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Abstract

This paper explores how a perceived tax burden is influenced by the degree that neighbors prefer income redistribution. Further, this paper investigates how the influence of neighbors is affected by the degree of interaction between neighbors. For these purposes, individual-level data and place of residence data were combined. After controlling for individual characteristics, I obtained the following key findings: people are more likely to perceive the amount of tax as low when neighbors are more likely to support redistribution policies. Further, this neighbor effect increases when community participation rates are high. This tendency is clearly observed in high-income groups but not in low-income groups. This implies that the norm for redistribution leads rich people to consider the tax burden as low. Further, the effect of the norm increases when there is a greater accumulation of social capital within a residential area. That is, one's perceived tax burden is influenced by psychological externalities.

JEL classification: D30; D63; H29; Z13
Keywords: Perceived tax; Norm; Redistribution; Social capital; Externality.

1. Introduction

A critical issue for policy-makers is how to deter tax evasion. Income redistribution through tax collection increases the welfare of the poor, while decreasing that of the wealthy. The wealthy are liable to pay tax that finances public spending. Inevitably, the wealthy have a greater incentive to evade tax than the poor, reducing public spending. In addition, "a preference for public spending increases to be funded for additional taxes for which they were not liable. Consistently, there is evidence of greater demand for public spending if this is financed out of taxes paid by others" (Gemmell et al., 2003, 811). Therefore, the poor, who are less likely to be liable for tax payments, support increases in public spending via tax burdens on the wealthy. From this we can derive an inference that rich people perceive a greater tax burden if they act in their own self-interest.

In addition to self-interest, the role played by social values is considered to be a key factor in the realization of a welfare state and enhancing redistributive policy (e.g., Gordon 1989; Luttmer 2001; Klor and Shayo, 2010).[2] For instance, a redistributive policy's effectiveness seems to depend on religion (Chang 2010) and culture (Luttmer and Singhal 2011). Preference for redistribution can be analyzed from the viewpoint of fairness (e.g., Galasso 2003; Alesina and Angeletos 2005; Tyran and Sausgruber 2006; Rainer and Siedler 2008; Luttens and Valfort 2011). Altruism can give rich people an incentive to redistribute their wealth to poorer people (Fehr and Schmidt 1999; Fong 2001). This seems to reduce the perceived tax burden for rich people. In this case, rich people do not perceive tax as high even when they are liable for progressive tax. Norms possibly lead people to behave altruistically even when they are actually selfish (Becker 1996). A number of workplaces took into account the role of norms to analyze individuals' behavior concerning tax (e.g., Alm et al., 1999; Wenzel 2004; 2005 a; 2005b; Balestrino 2010; Cullis et al., 2012). It seems plausible that the norm for redistribution is formed within a community when community members prefer income redistribution. On the assumption that the psychological cost to deviate from 'proper behavior' or

[2] Trust, a key social value, is observed to be important when tax systems are considered. Generalized trust leads people to pay tax (Scholz and Lubell 1998). Further, trust in institutions such as government, the legal system, public officials and politics is thought to be important to establish tax morale and deter tax evasion (Scholz and Pinney 1995; Torgler 2003; Hammar et al., 2009), and such trust induces people to prefer the welfare state (Algan et al., 2012). Hence, the size of the welfare state is determined in part by social trust (Bergh and Bjørnskov, 2011).

'proper perception' is sufficiently high, the norm for redistribution leads rich people to perceive their tax burden as low even if individuals' act in their own self-interest.

In addition to that norm, it has been recently found that people are likely to prefer redistribution policies in areas where social capital is sufficiently accumulated through frequent contact among neighbors (Yamamura 2012). This suggests that an externality via neighboring poor people increases social pressure on rich people, which leads rich people to prefer redistribution.[3] However, the degree of such an externality and social pressure seems to depend on the norm. Assuming that neighbors do not prefer redistribution, rich people are unlikely to be an object of envy even if there are close interpersonal relations between neighbors. There is another possibility that neighbors' preferences for redistribution are less likely to result in a psychological cost for rich people if community members do not have contact with each other. If these hold true, the relation between the norm for redistribution and community participation is considered to be complementary. From this I infer that the effect of the norm regarding perceptions about tax seems to depend on social capital, which is regarded as the strength of personal networks within a community (Putnam, 2000).[4] However, previous research ascertaining the determinants of perceptions about tax did not consider the effect of norms and social capital (Cuccia and Carnes 2001; Gemmel et al., 2003; 2004; Feld and Larsen 2012). The aim of this paper is to assess the effect of norms on perceptions of tax for rich people and then how the interactions between norms and social capital influence that perception.

To this end, this paper attempts to compare the effect of the norm for the redistribution on the perceived tax burden between poor and rich groups using Japanese General Social Surveys (JGSS), which includes more than 10,000 observations. I found that people are more inclined to perceive tax as low in areas where residents are more likely to prefer redistribution policies. The effect of residents is greater when neighbors are actively involved in community activities. These tendencies were observed only for people from high-income groups and not for people in low-income groups.

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[3] An individual's life satisfaction is influenced by the characteristics of their neighbors (Shields et al. 2008). Neighbors with higher education levels enhance university participation for middle class students, resulting in human capital accumulation (Foley 2012).

[4] Social capital influences not only individuals' perceptions but also their productivity. For instance, social capital and neighbors' characteristics are found to be key determinants regarding the earnings of microfinance borrowers (Gomez and Santor 2001).

The remainder of this paper is organized as follows. In Section 2, the testable hypotheses are presented. Section 3 provides an explanation regarding data and the empirical method used. Section 4 presents the estimation results and their interpretation. The final section offers some conclusions.

2. Hypotheses

According to Becker (1996), norms are defined as "those common values of a group which influence an individual's behavior through being internalized as preferences" (Becker 1996, 225). Norms play an important role in deterring opportunistic behavior such as tax evasion. The reason is that "if a person does not free-ride at the expense of others when that is advantageous to him, it may be because norms against the behavior lower the utility from the free-riding" (Becker 1996, 225). Social interaction is defined in terms of a consumption externality or as the utility function of a person to include the reactions of others in his/her actions (Becker 1974). Social interaction induces people to obey the norm. That is, "the enforcement of norms typically depends on negative reactions by peers toward individuals who deviate from 'proper' behavior" (Becker 1996, 229).[5] Take an example of punishment for violating a norm, those who act against the norm suffer social ostracism. That is, there is a psychological cost to violating a norm that defines 'proper' behavior'.

The influence of a norm on individuals' utility differs according to the income group the individuals belong to (Becker 1996, Chapter 11). Income tax is progressive in Japan and so the rate of tax for rich people is higher than poor people. That is, for rich people, the benefit of public goods is more likely to be smaller than their tax burden. However, rich people can be sufficiently compensated for any reduction in utility when they pay tax because of the incorporation of the norm for redistribution in their preferences. Therefore, even for rich people, a tax burden is considered relatively low when there is a norm that people should support redistribution. Accordingly, I advance *Hypothesis 1*:

Hypothesis 1
The norm for redistribution leads rich people to perceive the tax burden as low.

[5] An experimental analysis found that the "minority of fair-minded players can force a big majority of selfish players to cooperate fully in the public goods game with punishment" (Fehr and Schmidt 1999, 856).

