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Pay Disparity and Firm Performance in Korea

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ABSTRACT

This study investigates the effect of large pay disparity between executive and employee on firm performance and explore the underlying cause of the result. In this study conducted for Korean publicly traded companies, I find that pay multiple is negatively associated with subsequent firm's operating and stock return performance. In general, there are a couple of main explanations on this result in prior literature. One is that large pay disparity harms employee morale and the other is that large pay disparity is a manifestation of management rent extraction. In this regard, I find that the relation between pay multiple and proxies for employee morale is statistically insignificant, suggesting that the first explanation is not supported empirically in Korea. As an alternative explanation, I examine whether the adverse effect of large pay disparity is because it implies the prevalence of management rent extraction. In result, I find that the level of executive pay is negatively associated with subsequent firm performance, and this result remains unchanged when replacing the level of executive pay with excess executive pay. To ascertain the robustness of the result, I additionally examine how the predicted component of executive pay arising from governance structure affect firm

performance following Core et al.(1999). Consistent with the result of main test, I find that the predicted executive pay arising from board structure is negatively associated with subsequent firm performance. Taken together, my findings imply that to address the adverse effect of large pay disparity in Korea, regulators and corporate sector should focus on mitigating the agency problem rather than simply decreasing the pay gap itself.

Keywords: pay disparity, employee morale, agency problem, rent extraction
Data Availability: All data are publicly available from sources identified in the text
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1. INTRODUCTION

In line with deepening public concern for income polarization, growing pay gap between top management and rank-and-file employee (hereafter referred to as 'pay disparity') in corporate sector is getting more attention from academics and regulators across the globe. Actually in the U.S., as part of efforts to address this public concern, the SEC adopted final rules in August 2015 under which most U.S. publicly listed companies must disclose the ratio between the total annual compensation of its median-paid employee and of its CEO regarding fiscal years beginning on or after January 1, 2017[1].

Similarly, in Korea, the pay and the way used to calculate it of all inside directors who are rewarded beyond 0.5 billion KRW annually must be disclosed via the firm's annual report since November 2013 in response to public concern for excessive executive pay[2].

With respect to this subject, accounting literature focus primarily on the effect of the pay disparity on employee productivity and/or firm performance. In fact, how pay disparity influences firm performance is unclear. Namely, arguments conflicting with each

[1] This regulation started with Section 953(b) of the 2010 Dodd-Frank legislation directing the SEC to require publicly listed companies to disclose their CEO pay ratios. After the election of President Trump and Republican control of both houses of Congress, however, there are efforts to repeal, modify or delay its requirement. In fact, the repeal of CEO pay ratio disclosures was included in the Financial CHOICE Act which ultimately was passed by the U.S House of Representatives in early June 2017. However, because of the lack of any support for the bill from Democrat legislators, its approval by the Senate seems unlikely to be achieved before the first disclosures due in 2018.

[2] Further, intensified rule is supposed to be effective at March 2018, which additionally requires publicly listed companies to disclose top 5 executives' pay individually regardless of whether he(she) is registered director or not. (the Financial Investment Services and Capital Markets Act 159②)

other are suggested along with respective plausible logic and the empirical results are mixed as well.

So, the objectives of this study are, firstly, to give additional evidence to this incompatible debate on how pay disparity affects firm performance and further help business and regulator better design compensation-related scheme by exploring the causes and consequences of the pay disparity in depth.

To do so, I first examine how pay disparity affects firm operating and stock return performance in Korea using traditional model specification[3]. As a result, I find that pay disparity is negatively associated with subsequent firm performance in Korea, consistent with Shin, Kang, Hyun, and Kim (2015). Accordingly, we are able to say that pay disparity has negative influence on firm performance in Korea with a stronger conviction

Based on this result, I come up with a question: What attribute of pay disparity, especially in Korea, causes the unfavorable consequence for firm? A great deal of prior studies arguing the adverse effect of large pay disparity cite a couple of main rationales, in general: (1) Impairment of employee morale due to perception of inequality, (2) Signal of management rent extraction linked to weak corporate governance. To my knowledge, however, there are few literature in depth analyzing the specific reasons above since prior studies focus primarily on the relation between observed pay disparity and firm value/performance.

In this regard, I next investigate the main reason that causes the negative relation

[3] Note that when dealing with this kind of subject, it is essential to take into account that the result might substantially be derived from inherent factors of each country (e.g. cultural background, management transparency, and so on.)

between pay disparity and future firm performance in Korea. These tests provide several evidence which seemingly imply that management rent extraction plays key role in the phenomenon. To begin with, I find that firms with larger pay disparity tend to offer higher pay for both executive and employee, and the fact that executive pay is much greater than the one of employee among these firms results in the large vertical pay gap. Starting from this point, I first examine whether large pay gap between executive and employee actually harms employee morale regardless of the employee pay level itself. In result, I find that the relation between pay multiple and the proxies for employee morale (i.e. employee satisfaction and employee productivity) is statistically insignificant while the level of employee compensation is positively related to both proxies for morale. This result indicates that large pay disparity might not undermine employee morale. Put differently, the employee morale impairment due to the perception of inequality seems marginal at best.

Considering that the first explanation as to why large pay disparity adversely affect firm performance is unlikely to be supported, I examine whether the second explanation, the manifestation of management rent extraction, makes some sense in several ways. As a result, I first find that the level of executive pay has a significant negative relation with subsequent firm performance while employee pay level exhibits a statistically insignificant relation with that. This finding suggests that executive pay in Korean firms tend to be determined unreasonably from an economic perspective, definitely inconsistent with optimal contracting view. Rather, it could be evidence of management rent extraction.

Further, to alleviate a concern that the total compensation is likely to be noisy, I separate the unexpected fraction of compensation from total compensation for both

executive and employee and regress subsequent firm performance on these unexpected pays. This test reveals that deviations from the expected executive pay is negatively related to subsequent firm performance while that of employee has a statistically insignificant relation with it. In particular, excess pay for executive is negatively associated with subsequent firm performance contrary to excess employee pay does not have clear relation with it, suggesting that rent extraction by executive is likely to exist in Korean firms.

To robust this result, I conduct an additional test using Core et al.(1999) methodology in which they verify the evidence of rent extraction by showing the executive pay arising from governance structures has a negative association with subsequent firm performance. Consistent with Core et al.(1999), I find that the predicted component of executive pay arising from board structures is negatively associated with subsequent firm performance.

Unique disclosure environment of Korea which requires all publicly listed firms to disclose the average pay of both executives and employees via their annual report facilitates this study. By the same token, the sample period is limited to 2004 through 2016 in which the current pay disclosure regulation is effective. I owe related studies such as Shin, Kang, Hyun, and Kim (2015), Chemmanur, Cheng, and Zhang (2012), and other impressive studies for both ideas and methodologies.

This study contribute to the literature in several ways. First of all, I add to empirical evidence on this line of research using expanded and updated data compared to existing studies. More importantly, this study identifies the underlying cause as to why large pay disparity harms firm performance in Korea among several plausible explanations. I expect that this accomplishment could fill the gap remained unexplained in previous studies and

offer insight into how corporate sector, authorities, and even public cope with the pay disparity issue.

The remainder of this paper is organized as follows. Section 2 presents the prior literature review and develops my hypothesis. Section 3 describes the samples and data. Section 4 provides the research design and empirical results. Section 5 is dedicated to robustness test, and Section 6 concludes.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. The impact of pay disparity on firm value/performance

How large pay disparity influences on firm value/performance has long been controversial in the business and academic communities. In fact, it seems that no one can answer the question with confidence because both sides asserting either its positive or negative effect are strongly supported by theoretical and empirical background.

