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Kim Young-ran Act and Bribery Deterrence*

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Abstract

This paper pinpoints the clauses of self-report and immunity in "Kim Young-ran Act (KYR)" and game-theoretically analyzes the effectiveness of those clauses as a bribe deterrence mechanism. Contrary to an idea presented in the literature, KYR contains clauses that public employees are obligated to report their bribe taking and are immune from punishment if they immediately self-report bribe taking. That is, incentives are installed for the bribe taker to report the bribe giver. We, based on the methodology of Dufwenberg and Spagnolo (2015), develop a model of extortion bribes and analyze how the clauses of self-report and immunity under KYR play a role in deterring bribery. In particular, we focus on the emergence of a socially very bad equilibrium ("Ingrained Bribery Equilibrium") in the context of one-sided repeated game where a civil servant repeats the same task for a long time, characterize the parameter region for the equilibrium, and draw some policy implications on how to mitigate the emergence of the equilibrium under KYR. We also discuss how variations of KYR affect bribery and show that the parameter region for the Ingrained Bribery Equilibrium may shrink with a different incentive mechanism.

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Keywords : Kim Young-ran Act, Bribe game, One-sided repeated game, Self-report, Immunity, Ingrained Bribery Equilibrium

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Ⅰ. Introduction

Bribery and corruption remain as one of central political issues in many countries. In Korea, the anti-graft law, better known as "Kim Young-ran Act" (henceforth denoted as KYR), took effect on September 28, 2016. Since then, officers and employees of public service organizations cannot receive meals worth more than ₩30,000, gifts over ₩50,000, and congratulatory cash gifts above ₩100,000 at private events. A violation of the law can lead to imprisonment of up to three years and a fine as high as ₩30 million, regardless of whether the money was related to an official's duties or position, or whether favors were given in return.

This paper pinpoints the clauses of self-report and immunity in KYR and game-theoretically analyzes the effectiveness of those clauses as a bribe deterring incentive mechanism. Despite the similar structure among the anti-graft laws, KYR contains slightly different clauses from the recent proposal in academic literature. When a citizen offers a bribe to a civil servant, the two become partners in crime under traditional law. Thus they lack incentives to report their illegal activity. Considering this, the recent literature proposes an idea that incentives should be provided for the bribe giver to report the bribe taker. "Legalizing" bribe giving (and restituting the bribe after self-report) is one radical way of implementing them. If this is foreseen, the public employees would not accept the bribe in the first place. This is the key idea (See, Abbink and Wu, 2017; Abbink et al., 2014; Apesteguia et al., 2007; Basu, 2011; Dufwenberg and Spagnolo, 2015; Oak, 2015). In KYR, however, the incentive mechanism is installed in the opposite direction: public employees are obligated to report their bribe taking (Article 9, Clause 1) and are immune from punishment if they immediately self-report bribe taking (Article 22, Clause 1) That is, unlike the literature, incentives are provided for

the bribe taker to report the bribe giver, and no incentives are provided for the bribe giver in KYR. Therefore, it is worth analyzing the effectiveness of those clauses as a bribe deterring incentive mechanism.

With the introduction of clauses of self-report and immunity, two agents, an entrepreneur and a civil servant, are exposed to strategic interaction, because the incentives for self-reporting theoretically sow distrust between two parties tempted to exchange bribes. Hence, based on the methodology of Dufwenberg and Spagnolo (2015), we develop a simple bribe game to examine how the clauses of self-report and immunity under KYR play a role in deterring bribery. In particular, we focus on the emergence of a socially very bad equilibrium called "Ingrained Bribery Equilibrium" (henceforth IBE) from a conservative point of view, as in Dufwenberg and Spagnolo (2015). IBE is derived in the context of one-sided repeated game where a civil servant repeats the same task for a long time and short-run entrepreneurs share their experiences. We characterize the parameter region for the equilibrium. The results are somewhat negative. Even in the extended model reflecting the reality, the IBE survives as a Subgame Perfect Nash Equilibrium, regardless of the efficiency or organization of government. Nonetheless, we can draw some policy implications from our results on how to mitigate the emergence of IBE under KYR. That is, the two clauses of self-report and immunity in KYR are not so effective as bribe deterring incentive mechanism. Finally, we examine how conclusions change if immunity following self-report is withdrawn from a civil servant and is instead granted to an entrepreneur, reflecting the trend of literature. We could check that the parameter region for the IBE may shrink with a different incentive mechanism.

