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Integrity, CEO Compensation, and Performance: Evidence from Public Enterprises in South Korea

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ABSTRACT

Purpose: The purpose of this paper is to analyze perceived integrity of public service users and public enterprise employees in association with public enterprise performance, and the role of the CEO compensation on the association between perceived integrity and public enterprise performance.

Design/methodology/approach: This study uses publicly available performance evaluations and CEO compensation disclosures by the Ministry of Strategy and Finance (MOSF) in South Korea and integrity assessments by the Anti-Corruption & Civil Rights Commission of Korea from 2014 to 2017.

Findings: We find a positive association between integrity and public enterprise performance, a result driven by the positive association between integrity perceived by service users and public enterprise performance. Furthermore, higher monetary compensation paid to CEOs has a negative influence on the relationship between integrity perceived by public service users and public enterprise performance, whereas higher compensation paid to CEOs has a positive influence on the relationship between integrity perceived by employees and public enterprise performance.

Research limitation/implications: Integrity perception might be subject to bias depending on the type of stakeholders (public service users or public enterprise employees). Thus, information users of public enterprise performance reports need to be aware of perception gaps in relation to multi-faceted aspects of public enterprise performance. We provide insights into the relationship between perception of integrity and public enterprise performance of the government bodies who enact and administer laws and public policies.

Originality/value: This paper captures how the perceptions of integrity, as assessed by diverse stakeholders with differing perspectives and levels of honesty and transparency, influence public enterprise performance assessments. Furthermore, it extends the findings of prior studies on the impact of monetary compensation in the public sector (see Abner et al. 2017; Boyd et al. 2018; Chen and Hsieh 2015, among others) to confirm how CEO monetary compensation impacts the relationship between integrity and public enterprise performance. In the public sector, the extrinsic motivation of higher CEO monetary compensation relative to other public enterprises generally crowds out prosocial motivation, which, in turn, impairs the relationship between external integrity and public enterprise performance. At the same time, higher CEO monetary compensation has an incremental impact on internal integrity in association with financial management performance. Thus, we suggest that public enterprises should pay close attention to the design of their current incentive systems for CEOs, place greater weight on prosocial motivation to manage external integrity, and emphasize skill-based monetary compensation to manage internal integrity. Lastly, using manually collected data sets of public enterprises provided by two independent government organizations in Korea, we increase the objectivity and generalizability of the findings of the few studies published on public service organizations in a single-country setting.

Keywords: Integrity, Accountability, Efficiency, Performance evaluation, Public enterprises

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I. Introduction

Integrity is defined as a condition in which individuals and organizations "hold multiple realms of judgment in tension while keeping coherence in their actions and lives" (Dobel 1990, p. 355); it is systemized norms accepted by an organization and its stakeholders in the realm of corporate behaviors, processes, and procedures related to accountability to authoritative criteria (Huberts 2018; Montefiore and Vines 2005; Van der Wal et al. 2008). In this study, we view integrity as a quality of corporate governance critical to address public interests in light of two values of integrity: incorruptibility and transparency, and posit a symbiotic relationship between integrity and the performance of public enterprises by examining the perceived integrity of public service users and public enterprise employees in connection with public enterprise performance. Additionally, we examine the systematic influence of monetary compensation for CEOs on the relationship between integrity and public enterprise performance.

Public enterprises are funded by the government to promote the public good. They are given exclusive rights and privileges to operate specialized businesses for the benefit of public service users and the majority shareholders (i.e., the government). Therefore, public enterprises are exposed to a complex array of organizational goals that are subject to both accountability and efficiency. Accountability is rooted in values such as citizenship, impartiality, and equality, whereas efficiency is based on market norms including competition, consumerism, partnership, and managerialism (Denhardt and Denhardt 2000; Haque 1999). Following the proposition of New Public Management (NPM), public enterprises today focus on public accountability, seeing citizens as "customers" as in for-profit organizations and revamping public services to be more "businesslike" by improving operating efficiency (Brickley et al. 1995; Dobel 1990; Ferlie 2017; Heinrich 2002; Huberts 2018; Ittner and Larcker 2001; Otley 1999; Verbeeten 2008).

In accordance with the NPM approach, the

government of South Korea collects, evaluates, and disseminates the results of integrity assessments of public enterprises independently from public enterprises. Integrity plays an important role in the allocation of resources to improve accountability and efficiency goals of public enterprises in performance assessments, and the influence of monetary incentives on public enterprise employees have an important influence on the relationship between integrity and performance. By investigating the relationship between integrity and public enterprise performance, we explore how incorruptibility and transparency, dependent on public service users and public enterprise employees' perceptions, are associated with accountability and the efficiency of public enterprises performance.

We further examine whether monetary compensation for public enterprise CEO influences the relationship between integrity and public enterprise performance because CEO monetary compensation has been a controversial issue in prior literature due to its mixed impact on organizational performance (Abner et al., 2017; Bushman and Smith, 2001; Bebchuk and Fried 2003, 2006; Kim et al., 2018; Luo and Jackson, 2012; Sharma, 2005). On the one hand, we expect that CEO monetary compensation motivates public enterprise employees, specifically CEOs, to enhance their self-efficacy based on efficient compensation contracting, which, in turn, has a positive impact on organizational performance. Otherwise, CEO monetary compensation can be used as a means of rent-seeking by public enterprise CEOs given their bureaucratic backgrounds as ex-officio members of other public organizations, which then crowds out their prosocial motivation and deteriorates organizational performance. Therefore, it is an empirical question whether integrity influences the performance of public enterprises, and how public enterprise CEO compensation plays a role in the relationship between the integrity and performance of public enterprises.

Figure 1 depicts the conceptual framework for our study that describes how integrity is related to performance using Korean data on public enterprises from 2014 to 2017. Integrity consists of the collective perception of public service users (external integrity)

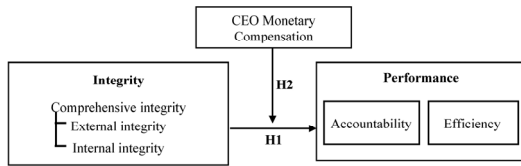


Figure 1. Integrity and public enterprise performance

and public enterprise employees (internal integrity); these two types of integrity are combined in a construct that we call comprehensive integrity, which affects the accountability and efficiency of public enterprises. CEO monetary compensation is an extrinsic motivating mechanism that influences the relationship between integrity and public enterprise performance.