On one hand, critics of large pay gap between executive and employee argue that it is likely to harm future firm performance suggesting a couple of main rationales. The first one is that pay disparity undermines employee morale, which in turn results in weaker dedication (e.g. Pfeffer 2007; Akerlof and Yellen 1990; Martin 1982; Cowherd and Levine 1992; Wade, O'Reilly Ⅲ, and Pollock 2006). And the second one is that pay disparity might be a signal of management rent extraction due to weak corporate governance. Since there exist lots of studies documenting that firm with weak governance exhibits lower firm value or poorer performance (e.g. Gompers, Ishii, and Metrick 2003; Cremers and Nair 2005; Bebchuk, Cohen, and Ferrell 2009), it makes some sense to conjecture that large pay disparity adversely affects firm value and/or performance.

A recent research conducted for Korean firms (i.e. Shin, Kang, Hyun and Kim 2015) provides empirical evidence backing up the unfavorable effect of large pay disparity by showing that the pay multiple, defined as executive annual pay divided by employee annual pay, is negatively associated with subsequent firm performance.

On the other hand, proponents of large pay gap insist that it is beneficial or at least inevitable for firms because of the reasons below. First, someone could say, based on the

tournament theory proposed by Lazear and Rosen(1981), that large pay differential is helpful for firm because it could intensify position contenders' incentive to win the competition, which in turn leads to better overall firm performance. (e.g. Eriksson 1999; Heyman 2005; Kale, Reis, and Venkateswaran 2009). Besides, it could also be argued that firms cannot help but offer disproportionately greater pay to top management relative to rank-and-file employee in order to obtain or retain those who can run the corporate successfully in the business environment getting larger and more complex (e.g. Kale, Reis, and Venkateswaran 2014[4]). Namely, it seems to reflect the optimal contracting viewpoint that argues such a pay differential stems from efficient contract mechanism to improve the business in the long run.

There are several recent studies consistent with this perspective in favor of large pay disparity. For instance, Faleye, Reis, and Venkateswaran (2013) find that the CEO-employee pay ratio has no impact on employee productivity at the average firm. Rather, their finding suggests that ordinary employees perceive an opportunity in higher pay ratios as long as they have a reasonable chance to win sequential promotion tournaments. Similarly, Cheng, Ranasinghe, and Zhao (2017, working paper) find that CEO pay ratios are positively associated with both firm value and performance and that high CEO pay is positively associated with proxies for CEO competence.

Here, it should be noted that the cultural backgrounds different across countries might account for substantive portion for these mixed results. Actually, according to the

[4] In this study, they find that managers are more likely to resign when their pay relative to their peers in the firm and outside the firm is lower.

survey-based study of Kim, Park, and Suzuki (1990), Korea has the culture preferring social harmony over individual achievement while U.S. traditionally places emphasis on individual accomplishment over the other, which is consistent with the result that large pay disparity plays negative role in Korean firms in contrast to in U.S. firms. In other words, the result of this line of studies should not be generalized without enough caution. Taking this into account, I particularly conduct tests for Korean listed firms following Shin, Kang, Hyun and Kim (2015) in which they investigate the effect of both pay multiple *per se* and deviations from expected pay multiple on firm performance in Korea.

Given the two opposite perspectives presented in prior studies, the influence of large pay disparity on future firm performance needs to be tested empirically. Thus, I present the first hypothesis in null form as below:

Hypothesis 1*: The pay multiple is not associated with subsequent firm stock return and operating performance.*

2.2. The causes that make pay disparity adversely affect future firm performance

With respect to hypothesis 1, I guess that it is likely to be rejected and large pay disparity has a negative effect on future firm performance in Korea, consistent with Shin, Kang, Hyun, and Kim (2015). Under this conjecture, I would like to go through the literature containing this line of assertion more specifically.

Impairment of Employee Morale

As mentioned earlier, it seems that there are two primary reasons as to why pay disparity

is negatively associated with firm value and performance. First, larger pay disparity could damage employee morale. According to Akerlof and Yellen (1990), employees' conception of the 'fairness' depends on the comparison of their own wage with that of senior executives. In the same sense, Wade, O'Reilly Ⅲ, and Pollock (2006) contend that employee assess the fairness of pay distribution mainly referring to CEO pay.

This assertion is backed by several evidence. For example, Martin (1982) finds that workers of a firm whose management-worker pay differential is large become less satisfied with their own job. Wade, O'Reilly Ⅲ, and Pollock (2006) report that lower-level managers are more likely to leave the firm when they are improperly underpaid relative to CEO. Cowherd and Levine (1992) find that pay gap between top management and rank-and-file worker is negatively associated with the quality of product, which suggests that lower pay disparity might better motivate the workers and induce stronger dedication.

To examine this argument, I hypothesize as follows using employee satisfaction and productivity as proxies for employee morale.

Hypothesis 2a*: The pay multiple is negatively related to subsequent employee satisfaction.*

Hypothesis 2b*: The pay multiple is negatively related to subsequent employee productivity.*

A Signal of Management Rent Extraction

Second, it is also plausible that large pay disparity is clear signal of management rent extraction due to weak corporate governance. Actually, Bebchuk, Cremers, and Peyer (2011) argue that large pay dispersion between CEO and other senior executives indicates CEO rent extraction and governance failure.

In this case, however, we could not posit that the existence of management rent extraction directly causes poorer future firm performance. Rather, weak governance might result in both more severe rent extraction and poorer firm performance at the same time. Even so, it seems reasonable to infer that management rent extraction has explanatory power for the negative relation between pay disparity and future firm performance given the linkage above.

Prior studies dealing with the management rent extraction subject primarily investigate whether it plays some role in decision of executive compensation or how management rent seeking due to weak governance affects firm value (or performance). For instance, Bebchuk and Fried (2003) report that the aspect of executive compensation decision in U.S. is largely compatible with the rent extraction view rather than optimal contracting view. And Core, Holthausen, and Larcker (1999) find that CEOs of firms with greater agency problem tend to receive greater pay and that firms with greater agency problem are likely to perform worse.

To my knowledge, however, there are few studies to investigate the role of rent extraction in adverse effect of large pay disparity. So I would like to examine whether the negative relation between pay disparity and future firm performance in Korea is attributable mainly to management rent extraction. To do so, I start with investigating how

the level of executive pay affects the subsequent firm performance. If executive pay arrangement is free from agency problems and reflects executive's competence properly, it would be positively related to the subsequent performance. By contrast, if rent extraction by executive with bargaining power generally exists in Korean firms, executive pay containing some excess pay would have no (or negative) association with subsequent performance. Thus, I present a hypothesis as below.

Hypothesis 3a*: The level of executive pay has no(or negative) association with subsequent firm performance.*

Further, given that total pay is likely to be noisy, I separate the excess pay from total pay and then examine the effect of excess pay on subsequent firm performance[5]. If the excess executive pay is a signal of rent extraction rather than reflecting certain talents of the executive not captured by economic factors, the economically unpredicted part of the actual executive pay (i.e. excess pay) would have no (or negative) association with the subsequent firm performance. Thus, my next hypothesis is as follows.

Hypothesis 3b*: Excessive executive pay has no(or negative) association with subsequent firm performance.*

[5] To measure the excess pay, I use the residual of Chemmanur, Cheng, and Zhang's (2012) CEO pay determinants model. I also owe Shin, Kang, Hyun and Kim (2015) for methodology to regress future firm performance on above residuals.