Empirical studies have significantly advanced our understanding of how widespread bribery and corruption are and how they can cause

harm (See, Hunt, 2007; Olken and Pande, 2012; Shleifer and Vishny, 1993; Svensson, 2005, for survey). And, international agencies such as World Bank and individual countries have sponsored numerous anti-corruption programs. However, theoretic research on how to best fight bribery and corruption is much less studied. Among them, this paper is closely related to Dufwenberg and Spagnolo (2015) and Abbink and Wu (2017). Dufwenberg and Spagnolo (2015) develop a model of harassment bribes and analyze the proposal to legalize paying the bribes while increasing fines on accepting them. Here we modify Dufwenberg and Spagnolo (2015) and analyze performance of an incentive mechanism of KYR designed for the bribe taker as regards bribery deterrence and public service provision. Abbink and Wu (2017), in their experimental study, investigate the effectiveness of offering rewards for self-report as a means of combating collusive bribery. They find that enabling both parties to self-report is highly effective in deterring bribes. But here we theoretically check that, under the current KYR, providing incentives for both parties is not welfare improving. Different from these papers, this study has some contribution by theoretically analyzing individual country's anti-graft law reflecting the country's inherent history and law culture.

The rest of the paper will proceed as follows. In Section Ⅱ, we present a basic bribe game, present a specific equilibrium concept, and characterize the conditions for the equilibrium. In Section Ⅲ, we enrich the basic model by relaxing strong assumptions and then explore how results change. Finally, we discuss how variations of KYR affect bribery and examine a slightly different incentive mechanism following the research trend of the literature.

Ⅱ. The Basic Model

Now we present a basic bribe game that incorporates the implicit and explicit assumptions in KYR. In later section, we replace some assumptions with others that emerged in the debates and the related papers for more realistic institutional environments, and consider an enriched version of the basic model.

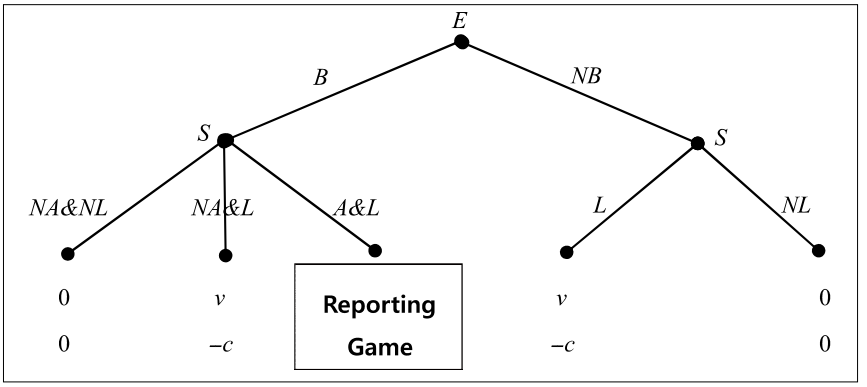
1. The Bribe Game

Consider the strategic interaction between two agents, a civil servant (S) and an entrepreneur (E). S is employed by the government and has the task of issuing a certain licence to citizens like E. Suppose that another office has already certified that E is entitled to getting the license. Here, however, it is within S's power to deny E this treatment or delay it. S may require a bribe or E already knows that a bribe is expected to get the licence issued on time. Hence E may choose to offer S a bribe. This kind of bribe is called "extortion bribe" or "harassment bribe" in the literature. Giving and accepting bribes is illegal and subject to monetary punishments, but there is actually no chance of being caught unless one side of the involved parties reports the corrupt exchange to law enforcers.[1)]

Even with cooperative law enforcers, a citizen reporting bribery will face some cost C in proving that the claim is true. We initially simplify notation by assuming that $C = 0$.

1) We suppose that criminal punishments can also be measured in a monetary unit.

〈Figure 1〉 The Bribe Game



Note: (1) Reporting game is separately defined in Tables 1, 2, and 3.

