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Attitudes toward municipal income tax rates in Sweden: Do people vote with their feet?

Niklas Jakobsson*

Abstract

The factors shaping people's preferences for municipal labor income tax rates in Sweden are assessed using survey data. The tax rate actually faced by the respondents does not have explanatory power for their attitudes toward the tax rate. The hypothesis that this small or nonexistent effect of the actual tax rate is caused by a Tiebout bias finds no support, yet instrumental variable estimations indicate that the actual municipal tax rate may be of importance for attitudes toward the tax rate. Also, people with higher education, people who regularly read a newspaper, people who agree with the political left, and people who state that they are satisfied with their municipal services are less likely to want to decrease the municipal tax. People with low income, people who claim to have a low level of knowledge about society, and people who agree with the political right are conversely more likely to want to decrease the municipal tax.

1. INTRODUCTION

Individual income taxes are an important part of government revenues in all western countries. To be able to collect these taxes, and since politicians want to get reelected, these taxes need to be perceived as legitimate. What determines people's preferences about income taxes is therefore of great interest. Previous research on tax attitudes has been able to identify several characteristics that are of associated with people's tax preferences. Education, income, self-assessed knowledge about society, and political preferences are some of the most important factors (e.g., Edlund, 1999, 2000, 2003; Hammar et al., 2009). It has also been shown that what shapes people's tax preferences varies significantly according to the particular tax involved (Hammar et al., 2009).

In this paper I analyze whether the tax rate an individual faces affects her willingness to change that same tax. Is it the case that people living in high-tax municipalities are more willing to decrease the tax, and individuals living in low-tax municipalities are more willing to increase the tax? Or, following the Tiebout (1956) argument, (that people will move to localities that satisfies their preferences for government provided goods and taxes) do people vote with their feet – by moving – to pay taxes that accord with their preferences? These questions are central to this paper, which focuses on Swedish municipal taxes on labor income.

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Sweden has among the highest taxes in the world (OECD, 2005). The municipal labor income tax constitutes the largest source of revenue for the Swedish government, making it very important for the financing of the public sector. It is also of great significance for individuals since it is the largest tax they pay (Swedish Tax Agency, 2006). That this tax is set at the local level and varies between, but not within, the 290 municipalities also makes it possible to investigate how preferences toward it vary with the actual tax rate faced by individuals.¹

There is a broad literature studying attitudes toward taxation. The earliest study of individual tax preferences (David, 1961) used interview data from Detroit, Michigan. Studying both attitudinal and socio-economic variables, David found that the most important variables are those reflecting self-interest; income and education are most important for preferences regarding income tax. Labor union membership, political party preference, and preferences regarding the size of the public sector are also important. Edlund (1999, 2000) used Swedish survey data to investigate people's opinions about taxes on earned income (including those at the national level). He found that most people regard income tax positively and prefer a progressive system, with lower rates for low-income earners and higher rates for high-income earners. He also found that younger people, highly educated individuals, and high-income earners favor less progressivity. Furthermore, research in the U.S. found that people generally have little understanding of tax policies (Roberts et al., 1994). However, using Swedish survey data on tax progressivity, Edlund (2003) found that people have a quite good understanding of tax progressivity, suggesting that the U.S. finding of little understanding is not necessarily generalizable to other countries.

If people misperceive the taxes they pay, then having more knowledge could affect their opinions. In particular, if they overestimate the taxes they pay and underestimate the benefits received, then having more knowledge might induce them to support higher taxes, and vice versa (Gemmell et al., 2004). Using Swedish survey data, Hammar et al. (2009) investigated people's opinions about eleven types of tax and found that people who claim to have a low level of knowledge about society preferred to reduce municipal income taxes more than did others. In line with the results in Edlund (1999), the highly educated were less likely to prefer reduced municipal income taxes and more likely to support raised. The same was true for frequent newspaper readers. Those who supported the public sector more (i.e., who identified themselves as left, rather than right, on the political scale), and those with a favorable impression of politicians also generally supported higher municipal income taxes. That trust in the political system is important for willingness to pay taxes is also shown in an experimental setting by Wahl et al. (2010). On the other hand, Kumlin (2007) found that dissatisfaction with public services in fifteen western European countries was unrelated to support for the welfare state and the taxes required to finance it.