3. SAMPLE AND DATA

3.1. Sample selection

My sample includes firm-year observations during the period 2004 -2016[6], which are publicly traded firms on the Korean Stock Exchange (KRX) without exception. I obtained financial statement data and stock return data from Dataguide database. Compensation data were manually collected from each firm's annual reports[7]. On the other hand, employee satisfaction data is based on the survey conducted by People's Solidarity for Participatory Democracy[8]. I excluded financial firms because the firms are regulated by industry-specific rules with regard to my variables of interest, thereby it might cause somewhat distorted results. I also exclude firm-year observations with *Pay_Multiple* less than 1 and firm-year observation that doesn't have requisite regression variables. Finally, I delete top and bottom 1 percent for all variables of interest to reduce outlier concern.

3.2. Descriptive statistics

Table 1, Panel A provides summary statistics for variables used throughout this paper. The distributions of main variables are overall consistent with Shin, Kang, Hyun, and Kim (2015). The average pay multiple (*Pay_Multiple*) is 6.86 (median of 4.82). The average of annual executive compensation (*Exec_Comp*) is 324 million KRW while that of employee

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[6] I could get both executive and employee data for this period.

[7] Dataguide provides the compensation data these days, but because executive pay starts from 2009, I cannot help but collect data manually to minimize loss of data.

[8] Because this data period is limited to 2002 through 2009, a certain amount of data loss take place in the regression including employee satisfaction variable.

is 45.20 million KRW. With respect to performance measure, the mean (median) value of operating performance (i.e. *ROA*) is 3.0% (3.1%), and that of annual stock return performance (i.e. *Ret*) is 24% (9.9%), respectively. As the proxies for firm risk, I use total variance measures of operating and stock return performance. That is, I compute the standard deviation of *ROA* and the standard deviation of *Ret* over 5 years. The mean (median) value of the former is 3.8% (2.7%) and that of the latter is 55.8% (45.3%), respectively. The average market value of equity (*MVE*) is 836 billion KRW (median of 129 billion KRW) and the debt divided by total assets (*Lev*) has a mean (median) value of 42.5% (42.6%). Panel B of Table 1 provides distribution of my firm-year observations over fiscal years. It appears quite evenly distributed, alleviating a concern that year effect drives the results.

[Insert Table 1 about here]

Table 2 provides Pearson and Spearman correlation matrix. Interestingly enough, *Pay_Multiple* is positively correlated to both of *Exec_Comp* and *Emp_Comp*, suggesting that firms with larger pay multiple offer higher compensation for both of executive and employee, and the fact that executive compensation is much greater than that of employee among these firms might result in the large vertical pay gap.

[Insert Table 2 about here]

As stated earlier, this study starts with a reasonable doubt as to whether

employees of firms with large vertical pay gap actually feel dissatisfaction despite their higher pay relative to that of the other firms' employees.

[Insert Figure 1 about here]

4. RESEARCH DESIGN AND EMPIRICAL RESULTS

4.1. The impact of pay disparity on future firm performance

To test hypothesis 1, I regress subsequent firm performance variables (i.e. stock return and ROA) on observed pay multiple replicating Shin, Kang, Hyun, and Kim (2015).

$$Performance_t = \alpha_0 + \alpha_1 Pay\_Multiple_{t-1} + \alpha_2 (Pay\_Multiple_{t-1})^2 + \alpha_3 Performance_{t-1} + \alpha_4 Perf\_Std_t + \alpha_5 Size_t + \alpha_6 Lev_t + \alpha_7 Mtb_t + Year\ Effects + Industry\ Effects + \varepsilon_t \quad (1)$$

where *Performance* refers to annual stock return (*Ret*) and return on assets (*ROA*). *Pay_Multiple* is the average total annual pay of inside executive directors divided by that of rank-and-file employees. Other explanatory variables are the same as those of Shin, Kang, Hyun, and Kim (2015). Specifically, to examine whether there is an inverted U-shaped relation between pay disparity and firm performance as suggested by prior studies (e.g. Yang and Klass 2011), I include the squared term for pay multiple. If the coefficient on the squared term (α_2) is negative and statistically significant, it could be interpreted as proving the potential concave relation between pay disparity and subsequent firm performance. Past performance ($Performance_{t-1}$) is incorporated in the model because it acts as a natural benchmark for conservative tests on the performance effect of specific variables (Larcker 2003). *Perf_std* refers to the standard deviation of either annual stock return (*Ret_std*) or return on assets (*ROA_std*). I compute above standard deviations over the prior five years following Core, Holthausen, and Larcker (1999). I also control for firm size (*Size*), leverage (*Lev*) and market-to-book ratio (*Mtb*), defining *Size* as the natural log of market value of equity, *Lev* as the total debt divided by total assets, and *Mtb* as a proxy

for growth opportunities of the firm. Detailed definitions of variables are to be found in the Appendix.

[Insert Table 3 about here]

Columns (1) through (2) of Table 3 present the estimation results of Equation (1). Further, to control for industry-specific characteristics that affect the level of pay multiple, I replace firm-level pay multiples (*Pay_Multiple)* with industry-adjusted pay multiples (*Ind_Adj_PM)* following Shin, Kang, Hyun, and Kim (2015). Columns (3) through (4) of Table 3 show the results. In columns (1) and (3), where *Ret* is used as the dependent variable, both coefficients on *Pay_Multiple* and *Ind_Adj_PM* are negative and significant at the 1% level. Similarly, when using ROA as the dependent variable, the coefficient on *Pay_Multiple* is negative and significant at the 10% as presented in column (2). Even considering that the coefficient on *Ind_Adj_PM* is statistically insignificant as can be seen in column (4), overall results appear to indicate that large pay disparity harms subsequent firm performance in Korea, consistent with Shin, Kang, Hyun, and Kim's (2015) empirical findings.

On the other hand, given that the coefficients on the squared term of *Pay_Multiple* and *Ind_Adj_PM* are statistically insignificant in all columns, potential concave relation between pay disparity and subsequent firm performance appear not to be observed. The coefficients on other control variables are also similar to those of Shin, Kang, Hyun, and Kim (2015).

4.2. The cause that makes pay disparity adversely affect firm performance

Based on the result of Equation (1), I explore the underlying cause as to why large pay disparity negatively affect future firm performance in Korea, by reviewing two primary explanations frequently mentioned in related studies.

Impairment of Employee Morale

To test hypothesis 2a-2b which posits that pay disparity has a negative effect on employee morale, I specify following two regression models.

$$Productivity_t = \alpha_0 + \alpha_1 Pay\_Multiple_{t-1} + \alpha_2 ln(Emp\_Comp_{t-1}) + \alpha_3 Emp\_Tenure_t + \alpha_4 Size_t + \alpha_5 Lev_t + \alpha_6 Mtb_t + Year\ Effects + Industry\ Effects + \varepsilon_t \quad (2)$$

where *Productivity* refers to the natural log of revenue per employee following prior studies (e.g. Gibbs et al. 2004; Cronqvist et al. 2009). *Emp_Comp* is the average annual pay of employee including salary, bonus, stock-based compensation, if any. And *Emp_Tenure* refers to the average number of years each employee has worked for the firm. Other explanatory variables are described previously.

The other model is the same as equation (2) except that the dependent variable is changed from employee productivity to employee satisfaction.

$$Emp\_Satisfaction_t = \beta_0 + \beta_1 Pay\_Multiple_{t-1} + \beta_2 ln(Emp\_Comp_{t-1}) + \beta_3 Emp\_Tenure_t + \beta_4 Size_t + \beta_5 Lev_t + \beta_6 Mtb_t + Year\ Effects + Industry\ Effects + \varepsilon_t \quad (3)$$

where *Emp_Satisfaction* is survey-based data obtained from People's Solidarity for Participatory Democracy. This index is distributed 1 through 10, and I use the negative binomial regression because it generally fits in this sort of counts-based data. Note that the ordinary least squares (OLS) is used in all regressions except for this one.