The effect of the norm seems to depend on the degree of social interaction. Further, the more people integrated into social relations, the greater the influence of the social interaction. This is because various benefits come from these relationships rather than market transactions. Once people are excluded from a strong relationship (such as interpersonal network formed in community), they lose the long-term benefit of the network (Hayami 2001). Rich people therefore agree to obey the norm in return for a sufficiently large long-term benefit from the community network. Frequency of contact with neighbors is considered as a type of social capital (Putnam, 2000) and seems to reflect the degree of integration into the social relation. Hence, the cost to violate the norm is greater for residents in areas with a greater accumulation of social capital. In other words, peer 'pressure' lowers rich people's marginal disutility to absorb the norm and therefore to pay progressive tax. This leads me to propose *Hypothesis 2:*

Hypothesis 2
The effect of the norm for redistribution on the perceptions of rich people is greater when they live in an area where residents are more likely to interact with each other.

3. Data and Methods

3.1. Data

In this paper, I used JGSS data, which are individual-level data.[6] In JGSS surveys, a two-stage stratified sampling method is used. The surveys have been conducted in Japan since 2000. In this paper, the dataset covered 2000, 2001, 2002, 2003, 2005, 2006, and 2008.[7] JGSS was designed as a Japanese counterpart to the General Social Survey (GSS) from the United States. To this end, JGSS asks standard questions regarding individuals' characteristics via face-to-face interviews. The data includes information about perceived income tax burden, opinions regarding income redistribution policies, marital and demographic (age and gender)

[6]Data for this secondary analysis, "Japanese General Social Surveys (JGSS), Ichiro Tanioka," was provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, the University of Tokyo.
[7]Surveys were not conducted in 2004 and 2007. Surveys were conducted in 2009 and 2010 but the data is not available.

status, annual household income,[8] years of schooling, prefecture of residence, and prefecture of residence at 15 years old. A Japanese prefecture is the equivalent to a state in the United States or a province in Canada. There are 47 prefectures in Japan, and the average values for the variables included in the JGSS can be calculated for each prefecture. These average values reflect the characteristics of each prefecture.

Data were collected from 22,796 adults, aged between 20 and 89 years. Respondents did not answer all of the survey questions; therefore, data regarding some variables are not available, and the number of samples used in the regression estimations is reduced to 7,794. In comparison with international data, the use of JGSS data in this paper has the advantage that "within country analysis is much less likely to be subject to measurement error due to changes in institutional structures of redistributive policies" (Alesina and Giuliano 2009, 22).

The variables used in the regression estimations are shown in Table 1, which provides definitions, means, standard deviations, maximum values, and minimum values. The key dependent variable is *TAX* (index of the perceived income tax burden). The JGSS asked the following question: "Do you think the amount of income tax you have to pay is high?" There were five response options: "1 (too low)", "2 (somewhat low)", "3 (about right)" "4 (somewhat high)", and "5 (too high)". *TAX* is the response options chosen by the respondents. The distribution of *TAX* is shown in Figure 1—it shows that most people considered tax as "somewhat high" or "too high".

The regional characteristics used in this paper are *SC, NORM*, and *AVINCOM.* The utility of people is considered to be influenced not only by one's own income but also by the income level of neighbors (e.g., Clark and Oswald, 1996; Neumark and Postlewaite, 1998; McBride, 2001; Stutzer 2004). In other words, not only absolute income but also relative income is considered related to an individual's utility and, therefore, perceptions. This paper controls for both individual-level household income and average household income within residential prefectures to capture the relative income effect. For this purpose, in addition to respondents' household incomes, the income level of residential areas are taken into account. I used JGSS data to calculate the average household income within a prefecture (*AVINCOM*).

[8]In the original dataset, annual earnings were grouped into 19 categories, and it was assumed that everyone in each category earned the midpoint value. For the top category of "23 million yen and above," I assumed that everybody earned 23 million yen. Of the 7,794 observations used in the regression estimations, there were only 98 observations in this category. Therefore, the problem of top-coding should not be an issue here.

With respect to individual characteristics, *INCOME, AGE, MARRY, SCHOOL, UNEMP, MALE, PROG_2, PROG3, PROG_4* and *PROG_5* are used. Data for these variables can be obtained from the JGSS. The proxy for individuals' political ideology is constructed, based on responses to the JGSS question, "Where would you place your political views on a five-point scale?" There are five response options: "1 (conservative)" to "5 (progressive)". The placement of political views is captured by dummies: PROG_5 takes the value of 1 when the response is "5", otherwise 0. PROG_1, PROG_2, PROG_3, and PROG_4 are defined in a similar manner.

3.2. Definitions of social norm and social capital

Previous research has distinguished personal norms and social norms and scrutinized their effects when perceptions and attitudes regarding tax were analyzed (Wenzel, 2004; 2005a). However, in these studies social norms were measured in terms of individual perceptions regarding the social norm, based on the following questions: "Do MOST PEOPLE think they should honestly declare cash earnings on their tax return?" and "Do MOST PEOPLE think working for cash-in-hand payments without paying tax is a trivial offence?" (Wenzel, 2004, 220). This index is considered as a subjective evaluation rather than objective one. Hence, this measure of social norms is regarded as an endogenous variable. Endogeneity bias seems to occur when tax perception is a dependent variable and the measure of social norms is included as an independent variable. To avoid this problem, in this paper, the social norm is measured as the average rate of those who prefer redistribution policies within the area that the respondent resides. The JGSS included a question concerning preferences for redistribution: "It is the responsibility of the government to reduce the differences in income between families with high incomes and those with low incomes." There were five response options, ranging from "1 (strongly disagree)" to "5 (strongly agree)". In this paper, the average value of the responses within a residential prefecture is defined as the norm for redistribution shared by neighbors.

In this research, and in line with Putnam (2000), the degree of participation in community activities is defined as social capital.[9] The influence of neighbors is considered to be greater when people participate in community activities. That is,

[9] Social capital is defined as the features of a social organization such as networks and norms, as well as social trust facilitating coordination and cooperation (Putnam 2000). Hence, social capital can be interpreted in various ways, thereby causing ambiguity and criticism regarding its measurement and definition (e.g., Paldam 2000; Sobel 2002; Durlauf 2002; Bjørnskov 2006).

the effect of the norm on the perception of individuals is greater when they live in areas with higher levels of community involvement. In 1996, the Japan Broadcasting Corporation conducted a survey on the consciousness and behaviors of prefecture residents (Japan Broadcasting Corporation 1997). This survey included a question about the degree of community activity involvement: "Do you actively participate in community activities?" Respondents could choose one of three responses: "yes", "unsure", or "no". I calculated the rates for those who answered "yes" within a prefecture, and used this value as a measure of social capital. I also assumed that the rate of participation in community activities was stable over time. As mentioned earlier, there are 47 prefectures, and I obtained a proxy for each prefecture.

In this paper, as an objective category, high-income earners are defined as those with a household income higher than 6 million yen. The remainder of the residents are defined as low-income earners. However, as demonstrated in Figure 2, the shape of distribution of household income is not clearly divided at 6 million yen. Inevitably, this category is arbitrarily determined. To put it differently, those who belong to the 5 million yen group can also be considered as high-income earners although the category of this paper defined them as low-income earners. It is difficult to clearly divide respondents into two groups because "middle-income earners" can be considered to belong not only to the high-income group but also to the low-income group. To reduce any ambiguity regarding categorization, and following Derin-Güre and Uler (2010), an alternative category of income groups is suggested. The JGSS asked: "Compared with Japanese families in general, what would you say about your family income?" There were five response options: "Far below average", "Below average", "Average", "Above average" and "Far above average". Figure 3 demonstrates that the share of the "average" group is greatest and that there is now a clearer difference between high- and low-income groups than in Figure 2. In addition to the objective category, an alternative subjective category is made based on the responses to the question. In the subjective category, those who belong to the high-(low)income group are defined as those who considered themselves above (below) or far above (below) average income earners. In the alternative measure, those responded "average" are excluded from the sample.

