Willingness to pay taxes for welfare:
Empirical evidence from South Korea

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Abstract

This study explores the conflicting perceptions between people's willingness to pay taxes and welfare demand, using the Korean panel data from 2018 to 2021. The results suggest that, first, taxpayers are willing to pay more taxes for welfare, even if they feel that the present tax burden is high. Second, they are less likely to reject a tax rate hike which is higher than expected if it satisfies their desired welfare level. Third, for the very high-income group, a high current welfare level is not necessarily interpreted as the willingness to pay (WTP) taxes. The findings suggest that people want to enjoy high-quality welfare service but do not like to pay more taxes for it. The study has two critical implications: raising taxes for welfare may not necessarily lead to tax resistance, and a growing consensus on the need for welfare can increase the willingness to pay taxes.

Introduction

Would people want to pay taxes for welfare while experiencing an increase in their tax burden? A rich literature suggests that people are willing to pay taxes when they benefit from government services (Seligman 1908; Musgrave 1959; Alm 2012; Luttmer and Singhal 2014). However, they do not like to pay more taxes for the same set of services. This study investigates the taxpayers' conflicting perceptions between tax avoidance and welfare demand.

The government's social security expenditure of the OECD countries has been increasing since 2019 (OECD 2022). This trend is likely to continue for a while due to the aging population and the COVID-19 situation. Increasing government spending on welfare present a puzzle for politicians. Satisfying welfare demand needs taxes, but tax increase is not attractive to politicians who wish to satisfy their supporters. It is especially true of countries accustomed to a culture of low tax burden.

Ultimately, the financial resources for welfare come from the taxpayers' pocket. Tax increase may be a minor problem if the society is already adapted to high tax burdens and related high welfare services, as in the Nordic countries. However, not all nations agree on a high level of tax burden. South Korea has low tax burden rates and welfare levels compared to the United States and Japan. Given its ideological confrontation with North Korea, which believes in communism, South Korea has a historically strong ideology of market capitalism (Hamilton and Biggart 1988). This study empirically analyzed people's Willingness to pay (WTP) taxes for welfare in South Korea, which has a tax burden rate that is lower than the OECD average.

If we naively and directly ask people about their WTP taxes (such as "*Are you willing to pay more taxes for welfare?*"), they are likely to answer that they want to pay more taxes for welfare because it seems much better. However, their answer will change if we adopt a randomized controlled trial

instead of a simple survey method (Giaccobasso et al. 2022). Nevertheless, randomized controlled trial (RCT) requires sophisticated research skills, and it is not easy for policy makers to get the results when they want.

We design a simple and powerful survey to estimate WTP tax, as follows: Willingness to pay taxes = Reasonable tax rate − Actual tax rate. For example, if I have to pay 20% of my income in taxes, and I think that the 10% tax level is appropriate, then I have less WPT. If the tax rate of 30% is thought to be appropriate, then WPT is judged to be high. We can create ordinal variables for people's WPT.

The results of survey seem better to explain the reality. The answer to our direct question, "*Are you willing to pay taxes more for welfare?"* shows that taxpayers are willing to pay more taxes for welfare, even if they feel that the present tax burden level is high. It cannot explain the taxpayers' resistance to the prevailing high tax rates. Without tax resistance, government will feel free to raise tax rates for welfare. This result is also disharmonious with previous research (Lim and Moon 2022).

Our result shows that the higher the level of tax burden compared to the welfare level, the lower the WPT. In addition, WPT increased even if one's tax burden increased for the ideal welfare level. The most interesting result is that WPT is positively correlated to people's satisfaction with the welfare level.

In recent years, numerous studies in various disciplines have been conducted on WPT, specifically in environment (Bishop et al. 2020; Fairbrother 2019; Friedrich 2022), tourism (Schuhmann et al. 2019; Raffaelli et al. 2022), and health (Kouakou and Poder 2022; Steigenberger et al. 2022). However, there are few studies concerning welfare. Ham and Woo (2015) investigated welfare but mainly in relation to various trust types. Lim and Moon (2022) explored the relationship between

welfare and political trust. Therefore, it is worthwhile to examine the relationship between people's WTP and welfare.

The remainder of this paper is organized as follows. Section 2 provides the institutional background. Section 3 develops the hypotheses. Section 4 explains the research design. Section 5 describes the data and empirical results. Section 6 discusses the policy implications and concludes the paper.