In Equation (2) and (3), the coefficients of interest are α_1 and β_1, respectively. That is, to be consistent with hypothesis 2a-2b, the coefficients on the *Pay_Multiple* (i.e. α_1 and β_1) should be negative and statistically significant.

[Insert Table 4 about here]

As presented in the first row of Table 4, the coefficients on *Pay_Multiple* are statistically and economically insignificant regardless of what proxy for employee morale is used, suggesting that the degree of pay disparity rarely have an effect on employee morale[9]. This result is inconsistent with both behavioral perspective based on equity-theory and economic perspective based on tournament-theory.

By contrast, *ln*(*Emp_Comp*) has a significant positive association with both proxies for employee morale as shown in the second row of Table 4, suggesting that the level of employee pay plays a key role to motivate workers.

In conclusion, the argument that large pay disparity is detrimental for firms because it makes rank-and-file employees have a perception of inequality (or injustice)

[9] This might be because employees actually do not care about pay disparity or one effect cancels the other effect out.

and thereby damages their morale is not supported empirically, at least in Korea. In other words, when discussing the adverse effect of executive-employee pay disparity, approaching from employee morale perspective is likely to mislead.

A Signal of Management Rent Extraction

As an alternative explanation for the negative association between pay disparity and firm performance, I would like to examine whether large pay disparity represents the weakness of governance and high likelihood of rent extraction by executive. To do so, I first specify following regression model to test hypothesis 3a.

$$Performance_t = \alpha_0 + \alpha_1 ln(Exec\_Comp_{t-1}) + \alpha_2 ln(Emp\_Comp_{t-1}) + \alpha_3 Performance_{t-1} + \alpha_4 Perf\_Std_t + \alpha_5 Size_t + \alpha_6 Lev_t + \alpha_7 Mtb_t + Year\ Effects + Industry\ Effects + \varepsilon_t \quad (4)$$

where *Exec_Comp* refers to the average annual pay of each inside director including salary, bonus, and stock options. The rest of explanatory variables are explained previously.

If the argument that management rent extraction is prevalent in Korean firms is the case, the level of executive pay would be unlikely to have a positive association with subsequent firm performance because it deviates from optimal pay level favorable for the firm. That is, if the coefficient α_1 is not positive (i.e. if hypothesis 3a is accepted), it might be a signal of management rent extraction.

Meanwhile, I don't predict how the level of employee pay affects future firm performance because nobody can assure of it even though it has nothing to do with agency

problem. That is, the employee pay level could enhance employee morale, but at the same time it could cause persistent cost burden which weakens firm profitability given the downward rigidity of wage.

[Insert Table 5 about here]

Table 5 presents the estimation results of Equation (4). Consistent with hypothesis 3a, natural log of *Exec_Comp* is negatively associated with both performance measures, significant at the 1% level for *Ret* and at the 5% level for *ROA*, respectively. Given that *Emp_Comp* does not have any significant relation with both of *Ret* and *ROA*, the clear negative influence of *Exec_Comp* on those suggests that the decision of executive pay is less likely to have an economic basis.

Further because total pay is likely to be noisy, I separate the excess pay from total pay and then regress subsequent firm performance on the excess pay to test hypothesis 3b. .In this way, I expect to verify whether or not management rent extraction exists more directly. To separate excess pay from observed executive pay, I employ the residuals obtained from Chemmanur, Cheng, and Zhang's (2013) CEO pay determinants model (hereafter, CCZ model)[10]. Then I first regress firm performance on the absolute value of the residuals to capture how the deviation from the expected pay level affects subsequent firm performance, following Shin, Kang, Hyun, and Kim (2015).

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[10] $Exec\_Comp_t = \alpha_0 + \alpha_1 Performance_t + \alpha_2 Perf\_Std_t + \alpha_3 Size_t + Leverage_t + \alpha_5 Mtb_t + \varepsilon_t$
The regression result is untabulated.

$$Performance_t = \alpha_0 + \alpha_1|Exec\_Residual|_{t-1} + \alpha_2 Performance_{t-1} + \alpha_3 Perf\_Std_t + \alpha_4 Size_t + \alpha_5 Lev_t + \alpha_6 Mtb_t + Year\ Effects + Industry\ Effects + \varepsilon_t \quad (5)$$

where *Exec_Residual* is the residuals of CCZ model and represents the excess executive pay as stated previously. If α_1 is negative, it could be interpreted as indicating that deviations from predicted executive pay, regardless of whether it is positive or not, adversely affect subsequent firm performance.

Then, I modify the above model in the way to include an additional variable, *Emp_Residual*, to investigate the effect of excess employee pay as well.

$$Performance_t = \alpha_0 + \alpha_1|Exec\_Residual|_{t-1} + \alpha_2|Emp\_Residual|_{t-1} + \alpha_3 Performance_{t-1} + \alpha_4 Perf\_Std_t + \alpha_5 Size_t + \alpha_6 Lev_t + \alpha_7 Mtb_t + Year\ Effects + Industry\ Effects + \varepsilon_t \quad (6)$$

where *Emp_Residual* is the residuals of the wage determinants model[11] specified following prior studies (e.g. Holzer 1990; Faleye, Reis, and Venkateswaran 2013; Chemmanur, Cheng, and Zhang 2013). The coefficients of interest are α_1 and α_2, and investigating how different those are from each other has implications in rent extraction

[11] $ln(Emp\_Comp_t) = \alpha_0 + \alpha_1 Size_t + \alpha_2 Leverage_t + \alpha_3 Mtb_t + \alpha_4 Productivity_t + \alpha_5 R\&D\ intensity_t + \alpha_6 Emp\_tenure_t + \alpha_7 Site_t + \alpha_8 Industry\_Emp\_Comp_t + \varepsilon_t$

The regression result is untabulated.

study.

[Insert Table 6 about here]

Columns (1) and (2) of Table 6 present the estimation results of Equation (5) and (6), respectively. As can be seen in column (1), the absolute value of *Exec_Residual* has a negative association with subsequent *Ret* and this result remains unchanged after adding to the absolute value of *Emp_Residual* in the model as presented in columns (2) of Table 6. Given that the relation between absolute value of *Emp_Residual* and subsequent *Ret* is statistically insignificant, it seems clear that the unpredicted executive pay has an adverse effect on firm performance unlike the unpredicted employee pay.

Then following Rajgopal and Srinivasan (2006), I decompose the residuals into positive and negative value to examine how higher and lower pay relative to predicted one affects future firm performance, respectively. The model is specified as below.

$$\begin{aligned} Performance_t = {} & \alpha_0 + \alpha_1 Exec\_Pos\_Res_{t-1} + \alpha_2 Exec\_Neg\_Res_{t-1} + \\ & \alpha_3 Performance_{t-1} + \alpha_4 Perf\_Std_t + \alpha_5 Size_t + \alpha_6 Lev_t + \alpha_7 Mtb_t + \\ & Year\ Effects + Industry\ Effects + \varepsilon_t \end{aligned} \quad (7)$$

where *Exec_Pos_Res* denotes the positive value of residuals of CCZ model, while *Exec_Neg_Res* refers to negative value of that.