Previous studies have not investigated the effect of the tax rate itself on people's opinions about taxes. My hypothesis is that since people are not perfectly mobile across municipalities, people living in high-tax municipalities should be more

¹ In Sweden, the tax rates on labor income are decided by the municipalities, and vary substantially across municipalities (of which there are 290 in 2004). Unearned income is taxed only at the national level, and there are surtaxes on labor incomes above certain levels. For more information on the Swedish tax system, see the Appendix.

supportive of decreasing the tax rate and people living in low-tax municipalities should be more supportive of increasing the tax rate. Using survey data, with a net response rate of 64 percent, of a random sample of Swedes aged 15–85, the present paper assesses what factors are important for people's willingness to change the municipal income tax rate. My findings are that the tax rate actually faced by survey respondents is not very important in determining the respondent's tax preferences. The reason that there is not a clearer effect of the actual tax rate on tax preferences may be related to Tiebout sorting, yet the evidence for this is not strong. Possible explanations are that people do not know the actual tax rate in their municipality (or in others) or that they are subject to status quo bias which means they come to accept the tax rate they face. Also, people with higher education, people who regularly read a newspaper, people who agree with the political left, and people who state that they are satisfied with their municipal services are less likely to want to decrease the municipal tax. Conversely, people with low income, people who claim to have a low level of knowledge about society, and people who agree with the political right are more likely to want to decrease the municipal tax.

The next section describes the data, while Section 3 presents the empirical strategy and theoretical background. Section 4 presents the empirical results, and Section 5 summarizes and draws conclusions.

2. DATA

The main data consist of responses from a survey mailed to a random sample of 3,000 Swedes aged 18–85 by the SOM Institute (www.som.gu.se/english) in 2004. Addresses were collected from the National Register, which includes all legal residents of Sweden; 1,774 individuals (64 percent) responded (from 267 of the 290 municipalities). The respondents are representative of the Swedish adult population (Nilsson, 2005).

Data from Statistics Sweden (www.scb.se) on municipal income tax rates in 2004 is also used. The dependent variable in the analysis is people's attitudes toward the municipal income tax, shown in Table 1. More specifically, people are asked the following question: "Do you think that the following taxes should be increased or decreased?". Attitudes toward the corporate income tax and the real estate tax are shown for comparison. The corporate income tax appears to be the most popular, though more people favor decreasing than increasing it, and the real estate tax is clearly the least popular.²

Most people seem to care about the taxes they pay. Half the respondents favor decreasing the municipal income tax, and 8 percent favor decreasing it a lot, while only 5 percent favor increasing it (a little). Nevertheless, 82 percent are fairly satisfied with it and favor no or small change. In comparison, 21 percent favor decreasing the corporate income tax a lot or a little, and 71 percent favor decreasing the real estate tax a lot or a little. Thus, more people are at least somewhat satisfied with the municipal income tax.³

² The real estate tax was abolished in 2008 and replaced with a municipal fee.

³ This is also true when compared to all eleven taxes in the survey (Hammar et al., 2009).

The actual municipal tax rates faced by the respondents (Table 2) varied from 28.9 percent (in Kävlinge) to 34.04 percent (in Dals-Ed). The mean was 31.58 percent, and the median 31.74 percent, indicating a distribution skewed very slightly to the right. The three municipalities with the most inhabitants had rates of 30.35 percent (Stockholm), 31.8 percent (Gothenburg), and 31.23 percent (Malmö), while the three with the fewest inhabitants all had a slightly higher rate of 32.6 percent (Bjurholm, Sorsele and Dorotea).

Table 1: Swedish tax attitudes, 2004, in percent

	Abolish/ decrease a lot	Decrease a little	Keep unchanged	Increase a little	Increase a lot	No opinion	No response
Municipal income tax	8	42	35	5	0	8	2
Corporate tax	6	15	29	11	2	32	5
Real estate tax	39	32	16	1	0	10	1

No. of obs. 1,683

Table 2: Swedish municipal income tax rates, 2004, in percent

Minimum	10th percentile	25th percentile	Median	75th percentile	90th percentile	Maximum
28.90	30.35	30.93	31.74	32.20	32.70	34.04

Table 3 provides summary statistics for the background characteristics for respondents that expressed an opinion about the municipal tax rate. There are approximately equal numbers of men and women; 21 percent were 65 or older; 32 percent were on a low income; 29 percent had studied at university; 14 percent had preschool children; 28 percent worked in the municipal sector; 35 percent lived in or near one of the three largest cities; one-third regarded themselves as sympathetic to the political left, one-third to the right; 62 percent regularly read a morning newspaper; 46 percent reported fairly good or very good public services in their municipality; and 34 percent trusted their local politicians.