Institutional Background

Populism is gaining ground worldwide (Guriev et al. 2021). Politicians offer pledges on higher welfare to win elections. However, they remain silent about the resulting increase in the tax burden. The demand for welfare has increased due to aging and the pandemic, but welfare is inevitably costly. Some societies such as the Nordic countries, which adapted to high tax burdens and welfare levels may not face this problem. However, taxpayers who have already adapted to low tax burdens and welfare levels may offer resistance if the government raises taxes, even if it is for their benefit (e.g., USA, Japan).

South Korea has a strong tradition of market liberalism. A strong hostility to communism developed after the ideological war between North Korea and South Korea in 1950. However, recently, the demand for welfare has been increasing rapidly worldwide due to the effects of low birth rates and aging. Accordingly, the government is fiddling with the idea of raising the tax rates. Recently, a new tax rate has been established for high-income earners. Consequently, Korea has created a very good environment to measure the ethical consciousness of taxes on welfare.

Hypothesis

We formulate the following three hypotheses and test them through empirical analysis.

Hypothesis 1: Taxpayers' WPT will be higher when government provides a higher welfare level.

The traditional economic approach to explain why people pay taxes focuses on the benefits that taxpayers receive from the government. People are willing to pay more taxes when they feel that they receive a benefit in return (Seligman 1908; Musgrave 1959). Thus, the conversion to a welfare state to provide more services to its citizens could lead to a WPT. Based on the traditional theory, increased government investment in welfare would elicit taxpayers' willingness to pay taxes. This study goes beyond the attempts to confirm such a benefit-based taxation theory and examines the relationship between welfare and tax burden. We also explore individual and social norms regarding welfare and provide empirical evidence to support this claim.

Hypothesis 2: High-income earners will be less willing to pay taxes even if they are satisfied with the current level of welfare.

We think that the rich should pay more taxes for their welfare than the poor to ensure vertical equity. It would be nice if the rich voluntarily and happily paid the taxes for welfare; however, the excessive tax burden for welfare could lead to temptations to evade taxes.

The government generally levies higher taxes to the high-income segment whose benefits are relatively low. No matter how high the government welfare benefits are, it can feel inadequate compared to the taxes they have paid, and if they feel that the tax system is unequal, they will have

lower ethical favor for taxes (Kim and Wan 2022). It is because the high-income groups do not need government welfare and can live a sufficiently affluent life on their own. Thus, even if the high-income segments feel that the government's welfare level is admirable, they will be less willing to pay taxes if they believe that it was achieved with their money.

Hypothesis 3: The higher the norm for welfare, the higher will be the willingness to pay taxes, regardless of the level of tax burden.

Individual beliefs affect the attitudes towards taxation (Luttmer and Singhal 2014). People who prioritize the importance of welfare are more likely to support tax increases to fund it, even if they already face a high tax burden. If this hypothesis is true, then it has important implications for the policymakers. It suggests that reducing the tax burden without addressing people's underlying values and beliefs about welfare may not be an effective strategy for increasing tax compliance or public support for government programs. Instead, the policymakers may need to make efforts to promote and reinforce positive attitudes towards welfare to build public support for tax increases to fund it. Additionally, this hypothesis can explain the differences in attitudes towards taxation and welfare across different countries and cultures, as variations in individual norms and values may play a role in shaping these attitudes.

Design

Administrative Household Data

We use the Korean administrative survey data collected by the National Tax and Public Finance to establish the government's tax and fiscal policies. It is a nationwide survey on approximately

5,000 household and 13,000 household member unit as the population, excluding the island areas. Starting in 2007, the survey was conducted every year using the face-to-face method. This study used the data from 2016 to 2020 because the welfare questionary used in the study began to be used in 2016. The data can be easily downloaded from the website.

Research Design

People want welfare; however, their willingness to pay taxes will be lowered if the tax burden increases to fund the benefits. To test this idea, we used a finely-designed survey to examine how people's willingness to pay taxes depends on the tax burden is for welfare.

Dependent variables: We looked at three different aspects of taxpayers' willingness to pay taxes.