This study makes notable contributions in several ways. First, our paper captures integrity as assessed by diverse stakeholders with differing perspectives and levels of honesty and transparency that influence public enterprise performance assessments. Second, we extend the findings of prior studies on the impact of monetary compensation in the public sector (see Abner et al. 2017; Boyd et al. 2018; Chen and Hsieh 2015, among others) to confirm how CEO monetary compensation impacts the relationship between integrity and public enterprise performance. In the public sector, the extrinsic motivation of higher CEO monetary compensation relative to other public enterprises generally crowds out prosocial motivation, which, in turn, impairs the relationship between external integrity and public enterprise performance. At the same time, higher CEO monetary compensation has an incremental impact on internal integrity in association with financial management performance. Thus, we suggest that public enterprises should pay close attention to the design of their current incentive systems for CEOs, place greater weight on prosocial motivation to manage external integrity, and emphasize skill-based monetary compensation to manage internal integrity. Lastly, by using manually collected data sets of public enterprises provided by two independent government organizations in Korea, we increase the objectivity and generalizability of the findings of the few studies (Boyd et al. 2018; Chen and Hsieh

2015; Ekmekci 2011; Qing et al. 2020) published on public service organizations in a single-country setting.

This paper is organized as follows. The next section provides a literature review and develops hypotheses; it is followed by a description of the research design. Then, we provide the results of our empirical analyses. Lastly, we describe the limitations of this study and provide suggestions for future research.

II. Previous Literature and Hypothesis Development

Several prior studies examined how integrity enhances managerial efficiency and labor productivity in both public-operated enterprises and state-owned enterprises (Ekmekci 2011; Mowday et al. 1979; Qing et al. 2020). For example, Qing et al. (2020) found positive relationships between ethical leadership, employee attitudes and psychological empowerment using a sample of public sector firms in China. Moreover, they found that psychological empowerment enhances the relationship between ethical leadership and employee commitment. Other research found that engaging in ethical business practices has a positive impact on firm reliability and corporate image and leads to greater job commitment and better individual performance of employees (Hodgkinson et al. 2018; Jung and Rainey 2011). Perceptions of the integrity of public enterprises can be evaluated from different perspectives by service users and public enterprise employees. Thus, investigating these perceptions separately in association with public enterprise performance may provide useful insights to practitioners and policy makers.

According to the Anti-Corruption & Civil Rights Commission of Korea (ACRC, hereafter), external integrity is based on public service users' direct experiences of corruption in association with public enterprise performance. The unique aspect of external integrity is that it captures not only the perceptions of public service users in light of detailed potential

corruption incidents but also directly asks for any preferential treatment requests, undue influences, illicit solicitations, pay-to-play experiences, entertainment requests, or abuses of authority.

External integrity reflects the quality of corporate governance based on incorruptibility according to public service users' perceptions of corruption and public enterprises' anti-corruption policies. Prior studies suggest that corruption is related to the actual practice of corruption (Shleifer and Vishny 1993; Everett et al. 2007) as well as perceived extent of corruption believed in a society (Malagueño et al. 2010; Houque and Monem 2016). For instance, Goel and Nelson (1998) investigated convicted cases of politicians for abusing their political power. In addition, several studies measure the quality of corporate governance based on laws and regulations, control of corruptions, and government effectiveness (Aidt 2009; Sáenz et al. 2014; Francis et al. 2016). If external integrity reflects the collective perceptions of public service users that a given public enterprise's anti-corruption policy is operating effectively as designed, and that it, therefore, experiences less corruption, external integrity would be high in this scenario. It also implies that external integrity is linked to public enterprises' strategic goals of enhancing organizational performance if the effect of corruption is appropriately controlled by anti-corruption policies, which, in turn, leads to a positive association between external integrity and overall management performance. In a similar vein, internal integrity is related to employees' engagement as the core factor of improving organizational performance (Harter et al. 2002).

Internal integrity reflects public enterprises' transparency in the work environment, anti-corruption policies, human resources, and budget management (ACRC, 2017). Organizational transparency has several advantages. First, it brings greater autonomy to government employees in controlling their work environment (Tangirala and Ramanujam 2008; Venkataramani and Tangirala 2010; Walumbwa and Schaubroeck 2009; Walumbwa et al. 2012). Second, employees are more likely to be receptive to other employees' inputs, pay closer attention to issues raised

by their colleagues, and fosters openness to different ideas and suggestions, which, creates an improvement-centered voice within the organization (Brown and Treviño 2006; Treviño et al. 2003). An improvement-centered voice is especially critical in public enterprises because public enterprise employees' experiences of corruption (i.e., the misuse of public resources, embezzlement, bribery, or the mistreatment of certain groups) has a direct influence on public trust (Hassan 2015). When public enterprise employees become a powerful factor with an improvement-centered voice, organizational performance improves (Detert et al. 2013; Edmondson 2003; Hassan 2015). Prior research found that engaging in ethical business practices has a positive impact on firm reliability and corporate image and leads to greater job commitment and a better individual performance of employees (Hodgkinson et al. 2018; Jung and Rainey 2011).

If external integrity is linked to public enterprises' strategic goals of enhancing organizational performance according to the proposition of NPM, we expect a positive association between external integrity and comprehensive performance. In a similar vein, if internal integrity based on the value of transparency, increases labor productivity and job commitment through public enterprise employees' intrinsic motivation, it would lead to better organizational performance overall (Chen and Hsieh 2015; Mowday et al. 2013). Taken together, if a public enterprise has high external and internal integrity, it will have enhanced organizational performance. Hence, we present the following hypotheses:

- H1.** There is a positive association between comprehensive integrity and overall management performance.
- H1-1.** There is a positive association between external integrity and overall management performance.
- H1-2.** There is a positive association between internal integrity and overall management performance.

In the next set of hypotheses, we examine how CEO monetary compensation influences the relationship between integrity and public enterprise performance. CEO monetary compensation has a mixed impact (Hu and Xu, 2022; Smith and Watts, 1992; Wright 1992) on both individual and organizational performance. It can motivate public employees (including CEOs) to enhance their self-efficacy and efficient contracting and has a positive impact on organizational performance overall.

On one hand, CEO monetary compensation is an effective self-regulatory mechanism that increases individual effort (Bandura 1991; Lee et al. 1997). When monetary incentives are provided to CEOs with greater self-efficacy, their efforts towards strategy development are likely to increase organizational performance (Wright 1990, 1992). Ades and Tella (1996) state that greater monetary compensation for public employees (including CEOs) is likely to reduce corruption as long as similar incentives and remuneration are provided to public employees as to employees in the private sector. Thus, in the presence of ethical leadership motivating self-efficacy, CEO monetary compensation may play a positive role in enhancing an integrity-oriented organizational culture, which will not only enhance public enterprise employees' performance but also organizational performance overall.

