Motivation, Discretion, and Corruption

Illoong Kwon
Seoul National University

ABSTRACT

Increased monitoring, higher wages, and less discretion are some of the generic remedies for corruption. However, these remedies can be expensive, and may reduce bureaucrats' public service effort and increase corruption. A theoretical model shows that extrinsic motivation for public service (e.g., performance pay) can reduce corruption without some of these side effects. Using a unique survey on 800 central government bureaucrats in Korea, this article also provides individual-level micro evidence that is largely consistent with the predictions of the theoretical model. Interestingly, the evidence suggests that bureaucrats' intrinsic motivation (e.g., public service motivation) is as negatively associated with their corruptibility as extrinsic motivation. Also, bureaucrats' frequent contact with civil organizations is negatively associated with their corruptibility, whereas frequent contact with the media is positively correlated with corruptibility.

Combating corruption is like judo. Instead of bluntly resisting the criminal forces, one must redirect the enemy's energy to his own decay. (Lambsdorff and Nell 2006, 1)

INTRODUCTION

This article theoretically examines whether extrinsic motivation for public service (e.g., performance-based pay or promotion) or intrinsic motivation (e.g., public service motivation, or PSM) can channel bureaucrats' time and energy into public service and consequently reduce corruption. Then, using unique individual-level Korean Civil Service Survey data from 2009, this article presents empirical evidence in support of the model's predictions.

The theoretical model shows that extrinsic or intrinsic motivation for public service not only increases public service effort but also reduces corruption. However, increased monitoring for corruption may reduce bureaucrats' public service effort as well as corruption, because a high probability of dismissal due to corruption

can increase uncertainty about future payoffs from both public service effort and corruption.

Higher wages together with the threat of dismissal can also reduce corruption, and may increase public service effort. However, high wages are costly, and firing bureaucrats can be difficult partly because corruption is often hard to verify and partly because those who monitor corruption may be corrupt as well. Extrinsic and intrinsic motivation, such as performance-based promotion or PSM, on the other hand, is not necessarily more costly. Also, while measuring the performance of bureaucrats is not an easy task, it may still be easier than verifying corruption. Moreover, many governments have adopted and are expanding performance pay, gradually overcoming the measurement problem.

Limiting bureaucrats' discretion may also reduce their public service effort as well as corruption, because a lack of discretion can decrease their productivity in providing public service. However, strong performance pay can reduce the ill effect of discretion on corruption, leading bureaucrats to use their discretion more productively in public service. Therefore, giving bureaucrats more discretion, along with strong performance pay, can increase their public service effort without increasing corruption.

To summarize, increased monitoring, higher wages, and less discretion are some of the generic remedies for corruption (Becker and Stigler 1974). However, these remedies can be expensive and may reduce public service effort and increase corruption. This article shows that extrinsic and intrinsic motivation for public service can reduce corruption without some of these side-effects.

To test whether extrinsic and intrinsic motivation for public service can reduce corruption, this article uses the data from the Korean Civil Service Survey (KCSS) from 2009.[1] The survey was conducted on 800 central government bureaucrats in Korea. The survey asks about various aspects of government organizations, including the extent of delegation of authority, performance-based promotion, policy preference, intrinsic motivation, and corruption. Even though the survey reflects the bureaucrats' subjective beliefs or attitudes, not necessarily objective facts, given the lack of objective measures for corruption or delegation of authority, these survey answers can be more accurate than other indirect proxies.

This study shows that when a bureaucrat believes promotions will depend on his/her public service performance, the bureaucrat has stricter standards (or a lower tolerance) for corruption. The evidence also shows that in teams where supervisors delegate authority frequently, bureaucrats have less strict standards for corruption. These results are consistent with the predictions of the theoretical model that extrinsic motivation leads to less corruption but that discretion may lead to more corruption.

Moreover, this article finds that bureaucrats with strong intrinsic motivation, as measured by the extent to which they feel their task is interesting, have stricter standards for corruption. Similarly, bureaucrats with strong PSM, as measured in the spirit of Perry (1996), have stricter standards for corruption.

The media can potentially act as an important monitoring device for bureaucrats' corruption (Brunetti and Weder 2003). However, the empirical analysis shows that

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[1]   The survey results were published in 2010. Thus, the dataset is actually called the 2010 KCSS data.

those bureaucrats who have frequent contact with the media have less strict standards for corruption. On the other hand, those bureaucrats who have frequent contact with civil organizations have stricter standards for corruption.

RELATED LITERATURE

With growing evidence that corruption distorts resource allocation, undermines stability, and reduces economic growth,[2] there is heightened interest in finding deterrents to corruption. In the 1996 annual meeting, James Wolfensohn, the president of the World Bank, characterized corruption as a "cancer," and announced that the elimination of corruption would be one of the central planks of development efforts by the World Bank and the IMF.

The remedies for corruption are more open to debate. Ades and Di Tella (1997) categorize the remedies for corruption into three approaches.[3] The first approach is to increase monitoring and punishment for corruption (Rose-Ackerman 1997; Tanzi 1998). As discussed above, however, repressing corruption in one area may lead to corruption in other areas. Also, these studies have not considered the effect of repressing corruption on public service effort. Moreover, the empirical significance of anti-corruption programs, such as creating an anti-corruption agency for better monitoring and passing legislation for tougher penalties, is ambiguous and contingent on other institutional details (Pope 1999; Rousso and Steves 2006; Shah and Huther 2000).

The second approach is to reduce discretion and rents in bureaucrats' decisions by introducing market competition, possibly through deregulation, privatization, and trade liberalization (Rose-Ackerman 1997; Shleifer and Vishny 1993). Ades and Di Tella (1996), Gerring and Thacker (2005), Henderson (1999), LaPalombara (1994), and Sung and Chu (2003) find evidence in support of this approach. However, Elliott (1997) and Treisman (2000) find mixed or insignificant effects.

The third approach is to provide incentives for bureaucrats not to engage in corruption. In particular, high wages combined with the threat of dismissal have received much attention since Becker and Stigler (1974). However, their empirical significance is ambiguous as well. For example, van Rijckeghem and Weder (1997) find that higher wages reduce corruption in the public sector in between-country regressions, but find no significant relationship in within-country regressions. Swamy, Knack, Lee, and Azfar (2001) and Treisman (2000) also find no significant association between wages and corruption.

Building on this literature, this article departs from the previous literature in several ways. First, this article develops a formal theoretical model to analyze how both public service effort and corruption are affected by monitoring, discretion, extrinsic, and intrinsic motivation, such as performance-based promotions, high wages, job satisfaction, PSM, etc. In contrast, most previous studies have focused on one or two of

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2   For example, Knack and Keefer (1995), Mauro (1997), Meon and Sekkat (2005), and Mo (2001) find that corruption leads to lower economic growth.

3   Other approaches include promoting press freedom (Brunetti and Weder 2003), high-quality judiciary (Ades and Di Tella 1996), transparency (Kaufmann 1998), and destabilizing corruption collusion (Lambsdorff and Nell 2006).

these factors. For example, Chand and Moene (1997), Dhami and Al-Nowaihi (2007), and Mookherjee and Png (1995) have studied the effect of performance pay on corruption, but not the effects of intrinsic motivation, monitoring, or the interaction with discretion.

Second, this article provides an empirical analysis based on individual-level micro data where all the bureaucrats belong to the same central government and share the same laws, regulations, and social culture. Therefore, the empirical results are less likely to be influenced by other compounding factors. In contrast, the previous empirical studies on corruption are largely based on cross-country or cross-organization analyses that can suffer from potentially serious measurement error and omitted variable bias, which may explain the mixed empirical evidence discussed above. Although emerging studies are incorporating more micro evidence of corruption (Di Tella and Schargrodsky 2003; Golden and Picci 2005; Olken and Barron 2007), studies based on direct survey questions to individual government officials are still scarce.

Third, this study examines the effects of both extrinsic and intrinsic motivation for public service. Extrinsic motivation, such as performance pay in the form of piece rates, merit pay, or promotion tournaments, has expanded steadily in many governments (see OECD [2005] for details). At the same time, the literature on PSM has emphasized the importance of intrinsic motivation for public service (Perry 1996). Although the impact of performance pay and PSM on individual behavior and organizational performance is still being debated (Perry, Engbers, and Jun 2008; Wright 2007), this article shows that both extrinsic motivation and intrinsic motivation are negatively associated with individual bureaucrats' corruptibility.

THEORETICAL MODEL

To develop a theoretical model, I assume that a bureaucrat can pursue two tasks: corruption effort and public service effort. Corruption effort includes accounting manipulation and social networking, and leads to higher private benefits, such as bribes. Public service effort also leads to higher payoffs either through explicit performance-based pay or promotion or through intrinsic motivation. For the theoretical discussion, it is not necessary to distinguish between explicit and intrinsic motivation. It is sufficient to assume that a bureaucrat may receive higher payoffs or utility by providing more public service. Also, note that we define performance pay in a broad way to include both merit bonus and performance-based promotions.

It is possible that extrinsic motivation may crowd out intrinsic motivation (Titmuss 1970). However, the empirical evidence is still mixed (Georgellis, Iossa, and Tabvuma 2010). Thus, although I assume no crowding out effect in the theoretical model, I will examine the validity of this assumption in the empirical analysis.