Table 2 shows the comparison of key variables between high-income and low-income groups, which is based on the objective category. *TAX* for the high-income group is 0.05 points higher than that of the low-income group. Further, it is statistically different at the 1 percent level. This implies that, in comparison with

people with low-income, people with high-income perceive income tax as higher. Values for *NORM* and *SC* for the high-income group are lower than the low-income group and statistically significant at the 1 percent level. This can be interpreted as stating that people belonging to the high-income group are less likely to live in areas where neighbors prefer income redistribution and actively participate in community events. The higher *TAX* is, the lower *NORM* and *SC* are. All in all, Table 2 suggests *NORM* and *SC* are negatively associated with *TAX*.

3.3. Econometric Framework and Estimation Strategy

In Figures 4(a), 4(b), and 4(c), the vertical axis shows the average *TAX* within a prefecture. The horizontal line shows *NORM* in each prefecture. Figure 4(a) shows the relationship between *TAX* and *NORM*, based on the whole sample. The relationship for the low-income group is demonstrated in Figure 4(b), while the relationship for the high-income group is shown in Figure 4(c). A cursory examination of Figure 4(a) shows that *TAX* is not obviously associated with *NORM*. For the low-income group, as in Figure 4(b), *TAX* is positively associated with *NORM*. In contrast, for the high-income group, as shown in Figure 4(c), *TAX* is negatively associated with *NORM*. This is consistent with *Hypothesis 1.* However, this relationship is observed when other factors are not controlled for. Hence, a more precise examination of the relationship is required via regression analysis using individual-level data matched with characteristics from residential areas.

For the purpose of examining the hypotheses previously proposed, the estimated function of the baseline model takes the following form:

$$TAX_{im} = \alpha_0 + \alpha_1 NORM_m * SC_m + \alpha_2 NORM_m + \alpha_3 SC_m + \alpha_4 AVINCOM_m + \alpha_5 INCOM_{im} + \alpha_6 AGE_{im} + \alpha_7 MARRY_{im} + \alpha_8 SCHOOL_{im} + \alpha_9 UNEMP_{im} + \alpha_{10} MALE_{im} + \alpha_{11} PROG\_2_{im} + \alpha_{12} PROG\_3_{im} + \alpha_{13} PROG\_4_{im} + \alpha_{14} PROG\_5_{im} + u_{im},$$

where TAZ_{im} represents the dependent variable in individual i and prefecture m. Regression parameters are represented by α. As explained earlier, values for TAZ_{im} range from 1 (too low) to 5 (too high). In this case, a multinomial response is an ordered response. Hence, the ordered probit model is appropriate to conduct the estimations (Greene 2008, 831–835). The error term is represented by u_{im}. It is reasonable to assume that the observations may be spatially correlated within a prefecture, as the preference of one agent may well relate to the preference of another in the same prefecture. To consider such spatial correlation in line with this

assumption, I used the Stata cluster command and calculated z-statistics using robust standard errors. The advantage of this approach is that the magnitude of the spatial correlation can be unique to each prefecture.

As explained earlier, in prior research, social norms have been measured looking at individuals' evaluations of social situations (Wenzel, 2004; 2005a). Therefore, endogeneity bias can occur because such a measure is endogenously determined. To alleviate this bias, the rate of those who support redistribution policies is used as a social norm in this paper. From *Hypothesis 1*, *NORM* is anticipated to take the negative sign when a sample of rich people is used. Furthermore, it seems plausible that people who are content with life and economic conditions are more likely to have contact with their neighbors. If this holds true, those who are content and perceive tax as low are more inclined to have contact with neighbors. Hence, the causality between socialization and the perceived tax burden is ambiguous. To alleviate this bias, in this paper, I examine the effect of social capital formed in residential areas rather than an individual's socialization. From *Hypothesis 2, NORM***SC* is predicted to take the negative sign.

AVINCOM is included to control for relative income within a prefecture. As suggested by Luttmer (2005), increases in average income within a locality lead to reductions in residents' welfare. Accordingly, people feel unhappier when the average income increases. People are thought to perceive tax as high. In this paper, for poor people, *AVINCOM* is expected to take the positive sign. However, an increase in *AVINCOM* appears to lead people to expect that they can earn more. If this is so, the sign for *AVINCOM* becomes negative.

Following previous research concerning redistribution (e.g., Ravallian and Lokshin, 2000; Corneo and and Gruüner, 2002; Ohtake and Tomioka 2004; Alesina and La Ferrara 2005; Rainer and Seidler, 2008; Alesina and Giuliano 2009; Yamamura 2012), *INCOME, AGE, MARRY, SCHOOL, UNEMP*, and *MALE* are incorporated as independent variables to control for individual characteristics. Political ideology plausibly influences preferences for redistribution. It is important to control for this ideology when preferences for income redistribution are estimated (Bernasconi 2006; Alesina Giuliano 2009). Hence, perceptions about tax burdens seem to be influenced by political ideology. This is captured by *PROG_2–PROG_5*, with *PROG_1* (conservative view), as reference groups.

4. Estimation Results

Tables 3(a), (b), 4(a), and (b) present the estimation results of the ordered probit model. The results of the baseline model, which does not include the interaction term between *NORM* and *SC*, are reported in Tables 3(a) and (b). Tables 4(a) and (b) show the results when the interaction term between *NORM* and *SC* is included. In each table, the estimation results, based on a sample containing rich and poor respondents, are shown in columns (1) and (4) of Tables 3(a) and 4(a). For the purpose of comparing factors determining *TAX* between high-income and low-income groups, the sample is divided into high-income and low-income groups. The results for the high-income group are presented in columns (2) and (5) of Tables 3(a) and 4(a) and in columns (1) and (3) of Tables 3(b) and 4(b). The results for the low-income group are presented in columns (3) and (6) of Tables 3(a) and 4(a) and in columns (2) and (4) of Tables 3(b) and 4(b).

As pointed out by Luttmer (2005), there is "the possibility that cross-section results are driven by selection of people who are happier by nature into areas that are relatively poor…One might worry that movers may have had something unobserved happen to them" (Luttmer 2005, 977). This unobserved factor can cause estimation bias. The JGSS provided data regarding not only current residential prefectures but also the residential prefectures of respondents at 15 years of age. If the current residential prefecture is not the same as the prefecture at 15 years old, respondents are considered to be "movers". To alleviate this bias, following Luttmer (2005) and Yamamura (2012), I also conducted estimations by excluding all respondents who had moved to a different prefecture. These results are exhibited in columns (4)–(6) of Tables 3(a) and 4(a), and in columns (3) and (4) in Tables 3(b) and 4(b).

