Easy Issue for Me, Hard Issue for Them: Field Experiment in Large Social Survey[1]

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ABSTRACT

Political scientists and economists often model the collective action problem as prisoner's dilemma in which noncooperation is the dominant strategy and no public goods are provided in the equilibrium. But, in reality, public goods are provided. We hypothesize that public goods are provided when people receive message in a way that they easily come to understand the merits of their provision, and when they expect others to understand the merits as well. To test this hypothesis, we have imbedded an experiment within our nation-wide surveys conducted in Japan in 2007 using CASI (computer assisted self-administered interview) technology. In the virtual space on a mobile computer, we have created an experimental situation where a respondent has to decide whether to cooperate for public goods provision by paying some personal cost. The game is designed as "public goods provision game with thresholds" where both "cooperation (at thresholds) and "noncooperation" are Nash equilibria, although the former is Pareto optimal. We argue that, if public

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goods provision is presented to players as easy issue, they will choose the cooperation equilibrium. On the other hand, if public goods provision is regarded by players as hard issue, they will select the noncooperation equilibrium. The key for testing the above hypothesis is to manipulate the respondent's comprehension level and her/his expectation for others' behavior in an experimental setting. From our experiments, we have obtained some interesting findings regarding "comprehension" and "expectation" on public action.

INTRODUCTION

The collective action problem can be modeled as threshold public goods game. In such a game, we argue that presenting public goods as easy issue is helpful. The reason is that people tend to expect that the others will also pay the cost for public goods provision and makes a cooperation equilibrium the focal point. To validate our hypothesis, this paper employs field experiment in large social survey via CASI (computer assisted self interview).

Political scientists often model the collective action problem as prisoner's dilemma where noncooperation is the dominant strategy and no public goods are provided in the equilibrium (Olson, 1965, Ostrom, 1990). But, in reality, public goods are provided. Instead, we employ a threshold public goods game. In this game, when the number of cooperators is larger than the threshold level, public goods are provided. In some equilibria, some players cooperate and public goods are provided. Moreover, the game can be applied to various familiar situations of the collective action problem. The present paper uses the two examples, namely, garbage problem and bid-rigging problem, for illustration.

Let us explain bid-rigging problem first. Suppose that a city proposes an ordinance to prohibit bid-rigging. If half of voters approve it, an ordinance will be effective. No residents would object to this ordinance But it is unlikely that all residents would vote because going to the ballot box is troublesome. Thus, turnout might be lower than half and voting might fail to be effective. Roughly speaking, if residents expect turnout to be around 50%, they think their ballot might be decisive and feel like going to vote. As a result, the ordinance will be approved. On the other hand, if residents expect turnout to be far much lower than 50%, they find it meaningless to vote. Thus, the ordinance will not be established. In this case, the ordinance is public goods, voting is cooperation, abstention is noncooperation and the threshold level is 50%.

This kind of problem is not limited to politics. Another example is a garbage problem. Suppose that a new garbage bag was invented, which prevents animals from biting and scratching it. If more than half residents use it, a town will be free from garbage foraging animals on the road. That sounds good news. But since this new garbage bag is more expensive than usual one, not all people would buy it. Citizens might buy the bag if they think others also do the same. The new bag will prevail in the neighborhood. On the other hand, citizens won't buy the bag if they think others don't. Thus, the community fails to expel foraging animals due to insufficient usage of the new garbage bag. In this case, the new garbage bag is public goods, buying it is cooperation, not buying it is noncooperation and the threshold level is 50%.

Our question is what decides which consequence results. We argue that, if public goods dilemma is presented as easy issue, players will choose the cooperation equilibrium. On the other hand, if public goods dilemma is regarded as hard issue, players will select the noncooperation equilibrium.

To test our argument, we perform field experiments in large social survey via CASI. The topics of experiment are garbage problem and bid rigging prevention. Nowadays, it becomes not unusual for political scientists to employ field experiment *or* laboratory one (reviewed in Kinder and Palfrey, 1993, McDermott, 2002). Unfortunately, however, field experiment warrants external validity, while laboratory experiment enhances internal validity, and hence there is trade-off between the two. CASI makes it possible to achieve *both* goals; interviewers take laptop computers to interviewees' houses across the country (external validity) and the computers randomly assign interviewees to the treatment group and the control group (internal validity).