Both corruption effort and public service effort are costly to a bureaucrat because they require the bureaucrat's time and energy. Also, since a bureaucrat's time and energy are limited, pursuing public service effort, for example, makes corruption effort more costly. Therefore, if higher extrinsic or intrinsic motivation for public service leads to more public service effort, there will be less time and energy for corruption effort and consequently less corruption.

Discretion is a double-edged sword. On one hand, more discretion increases the productivity of public service and leads to more public service effort. On the other hand, more discretion increases the returns to corruption effort as well and leads to more corruption effort.[4] Therefore, it is generally ambiguous whether it is optimal to provide much discretion to a bureaucrat. However, if increased discretion is combined with strong extrinsic or intrinsic motivation, it should increase public service effort without necessarily promoting additional corruption.

I consider dismissal from public service as the main punishment for corruption. Note that if a bureaucrat gets fired, s/he cannot enjoy the full benefits of his/her corruption or public service effort. For example, a bribe would stop and an intrinsic motivation, such as PSM, would disappear if a bureaucrat loses the public service job. Also, if a bureaucrat gets fired, s/he cannot get promoted to a higher-wage position even if s/he has performed well in public service. Therefore, it is possible (but not always) that increased monitoring for corruption and a higher probability of dismissal reduce the expected benefits from *both* public service effort and corruption effort and consequently reduce the levels of both public service effort and corruption effort.

To formalize these arguments, I extend the agency model with multitasks by Holmstrom and Milgrom (1991). As I will discuss below, however, the empirical analysis in this article cannot test the predictions regarding monitoring or punishment for corruption due to the lack of relevant data. Therefore, I first present a simple model below without considering monitoring or punishment for corruption. Then, I provide a more general model that incorporates monitoring and punishment for corruption in the Appendix.

Consider an agent (a bureaucrat) who can pursue either public service effort, denoted by e_P, or corruption effort, denoted by e_C. For simplicity, assume that private benefits from corruption, denoted by B, and the level of public service, denoted by S, are determined as follows:

$$B = be_C \tag{1}$$

$$S = se_P + \varepsilon, \tag{2}$$

where ε is a random noise with mean zero, and b and s reflect the productivity/returns of each type of effort.

The principal can observe neither the agent's efforts (e_P and e_C) nor the private benefit from corruption, B. Thus, there is an information asymmetry problem. However, the agent's performance in public service, S, is observable and verifiable. Therefore, the principal can provide performance pay based on S.

Then, the agent's payoffs are as follows:

$$U = W + B - C(e_P, e_C), \tag{3}$$

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4   For example, Ades and Di Tella (1997), Goel and Nelson (1998), Kaufmann and Siegelbaum (1997), Simon, Kaufmann, and Zoido-Lobaton (1998), and Weyland (1998) show that discretionary power and the associated economic rents increase corruption.

where W is the payoff from public service, and $C(e_P, e_C)$ is the cost of the efforts. $C(e_P, e_C)$ is determined as follows:

$$C(e_P, e_C) = \frac{1}{2} e_P^2 + \frac{1}{2} e_C^2 + \gamma\, e_P e_C, \tag{4}$$

where $0 < \gamma < 1$. Note that the exact functional form of the cost function is not important as long as more corruption effort increases the marginal cost of public service effort, that is, $\dfrac{\partial^2 C}{\partial e_P \partial e_C} > 0$.

The payoff from public service, W, depends on the level of public service, S.[5] In particular, I assume that the agent receives a base payoff, α, regardless of the level of public service, and receives a public service–related payoff, βS, in the *next* period. For example, the agent may get promoted in the next period and the probability of promotion depends on S. Then, the formal payoff from public service, W, is determined as follows:

$$W = \alpha + \delta \beta S, \tag{5}$$

where δ is the agent's discount factor; α reflects the base payoff; and β reflects the strength of extrinsic and intrinsic motivation. Alternatively, one can interpret δ as the level of employee engagement in the spirit of Harter, Schmidt, and Hayes (2002). That is, a more engaged agent may receive larger intrinsic payoffs from public service.

Then, the agent's optimization problem is as follows:

$$\max_{e_P > 0, e_C > 0} E[\alpha + \delta \beta S + B] - C(e_P, e_C). \tag{6}$$

Then, from equations (1) and (2), it is straightforward to show that the agent's optimal choice of efforts is

$$e_C^* = \frac{1}{1 - \gamma^2}(b - s\delta\beta\gamma) \tag{7}$$

$$e_P^* = \frac{1}{1 - \gamma^2}(s\delta\beta - b\gamma). \tag{8}$$

I assume $s\delta\gamma < \dfrac{b}{\beta} < \dfrac{s\delta}{\gamma}$ so that $e_C^* > 0$ and $e_P^* > 0$. In other words, the returns from corruption effort and public service effort are not too different. Otherwise, the agent would focus on one type of effort only.

From equations (7) and (8), the main theoretical results of this article can be formally derived as follows: First, increasing the motivation for public service (β)

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5   A small amount of corruption may serve as a way to reduce transaction costs and increase the payoff from public service, called the "grease the wheels" hypothesis. However, most recent empirical studies have found a negative relationship between corruption and economic growth or foreign direct investment (Mauro 1995; Wei 2000)

increases public service effort (e_P) *and* reduces corruption effort (e_C) at the same time. Therefore, increasing extrinsic or intrinsic motivation for public service can be an efficient way to deter corruption.

Second, if the agent has much discretionary power, it would increase the returns to corruption effort, b, but it would also increase the productivity of public service, s. Therefore, it is theoretically ambiguous how increased discretion would affect the levels of corruption effort and public service effort.

Third, it is unambiguous, however, that the interaction effect of motivation for public service and discretion is negative. Note that from equation (7), $\frac{\partial^2 e_C}{\partial s \partial \beta} = -\frac{\delta \gamma}{1-\gamma^2} < 0$ and $\frac{\partial^2 e_C}{\partial b \partial \beta} = 0$. Thus, if discretion increases both s and b, the cross-derivative between discretion and motivation ($= \frac{\partial^2 e_C}{\partial s \partial \beta} + \frac{\partial^2 e_C}{\partial b \partial \beta}$) must be negative. That is, the more discretion an agent has, the more effective extrinsic and intrinsic motivations for public service are in reducing corruption.

Finally, a lower discount factor or a lower level of engagement (δ) reduces the expected payoff from public service effort and consequently the level of public service effort. Then, a bureaucrat would pursue more corruption effort instead. Therefore, for example, if the agent is likely to quit, s/he would not value future payoffs from public service and would exert more corruption effort now.[6]

DATA, MEASURES, AND HYPOTHESES

Data

The KCSS was conducted between September 9, 2009, and October 9, 2009, for 800 central government bureaucrats in 40 ministries. The survey was designed by the Knowledge Center for Public Administration & Policy at Seoul National University and administered by Gallup Korea. The questionnaire includes 87 structured questions and was presented in face-to-face interviews. For most questions, the respondents must answer on a 1 (strongly disagree) to 5 (strongly agree) scale.

Table 1 and figure 1 show basic summary statistics for the personal and job characteristics of the surveyed bureaucrats. Job grades range from 9 (the lowest) to 1 (the highest), but the survey includes only those between grade 3 and grade 9. The sampling is designed for 20 samples in each ministry, and there are a roughly equal number of samples for grades 3–5 officials and grades 6–9 officials in each ministry.

The survey includes questions on corruption, delegation of authority, performance pay, turnover, workload, reason for doing one's current job, and frequency of communication with external personnel or organizations.

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6   If the payoffs from corruption come in the future, a lower discount factor would reduce the expected future payoff from corruption effort as well. However, given that corruption arrangements cannot be made by a legally binding contract, long-term corruption arrangements must be more difficult to sustain than a long-term wage contract, such as a retirement pension plan. Therefore, it is more likely that a lower discount factor would reduce the expected payoffs from public service effort relatively more than those from corruption effort. Then, a lower discount factor would still increase corruption effort.

