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Political Support and Voluntary Tax Compliance

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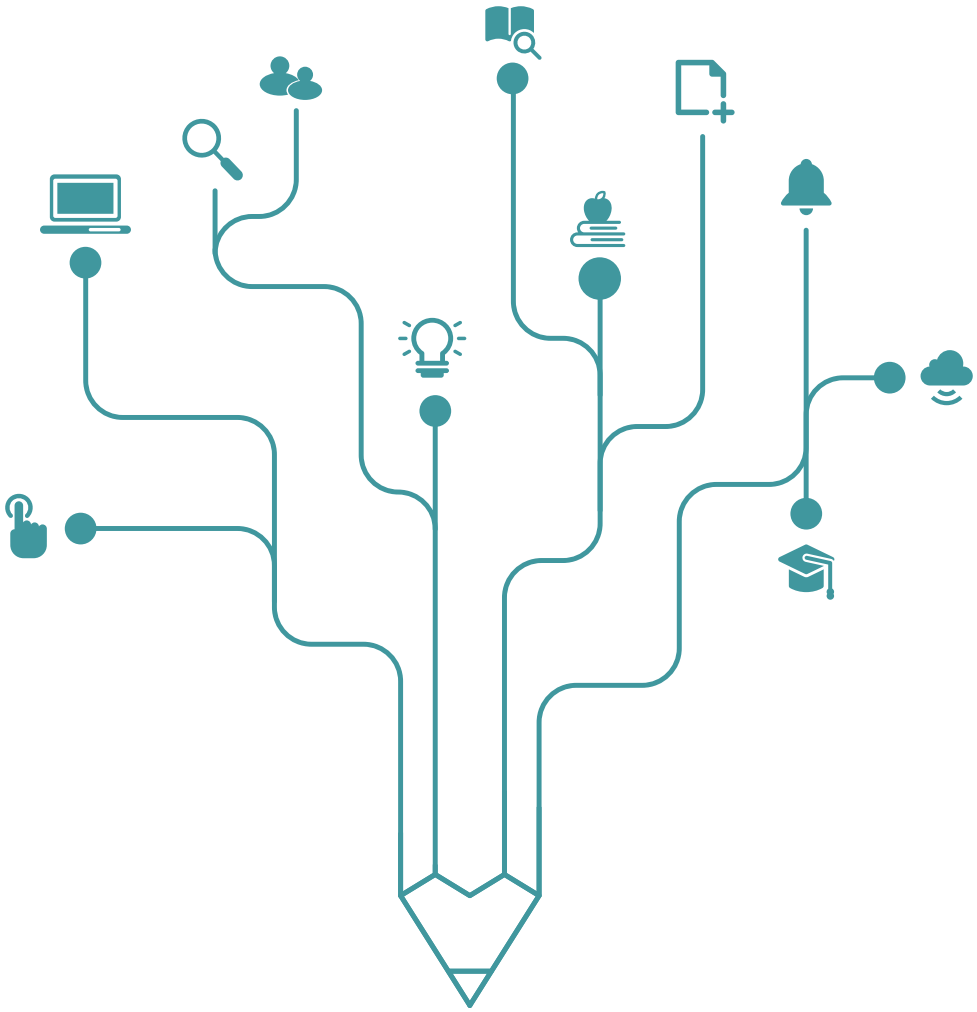

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Abstract

We empirically analyze the effect of political support for the government on voluntary tax compliance. To this end, we use 33 survey results of the contingent valuation (CV) method developed and widely used for the valuation of non-market goods in the field of environmental economics. The degree of political support for the government is observed by the results of weekly national polls. Estimation results using probit models reveal the political support for the government has a statistically significant positive effect on voluntary tax compliance. Tax compliance is high when a taxpayer lives in the stronghold of the current president's party, which also implies a positive correlation between the political support and voluntary tax compliance. Moreover, consistent with previous studies, the higher the education level, the more compliant the taxpayers are. Income and tax compliance has a negative correlation, but in previous studies, the relationship was mixed.

Keywords: Government trust, Fairness perceptions, Contingent valuation survey, Public investment

JEL classification: H24, H31, H41, P16

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I. Introduction

In many countries, the majority of government spending comes from tax revenues. Tax compliance has been highlighted as an important topic in order to secure stable tax revenue for the smooth fulfillment of government duties and to ensure the welfare and equality of taxpayers. According to the schematic framework proposed in the seminal study by Kirchler et al. (2008), the power of the government and trust in the government affect tax compliance. On one hand, the more thorough the audit of the tax authority and the stronger the penalty, the more compulsion the taxpayers to the tax policy. On the other hand, taxpayers are more willing to pay taxes voluntarily if they support government policies and trust that taxes will be spent as advertised. The former is the enforced tax compliance, and the latter is called the voluntary tax compliance.

This study aims to empirically analyze the effect of political support for the government on voluntary tax compliance. To this end, we intend to use the actual information obtained while conducting prefeasibility studies to determine whether to proceed with public investment projects financed by taxes. The prefeasibility study often uses a survey method to estimate the benefit value during the cost-benefit analysis. The survey method is the contingent valuation (CV) method developed and widely used for the valuation of non-market goods in the field of environmental economics. Each CV study uses a carefully designed questionnaire to ask the respondents' willingness to pay (WTP) for the target goods and calculates the benefits by summing them up. In so doing, measures were devised to make respondents feel the hypothetical change as close to the real as possible, and as part of them, income tax was introduced as a payment method.

It is no wonder that some respondents are not at all willing to pay for the public investment project in question. They may feel no difference with the provision of the project, may oppose the project plan, or they may not afford to pay additional taxes. Moreover, their unwillingness to pay additional taxes

may be because they do not trust the government's plans or suspect that the government will not use the taxes as planned. In this study, we want to use the information from responses of unwilling to pay taxes as a matter of trust or support for the government.

In addition, we collect the results of a survey on the degree of political support for the government at the time of the survey are introduced. Since it is not possible to observe the degree of political support of individuals from the CV questionnaire, this study analyzes to what extent the level of support that the government received from the public affect individual voluntary tax compliance.