After both S and E have been aware that that a bribe needs to be paid to get a licence, the game unfolds as shown in Figure 1 and payoffs are realized. At the initial node E either offers a bribe (B) or not (NB).[2] In the latter case, S responds by issuing the licence (L) or not doing so (NL). If E decides to offer a bribe, then S has three options: not accepting the bribe and not issuing the licence ($NA\&NL$); not accepting the bribe and issuing the licence ($NA\&L$); and accepting the bribe and issuing the licence ($A\&L$). If E chooses B and S responds with $A\&L$ then both the agents immediately play the reporting game as a subgame. That is, they simultaneously choose whether to report (R) or not (NR) the exchange of the bribe. This is where KYR diverges from the standard law enforcement of the literature and the recent trend of the research literature. The main difference is that, in KYR only S is exempted from (monetary) punishments if S self-reports bribe taking and pays back the bribe. However, any bribe is forfeited if they are convicted due to a report.

2) This assumption is in line with KYR which takes a stricter stance against a bribe giver than against a taker. And, we could add a preceding stage where S requires a bribe or not, but the game would get more complicated without much change in results. Simply assume that E knows that a bribe is expected from the practice.

The payoffs after the reporting game are described in Table 1.[3)]

〈Table 1〉 The Reporting Game as a Subgame

		S: R	S: NR
E	R	$v-b-F_E,\ -c$	$v-b-F_E,\ -c-F_S$
	NR	$v-b-F_E,\ -c$	$v-b,\ b-c$

Note: Payoffs are modified in accordance with KYR act. Refer to Dufwenberg and Spagnolo (2015).

As for the payoffs, v is the value of the licence to E, b the amount of the bribe, c the cost of issuing a licence for S, and F_E and F_S the fines to E and S if they are convicted for the corrupt exchange because of a report. We assume that $F_E, F_S > v > b > 0$ and that $b > |c|$ where c might be either positive or negative. $c > 0$ is relevant if there exists an opportunity cost of S from not shirking, $c < 0$ is relevant if denying E a licence implies risk that S is caught-in-the-act-and-fired (Dufwenberg and Spagnolo, 2015). With the development of political consciousness of citizens and the prevalence of Social Network Services, combined with the computerized working environment, we consider $c < 0$ as the standard case but, in extreme situations of disorganized government, the situation may be better captured by $c > 0$. Although it is obvious, note that the assumption that $v > b > c$ is the key for corruption. And, as most of our results do not depend on the exact level of b as long as $v > b > c$ is satisfied, we will assume that S has all the bargaining power in

3) In Dufwenberg and Spagnolo (2015), the Standard Law Enforcement (without immunity clauses) has the following payoff matrix in the reporting game:

		S: R	S: NR
E	R	$v-b-F_E,\ -c-F_S$	$v-b-F_E,\ -c-F_S$
	NR	$v-b-F_E,\ -c-F_S$	$v-b,\ b-c$

determining b. So, S can unilaterally set its level subject to relevant incentive constraints. This assumption makes sense especially if S, but not E, interacts repeatedly, which is our main focus.

Now let's think about what game outcomes would be good or bad from society's welfare point of view? In order to appreciate game outcomes, we employ two qualitative yardsticks: (1) to what degree are bribes deterred? (2) to what degree are licences issued? The reasons are as follows. The occurrence of bribes is well known to be bad. Why? Understand first that, there exist welfare costs of bribes not explicitly reflected in the game's payoffs. It has to do with negative externalities. For instance, the practice of bribe may undermine civic morale, and it increases E's propensity to cheat when filling out his tax return. However, we do not attempt any exact quantification of the social costs associated with bribes. Also, note that in our approach, c is not a cost to care about for welfare purposes. Since S is hired with the understanding that he should issue a licence to qualified citizen like E and S is adequately compensated, the value to society of licensing is higher than c. Hence, if S fails to issue a licence to E, this is a bad outcome.

We treat the cases $c > 0$ and $c < 0$ separately, because results hinge crucially on the sign of c.

2. One-Shot Game

The case of $c > 0$.