WPT for Welfare: The first dependent variable is about the WPT for welfare. The respondents were asked, "*Would you be willing to pay the extra tax if the welfare was expanded by raising taxes?*" This question is rated on a five-point scale; 1 is not willing to pay extra tax, 2 is willingness to pay extra less than 5% of current tax, 3 is willingness to pay extra less than 5-10% of current tax, 4 is willingness to pay extra less than 10-15% of current tax, and 5 is willingness to pay 15% or more of current tax. Thus, we concluded that the higher the willingness to pay additional taxes relative to current taxes, the higher the personal norm for welfare.

WPT for each Income Strata: Personal and societal perceptions of how much taxes must be paid for welfare may differ. For example, a low-income person may have a low intention to pay taxes but a high demand for welfare; conversely, a high-income person may have a low intention to pay

taxes but a low demand for welfare, unlike a low-income person. Thus, failure to analyze the issue against such social norms can lead to biased policy decisions.

There are nine income categories (from 1 to 9) concerning the basic dependent variable answers. The questionnaire is as presented in Figure 1. The question is as follows.

If an individual's total annual pre-tax income is in each of the following cases, what percentage of that income do you think is the appropriate tax?

[Insert Figure 1 Here]

This study determined social norms by the tax rate that taxpayers in each income bracket consider appropriate, in other words, the actual tax rate for the relevant income. For example, if the actual income tax rate for a billion is 40% but a taxpayer believes that an income tax rate of 60%, then the social norm for paying taxes on an income equivalent to a billion is even stricter.

It is important in that it provides a basis for additional judgment to policy maker. For example, low-income persons may think they do not have to pay any tax for welfare, but they might infer that high-income persons should pay more taxes for welfare. In this case, social WPT may be underestimated (or overestimated) if only the understanding of tax norms for the welfare of low-income individuals (or high-income individuals) is investigated. Therefore, we investigated the social norms of taxpayers to comprehensively judge their WPT for social welfare.

WPT: The last dependent variable is defined according to the following structure.

The difficulty in estimating people's WPT involves handling desirability bias. If we naively and directly ask about people's WPT, they are likely to answer that they want to pay more taxes for welfare because it seems much better socially. Desirability bias will be removed if we adopt randomized controlled trial instead of a simple survey method (Giaccobasso et al. 2022). However,

RCT requires sophisticated research skills, and it is not easy for policy makers to get the results they want. Therefore, we designed the following survey design.

How to estimate WPT:

(i)   Ask the appropriate tax rate for each income.

(ii)   Compare the actual income tax rate.

(iii)   WPT = Preferred tax rate − Actual tax rate

The first step is to investigate the appropriate level of income tax for a specific income. We used questionnaire presented in Figure 1 to calculate the appropriate tax rate. The second step is to investigate the taxpayer's actual income and their applicable tax rate. The final step is to subtract the tax rate that the respondent thinks is appropriate and the respondent's actual tax rate.

For example, if one's income is 30 million won, and one thinks that a tax rate of 10% is appropriate, but if the actual tax rate is 30%, then one will probably be unwilling to pay taxes and will be tempted to evade only 20% of the tax, that is, the difference between the tax rate one thinks is appropriate and the tax one actually has to pay.

We interpreted a person's WPT as stronger when they believed that they would have to pay an even higher tax rate than the rate he or she faced. The dependent variable was defined as an ordinal variable ranging from 1 (the lowest WPT) to 5 (the highest WPT).

Table 1 presents the basic statistics of tax intention generated through the process described above. The basic statistics by year did not differ significantly from the frequencies presented in Table 1.

[Table 1 near here]

Explanatory variables: There are two categories of explanatory variables: Perception of tax burden and Perception of welfare state.

This study added the current perspective tax burden and welfare variables for the independent variable. As shown in Figure 2, individuals were asked, "Which of the following diagrams do you think represent the current average tax burden and welfare level in South Korea?" This study considered two separate variables for tax burden and welfare. In addition, the ideal tax burden and welfare variables were also included in the explanatory variables, and the individuals were asked, "Which of the following diagrams do you think the average tax burden and welfare level correspond to?" There were nine answers for this question.

[Insert Figure 2 Here]

Control variables: This study included social-economic controls: income, education, gender, age, and marry status. Our data available using reliable information on income because respondents' income certificates were collected.

Subsequently, I also controlled for various psychological factors of taxpayers with respect to taxes. It is important because trust with government has been shown to influence taxpayers' ethical attitudes toward taxes (Luttmer and Singhal 2014; Kim et al. 2022). To this end, we specifically controlled for vertical tax fairness, exchange tax fairness, horizontal tax fairness, perception of income inequality, and outlook of income inequality. Controlling for these taxpayers' psychological factors added credibility to our results.