On the other hand, CEO monetary compensation may be used as a means of securing rent-seeking of public enterprise CEOs, which, in turn, can crowd out their prosocial motivation. Although monetary incentives are frequently employed to motivate employees, including CEOs, a heavy reliance on monetary incentives may crowd out prosocial motivation in the public sector (Walton 2012). In particular, providing higher monetary compensation to public enterprise CEOs compared to their peers at other public enterprises may result in a trade-off between private benefits and the ethical/moral beliefs needed to serve the public. Notably, motivation crowding theory views monetary incentives as an undesirable mechanism in the public sector because the focus of the public sector is on the prosocial values of

their public service work rather than on pursuing extrinsic values (Frey and Jegen 2001; Abner et al. 2017; Chen and Hsieh 2015; Frey and Oberholzer-Gee 1997; Hodgkinson et al. 2018; Kroll and Porumbescu 2019). Thus, if public enterprise CEOs' monetary compensation is too high, it may crowd out their prosocial motivations, and as a result, impact other public service employees to focus more on increasing their individual wealth (Eisenhardt 1989; Kroll and Porumbescu 2019; Papenfuß and Keppeler 2020).

As argued above, CEO compensation has a mixed connotation in the relationship between integrity and organizational performance. Thus, we propose the following null hypotheses.

- H2.** Higher CEO compensation in public enterprises compared to peers has no impact on the relationship between comprehensive integrity and overall management performance.
- H2-1.** Higher CEO compensation in public enterprises compared to peers has no impact on the relationship between external integrity and overall management performance.
- H2-2.** Higher CEO compensation in public enterprises compared to peers has no impact on the relationship between internal integrity and overall management performance.

III. Research Design and Data

A. Data and Sample Selection

According to the Act on the Management of Public Institution (Enterprise) Article 4 Public Institution (Enterprise), public enterprises in South Korea are classified as publicly operated enterprises (market type and semi-market type), state-owned enterprises (fund-management type and commissioned-services type), and specially incorporated enterprises (public enterprises that are neither publicly operated nor state-owned enterprises). In general, public enterprises have autonomy from the Korean government in their

operations and respective revenue models. The relationship among integrity, performance, public enterprise CEO compensation, and the characteristics of public enterprises vary depending on the roles and responsibilities that public enterprises are assigned by the Korean government. In this study, we use data from both publicly operated and state-owned enterprises to examine these relationships.

In particular, we used three sources of data on public enterprises: performance evaluations, CEO compensation disclosures, and integrity assessments. There are several noteworthy aspects of these evaluations. First, they focus on procedural validity to meet future-oriented organizational objectives from the viewpoints of various public service stakeholders. Second, they focus on the implementation of market-driven competition as a means of improving public enterprise operations (Ahn et al. 2010; Lebas 1995).¹⁾ Lastly, we use data supplied by two independent Korean organizations that publicly disclose information on public enterprise evaluations and integrity assessments at different times throughout the respective years. Performance evaluations and CEO compensation disclosures are publicly shared by the Ministry of Strategy and Finance (MOSF) in the third quarter of the next year, whereas integrity assessments are publicly disclosed by the ACRC at the end of each calendar year. Therefore, it mitigates a potential priming effect on the relationship between integrity and business performance. The annual public enterprise performance evaluation conducted by the MOSF involves approximately 100 civilian experts in respective industries/fields, including professors and accountants. The MOSF provides evaluation principles and standards in the evaluation handbook. The results of public enterprise performance evaluations are disclosed every year via the Public Information Disclosure System in Korea, also known as the All

Public Information In-One (Alio).²⁾ We present an example of public enterprise performance evaluation results from the Korea Gas Corporation (KOGAS) in Appendix 1.

CEO compensation is publicly disclosed every year under the mandatory disclosure regulations in Korea. CEO compensation consists of six factors: base pay, fixed allowance, performance allowance, employee benefits, miscellaneous performance-related bonuses, and performance for pay. Public enterprise CEO compensation pertaining to performance for pay is directly tied to public enterprise performance that is evaluated and paid in the next fiscal year.

Subsequently, the ACRC conducts surveys of the perception of integrity of these enterprises and records the number of corruption incidents to create perception indices for external, internal, and overall integrity to reduce the occurrence of corruption in susceptible public enterprises³⁾. Integrity is measured as a weighted average of the combined scores for external integrity and internal integrity after deducting corruption scores taken from the corruption database.⁴⁾ External integrity is a combined score of the corruption index and corruption risk index, reflecting the integrity perceptions of public service users based on their direct experiences of specific public services. The external integrity survey is conducted via phone, and citizens who recently used public services are randomly selected by the respective public enterprise using a Computer Aided Telephone Interview (CATI) system. The CATI manages the names and contacts of public citizens in the database, selects samples, and assigns contact information for calling the selected center personnel (ACRC, 2016). Once public service users are selected, they respond to survey questions related

1) Article 48 of the Act on the Management of Public Enterprises (Firm Performance Evaluation) entails the following: 1) the Deputy Prime Minister and Minister of Strategy and Finance evaluate the performance of public enterprises in accordance with Articles 31-(3) and 31-(4) in relation to compliance with contacts and Article 46, which relates to the mission and performance reports of public enterprises.

2) See <http://www.alio.go.kr/alioIntroduce.do>.

3) Public enterprise employees are not technically classified as civil servants, but they are still required to abide by the Public Servant Ethics Act and are subject to punishments under the Criminal Act (Articles 129-132) for giving or receiving bribes.

4) The corruption database maintains comprehensive, detailed information on cases of corruption occurring in public enterprises, including the amount of money involved, practices, patterns, and systems. The impact of each corruption incident on public enterprises is assessed by experts and translated into corruption scores.

to their experiences and perceptions regarding recently used public services with regard to incorruptibility. When the external integrity score is high, the organization has low corruption as assessed by external public enterprise users. External integrity is the sum of the corruption index and the corruption risk index, which are based on the survey questions after deducting corruption conviction cases.

Internal integrity consists of the perceived integrity culture index and the work integrity index, scores for which may be obtained from a survey completed by public enterprise employees using a Computer Aided Web Interview (CAWI) system. The CAWI system selects public employees for the survey based on their departments and rank (ACRC, 2016). The survey results offer in-depth information about the internal integrity of public enterprises, which is not apparent for public service users with respect to work environment transparency. Internal integrity assesses an organization's integrity-based system and the perception of public enterprise employees who have direct experience of the organization's integrity culture. Internal integrity consists of the integrity culture index (organizational culture, anti-corruption policy) and the business process transparency index (human resources management and budget management). More specifically, the business process transparency index includes questions in relation to both direct and indirect experiences of pay-to-play, entertainment, or preferential treatments through the improper use of organizational funds. Integrity is the sum of external integrity, internal integrity, and performance evaluations by a relevant organization after deducting penalty scores for improper/disciplinary actions. The policy customer evaluation, which refers to the evaluation performed by external experts and related stakeholders of public enterprises, such as government-linked firms, based on their perceptions and experience of corruption-related issues, is weighted at 14.9%. These evaluations determine the integrity for certain types of public enterprises and cannot be generalized to all public enterprises in this study; therefore, we did not examine policy customer evaluation separately.