Once the reporting subgame is reached, E has a (weakly) dominant choice not to report.[4] Assuming E thus chooses NR, the game possesses a unique associated Subgame Perfect Nash Equilibrium (SPNE): The strategy profile for each agent can be

4) (R, R) equilibrium also exists in the reporting game which deters bribery, but it is weakly dominted.

written as $((B,NR)_E,(A\&L,NL,NR)_S)$. The outcome is that E offers a bribe to S, who accepts it and issues a licence. And no agent reports the bribe. Is this good or bad from a welfare point of view? It is mixed. A bribe is paid, which is bad. However, a licence is issued, which in our criteria is good. On the other hand, legalizing bribe giving as in Dufwenberg and Spagnolo (2015) is successful on bribe deterrence but fails in issuing a license.

The case of $c<0$.

Back to Table 1, assuming that the dominant choice of NR are made by E, there exists a unique associated SPNE: $((NB,\ NR)_E,(A\&L,L,NR)_S)$. E does not provide any bribe but S issues a licence, which is the same result as the case of legalizing bribe giving (Dufwenberg and Spagnolo, 2015).

Observation 1. *With one-shot interaction, KYR deters bribes and leads to license being issued if* $c<0$.

Observation 1 tells that if government is well organized (i.e., $c<0$) then KYR works well, but KYR cannot deter corruption otherwise. This result, however, is questionable. The result rests on E being able to safely ignore the burden of bribe and still get a licence. We may think of many cases where harassment bribes are paid even when $c<0$. What is missing from the picture? The answer is, we believe, that we have neglected important aspects of repeated interaction. We examine this next.

3. One-Sided Repeated Game

Under Korean Career Civil Service System, civil servants who issue licences or carry out similar tasks are often around a long time. Therefore, a more realistic setting for the analysis of KYR is one in

which S is a long-run player who interacts over and over again with new short-run E's. If civil servants perform the same task for a long time, then citizens and entrepreneurs are likely to share their experiences.

Suppose that the game described in the previous section is played infinitely many periods. Time is discrete and periods are indexed by $t = 1,2,3,\cdots$. In each period, S interacts with a different E, one at a time. Each E knows the history of play. It is well known in game theory that, in such a one-sided repeated game, perpetual play, following any history, of the one-shot equilibrium discussed in the previous section corresponds to a SPNE. Also, while short-run agents are bound to play their static best responses, the threat of perpetual reversion to a stage game Nash equilibrium can credibly be used to sustain other equilibria where the long-run agent avoids his static best response (See Fudenberg et al., 1990).

Our analysis is that we focus on a specific equilibrium with as much bribery as possible, and explore how KYR works there.

The case of $c > 0$.

Common sense will tell that if the government is so inefficient that $c > 0$, allowing S to be a long-run agent does not make less bribe supportable as a SPNE than in Section II.2. Perpetual play of the equilibrium of the one-shot game starting at any history is a SPNE of the one-sided repeated game. What happens under KYR? As short-run agents are not able to commit, each E has a dominant choice not to report. Hence, S accepts bribe. As in the one-shot case, KYR cannot deter corruption.[5)]

5) On the other hand, legalizing bribe giving as in Dufwenberg and Spagnolo (2015) successfully deters corruption but has the drawback that no licenses are issued.

The case of $c < 0$.

Allowing for a long-lived civil servant may change the results when $c < 0$. As perpetual play of the equilibrium of the one-shot game is a SPNE, the one-shot game outcome where E does not bribe and S delivers the licence is possible.[6] However, since S is now a long-run agent, other equilibria with bribery emerge as long as S is sufficiently patient. Focusing on environments with as much bribery as possible, we check one typical equilibrium, named "Ingrained Bribery Equilibrium (IBE)," is possible, where S conditions his stage-game actions on whether or not he was bribed, and each E conditions his stage-game actions on whether or not a license was issued. Formally, strategies for both agents are as follows:

(ⅰ) For long-run S: (Conditional Licensing Strategy) Accept the bribe and issue a licence if E offers a bribe. Do not issue a licence the first time some E does not offer a bribe.

(ⅱ) For each short-run E: (Collective Bribe Strategy) Offer the bribe if in the history S always issued a licence every time a bribe was offered and did not issue a licence every time no bribe was offered. Do not offer a bribe otherwise.