Furthermore, this study also considered region and year dummies as an important part of the control variables. Thus, controlling for all of the taxpayers' socioeconomic and psychological factors in paying taxes provided considerable freedom in terms of the omitted variables problem.

[Table 2 near here]

Empirical Results

We used ordered probit model to estimate the WPT:

$$y_{ij} = \beta_1 Burden_{ij} + \beta_2 Welfare_{ij} + X_{ij} + \theta_{ij} + \varepsilon_{ij} \tag{1}$$

where i denotes individuals, j denotes household, and t denotes time periods. The term y_{ij} denotes the tax morale, social norm, and individual norm, θ_{ij} denote the fixed effects corresponding to individuals and year, and X_{ij} is a control variable.

Burden and *Welfare* indicate the level of tax burden on welfare and the level of welfare, respectively, and both variables are composed of ordinal variables of 1, 2, and 3. Each number implies the following: 1 indicates a low tax burden level, 2 indicates a normal tax burden level, and 3 indicates a high tax burden level. The welfare level is structured in the same way as the tax burden level. The case in which the two variables indicating the level of tax burden and the level of welfare are interpreted as categorical variables rather than ordinal variables is analyzed in the expanded result. In this case, dummy variables were considered for middle and high tax burden and welfare levels, respectively. The main analyses contained only dummies for socioeconomic variables, and robustness checks include different vectors of covariates, as noted in the pre-analysis. The outcomes included time fixed effects corresponding to waves.

Willingness to pay taxes for welfare

To investigate individual norms toward welfare, we employed a dependent variable that directly asked about an individual's WPT for welfare. In general, the higher the taxpayer's level of tax burden, the lower their willingness to pay taxes. Otherwise, tax resistance to higher taxes would

not be explained by the real-world tax increases. However, the results may differ with respect to individual welfare norms.

The estimates are presented in Table 3. In column (1), an independent variable that equals the perception of tax burden and the welfare state at the present level. According to the hypothesis, an increase in the perceived tax burden should decrease the tax morale, whereas as per the trust paradigm, an increase in the perceived welfare state should increase tax morale. The results are consistent with this hypothesis. The coefficient is negative and statistically significant. Column (2) suggests the desired level of welfare. Column (3) presents the results obtained by putting the two category variables together in the regression equation.

We looked at the resulting values when other psychological factors are also controlled. The results in column (4)–(6) are consistent with the results in column (1)–(3). Most importantly, although it shows a negative effect on the current tax burden, it was confirmed that tax ethics also increased when taxes were increased for welfare.

 The respondents believed that they had to pay taxes for welfare even though they believed that the level of tax burden was high compared to the current level of welfare. These results support Hypothesis 3: The higher the norm for welfare, the higher will be the willingness to pay taxes, regardless of the level of tax burden.

This study interpreted the reason as the willingness to increase taxes for welfare expansion. In other words, in case of personal norms toward welfare, taxpayers are willing to fully bear the tax burden (even if it is sometimes an irrational exchange compared to the benefits they receive) for the sake of welfare. If taxpayers have sufficient sympathy for welfare expansion, they are willing to bear the tax burden even if they perceive it to be high.

[Table 3 near here]

Willingness to Pay Taxes about income groups

Unlike the previous section, we analyzed the willingness of all taxpayers to pay taxes, to understand the social norms that people have regarding welfare.

People believe that the rich bear a greater responsibility for welfare than the poor. The higher the income, the more taxes one must pay for welfare. Many welfare policies are designed to benefit low-income people more than they benefit high-income people. However, the government gets most of its funding for such welfare from high-income earners. While rich people may voluntarily and willingly pay taxes for welfare, if they feel that their tax burden is excessive, then such dissatisfaction could lead to potential temptations for tax evasion. Against this backdrop, we analyzed the taxpayers' WPT in reference to their income to test Hypothesis 2.

The results are presented in Table 4. The results for the perception of the current tax burden level are mixed across the income groups. However, all income intervals showed positive results regarding whether people are willing to accept a higher tax burden for their ideal welfare. The results indicate a social norm that people are willing to pay higher taxes for their ideal level of welfare. However, no statistical significance was found for the highest income group of 1 billion won.