The plan of the paper is as follows. The first section elaborates on our theory and the model. In the second section, we illustrate the experiment design. The third section shows the results of analysis. Finally, we conclude.

THEORY

We formally introduce a threshold public goods game here (see, for example, Cadsby et al., 2007). N players decide to cooperate or not cooperate simultaneously. When players cooperate, it pays cost C. If the number of cooperators, K, is more than the minimum integer above threshold level, T, public good are provided and all players gain benefit B, whichever it cooperate or not. Suppose $B > C$.

There are two kinds of pure strategy equilibria. In a success equilibrium, $K=T$. In the failure equilibrium, $K=0$. We illustrate the reason by way of an example case where three actors, X, Y and Z, play the game and $T/N = 2/3$. In one success equilibrium, X and Y cooperate while Z does not cooperate, which is denoted by {C, C, D}. In this case, public goods are provided. If either X or Y does not cooperate, there won't be public goods and the player's utility decreases from B-C to 0. If Z cooperates, its utility decreases from B to B-C. Thus, none has incentive to change its strategy. Similarly, {C, D, C} and {D, C, C} are also Nash equilibria. {D, D, D} is the failure equilibrium, where public goods are not provided. Even if a player changes its action, it fails to gain public goods and its utility decreases from 0 to -C. It is easy to generalize this case into the case where $N>3$. Since players are exchangeable, in order to judge whether a strategy profile consists of a Nash equilibrium, we only have to consider the number of cooperators, K.

Obviously, the success equilibrium is better than failure one for everybody. But game theory does not tell us which equilibrium players choose. We argue choice between the two depends on players' expectation of others' behavior. If a player has optimistic expectation that many others help public goods creation, the player is willing to cooperate. If a player has pessimistic expectation that not so many people stand for public goods, the player is loath to share the burden. Thus, expectation is a key for solving the collective action problem.

One of tools to enhance such expectation is clarity of information. If political leaders succeed in framing public goods as "easy issue" instead of "hard issue" (Carmines and Stimson, 1980) ordinary people are more likely to take part in solution of public goods for two reasons. On the one hand, since citizens understand how good promised public goods are, they cooperate. We call this "direct effect" of presenting pubic good as easy issue on public good provision. On the other hand, a citizen expects that the others also understand how good public goods are and participate in public goods creation. This is the effect of easy issue on expectation formation. As a result of this, the citizen also has every reason to pay public goods cost. This is the effect of shared expectation on public good provision. Both effects compose "indirect effect" of easy issue on public good provision. What makes players choose the success equilibrium rather than the failure one is direct effect of easy issue as well as indirect effect of easy issue through formation of shared expectation.

In real life, since direct effect and indirect effect work simultaneously, it is very difficult to distinguish them. Thus, in order to test for one effect, it is necessary to control the other. From the above, we derive the following two hypotheses:

H1 (Direct Effect): A subject is more likely to cooperate in an easy issue condition than in a hard issue condition, given that the subject knows that the others are given a hard issue condition.

H2 (Indirect Effect): A subject in an easy issue condition is more likely to cooperate when the subject knows that the others are given an easy issue condition than a hard issue condition.

This is exactly what we aim to establish in the experiment, to which we turn in the next section.

EXPERIMENT

According to the above discussion, we conducted two experiments with general population to explore the effects of two independent variables: types of information (easy vs. hard) and types of information receiver (self vs. the others). We should note that this is not strictly hypothesis-testing type experiment. Rather, this is exploratory experiment to examine how the two independent variables affect on the people's cooperative behavior.

Outline

A major difficulty to implement an experiment for general population is instruction. The instruction should be understandable for every respondent. In a laboratory experiment with university students, we usually use a verbal instruction for experiment appearing on a computer display. It is however not a good strategy for this research because some of respondents may be hard to read a long sentence. For this problem, instruction should reasonably depend on verbal expression, but not too much. We therefore decided to use Flash Animation for the instruction. The animation helps intuitive understanding for all the population.

We conducted two experiments, one concerning the garbage problem and the other concerning bid-rigging problem as described above. The former experiment was carried out in July 2007 just before the Upper House election and the latter in September 2007 right after the election. In the following, we first introduce the garbage problem, which has the same game structure with our model. We then featured the bid-rigging problem that directly examines people's voting behavior[6]. In both experiments, respondents were requested to watch the flash animation. The animation explained a hypothetical social problem in the living area of each respondent. After the explanation, they chose either "cooperation (buying a new costly trash bag, or costly voting)" or "noncooperation (not buying the bag, or not voting)." The flash animations of both experiments had basically the same structure of story because both had the same game structure (threshold public goods problem). In the garbage problem, if half or more of people in town uses the new trash bag, the problem will be solved for sure. But the problem will remain when less than half uses the bag.