Table 1
Summary Statistics

		Frequency	%
Total		800	100
Job grade	Grades 3–5	382	47.8
	Grades 6–9	418	52.3
Sex	Male	639	79.9
	Female	160	20
	Missing	1	0.1
Age	20–29 years	66	8.3
	30–39 years	318	39.8
	40–49 years	295	36.9
	50–59 years	116	14.5
	Missing	5	0.6
Main job	Policy planning	250	31.3
	Policy implementation	175	21.9
	Regulatory implementation	42	5.3
	Administrative management	333	41.6
Job groups	Administrative service groups	600	75
	Technical service groups	147	18.4
	Others	53	6.6

Figure 1
Distributions of Individual and Job Characteristics
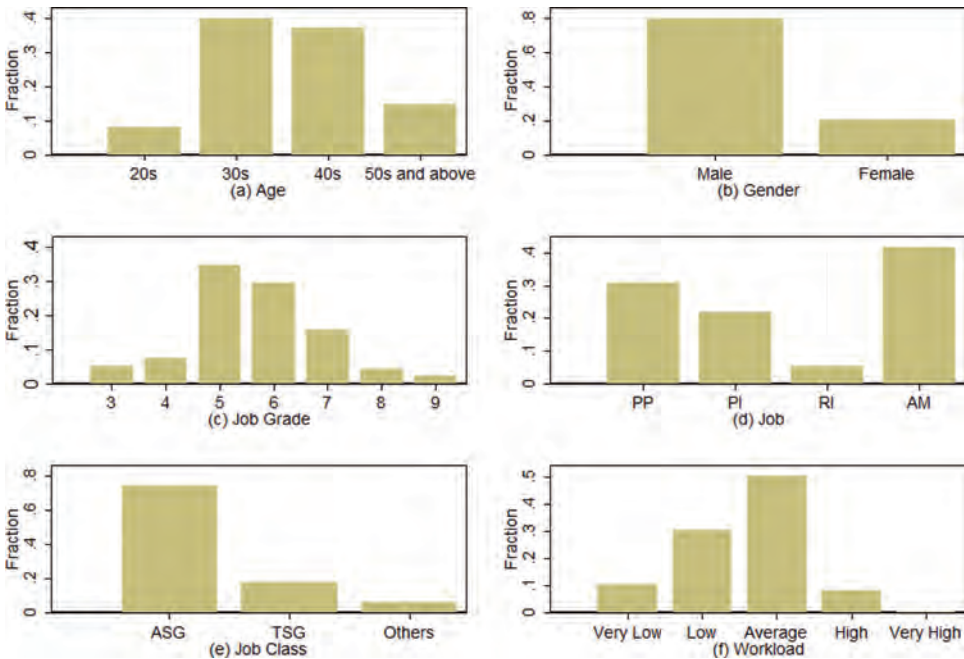
Note: In (d), PP, Policy Planning; PI, Policy Implementation; RI, Regulation Implementation; AM, Administrative Management. In (e), ASG, Administrative Service Groups; TSG, Technical Service Groups.

Korean Context

Before I describe the data, it is worth discussing the Korean context of corruption. According to the corruption perception index (CPI) by Transparency International, Korea was ranked 43th in the world in 2010, which is lower (or worse) than Japan, Singapore, and Taiwan. Part of the reason for the low score is a relatively short history of civilian democratic government. Between 1961 and 1992, all the presidents of Korea came from the military. During this period, combined with the government-driven economic development policy and the emergence of large corporations (e.g., Hyundai, Samsung), it is widely believed that systematic corruptions was common.[7]

The first civilian president, Young-sam Kim, was elected in 1993, but through a coalition with the former military president. The first civilian president from the minority party, Dae-jung Kim, was elected in 1998. He later won the Nobel Peace Prize. With civilian governments and economic growth, more systematic efforts have been made to curb corruption in Korea. Examples include the corruption prevention act, the requirement of confirmation hearing for high-ranked government officials and the public disclosure of their assets, the establishment of the Korea Independent Commission Against Corruption, which later became The Anti-Corruption & Civil Rights Commission in 2008.[8]

Consequently, the CPI for Korea has steadily improved from 3.8 in 1999 to 5.6 in 2007, though it has fallen recently to 5.4 in 2011. Also, Hong, Kim, and Goo (2010) find that in 1997, 36% of the participants in a survey reported that they have given some form of bribe to public officials within the last year, whereas in 2010, this percentage had fallen to 4.4%. However, in 2010, still more than 10% of people in the entertainment industry (e.g., bar, karaoke) have reportedly given bribe. Among those who reported giving bribes on a regular basis, they typically gave between 300,000 won (approx. US$300) and 500,000 won (approx. US$500) each time. More than 57% of the surveyed citizens thought that giving a bribe of less than 100,000 won (approx. US$100) is not a crime.

As far as I know, the role of congress in corruption is not well understood in Korea, and is an interesting topic for future research. Recall that until 1998, all the presidents in Korea came from the majority party, and the presidents had strong control over both the congress and the administration. Thus, one can argue that the congress, especially the minority party, was not able to provide effective checks and balances until 1998. For example, the first congressional confirmation hearing for a prime minister was held in 2000. And in 2002, the two prime minister nominees were rejected in the congressional confirmation hearings for the first time due to various

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7   For example, all the recent former presidents were charged with corruption after they stepped down (see, for example, http://community.seattletimes.nwsource.com/archive/?date=19951116&slug=2152692, last accessed on November 30, 2012).

8   The Anti-Corruption & Civil Rights Commission is led by a 15-member committee. Thirteen of the committee members are appointed by the president, and the other two are appointed by the congress and the Supreme Court respectively. Regarding corruption, the committee's main goals are (i) coordinating national anti-corruption policies, (ii) encouraging voluntary partnerships, (iii) monitoring and detecting corrupt practices, and (iv) protecting and rewarding whistle-blowers. One of the more visible outputs of the commission is the publication of an integrity index for each public organization. One can visit its homepage (http://www.acrc.go.kr/eng_index.html, last accessed on November 30, 2012) for more details.

charges of corruption. Despite this progress, it is also possible that competition between the majority and minority parties has led to more corruption within the congress, possibly due to vying for more political funds. In a 2009 survey, the congress and the political parties were still perceived as some of the most corrupt groups in Korea.[9]

The bureaucrats in the central government have job grades ranging from 9 (the lowest) to 1 (the highest). They are mostly hired through the civil service examinations for grades 5, 7, and 9. Also, bureaucrats in Korea are subject to frequent job rotations. For example, in 2006, more than 40% of bureaucrats in levels 4 and 5 had changed their job within the last year (Kim 2008). Therefore, the bureaucrats in Korea are relatively homogenous across different ministries.

The civil service examinations are very competitive. For example, the exam for grade 9 in 2009 had a 200:1 competitive ratio. The exam for grade 5 is also highly competitive, and attracts some of the best college students. Therefore, the public officials in the central government, especially those above grade 5, can be considered as an elite group in Korean society. Even though many of them are highly motivated for public service, their pay is relatively low at 85% of that in the private sector in 2011.[10] Also, the central government bureaucrats are in charge of many business regulations and large subsidies, making them more susceptible to corruption.

Measure of Corruption

According to the code of conduct for civil servants, corruption is defined as the abuse of power at the request of supervisors, relatives, or politicians and through the desire for personal gain.[11] In particular, taking personal gains (e.g., money, free resort access) worth more than 30,000 won (approx. US$30) is prohibited. Because the abuse of power at the request of others does not involve direct monetary transfers, it is very difficult to measure or identify.[12] Therefore, in this article, I focus on the abuse of power for personal monetary gain.

Then the most relevant question for corruption in the survey is, "Do you think that taking 100,000 won (roughly US$100) from job-related companies in your child's marriage ceremony is corruption?" Job-related companies are typically those business companies that can benefit from government regulations or subsidies. Even though the interviewer did not define "job-related companies," the government has given frequent

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9   For more details, see http://www.realmeter.net/issue/view.asp?Table_Name=s_news2&N_Num=646&file_name=20091229121944.htm&Cpage=14 (available only in Korean, last accessed on November 30, 2012).

10   For more details, see http://www.index.go.kr/egams/stts/jsp/potal/stts/PO_STTS_IdxMain.jsp?idx_cd=1021&bbs=INDX_001&clas_div=C&rootKey=1.48.0 (available only in Korean, last accessed on November 30, 2012).

11   For the complete code of conduct, see http://likms.assembly.go.kr/law/jsp/law/Law.jsp?WORK_TYPE=LAW_BON&LAW_ID=B3584&PROM_NO=22471&PROM_DT=20101102&HanChk=Y (available only in Korean, last accessed on November 30, 2012).

12   For example, the abuse of power at the request of a supervisor (e.g., providing a favor in a hiring decision or subsidy grant to the supervisor's friends and relatives) can be rewarded by the bureaucrat's own promotion in the future. Also, the abuse of power at the request of family and relatives can be rewarded by a mutual exchange of favors, and, to a certain extent, it is considered as a virtue.

warnings to bureaucrats not to play golf or to dine out with those in job-related companies.[13] Therefore, there is a general consensus that job-related companies are those prone to corruption.

The bureaucrats were asked to answer on a 1-to-5 scale where 5 represents "It is obvious corruption," and 1 represents "It is not corruption at all." Gallup rescaled the answer to a 0–100 scale where 1 is scaled to zero and 5 is scaled to 100. This rescaled variable is called y_b87.

Normally, for bureaucrats, taking more than 100,000 won is considered corruption.[14] Also, 50,000 won is roughly a median amount of congratulatory money that guests bring for a wedding ceremony. But it is not unusual for close friends and relatives to bring more than 100,000 won. Therefore, 100,000 won is the lower bound for corruption and is higher (but not unusually higher) than a typical amount of congratulatory money.

I assume that officials who strongly believe taking 100,000 won is corruption (y_b87 = 100) are *less* likely to commit corruption. Thus, I measure corruption (or corruptibility) by 100 − (y_b87). Note that the less strict a bureaucrat's standard for corruption is, the higher is his/her corruption measure. Unfortunately, the survey does not include relevant questions to measure public service effort. Therefore, the empirical analysis will focus on the effect on corruption only.