In relation to the perceptions of welfare, we can confirm that the higher the current welfare level is considered, the more people in the low-income segment believe that they must pay more taxes for welfare. However, we confirmed that the higher one goes in the high-income segment, the lower one's willingness to voluntarily pay taxes becomes as the more one thinks that the tax burden is high relative to the current welfare level. Particularly, as shown in (9) of Table 4, in the highest income group, the higher the current welfare level is, the more the willingness to voluntarily pay

taxes shows a rather negative effect. These results support Hypothesis 2: High-income earners will be less willing to pay taxes even if they are satisfied with the current level of welfare. The results also show that Hypothesis 1, which was supported by the previous analysis, is not supported by the social norms associated with specific income groups. This result suggests that in the highest income group, even if people enjoy a high level of welfare, they may consider this welfare to be accumulated through their financial sacrifices, and their satisfaction with their current welfare may not necessarily lead to their WPT.

The results confirm that the WPT increases in all income groups except the low-income group for the ideal welfare. Interestingly, in the low-income group, the perception of ideal welfare is not proportional to the WPT.

[Table 4 near here]

Willingness to Pay Taxes

The results of the analysis using regression equation (2) are presented in Table 5. The dependent variable is taxpayers' WPT, and the main independent variables are their perception of the current level of tax burden and welfare status. The predicted results reveal that as the tax burden increases, the WPT decreases, while it increases as taxpayers perceive the level of welfare to be higher. Column (1) in Table 5 shows a negative result value of -.063, thus indicating that the higher the perceived current tax burden, the lower the willingness to voluntarily lower taxes. However, we confirmed that the higher one perceives the current welfare level to be, the stronger one's willingness to voluntarily pay taxes becomes. While it is expected that the higher the perceived level of tax burden, the lower the willingness to lower taxes, the higher the perceived level of welfare, that is, the more the benefits one receives from the government, the higher the voluntary willingness to lower taxes. This result has important policy implications. It makes sense from a

policy perspective as it implies that the government's decision to raise taxes for welfare does not necessarily evoke tax resistance.

Result (2) is based not on the current level of tax burden and welfare, but on one's ideal level of tax burden and welfare. The results reveal interesting results which are opposite to (1) above. While (1) implied that the higher the current level of tax burden is perceived to be, the lower the willingness to pay taxes, (2) confirmed that in the case of the ideal level, a quantity effect appears in relation to the level of tax burden. In other words, people are willing to bear the tax burden for government tax increases for what they consider to be the ideal welfare level. It is positive empirical evidence for Hypothesis 1: The higher the government provides a higher welfare level, the greater the taxpayers' willingness to voluntarily pay taxes. It is positive empirical evidence for Hypothesis 1: taxpayers' WPT will be higher when government provides a higher welfare level. It means that taxpayers do not react passively to the level of government welfare but are able to actively work for their ideal level of welfare.

Result (3) accounts for all variables for the perception of the current level and the desired level in the model, and the results are unchanged compared to (1) and (2). Both results (1)~(3) are statistically significant.

Columns (4)–(6) examine how the result values appear when psychological factors are also controlled for. Psychological factors are important because this study deals with subjective tax and welfare levels, and not objective welfare and tax levels, and other psychological factors such as tax fairness can have a significant impact on taxpayers' intentions to pay taxes. Therefore, we controlled for psychological factors in (4)–(6) and proceeded with the analysis. The results of our analysis confirm that our results are not different from those obtained in (1)–(3), even after controlling for psychological factors.

This result confirms that raising taxes for the sake of welfare does not necessarily evoke tax resistance; in fact, it increases the WPT. However, the higher the current tax burden was perceived to be, the more negative its effect on taxpayers' WPT. Overall, the results in Table 2 support Hypothesis 1 regarding welfare, but the interpretation of the results is mixed in the sense that they indicate that the current level of tax burden may lower taxpayers' WPT even if the government provides a high level of welfare.

[Table 5 near here]

Expanded results - Actual Tax burden

We exploit the actual amount of tax burden information to probe the robustness of the results. A common concern with survey data is social desirability bias (Giaccobasso et al. 2022). Even if individuals have a high desire for welfare, their actual behavior may vary depending on the amount of taxes they actually have to pay for welfare. In the results in Table 2, the level of tax burden and the level of burden for welfare are psychological burden levels, not actual burden levels. Therefore, the main results may vary depending on the omission of variables for actual tax and social security expenditures.