We limit our sample period to 2014-2017 because

CEO compensation data was not available prior to 2014, and the classification of integrity assessment data was changed from a points-based system to a letter-grade system starting from 2018. Based on public enterprise performance evaluations and integrity assessment data from 2014 to 2017, we utilize a total of 241 firm-year observations, comprising 112 publicly operated and 129 state-owned enterprises. We exclude one observation lacking employee information and six additional observations lacking the necessary financial information for control variables. The final sample, thus, consists of 234 firm-year observations, as shown in panel A of Table 1. Panel B of Table 1 presents the distribution of the number of public enterprises by year. The observations range from 49 to 77 per year, which increased from 49 to 59 between 2015 and 2016, and from 59 to 77 between 2016 and 2017, due to an increase in the number of public enterprises subject to performance evaluations in 2016 and 2017.

Table 1. Sample selection and distribution by year

Panel A. Sample Selection Procedure	
Description	Observations
Publicly operated enterprises	112
State-owned enterprises	129
Total number of public enterprises for integrity measure and firm performance evaluations from 2014 to 2017	241
Less: Missing employee information	1
Less: Missing other financial information	6
Total number of public enterprises	234

Panel B. Sample Distribution by Year	
Year	Number of Observations
2014	49
2015	49
2016	59
2017	77
Total Sample	234

B. Research Model

To test our hypotheses, we use the following models:

$$OP_{it} = \alpha + \beta_1 (CI/ EI/ II)_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 LOSS_{it} + \beta_6 ASSET_{it} + \beta_7 CEOCD_{it} + \varepsilon_{it} \quad (1)$$

$$OP_{it} = \alpha + \beta_1 CEOCD_{it} \times (CI/ EI/ II)_{it} + \beta_2 (CI/EI/II)_{it} + \beta_3 CEOCD_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 LOSS_{it} + \beta_8 ASSET_{it} + \varepsilon_{it} \quad (2)$$

See the Appendix 2 for detailed definitions of variables.

Model (1) examines how comprehensive integrity (*CI*) is associated with overall management performance (*OP*) in testing of H1. We subdivide our main independent variable, comprehensive integrity (*CI*), into external integrity (*EI*) and internal integrity (*II*) to examine differential integrity perceptions of public service users and public enterprise employees on *OP* in testing of H1-1 and H1-2, respectively. Subsequently, we examine the impact of CEO compensation (*CEOCD*) in association with *CI* and *OP* in testing of H2 using model (2). *CEOCD* is an indicator variable representing CEO annual compensation greater than the median annual compensation of CEOs of peer public enterprises in the sample, following Cremers and Grinstein (2014). Lastly, we examine how *EI* and *II* are associated with *OP* in testing of H2-1 and H2-2, respectively. We use the fixed effect model to control for omitted variables and time-invariant characteristics, as each public enterprise has different asset allocations and profit structures depending on its specialized area of business.⁵⁾

The dependent variable, *OP*, represents overall management performance, and the independent variable, *CI*, is comprehensive integrity. *EI* and *II* represent external integrity and internal integrity, respectively. The coefficient of *CEOCD* \times *CI* shows

the mediating effect of higher CEO compensation than peers (*CEOCD*) on the relationship between *CI* and *OP*. An intuitive way to examine whether *CEOCD* explains prosocial motivation and self-efficacy of the CEO is to employ, as the benchmark CEO compensation, the median compensation in the peer group in year *t*. This benchmark group formation follows the protocol in Cremers and Grinstein (2014); thus, this variable is based on the median CEO compensation of all public enterprises in the sample. We identify benchmark CEO compensation as the median base pay after excluding performance pay from total CEO compensation. We exclude performance pay because this form of pay in public enterprises is determined and paid by the government in the next fiscal year.⁶⁾

We consider several control variables, *SIZE*, *LEV*, *ROA*, *LOSS* and *ASSET* to represent public enterprise-level characteristics. *SIZE* is measured as the number of employees.⁷⁾ *LEV* is leverage, calculated as total liability divided by total assets, and *ROA* is the return on assets calculated as net income divided by total assets. *LOSS* is equal to 1 if an enterprise's net income is less than 0. *ASSET* is measured as the natural logarithm of total assets. *SIZE*, *LEV*, *ROA*, *LOSS* and *ASSET* control for direct and indirect effects of financial variables on performance. Public enterprise performance evaluations include both accountability (non-financial) and efficiency (financial) measures that collectively represent public enterprise performance; thus, we expect our performance measure (*OP*) to

6) Precise measurement of the effect of *CEOCD* on the relationship between *CI* and *OP* is not possible if we include performance pay as part of benchmarked peer group *CEO* compensation.

7) Following Hyun et al. (2022), we use the number of employees as a proxy for *SIZE* rather than total assets because the total assets of public enterprises are determined based on enterprise-specific characteristics and objectives driven by the Korean government. A majority of Korean public enterprises include usufruct as part of intangible assets, which does not necessarily represent resources that the respective public enterprise owns, or controls rather bestowed by the government depending on the mission of public enterprise. Thus, the number of employees rather than total assets may be a better proxy for the size of the public enterprises. According to an anonymous reviewer's suggestion, we also included total assets as a control variable in the analysis, and the result remains qualitatively the same.

5) Based on the Hausman test (Hausman and Taylor 1981), we confirm that the fixed effect model is appropriate. For this model, we exclude time-invariant characteristics and report within R^2 values.

show different associations with *SIZE*, *LEV* and *ASSET*. *ROA* is directly associated with the financial performance of public enterprises; thus, we expect *ROA* to be positively associated with *OP*. Conversely, we expect that *LOSS* will negatively influence integrity. Lastly, we include *CEOC*, a continuous variable in model (1) to control for the influence of CEO annual compensation in public enterprises that are not tied to performance evaluations on the relationship between integrity and performance measures.

IV. Empirical Results

A. Main Results

Table 2 presents the descriptive statistics of our analysis of the required variables to estimate models (1) and (2) for all enterprise-years from 2014 to 2017. We winsorize the continuous variables used in the analyses at 1% and 99% to mitigate the effects of outliers. The mean of the raw scores for performance

(logged scores) of *OP* is 80.39 (4.38) based on a 100-point scale. The mean values of the raw scores for integrity (logged scores) of *CI*, *EI*, and *II* are 8.28 (2.11), 8.54 (2.14), and 8.18 (2.10), respectively, based on a 10-point scale.

The mean of *SIZE* is 7.20, which is equivalent to an average of 2,839 employees. The mean (median) of *LEV* is 1.29 (0.52), implying that public enterprises generally possess a leverage ratio of 129%, and that the mean is skewed. High *LEV* does not necessarily indicate that public enterprises have impaired capital, but rather that they maintain a certain level of debt subject to the nature of their respective missions. The mean of *ROA* is -0.01, indicating that the net income of the public enterprises included in our sample is close to zero on average, which shows that they are less inclined to achieve resource allocation efficiency by improving profitability, but are more focused on meeting accountability goals for the benefit of public citizens. The mean annual CEO compensation is approximately KRW 1.28 million (USD 114,325), with a maximum and minimum of KRW 1.98 million (USD 176,680) and 0.99 million (USD 88,063) respectively.