As a result of the analysis using probit models, the political support for the government has a statistically significant positive effect on voluntary tax compliance. Tax compliance is high when a taxpayer lives in the stronghold of the current president's party, which also implies a positive correlation between the political support and voluntary tax compliance. Moreover, consistent with previous studies, the higher the education level, the more compliant the taxpayers are. Income and tax compliance has a negative correlation, but in previous studies, the relationship was mixed.

This study contributes as the first paper to empirically reveal the relationship between support for the government and tax compliance using the results of the CV questionnaire. Similar follow-up studies on other political systems and forms of government are expected to complement the results of this study.

The rest of this paper is structured as follows. Section II reviews related literature and Section III describes data and estimation methodology. Section IV discusses the estimation results and Section V is devoted to concluding remarks.

II. Literature Review

There has been consistent debate about what makes taxpayers more compliant with their tax requirements. Based on the economic modeling on criminal activity by Becker (1968), Allingham and Sandmo (1972) and Srinivasan (1973) developed pioneering models of taxpayers' compliance decisions. When filling taxes, taxpayers make a decision under uncertainty as they do not know if they will be subject to a tax

audit. Following the expected utility theory, taxpayers can either declare the true total gross income (i.e. pay the tax due) or conceal income and/or unauthorized expenditures (i.e., pay less than the tax due). If taxpayers pay the tax due, they take the sure option. Otherwise, they face the uncertain outcome depending on whether audit occurs. In models of Allingham and Sandmo (1972) and Srinivasan (1973), taxpayers consider four parameters: income, tax rate, audit probability, and fine rate. They decide whether to comply or not by comparing the value of the sure option with the expected value of the uncertain options. Tax compliance (or evasion) is determined by the detection probability and punishment (Alm, 2012; Hartmann, 2020). Letting alone economic models *a la* Becker (1968), extensive literature on tax compliance focusing on the strategic interaction between taxpayers and tax authorities exist (Cowell, 1990; Andreoni et al., 1998; Schneider and Enste, 2000; Slemrod, 2007).

Besides, the socio-psychological determinants of tax compliance have also been extensively explored. Without explicit modeling, Listokin and Schizer (2013) argued that taxpayers who support the way their tax money is spent are more likely to comply voluntarily and less likely to change their behavior to avoid tax. Batrancea et al. (2013) discussed determinants of tax compliance behavior. Among the socio-psychological factors, they presented details concerning attitudes, norms, fairness perceptions, motivational postures, and the way they relate to tax compliance behavior (Batrancea et al., 2013, p.201). Recently, Hartmann et al. (2020) summarized socio-psychological and economic factors offered in previous studies on tax compliance.

In the meantime, a pivotal work by Kirchler et al. (2008) suggested a framework for tax compliance in which both the power of tax authorities and trust in the tax authorities are relevant dimensions for understanding enforced and voluntary compliance, namely the “slippery slope framework” (Kirchler et al., 2008, p.210). Figure 1 shows the framework graphically in a three-dimensional space with the power of authorities, trust in authorities, and tax compliance as dimensions. As power of authorities strengthens *ceteris paribus*, taxpayers tends to comply with the tax because audit and detection probabilities which inflict severe fines increase and the expected gain from tax evasion decreases.

Similarly, taxpayers are willing to comply with tax if they have high trust in authorities, i.e. they believe tax money collected is not wasted in such a way of public investment with low efficiency, corruption, and political injustice, to name a few. Kirchler et al. (2008) distinguished the former and the latter by naming them enforced tax compliance and voluntary tax compliance, respectively. Although he did not discern types of tax compliances explicitly, Tyler (2006) made a similar distinction of authorities' characteristics which can gain cooperation from the public: threat of punishment and perceived competence in managing problem. As shown in Figure 1, the impact of changes in one of the power of authorities or trust in authorities is assumed to depend on the level of the other.

[Insert Figure 1 about here]

Subsequently, empirical studies were carried out to confirm whether this concise framework conforms to reality. For example, Wahl et al. (2010) conducted a laboratory experiment and an online experiment. In both experiments, they found that trust and power positively influence tax payments. More precisely, Trust increases and power decreases voluntary compliance, whereas power increases and trust decreases enforced compliance (Wahl et al., 2010, p.383).

As specified in the previous section, however, the well-established stream of economic models on tax evasion as concealing behavior and punishment is beyond the scope of this study. More specifically, the data used in this study does not allow testing the enforced tax compliance induced by the power of authorities in the slippery slope framework. Nevertheless, three previous studies dealing with factors affecting tax compliance behavior are worthwhile to review here. First, by emphasizing the interdependence between tax compliance, government policy, and political opinion, Fershtman and Lipatov (2009) provides insights from theoretical perspectives to this study. While the audit and punishment by tax authorities still play a central role in the model, they considered a case in which individuals are heterogeneous with respect to their earning and government support. Their key assumption

is that political opinions may affect the individuals' tax compliance decision (Fershtman and Lipatov, 2009, p.3). Second, by conducting a survey that identifying the respondents' political ideology (left- and right-wings), Lozza et al. (2013) empirically explored the relationship between political ideology and attitudes toward tax compliance within the slippery slope framework. They found that left-leaning taxpayers expressed higher levels of voluntary tax compliance and showed reactance to the coercive power of authorities, whereas right-leaning taxpayers expressed higher levels of enforced tax compliance and were more averse to tax evasion with increased trust in authorities and institutions (Lozza et al., 2013, p.2195). Third, Konrad and Qari (2012) linked two cross-country datasets to analyze the relationship between individuals' patriotism and attitudes toward tax compliance, and they confirmed a robust positive association between them.

As the main interest of this study is to empirically find the influence of political support to the government to the willingness to pay for taxes using survey data for public good provisions, it is worthwhile to review empirical works that examined characteristics affecting the contribution to public goods. Using experiments or surveys, previous studies found that that the social capital (e.g. trust and social network) tends to positively affect the individuals' contribution to public goods (Anderson et al., 2004; Bouma et al., 2008; Leonard et al., 2010; Tu et al., 2011).