Because corruption is difficult to measure objectively, subjective survey responses are often the only option.[15] The survey responses, especially on corruption, however, can be potentially biased because the respondents may have a tendency to provide socially desirable responses (DeMaio 1984). Also, respondents who feel lazy or do not wish to answer a sensitive question may pick a middle answer such as "uncertain" or "average" (Singleton and Straits 2010). However, figure 2 shows that the responses to the corruption question are widely spread out, suggesting that there is no large systematic bias leading to one particular answer.

It is still possible that the respondents may simply disagree on the lower bound of congratulatory money that constitutes corruption, without actually engaging in corruption. Also, since the survey question is about a relatively small amount of money, our measure may pick up small or petty corruption only, not big-scale or grand corruption.

To test the reliability of the corruption measure, I collected the government integrity index from the Anti-Corruption & Civil Rights Commission in Korea by each ministry. The integrity index is published annually based on surveys, crime data, and media reports to measure the transparency and lack of corruption at the ministry level.[16] Then, I regressed the ministry averages of our corruption measure on the integrity index using the number of employees in each ministry as weights. As expected, the integrity index has a negative and significant effect on our corruption measure with

13   See, for example, http://www.koreaherald.com/national/Detail.jsp?newsMLId=20110622000875 (last accessed on November 30, 2012).
14   For example, many government organizations and public companies in Korea (e.g., LH, KORAIL) have internal rules to fire or punish anyone who takes more than 100,000 won as a bribe (see, for example, http://www.nocutnews.co.kr/show.asp?idx=1832448, available in Korean, last accessed on November 30, 2012).
15   For recent studies that attempt to measure corruption more objectively, see Di Tella and Schrgrodsky (2003), Golden and Picci (2005), and Olken and Barron (2007).
16   Available from http://www.acrc.go.kr/eng_index.html (last accessed on November 30, 2012).

Figure 2
Distributions of Main Variables
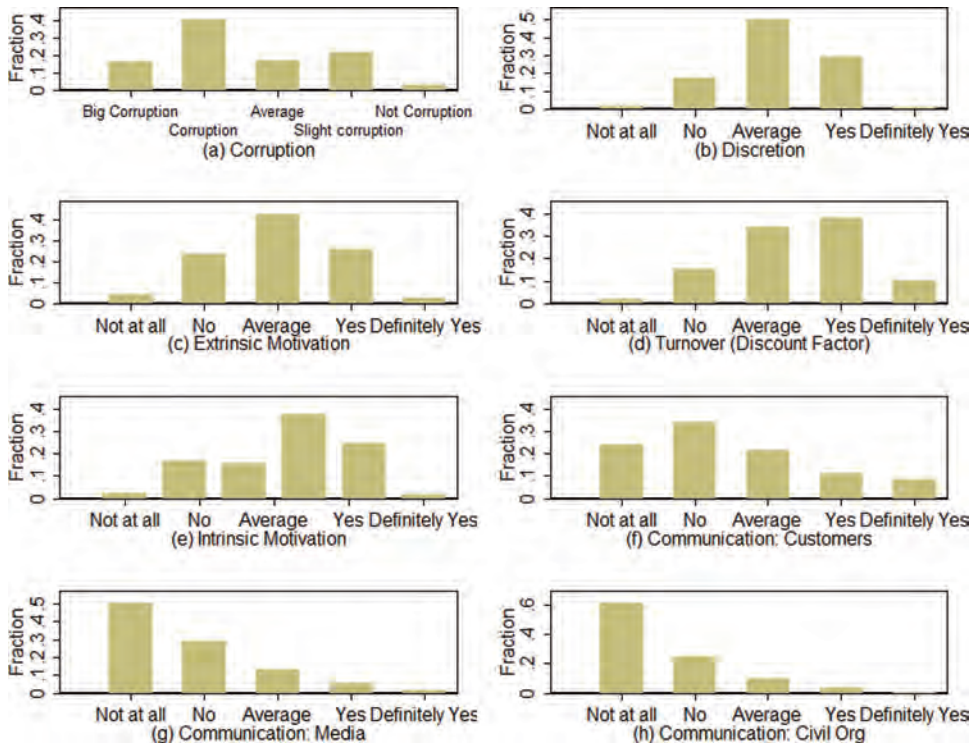
p-value less than .000.[17] This result provides some support that our corruption measure is related to other corruption indices at the ministry level.

It must be emphasized, however, that the measure of corruption in this study is based on subjective *perceptions or attitudes*, and shares the same limitation of potential measurement errors with most other studies that are based on survey responses, such as the popular CPI by Transparency International. An important advantage of our measure is that our measure is available at the individual level.

Measure of Motivation

In Korea, although explicit merit pay has been introduced to high-ranked bureaucrats in grades 3 and 4 since 2003, the size of explicit merit pay is still small, and wages are mostly tied to job grade and tenure. Therefore, performance pay for Korean bureaucrats is provided mostly in the form of performance-based promotion. However, because performance is measured by supervisors' subjective ratings, there can exist relatively large variations in the sensitivity of promotion to *real* performance depending on the

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17   More specifically, the regression result is as follows: corruption = 45.197 − 0.46 × (integrity index), where the coefficient for the integrity index (=0.46) has *p*-value .000.

supervisors. For example, some supervisors may promote those with higher seniority or those with closer personal ties by overstating their performance. Therefore, I use the answer to the question whether "my promotion depends on my performance" as a proxy of extrinsic motivation for public service (β in the theoretical model).

Note that the previous literature suggests that performance-based pay or promotion in some public sectors was not successful partly because performance-related pay was not implemented correctly and in particular workers did not trust the goal of performance-based pay or the performance measurement system (Brudney and Condrey 1993; Kessler and Purcell 1992) Therefore, introducing or strengthening *formal* performance-based pay or promotion does not necessarily imply effective extrinsic motivation. In contrast, our measure depends on the bureaucrats' own belief about whether their promotions depend on their own performance. Thus, our measure can be a potentially good proxy of *effective* extrinsic motivation.

For intrinsic motivation, I use the answers to the question whether "I am performing the current task because the task is interesting to me."[18] Such interest could reflect personal energy, PSM, relationships with colleagues, or organizational culture. Although disentangling the reasons for a bureaucrat's interest in a task is generally difficult, I will attempt to measure PSM in the spirit of Perry (1996) later in the analysis. For the purpose of this article, however, it is sufficient that this interest motivates the government officials to perform their tasks, and reflects their intrinsic motivation (β).

Other Measures

For discretion, I use the answer to the question whether "My supervisors frequently delegates authority to subordinates" (b and s). As I will discuss later, the survey includes other questions related to discretion, and the results are robust to alternative definitions of discretion.

For the discount factor or the employee engagement, I use the answers to the question whether "I often consider quitting my job." Recall that the employee engagement and discount factor in the theoretical model reflects how much a bureaucrat values his/her current and future payoffs from public service. If a bureaucrat is likely to quit a job, s/he would not value future payoffs from the job. Also, many studies have shown that higher employee engagement leads to lower turnover levels (see, e.g., Harter et al. 2002; Meyer and Allen 1991). Therefore, I measure the level of employee engagement or discount factor by 100 ("I often consider quitting my job"). Note that the intention of this article is not to measure the full dimensions of the discount factor, or employee engagement, but to measure how much civil servants value the outcome of public service. For this purpose, turnover intention can be a good proxy.

The survey also asks whether "I communicate frequently with policy target groups, media, civil organizations, or congress." The *policy target groups* differ by the ministries. For example, for the Ministry of Education, the policy target groups include schools, students, and parents. For the Ministry of Knowledge Economy, the policy target

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18   For some reason, the answer to this particular question is on 1–6 scale, not 1–5 scale. I have normalized the answer to 1–100 scale accordingly such that 1 becomes 0 and 6 becomes 100.

groups are mostly private and public companies. For the Ministry of Health & Welfare, the policy target groups include hospitals, patients, and social service providers.

For a given level of corruption effort, frequent communication or contact with policy target groups or customers should make it easy to form an implicit corruption agreement or increase the returns to corruption effort (b) (Lambsdorff and Nell 2006). For example, private companies that are affected by specific policies often take bureaucrats to expensive bars, restaurants, or golf resorts and provide expensive gifts in an effort to affect policy decisions in their favor. Such activities clearly constitute corruption according to the code of conduct for civil servants.[19]

On the other hand, for an effective policy design, public officials must understand the policy target groups. Thus, frequent contact with policy target groups can increase the productivity of public service (s) and decrease corruption. Therefore, the effect of frequent contact with policy target groups on corruption is theoretically ambiguous and becomes an empirical question.

Likewise, frequent communication or contact with the media can reduce corruption or decrease the returns to corruption effort ($-b$) if the media acts as a monitor for bureaucrats' corruption. However, if frequent communication with the media allows bureaucrats to collude with the media and to hide their corruption, it can increase the returns to corruption effort (b) and the level of corruption.

From figure 2(g), note that the distribution of communication with the media is highly skewed. That is, most respondents have almost no contact with the media, and only a few have frequent contact. Then, one must be careful that a small group of outliers who have frequent contact with the media do not drive our main empirical results. Thus, I will later use a simple dummy variable for those who had more than or equal to the median contacts with the media instead.