In the IBE, bribes are the driving force for daily routines. That is, civil servants do not carry out what they are ordered to do if bribes are not offered, knowing that entrepreneurs offer bribes whenever asking for a license. Also entrepreneurs offer bribes whenever they ask for a license with an understanding that the license is not issued without bribes, even though they are entitled to. If possible, we have to block the emergence of IBE. We check under what conditions this

6) A factor that undermines the relevance of the current paper is the multiplicity of equilibria not only in the repeated game but also in the one-shot game. But equilibria without bribery are uninteresting here given that we are analyzing how KYR works in fight with existing and observed corruptions.

equilibrium might emerge, and figure out how to mitigate the emergence of equilibrium with policy tools.

If this strategy profile mentioned above constitutes an equilibrium, along the equilibrium path each short-run E takes into account that S issues a licence iff he is bribed. This is sustained by the logic that if at any time a bribe were not offered but S still issued a licence then the short-run agents, after that time on, would forever stop offering bribes and then their play would revert to perpetual repetition of the one-shot game equilibrium with no bribes and licensing.

S will play his Conditional Licensing Strategy as long as the following incentive constraint is satisfied:

$$\frac{\delta}{1-\delta}(b-c) \geq \frac{-c}{1-\delta}$$

where δ denotes the intertemporal discount factor. Left-hand side shows the payoff of sticking to the equilibrium strategy when a bribe is not offered. On the right-hand side, we have the payoff following a deviation, issuing a license even if a bribe is not offered.

This inequality is simplified to $b \geq \frac{1-\delta}{\delta}(-c)$ and gives us some implications when to expect bribery to emerge under KYR. Note first that $c < 0$. This means we implicitly assume that the government is well organized and shirking is risky. For instance, if there is pressure on a social servant to perform his duty well and his shirking is easily detected so that $-c$ is positive and large, then bribery is viable only for highly valuable licences which justify a high value of b. Therefore, KYR can be effective for preventing bribery of a small amount but has limited effect on the prevention of huge bribes. Another implication is related to the discount factor δ. If δ is high, then the inequality is satisfied even with small values of b. What is the meaning of δ in the model? The discounting factor captures the

probability that the stage game continues. Therefore, S is expected to perform the same task continuously for a long time or frequently in a given time, bribery may easily emerge.

The following proposition summarizes:

Observation 2. *With one-sided repeated interaction: KYR cannot deter bribery if* $c > 0$. *And if* $c < 0$, *the Ingrained Bribery Equilibrium emerges under KYR if the following inequality is satisfied:*

$$\frac{\delta}{1-\delta}(b-c) \geq \frac{-c}{1-\delta}.$$

Until now we have obtained somewhat negative results in deterring corruption under KYR, since the IBE is sustainable even in the well-organized government ($c < 0$). The results, however, might rely on a set of simplifying assumptions. So, we take this as the main benchmark and enrich our analysis to reflect our reality.

Ⅲ. The Extended Model

We enrich the previous model by considering the costs for E of reporting the corrupt exchange, the possibility of being detected and convicted even without a report, and the moral cost when E illegally gives a bribe, and then explore how results change. For notations, assume that if E reports he incurs litigation and harassment cost $C > 0$, unless S also self-reports. Let $0 < \alpha < 1$ be the probability of conviction when no party reports the bribe, and $M > 0$ the moral cost of illegal bribe giving. Under KYR, we get the reporting game as in Table 2.

〈Table 2〉 The Extended Reporting Game

		S	
		R	NR
E	R	$v-b-F_E-M,\ -c$	$v-b-F_E-C-M,\ -c-F_S$
	NR	$v-b-F_E-M,\ -c$	$v-b-\alpha F_E-M,\ b-c-\alpha(b+F_S)$