In the bid-rigging problem, if half or more of people in town vote for the new ordinance, the problem will be solved for sure. The flush animation gives the instruction that the respondent should go to voting place near the living place on a certain day and certain rage of time.

Subjects

Since both experiments were conducted as a part of CASI survey, all the respondents of CASI are subjects. In the first experiment the number of subjects is 736, female 361(49.0%) and male 375(51.0%); in the second one 780, female 376(48.2%) and male 403(51.7%).[7]

Experimental Design

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6 One major reason that we featured the garbage problem, which appears irrelevant to voting behavior, is Japanese law restriction. Any experiments possibly affecting people's voting decision is prohibited.

7 For details of sampling process and survey procedure, see the paper by Masaru Kohno et.al. which is presented at the same APSA panel.

As note earlier, the structure of both experiments is the threshold public goods provision game. The public goods in the experiments were provided if and only if the half of the population cooperates. There are two kinds of Nash equilibria in this game that have representative characteristics; all noncooperation and half of people cooperation. According to our argument, both the level of people's expectation for other people's cooperation and their own understanding level depend on how clear the information is, and who receives the information. If everyone receives easy information, it would produce high levels of both expectation and understandings. On the other hand, if everyone receives hard information, it would produce low levels of such expectation and understandings. One interesting question is what happens if a respondent and others have different kinds of information. For example, when only you have easy information and the others have hard information, how would you expect cooperation from others? It is necessary to realize this sort of situation to well distinguish the effects of people's expectation for themselves from those of their expectation for others.

As the independent variables, we introduced EASY vs. HARD information and self vs. the others as the information receiver. EASY manipulation means that respondents got easy and short information whereas HARD manipulation means that they got long and difficult information. There are four experimental conditions possible: EASY information given to both self and the others (EE), HARD information given to both self and the others (HH), EASY information given to self whereas HARD information given to the others (EH) and HARD information given to self whereas EASY information given to the others (EH). To be more precise, in the latter two cases, it is necessary to make respondents THINK that the others are given another kind of information in the actual manipulation. Direct and indirect effects are confounded in EE and HH, but to introduce EH and EH makes us possible to isolate indirect effect.

However, it is impossible that you expect the others have only HARD information when you know only EASY information because you should have known that the others' EASY information. Thus, the experimental design should be EE, EH, and HH.

In both experiments, respondents were randomly assigned to one of the three conditions.

Manipulation of Public Information and Private Information: Garbage Problem

We show how each story is explained with the flash animation in our instruction. In the garbage problem, we started with showing a picture that a mass of trash bags with some crows on them, saying

> **"Recently, in your local area, it has been pointed out as a major problem that crows, dogs and stray cats pick at trash and tear garbage out of the bags. Local newspapers and TV stations report the problem of bad odor being spread and landscape being impaired. In order to solve the problem, a new**

trash bag has been developed." (Figure 1)

[Figure 1 around here]

After the explanation, the animation introduces "a new trash bag." This bag has three major features to solve this problem. An anchorman of a hypothetical news show appears in a TV screen, and he explains the features. While in EE version he explains the information with short phrases, in HH and EH version, he explains it only with long and difficult phrases (see Figure 2 and Figure 3). This manipulation is to make it clear that the information given by the anchorman would be public and shared by all the people in town.

[Figure 2 around here]
[Figure 3 around here]

More precisely, the short version of the explanation on the three features was described in the following way: First, it is "**invisible to crows**," second, it has "**terrible taste for animals**," and finally, it is "**very tough**." These explanations are straightforward and easy to understand.

In the other version of animation, we had "HARD" explanation. The first feature was explained as "**This bag is specially stained with atypical color. It is hard for crows, dogs or cats--hereinafter collectively called "designated animals"-- to detect.**" The second was explained as "**This bag contains special substance which inspires disgust when designated animals take this bag by mouth (Notice: This bag does not damage animals' health at all)."** Finally, the third was explained as "**This bag is highly resistant to destruction by designated animals compared to conventional trash bags.**"

Subsequently, a professor came up on the display and summarized the given information of the hypothetical TV news. This information was given only to the respondent personally. In other words, the explanation by the professor was not shared among people in town. In EE and HH conditions (Figure 4 and 5), he only repeated the information that anchorman explained, whereas in EH conditions he tried to summarize the difficult information given by anchorman in a more understandable manner (Figure 6).