There are more than 20,000 registered civil organizations or non-governmental organizations (NGOs) in Korea, which serve public goals such as environmental protection, human rights, and the reduction of corruption. Note that these civil organizations differ from interest groups that represent specific companies or professionals. For example, PSPD (People's Solidarity for Participatory Democracy) is one of the largest political civil organizations, and its missions include providing alternative policies and monitoring abuses of power.[20] Also, PSPD does not receive any grants from the government. Because of their public goals and the competition among them, civil organizations in Korea are considered as more trustworthy than government, religious groups, congress, the media, the judiciary, or the police.[21] Therefore, civil organizations are likely to provide monitoring for bureaucrats' corruption, and frequent contact with them should reduce corruption ($-b$).

From figure 2(h), the distribution of communication with civil organizations is also highly skewed. Therefore, I will again check the robustness of the results by using a simple dummy variable for those who had more than or equal to the median contacts with the civil organizations instead.

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19   http://www.koreaherald.com/national/Detail.jsp?newsMLId=20110622000875 (last accessed on November 30, 2012).

20   For more details, see http://www.peoplepower21.org/index.php?mid=English&category=37682&document_srl=39340 (last accessed on November 30, 2012).

21   From a survey by RealMeter in 2009, http://www.viewsnnews.com/article/view.jsp?seq=51117 (available only in Korean, last accessed on November 30, 2012).

Table 2
Measures and Hypotheses

Hypotheses		Parameter in the Model	Survey Question (Answer = 0,25,50,75,100) (0 = strongly disagree, 100 = strongly agree)	Effect on Corruption
	Corruption	e_C	100-(Taking 100,000 won from job-related companies is corruption.)	
H1	Extrinsic motivation	β	My promotion depends on my performance.	−
H2	Intrinsic motivation	β	I perform my task because it is an interesting job to me.	−
H3	Discretion	b and s	My supervisor frequently delegates authority to subordinates.	+/−
H4	Extrinsic motivation * Discretion	$\beta * s$	(Promotion depends on performance) * (Frequent delegation)	−
H5	Discount factor or engagement	δ	100-(I often consider quitting my current job.)	+
H6	Frequent	b or $-b$	Customers or policy target group	+/−
H7	communication	b or $-b$	Media	+/−
H8	with	$-b$	Civil organizations	−

Hypotheses and Empirical Specification

These measures and the corresponding empirical hypotheses are summarized in table 2.

For the concepts of corruption, performance pay, or delegation of authority, the survey has other related questions. However, controlling for the answers to these other related questions does not change the results.[22] Based on these measures, I test the empirical hypotheses with the following regression equation:

$$\text{corruption}_{ij} = \beta_0 + \beta_1(\text{extrinsic motivation}_{ij}) + \beta_2(\text{intrinsic motivation}_{ij}) + \beta_3(\text{discretion}_{ij})$$
$$+ \beta_4(\text{extrinsic motivation}_{ij} * \text{discretion}_{ij}) + \beta_5(\text{discount factor}_{ij})$$
$$+ \beta_6(\text{contacts with policy target groups}_{ij}) + \beta_7(\text{contacts with the media}_{ij})$$
$$+ \beta_8(\text{contacts with civil organization}_{ij}) + X'_{ij}\gamma + \delta_j + \varepsilon_{ij},$$

where corruption_{ij}, for example, is the corruption measure of individual i in ministry j; X_{ij} is a vector of personal and job characteristics including dummy variables for age, gender, workload, job grade, main job category, and job groups; δ_j is the ministry random effect. Due to the discrete nature of the dependent variable, I will also estimate an ordered probit model.

RESULTS

Table 3 reports the main empirical results. At first, in column 1 of table 3, I do not control for personal and job characteristics, such as dummy variables for age, gender, workload, job grade, job category, and job class. Then, column 2 adds these personal and job characteristics. Note that the estimates in columns 1 and 2 are very similar,

22   These results are not reported due to space limitation but are available from the author.

Table 3
Motivation, Discretion, and Corruption (Dependent Variable = Corruption)

Variables	Parameter in the Model	1	2	3	4	5
Extrinsic motivation	β	−0.0868**	−0.0805**	−0.0808**	0.1176	0.1198
		(0.0191)	(0.0333)	(0.0326)	(0.1881)	(0.1921)
Intrinsic motivation	β	−0.1460***	−0.1507***	−0.1498***	−0.1515***	−0.1635*
		(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0800)
Discretion	b or s	0.1417***	0.1474***	0.1474***	0.3061***	0.2984***
		(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0021)
Discretion * Extrinsic motivation	β * s				−0.2949**	−0.2966**
					(0.0141)	(0.0165)
Discretion * Intrinsic motivation	β * s					0.0149
						(0.9109)
Discount factor/engagement	δ	−0.0805**	−0.0847**	−0.0846**	−0.0860**	−0.0862**
		(0.0306)	(0.0238)	(0.0236)	(0.0211)	(0.0208)
Contacts: Policy target group	b or $-b$	−0.0481	−0.0548	−0.0546	−0.0478	−0.0483
		(0.2328)	(0.1761)	(0.1768)	(0.2374)	(0.2331)
Contacts: Media	b or $-b$	0.1081**	0.0990**	0.0975*	0.1020**	0.1066**
		(0.0295)	(0.0498)	(0.0532)	(0.0431)	(0.0346)
Contacts: Civil organization	$-b$	−0.1366***	−0.1369***	−0.1357***	−0.1307***	−0.1342***
		(0.0050)	(0.0052)	(0.0055)	(0.0073)	(0.0059)
Low job grades (= 6, 7, 8)			−0.0117	−0.0115	−0.0129	−0.0131
			(0.7817)	(0.7846)	(0.7585)	(0.7562)
Personal, job characteristics		No	Yes	Yes	Yes	Yes
Ministry random effects		No	No	Yes	Yes	Yes
N		793	793	793	793	793
R^2		0.0651	0.0871	0.0871	0.0941	0.0941

Note: The standardized coefficients are reported. P-values are in parentheses. Personal and job characteristics include dummy variables for age, gender, workload, job category, and job class.
***, significant at 1%; **, significant at 5%; *, significant at 10%.

which suggests that these estimates are not largely driven by differences in personal or job characteristics.

Column 3 of table 3 also adds 40 ministry random effects to control for unobserved differences in job characteristics and human resource policies among different ministries.[23] Again, the qualitative results do not change, which suggests that unobserved heterogeneity of different ministries is not responsible for the results. In columns 4 and 5, I control for the interactions between discretion and extrinsic or intrinsic motivation. All coefficients are standardized for easier comparison, and *p*-values are reported in the parentheses.

Extrinsic Motivation

From columns 1–3 of table 3, extrinsic motivation is negatively associated with the bureaucrats' corruptibility.[24] More specifically, those who believe that their promotions depend on their own performance have a stricter standard for corruption. This result is consistent with the theoretical prediction, H1, in table 2.

However, because our measures of extrinsic motivation and corruption are based on the bureaucrats' subjective opinions or attitudes, it is difficult to make a definitive causal inference. For example, some public officials may have a set of attitudes supportive of performance and strict accounting. Although I will attempt to control for such a set of attitudes later, our result provides only suggestive, not definitive, evidence that extrinsic motivation can reduce corruption.

Although other theoretical studies (e.g., Dhami and Al-Nowaihi 2007; Mookherjee and Png 1995) have also hypothesized that extrinsic motivation (e.g., performance pay) can affect bureaucrats' corruption, to my knowledge, its significance has never been analyzed empirically before. Therefore, despite the caveat discussed above, the results of this article can still make a contribution to the literature.

The emphasis on objective performance measures and performance-based pay and promotion has been increasing in the public sector mainly to induce more public service effort by bureaucrats. This study suggests that performance-based pay or promotion can reduce corruption as well.

Perhaps more importantly, if performance-based promotion can reduce corruption, it would imply that corrupt bureaucrats can be turned into productive ones, as long as their public service effort is properly rewarded. This perspective contrasts with some of the public discussion that has largely focused on monitoring and penalizing corrupt bureaucrats. Such repressive policies may reduce officials' public service effort on the job and cause the government to lose potentially productive officials due to dismissals.

Intrinsic Motivation

Table 3 shows that intrinsic motivation is also negatively associated with the bureaucrats' corruptibility. That is, those bureaucrats who perform their task because it is

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23   Controlling for ministry fixed effects does not change our results, but the Hausman test supports the random effects model.

24   In columns 4 and 5, we can also show that extrinsic motivation reduces corruption when evaluated at the mean values of other variables.

interesting to them have a stricter standard for corruption. Although this result does not necessarily imply a causal relationship, it is consistent with the theoretical prediction, H2, in table 2.

It is also interesting to note that the standardized coefficient of intrinsic motivation is larger (in absolute value) than that of extrinsic motivation. That is, intrinsic motivation appears to be more negatively correlated with bureaucrats' corruptibility than extrinsic motivation. One must be careful, however, when comparing the effects of extrinsic and intrinsic motivations because their units of measurement are different. Even though I have standardized the coefficients to take that into account, it cannot perfectly control for the difference in the units of measurement. Despite this caveat, the idea that making civil servants' jobs more interesting (e.g., by careful job assignment or promoting more friendly social interaction) can reduce corruption as effectively as providing extrinsic motivation (e.g., performance-based pay) is an intriguing one.