Table 3: Summary statistics, background characteristics

Variable	Description	Mean	Standard deviation	Percentage 0	Percentage 1	Obs.
Women	=1 if woman	0.478	0.500	52.2	47.8	1,554
Old (65-85)	=1 if 65-85 years old	0.214	0.410	78.6	21.4	1,554
Children	=1 if child 0-6 in household	0.138	0.345	86.2	13.8	1,554
Low income	=1 if household yearly income is less than 11k euro (single adult) or 22k euro (two or more)	0.310	0.463	69.0	31.0	1,475
High income	=1 if household yearly income exceeds 43k euro (single adult) or 65k euro (two or more)	0.193	0.395	80.7	19.3	1,475
Low education	=1 if no high school degree	0.362	0.481	63.8	36.2	1,554
High education	=1 if studies at university or for a university degree	0.293	0.455	70.7	29.3	1,536
Municipal employee	=1 if working in municipal sector	0.280	0.449	72.0	28.0	1,357
Newspaper	=1 if read morning newspaper 6-7 days/week	0.631	0.483	36.9	63.1	1,543
Left	=1 if 1 or 2 on a political scale 1-5	0.340	0.474	66.0	34.0	1,495
Right	=1 if 4 or 5 on a political scale 1-5	0.344	0.475	65.6	34.4	1,495
Good services	=1 if services in municipality fairly good or very good, last 12 months	0.463	0.500	53.7	46.3	1,404
Low knowledge	=1 if 1-3 on a scale 1-10	0.186	0.389	81.4	18.6	1,519
Low trust	=1 if low trust for municipal board	0.350	0.477	65.0	35.0	1,520
Tax base	per capita as percentage of national mean	99.215	14.629			1,552
Grants	intergovernmental grants per capita in thousands SEK	3.889	4.705			1,552
Urban	=1 if living in one of 3 largest city regions	0.351	0.477	64.9	35.1	1,552
Change '03	percentage point change in municipal taxrate 2002-2003	0.569	0.713			1,552
Change '04	percentage point change in municipal taxrate 2003-2004	0.297	0.387			1,549
Moved	=1 if moved to the municipality less than 3 years ago	0.087	0.283	91.3	8.7	1,532

Table 4 shows the distributions of preferences toward the municipal income tax by the independent variables, and there are some clear patterns in the data. A Wilcoxon rank-sum test showed that the differences between men and women, young and old, people with preschool children and those without, and people who lived in cities and those who did not are not statistically significant. Those with high or low income are more likely to favor decreasing the tax (and those with middle income are more likely to favor increasing it); the difference between low and middle income earners is statistically significant at the 1% level. Those with low education are much more likely to favor decreasing the tax (and less willing to increase it). Similarly, private sector employees are much more likely to favor decreasing the tax (and less likely to favor increasing it).

Table 4: Distribution of Swedish municipal income tax preferences, in percent

	Abolish/ decrease a lot	Decrease a little	Keep unchanged	Increase a little	Increase a lot	No opinion
Full sample	8.4	42.7	35.3	5.2	0.1	8.3
Women	8.4	40.0	35.7	3.9	0.1	11.8
Men	8.3	45.3	34.9	6.4	0.1	4.9
Young (18-30)	9.9	35.9	36.2	2.1	0.0	15.9
Old (65-85)	6.5	44.9	32.0	4.8	0.3	11.5
Children	10.3	42.0	36.6	5.8	0.0	5.4
No children	8.1	42.8	35.1	5.1	0.1	8.8
High income	7.6	46.5	35.0	4.3	0.0	6.6
Middle income	7.1	43.3	39.2	6.1	0.0	4.4
Low income	10.5	41.3	30.0	4.8	0.4	13.1
High education	6.5	39.0	40.9	6.5	0.0	7.1
Low education	9.6	44.1	31.2	4.7	0.2	10.3
Municipal employee	8.3	38.3	39.8	6.0	0.3	7.5
Private employee	8.8	46.5	33.3	5.0	0.1	6.4
Newspaper	6.6	42.8	37.8	6.0	0.1	6.8
No newspaper	11.3	42.5	31.7	3.8	0.2	10.5
Left	4.8	35.3	43.1	9.2	0.0	7.6
Right	9.7	52.0	30.5	2.7	0.0	5.1
Good services	6.5	41.6	39.4	5.9	0.3	6.3
Bad services	11.8	48.4	27.5	5.2	0.0	7.2
High trust	6.3	38.1	44.4	7.6	0.0	3.6
Low trust	10.7	47.0	30.7	5.6	0.2	5.8
High knowledge	7.1	42.1	40.5	6.4	0.0	4.0
Low knowledge	13.3	43.5	23.5	4.3	0.3	15.1
Urban region	8.4	46.2	32.6	5.4	0.2	7.3
Not urban region	8.4	42.2	35.6	5.5	0.1	8.2
High municipal tax	9.6	44.0	35.0	3.0	0.0	8.4
Low municipal tax	9.7	39.5	36.8	6.1	0.0	7.9

Bold characters indicate a statistically significant difference between the pairs (at least at 10%).