Then, I add to variables related to the residuals of employee pay in the Equation (7).

$$Performance_t = \alpha_0 + \alpha_1 Exec\_Pos\_Res_{t-1} + \alpha_2 Exec\_Neg\_Res_{t-1} + \alpha_3 Emp\_Pos\_Res_{t-1} + \alpha_4 Emp\_Neg\_Res_{t-1} + \alpha_5 Performance_{t-1} + \alpha_6 Perf\_Std_t + \alpha_7 Size_t + \alpha_8 Lev_t + \alpha_9 Mtb_t + Year\ Effects + Industry\ Effects + \varepsilon_t \quad (8)$$

where *Emp_Pos_Res* is the positive value out of residuals of wage determinants model and *Emp_Neg_Res* refers to negative value of the residuals above.

The variable of interest in Equation (7) and (8) is *Exec_Pos_Res* because it represents the surplus component of executive pay, which is not predicted by economic factors. According to hypothesis 3b, α_1 in both Equation (7) and (8) should be either statistically insignificant or negative because it assumes that higher executive pay relative to prediction is a signal of rent extraction rather than rewards for invisible executive talent. Especially, in Equation (8), α_1 should have different aspect from α_3 to be consistent with hypothesis 3b.

Columns (3) and (4) of Table 6 present the estimation results of Equation (7) and (8), respectively. The result appears to be consistent with hypothesis 3b. That is, α_1 in Equation (7) is statistically insignificant as presented in column (3) of Table 6, and that in Equation (8) is negative and significant at the 10% level while the coefficient on *Emp_Pos_Res* is statistically insignificant as shown in column (4) of Table 6. Taken together, these results imply that excess executive pay is likely to be attributable primarily to rent extraction by executive.

5. Robustness Test

To ascertain the robustness of the previous result that rent extraction by executive is prevalent in Korea, I conduct an additional test by employing an alternative specification including governance-related variables.

Actually, there are several studies investigating the existence of rent extraction in connection with governance attributes such as board and ownership structure. For example, Core, Holthausen, and Larcker (1999) find that board and ownership structures explain a significant amount of variation in CEO pay and that the predicted component of CEO pay arising from these governance structures has a negative relation with subsequent firm performance. They interpret this negative relation as strong evidence of management rent extraction. Likewise, Chalmers, Koh, and Stapledon (2006) find that not only economic factors but also governance structures act as a significant determinant of CEO compensation and document that management rent extraction is observed in Australian firms, building on Core, Holthausen, and Larcker (1999)[12].

Following above research methodologies, I hypothesize as below to examine the existence of management rent extraction.

Hypothesis (a)*: Predicted component of executive pay arising from governance structures is negatively associated with firm performance.*

[12] However, unlike Core, Holthausen, and Larcker (1999), they show that the rent extraction is not economically significant and does not persist beyond one year.

To test hypothesis (a), I follow Core, Holthausen, and Larcker (1999) in which they devise the 'predicted excess pay' variable derived from the variables representing board and ownership attributes out of CEO pay determinants and then regress firm performance on the predicted excess pay. To apply this approach, I need to specify a new executive pay determinants model including governance attributes as follows [13]. Unfortunately, the variables regarding governance attributes are restricted to a few board structure variables because of data limitation.

$$ln(Exec\_Comp_t) = \alpha_0 + \alpha_1 Performance_t + \alpha_2 Perf\_Std_t + \alpha_3 Size_t + \alpha_4 Leverage_t + \alpha_5 Mtb_t + \alpha_6 ln(Board\_Size_t) + \alpha_7 Board\_Ind_t + \alpha_8 2Trillion_t + \alpha_9 Board\_Ind_t * 2Trillion_t + Year\ Effects + Industry\ Effects + \varepsilon_t \quad (9)$$

where *Board_Size* refers to the sum of inside and outside directors and *Board_Ind* refers to the proportion of outside directors in board of directors. *2trillion* is an indicator variable equal to one if the firm's total asset is over 2 trillion KRW, zero otherwise. The interaction variable between *Board_Ind* and *2trillion* is to reflect the Korean-specific governance regulation which requires higher fraction of outside directors for the firms with total assets more than 2 trillion KRW[14].

[13] Most explanatory variables in this specification are the same as Shin, Kang, Hyun, and Kim (2015)

[14] Specifically, publicly listed firms with total assets more than 2trillion KRW should make up board of directors whose outside director fraction is at least 50% (The Commercial Law 542_11)

[Insert Table 7 about here]

Now, I can compute the predicted excess pay as follows.

$$Pred\_excess\_pay_t = \sum \beta_i \, board\ structure_i \qquad (10)$$

where the estimated coefficients on the board structure variables ($\beta_i's$) are those reported in Table 7.

Finally, it becomes possible to test hypothesis (a) by regressing firm performance on the *Pred_excess_pay*. The model specification is as follows.

$$Performance_t = \alpha_0 + \alpha_1 Pred\_excess\_pay_t + \alpha_2 Performance_{t-1} + \alpha_3 Perf\_Std_t + \alpha_4 Size_t + \alpha_5 Lev_t + \alpha_6 Mtb_t + Year\ Effects + Industry\ Effects + \varepsilon_t \qquad (11)$$

To be consistent with hypothesis (a), α_1 should be negative, which implies that the association between executive pay and governance structure reflects the degree of managerial entrenchment. By contrast, if the predicted excess pay has no or a positive association with firm performance, it might indicate that the association between executive pay and governance structure reflects the firm's demand for talented executive not captured by economic factors.

[Insert Table 8 about here]

The empirical result is presented in Table 8. Consistent with hypothesis (a), the predictable component of executive pay due to board structure variables (*Pred_excess_pay*) exhibits a significant negative association with both firm performance measures, suggesting that this kind of compensation seems to lack the economic basis; Rather, it is likely to come from the influence of the executive on board of directors. This finding is robust to the result of main test in that it provides another evidence of management rent extraction in Korean firms.

6. CONCLUSION

In this paper, I examine the effect of large pay disparity between executive and employee on future firm performance and explore the underlying cause of the result. There are competing theories on this subject and the empirical results are mixed as well. In this study conducted for Korean publicly traded firms, I find that executive-employee pay gap is negatively associated with subsequent firm's stock return and operating performance. This result is consistent with Shin et al. (2015).

In the next stage, I try to identify the underlying cause of this result. In general, there are a couple of main explanations for this line of result in prior literature: One is the impairment of employee morale and the other is manifestation of management rent extraction. I specify several models to examine each explanation and first find that the relation between pay disparity and proxies for employee morale (i.e. employee productivity and employee satisfaction) is statistically insignificant, suggesting that the first explanation is not supported empirically, at least in Korea.

As an alternative explanation, I examine whether the adverse effect of large pay disparity is because it implies the prevalence of management rent extraction. In result, I find that the level of executive pay is negatively associated with subsequent firm performance, and the result remains unchanged after replacing the level of executive pay with excess executive pay. As a robustness test, I investigate how the predicted component of executive pay arising from governance structure affect firm performance, following Core et al. (1999). Consistent with the main test result, I find that the predicted executive pay arising from board structures is negatively associated with subsequent firm performance.

In brief, this study re-confirmed that large pay disparity has an unfavorable effect on firm performance in Korea, and find that the underlying cause of above result is more likely because it manifests the prevalence of rent seeking by management rather than damage of employee morale. The findings of this study imply that to address the adverse effect of large pay disparity on firm performance, regulators and corporate sector should focus on mitigating the agency problem rather than simply minimizing the executive-employee pay gap itself.