Of course, the reasons bureaucrats find their tasks interesting can be diverse. Thus, our measure of intrinsic motivation is subject to potentially large measurement error. However, measurement errors should lead to an attenuation bias where the estimated effect becomes smaller in absolute value than the true effect. Thus, a pure measurement error does not explain the finding that the effect of intrinsic motivation is larger than that of extrinsic motivation.

Bureaucrats in Korea, especially in the central government, are paid relatively less than comparable workers in the private sector.[25] Therefore, part of the reason these bureaucrats feel their job is interesting can be due to PSM or the desire to work for the public interest (Perry and Wise 1990). Alternatively, bureaucrats may also find their jobs interesting due to the perks and the power associated with their positions. In such a case, our measure of intrinsic motivation would be misleading. However, the latter type of intrinsic motivation is likely to be positively associated with corruption, which is the opposite of the findings of this article.

### Discretion and Its Interaction with Motivation

It is theoretically ambiguous whether more discretion given to bureaucrats would lead to higher returns to corruption effort (b) and more corruption or to higher productivity of public service (s) and less corruption. Empirically, however, table 3 shows that on average, more discretion (measured by the extent of delegation by supervisors) is positively associated with the bureaucrats' corruptibility.

Interestingly, the bureaucrats' job grades are not statistically significant. One conjecture is that although bureaucrats at higher grades have larger discretion, they are also subject to much closer scrutiny. Also, bureaucrats at higher grades have less chance of direct or private contacts with business owners than those at lower grades. Thus, these effects may cancel out the effect of discretion.

Decentralization is a part of the New Public Management (NPM) reforms and is being pursued in many governments to promote efficiency. However, opponents

25   In 2011, civil servants' wages were about 85% of those in the private sector, controlling for age, education, and location. For more details, see http://www.index.go.kr/egams/stts/jsp/potal/stts/PO_STTS_IdxMain.jsp?idx_cd=1021&bbs=INDX_001&clas_div=C&rootKey=1.48.0 (available only in Korean, last accessed on November 30, 2012).

Figure 3
Effects of Discretion and Extrinsic Motivation
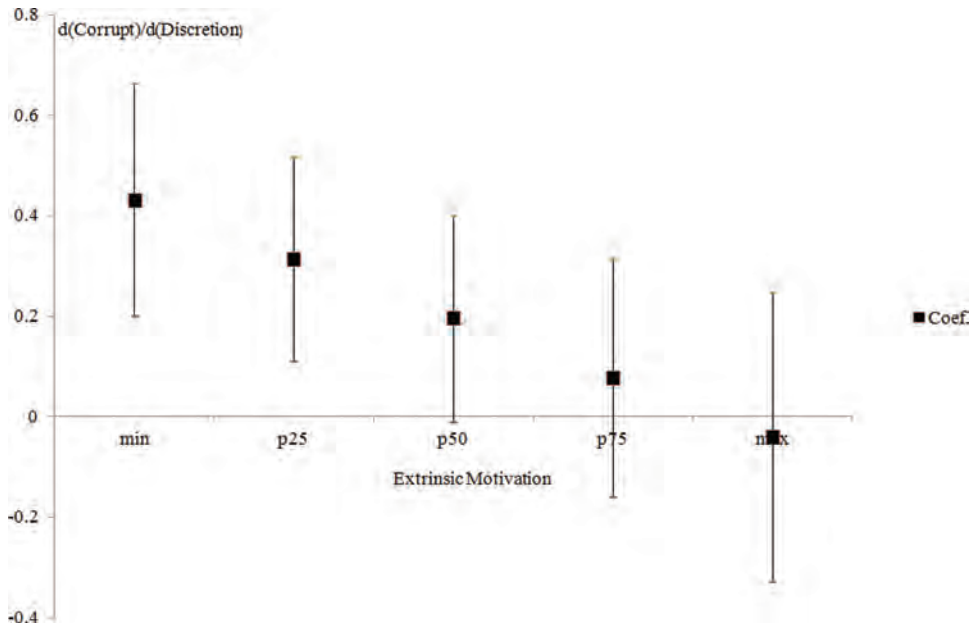
Note: The figure shows the conditional (non-standardized) coefficients of discretion and the corresponding 90% confidence intervals for each level of extrinsic motivation (min, p25, p50, p75, and max). The estimates are based on column 5 of table 3.

of NPM have argued that decentralization along with the blurring of the boundary between public and private sectors (due to outsourcing and privatization) can lead to more corruption (von Maravic 2007). The findings of this article provide evidence consistent with the latter argument.

However, recall that I find that extrinsic motivation, such as performance pay, is negatively associated with the bureaucrats' corruptibility. In particular, the theoretical model predicts that the anti-corruption effect of extrinsic motivation would be stronger when a bureaucrat has more discretion (H4 in table 2). Consistent with this prediction, columns 4 and 5 of table 3 show that the interaction between extrinsic motivation and discretion is negatively associated with corruptibility. In other words, those who believe their promotions depend on their performance have a stricter standard for corruption, especially when they are given more discretion. However, the interaction between discretion and intrinsic motivation is not statistically significant.[26]

The significance of the interaction between extrinsic motivation and discretion implies that the effect of discretion on corruption may differ depending on the level of extrinsic motivation. Therefore, in figure 3, based on the estimates from column 4 of

[26]   To check whether this insignificance is due to the fact that intrinsic motivation is measured on a slightly different scale (see footnote 18), I have measured both extrinsic and intrinsic motivations as dummy variables where the variables are equal to 1 if they are greater than the medians, and 0 otherwise. However, the qualitative results did not change. The result is not reported but available from the author.

table 3, I have computed the conditional coefficients of discretion and the corresponding 90% confidence intervals for different levels of extrinsic motivation. Interestingly, when the level of extrinsic motivation is less than 25 percentile, the effect of discretion on corruption is positive and statistically significant. That is, when the level of extrinsic motivation is low, higher level of discretion is positively associated with the bureaucrats' corruptibility.

However, when the level of extrinsic motivation is larger than the median, the effect of discretion on corruption is no longer statistically significant. Moreover, when the level of extrinsic motivation is at the maximum in our sample, the effect of discretion on corruption becomes negative, even though it is statistically insignificant. These results imply that allowing more discretion to bureaucrats must be accompanied by strong extrinsic motivation in order not to induce more corruption.

Discount Factor and Engagement

As discussed above, when bureaucrats do not value current or future payoffs of public service (i.e., a low level of the discount factor or employee engagement), they are more likely to engage in corruption (H5 in table 2). Consistent with this hypothesis, table 3 shows that those who often consider quitting public service have a less strict standard for corruption.

The economic literature on repeated games has emphasized the importance of the discount factor in sustaining cooperation, and has successfully applied the theories to illegal tacit price collusion in anti-trust cases. Note that illegal price collusion among firms is similar to illegal corrupt arrangements between bureaucrats and private parties, as both arrangements are susceptible to cheating for short-term gains by a participating player. For example, after a bureaucrat takes a bribe for a favor, s/he may decide not to provide the favor to avoid the risk of an audit.

The empirical significance of the discount factor in corruption implies that the same theoretical model of repeated games can be applied to explaining corruption, and that future research in such a direction would be promising. Lambsdorff and Nell (2006), for example, argue that future reforms against corruption must exploit the cheating incentives to destabilize corrupt arrangements.

Also, employee engagement has been considered as an important determinant of employee or organizational performance (see, e.g., Harter et al. 2002). However, few studies have empirically analyzed its effect on corruption. To the extent that turnover intention is associated with employee engagement, our results suggest that employee engagement is negatively associated with bureaucrats' corruptibility.

Communication and Contacts with Outside Organizations

The effect of frequent communication and contact with policy target groups can be ambiguous. As discussed above, frequent contact with policy target groups or customers can increase the productivity of public service but also increase the possibility of corrupt arrangements. Consequently, increasing formal or informal interaction with

private markets is a frequent subject of debate in many government reforms. Table 3 shows that frequent contact with policy target groups is not significantly associated with the bureaucrats' corruptibility, possibly because those two opposing effects are cancelled out.

The effect of interaction with the media on corruption is an interesting one, as it can provide an indirect test of whether the media acts as a monitoring device for corruption or as an accomplice in corrupt arrangements. Table 3 suggests that in the context of Korea, frequent contact with the media is positively associated with corruptibility, suggesting that the Korean media is not acting as a watchdog for corruption. Brunetti and Weder (2003) find a strong relationship between more press freedom and less corruption. Perhaps, it is no coincidence that Korea is ranked only 70th in the world in the 2011 press freedom index by FreedomHouse, classified as "partly free."[27]

Table 3 suggests that frequent contact with civil organizations is negatively associated with corruption as predicted (H8 in table 2). In a 2009 survey by RealMeter, civil organizations were ranked as the most trusted organizations by 18.2% of the respondents.[28] In 2008, there were more than 20,000 civil organizations in Korea, including NGOs. These organizations promote the public interest, volunteer for social service, and pursue political agendas in the fields of economy, labor, human rights, the environment, women's rights, consumer' rights, etc. Many civil organizations are progressive or on the left of the political spectrum, and they are typically very critical of government policies. Also, many senior members of political civil organizations were active in the student demonstrations against the government in the 1980s. Thus, for the most trusted organizations, civil organizations are ranked much higher than the media, which got only 7.2% of the votes. These results suggest an interesting hypothesis that in Korea, civil organizations, not the media, provide more effective monitoring for corruption. A rigorous test of such a hypothesis is beyond the scope of this article and needs to be pursued in future research.