Table 2. Descriptive statistics

Variables	N	Med	Mean	SD	Max	Min
<i>OP</i>	234	4.41	4.38	0.10	4.52	4.01
<i>OP (unlogged)</i>	234	81.91	80.39	7.47	91.48	55.14
<i>CI</i>	234	2.13	2.11	0.05	2.20	1.98
<i>CI (unlogged)</i>	234	8.38	8.28	0.37	8.98	7.27
<i>EI</i>	234	2.15	2.14	0.04	2.22	2.01
<i>EI (unlogged)</i>	234	8.61	8.54	0.35	9.21	7.44
<i>II</i>	234	2.11	2.10	0.07	2.21	1.67
<i>II (unlogged)</i>	234	8.22	8.18	0.51	9.15	5.32
<i>SIZE</i>	234	7.23	7.20	1.18	10.24	4.54
<i>SIZE (unlogged)</i>	234	1,379	2,839	4,832	28,773	86
<i>LEV</i>	234	0.52	1.29	4.65	36.14	0.03
<i>ROA</i>	234	0.01	-0.01	0.18	0.25	-1.31
<i>LOSS</i>	234	0	0.33	0.47	1	0
<i>ASSET</i>	234	21.61	21.36	2.24	25.86	16.65
<i>CEOC</i>	234	11.76	11.78	0.15	12.19	11.55
<i>Unlogged CEOC (in thousands, KRW)</i>	234	127,962	131,881	22,541	197,754	98,567

Note: See Appendix 2 for variable definitions.

Table 3 presents the Pearson's correlations of the variables used in this study. While those for *CI* and *EI* are positive, but not significantly associated with *OP*, that for *II* is positively associated with *OP* at the 10% level, providing indirect evidence that integrity information was not widely incorporated as part of public enterprise performance evaluations during the sample period. Among the control variables, *SIZE* and *ASSET* have significant negative association with *CI* and *EI*, implying that a greater number of public enterprise employees and larger total assets of public enterprise are negatively associated with integrity perception in general, more specifically driven by *EI*. *LEV* and *ROA* are not significantly correlated with the majority of variables because enterprise-level leverage and profitability measures against total assets are not directly linked to *OP*, in which accountability performance measures are embedded. In a similar vein, *LEV* and *ROA* are not significantly correlated with the integrity variables (*CI*, *EI*, and *II*) because of the qualitative nature of the integrity measure. In contrast, *LOSS* has a significant negative association with *OP* and the enterprise-level financial variables (*LEV*, *ROA*), indicating that unfavorable net income

sends an ominous signal that impacts public enterprise performance as a whole. Finally, *CEOC* is positively and significantly associated with *OP*, presenting evidence that CEO base compensation in the public enterprises in our sample is closely tied to public enterprise performance.

The results for testing of H1, H1-1, and H1-2 concerning the association between *CI*, *EI*, *II*, and *OP* are presented in Table 4, model (1). In column (1), the coefficient of *CI* is positive and significant at the 5% level (0.350, $t = 2.14$). In column (2), the coefficient of *EI* is positive and significant at the 5% level (0.429, $t = 2.62$), but the coefficient of *II* is not significant. The positive association between *CI* and *OP* suggests that the integrity of public enterprises is relevant to overall public enterprise performance and is driven by the perceptions of public service users of the integrity of public enterprises. Among the control variables, *LOSS* has a significant negative association with *OP* at the 5% level, indicating that a positive net income is positively associated with overall public enterprise performance. Taken together, these results support H1 and H1-1, but does not support H1-2.

Table 3. Pearson's correlation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) <i>OP</i>	1.000									
(2) <i>CI</i>	0.074 (0.259)	1.000								
(3) <i>EI</i>	0.023 (0.729)	0.847 (0.000)	1.000							
(4) <i>II</i>	0.112 (0.087)	0.455 (0.000)	0.149 (0.023)	1.000						
(5) <i>SIZE</i>	0.108 (0.100)	-0.297 (0.000)	-0.128 (0.050)	0.104 (0.112)	1.000					
(6) <i>LEV</i>	0.082 (0.213)	0.097 (0.139)	0.053 (0.420)	0.055 (0.401)	-0.083 (0.209)	1.000				
(7) <i>ROA</i>	0.072 (0.273)	-0.063 (0.335)	-0.044 (0.503)	-0.031 (0.639)	0.062 (0.346)	-0.718 (0.000)	1.000			
(8) <i>LOSS</i>	-0.239 (0.000)	-0.063 (0.337)	-0.043 (0.511)	-0.062 (0.343)	0.032 (0.622)	0.174 (0.008)	-0.450 (0.000)	1.000		
(9) <i>ASSET</i>	-0.040 (0.548)	-0.177 (0.007)	-0.185 (0.005)	0.204 (0.002)	0.308 (0.000)	0.091 (0.164)	-0.025 (0.708)	-0.161 (0.014)	1.000	
(10) <i>CEOC</i>	0.199 (0.002)	0.091 (0.163)	0.029 (0.663)	0.028 (0.670)	-0.092 (0.161)	-0.021 (0.750)	0.072 (0.272)	-0.043 (0.517)	0.183 (0.005)	1.000

Note: (1) The numbers in parentheses indicate the p-value. (2) See Appendix 2 for variable definitions.

Table 4. Hypothesis 1: Integrity and overall management performance
$$OP = \alpha + \beta_1 CI + \beta_2 SIZE + \beta_3 LEV + \beta_4 ROA + \beta_5 LOSS + \beta_6 ASSET + \beta_7 CEOC + \epsilon$$

$$OP = \alpha + \beta_1 EI + \beta_2 II + \beta_3 SIZE + \beta_4 LEV + \beta_5 ROA + \beta_6 LOSS + \beta_7 ASSET + \beta_8 CEOC + \epsilon$$

	Dependent Variable: <i>OP</i> (Overall Management Performance)			
	(1)		(2)	
	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value
Intercept	2.942	1.20	2.766	1.12
<i>CI</i>	0.350	2.14**		
<i>EI</i>			0.429	2.62**
<i>II</i>			0.006	0.04
<i>SIZE</i>	-0.061	-0.54	-0.064	-0.57
<i>LEV</i>	0.010	0.42	0.010	0.41
<i>ROA</i>	0.010	0.26	0.010	0.24
<i>LOSS</i>	-0.037	-2.29**	-0.038	-2.36**
<i>ASSET</i>	-0.042	-1.37	-0.040	-1.31
<i>CEOC</i>	0.173	0.91	0.170	0.90
Firm and year fixed effect	Included		Included	
<i>R</i> ²	0.13		0.15	
<i>F</i> -value	4.58***		4.65***	
<i>N</i>	234		234	

Note: (1) *, **, *** denote significance of coefficients at the 1%, 5%, and 10% levels, respectively, with two-tailed tests. (2) See Appendix 2 for variable definitions.