To check whether the results are affected by actual tax expenditures, we proceeded with the analysis by adding as variables the amount of taxes and social security expenditures actually paid. The samples were limited to those who paid taxes due to income and those who cooperated in submitting income certificates for surveys. The percentage of submission of income certificates was 40% in the sample.

The results are shown in Table 6. There is no significant difference in the main results and directions even when controlling for the amount of taxes actually paid and that of social security

expenditures. No statistical attention was paid to the relationship between the actual level of tax burden and the time of voluntary tax payments. It is attributed to the fact that the study covered a short time period of four years, and thus, the fluctuations in the amount of taxes paid were not large.

[Table 6 near here]

Expanded results - Case of Categorical variables

In equation (2), we proceeded with the analysis by assuming that the two variables indicated tax burden level and welfare level are ordinal-type variables. However, if the two variables are interpreted as categorical variables, it is appropriate to define them as categorical dummy variables and include them in the model according to the general approach. Specifically, as the tax burden level has values of 1, 2, and 3, we placed the group that considers the tax burden level to be low in the comparison group and created dummy variables for each of them for analysis. The results are shown in Table 7.

The results suggest support for the main result in relation to the welfare level but the opposite result in relation to the tax burden level. The group that perceived their tax burden to be low demonstrated a higher willingness to pay taxes than the group that perceived their tax burden to be medium and the one that perceived their tax burden to be high. Although the results are less robust than those in Table 5, they provide stronger support for Hypothesis 1 than the main results, which states that the taxpayers' WPT increases as the government provides a higher level of welfare. It is because taxpayers manifest a WPT even though they perceive the current level of tax burden to be high.

[Table 7 near here]

Conclusion

This study investigates the relationship between taxpayers' desire for welfare and their willingness to pay taxes. Using the Korean panel data from 2018 to 2021, we empirically examine whether an increase in the demand for welfare leads to an increase in the WPT at a higher rate than the current tax rate. The results suggest that the taxpayers' tax burden does not necessarily lead to tax resistance. Rather, taxpayers are less likely to reject a tax rate hike than expected if it satisfies their desired level of welfare. Specifically, they are less WPT if their tax burden is higher than their current welfare level but are willing to pay even higher income taxes for an ideal welfare level.

The study also investigates social and individual norms regarding welfare. For the very high-income group, a high current welfare level is not necessarily interpreted as a WPT. Rather, the higher the current welfare level, the more it is perceived as being at their expense, thus resulting in a lower WPT. However, in the case of individual norms toward welfare, the WPT is rather high, even when the tax burden rate is higher than the current welfare level.

The results of this study can be applied to other countries with low welfare levels, such as the United States and Japan, which are also transitioning towards welfare states due to their aging populations. The study's focus on citizens' reactions to tax burdens in such a trend is of global importance.

Overall, this empirical evidence suggests that government tax increases on welfare do not necessarily lead to taxpayers' tax resistance. Thus, it is crucial for the government to actively empathize with the taxpayers' needs for welfare. If the public is sufficiently sympathetic to welfare, a positive taxpayer reaction can be expected in response to tax increases. However, it cannot be concluded that such efforts will necessarily increase taxpayers' willingness to pay for the highest

income bracket, which necessitates the development of selective public relations strategies for each income bracket.

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Table 1: Willingness to pay taxes (WPT)

WPT	Frequency	Percent (%)
1	23,511	64.98
2	11,196	30.95
3	1,332	3.68
4	108	0.30
5	33	0.09
SUM	36,180	100

1=Very low WPT level; "WPT level" <-1, people probably do not want to pay taxes because they want a lower tax rate.

2=Low WPT level; "WPT level" = -1

3=Fair WPT level; "WPT level" = 0, people think that the current income tax rate is fair.

4 = High WPT level; "WPT level" = +1,

5 = Very high WPT level; "WPT level" > +1, people think that the current tax rate is low and would voluntarily pay higher taxes if given the opportunity.