I see from Table 3(a) that the signs for *NORM* have the expected negative sign for results based on the whole sample and the high-income group sample. Furthermore, as presented in columns (2) and (5), it is statistically significant at the 1 percent level for high-income group. In contrast, in columns (3) and (6), the sign of *NORM* is positive although not statistically significant for the low-income group. The coefficients exhibited in Table 3(a) cannot be interpreted as marginal effects and it is difficult to interpret them in the ordered probit model. Hence, to determine economic significance, I see a marginal effect of *NORM*. The values for *TAX* range between 1 and 5 and so the marginal effect of *NORM* varies according to values of *TAX*[10] (Greene 2008, 831–835). In the third line from bottom, Tables 3(a) and (b)

[10] The marginal effects of *NORM* can be calculated for each value of *TAX*; that is, the marginal effect of *NORM* on the probability that *TAX* is 5, the marginal effect of *NORM*

show the marginal effect of *NORM* on the probability that the value of *TAX* is 5 (perceive tax burden as being "too high"). In columns (2) and (4), the absolute values of the marginal effect of *NORM* are 0.40 and 0.42, respectively. Further, they are statistically significant at the 1 percent level. This can be interpreted as a 1 percent increase in those who support redistribution policies within a residential area leads to a 0.40 percent decrease in the probability that high-income people perceive their tax burden as "too high". These results are in line with *Hypothesis 1*.

Concerning *AVINCOM*, the higher their neighbors' income, the less satisfied people become. If their neighbors have high levels of income, then people perceive tax as high. In contrast, poor people expect that they can earn more if their neighbors have higher levels of income. Hence, people perceive the tax as low. The former effect is neutralized by the latter, and so *AVINCOM* is not statistically significant for whole sample and the low-income group sample. For the high-income group, *AVINCOM* has the negative sign and is statistically significant at the 1 percent level. The reason seems to be that the latter effect is distinctly greater than the former.

As for individual characteristics reported in Table 3(a), the sign for *INCOME* is positive for whole sample and the high-income group sample, whereas it is negative for the low-income group sample. With the exception of column (3), it is statistically significant. This is consistent with the assumption that high-income people are more inclined to perceive the tax burden as high as income tax is progressive. A significant negative sign for *SCHOOL* is observed in all estimations. It is statistically significant for whole sample and the low-income group sample. People with higher education are more likely to expect higher future earnings even if they are currently poor. The income tax burden for the low-income group is smaller than the high-income group when income tax is progressive. Hence, the results for *SCHOOL* can be interpreted as suggesting that there is high probability that higher educated poor people will become rich in the future, and therefore poor people will perceive the tax burden as low. *PROG_3, PROG_4* and *PROG_5* have the positive sign and are statistically significant in all estimations. In my interpretation, these results imply that more progressive people are less likely to trust the government and so feel that tax is not effectively used. As a consequence, the tax burden is perceived to be higher than the benefit from tax, leading progressive people to

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on the probability that *TAX* is 4, the marginal effect of *NORM* on the probability that *TAX* is 3, the marginal effect of *NORM* on the probability that *TAX* is 2, and the marginal effect of *NORM* on the probability that *TAX* is 1.

perceive tax as high. However, the assumption that progressive people are less likely to the trust government is open to discussion. A closer examination of this assumption is beyond the scope of this paper and so should be explored in future research.

Results reported in Table 3(b) are similar to those in Table 3(a). This leads me argue that those who consider themselves as high-income earners are more likely to perceive their tax as low if neighbors are more likely to prefer redistribution when the alternative subjective category regarding high-income people is used. Therefore, *Hypothesis 1* is strongly supported.

Turning now to Table 4 (a), I focus on *NORM*SC*, which is the key variable to test *Hypothesis 2* because the results of the other control variables are similar to those exhibited in Table 3(a). As exhibited in columns (1), (2), (4) and (5), *NORM*SC* yields the negative sign for all samples and the high-income sample. Further, for the high-income sample, it is statistically significant. In contrast, *NORM*SC* produces the positive sign for the low-income sample although it is not statistically significant. That is, the effect of *NORM* becomes greater when there is a greater accumulation of social capital within a residential area through participation in community activities. Furthermore, as presented in columns (2) and (5), the marginal effect of *SC* takes the negative sign and is statistically significant and its absolute values are 0.31 and 0.38. This suggests that a 1 percentage point increase in the rate that neighbors participate in community activities leads to a 0.31–0.38 percentage point decrease regarding the perception of high-income people that their tax burden is "too high". This is consistent with Yamamura (2012), who found that social capital leads rich people to prefer redistribution policies. The results of Table 4(b), based on an alternative category regarding high- and low-income groups, are almost identical to those of Table 4(a). Considering Tables 4(a) and (b) together leads me to assert that the effect of *NORM* for rich people is strengthen by *SC* and so Hypothesis 2 is strongly supported.

To sum the various estimated results presented thus far, I conclude, as a whole, that the estimation results examined in this section are consistent with *Hypotheses 1* and *2*, and hence support them reasonably well. The above findings imply that the norm for redistribution within a residential area leads rich people to agree with higher tax rates even if income tax is progressive. Further, that effect of the norm is strengthened by social capital formed by neighbors. This is congruent with findings from the United States, where rich people are more likely to increase charitable contributions for inequality reduction than poor people (Derin-Güre and Uler 2010).

These results imply that, for rich people, there are negative externalities caused by neighbors when rich people act against the norm. In contrast, poor people's perceptions about income tax are unlikely to depend on the norm.

5. Conclusions

Income tax in Japan is progressive: the higher the income, the greater the tax. That is, the net benefit from tax is smaller for the wealthy than the poor. It seems appropriate that the wealthy are likely to perceive the tax as high if their perceptions about tax burdens are determined by self-interest. In this paper, I suggest another possibility: the norm for redistribution leads the wealthy to perceive their tax burden as low even if the individual is not altruistic and acts in their own self-interest. However, to date no empirical research has attempted to examine this possibility.

This paper explores how the perceived tax burden is influenced by the degree that neighbors prefer income redistribution. Further, this paper investigates how the influence of neighbors is affected by social capital measured as the degree of neighbors' involvement in community activities; individual-level data and place of residence data were combined to determine this effect. After controlling for individual characteristics, I obtained the following key findings: the norm for redistribution leads rich people to consider the tax burden as low. Further, the effect of the norm increases when there is a greater accumulation of social capital within a residential area. That is, one's perceived burden of tax is influenced by psychological externalities through interactions in the community. Existing research suggests that rich people are more likely to prefer income redistribution in areas where there are higher rates of community participation (Yamamura 2012). However, psychological externalities vary according to the type of norms within a community. That is, in the condition that neighbors are unlikely to prefer redistribution, the psychological cost to rich people to oppose redistribution is small. The findings of this paper imply that the norm plays a central role in affecting perceptions regarding tax burdens. The effects of the norm within a community decrease when relationships within the community are weak, even though neighbors prefer redistribution. This is in line with the argument in Baron (2010) that socio-economic distance influences the degree of enforcement of altruistic moral preferences.

This paper used survey data and hence the cost of giving a response is very low.

Accordingly, survey responses can be considered as “expressive”. According to the expressing voter hypothesis, individuals vote because they are expressing their opinions regarding particular issues, and not because they expect to alter the outcomes of the election (e.g., Tullock, 1971; Copeland and Laband, 2002; Sobel and Wagner, 2004). The results of this paper can be interpreted as suggesting that “pleasing others has a basis in wishing to be liked or popular, which can be achieved by expressively signaling conformity with group-defined norms” (Hillman, 2010, 404). It is difficult to identify the reasons behind the results of this paper. Hence, experimental analysis should be conducted to determine whether the results can be explain by expressive behavior or psychological externalities.