[Figure 4 around here]
[Figure 5 around here]
[Figure 6 around here]

The information by the anchorman was public whereas the information by the professor was private and the other people in local area did not know this privately given information. The former refers to information to the others, while the latter refers to information to self.

The introduction of these two kinds of information source, anchorman and professor, was designed to make subjects recognize the EH condition where they receive both easy and hard information but the others in the town receive only hard information.

As a result, with controlling the types of information (EASY vs. HARD) and types of information receiver (self vs. the others), we could suppose that while in EE and HH conditions subjects imagine “We share the same information”, in EH condition they imagine “We have different information”.

In the flush animation, there was also the description of the game structure. The anchorman described if the half or more of people in town used the new trash bag, the problem would be solved for sure. But the problem would remain when less than half used the bag. In addition, we prepared a question for manipulation check and created imitation of this hypothetical trash bag and put the picture on the display to make the story realistic. It also had the information corresponding to assigned condition (Figure 7).

[Figure 7 around here]

Manipulation of Public Information and Private Information: Bid-rigging Problem

In the bid-rigging problem experiment, we started the description of the problem as follows.

> “**Recently, in your local area, it has been reported as a major problem that some politicians pressure the local government to give lucrative public works contracts to certain construction companies. These politicians are said to accept money from the companies in exchange. In other words, the local government is wasting your tax money. In order to solve the problem, a new rule has been developed.**” (Figure 8)

[Figure 8 around here]

After the description of the problem, the animation this time introduced “a new ordinance.” This ordinance has three features to solve the problem. Exactly in the same way as the garbage problem, the anchorman appeared in the hypothetical TV news and gave public information to the respondent. The professor also came up on the display to give private information afterwards. Although the contents of the problems were different, the procedure of explanation and manipulation is the same.

In the bid-rigging problem, three features of the new ordinance were as follows: “**It can**

effectively cut the costs for construction," "**It punishes unfair bidders**," and "**It excludes unqualified bidders**." These were the EASY information.

The HARD information was: "**It enhances a substantial reduction in budgets for constructions by introducing the regulation prohibiting selective tendering and private contract and by strict enhancement of general and open bidding regulation**," "**It enhances openness of bidding processes by the regulation that monitoring system of general bidding process should be operated by third parties**" and "**It introduces a regulation that bidders with unqualified records are strictly excluded from open bidding process**."

In this problem, there was the description of game structure that if the half or more of people in town voted for the new ordinance, the problem would be solved for sure.

We note that we inserted questions after each of above manipulations to check their effects and to confirm respondents' level of understandings and expectation for others. It makes it possible for us to check if the experimental manipulations had worked for each respondent.

Dependent variables

The final display of the flush animation asked if the respondents would make a costly decision.

In the garbage problem, the respondents were finally asked if they would buy the trash bag. Buying behavior is cooperation[8]. In the bid-rigging problem, the respondents' final decision is whether they would vote or not. The flush animation gave the instruction that the respondent should go to voting place near the living place on a certain day and certain rage of time. Though the costs for voting were varied with respondents, this voting behavior would be reasonably costly for everyone. For controlling external factors, we asked how long they take to reach their voting places.

EXPERIMETAL RESULTS

With results appeared in Table1 and 2, their statistical analysis showed that our experimental conditions – explanation of the proposed rules in a different way- do not affect, in both "Garbage Problem" and "Bid-rigging Problem", respondent's behavior as we have expected. To recognize reasons why information conditions do not control respondent's behavior, we begin with manipulation check.

[Table 1 around here]

[Table 2 around here]

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8 The cost was about $1.5 per bag. For controlling external factors, we had asked a question about cost to respondent prior to the flash animation starting. We asked how much they pay for trash bag in their actual living area. It makes us easier to analyze the data by controlling cost of cooperation.

Manipulation Check for "Garbage Problem" and "Bid-rigging Problem"

In the "Garbage Problem" it seems that respondents don't understand sufficiently the "Clarity Difference" of information conditions (see Table 3). In contrast, in the "Bid-rigging Problem" they understand quite correctly its difference. Kruskal Wallis test reveals that there is significant difference in the "Clarity Difference" across three information conditions: $X^2(2)=15.98$, P=.000 (see Table 4).