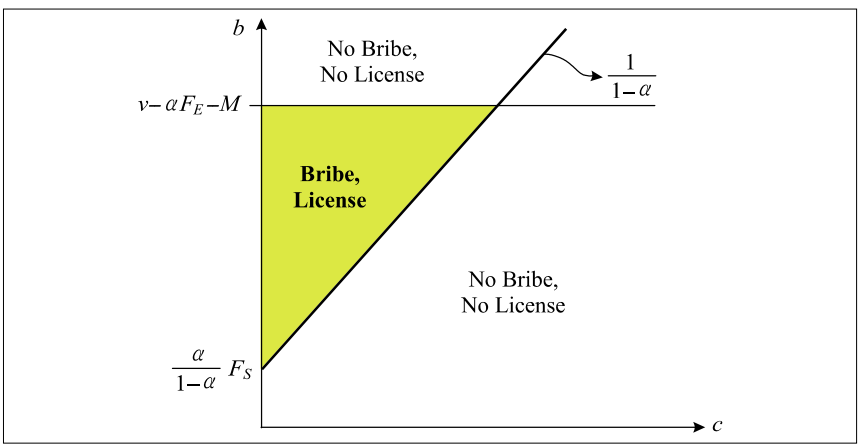
Note: The Reporting game is a subgame of the whole bribe game described in Figure 1.

1. One-Shot Game

The case of $c>0$.

Once the reporting subgame is reached, E still has a dominant choice not to report. Although E thus chooses NR as in the benchmark case, the outcomes are different. Agents' behaviors change since a bribe entails additional costs for both agents and, hence, both agents act according to their expected benefits and expected costs. Unlike the benchmark, a bribe is offered and a licence is issued under a limited condition. S deviates from the outcome of bribe and license if the amount of bribe is small, and E deviates from the outcome if the amount of bribe is too big. The outcome is summarized in Figure 2.

〈Figure 2〉 The Outcome of Case $c>0$ in the One-Shot Game



Note: The outcome of Bribe, License is possible under a limited condition.

As shown in Figure 2, the interval for the outcome of bribe and license shrinks with higher α, F_E, F_S, c, or M.

The case of $c < 0$.

When $c < 0$, E does not have any incentive to offer a bribe, but S has to issue a licence as in the benchmark case.

Observation 3. *With the possibility of being detected even without a report and the moral cost, KYR deters bribes and leads to license being issued in the one-shot game if $c < 0$. But if $c > 0$, either the outcome of no bribe and no licence or the outcome of bribe and license emerges depending on the size of bribe b.*

2. One-Sided Repeated Game

The case of $c > 0$.

E's participation constraint for playing the equilibrium of bribe and license is satisfied if $v - b - \alpha F_E - M \geq 0$, while S's participation constraint is satisfied if $b - c - \alpha(b + F_S) \geq 0$. Therefore, bribery is viable only if the joint participation constraint

$$\frac{\alpha}{1-\alpha} F_S + \frac{c}{1-\alpha} \leq b \leq v - \alpha F_E - M$$

is satisfied; this interval is exactly the same as that for the outcome of bribe and licence in the one-shot game when $c > 0$. This inequality cannot hold for sufficiently high α, F_E, F_S, c, or M. Also, this interval of the extended model is severely restricted compared to the benchmark model.

The case of $c < 0$.

As in Section II, IBE is sustainable by the profile of Conditional

Licensing Strategy and Collective Bribe Strategy. The joint participation constraint is the same form as above:

$$\frac{\alpha}{1-\alpha}F_S + \frac{c}{1-\alpha} \leq b \leq v - \alpha F_E - M.$$

Now, we have to find a condition to rule out the possibility of delivering a licence without a bribe. That is, S will play his Conditional Licensing Strategy as long as the following incentive constraint is satisfied:

$$\frac{\delta}{1-\delta}(b - c - \alpha(b + F_S)) \geq \frac{-c}{1-\delta}.$$

Left-hand side shows the payoff of sticking to his equilibrium strategy when a bribe is not offered. On the right-hand side, we have the payoff following a deviation, issuing a license even if a bribe is not offered. Combining both the joint participation constrain and the incentive constraint, we have

$$\frac{1-\delta}{\delta}\frac{(-c)}{1-\alpha} + \frac{\alpha}{1-\alpha}F_S \leq b \leq v - \alpha F_E - M.$$

The overall conclusions of the one-sided repeated game about when to expect IBE to emerge under KYR are summarized as follows.