III. Data and Estimation Strategy

3.1. Willingness to Pay for Implementing Public Projects

The government of the Republic of Korea has carried out the prefeasibility studies on new large-scale public investment projects. The cost-benefit analysis is the main methodology in determining the feasibility of a project, on which the budgetary decision is keenly dependent. Recognizing its importance, the budget authority of the Republic of Korea commissioned an institution solely dedicated to carry out prefeasibility studies, namely the Public and Private Infrastructure Investment Management Center (PIMAC) at the Korea Development Institute. Over the last two decades, the system has been successful

in playing a role to enhance fiscal efficiency by screening out economically and socially infeasible projects.

In the mid-2000, while developing the methodology of prefeasibility studies, the PIMAC introduced the CV survey to estimate the benefit to be generated by projects for which proper data of revealed preferences (e.g. market transaction data) are not available. The main purpose of the CV questionnaire is to ask the respondents how much they are willing to pay for the construction of the project after sufficiently conveying the details of the planned project to the respondents. In so doing, careful attention is required to obtain reliable WTP through the responses of the questionnaire. Since the inception of the CV studies, the center deliberately followed the guidelines of the NOAA panel (Arrow et al., 1993) including carefully designing the survey instruments and administering the survey through professional agencies.

More precisely, to clearly convey the information as much as possible, all surveys rely on face-to-face interviews rather than telephone or internet media, and contain an accurate and understandable description of the project or program under consideration and the associated benefits in each of the two scenarios, i.e. with and without the project/program, in a standardized format. Moreover, to minimize potential biases due to strategic behavior of respondents, all questionnaires ask questions to elicit the respondents' WTP for future incidents (construction and/or operation of projects) rather than willingness to accept for incidents already occurred, and use a dichotomous choice (DC) referendum WTP elicitation format, which is a take-it-or-leave-it question format on a given amount of payment and known to be less vulnerable to strategic biding behavior than, for example, the open-ended elicitation format. Furthermore, to ensure the reliability of responses, they all include reminders that the substitutes for the project in question exist with visual and descriptive aids of them and budgets are limited for both the respondent and the government, and include a follow-up questionnaire to be sure if the respondents understood the choice that they were asked to make.

[Insert Figure 2 about here]

Let us take a closer look at the two-step DC referendum question format asking respondents' WTP as illustrated in Figure 2. First, a specific (bid) amount B is presented, and the question is asked if they are willing to additionally pay that amount B as *income tax* for the construction of the planned project with a description that if many people agree to pay additional income tax, the project can be implemented, and vice versa. If the respondent says "yes" to this question, we know that his/her WTP is at least B or more, otherwise, he/she is only willing to pay less than B with a possibility of a negative WTP amount (e.g. in case the respondent dislikes the noise and congestion that the project to be built near his/her residence creates). Second, an additional yes/no question is asked such as: *Then, are you unwilling to pay anything to get the project going?* If a respondent says "no" to this question, we know his/her WTP is positive but bounded up to B. By saying "yes" to this question, some respondents reveal that they have no intention at all to pay for the project.

Among these "zero-bid" responses, i.e. those revealing the respondents are not willing to pay at all, we can distinguish between the cases in which the respondents have zero (or non-positive) WTP amount based on their preference to the project only and those not. The former includes the cases when the change in the public good presented in the survey has no effect on the utility of the respondent and when they do not have the ability to pay at all. On the contrary, even though the respondents fully understand the contents of the project and feel its positive effect on their utility, the latter may occur for other reasons such that they are doubtful if the government will implement the project as explained or they believe that the project should be financed by taxed already paid. This response of unwillingness to pay for some other reasons than the project itself is called a "protest bid." Recently, Johansson and Kriström (2021) showed rational respondents may well offer protest bids. Oh (2012) distinguished protest bids and non-protest zero bids by categorizing responses to a follow-up question asking the reason why they responded "no" to a bid amount as arranged in Table 1.

To identify protest bids, an additional question is included in our CV questionnaire whose typical format is as follows:

Q: What is *the most important reason* your household does not want to pay extra taxes to construct the project?

a) It should be financed by taxes already paid.
b) Not enough information was given to make a judgment.
c) This issue is not important enough to prioritize.
d) The government is already spending too much money on this area.
e) This project is not of interest to my household.
f) There are already enough facilities to replace this project.
g) My family cannot afford to pay.
h) Additional taxes collected will not be used for the stated project.
i) Other ( )

According to the criteria in Table 1, the items *a*, *b*, *d*, and *h* are categorized as protest bids. More precisely, item *h* represents the respondents' distrust in government, while items *a* and *d* depicts the unfairness they feel regarding the public investment project. Item *b* indicates that the respondents apprehend too much uncertainty to make a decision, if we admit that he or she fully understand the situation. In this sense, this uncertainty issue is regarded as a part of protest bids (Jorgenson et al., 2006). For this study's purposes, however, the protest bids due to the uncertainty are excluded since we cannot deduce any information on the respondent's attitude to the government or its policy. The main interest in this study is the responses indicating item *h* as the main reason of unwillingness to pay for additional income taxes, i.e. representing the distrust in government as the main reason of non-compliance of taxes. Although it was not intended, the contents of the multiple-choice response items for each questionnaire were similar, but the order was slightly different, and as a result, the potential bias due to the order of the items was reduced.

We obtained individual responses to 33 CV surveys administered by the PIMAC during 2012-19. Each CV survey collected 1,000 randomly stratified samples. Other than the binary responses of protest bids, we collected explanatory variables of individuals (respondents) and projects from the survey instrument as shown in Table 2. Individuals' socio-economic characteristics include gender, age, education level (middle school, high school, and college and above), size of family, income, and information of residence. Projects presented in the surveys are categorized their types: performing art center, museums, science centers, and others. Other types of projects include tourism complexes, youth education/training centers, recreational amenities, and environmental facilities.