The effect of the residential area characteristics seems to differ according to individual characteristics. That is, even if individuals live in tight-knit communities with high levels of of social capital, their preferences are not necessarily influenced their neighbors if they do not socialize in the neighborhood. A lack of data prevents a more detailer exploration of this issue. In addition, Japan is generally characterized as a racially homogenous society. Japan’s historical and cultural condition is different from Western countries. The influence of social capital is thought to depend on institutional strength (Ahlerup et al., 2009). Hence, when testing the generality of the findings provided in this paper, it is necessary to examine the hypotheses proposed here using other countries with different historical and cultural background.

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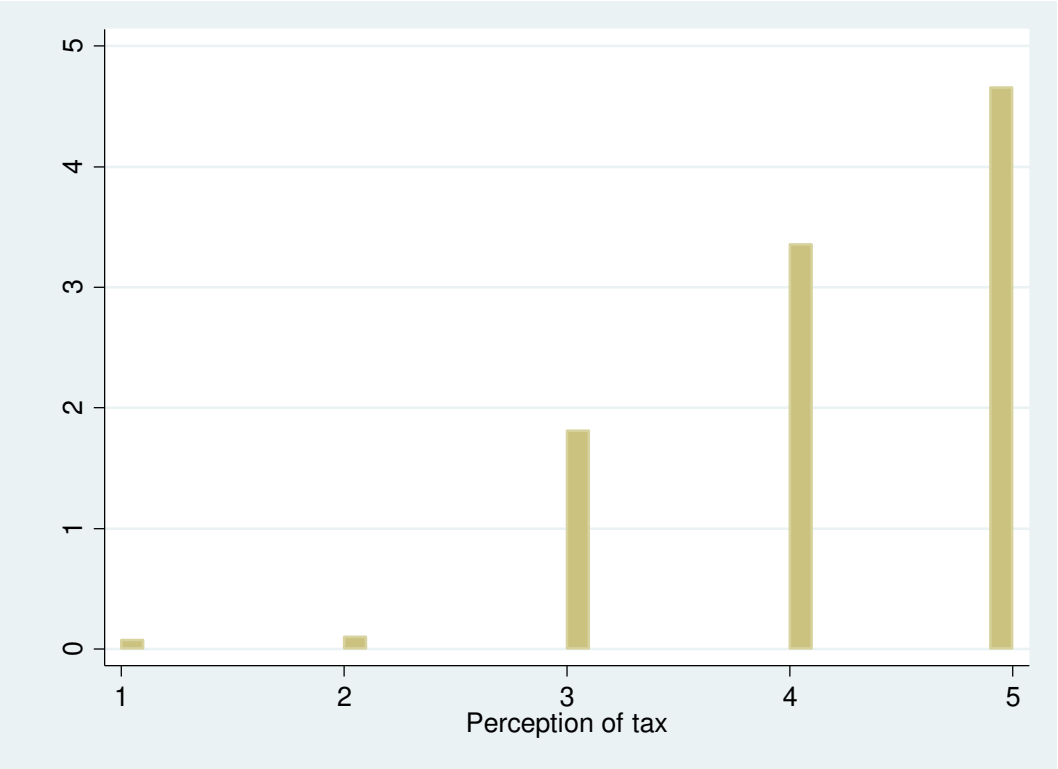

Figure 1. Distribution of views regarding perceived tax burden

Note: Respondents were asked: "Do you think the amount of income tax you have to pay is high?"

There were five response options: "1 (too low)", "2 (somewhat low)", "3 (about right)" "4 (somewhat high)", "5 (too high)".

The number indicated in the figure is equivalent to the number of responses.

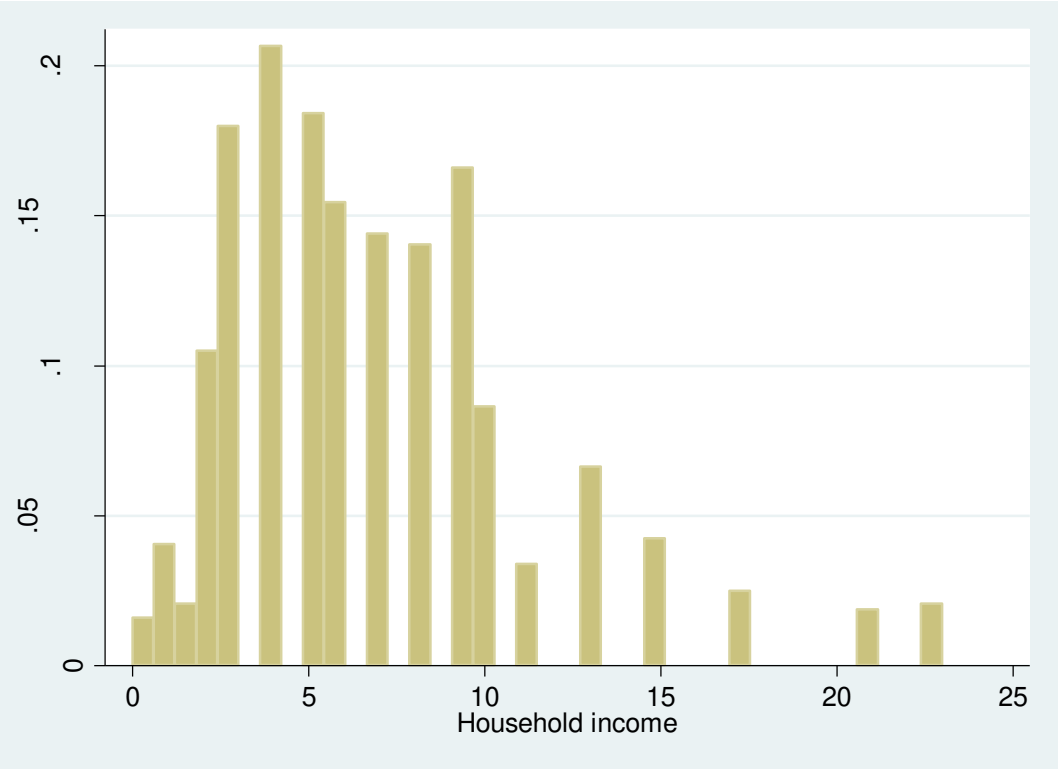

Figure 2. Distribution of household income

Note: One unit is equal to one million yen.