As expected, people supporting the political left are much less likely to favor decreasing the tax (and more likely to favor increasing it) than are those supporting the right. Regular newspaper readers and those self-reporting a high level of knowledge about society are also less likely than others to favor decreasing the tax (and more likely to favor increasing it). Those reporting good public services in their municipality and those trusting their municipal politicians are less likely to favor decreasing the tax. All these differences are statistically significant according to the Wilcoxon rank-sum test. Finally, those living in low-tax municipalities (the 10 percent of the sample paying the lowest tax rate) are less likely than the 10 percent living in high-tax municipalities to favor decreasing the tax (and more likely to favor increasing it). However, this difference is not statistically significant.

3. EMPIRICAL STRATEGY AND THEORETICAL BACKGROUND

3.1 Empirical strategy

Following a general choice framework developed by Bergstrom et al. (1982) and used in a similar context by Bergstrom et al. (1988), Ahlin and Johansson (2001), and Ågren et al. (2007), I assume that an individual's preferred municipal income tax rate is given by

$$t_i^* = \beta_0 + \mathbf{x}_i \boldsymbol{\beta} + \varepsilon_i, \quad (1)$$

where $\mathbf{x}_i$ is a vector of variables explaining the unobserved preferred tax rate (t_i^*), and ε_i is an independently and identically distributed random error term. We do not observe t_i^* directly, but we assume that an individual expresses dissatisfaction with the actual tax rate (t_i) if it deviates from her preferred level with a sufficiently large amount (formalized by the parameters $\delta < 0$ and $\gamma < 0$). Individuals will respond

“abolish/decrease a lot” if $t_i^* < t_i \cdot \delta - \gamma$

“decrease a little” if $t_i^* < t_i - \delta$

“keep unchanged” if $t_i - \delta \leq t_i^* \leq t_i + \delta$

“increase a little” if $t_i^* > t_i + \delta$

“increase a lot” if $t_i^* > t_i + \delta - \gamma$.

For example, the probability that individual i will choose response alternative “keep unchanged” is the probability that the unobserved preferred tax rate falls in between the cut-points $t_i - \delta$ and $t_i + \delta$. Thus, the variable is inherently ordered but the distances between the categories (δ) are unknown. Assuming that ε_i are normally distributed we can estimate the model using ordered probit estimation (see e.g., Bergstrom et al., 1982, 1988).⁴

⁴ If we instead assume that the error has a logistic distribution ordered logit regressions would be preferred.

3.2 Theoretical background

If location of residence is exogenous and respondents are randomly distributed over municipalities, we would expect those paying higher taxes to be more supportive of decreasing tax rates than those paying lower taxes. In a Tiebout setting, where location is endogenous, a person who does not like the tax rate in her municipality could move to one with a tax rate more to her liking (Tiebout, 1956). That is, some of those who prefer low tax rates might already have moved to lower tax municipalities. If this “vote-with-your-feet” mechanism worked perfectly, everyone would be satisfied with the municipal taxes that they pay, but, given (among other things) that people are not perfectly mobile and that there are not enough different municipalities to choose from, we should not expect Tiebout sorting to work perfectly. Studying how movement is related to local public services, Dahlberg and Fredriksson (2001) do not find strong evidence of Tiebout sorting in Sweden.⁵ In light of this we expect that people living in high tax municipalities should be more willing to decrease the tax and individuals living in low tax municipalities should be more willing to increase the tax.

In studying the relationship between the municipal tax rate that people face and their willingness to change that same tax we include a number of control variables that have been argued to be important for tax preferences. Families with incomes below the mean, by the standard Meltzer-Richard argument, would have an incentive to favor policies that redistribute income from families with high incomes to families with low incomes (Meltzer and Richard, 1981); we thus expect both high income earners to be more willing to decrease the tax and low income earners to be more willing to decrease the tax, as compared to middle income earners. Simple theoretical models of demand for local public goods imply that personal income, intergovernmental grants, and tax base should affect demand for local public goods and thus also tax preferences (Bergstrom et al., 1982; Ahlin and Johansson, 2001). Hess and Orphanides (1996) construct a model showing that families with more children prefer higher taxes than others, due to them benefiting more from government spending. Edlund (2003) argues that social class should also be an important explanatory variable, as a self-interest effect. For example, manual workers tend to have a higher risk of unemployment and thus a greater need for public support than do highly educated workers.