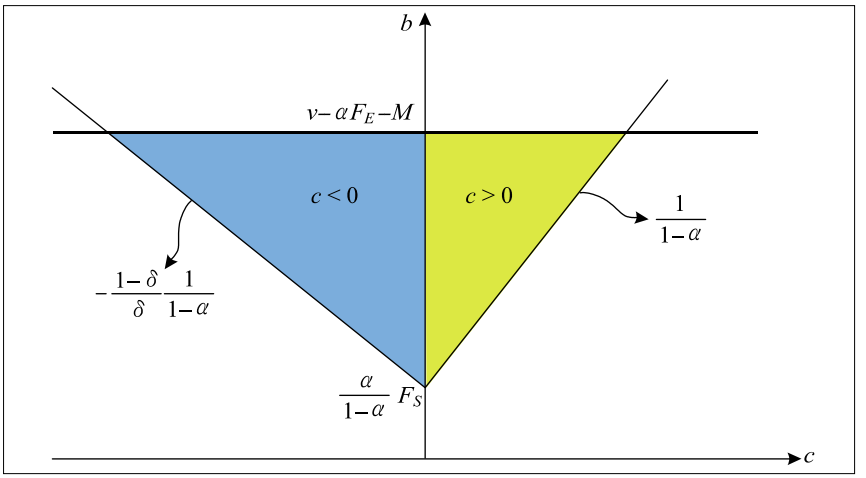
Observation 4. *With the possibility of being detected even without a report and the moral cost, the Ingrained Bribery Equilibrium emerges under KYR if the following conditions are satisfied:*

$$\frac{c}{1-\alpha} + \frac{\alpha}{1-\alpha}F_S \leq b \leq v - \alpha F_E - M \qquad if\ c > 0,$$

$$\frac{1-\delta}{\delta}\frac{(-c)}{1-\alpha}+\frac{\alpha}{1-\alpha}F_S \le b \le v-\alpha F_E - M \quad if\ c<0.$$

And the conditions for the emergence of IBE is depicted in Figure 3.

〈Figure 3〉 The Parameter Region for Ingrained Bribery Equilibrium



Note: The areas are asymmetric between the case $c<0$ and the case $c>0$.

As in the basic model, the IBE is still sustainable in the extended model. Nonetheless, we can find some policy implications on how to obstruct the emergence of IBE under KYR. For this, it is useful to see the parameter region for the emergence of IBE in Figure 3. Note first that bribery may emerge as an equilibrium regardless of the efficiency of a government. That is, bribery is difficult to avoid even in a well-organized government. Also, note that the current clauses of self-report and immunity for civil servants as an incentive mechanism do not work well for themselves. Hence, on top of fine-tuning of the clauses, other prescriptions are necessary. For fine-tuning of the clauses, the increase of fines F_E and F_S will directly reduce the region. For other ideas mobilized from the traditional realm of law economics, the increase of α and periodic circulations of civil servants to decrease δ might help.

Until now, we take the incentive system of KYR as given. Judging from the knowledge of literature, it is probable that the incentive system itself is inferior to others. Because the current incentive scheme directed to the bribe taker forces the bribe giver to conceal bribery and, at the same time, is not attractable enough for the bribe taker to report their corruptive exchange.

Ⅳ. Discussions and Conclusion

It is natural to wonder how variations of KYR affect bribery. First, we analyzed how conclusions change if immunity following self-report is withdrawn from both agents, or if immunity is granted for both agents. Somewhat surprisingly, the conclusions do not change at all.[7] Therefore, the parameter region for the IBE remains the same. This is a little different from Abbink and Wu's (2017) experimental result.

Finally, motivated the recent controversy of "legalizing bribe giving" in the literature, we explore a slightly different incentive mechanism. That is, we propose to grant E immunity only if he reports having offered a bribe, and restitute that bribe to him. That is, we withdraw immunity from S. Applying this idea to the previous reporting game, we get the reporting game in Table 3.