3.2. Political Support

The CV surveys for this study are for prefeasibility studies preceding the implementation of public investment projects that cost more than 50 billion Korean Won (KRW) and more than 30 billion KRW are to be financed by the national treasury. Therefore, although the scope of benefits of the project may be sometimes limited regionally, they are on the central government's policy enforcement. In this regards, the surveys aim to reflect the attitude of the respondents toward the central government.

Moreover, Korea is politically and fiscally centralized as it adopts a presidential system and whose national taxes occupy about three-quarters of entire taxes. Unlike those in federal systems, local governments in Korea are granted autonomy within a relatively limited range. Consequently, the general public's policy interest is focused on the central government rather than the local governments and opinion polls are also focused accordingly.

Since 1988, a polling company, Gallup Korea, has been conducting public opinion surveys on how well the president is performing his/her duties. Until 2011, surveys commissioned by the media were conducted irregularly, and during this period, representative quarterly survey results were disclosed. Since 2012, weekly surveys have been conducted regularly. The reason why the CV surveys collected after 2012 is mainly due to the availability of the results of this weekly survey although the fact that many CV

questionnaires before 2012 often lacked the question to distinguish protest bids also matters.

In their weekly surveys, Gallup Korea asks the following question to about 1,000 stratified and randomized respondents:

> Q: Do you think that President _____ is performing his/her duties well as president these days, or do you think he/she is doing it wrong?
>
> a) Doing well
> b) Doing wrong
> c) Neither
> d) Don't know

The proportion of responding *a* is reported as the support to the president and subsequently government or policy. Figure 3 shows the trend of support for each president over time after taking office from 2012 to 2019. During the timespan of data, there were three presidents, Lee Myung-bak, Park Geun-hye, and Moon Jae-in, in order. Overall, in line with conventional "lame duck" arguments, a declining tendency for the rate of support is conspicuous as time elapses since the inauguration of the president. For President Park Geun-hye, the impeachment charge was passed by the National Assembly in the first week of December 2016, which corresponds to her 196th week in the office, and her duties as president were suspended. Reflecting this, the approval rating plummeted four weeks ahead.

A major characteristic of the political inclination of the Korean people is that the inclinations of the residents of the southern regions are divided. Historically, given two major political parties in the country, residents of the southeast region have supported the conservative party, while the people of the southwest region have supported the progressive party. Among the three presidents who came to power during the data period of this study, the first two were from the conservative party and the other from the progressive party. All other things being equal, people in the southeast region will support government policies more when a conservative government comes to power, and vice versa. In order to control this

effect of political bias on government support, a dummy variable, $DHomeTurf_i$, indicating if the respondent resides in the home turf of the ruling party is constructed. This dummy has value one if the respondent lives in one of five provinces in the southeast region to a survey conducted when the president from the conservative party is in office. Similarly, it has value one if the respondent's house is located in one of three provinces in the southwest region when the survey is conducted by a progressive government. Otherwise, its value is zero.

The survey results on support for the government are matched to the variables from CV surveys. Considering that the weekly opinion survey was conducted every Tuesday through Thursday, the average government support during the CV survey period was taken accordingly. For example, if a CV survey was conducted from the first Wednesday in April to the fourth Monday in April, the average of the weekly government support from the first week to the third week in April is applied. As can be seen in Figure 3, no surveys on government support were conducted during certain weeks, including two major national holidays, the summer vacation period, and the end of the year. The CV surveys were also conducted avoiding these holidays and vacation periods, so there was no problem of mismatching due to the absence of data.

3.3. Estimation Strategies

For data analysis, a probit model was used to estimate limited dependent variables. Let us go back to the previous example to define the dependent variable. As the narrowest standard, we can consider the case where only the response that refused payment because the government's plan was unreliable (item *h* in the above example) was set to one, and zero otherwise. Respondents may be opposed to the government's financing plan if they feel that the government is already spending too much money, or that it should be covered by the taxes it has collected (items *a* and *d*). We can expand the scope of distrust in the government to include can be expanded to include these responses. Researchers of CV studies identify these responses as "fairness" concerns of respondents (Jorgensen et al., 1999; Jorgensen et al., 2006).

Kirchler (2007) also identify "fairness perceptions" as one of the socio-psychological determinants of tax compliance. Therefore, we compare three cases where the binary dependent variable has a value of 1 indicating that a respondent does not support the government: distrust in government (item h), fairness perceptions (items a and d), and both distrust in government and fairness perceptions (items a, d, and h).

Table 2 summarizes the variables used, their basic statistics, and data sources. The explanatory variables from the CV questionnaires include the socioeconomic and political variables of the respondents and the characteristics of the project to which if the respondent is willing to pay the income tax. Since the WTPs of direct beneficiaries of the project implementation is expected to be higher than those who are not, a dummy of respondents living in the same area as the project site, $DSite_{ij}$, was added.

The explanatory variables also include those represent the political circumstance. Government support at the time of the CV survey, whose effect is the main interest of this study, is calculated as stated above. To control for a specific administration's influence, dummies for each administration setting the base to be the first administration during the sample period are added. Moreover, the time effect was considered.

While the standard probit model is estimated, this study pays attention to the fact that the difference between the CV surveys can be larger than the difference within each survey. This is especially the case in a situation where sufficient information other than type is not provided on the characteristics of the project. Therefore, the standard errors are obtained as clustered by survey (or project).

IV. Estimation Results and Discussions

Table 3 shows the estimation results for three model setups. The results of the analysis on government trust (Model I) were not satisfactory as statistical significance could not be confirmed in most cases. This is mainly because the proportion of the dependent variable having a value of one (5.19 percent as shown in Table 2) is very low. The estimation performance improved significantly for the model for the responses that raised the issue of fairness (Model II) and when both government trust and fairness perceptions were

considered (Model III).

[Insert Table 3 about here]

Here, we take a closer look at the estimation results of Model 3, which comprehensively represents government support. Remember that a value of 1 of the dependent variable means the respondent is unwilling to pay income tax because he/she does not support the government. Therefore, a negative sign in the coefficient indicates that the tendency to comply with tax rises when the value of corresponding explanatory variable increases.