[Table 3 around here]

[Table 4 around here]

To compare the "Clarity Difference" between three conditions, we used the binomial logit model. Dependent variable is a probability of respondent who choose 1 or 2 with "Clarity Difference of Information" question: p_i**.** Independent variables are HH dummy and EE dummy: the former is coded 1 if respondent is in HH group, 0 otherwise; the latter is coded 1 if respondent is in EE group, 0 otherwise. The results appear in the Table 5 confirm the influence of information conditions on the "Clarity Difference": in comparison with respondent in EH condition where different explanation were given between respondent and other people (in his local area), subjects either in EE or HH condition, where they receive the same explanation as others could have a tendency to feel "we share the same information about the proposed rule". It follows from the above analysis that our experimental manipulation worked better in "Bid-rigging Problem" than in "Garbage Problem".

[Table 5 around here]

Effects of Information Conditions on *Expectation* in the "Bid-rigging Problem"[9]

After the experiment of "garbage problem", we thought it necessary to know if respondents understand well the proposed rules and how they expect others' comprehension about them in each information condition. So in the "bid-rigging problem", we inserted questions with which to confirm respondents' understandings level of proposed rules and their expectation for others' comprehension. We call the former "Self-Reported Comprehension (SRC)" and the latter "Expectation for Others' Comprehension (EOC)"

In spite of respondents' correct understanding about "Clarity Difference" in "bid-rigging problem", the results appeared in Table 6 and 7 show that with our three information conditions, we could not manipulate subject's self-reported comprehension (SRC) *nor* his/her expectation for

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[9] Questions about "Self-Reported Comprehension" and "Expectation for Others' Comprehension" were implemented only in "Bid-rigging Problem".

others' comprehension (EOC). We think this is the reason why our experimental conditions did not affect respondent's behavior.

[Table 6 around here]

[Table 7 around here]

***Expectation* and Political Decision Making**

Looking at model 1 and model 2 of Table 8, we might find the main effects of both SRC (Self-Reported Comprehension) and EOC (Expectation for Others' Comprehension). But model 3 teaches us immediately these two main effects are only an appearance. Actually as these two variables are correlated strongly (Speaman's correlation coefficient is about 0.6 at 1% level), it is probable that this correlation causes multicollinearity (see model 3). Hence comparing these models and taking into account of the multicollinearity, it results that it is SRC, not EOC that influence voter's behavior. It is also noted that this effect can be observed if information conditions are controlled (see Model4).

[Table 8 around here]

As the above analysis reveals that people who are confident in their comprehension about proposed rules are driven to go to vote by their own motivation, in the next analysis we exclude the respondents who have high SRC level from the data to examine effects of EOC for those whose SRC level is relatively low. We ran binomial logit estimations with the independent variable as interaction of SRC and EOC and obtained a significant interaction. It confirms that with respondents who are relatively less confident in their comprehension, not only comprehension level but also *expectation* for others could give some impact on their vote choice (see Table 9).

[Table 9 around here]

Discussion

Although with our independent variable, that is information conditions, we are not able to manipulate SRC (Self-Reported Comprehension) nor EOC (Expectation for Others' Comprehension), we observe some interesting findings regarding "comprehension" and "expectation" on public action. These findings suggest that if subject's expectation had been manipulated through our information conditions, we could have obtained results that we had expected. SRC influences subject's vote choice and EOC also affects it when subjects are not so confident with their own comprehension.

In this experiment we have tried not only to change levels of difficulty of information *contents* regarding proposed rules but also to differentiate the *way* in which information was diffused to subjects. This setting might have been too complicated for subjects who were randomly selected from the Japanese population at large[10]. Therefore, to make experimental condition as simple as possible could be one of the means to improve experimental design. Besides, to give real incentive (e.g., monetary reward) to subjects could make them consider other's behavior more seriously.

Acknowledgement

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The data set will be available in the near future from ICPSR, the University of Michigan (http://www.icpsr.umich.edu/) and/or the Social Science Japan Data Archive, the Institute of Social Science, the University of Tokyo (https://ssjda.iss.u-tokyo.ac.jp/en/).

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10 Prior to CAPI survey, we had done several pre-experiments by using university students as subjects to test the effects of our experimental condition. At that time, student's comprehension level was manipulated in a quite coherent manner with our supposition.