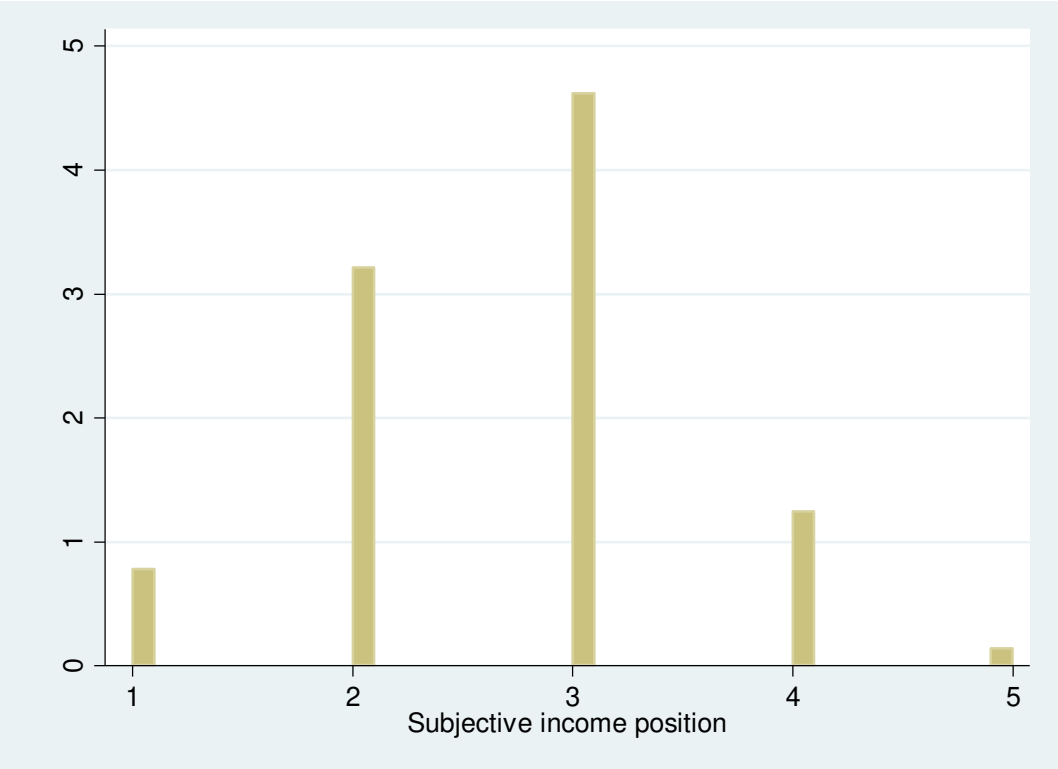

Figure 3. Distribution of subjective income position

Note: “Far below average (1)”, “Below average (2)”, “Average (3)”, “Above average (4)”, and “Far above average (5)”.

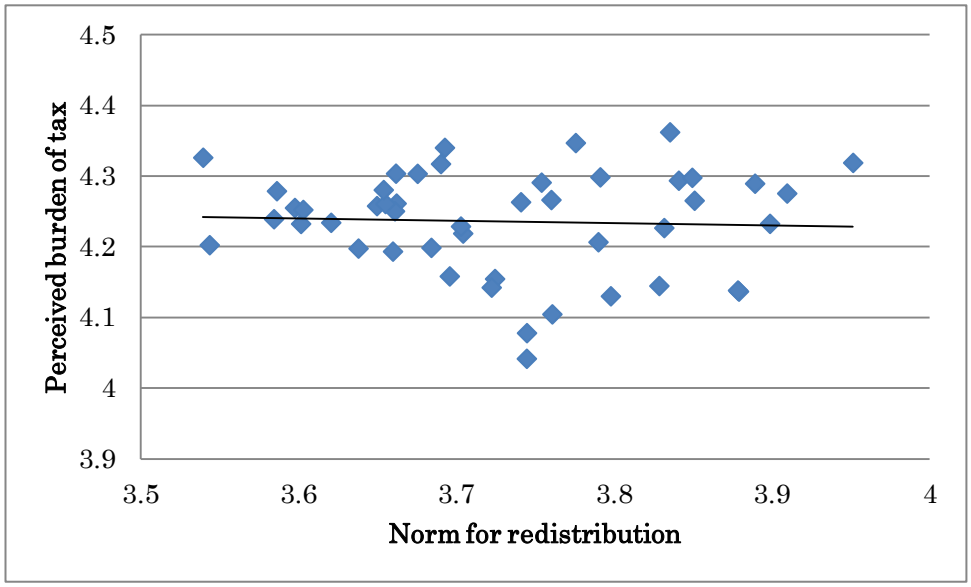

Figure 4(a). Relationship between the norm for redistribution and perceived tax burden for all categories of income level

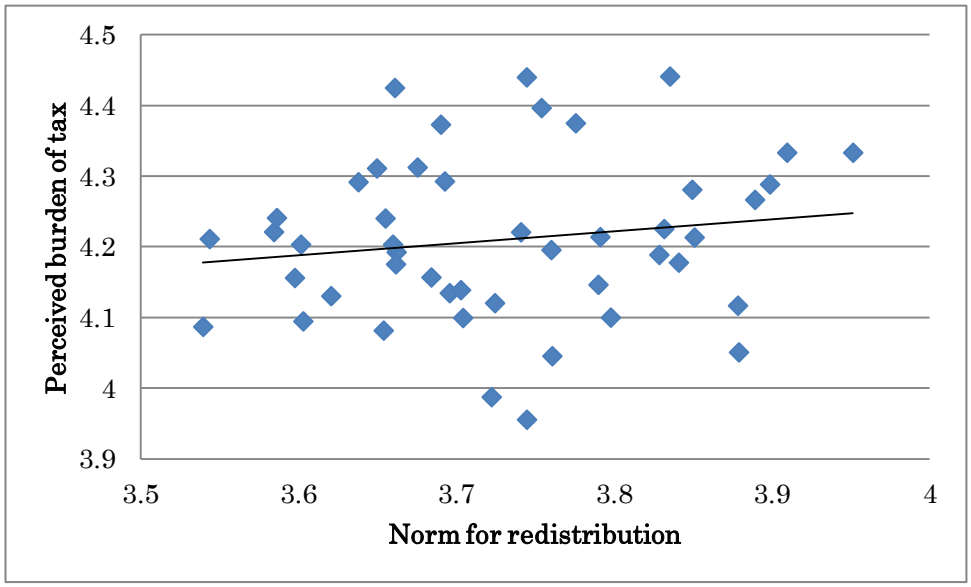

Figure 4(b). Relationship between the norm for redistribution and perceived tax burden for low-income level group (annual household income is lower than 6 million yen)

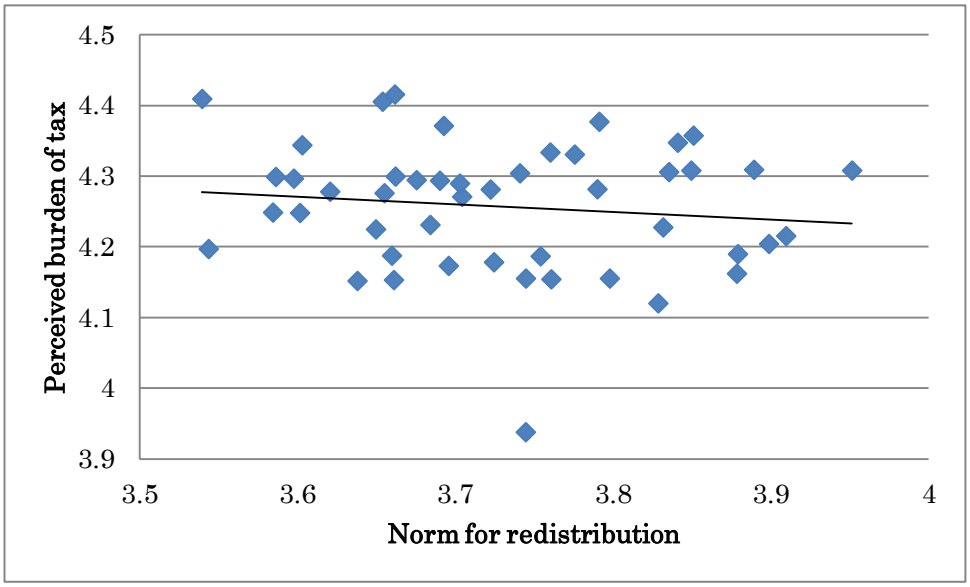

Figure 4(c). Relationship between the norm for redistribution and perceived tax burden for high-income level group (annual household income is higher than 6 million yen)

Table 1
Mean values for high-income household group and low-income household group