The effect of government support, which is our main concern, on the WTP for income tax was statistically significant and negative, as expected. This is an empirical confirmation of the voluntary compliance of the slippery slope framework is positively associated with the support to the government. The effect of political bias by region also has an expected negative sign and statistically significant, which confirms that the great level of support to the government in the incumbent administration's traditional stronghold induces the high tax compliance level. This can be explained by the regional budget allocation behavior of the government that considers re-election in favor of its home turfs, namely "partisanship." In particular, a risk averse incumbent administration will allocate more budget or resources to the regions where it can obtain higher political support because it is too risky to invest in swing voter groups (Cox and McCubbins, 1986). Moreover, partisan support to win the presidential elections may also come from the party's presence in regional governments (Grossman, 1994). If a region is a party's stronghold, the policy coordination for this region is much easier for the president from the same party. Such facilitated policy implementations strengthen residents' satisfaction and further political support to the central government.

Among individual characteristics, the respondent's education level significantly affects the tax compliance while neither gender nor age matters. The higher the education level, the more likely a taxpayer to be willing to pay tax. This result is in line with previous studies arguing that higher-educated

people understand better the meaning of tax liabilities and the aim of government policies (Song and Yarbrough, 1978; Spicer and Lundstedt, 1976). Using subdivided education levels, Konrad and Qari (2006), to which this study's result partially matched, found an inverted U-shaped effect of education on tax compliance. A similar logic is applicable to the estimate of the coefficient to a dummy for being mainly responsible for household income, $DEcon_i$. If the respondent earns the majority of household income, he/she is the main taxpayer of the household who is conscious of tax liabilities and usages.

Meanwhile, a negative relationship between income and tax compliance is found in accordance with some previous experimental studies although they studied enforced tax compliance (Baldry, 1987; Anderhub et al., 2001; Slemrod et al., 2001). However, the conclusion is ambiguous as empirical evidences are mixed. Similar studies report a positive relationship (Christian, 1994; Fishlow and Friedman, 1994), or no significant relationship (Park and Hyun, 2003; Wärneryd and Walerud, 1982).

Finally, statistically significant results appear in regional differences. The central, southeast, and southwest regions show less tax compliance compared to the northeast region *ceteris paribus* while the SMA and the northeast region do not reveal statistically significant difference. Interestingly, the fact that the project is to be implementing in the region where the respondent resides does not affect the voluntary tax compliance. CV studies have dealt with the "distance-decay effect" where the distance between the goods to be evaluated and the respondent's residence negatively affects the WTP estimate (Lee, 2016). However, it is noteworthy that the distance-decay effect on voluntary tax compliance is not statistically significant when other factors are controlled for.

V. Concluding Remarks

This study empirically found higher level of voluntary tax compliance occurs if taxpayers support the government politically. In so doing, this study is the first case of using the CV survey results. The elaborately developed questionnaire and the consistently implemented survey procedure to be used as the basis for making a decision on actual large-scale public investment contribute to increasing the reliability

of the results.

Nevertheless, this study has several limitations. First, the scope of the analysis of this study is bounded to the relationship between political support and "voluntary" tax compliance. Due to the characteristics of the survey data, the implications to the "enforced" tax compliance from the well-established slippery slope framework cannot be derived. Second, due to the difference in the questionnaire composition between cases, it was not possible to obtain abundant information on the respondents' preference for the project. Information may be obtained from some surveys includes whether or not the respondents were aware that the project was being prepared, and whether they would be willing to visit if the project is implemented. However, unlike the case of estimating the WTP value for the implementation of the project, which is the original purpose of the CV survey, the problem of losing such information will be relatively weaker in this study using information on protest bids only. Third, the data period was limited due to the short time series of the weekly surveys on the political support to the president. As a result, only three administrations were included in the data, two of which were only part of their tenure. This constrained the analysis of another important aspect of political support, the lame duck issue. If the time series of the data were long enough, it would be possible to examine how the fact that the term of office was nearing the end of the term had an effect on voluntary tax compliance *ceteris paribus*.

Finally, it will be valuable to conduct similar studies using the CV survey results of countries with varied political environments such as parliament system and federal system in the future. The differences in voluntary tax compliance according to the socioeconomic characteristics of taxpayers, especially income, education level and region of residence, are also interesting results to be revisited and supplemented by future studies.

REFERENCES

Allingham, M. G. and A. Sandmo, 1972, "Income Tax Evasion: A Theoretical Analysis," *Journal of Public Economics*, 1(3-4), pp.323-338.

Alm, J., 2012, "Measuring, Explaining, and Controlling Tax Evasion: Lessons from Theory, Experiments, and Field Studies," *International Tax and Public Finance*, 19(1), pp.54-77.

Anderhub, V., S. Giese, W. Güth, A. Hoffmann, and T. Otto, 2001, "Tax Evasion with Earned Income: An Experimental Study," *Finanz Archiv*, 58(2), pp.188-206.

Anderson, L. R., J. M. Mellor, and J. Milyo, 2004, "Social Capital and Contributions in a Public-goods Experiment," *American Economic Review*, *94*(2), pp.373-376.

Andreoni, J., B. Erard, and J. Feinstein, 1998, "Tax Compliance," Journal of Economic Literature, 36(2), pp.818-860.

Arrow, K., R. Solow, P. R. Portney, E. E. Leamer, R. Radner, and H. Schuman, 1993, "Report of the NOAA Panel on Contingent Valuation Surveys," *Federal Register*, 58, pp.4601-4614.

Baldry, J. C., 1987, "Income Tax Evasion and the Tax Schedule: Some Experimental Results," *Public Finance*, 42(3), pp.357-383.

Batrancea, L. M., R. A. Nichita, and I. Batrancea, 2013, "Understanding the Determinants of Tax Compliance Behavior as a Prerequisite for Increasing Public Levies," *The USV Annals of Economics and Public Administration*, 12(1(15)), pp.201-210.

