0.6041***	0.2841***	-0.2806***	-0.0914***
<i>CHAEVOL</i>							0.4989***	-0.0280**	0.4615***	0.0762***	-0.0873***	0.1683***	0.0403***	0.0204*	0.0488***
<i>LNASSET</i>								-0.1690***	0.9002***	0.2185***	-0.1567***	0.2133***	0.1952***	0.0816***	0.0837***
<i>SALEG</i>									-0.2650***	-0.0589***	0.0118	-0.0565***	-0.0518***	-0.0850***	0.0122
<i>OP</i>										0.2629***	-0.1426***	0.2983***	0.2256***	0.1568***	0.1050***
<i>ROA</i>											-0.0629***	-0.1853***	0.0923***	0.3294***	0.1879***
<i>RD</i>												-0.1235***	-0.1271***	0.0142	-0.0235*
<i>LEV</i>													0.2104***	-0.3216***	-0.0256**
<i>PPE</i>														0.0005	0.0280**
<i>DIV</i>															0.1362***

***, **, * indicate the significance at the 1%, 5%, and 10% levels, respectively.
Refer to Table 1 for the definitions of variables.

Table 3: Calculation of Excess Compensation

$$LNCOMP_{i,t} = \alpha_0 + \alpha_1 LNASSET_{i,t-1} + \alpha_2 RD_{i,t-1} + \alpha_3 SALEG_{i,t-1} + \alpha_4 ROA_{i,t-1} + \alpha_5 RET_{i,t-1} \\ + \sum IND_{i,t} + \sum YEAR_{i,t} + e_{i,t}$$

Variable	Coefficient	<i>t</i> -statistic	<i>p</i> -value
<i>LNASSET</i>	0.255***	43.67	<0.001
<i>RD</i>	4.023***	8.15	<0.001
<i>SALESG</i>	0.189***	19.98	<0.001
<i>ROA</i>	0.906***	16.27	<0.001
<i>RET</i>	-0.005	-0.47	0.6393
Industry dummy		INCLUDED	
Year dummy		INCLUDED	
Adj-R ²		0.3913	
# of obs.		6,823	

*** indicates the significance at the 1% level.

The error term (*e*) from the above regression model represents excess compensation.

Refer to Table 1 for the definitions of variables.

Table 4: Excess Compensation and Governance Structures

$$\begin{aligned}
EX_COMP_{i,t} = & \alpha_0 + \alpha_1 OWN_{i,t-1} + \alpha_2 BLOCK_{i,t-1} + \alpha_3 FORE_{i,t-1} + \alpha_4 FINST_{i,t-1} \\
& + \alpha_5 CHAEBOL_{i,t-1} + \alpha_6 LNASSET_{i,t-1} + \alpha_7 OP_{i,t-1} + \alpha_8 ROA_{i,t-1} + \alpha_9 RD_{i,t-1} + \alpha_{10} LEV_{i,t-1} \\
& + \alpha_{11} PPE_{i,t-1} + \alpha_{12} DIV_{i,t-1} + \alpha_{13} RET_{i,t-1} + \sum IND_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t}
\end{aligned}$$

Variable	Coefficient	<i>t-statistics</i>	<i>p-value</i>
<i>OWN</i>	0.094**	1.99	0.046
<i>BLOCK</i>	-0.051	-1.23	0.220
<i>FORE</i>	0.155**	1.93	0.054
<i>FINST</i>	-0.133*	-1.80	0.072
<i>CHAEBOL</i>	0.145***	3.93	0.000
<i>LNASSET</i>	-0.106***	-6.02	0.000
<i>OP</i>	0.084***	5.03	0.000
<i>ROA</i>	-0.096***	-3.02	0.000
<i>RD</i>	-0.362	-0.80	0.423
<i>LEV</i>	0.005	0.10	0.921
<i>PPE</i>	0.015	0.27	0.784
<i>DIV</i>	3.480***	2.65	0.008
<i>RET</i>	-0.009***	-9.47	0.000
Industry dummy		INCLUDED	
Year dummy		INCLUDED	
R ²		0.032	
# of obs.		6,823	

*** and * indicate the significance at the 1% and 10% levels, respectively.
We obtain *t-statistics* and *p-values* with two-way clustering by firm and year.
Refer to Table 1 for the definitions of variables.

Table 5: Performance Model

$$PERS_{i,t} = \alpha_0 + \alpha_1 EX_COMP_{i,t} + \alpha_2 LEV_{i,t-1} + \alpha_3 SALEG_{i,t-1} + \alpha_4 LNASSET_{i,t-1} + \sum IND_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t}$$

Dep. Variables	Coefficient on <i>EX_COMP</i> (α_1)	<i>t-statistics</i>	IND & YEAR	R ²	# of Obs.
<i>PERS 1</i>	0.036***	4.53	INCLUDED	0.20	6,621
<i>PERS 2</i>	0.032***	4.43	INCLUDED	0.11	6,621
<i>PERS 3</i>	0.079***	3.58	INCLUDED	0.08	6,621
<i>PERS 4</i>	0.023***	5.39	INCLUDED	0.15	6,621
<i>PERS 5</i>	0.026***	5.25	INCLUDED	0.16	6,621
<i>PERS 6</i>	0.038***	4.93	INCLUDED	0.11	6,621
<i>PERS 7</i>	0.040***	4.45	INCLUDED	0.04	6,621

Variable Definitions:

PERS1: gross profits scaled by sales;

PERS2: net income scaled by total assets;

PERS3: net income scaled by net sales;

PERS4: operating income scaled by average equity;

PERS5: net income scaled by average equity;

PERS6: net income scaled by capital; and

PERS7: operating income scaled by capital.

*** indicates the significance at the 1% level.

We obtain *t-statistics* and *p-values* with two-way clustering by firm and year.

Refer to Table 1 for the definitions of other variables.