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Figure 1: Garbage Problem

Figure 2: Anchorman’s Explanation in EE Condition

Figure 3: Anchorman’s Explanation in HH and EH Condition

Hi!

Let me summarize this information for you.

It means that this bag is:

“Invisible to crows.”

Figure 4: Professor’s Explanation in EE Condition

Figure 5: Professor’s Explanation in HH Condition

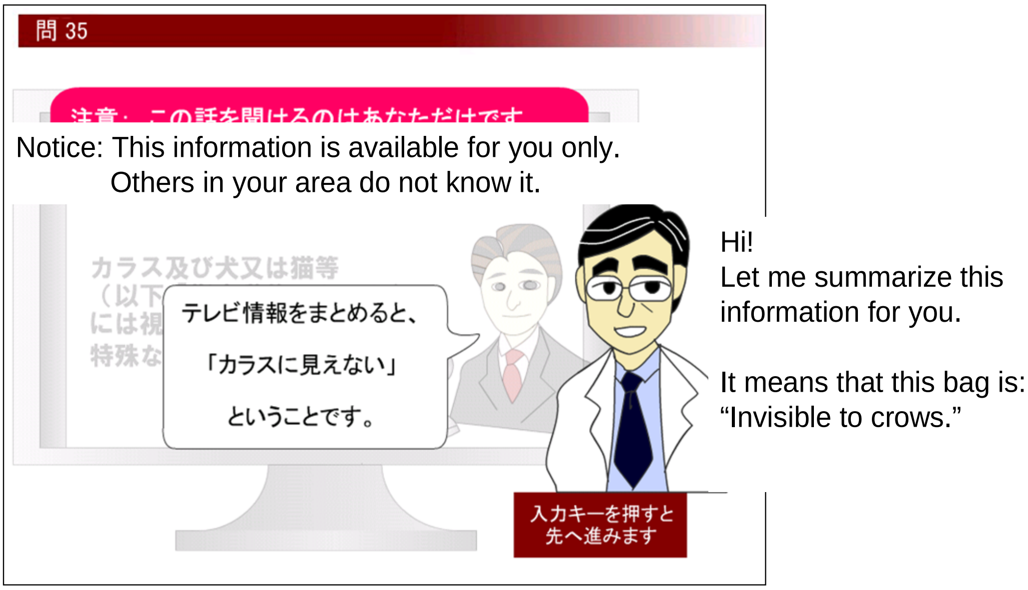

Figure 6: Professor’s Explanation in EH Condition

Figure 7: New Household trash bag

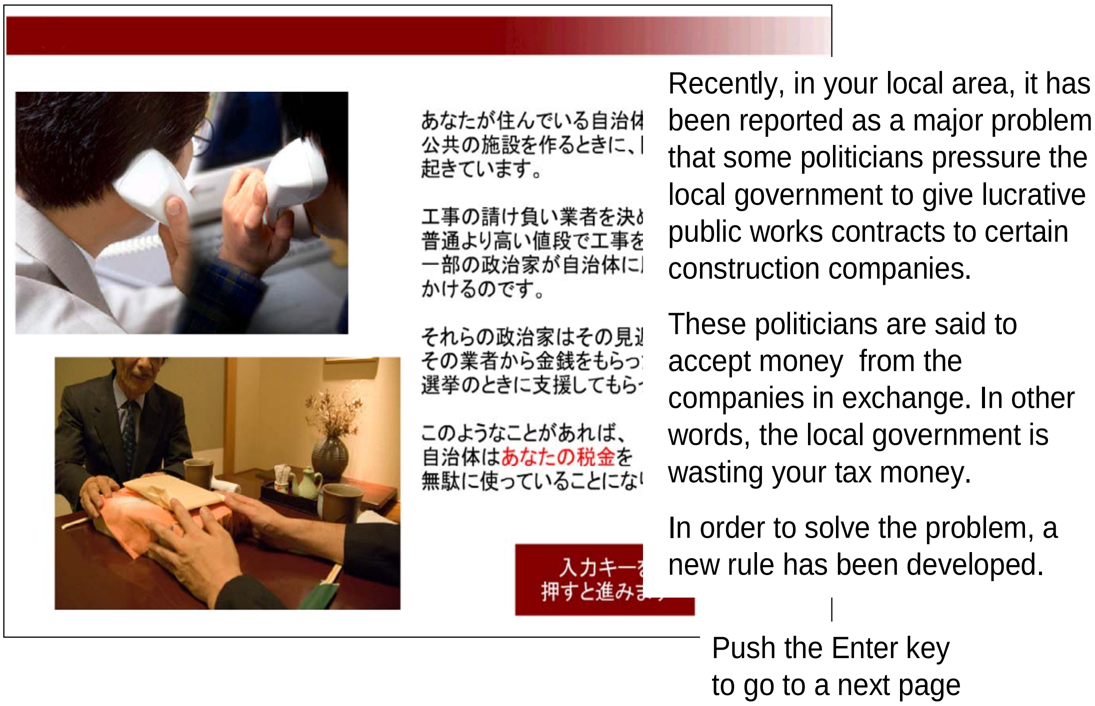

Figure 8: Bid-rigging Problem

Table 1: Consumers' Behavior and Information Conditions at "Garbage Problem"

Information Conditions	Buy		Don't Buy		DK/NA		Sum	
	Frequency	(%)	Frequency	(%)	Frequency	(%)	Frequency	(%)
EE	134	51.0%	129	49.0%	0	0%	263	100.0%
EH	113	46.9%	128	53.1%	0	0%	241	100.0%
HH	123	53.0%	109	47.0%	0	0%	232	100.0%
Number of obs	370		366				736	

Pearson's Independence Test: $X^2(2)$=1.852, P=.396

Note: DK/NA is excluded from the analysis.

Table 2: Voters' Behavior and Information Conditions at "Bid-rigging Problem"

	Vote		Don't Vote		DK/NA		Sum	
Information Conditions	Frequency	(%)	Frequency	(%)	Frequency	(%)	Frequency	(%)
EE	198	77.0%	51	19.8%	8	3.1%	257	100.0%
EH	203	82.9%	37	15.1%	5	2.0%	156	100.0%
HH	218	78.4%	53	19.1%	7	2.5%	172	100.0%
Number of obs	619		141		20		780	

Pearson's Independence Test: $X^2(2)=2.356$, P=.308

Note: DK/NA is excluded from the analysis.

Table 3: Information Conditions and "Clarity Difference of Information" at "Garbage Problem"

Answer / Information Conditions	Yes (1) Frequency (%)	No (2) Frequency (%)	DK (3) Frequency (%)	NA (4) Frequency (%)	Sum Frequency (%)
EE	122(46.4%)	20(7.6%)	116(44.1%)	5(1.9%)	263(100%)