Becker, G. S., 1968, "Crime and Punishment: An Economic Approach," *Journal of Political Economy*, 76(2), pp.169-217.

Bouma, J., E. Bulte, D. van Soest, 2008, "Trust and Cooperation: Social Capital and Community Resource Management," *Journal of Environmental Economics and Management*, *56*(2), pp.155-166.

Christian, C. W., 1994, "Voluntary Compliance with the Individual Income Tax: Results from the 1988 TCMP Study," *The IRS Research Bulletin*, IRS Publication 1500 (Rev.9-94), (1993/1994): 35-42.

Cowell, F. A., 1990, Cheating the Government: The Economics of Evasion, MIT Press.

Cox, G. W. and M. D. McCubbins, 1986, "Electoral Politics as a Redistributive Game," *Journal of Politics*, 48(2), pp.370-389.

Dean, P., T. Keenan, and F. Kenney, 1980, "Taxpayers' Attitudes to Income Tax Evasion: An Empirical Study," *British Tax Review*, 25, pp.28-44.

Fershtman, C. and V. Lipatov, 2009, *Political Support and Tax Compliance: A Social Interaction Approach*, Unpublished manuscript (No. 275731), Foerder Institute for Economic Research, Tel-Aviv University.

Fishlow, A. and J. Friedman, 1994, "Tax Evasion, Inflation and Stabilization," *Journal of Development Economics*, 43(1), pp.105-123.

Grossman, P. J., 1994, "A Political Theory of Intergovernmental Grants," *Public Choice*, 78(3), pp.295-303.

Hartmann, A. J., M. Mueller, and E. Kirchler, 2020, "Tax Compliance: Research Methods and Decision Processes," In: Zaleskiewicz, T. and J. Traczyk, (eds) *Psychological Perspectives on Financial Decision Making*, Springer, Cham.

Lee, J., 2016, "Income and Distance-Decay Effects on Willingness to Pay Estimated by the Contingent Valuation Method," *Journal of Environmental Planning and Management*, 59(11), pp.1957-1981.

Johansson, P. O. and B. Kriström, 2021, "Why Rational Agents Report Zero or Negative WTPs in Valuation Experiments," *Journal of Environmental Economics and Policy*, *10*(1), pp.22-27.

Jorgensen, B. S., G. J. Syme, B. J. Bishop, and B. E. Nancarrow, 1999, "Protest Responses in Contingent Valuation," *Environmental and resource economics*, *14*(1), pp.131-150.

Jorgensen, B. S., G. J. Syme, and B. E. Nancarrow, 2006, "The Role of Uncertainty in the Relationship between Fairness Evaluations and Willingness to Pay," *Ecological Economics*, 56(1), 2006, pp.104-124.

Kirchler, E., 2007, *The Economic Psychology of Tax Behaviour*, Cambridge: Cambridge University Press.

Kirchler, E., E. Hoelzl, and I. Wahl, 2008, "Enforced versus Voluntary Tax Compliance: The 'Slippery Slope' Framework," *Journal of Economic Psychology*, 29(2), pp.210-225.

Konrad, K. A. and S. Qari, 2012, "The Last Refuge of a Scoundrel? Patriotism and Tax Compliance," *Economica*, 79(315), pp.516-533.

Leonard, T., R. T. Croson, and A. C. de Oliveira, 2010, "Social Capital and Public Goods," *The Journal of Socio-Economics*, *39*(4), pp.474-481.

Listokin, Y. and D. M. Schizer, 2013, "I Like to Pay Taxes: Taxpayer Support for Government Spending and the Efficiency of the Tax System," *Tax Law Review*, 66, pp.179-215.

Lozza, E., B. Kastlunger, S. Tagliabue, and E. Kirchler, 2013, "The Relationship between Political Ideology and Attitudes toward Tax Compliance: The Case of Italian Taxpayers," *Journal of Social and Political Psychology*, 1(1), pp.51-73.

Oh, H., 2012, "Detecting Protest Reponses," *KDI Journal of Economic Policy*, 34(1), pp.137-168 (in Korean).

Oh, H. and J. H. Hong, 2012, "Citizens' Trust in Government and Their Willingness-to-pay," *Economics Letters*, *115*(3), pp.345-347.

Park, C.-G. and J. K. Hyun, 2003, Examining the Determinants of Tax Compliance by Experimental Data: A Case of Korea," *Journal of Policy Modeling*, 25(8), pp.673-684.

Schneider, F. and D. Enste, 2000, "Shadow Economies: Size, Causes, and Consequences," Journal of Economic Literature, 38(1), pp.77-114.

Slemrod, J. 2007, "Cheating Ourselves: The Economics of Tax Evasion," Journal of Economic Perspectives, 21(1), pp.25-48.

Slemrod, J., M. Blumenthal, and C. Christian, 2001, "Taxpayer Response to an Increased Probability of Adit: Evidence from a Controlled Experiment in Minnesota," *Journal of Public Economics*, 79(3), pp.455-483.

Song, Y.-D. and T. E. Yarbrough, 1978, "Tax Ethics and Taxpayer Attitudes: A survey," *Public Administration Review*, 38(5), pp.442-452.

Spicer, M. W. and S. B. Lundstedt, 1976, "Understanding Tax Easion," *Public Finance*, 21(2), pp.295-305.

Srinivasan, T., 1973, "Tax Evasion: A Model," *Journal of Public Economics*, 2(4), pp.339-346.

Tu, Q., A. P. Mol, L. Zhang, R. Ruben, 2011, "How Do Trust and Property Security Influence Household Contributions to Public Goods? The Case of the Sloping Land Conversion Program in China," *China Economic Review*, *22*(4), pp.499-511.

Tyler, T., 2006, "Psychological Perspectives on Legitimacy and Legitimation," *Annual Review of Psychology*, 57, pp.375–400.

Wahl, I., B. Kastlunger, and E. Kirchler, 2010, "Trust in Authorities and Power to Enforce Tax Compliance: An Empirical Analysis of the 'Slippery Slope Framework,'" *Law and Policy*, *32*(4), pp.383-406.