DISCUSSION AND ROBUSTNESS

Public Service Motivation

PSM can be an important part of intrinsic motivation for public service. PSM can also reflect professionalism and professional training that induce bureaucrats to conform to the rule. For example, a classic study by Kaufman (1960) shows how the Forest Service has used administrative procedures to reinforce the culture of "voluntary conformity." Also, Campbell and Strakosch (1979) and Holzer and Rabin (1987) have emphasized the importance of installing professionalism in public sector to improve the quality of public service and to recruit high-quality public managers. Such professionalism can increase the intrinsic cost of corruption and channel bureaucrats' effort from corruption to public service.

27   Available from http://www.freedomhouse.org/sites/default/files/FOTP%202011%20Tables%20and%20 Graphs_0.pdf (last accessed on November 30, 2012).
28   Available from http://www.realmeter.net/issue/view.asp?Table_Name=s_news2&N_Num=646&file_name =20091229121944.htm&Cpage=14 (last accessed on November 30, 2012).

Our survey data do not contain all the relevant questions to measure PSM directly. Thus, I construct a proxy of PSM based on the average of the responses to the following survey questions: (i) "I am willing to donate money to a charity"; (ii) "Violation of public order must be strongly punished"; (iii) "I am willing to accept the building of unpleasant but necessary facilities (e.g., a garbage incineration plant) in my neighborhood"; (iv) "I am willing to sacrifice for government policy." Recall that the survey answers are scaled from 1 (strongly disagree) to 5 (strongly agree). In the spirit of Perry (1996), the first question measures "compassion"; the second measures "social justice"; the third measures "commitment to the public interest"; and the fourth measures "civic duty."

Column 1 of table 4 shows that PSM has a negative and significant effect on the bureaucrats' corruptibility. Moreover, its effect is larger than that of extrinsic motivation. Therefore, PSM as well as other intrinsic motivations appear to be important deterrents to corruption. Note that there is growing evidence that PSM increases public service performance (Petrovsky 2009), and this article suggests that intrinsic motivation, such as PSM, may reduce corruption as well.

Alternative Measures and Specifications

So far, I have measured discretion by the extent to which supervisors delegate authority. The survey also includes another question regarding whether "I have much discretion in my tasks." As an informal test for the consistency of the survey responses and for the question-order bias (Schwarz et al. 1991), in column 2 of table 4, I have measured discretion by the answer to this alternative question. Again the qualitative results are robust to this alternative definition of discretion.

As discussed above, figure 2 shows that variables for contact with the media and with civil organizations have very skewed distributions because many of the bureaucrats have reported no contact with the media or with civil organizations. In order to check whether a few outliers who had frequent contact are responsible for the results, I have measured the contact variables as dummy variables for whether the bureaucrats had more frequent contact than the median. Column 3 of table 4 shows that using dummy variables for the amount of contact does not change the qualitative results.

Recall that the corruption measure is a discrete ordinal variable. Therefore, as a specification test, in column 4 of table 4, I estimate the model by ordered probit.[29] Note that the qualitative results do not change. Therefore, the results of this article appear to be robust to various measures and specifications.

An important caveat is, however, that in this article both the corruption and the PSM measures are from a single survey. Thus, the analysis may suffer from a mono source bias (Podsakoff and Organ 1986). In particular, I cannot rule out the omitted variable bias from unobserved characteristics of individuals, such as general opinions about public policy and moral values. For example, the respondents may consistently answer in a positive or a negative way for the government, which would generate spurious correlations among our variables (Podsakoff and Organ 1986). To address this

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29   Controlling for the ministry random effect in the ordered probit regression does not change the results.

Table 4
Discussion and Robustness

Variables	PSM [1]	Discretion [2]	Contacts [3]	O Probit [4]	Opinion [5]	Crowding Out [6]
Extrinsic motivation	−0.0719*	−0.0710*	−0.0854**	−0.0029*	−0.0609	0.0532
	(0.0565)	(0.0627)	(0.0238)	(0.0577)	(0.1101)	(0.7623)
Intrinsic motivation	−0.1354***	−0.1305***	−0.1524***	−0.0055***	−0.1192***	−0.2237***
	(0.0003)	(0.0006)	(0.0000)	(0.0003)	(0.0017)	(0.0058)
Discretion	0.1590***	0.1081***	0.1430***	0.0067***	0.1659***	0.1620***
	(0.0000)	(0.0049)	(0.0001)	(0.0000)	(0.0000)	(0.0000)
Discount factor	−0.0787**	−0.0697*	0.0822**	−0.0032**	−0.0717*	−0.0787**
	(0.0346)	(0.0623)	(0.0278)	(0.0339)	(0.0552)	(0.0346)
Contacts: policy target group	−0.0529	−0.0431	−0.0586	−0.0024	−0.0502	−0.0560
	(0.1889)	(0.2864)	(0.1211)	(0.1333)	(0.2117)	(0.1656)
Contacts: media	0.0950*	0.0753	0.0992**	0.0035*	0.0938*	0.0945*
	(0.0586)	(0.1376)	(0.0393)	(0.0795)	(0.0622)	(0.0603)
Contacts: civil organization	−0.1335***	−0.1290***	−0.0990**	−0.0049**	−0.1322***	−0.1318***
	(0.0060)	(0.0084)	(0.0389)	(0.0122)	(0.0066)	(0.0068)
PSM	−0.1112***	−0.1008***		−0.0050***	−0.0927**	−0.0169
	(0.0023)	(0.0059)		(0.0007)	(0.0131)	(0.8417)
Extrinsic motivation * Intrinsic motivation						0.1583
						(0.2050)
Extrinsic motivation * PSM						−0.2641
						(0.2011)
Opinion: Government honesty					−0.0292	
					(0.6982)	
Opinion: Government integrity					−0.0617	
					(0.4130)	
Personal, job characteristics		Yes	Yes	Yes	Yes	Yes
Ministry random effects		Yes	Yes	No	Yes	Yes
N	793	794	793	793	792	793
R²	0.0979	0.0855	0.0832	0.0371	0.1034	0.1009

Note: The standardized coefficients are reported. *P*-values are in parentheses. Personal and job characteristics include dummy variables for age, gender, workload, job grade, job category, and job class. In column 2, "Discretion" is measured by alternative survey question as discussed in the text. In column 3, "Contacts" variables are measured as dummy variables. In column 4, "pseudo-R square" is reported.
***, significant at 1%; **, significant at 5%; *, significant at 10%.

consistency motif problem, in column 5 of table 4, I control for the survey responses to the questions on the current government's honesty and integrity. However, the qualitative results remain the same.

Crowding Out Between Intrinsic and Extrinsic Motivation

A series of studies (e.g., Frey and Jegen 2001; Georgellis et al. 2010; Houston 2006; Ryan and Deci 2000; Titmuss 1970) have shown that extrinsic rewards can reduce (or crowd out) intrinsic motivation. Then, even though the evidence suggests that both extrinsic and intrinsic motivations are effective in deterring corruption, increasing both types of motivation at the same time may not have a strong effect. To test whether extrinsic motivation crowds out intrinsic motivation, I control for the interaction between extrinsic and intrinsic motivation as well as the interaction between extrinsic motivation and PSM. Column 6 of table 4 shows that the interaction terms have no significant effects on corruption, suggesting that in deterring corruption, extrinsic motivation does not crowd out intrinsic motivation.

Heterogeneity among Ministries

As discussed above, controlling for ministry random (or fixed) effects does not change our results. That is, our results are not driven by unobserved heterogeneity among different ministries. It does not mean, however, that there exists no difference among ministries. Table 5 shows the estimated ministry fixed effects. For example, the bureaucrats in the Korean Intellectual Property Office, Ministry of Knowledge Economy, and Ministry of Health & Welfare have the least strict standard for corruption, controlling for many personal and job characteristics.

It is interesting to note that those in the Military Manpower Administration have the lowest fixed effect, that is the strictest standard for corruption. In Korea, all young adult males must serve in the military for about 2 years. But depending on the outcome of a physical examination or other exemption rules, they can serve shorter terms (e.g., 6 months or 18 months) or can be exempted. Therefore, the bribing of physical examiners, administrators, or doctors to get an exemption or a shorter service term has been a serious problem. But recently, there has been strong social pressure to deter such corruption. Consequently, even politicians or bureaucrats with sons who were properly exempted from military service must now face extreme criticisms.[30] Our results are consistent with such a recent anti-corruption emphasis in the military service.

One could conjecture that those on the Anti-Corruption & Civil Rights Commission should have a very strict standard for corruption. Our results support such a conjecture, as those in the Anti-Corruption & Civil Rights Commission have the second strictest standard for corruption.