〈Table 3〉 The Reporting Game: Immunity granted to E only

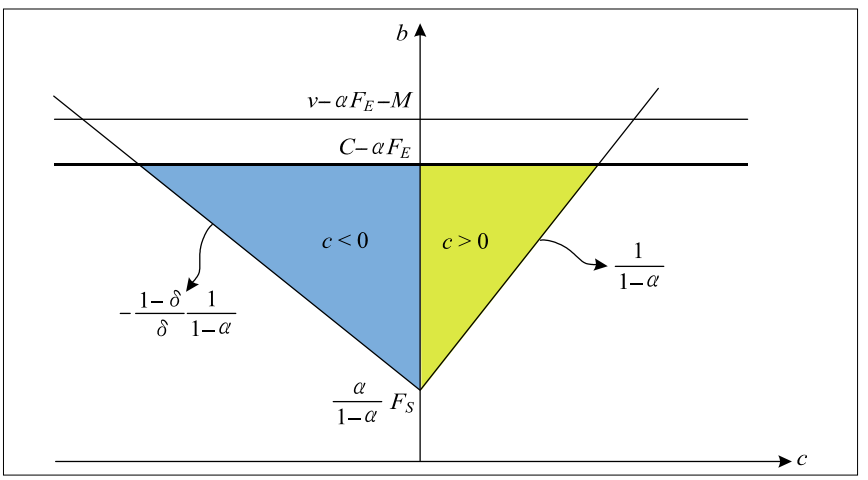
		S	
		R	NR
E	R	$v-M,\ -c-F_S$	$v-C-M,\ -c-F_S$
	NR	$v-b-F_E-M,\ -c-F_S$	$v-b-\alpha F_E-M,\ b-c-\alpha(b+F_S)$

Note: The payoffs of E when choosing R changed compared to those of Table 2.

7) The change in payoff in case of R is irrelevant in deriving equilibrium conditions. The analysis is so simple and is omitted in the main text.

In order to check the emergence of IBE, consider the analogous participation and incentive constraints discussed in Section III. Analogous reasoning as before makes it clear that the joint participation constraint and incentive constraint do not change when considering the new reporting game shown in Table 3. However, to get the full picture we should take into account that if the bribe is too high then E would report and hence S would not accept the bribe. Put differently, as described in Table 3, E will report if $v-C-M>v-b-\alpha F_E-M$, or $b>C-\alpha F_E$. To rule this possibility out, the following constraint must hold: $b \leq C-\alpha F_E$. All in all, if only E is granted immunity, the parameter region for IBE shrinks when $v>M+C$, as depicted in Figure 4. Otherwise, the parameter region is the same.

〈Figure 4〉 The Parameter Region for Ingrained Bribery Equilibrium: Immunity granted to E only



Note: The parameter region for IBE shrinks.

We summarize the last findings:

Observation 5. *The parameter region for the Ingrained Bribery Equilibrium may shrink if we grant immunity E only and restitute the*

bribe to him.

Observation 5 implies that granting immunity to E only might work better, especially when the society worries about briberies of a large amount.

To avoid unnecessary debate, we add our final comment here. Here we do not assert that KYR is irrelevant to bribery deterrence. Since our model is based on an infinitely repeated game, there exist a plethora of equilibria. And, among them, we focused on the emergence of a very specific equilibrium from a conservative point of view, and tried to draw several policy implications.

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김영란법과 뇌물방지

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논문초록

본 논문은 김영란법의 자진신고제도와 이에 따른 처벌면제조항에 초점을 두고, 이 조항들의 뇌물방지 메카니즘으로서의 효과성을 게임이론적으로 분석한다. 여러 학술문헌에서 제시되고 있는 방안들과는 반대로, 김영란법은 공무원에게 (뇌물수수에 대해) 자진신고의무를 부과하고 있으며, 수수한 뇌물을 즉시 보고한 경우 처벌을 면제하는 조항을 두고 있다. 즉, 인센티브가 뇌물수수자에 대해 디자인된 것이다. 우리는 Dufwenberg와 Spagnolo (2015)의 모형을 확장하여 김영란법이 가진 자진신고와 처벌면제 조항이 뇌물방지에 어떠한 역할을 하는지 분석한다. 특히, 뇌물이 만성화된 사회적으로 아주 나쁜 균형("Ingrained Bribery Equilibrium")을 일방반복게임의 틀에서 정의하고, 이 균형이 성립하는 파라미터 영역을 구체적으로 도출한다. 이를 통해 김영란법 체계 하에서 어떻게 사회적으로 나쁜 균형의 출현을 완화할 수 있을 것인가에 대해 정책적 함의를 제공하고자 한다.

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