Wärneryd, K.-E. and B. Walerud, 1982, "Taxes and Economic Behavior: Some Interview Data on Tax Evasion in Sweden," *Journal of Economic Psychology* 2(3), pp.187-211.

Table 1

Protest Bids and Non-protest Zero Bids

Protest bid	Non-protest zero bid
· Distrust in government · Don't believe that the project achieves the goal · Unfair to ask me to pay · Ill-feeling against the project · Uncertainty (not enough information is given)	· Zero-marginal utility · No plan to use · Cannot afford to pay · Public bads

Table 2

Definitions, Basic Statistics, and Data Sources of Variables

Category	Variable	Definition	Min	Max	Mean	Std. Dev.
Responses to Contingent Valuation Surveys						
Dependent	$Resist_{ij}^{I}$	Binary response for distrust of government	0	1	.0518863	.2218012
	$Resist_{ij}^{II}$	Binary response for unfairness of government policy	0	1	.2939235	.4555648
	$Resist_{ij}^{III}$	Binary response for distrust of government and unfairness of government policy	0	1	.3458098	.4756394
Individual/Socio-economic	Sex_i	Sex (1=Male, 0=Female)	0	1	.5002806	.5000082
	Age_i	Age in years	20	65	46.8489	9.717811
	Age_i^2	Age squared	400	4225	2289.252	898.4156
	Edu_i	Education level (1=Middle School, 2= High School, 3=College and above)	1	3	2.440308	.6006525
	$Family_i$	Size of family	1	9	3.320461	1.069317
	$Income_i$	Household after-tax monthly income level	1	8	4.659801	1.668438
	$DEcon_i$	Dummy for being mainly responsible for household income	0	1	.5280721	.4992196
	$DSite_{ij}$	Dummy for residing at the same Province/Metropolitan City as the project site	0	1	.0973694	.296465
	$DMetro_i$	Dummy for residing at a Metropolitan City	0	1	.4903126	.4999144
	$DAreaSMA_i$	Dummy for residing at the Capital region	0	1	.5081031	.4999426
	$DAreaC_i$	Dummy for residing at the central region	0	1	.0946628	.2927535
	$DAreaSE_i$	Dummy for residing at Southeast region	0	1	.2658019	.4417666
	$DAreaSW_i$	Dummy for residing at Southwest region	0	1	.1042347	.3055699
Individual/Political	$DHomeTurf_i$	Dummy for residing at a home turf of the ruling party	0	1	.2335215	.4230781
Project	$DTypePerf_j$	Dummy for project type I: Performing art centers	0	1	.1649668	.3711567
	$DTypeMusm_j$	Dummy for project type II: Museums	0	1	.3399346	.4736945
	$DTypeSci_j$	Dummy for project type III: Science centers	0	1	.1320263	.3385249
Time Effect	$Year_j$	Year of survey	2012	2019	2015.155	1.839906
Political Circumstances						
	$Favor_j$	Ratio of supporting for the performance of the President's duties	.0429777	.718303	.4378472	.1485262
	$DPres3_j$	Dummy for the recent President (3rd in the sample period)	0	1	.1980394	.3985286
	$DPres2_j$	Dummy for the previous President (2nd in the sample period)	0	1	.7359805	.440817