Table 2: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Willingness to pay taxes for welfare	36178	1.396	.584	1	5
Willingness to pay taxes	45570	2.75	1.75	1	5
Present tax burden t	36176	1.959	.573	1	3
Present welfare burden	36176	1.939	.628	1	3
Ideal tax burden	36177	1.875	.51	1	3
Ideal welfare burden	36177	2.386	.559	1	3
Vertical tax fairness	36178	3.388	.696	1	5
Exchange tax fairness	36178	2.61	.8	1	5
Horizontal tax fairness	36178	3.38	.646	1	5
Perception of income inequality	36178	4.162	.677	1	5
Prospect of income inequality	36178	4.238	.689	1	5
Ln(Household income)	57265	8.504	.798	3.401	12.997
Edu (High school)	58132	.292	.455	0	1
Edu (Undergraduate)	58132	.409	.492	0	1
Gender	58132	.48	.5	0	1
Marriage	56003	.868	.338	0	1

Table 3: Willingness to pay taxes for welfare

	(1)	(2)	(3)	(4)	(5)	(6)
Perception of tax burden						
Present level	.079***		.044**	.088***		.053***
	(.019)		(.019)	(.019)		(.019)
Desirable level		.202***	.187***		.195***	.178***
		(.021)	(.022)		(.021)	(.022)
Perception of welfare state						
Present level	.082***		.062***	.076***		.056***
	(.017)		(.017)	(.017)		(.017)
Desirable level		.088***	.079***		.091***	.083***
		(.019)	(.02)		(.019)	(.02)
Observations	25271	25271	25271	25271	25271	25271
Social economic controls	√	√	√	√	√	√
Psychological factors				√	√	√
Year & Region	√	√	√	√	√	√

Notes: *** p<.01, ** p<.05, * p<.1

Table 4: Willingness to pay taxes about income group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	10million	30million	50million	70million	100million	200million	300million	500million	1000million
Perception of tax burden									
Present level	.224***	.12***	.021	-.076***	-.04**	-.052***	.001	-.042***	-.015
	(.018)	(.016)	(.019)	(.025)	(.018)	(.015)	(.014)	(.016)	(.015)
Desirable level	.22***	.217***	.127***	.145***	.058***	.06***	.087***	.035**	.018
	(.02)	(.018)	(.021)	(.027)	(.019)	(.017)	(.016)	(.017)	(.017)
Perception of welfare state									
Present level	.103***	.088***	.043**	.033	.033**	.003	.005	.007	-.039***

	(.016)	(.015)	(.017)	(.022)	(.016)	(.014)	(.013)	(.014)	(.013)
Desirable level	-.001	.021	.096***	.196***	.159***	.139***	.133***	.104***	.126***
	(.018)	(.016)	(.019)	(.025)	(.018)	(.016)	(.015)	(.016)	(.015)
Observations	33913	33913	33913	33913	33913	33913	33913	33913	33913
Social economic controls	√	√	√	√	√	√	√	√	√
Psychological factors	√	√	√	√	√	√	√	√	√
Year & Region	√	√	√	√	√	√	√	√	√

Notes: *** p<.01, ** p<.05, * p<.1

Table 5: Main results

	(1)	(2)	(3)	(4)	(5)	(6)
Perception of tax burden						
Present level	-.063***		-.136***	-.045***		-.116***
	(.015)		(.016)	(.016)		(.016)
Desirable level		.353***	.382***		.343***	.366***
		(.018)	(.018)		(.018)	(.018)
Perception of welfare state						
Present level	.094***		.064***	.093***		.065***
	(.014)		(.015)	(.014)		(.014)
Desirable level		.085***	.074***		.085***	.074***
		(.016)	(.016)		(.016)	(.016)
Observations	33913	33914	33913	33913	33914	33913
Social economic controls	√	√	√	√	√	√
Psychological factors				√	√	√
Year*Region	√	√	√	√	√	√

Notes: *** p<.01, ** p<.05, * p<.1

Table 6: Expanded results

	(1)	(2)	(3)	(4)	(5)	(6)
Perception of tax burden						
Present level	-.125***		-.175***	-.11***		-.159***
	(.031)		(.031)	(.031)		(.031)
Desirable level		.409***	.436***		.384***	.409***
		(.037)	(.037)		(.037)	(.037)
Perception of welfare state						
Present level	.079***		.051*	.075***		.049*
	(.028)		(.029)	(.028)		(.028)
Desirable level		.169***	.158***		.164***	.153***
		(.033)	(.033)		(.033)	(.033)
Actual tax burden						
ln(Amount of tax)	-.015	-.021	-.018	.006	.001	.002
	(.014)	(.014)	(.014)	(.014)	(.014)	(.014)
ln(Social security tax)	.027	.025	.027	.03	.029	.029
	(.034)	(.034)	(.034)	(.034)	(.034)	(.034)
Observations	7674	7674	7674	7674	7674	7674