Table 5 reports the results from model (2) that examines how *CEOCD* influences the relationships among *CI*, *EI*, *II*, and *OP*. In column (1), the coefficient of *CEOCD* × *CI* is negative, but not significant, while the coefficient of *CI* is still weakly positive (0.374, *t* = 1.69) in association with *OP*. In column (2), the coefficient of *CEOCD* × *EI* (-0.672, *t* = -2.09) is significant and negative at the 5% level, whereas the coefficient of *EI* (0.743, *t* = 3.19) is significant and positive at the 1% level. Conversely, the coefficient of *CEOCD* × *II* is weakly positive (0.435, *t* = 1.92) and the coefficient of *II* is not significant. We confirm that *OP* is consistently associated with *CI* and *EI*, as shown in Table 5, but for the interaction of this variable with *CEOCD*, the results are mixed. Looking at the insignificant result of the coefficient term *CEOCD* × *CI*, we find that the negative coefficient of *CEOCD* × *EI* and the positive coefficient of *CEOCD* × *II* are offset from each other. Among the control variables, *LOSS* has a significant and negative association with *OP*

at the 5% level in both column (1) and column (2).

Higher CEO compensation in public enterprises vis-à-vis compensation among other public enterprises has a negative influence on the relationship between external integrity and overall public enterprise performance, whereas higher CEO compensation in public enterprises has a positive influence on the relationship between internal integrity and overall public enterprise performance. Figures 2 and 3 illustrate our main results. We find that integrity is associated with the performance of public enterprises (H1), and public service users play a monitoring role as major customers of public services in this association. We also clearly observe the subjectivity of perceptions of integrity of public service users and public enterprise employees in association with public enterprise performance (H1-1; H1-2).

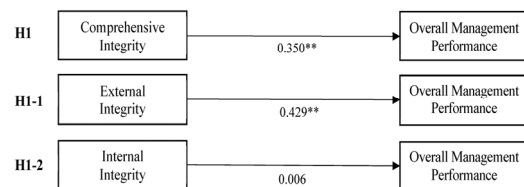
In H2, higher monetary compensation to CEOs of public enterprises compared to the median peer group compensation indicates no apparent association between comprehensive integrity and overall

Table 5. Hypothesis 2: Integrity, public enterprise CEO compensation, and overall management performance
$$OP = \alpha + \beta_1 CEOCD \times CI + \beta_2 CI + \beta_3 CEOCD + \beta_4 SIZE + \beta_5 LEV + \beta_6 ROA + \beta_7 LOSS + \beta_8 ASSET + \epsilon$$

$$OP = \alpha + \beta_1 CEOCD \times EI + \beta_2 CEOCD \times II + \beta_3 EI + \beta_4 II + \beta_5 CEOCD + \beta_6 SIZE + \beta_7 LEV + \beta_8 ROA + \beta_9 LOSS + \beta_{10} ASSET + \epsilon$$

	Dependent Variable: <i>OP</i> (Overall Management Performance)			
	(1)		(2)	
	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value
Intercept	4.847	4.54***	4.040	3.62***
<i>CEOCD</i> × <i>CI</i>	-0.153	-0.50		
<i>CI</i>	0.374	1.69*		
<i>CEOCD</i> × <i>EI</i>			-0.672	-2.09**
<i>EI</i>			0.743	3.19***
<i>CEOCD</i> × <i>II</i>			0.435	1.92*
<i>II</i>			-0.179	-1.05
<i>CEOCD</i>	0.372	0.57	0.568	0.75
<i>SIZE</i>	-0.052	-0.46	0.008	0.07
<i>LEV</i>	0.009	0.37	0.002	0.10
<i>ROA</i>	0.011	0.27	0.010	0.26
<i>LOSS</i>	-0.034	-2.12**	-0.032	-2.05**
<i>ASSET</i>	-0.043	-1.41	-0.045	-1.50
Firm and year fixed effect	Included		Included	
<i>R</i> ²	0.15		0.20	
<i>F</i> -value	4.41***		4.62***	
<i>N</i>	234		234	

Note: (1) *, **, *** denote significance of coefficients at the 1%, 5%, and 10% levels, respectively, with two-tailed tests. (2) See Appendix 2 for variable definitions.

**Figure 2.** Summary of main results: Hypothesis 1

management performance. However, there is a clear difference in the perceptions of integrity between public service users (external integrity) and public enterprise employees (internal integrity) that higher monetary compensation to CEOs of public enterprises compared to the median peer group compensation has a detrimental impact on the relationship between external integrity and public enterprise performance. This is because high monetary compensation shifts

CEOs' focus from prosocial incentives to monetary incentives, which in turn impairs public enterprise performance (H2-1). Conversely, higher monetary compensation to CEOs of public enterprises compared to their peers has a weak incremental effect on the relationship between internal integrity and overall management performance. This suggests that monetary compensation to CEOs may enhance public enterprise performance as long as it is linked to their skills, effort, and ability to improve public enterprise performance (H2-2).

The conflicting findings (H2-1 and H2-2) evidence that there is a perception gap with regard to integrity between public service users and public enterprise employees, given that Korean public enterprises operate in-between the public administration and business administration sectors, where public enterprise

performance is subject to both accountability and efficiency NPM. When public enterprise CEOs receive higher compensation than their peers in public sector, it raises the question among public service users about the relationship between financial compensation and incorruptibility. Thus, public service users pay keen attention to the association between incorruptibility and public enterprise performance, as well as public enterprise CEO compensation. Given the nature of public enterprises, which operate based on the financial support of taxpayers, when relatively high monetary compensation is paid to public enterprise CEOs, public service users may perceive that paying high monetary compensation to CEOs impairs their prosocial motivations by impairing the public enterprise's incorruptibility overall, which, in turn, attenuates the relationship between external integrity and public enterprise performance.

On the other hand, public enterprise employees view integrity as part of the organizational culture that promotes ethical business practices. In particular, public enterprise employees perceive greater integrity as increasing productivity and job commitment, which leads to better organizational performance. In a similar vein, higher CEO compensation is perceived as an effective mechanism that enhances self-efficacy and efficient contracting, which have a positive impact on performance.

Overall, our main results are mixed. While we find that comprehensive integrity and external integrity are positively associated with performance (H1), the results also indicate that higher CEO monetary

compensation in relation to CEO compensation at other public enterprises has a negative impact on the relationship between external integrity and performance, whereas higher CEO monetary compensation than peers has a positive impact on the relationship between internal integrity and performance (H2). These mixed results indicate that public enterprises should take an adaptive NPM approach in implementing the performance-based monetary incentive system that is widely used in for-profit organizations in order to avoid compromising the prosocial motivation of public enterprise employees.