Table 3

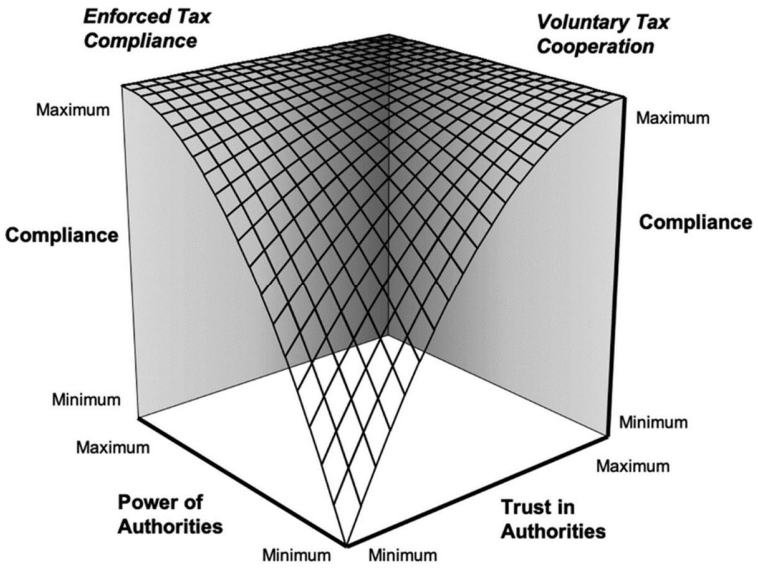
Estimation Results

Variable	Model I: Government Trust		Model II: Fairness Perceptions		Model III: Government Support	
Political Circumstances						
$Favor_j$	0.3776	(0.3587)	-0.7437 **	(0.2941)	-0.5990 **	(0.2397)
$DPres3_j$	-0.5359	(0.4508)	0.5133	(0.4098)	0.3382	(0.3330)
$DPres2_j$	-0.3636 *	(0.2152)	0.3549 *	(0.1906)	0.2268	(0.1518)
Individual-level Political Preference						
$DHomeTurf_i$	0.02270	(0.07491)	-0.1666 **	(0.07327)	-0.1417 **	(0.05966)
Individual-level Socio-economic Characteristics						
Sex_i	-0.08428	(0.09297)	0.1161 ***	(0.04184)	0.07942	(0.05021)
Age_i	-0.002547	(0.01472)	0.008286	(0.009645)	0.006895	(0.009373)
Age_i^2	0.0000135	(0.0001569)	-0.0000661	(0.0001001)	-0.0000568	(0.0001002)
Edu_i	-0.01488	(0.01946)	-0.1012 ***	(0.01996)	-0.09805 ***	(0.01965)
$Family_i$	-0.02513	(0.01648)	0.007897	(0.008730)	-0.0001153	(0.009721)
$Income_i$	0.01504	(0.009153)	0.008407	(0.006921)	0.01212 *	(0.006908)
$DEcon_i$	0.1073	(0.09115)	-0.1361 ***	(0.04597)	-0.09248 *	(0.05035)
$DSite_{ij}$	0.01953	(0.06811)	-0.02526	(0.06591)	-0.02009	(0.06370)
$DMetro_i$	-0.008612	(0.03193)	0.01948	(0.02273)	0.01582	(0.02268)
$DAreaSMA_i$	-0.02204	(0.07678)	0.09836	(0.07484)	0.08113	(0.07344)
$DAreaC_i$	-0.2936 ***	(0.09506)	0.4619 ***	(0.08157)	0.3638 ***	(0.08382)
$DAreaSE_i$	0.03954	(0.1005)	0.4556 ***	(0.09638)	0.4258 ***	(0.08602)
$DAreaSW_i$	0.02998	(0.08408)	0.2687 ***	(0.08262)	0.2555 ***	(0.08101)
Project Characteristics						
$DTypePerf_j$	-0.1567	(0.1138)	0.03184	(0.06093)	-0.01646	(0.05088)
$DTypeMusm_j$	-0.1994 **	(0.08236)	0.04188	(0.05232)	-0.01237	(0.03930)
$DTypeSci_j$	0.1223	(0.1049)	-0.1384	(0.09463)	-0.07980	(0.06405)
Time effect						
$Year_j$	0.1152 **	(0.05277)	-0.06677	(0.04804)	-0.02858	(0.03941)
Constant	-233.3 **	(106.3)	133.7	(96.73)	57.05	(79.34)
Number of observations	30,297		30,297		30,297	
Log pseudolikelihood	-6061.56		-18047.91		-19309.58	
χ^2	--		517.35	[0.000]	316.61	[0.000]
Pseudo R^2	0.0194		0.0164		0.0116	

*Note: Numbers in parentheses and brackets refer to clustered standard errors and p values, respectively. Asterisks indicate statistical significance: *, $p < 0.1$; **, $p < 0.05$; ***, $p < 0.01$.*

Figure 1

The Slippery Slope Framework for Tax Compliance



Source: Kirchler et al. (2008), p.212.

Figure 2

The Structure of Dichotomous Choice Referendum Questions

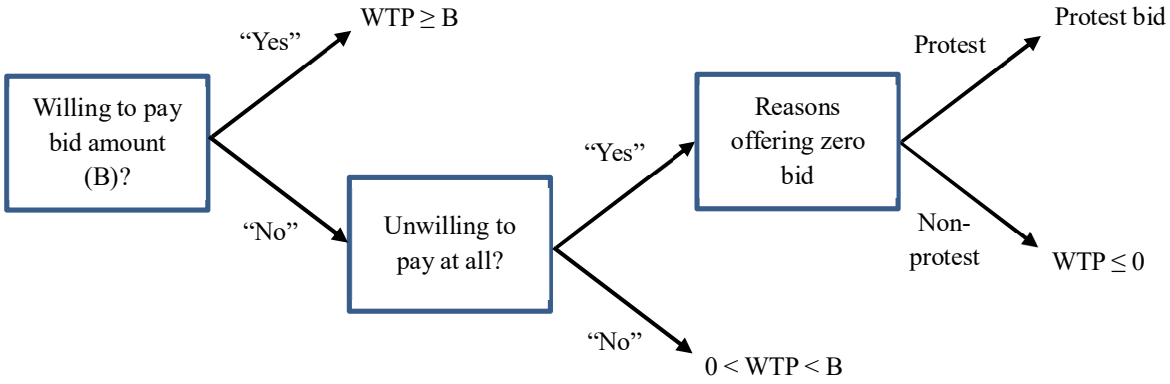
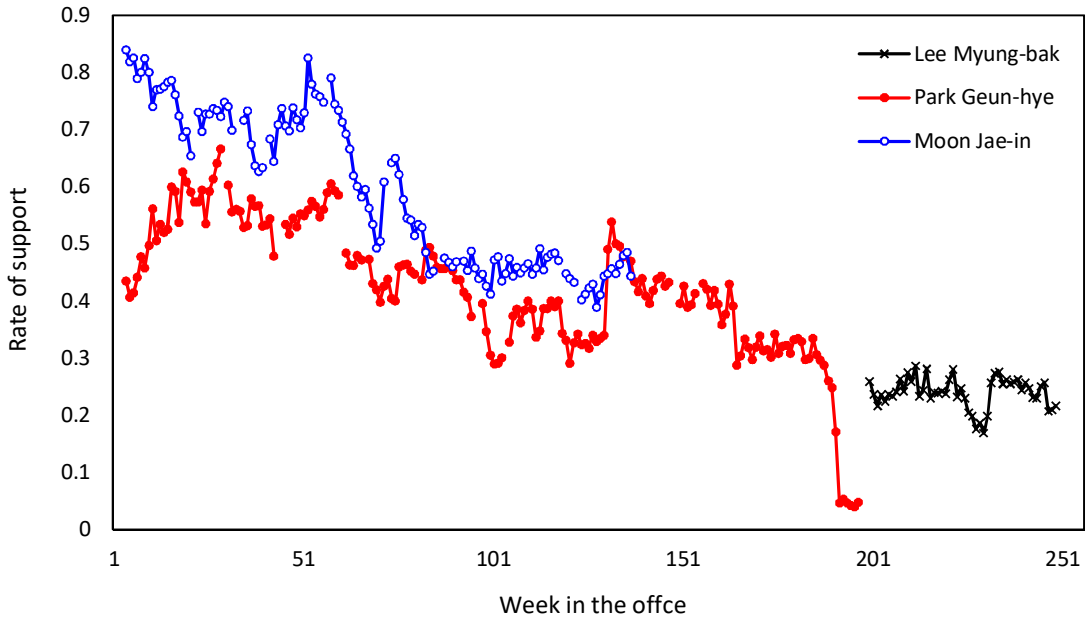


Figure 3

Support for the Presidents during Timespan of Data (2012-19)