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30   For example, in 2012, "Independent lawmaker Kang Yong-seok, who accused Seoul Mayor Park Won-soon's son of trying to dodge his compulsory military service, resigned from his position after raising the groundless rumors, as the son has proven his innocence through an open physical examination." From http://koreajoongangdaily.joinsmsn.com/news/article/article.aspx?aid=2948906&cloc=joongangdaily|home|newslist1 (last accessed on November 30, 2012).

Table 5
Heterogeneity among Ministries

Ministry	Fixed Effect
Korean Intellectual Property Office	13.42
Ministry of Knowledge Economy	10.83
Ministry of Health & Welfare	9.24
Ministry of Environment	7.28
Ministry of Employment and Labor	7.08
National Police Agency	6.25
Ministry of Justice	5.92
Ministry of Strategy and Finance	5.72
Korea Custom Service	4.99
Ministry of Foreign Affairs and Trade	4.92
National Emergency Management Agency	4.70
Cultural Heritage Administration	4.44
Ministry of Education, Science and Technology	4.33
Korea Communication Commission	4.05
Korea Meteorological Administration	3.54
Prime Minister's Office	3.39
Ministry of Culture, Sports and Tourism	1.99
Financial Service Commission	1.12
Ministry of Government Legislation	0.00
Rural Development Administration	−0.3
Ministry of Food, Agriculture, Forestry and Fisheries	−0.81
Fair Trade Commission	−1.14
Ministry of Public Administration and Security	−2.46
Ministry of Land, Transport and Maritime Affairs	−2.83
National Tax Service	−3.14
Supreme Prosecutors' Office	−3.23
Korea Food & Drug Administration	−3.61
Ministry of National Defense	−3.93
Multifunctional Administrative City Construction Agency	−6.18
Ministry of Patriots and Veterans Affairs	−6.42
Small & Medium Business Administration	−6.49
Public Procurement Service	−7.57
Defense Acqustion Program Administration	−8.1
Ministry of Unification	−9.17
Korea Forest Service	−13.63
Ministry of Gender Equality & Family	−14.31
Anti-Corruption & Civil Rights Commission	−14.7
Military Manpower Administration	−15.52

Note: The table shows the estimated ministry fixed effects using the same specification as column 2 of table 3.

It is alarming that the bureaucrats in the Korean Intellectual Property Office and Ministry of Knowledge Economy have the highest fixed effects, or the least strict standards for corruption, as they are responsible for various regulations and subsidies for innovations. One possible explanation is that because innovations are uncertain and often intangible, the regulations and subsidies for innovation are more susceptible to corruption.

CONCLUSION

This article builds a theoretical model of corruption to assess interactions with extrinsic and intrinsic motivations and discretion. I also present an empirical analysis based on individual-level survey data. The evidence is largely consistent with the predictions of the theoretical model and sheds new light on the role of extrinsic and intrinsic motivation, the delegation of authority, and the role of the media and civil organizations in the context of corruption.

These results are significant in at least three ways. First, the previous theoretical literature has largely focused on how to repress corruption, but has often ignored how repressing corruption would affect bureaucrats' public service effort. Our theoretical model analyzes corruption and public service effort simultaneously and shows that repressing corruption may reduce public service effort. However, providing extrinsic or intrinsic motivation for public service cannot only increase public service effort but also decrease corruption. With the NPM movement, performance pay is rapidly expanding in many governments. This article suggests that performance pay (broadly defined to include piece rate, merit pay, or promotion tournaments) is not only an incentive device for public service effort but also an effective anti-corruption policy instrument.

Second, the PSM literature has emphasized intrinsic motivation for public service in explaining the behavior of bureaucrats. This article presents empirical evidence that promoting such intrinsic motivation can be effective in deterring corruption, possibly more so than extrinsic motivation, such as performance pay, and sheds new light on the significance of PSM as an anti-corruption device.

Third, these results suggest that bureaucrats are led to corruption partly because their public service efforts on the job are not properly rewarded extrinsically or intrinsically. In particular, the findings of this article suggest that although discretion (or delegation of authority) generally increases corruption, this effect is smaller and insignificant when the bureaucrats' promotions depend on their own performance. In other words, when performance pay is strong, the bureaucrats use their discretion to increase their public service performance rather than to pursue corruption. These results are in contrast with a view that corrupt bureaucrats are immoral or incapable agents who need to be punished or restrained.

Note that this article provides some of the first sub-country-level micro evidence on the way corruption is related to discretion, extrinsic and intrinsic motivation, the media, and civil organizations. Thus, further work is needed to replicate the findings of this article in other countries and using alternative measures of extrinsic and intrinsic motivations.

Fourth, there is growing debate on whether NPM fosters corruption. On one hand, introducing performance pay, competition, or accountability can reduce corruption (Osborne and Gaebler 1997; Osborne, Gaebler, and Plastrik 1997). On the other hand, delegation of authority, blurring the boundary between the public and private sector, and the pursuance of profits can promote corruption (Painter 2000; Self 2000; von Maravic 2007). Despite these debates, there exist few related empirical studies especially at the sub-national level in developed countries (Gratto, Preston, and Snilsberg 2002). This article provides evidence to suggest that although performance-pay deters corruption, delegation of authority can increase it. Therefore, the

relationship between NPM and corruption is not simple due to the multifaceted nature of NPM that includes performance-pay, delegation of authority, and privatization.

APPENDIX: A MODEL WITH MONITORING AND PUNISHMENT FOR CORRUPTION

In the basic theoretical model, I have mainly focused on the role of performance pay, which rewards public service effort and consequently reduces corruption effort. To reduce corruption, however, another popular approach is to monitor and punish corruption effort. In this Appendix, I extend the basic model to incorporate monitoring and punishment for corruption. In particular, I show that increasing monitoring can reduce corruption, but may or may not increase public service effort.

Suppose that corruption can be detected by audits with probability q. Then, the agent gets fired as long as the agent is engaged in corruption, or $e_C > 0$. Also, there is a punishment for detected corruption, tB, where $t \geq 0$. Note that the punishment is proportional to the size of corruption.

Then, the agent's expected payoffs are as follows:

$$U = (1-q)(W+B) + q(W_0 - tB) - C(e_P, e_C), \tag{A1}$$

where W_0 is the outside market wage, and tB is the fine for detected corruption. Note that if the agent does not get fired (with probability $1-q$), the agent enjoys $W + B$ as the total payoff from his public service. The other notations are the same as before.

Then, assuming $e_P > 0$ and $e_C > 0$, the agent's optimization problem is as follows:

$$\max_{e_P > 0, \, e_c > 0} (1-q)(\alpha + \delta\beta S + B) + q(W_0 - tB) - C(e_P, e_C). \tag{A2}$$

Then, from equations (A1) and (A2), it is straightforward to show that the agent's optimal choice of efforts is

$$e_C^* = \frac{1}{1-\gamma^2}[(1-q)(b - s\delta\beta\gamma) - qtb] \tag{A3}$$

$$e_P^* = \frac{1}{1-\gamma^2}[(1-q)(s\delta\beta - b\gamma) + \gamma qtb]. \tag{A4}$$

The assumption that $e_P > 0$ and $e_C > 0$ is not innocuous. For example, if q is large enough and if W_0 is small enough, the agent may choose $e_C = 0$ to avoid getting fired, that is, $q = 0$. Also, even when $q > 0$, if b is small enough relative to β, the agent would choose $e_C = 0$ to focus on public service effort e_P. Then, a marginal change in q would have no effect on e_C or e_P. Although it is interesting to analyze when the agent would stop corruption entirely, the main focus of this article is to analyze how motivation (β) and monitoring (q) change corruption effort (e_C) and public service effort (e_P). Therefore, I focus on the interior solutions where $e_C^* > 0$ and $e_P^* > 0$.[31]

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[31]   The exact conditions for $e_C^* > 0$ and $e_P^* > 0$ can be derived, but they are quite complicated. A sufficient condition for $e_C^* > 0$ and $e_P^* > 0$ is that q is small enough and $\gamma\frac{1}{s\delta} < \frac{\beta}{b} < \frac{1}{\gamma}\frac{1}{s\delta}$.

From equations (A3) and (A4), several findings are noteworthy. First, increased monitoring for corruption (q) always reduces corruption effort (e_C). However, if t is small, increased monitoring can *reduce* public service effort (e_P). For example, from equation (A4), if $t = 0$, increased monitoring of corruption (q) can reduce public service effort. More specifically, e_P decreases in q if and only if $t < \dfrac{s\delta\beta}{\gamma b} - 1$. In other words, unless the punishment for corruption is sufficiently proportional to the size of corruption, focusing only on detecting corruption can *reduce* the incentive for bureaucrats to exert public service effort. Consequently, the quality of public service can deteriorate despite a lower level of corruption.

Second, if t is large enough (i.e., the punishment for corruption is sufficiently proportional to the size of corruption), then increasing q would reduce corruption effort (e_C) and increase public service effort (e_P).

Third, increased punishment for corruption (t) reduces corruption effort and increases public service effort. Note that the punishment must be proportional to the size of corruption. If the punishment is large but constant (i.e., independent of the size of corruption), it would have no effect on corruption effort or public service effort. Moreover, if small or petty corruption is punished but big or grand corruption is not (i.e., $t < 0$), corruption effort may actually increase.

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