	Definitions	Mean	Standard deviation	maximum	minimum
Regional characteristics					
NORM	Average value of agreeing with redistribution policies within a prefecture. The definition of the value is as below: Degree of agreement with the argument that the government should reduce income inequality: 1 (strongly disagree)–5 (strongly agree)	3.71	0.09	3.95	3.53
SC	Rate of those who actively participate in community events	0.47	0.06	0.60	0.37
AVINCOM	Average household income within a prefecture (million yen)	6.12	0.82	7.99	3.52
Individual characteristics					
TAX	Index of perceived tax burden	4.24	0.83	5	1
INCOME	Individual household income (million yen)	6.11	4.17	23	0
AGE	Age	52.0	16.6	89	20
MARRY	Takes 1 if respondents are currently married, otherwise 0	0.78	--	1	0
SCHOOL	Years of schooling	12.1	2.62	18	6
UNEMP	Takes 1 if respondents are currently unemployed, otherwise 0	0.01	--	1	0
MALE	Takes 1 if respondents are male, otherwise 0	0.45	--	1	0
PROG_1	Concerning political views, takes 1 if respondents choose 1, otherwise 0 1 (conservative)–5 (progressive)	0.07	--	1	0
PROG_2	Concerning political views, takes 1 if respondents choose 2, otherwise 0 1 (conservative)–5 (progressive)	0.20	--	1	0
PROG_3	Concerning political views, takes 1 if respondents choose 3, otherwise 0 1 (conservative)–5 (progressive)	0.52	--	1	0
PROG_4	Concerning political views, takes 1 if respondents choose 4, otherwise 0 1 (conservative)–5 (progressive)	0.16	--	1	0
PROG_5	Concerning political views, takes 1 if	0.03	--	1	0

	respondents choose 5, otherwise 0
	1 (conservative)–5 (progressive)

Table 2

Comparison of *TAX, NORM*, and *SC* between high-income household group and low-income household group

	High-income	Low-income	t-statistics
TAX	4.25	4.20	2.63***
NORM	3.69	3.71	14.2***
SC	0.46	0.47	10.7***

Note: Respondents whose annual household income is higher than 6 million yen are classified as the high-income group. Respondents whose annual household income (or equivalent to) lower than 6 million yen are classified as the low-income group. All observations were used. Absolute values of t-statistics are the results of a mean difference test between high- and low-income household groups. *** indicates significance at the 1% level.

Table 3(a) Baseline model: dependent variable is *TAX* (ordered probit model): each group is categorized based on an objective measure (annual household income)

	All			People live in the same prefecture they lived in at 15 years of age		
	(1) All	(2) High-income	(3) Low-income	(4) All	(5) High-income	(6) Low-income
Regional characteristics						
NORM	–0.31	–1.03***	0.27	–0.35*	–1.08***	0.23
	(–1.60)	(–3.63)	(1.20)	(–1.65)	(–3.53)	(0.89)
AVINCOM	–0.02	–0.09***	0.04	–0.03	–0.11***	0.03
	(–1.11)	(–2.83)	(1.52)	(–1.33)	(–3.11)	(1.17)
Individual characteristics						
INCOME	0.01***	0.01***	–0.01	0.01*	0.01***	–0.02*
	(2.97)	(3.57)	(–1.30)	(1.69)	(3.43)	(–1.68)
AGE	–0.004***	0.0001	–0.007***	–0.003***	0.0003	–0.006***
	(–3.77)	(0.04)	(–6.09)	(–2.60)	(0.17)	(–4.09)
MARRY	0.04	0.10	0.04	0.06*	0.07	0.07*
	(1.42)	(1.51)	(1.15)	(1.81)	(1.12)	(1.85)
SCHOOL	–0.02***	–0.001	–0.03***	–0.02***	–0.005	–0.02***
	(–3.44)	(–0.23)	(–3.83)	(–2.84)	(–0.59)	(–2.63)
UNEMP	0.04	–0.23	0.13	0.03	–0.23	0.11
	(0.35)	(–1.14)	(1.19)	(0.30)	(–0.97)	(0.88)
MALE	0.02	0.01	0.02	0.01	–0.03	0.04
	(0.66)	(0.26)	(0.73)	(0.34)	(–0.71)	(1.02)
PROG_1		<Reference group>			<Reference group>	
PROG_2	–0.01	0.03	–0.01	–0.01	–0.01	0.06
	(–0.17)	(0.37)	(–0.20)	(–0.16)	(–0.11)	(0.07)
PROG_3	0.18***	0.22***	0.18***	0.21***	0.19**	0.22***
	(3.81)	(2.61)	(2.91)	(3.75)	(2.20)	(3.32)
PROG_4	0.17***	0.20**	0.16**	0.18***	0.18*	0.19**
	(3.44)	(2.41)	(2.44)	(2.65)	(1.89)	(2.22)
PROG_5	0.52***	0.76***	0.37***	0.52***	0.74***	0.39***
	(5.03)	(4.13)	(3.57)	(4.86)	(4.19)	(3.12)
Marginal effect *NORM*	–0.12	–0.40***	0.10	–0.14*	–0.42***	0.09
	(–1.60)	(–3.66)	(1.20)	(–1.66)	(–3.57)	(0.89)
Wald Statistics	164	120	117	188	96	152
Observations	7794	3512	4282	5606	2479	3127

Note: Respondents whose annual household income is higher than 6 million yen are classified as the high-income group. Respondents whose annual household income is lower than (or equivalent to) 6 million yen are classified as the low-income group. Values in each variable are coefficients. In the third line from the bottom, the marginal effect of *NORM* on the probability that *TAX* is 5 is reported. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the

prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, year dummies are included as independent variables but are not reported because of space limitations.

Table 3(b) Dependent variable is *TAX* (ordered probit model): each group is categorized based on a subjective measure

	All		People live in the same prefecture they lived in at 15 years of age	
	(1) High-income	(2) Low-income	(3) High-income	(4) Low-income
Regional characteristics				
NORM	–0.93**	0.03	–1.05**	0.10
	(–2.52)	(0.16)	(–2.15)	(0.43)
AVINCOM	–0.07*	0.003	–0.13**	–0.01
	(–1.96)	(0.12)	(–2.53)	(–0.16)
Individual characteristics				
INCOME	0.01***	–0.004	0.02**	–0.01
	(2.80)	(–0.52)	(2.56)	(–0.98)
AGE	–0.001	–0.003**	–0.001	–0.002
	(–0.61)	(–2.54)	(–0.21)	(–1.28)
MARRY	0.02	0.11**	0.01	0.16***
	(0.22)	(2.27)	(0.11)	(3.09)
SCHOOL	–0.01	–0.02***	–0.01**	–0.01
	(–0.29)	(–3.01)	(–0.35)	(–1.23)
UNEMP	–0.17	0.30**	–0.10	0.19
	(–0.38)	(2.03)	(–0.16)	(1.24)
MALE	0.02	0.01	0.05	–0.01
	(0.39)	(0.34)	(0.70)	(–0.15)
PROG_1	<Reference group>		<Reference group>	
PROG_2	0.08	0.02	–0.04	0.08
	(0.67)	(0.28)	(–0.31)	(0.84)
PROG_3	0.23*	0.24***	0.18	0.31***
	(1.78)	(3.17)	(1.32)	(3.67)
PROG_4	0.24**	0.19**	0.20	0.21**
	(2.11)	(2.38)	(1.40)	(2.30)
PROG_5	0.40**	0.51***	0.25	0.56***
	(2.31)	(4.33)	(0.96)	(4.08)
Marginal effect *NORM*	–0.36**	0.01	–0.40**	0.04
	(–2.53)	(0.16)	(–2.14)	(0.43)
Wald statistics	80	101	76	79
Observations	1197	3135	784	2280

Note: Respondents who considered themselves above or far above average income earners are classified as the high-income group. Respondents who considered themselves below or far below average income earners are classified as the low-income group. Respondents who considered themselves as average earners are included in the estimations in columns (1) and (4) in Table 3(a), but excluded from the sample in Table

3(b). Values in each variable are coefficients. In the third line from the bottom, the marginal effect of *NORM* on the probability that *TAX* is 5 is reported. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, year dummies are included as independent variables but are not reported because of space limitations.