B. Additional Analysis

We further examine the differential impacts of monetary compensation to CEOs of public enterprises on the relationship between integrity and specific types of public enterprise performance in light of accountability and efficiency. In Table 6, we break down public enterprise performance into three categories: Policy congruence Performance (*PP*), Human resources Performance (*HP*), and Financial Performance (*FP*), that require differential levels of CEO ability, impacting organizational performance to confirm whether public enterprise CEO compensation is a mechanism of self-efficacy based on efficient contracting or that of rent-seeking crowding out prosocial motivation.

PP focuses on the strategic planning of government-driven public policy to enhance information transparency. *HR* involves the evaluation of how well the HR management operate at the organizational level including the assessment of individual employee management in terms of wages, welfare, and labor relations. *FP* represents budget management, debt management, financial performance indicators, and cost management.

The analysis of *PP* in column (1) shows that the coefficients of $CEOCD \times CI$ and CI are not significant. When we further analyze *EI* and *II*, represented in column (2), the coefficients of $CEOCD \times EI$ is significant at the 10% level (0.444, $t = 1.66$) whereas $CEOCD \times II$ is insignificant. The results of the

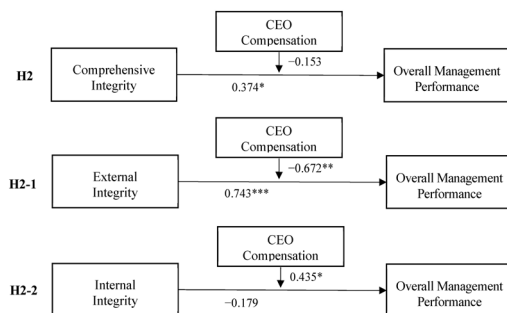


Figure 3. Summary of main results: Hypothesis 2

analysis of *HP* in column (3) show that the coefficients of $CEOCD \times CI$ and CI are not significant. In column (4), when we investigate the differential impacts of external/internal integrity, the coefficient of $CEOCD \times EI$ (-0.703, $t = -1.94$) is significant and negative at the 10% level, whereas the coefficient of $CEOCD \times II$ (0.522, $t = 2.03$) is significant and positive at the 5% level. Similarly, column (5) shows that the coefficient of $CEOCD \times CI$ and CI is not significant in its association with *FP*. On the other hand, in column (6), we note that the coefficient of $CEOCD \times EI$ (-1.972, $t = -2.17$) is significant and positive at the 5% level, and that of $CEOCD \times II$ (1.129, $t = 1.76$) is significant and positive at the 10% level.

The results shown from column (4) and column (6) indicate that there are relatively negative integrity

perceptions of public enterprises that pay more to their CEOs compared to other public enterprises with respect to their human resources management and financial management performance. This suggests that rent-seeking due to the crowding-out of prosocial motivation is stronger than their managerial ability, from the public service user's perspective. Our analysis of policy congruence performance indicates that higher CEO monetary compensation can have an incremental impact on public service users' perceptions on enhancing information transparency of the government's strategic planning. Similarly, from public enterprise employees' perspective, higher CEO monetary compensation can have an incremental impact on employees' perceptions of the organization's internal integrity. This, in turn, can affect the

Table 6. Additional analysis: Integrity, public enterprise CEO compensation, policy congruence, HR management, and financial management performance

$$PP, HP, FP_{it} = \alpha + \beta_1 CEOCD \times CI + \beta_2 CI + \beta_3 CEOCD + \beta_4 SIZE + \beta_5 LEV + \beta_6 ROA + \beta_7 LOSS + \beta_8 ASSET + \epsilon$$

$$PP, HP, FP_{it} = \alpha + \beta_1 CEOCD \times EI + \beta_2 CEOCD \times II + \beta_3 EI + \beta_4 II + \beta_5 CEOCD + \beta_6 SIZE + \beta_7 LEV + \beta_8 ROA + \beta_9 LOSS + \beta_{10} ASSET + \epsilon$$

	Dependent Variable: <i>PP</i> (Policy congruence Performance)				Dependent Variable: <i>HP</i> (Human resources Performance)				Dependent Variable: <i>FP</i> (Financial Performance)			
	(1)		(2)		(3)		(4)		(5)		(6)	
	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
Intercept	2.523	2.84***	2.174	2.34**	3.977	3.33***	3.476	2.76***	7.371	2.41**	5.560	1.76*
$CEOCD \times CI$	0.351	1.38			-0.355	-1.04			-0.221	-0.25		
CI	-0.068	-0.37			0.238	0.96			0.718	1.13		
$CEOCD \times EI$			0.444	1.66*			-0.703	-1.94*			-1.972	-2.17**
EI			-0.257	-1.33			0.389	1.48			2.293	3.49***
$CEOCD \times II$			0.086	0.45			0.522	2.03**			1.129	1.76*
II			0.293	2.07**			-0.113	-0.59			-1.113	-2.33**
$CEOCD$	-0.731	-1.36	-1.115	-1.76*	0.753	1.04	0.415	0.48	0.651	0.35	2.012	0.94
$SIZE$	0.266	2.82***	0.274	2.90***	0.071	0.56	0.140	1.10	-0.398	-1.23	-0.265	-0.83
LEV	-0.014	-0.68	-0.014	-0.71	-0.010	-0.39	-0.016	-0.61	0.063	0.91	0.042	0.63
ROA	-0.001	-0.03	0.000	-0.01	-0.019	-0.41	-0.021	-0.47	0.049	0.42	0.047	0.42
$LOSS$	0.003	0.22	0.005	0.35	-0.021	-1.17	-0.019	-1.07	-0.103	-2.23**	-0.100	-2.24**
$ASSET$	0.008	0.30	0.011	0.44	-0.029	-0.86	-0.033	-0.99	-0.086	-0.98	-0.093	-1.10
Firm and year fixed effect	Included		Included		Included		Included		Included		Included	
R^2	0.20		0.24		0.11		0.14		0.13		0.21	
F-value	3.74***		3.68***		5.63***		5.64***		2.10***		2.36***	
N	234		234		234		234		234		234	

*, **, *** denote significance of coefficients at the 1%, 5%, and 10% levels, respectively, with two-tailed tests. See Appendix 2 for variable definitions.

relationship between integrity and HR/financial management performance, being consistent with self-efficiency based on efficient contracting. We also find that higher CEO monetary compensation in relation to compensation among peers has a negative impact on the relationship between external integrity and performance in terms of accountability and efficiency, as proxied by human resources management performance and financial management performance, respectively. In contrast, higher CEO monetary compensation in relation to compensation among peers has a positive impact on the relationship between internal integrity and accountability and efficiency performance.