I acknowledge that my study is subject to potential limitation such as measurement errors and that such limitations make it difficult to argue for causality. Despite such issues, however, I suggest that my findings have potential to contribute to the literature in some ways. First of all, I add to empirical evidence on this line of research using expanded and updated data compared to existing studies. Further, this study firstly identifies the underlying cause as to why large pay disparity harms firm performance by examining plausible explanations one by one. Most importantly, this study uncover that the claim that executive-employee pay disparity is detrimental for firms might mislead because it is likely to be due mainly to excess executive pay, not pay multiple *per se*.

I expect that this accomplishment could fill the gap remained unexplained in previous studies and offer insight into how corporate sector, authorities, and even public cope with the pay disparity issue.

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APPENDIX: DEFINITION OF VARIABLES

Variable	Definition
Pay_Multiple	Average annual pay (salary, bonus and stock options of inside executive director (*Exec_Comp*) scaled by that of employee (*Emp_Comp*)
Exec_Comp	Average annual pay (salary, bonus, and stock options) of inside director (in millions of KRW)
Emp_Comp	Average annual pay (salary, bonus, and stock options) of employee (in millions of KRW)
ROA_Std	Standard deviation of return on asset (*ROA*) over prior five years (*t*-5 to *t*-1)
Ret_Std	Standard deviation of monthly compounded annual stock returns (*Ret*) over prior five years (*t*-5 to *t*-1)
ROA	Income from continued operation scaled by total assets of beginning of the year
Ret	Monthly compounded annual stock returns
Emp_Tenure	Average number of years each employee has worked for the firm
Size	Natural logarithm of market value of equity
Lev	Total debt scaled by total assets
Mtb	Market-to-book ratio at the fiscal year end
Ind_Adj_PM	Firm-level *Pay_Multiple* minus industry average pay multiple, where the mean value excludes the firm of interest
Board_Ind	The number of outside directors scaled by *Board_size*
Board_Size	The sum of inside and outside directors
2trillion	1 if firm's total asset is over 2 trillion KRW, 0 otherwise
Productivity	Natural logarithm of revenue scaled by the number of employee
R&D_Intensity	Annual R&D expenditure scaled by total asset
Site	1 if the head-quarter of the firm is located in Seoul, 0 otherwise

Table 1. Descriptive Statistics and Sample Distribution

Panel A: Summary statistics

Note: Table 1 presents the descriptive statistics of variables used in the empirical analyses. The sample is comprised of 4,820 firm-year observations over the period of 2004-2016. All the continuous variables are winsorized at 1 percentile and 99 percentiles. See Appendix for variable definition.

Variable	N	Mean	Std. Dev.	Q1	Median	Q3	Maximum
Pay_Multiple	4,820	6.863	6.521	1.005	4.821	8.006	82.500
Exec_Comp	4,820	324.014	343.907	29.884	205.000	372.308	2,848.440
Emp_Comp	4,820	45.196	14.149	3.236	43.000	54.000	110.807
ROA_std	4,795	0.038	0.041	0.003	0.027	0.046	0.494
Ret_std	4,820	0.558	0.381	0.062	0.453	0.696	3.475
ROA	4,819	0.030	0.059	-0.297	0.031	0.062	0.291
Ret	4,820	0.240	0.613	-0.793	0.099	0.447	5.110
Mve	4,820	836	2,365	5.427	129	425	27,699
Size	4,820	25.871	1.618	22.415	25.582	26.776	30.952
Lev	4,820	0.425	0.194	0.007	0.426	0.574	0.945
Mtb	4,820	1.016	0.825	0.11	0.770	1.210	7.12

Panel B: Sample distribution across fiscal year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
N	279	308	319	342	339	320	336	389	424	445	444	474	401
%	5.79	6.39	6.62	7.10	7.03	6.64	6.97	8.07	8.80	9.23	9.21	9.83	8.32

Note: This table presents the sample distribution over fiscal year. The sample is comprised of 4,820 firm-year observations over the period of 2004-2016.

Table 2. Pearson and Spearman correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) $Pay\_Multiple$	1.000	0.865 (<.0001)	0.149 (<.0001)	-0.073 (<.0001)	-0.033 (0.0217)	0.088 (<.0001)	-0.038 (0.0075)	0.461 (<.0001)	0.026 (0.0719)	0.184 (<.0001)
(2) $Exec\_Comp$	0.916 (<.0001)	1.000	0.472 (<.0001)	-0.084 (<.0001)	-0.046 (0.0014)	0.091 (<.0001)	-0.062 (<.0001)	0.593 (<.0001)	0.046 (0.0014)	0.196 (<.0001)
(3) Emp_Comp	0.213 (<.0001)	0.559 (<.0001)	1.000	-0.126 (<.0001)	-0.116 (<.0001)	0.065 (<.0001)	-0.103 (<.0001)	0.557 (<.0001)	0.069 (<.0001)	0.122 (<.0001)
(4) ROA_std	-0.092 (<.0001)	-0.122 (0.0202)	-0.105 (<.0001)	1.000	0.128 (<.0001)	-0.166 (<.0001)	0.019 (0.1896)	-0.115 (<.0001)	0.120 (<.0001)	0.116 (<.0001)
(5) Ret_std	-0.034 (0.0173)	-0.068 (<.0001)	-0.095 (<.0001)	0.173 (<.0001)	1.000	0.001 (0.9456)	-0.046 (0.0014)	-0.02429 (0.0917)	0.162 (<.0001)	0.130 (<.0001)
(6) ROA	0.109 (<.0001)	0.112 (<.0001)	0.039 (0.0062)	-0.153 (<.0001)	0.020 (0.1551)	1.000	0.222 (<.0001)	0.241 (<.0001)	-0.333 (<.0001)	0.133 (<.0001)
(7) Ret	-0.032 (0.0250)	-0.057 (<.0001)	-0.082 (<.0001)	-0.044 (0.0026)	-0.067 (<.0001)	0.281 (<.0001)	1.000	0.055 (0.0001)	-0.005 (0.7278)	0.262 (<.0001)
(8) $Size$	0.478 (<.0001)	0.613 (<.0001)	0.545 (<.0001)	-0.118 (<.0001)	0.001 (0.9289)	0.247 (<.0001)	0.085 (<.0001)	1.000	-0.012 (0.3964)	0.438 (<.0001)
(9) Lev	0.011 (0.4279)	0.040 (0.0061)	0.084 (<.0001)	0.108 (<.0001)	0.176 (<.0001)	-0.370 (<.0001)	-0.059 (<.0001)	-0.031 (0.0320)	1.000	0.112 (<.0001)
(10) Mtb	0.1807 (<.0001)	0.218 (<.0001)	0.156 (<.0001)	0.094 (<.0001)	0.149 (<.0001)	0.244 (<.0001)	0.253 (<.0001)	0.496 (<.0001)	0.093 (<.0001)	1.000