EH	92(38.2%)	56(23.2%)	91(37.8%)	2(0.8%)	241(100%)
HH	102(44.0%)	27(11.6%)	100(43.1%)	3(1.3%)	232(100%)
Number of obs	316	103	307	10	736

Kruskal Wallis Test: $X^2(2)$=.002, P=.999.

Note: Question is "Do you think the explanation given to you regarding the proposed rule is same as that given to other people in your local area?"; DK/NA is excluded from the analysis.

Table 4: Information Conditions and "Clarity Difference of Information" at "Bid-rigging Problem"

Answer / Information Conditions	exactly same (1) Frequency (%)	mostly same (2) Frequency (%)	quite different (3) Frequency (%)	completely different (4) Frequency (%)	DK/NA (5,6) Frequency (%)	Sum Frequency (%)
EE	60(23.3%)	119(46.3%)	15(5.8%)	2 (0.8%)	61 (19.5%)	257 (100%)
EH	32(6.5%)	100(38.8%)	33(26.5%)	5 (13.5%)	78 (13.5%)	245 (100%)
HH	59(8.3%)	121(39.9%)	27(25.2%)	4 (10.8%)	67 (15.8%)	278 (100%)
Number of obs	151	340	75	11	203	780

Kruskal Wallis Test :X^2(2)=15.98, P=.000.

Note: Question is "In terms of the levels of clarity, do you think the explanation given to you regarding the proposed rule is different from that given to other people in your local area?"; DK/NA is excluded from the analysis.

Table 5: Logit Analysis of "Clarity Difference of Information" at "Bid-rigging Problem"

Independent Variables	Exp(β)		Wald Value	P value
Intercept	.168	***	86.900	.000
EE dummy	1.915	**	7.213	.007
HH dummy	1.676	*	4.580	.032
Number of obs			780	

* $p < .05$ ** $p < .01$ *** $p < .001$(one-tailed test)

Note: Dependent variables dummy coded 1 if respondent answered 1 or 2 at "Clarity Difference" question, 0 otherwise; β is standardized binomial logit regression coefficients and exp (β) is its exponential value.