V. Conclusion and Suggestions for Future Research

Our study offers several recommendations to public service users, public enterprise practitioners, and policy makers. Our primary results imply that information users of public enterprise performance need to be aware of the subjectivity of perceptions of integrity depending on the stakeholders (public service users or public enterprise employees) in interpreting information related to public enterprise performance. Further, we confirm the existence of the dilemma of offering monetary incentives based on the premise of NPM in the context of public enterprises. Monetary incentives may certainly be effective to enhance performance (see Abner et al. 2017; Boyd et al. 2018; Chen and Hsieh 2015, among others). However, the mixed findings of our study regarding monetary compensation to CEOs in the relationship between integrity and performance indicate that close attention should be paid to current incentive systems in public enterprises, especially those for CEOs; greater weight should be placed on prosocial motivation to ensure external integrity while providing direct links to skill-based monetary incentives to ensure internal integrity. Lastly, this

study augments the objectivity and generalizability of previously obtained empirical evidence on public enterprise performance using various data sets supplied by two independent government organizations in Korea (the ACRC and MOSF). Collaboration between government organizations may reveal insights into the relationship between public trust and public enterprise performance. The limitation of this study is the results cannot be generalized in public enterprise setting other than Korea. Furthermore, starting from 2018, the classification of integrity assessment data was changed from a point-based system to a grade system. The newly implemented letter-grade system does not disclose how points are converted to an equivalent grade from grade 1 to grade 5 (where grade 1 represents the highest level of integrity and grade 5 represents the lowest integrity), which disables assessments of differences in perceived integrity within the same grade group. Therefore, the association between integrity and public enterprise performance in future periods may identify additional insight by using the grade-based system.

Future studies can explore the conditions under which monetary incentive systems for public enterprise employees influence the relationship between integrity and public enterprise performance. It would be interesting to examine the extent to which within-enterprise pay gaps between CEOs and their employees affect public enterprise incentive systems. This would provide additional insights into incentive systems, enabling them to be redesigned and communicated to information users of public enterprise performance reports.

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Appendix 1. Performance evaluation example of a public enterprise, Korea Gas Corporation (KOGAS, 2017)

KOGAS was established in August 1983 with the purpose to supply natural gas to public citizens. The responsibilities of KOGAS include: 1) construct the Liquefied Natural Gas (LNG) value chain and gas supply pipelines, 2) import LNG from other countries, 3) regasify LNG, 4) supply LNG to the city gas companies and power plants.

As indicated in Table #1 below, the performance evaluation consists of qualitative and quantitative criteria that are both scored with weighted scores and letter grades. A higher weighted score means better performance; the letter grade 'A+' is the highest grade. For each public enterprise, we used the total scores based on both qualitative and quantitative evaluation. The score is the sum of the weighted scores and letter grades. The basis of letter grades is 'A+', which is equivalent to 100 percent. The difference between letter grade 'A+' and 'A' is equivalent to a 5%-point deduction. In the case of the Korea Gas Corporation, as shown below, the total raw score was 35.053 out of 50 points for 2017.

	Category	Weight	Grade	Weight	Score
Overall Management Performance	1. Strategy and social contribution				
	(1) Strategic planning and corporate responsibility	5	C		
	(2) Management innovation	3	B		
	(3) Customer satisfaction			2	1.966
	(4) Information sharing and data opening			1	0.773
	(5) Information Disclosure			1	0.834
	(6) Policy objectives achievement			6	5.390
	2. Human resources and organization management	4	B		
	3. Human resources cost and benefit management				
	(1) Employee Benefit Management	6	C		
	(2) Human resources cost management			3	3.000
	(3) Labor relations	4	B		
	4. Efficiency				
	(1) Labor efficiency			2.5	0.500
	(2) Capital efficiency			2.5	0.787
	5. Financial budget management and performance				
	(1) Financial budget management	3	C		
	(2) Financial structure improvement	2	C		
	(3) Financial performance				
	- Operating margin			2	1.253
	- Debt management			1.5	1.050
	- Long-term financial management plan			1.5	0.300
	Total Score	27	19.2	23	15.853
					35.053

Note: Total raw scores of overall management performance differ by public service organizations. Therefore, we used standardized scores out of total 100 possible points for empirical analysis. The standardized score of KOGAS was 70.106.

Appendix 2. Variable definitions

CI_{it} :	the natural logarithm of the sum of scores for external integrity, internal integrity, and evaluation of policy implementation points reflecting the perceptions of citizens, public officers, employees, experts in the field, and affiliated workers. Deducted from this are points for occurrences of corruption based on employees' discreditable acts in public enterprise i in year t . Discreditable acts refer to occurrences of corruption based on the corrupt public official disciplinary index applicable to government agency employees, the corruption case index applicable to political appointees of government agencies and executive/staff of public service-related organizations, and acts reducing assessment reliability including manipulation/inaccuracy of the list of respondents, requests for favorable responses, improper acts detected through on-site inspections;
EI_{it} :	the natural logarithm of the external integrity score, which reflects the perceptions of citizens and public officers measured using the corruption index and corruption risk index. The corruption index measures direct and indirect experiences and perceptions of corruption (i.e., the offering of money, gifts, entertainment, or convenience, and other improper pursuit of private interests), and accounts for 0.638 points based on 13 questions from the survey. The corruption risk index measures transparency and accountability in performing duties, and accounts for 0.362 points based on 4 questions from the survey of public enterprise i in year t ;
II_{it} :	the natural logarithm of the internal integrity score, which reflects the perceptions of public employees measured using the integrity culture index and work integrity index. The integrity culture index measures the prevalence of corrupt practices and effectiveness of anti-corruption systems, accounting for 0.433 points based on 9 questions from the survey. The work integrity index measures transparency and fairness in personnel management, budget expectations, and order by superiors, which account for 0.567 points based on 24 questions from the survey of public enterprise i in year t ;
OP_{it} :	the natural logarithm of the overall management performance score (with a total of 100 points) of public enterprise i in year t ;
PP_{it} :	the natural logarithm of the strategy and social contribution performance score (with a total of 100 points) of public enterprise i in year t ;
HP_{it} :	the natural logarithm of the HR and organization management score plus the HR cost and benefit management score (with a total of 100 points) of public enterprise i in year t ;
FP_{it} :	the natural logarithm of the efficiency score plus the financial budget management and performance score (with a total of 100 points) of public enterprise i in year t ;
$CEOCD_{it}$:	equals 1 if CEO annual compensation of public enterprise i in year t is higher than the median CEO annual compensation of its peer public enterprises in the sample, otherwise 0;
$SIZE_{it}$:	the natural logarithm of the number of employees at public enterprise i in year t ;
LEV_{it} :	total liability divided by total assets of public enterprise i in year t ;
ROA_{it} :	net income divided by total assets of public enterprise i in year t ;
$LOSS_{it}$:	takes a value of 1 if public enterprise i 's net income in year t is negative, otherwise 0;
$ASSET_{it}$:	the natural logarithm of total assets of public enterprise i in year t ;
$CEOC_{it}$:	the natural logarithm of annual compensation of the CEO at public enterprise i in year t , per thousand KRW.