Table 4(a) Baseline model: dependent variable is *TAX* (ordered probit model): each group is categorized based on objective measure (annual household income)

	All			People live in the same prefecture they lived in at 15 years of age		
	(1)	(2)	(3)	(4)	(5)	(6)
	All	High-income	Low-income	All	High-income	Low-income
Regional characteristics						
*NORM*SC*	–0.69	–5.03*	0.86	–0.74	–5.45*	0.92
	(–0.36)	(–1.95)	(0.30)	(–0.34)	(–1.72)	(0.27)
NORM	0.10	1.66	–0.17	0.09	1.87	–0.25
	(0.10)	(1.22)	(–0.12)	(0.08)	(1.11)	(–0.14)
SC	2.23	17.9*	–3.07	2.33	19.2*	–3.34
	(0.31)	(1.90)	(–0.29)	(0.29)	(1.65)	(–0.26)
AVINCOM	–0.03	–0.10***	0.04	–0.04	–0.12***	0.03
	(–1.30)	(–3.34)	(1.38)	(–1.46)	(–3.63)	(1.09)
Individual characteristics						
INCOME	0.01***	0.01***	–0.01	0.01*	0.02***	–0.02*
	(3.01)	(3.57)	(–1.30)	(1.72)	(3.40)	(–1.69)
AGE	–0.004***	0.0002	–0.007***	–0.003**	0.0005	–0.006***
	(–3.68)	(0.09)	(–6.05)	(–2.49)	(0.23)	(–4.07)
MARRY	0.04	0.10	0.04	0.06*	0.07	0.07*
	(1.46)	(1.56)	(1.15)	(1.88)	(1.20)	(1.85)
SCHOOL	–0.02***	–0.002	–0.03***	–0.02***	–0.005	–0.02***
	(–3.49)	(–0.28)	(–3.80)	(–2.87)	(–0.61)	(–2.64)
UNEMP	0.03	–0.24	0.13	0.03	–0.24	0.11
	(0.33)	(–1.19)	(1.18)	(0.27)	(–1.02)	(0.87)
MALE	0.02	0.01	0.02	0.01	–0.03	0.04
	(0.67)	(0.28)	(0.74)	(0.34)	(–0.73)	(1.02)
PROG_1		<Reference group>			<Reference group>	
PROG_2	–0.01	0.03	–0.01	–0.01	–0.004	0.01
	(–0.15)	(0.40)	(–0.20)	(–0.15)	(–0.05)	(0.08)
PROG_3	0.18***	0.22***	0.18***	0.20***	0.20**	0.22***
	(3.76)	(2.62)	(2.91)	(3.70)	(2.26)	(3.31)
PROG_4	0.17***	0.20**	0.16**	0.18***	0.18*	0.19**
	(3.42)	(2.42)	(2.44)	(2.63)	(1.92)	(2.22)
PROG_5	0.52***	0.77***	0.37***	0.52***	0.74***	0.39***
	(5.02)	(4.12)	(3.59)	(4.84)	(4.16)	(3.15)
Marginal effect *NORM*	–0.08	–0.26**	0.09	–0.10	–0.28**	0.07
	(–1.08)	(–2.21)	(0.89)	(–1.19)	(–2.22)	(0.65)
Marginal effect *SC*	–0.13	–0.31**	0.04	–0.17	–0.38**	0.03
	(–1.39)	(–2.29)	(0.35)	(–1.27)	(–2.39)	(0.20)
Wald Statistics	292	133	171	274	98	169

Observations	7794	3512	4282	5606	2479	3127

Note: Respondents whose annual household income is higher than 6 million yen are classified as the high-income group. Respondents whose annual household income is lower than (or equivalent to) 6 million yen are classified as the low-income group. Values are coefficients in each variable. In the third line from the bottom, the marginal effects of *NORM* and *SC* on the probability that *TAX* is 5 are reported. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, year dummies are included as independent variables but are not reported because of space limitations.

Table 4(b) Dependent variable is *TAX* (ordered probit model): each group is categorized based on subjective measure.

	All		People live in the same prefecture they lived in at 15 years of age.	
	(1) High-income	(2) Low-income	(3) High-income	(4) Low-income
Regional characteristics				
*NORM*SC*	–8.49** (–0.24)	1.51 (0.56)	–11.2* (–1.91)	1.39 (0.51)
NORM	3.33* (1.79)	–0.71 (–0.50)	4.59 (1.52)	–0.57 (–0.40)
SC	31.4** (2.22)	–5.74 (–0.57)	41.8* (1.91)	–5.44 (–0.54)
AVINCOM	–0.06 (–1.39)	–0.002 (–0.08)	–0.10* (–1.83)	–0.01 (–0.36)
Individual characteristics				
INCOME	0.01*** (2.76)	–0.004 (–0.50)	0.02** (2.55)	–0.01 (–0.95)
AGE	–0.001 (–0.60)	–0.003** (–2.52)	–0.001 (–0.25)	–0.002 (–1.25)
MARRY	0.02 (0.27)	0.12** (2.31)	0.01 (0.15)	0.16*** (3.13)
SCHOOL	–0.003 (–0.19)	–0.02*** (–3.06)	–0.004 (–0.23)	–0.01 (–1.27)
UNEMP	–0.17 (–0.36)	0.29** (2.01)	–0.09 (–0.14)	0.19 (1.21)
MALE	0.02 (0.27)	0.01 (0.35)	0.04 (0.49)	–0.01 (–0.15)
PROG_1	<Reference group>		<Reference group>	
PROG_2	0.07 (0.59)	0.02 (0.30)	–0.05 (–0.35)	0.08 (0.86)
PROG_3	0.22* (1.69)	0.24*** (3.17)	0.17 (1.24)	0.31*** (3.65)
PROG_4	0.23* (1.97)	0.19** (2.38)	0.18 (1.26)	0.21** (2.32)
PROG_5	0.40** (2.28)	0.51*** (4.33)	0.25 (0.95)	0.56*** (4.06)
Marginal effect *NORM*	–0.23* (–1.65)	0.002 (0.02)	–0.27 (–1.41)	0.03 (0.38)

Marginal effect	0.02	–0.04	0.07	–0.09
SC	(0.11)	(–0.34)	(0.32)	(–0.55)
Wald statistics	84	102	91	79
Observations	1197	3135	784	2280

Note: Respondents who considered themselves above or far above average income earners are classified as the high-income group. Respondents who considered themselves below or far below average income earners are classified as the low-income group. Respondents who considered themselves as average earners are included in the estimations of columns (1) and (4) in Table 3(a), but excluded from the sample in Table 3(b). Numbers indicate marginal effect. Values are coefficients in each variable. In the third line from the bottom, marginal effects of *NORM* and *SC* on the probability that *TAX* is 5 are reported. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, year dummies are included as independent variables but are not reported because of space limitations.