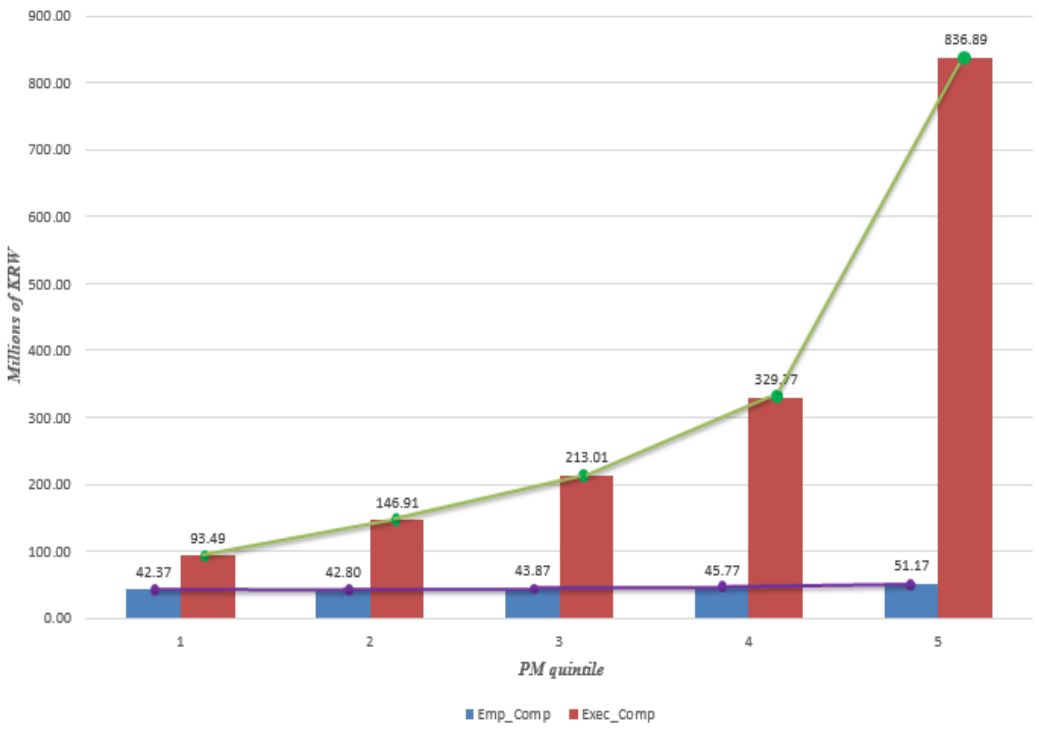
Note: This table reports the Pearson and Spearman correlation coefficients of main variables. The sample is comprised of 4,820 firm-year observations over the period of 2004-2016. The numbers reported in the parenthesis are p-values

Table 3. The Effect of the Pay Multiple on Subsequent Firm Performance

	Dependent Variable							
	(1)$\mathbf{Ret_t}$		**(2)$\mathbf{ROA_t}$**		**(3)$\mathbf{Ret_t}$**		**(4)$\mathbf{ROA_t}$**	
	Coeff.	***t-value***	***Coeff.***	***t-value***	***Coeff.***	***t-value***	***Coeff.***	***t-value***
$\boldsymbol{Pay\_Multiple_{t-1}}$	-0.009***	-3.07	-0.0005*	-1.69				
$(\boldsymbol{Pay\_Multiple_{t-1}})^2$	0.000	0.60	0.0000	0.37				
$\boldsymbol{Ind\_Adj\_PM_{t-1}}$					-0.008***	-4.28	-0.0003	-1.64
$(\boldsymbol{Ind\_Adj\_PM_{t-1}})^2$					0.000	0.51	-0.0000	-0.25
$\boldsymbol{ROA_{t-1}}$			0.388***	30.36			0.388***	30.34
$\boldsymbol{ROA\_std_t}$			-0.074***	-4.14			-0.073***	-4.12
$\boldsymbol{Ret_{t-1}}$	-0.058***	-4.75			-0.058***	-4.76		
$\boldsymbol{Ret\_std_t}$	-0.149***	-7.16			-0.149***	-7.15		
$\boldsymbol{Size_t}$	-0.007	-1.24	0.005***	7.97	-0.007	-1.23	0.004***	7.73
$\boldsymbol{Lev_t}$	-0.115***	-2.79	-0.067***	-16.31	-0.114***	-2.76	-0.067***	-16.35
$\boldsymbol{Mtb_t}$	0.228***	21.02	0.008***	7.51	0.228***	21.00	0.008***	7.57
Intercept	0.167	1.00	-0.082***	-5.15	0.115	0.68	-0.080***	-4.91
Year & Industry Fixed Effect	Yes		Yes		Yes		Yes	
Observations	4,820		4,795		4,820		4,795	
Adjusted. R^2	0.355		0.371		0.356		0.370	

Note: This table shows the regression results of hypothesis 1 using Shin et al. (2015) model specification, which examines the effect of executive pay multiple on subsequent operating and stock performance. The sample is comprised of 4,820 firm-year observations over the period of 2004-2016. All the continuous variables are winsorized at top and bottom one-percentile.

Figure 1. The Comparison of Executive and Employee Compensation across Pay Multiple Quintile



Note: This figure presents the comparison of executive and employee pay across *Pay_Multiple* quintile.

Table 4. The Influence of Pay Multiple on Employee Morale

	Dependent Variable			
	(1)Employee Satisfaction$_t$		**(2)Productivity$_t$**	
	Coeff.	***Wald Chi-Square***	***Coeff.***	***t-value***
$\boldsymbol{Pay\_Multiple_{t-1}}$	0.003	0.84	0.002	0.85
$\boldsymbol{ln(Emp\_Comp_{t-1})}$	0.147**	6.06	1.524***	24.64
$\boldsymbol{Emp\_Tenure_t}$	-0.018***	16.68	-0.041***	-9.94
$\boldsymbol{Size_t}$	-0.006	0.25	0.063***	5.63
$\boldsymbol{Lev_t}$	0.037	0.24	-0.022	-0.33
$\boldsymbol{Mtb_t}$	0.042**	4.48	-0.104***	-5.91
Intercept	1.373***	26.78	6.414***	22.30
Year & Industry Fixed Effect	Yes		Yes	
Observations	1,217		4,715	
Adjusted. R^2			0.448	

Note: This table shows the regression result about the influence of *Pay Multiple* on employee satisfaction and productivity. Note that I use OLS for productivity regression while using negative binomial for employee satisfaction regression. All the continuous variables are winsorized at top and bottom one-percentile. *, **, and *** denote statistical significance at a 0.10, a 0.05, and a 0.01 level respectively.

Table 5. The Effect of both Executive and Employee Pay Level on Subsequent Firm Performance

	Dependent Variable			
	(1)$\mathbf{Ret_t}$		**(2)$\mathbf{ROA_t}$**	
	Coeff.	***t-value***	***Coeff.***	***t-value***
$ln(Exec\_Comp_{t-1})$	-0.064***	-5.21	-0.003**	-2.23
$ln(Emp\_Comp_{t-1})$	-0.055	-1.57	0.004	1.13
Ret_{t-1}	-0.058***	-4.73		
Ret_std_t	-0.153***	-7.32		
ROA_{t-1}			0.388***	30.35
ROA_std_t			-0.075***	-4.19
$Size_t$	0.004	0.60	0.004***	6.47
Lev_t	-0.096**	-2.31	-0.067***	-16.17
Mtb_t	0.219***	19.82	0.008***	7.40
Intercept	0.371**	2.20	-0.078***	-4.81
Year & Industry Fixed Effect	Yes		Yes	
Observations	4,813		4,788	
Adjusted. R^2	0.356		0.370	

Note: This table shows the regression results about the effect of both executive and employee pay level on subsequent operating and stock performance. All the continuous variables are winsorized at top and bottom one-percentile. *, **, and *** denote statistical significance at a 0.10, a 0.05, and a 0.01 level respectively.