Table6: Information Conditions and "Self-Reported Comprehension Levels"

Information Conditions	Understood all of it (1) Frequency (%)	Understood most of it (2) Frequency (%)	Understood about half of it (3) Frequency (%)	Understood a little of it (4) Frequency (%)	Did not understand at all (5) Frequency (%)	DK/NA (6,7) Frequency (%)	Sum Frequency (%)
EE	64 (24.9%)	129 (50.2%)	26 (10.1%)	20 (7.8%)	1 (0.4%)	17 (6.6%)	257 (100%)
EH	42 (17.1%)	133 (54.3%)	27 (11.0%	19 (7.8%)	0 (0%)	24 (9.8%)	245 (100%)
HH	53 (19.1%)	150 (54.0%)	41 (14.7%)	14 (5.0%)	2 (0.7%)	18 (6.5%)	278 (100%)
Number of obs	159	412	94	53	3	69	780

$X^2(2)=3.708$, $P=.157$; DK/NA is excluded from the analysis.

Note: Question is "How well did you understand the proposed rule?"**;** Kruskal Wallis test reveals that there is no significant difference in the "Self-Reported Comprehension(SRC) Levels" across three information conditions.

Table 7: Information Conditions and "Expectation for Others' Comprehension Levels"

Information Conditions	Understood all of it (1) Frequency (%)	Understood most of it (2) Frequency (%)	Understood about half of it (3) Frequency (%)	Understood a little of it (4) Frequency (%)	Did not understand at all (5) Frequency (%)	DK/NA (6,7) Frequency (%)	Sum Frequency (%)
EE	29 (11.3%)	100 (38.9%)	61 (23.7%)	27 (10.5%)	2 (0.8%)	38 (14.8%)	257 (100%)
EH	16 (6.5%)	95 (38.8%)	65 (26.5%)	33 (13.5%)	3 (1.2%)	33 (13.5%)	245 (100%)
HH	23 (8.3%)	111 (39.9%)	70 (25.2%)	30 (10.8%)	0 (0.0%)	44 (15.8%)	278 (100%)
Number of obs	68	306	196	90	5	115	780

$X^2(2)=1.528$, P=.466; DK/NA is excluded from the analysis.

Note: Question is "Do you think how well the others in your local are can understand the proposed rule?"; Kruskal Wallis test reveals that there is no significant difference in the "Expectation for Others' Comprehension (EOC)Levels" across three information conditions:

Table 8: Logit Model of Vote Choice

	Model 1	Model 2	Model 3	Model 4	Model 5
Independent Variables	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)
Intercept	18.327***	11.849***	18.754***	27.524***	9.022***
SRC	.575***		.582***	.566***	
EOC		.743***	.982 (p=.843)		
SRC＊EOC					.927(p=.147)
EE dummy				.558*	
HH dummy				.641†	
AIC	636.6	667.5	638.5	635.2	644.2
Number of obs			739		

- †p < .10, * p < .05. ** p < .01, *** p < .001

Note: β is standardized binomial logit regression coefficients and exp (β) is its exponential value with standard errors in parentheses; If probability of i^{th} respondent's vote choice is written by p_i, dependent Variable is defined as logit(p_i), that is log(p_i/1- p_i); From all respondents, we exclude those who answered DK/NA at vote choice, or " at "Expectation for Others' Comprehension " question or "Self-Reported Comprehension" question.; As time cost is not influential at all on the vote choice, this element is not inserted in any model.

Table 9: Logit Model of Vote Choice with Selected Respondents

Independent Variables	Exp(β)		Wald Value	P value
Intercept	8.072	***	47.50	.000
SRC＊EOC	.936	***	179.341	.000
AIC			559.04	
Number of obs			604	

- †p < .10 * p < .05 ** p < .01 *** p < .001

Note: If probability of i^{th} respondent's vote choice is written by p_i, dependent variable is defined as logit(p_i), that is log(p_i/1- p_i); From all respondents, we exclude those who answered DK/NA at vote choice, or answered "Understood all of it (1)" at "Self-Reported Comprehension" question. If we exclude those who answered "Understood most of it (2)", the result does not change; As time cost is not influential at all on the vote choice, this element is not inserted in any model.