Social economic controls	√	√	√	√	√	√
Psychological factors				√	√	√
Year&Region	√	√	√	√	√	√

Notes: *** p<.01, ** p<.05, * p<.1

Table 7: Categorical variable results

	(1)	(2)	(3)	(4)	(5)	(6)
Present tax burden level						
Middle	.09***		.053*	.102***		.064**
	(.029)		(.03)	(.029)		(.03)
High	.158***		.083**	.175***		.102***
	(.037)		(.038)	(.038)		(.038)
Present welfare level						
Middle	.059**		.034	.045*		.021
	(.027)		(.027)	(.027)		(.027)
High	.166***		.128***	.155***		.116***
	(.034)		(.034)	(.034)		(.034)
Desirable tax burden level						
Middle		.162***	.148***		.162***	.146***
		(.028)	(.029)		(.028)	(.029)

High		.431***	.402***		.413***	.38***
		(.044)	(.045)		(.044)	(.045)
Desirable welfare level						
Middle		.131**	.117**		.131**	.122**
		(.057)	(.058)		(.057)	(.058)
High		.205***	.184***		.21***	.194***
		(.058)	(.059)		(.058)	(.059)
Observations	25,271	25,271	25,271	25,271	25,271	25,271
Social economic controls	√	√	√	√	√	√
Psychological factors				√	√	√
Year&region	√	√	√	√	√	√

Notes: *** p<.01, ** p<.05, * p<.1

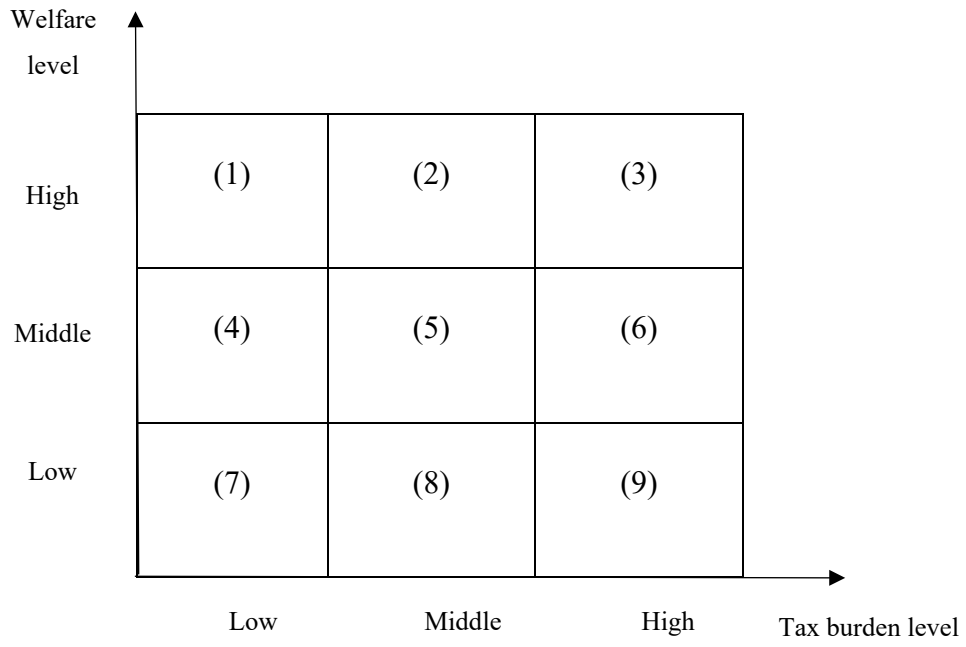| Personal pre-tax income (Unit: won)	Appropriate income tax ratio to total pre-tax Iincome (%)							
	(1) 0	(2) 1~10	(3) 11~20	(4) 21~30	(5) 31~40	(6) 41~50	(7) 51~60	(8) Upper 60
1) 10million								
2) 30 million								
3) 50 million								
4) 70 million								
5) 100 million								
6) 200 million								
7) 300 million								
8) 500 million								
9) 1000 million								

FIGURE 1. APPROPRIATE TAX RATE BY EACH INCOME

FIGURE 2. WELFARE AND TAX BURDEN