Table 6. The Effect of Residuals of Pay on Subsequent Firm Performance

	Dependent Variable: Ret_t							
	(1) ***Coeff.***	***t-value***	**(2)** ***Coeff.***	***t-value***	**(3)** ***Coeff.***	***t-value***	**(4)** ***Coeff.***	***t-value***
$\lvert Exec\_Residual \rvert_{t-1}$	-0.055**	-2.36	-0.095***	-2.98				
$\lvert Emp\_Residual \rvert_{t-1}$			-0.175	-1.59				
$Exec\_Pos\_Residual_{t-1}$					-0.026	-0.97	-0.072*	-1.94
$Exec\_Neg\_Residual_{t-1}$					0.111***	3.67	0.120***	3.12
$Emp\_Pos\_Residual_{t-1}$							-0.183	-1.33
$Emp\_Neg\_Residual_{t-1}$							0.166	1.30
Ret_{t-1}	-0.070***	-4.52	-0.072***	-3.40	-0.070***	-4.51	-0.074***	-3.45
Ret_std_t	-0.158***	-6.37	-0.160***	-4.68	-0.158***	-6.37	-0.160***	-4.69
$Size_t$	-0.025***	-4.21	-0.029***	-3.44	-0.024***	-4.02	-0.029***	-3.39
Lev_t	-0.099**	-2.16	-0.011	-0.16	-0.099**	-2.14	-0.018	-0.26
Mtb_t	0.264***	20.62	0.278***	15.15	0.259***	20.49	0.277***	15.04
Intercept	0.536***	3.09	0.741**	2.42	0.518***	2.99	0.755**	2.46
Year & Industry Fixed Effect	Yes		Yes		Yes		Yes	
Observations	3,771		2,019		3,771		2,019	
Adjusted. R^2	0.378		0.419		0.375		0.419	

Note: This table shows the regression results about the effect of residuals of executive and employee pay determinants model on subsequent stock return performance. All the continuous variables are winsorized at top and bottom one-percentile. *, **, and *** denote statistical significance at a 0.10, a 0.05, and a 0.01 level respectively.

Table 7. The Result for Executive Pay Determinants Model including Board Structure variables

	Dependent Variable: $ln(Exec\_Comp_t)$			
	(1)Performance: Ret		**(2)Performance: ROA**	
	Coeff.	***t-value***	***Coeff.***	***t-value***
$Size_t$	0.314***	34.67	0.299***	31.86
Lev_t	0.326***	6.58	0.397***	7.64
Mtb_t	-0.097***	-7.20	-0.101***	-7.70
Ret_t	-0.037**	-2.16		
Ret_std_t	-0.089***	-3.74		
ROA_t			0.638***	3.85
ROA_std_t			-1.343***	-6.14
$ln(Board\_Size_t)$	-0.192***	-6.75	-0.205***	-7.19
$Board\_Ind_t$	0.277***	2.95	0.338***	3.61
$2Trillion_t$	0.037	0.32	0.056	0.49
$Baord\_Ind * 2Trillion_t$	0.259	1.21	0.288	1.35
Intercept	-2.618***	-10.81	-2.245***	-9.06
Year & Industry Fixed Effect	Yes		Yes	
Observations	4,820		4,795	
Adjusted. R^2	0.505		0.510	

Note: This table shows the regression results for the first-stage executive pay determinants model including the board structure variables. All the continuous variables are winsorized at top and bottom one-percentile. *, **, and *** denote statistical significance at a 0.10, a 0.05, and a 0.01 level respectively.

Table 8. The Influence of Predicted Excess Executive Pay on Firm Performance

	Dependent Variable			
	(1)$\mathbf{Ret_t}$		**(2)$\mathbf{ROA_t}$**	
	Coeff.	***t-value***	***Coeff.***	***t-value***
$Pred\_Excess\_Pay_t$	-0.280***	-2.91	-0.031***	-3.85
Ret_{t-1}	-0.057***	-4.57		
Ret_std_t	-0.129***	-6.16		
ROA_{t-1}			0.398***	31.06
ROA_std_t			-0.057***	-3.15
$Size_t$	-0.023***	-4.10	0.004***	7.40
Lev_t	-0.111***	-2.65	-0.063***	-15.22
Mtb_t	0.224***	20.42	0.007***	6.54
Intercept	0.568***	2.20	-0.073***	-4.38
Year & Industry Fixed Effect	Yes		Yes	
Observations	4,758		4,735	
Adjusted. R^2	0.347		0.366	

Note: This table shows the regression results about the influence of predicted excess executive compensation on operating and stock return performance. All the continuous variables are winsorized at top and bottom one-percentile. *, **, and *** denote statistical significance at a 0.10, a 0.05, and a 0.01 level respectively.

요약(국문초록)

본 연구는 임직원간의 큰 임금 격차가 기업의 성과에 어떤 영향을 미치는지, 그리고 그러한 결과가 발생하는 주요 원인은 무엇인지 한국 상장기업을 대상으로 실증적으로 분석한다. 2004년부터 2016년까지 한국거래소 유가증권시장에 상장된 기업들을 대상으로 연구한 결과, 임직원간 큰 임금격차는 차기의 기업성과(주가수익률 및 ROA)에 부정적인 영향을 미치는 것으로 나타났다. 선행연구에서는 이러한 결과를 설명하기 위해 주로 ①직원의 사기(morale) 저하, ②경영진의 지대추구행위(rent extraction)의 징후 등을 들고 있는 바, 본 연구에서는 이들 각각을 회귀분석을 통해 검증해보았고 그 결과는 다음과 같았다. 첫째, 다른 설명변수들을 통제했을 때 임직원의 임금격차는 직원 사기의 대용치인 생산성이나 직무만족도와 통계적으로 유의한 관계가 없는 것으로 나타났다. 이는 임직원간 임금격차가 직원의 동기부여를 크게 저해하지 않음을 나타내는 것으로 해석될 수 있으며, 결국 첫 번째 설명이 한국기업을 대상으로 했을 때 실증적으로 뒷받침되지 않음을 의미한다. 다음으로, 임직원간 큰 임금격차가 경영진의 지대추구행위에서 비롯되는 것이며, 이를 가능케 하는 부실한 기업지배구조가 미래의 나쁜 성과로 연결되는 것인지를 조사한 결과, (1)직원의 급여수준이 기업의 차기성과와 유의한 관계를 가지지 않는 데 반해, 임원의 급여수준은 부(−)의 관계를 가짐을 발견하였고, (2)임원급여 중 경제적 요소로부터 예측되지 않는 부분이 기업의 차기성과와 부(−)의관계를 가짐을 발견하였다. 또한 (2)의 모형에 직원급여의 예측되지 않는 부분까지 추가하여 회귀분석한 결과, (3)초과 직원급여는 기업의 차기성과와 유의한 관계를 갖지 않는 반면, 초과 임원급여는 부(−)의 관계를 가짐을 발견하였다. 마지막으로 Core et al.(1999)의 방법론을 사용하여 분석한 결과, (4)임원의 급여 중 기업지배구조 관련 변수들로부터 예

측되는 부분이 기업의 차기성과와 부(−)의 관계를 가짐을 발견하였다. 이런 결과는 한국기업에서 임원의 급여, 특히 경제적 요소들로부터 예측되는 부분을 초과하여 지급되는 급여는 임원의 보이지 않는 능력에 대한 보상이라기보다 경영진의 지대추구행위 때문일 개연성이 큼을 시사한다. 이로부터 우리는 임직원 임금 격차의 역효과 문제를 해결하기 위해서는 임금격차 자체에 주목하기보다 이를 촉발시키는 근본원인, 즉 임원의 지대추구에 따른 초과급여 문제를 해결하는 것이 우선되어야 함을 추론할 수 있다.

주요어: 임직원간 임금격차, 직원 동기부여, 주인−대리인 문제, 지대 추구 행위

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