Since women may be more dependent on the public sector when it comes to employment, benefits, and social services, Edlund (2003) argues that they should be less likely to promote lower taxes. Empirical studies of policy preferences typically find that women are more supportive of activist government policies (e.g., Svallfors, 1997), as well as income redistribution and assistance for the poor (Alesina and La Ferrara, 2005). Alvarez and McCaffery (2003) find that while women want to use a potential budget surplus on child care (or express no opinion on how to spend the surplus), men want to spend the surplus on tax reductions. Furthermore, Courant et al. (1979) argue that public employees should have preferences for more public spending and should thus favor higher taxes. In line with the self-interest assumptions, municipal employees are more dependent on the municipal sector, they should be less likely to promote a decrease in the municipal income tax. Relatedly, elderly individuals benefit more from public spending, than do those of working age, and should thus also demand more municipal spending, and thus higher taxes.

⁵ See Dowding et al., (1994) for a review of the empirical literature on Tiebout sorting.

4. EMPIRICAL RESULTS

4.1 Factors related to tax preferences

The aim of this section is to assess what determines people's attitudes toward the municipal labor income tax and how attitudes are affected by the taxes people face. Following the discussion in Section 3.1, ordered probit regressions are used to analyze attitudes to the municipal tax rate, with willingness to change it ranging from 1 for "abolish/ decrease a lot" to 5 for "increase a lot" as dependent variable. We run three models, including progressively more explanatory variables. The idea is that the variables included in the latter specifications could be regarded as less exogenous since they are attitude variables, and a successive introduction of variables thus helps us spot odd events. In all three models we hold the number of observations constant. Table 5 shows the estimated coefficients, and Table 6 shows the marginal effects for specification 3.

Specification 1 focuses on a few socio-demographic variables, chosen following the discussion above. The municipal tax rate itself has a negative but statistically insignificant effect. Low income has a statistically significant negative effect, indicating a tendency for those with low income to favor reduced municipal tax rates. The same is true for high-income earners. That low-income earners would like to cut the tax rate is not in line with the standard Meltzer and Richard (1981) argument. One possible reason for this may be that the municipal income tax is not progressive, thus low-income earners prefer increases in other taxes instead. These results are also similar to the results in Edlund (1999) and Hammar et al. (2009).

Having at least some higher education (as compared to only high school) has a statistically significant positive effect (while having low education has a negative but not statistically significant effect), perhaps indicating that these respondents do not overestimate the taxes they pay. Gender, being old, and having preschool children do not have statistically significant effects, which does not support the previous theoretical arguments indicating that females, the elderly, and families with children should be more supportive of taxes used to finance public services, due to self-interest. The tax base in the municipality where the respondent lived and the intergovernmental grants to that municipality are not statistically significant.

Specification 2 includes two new variables expected to affect preferences regarding municipal taxes: whether respondents are regular newspaper readers, and whether they are municipal employees. Regular newspaper readers are more supportive of municipal taxes, perhaps because they are better informed about the taxes they pay and what the tax payments are used for, as proposed by Gemmell et al. (2004). Municipal employees also tend to support municipal taxes; this relation is however not statistically significant.

Specification 3 adds five subjective variables: supporting the political left, or the political right; perceiving good municipal services; distrust in local politicians; and claiming to have a low level of knowledge about society. Pseudo R^2 is higher with these new variables included; also a link test for model specification implies that this specification fits the data better than the other two specifications.

Table 5: Estimation of attitudes toward municipal income tax, ordered probit

	(1)	(2)	(3)
Tax rate	-0.054 (0.039)	-0.044 (0.038)	-0.046 (0.040)
Tax base	-0.007 (0.005)	-0.006 (0.005)	-0.008 (0.005)
Grants	-0.012 (0.015)	-0.012 (0.015)	-0.019 (0.014)
Women	-0.010 (0.061)	-0.036 (0.061)	-0.034 (0.061)
Old (65-85)	0.129 (0.088)	0.080 (0.092)	0.117 (0.094)
Children	-0.019 (0.113)	0.000 (0.115)	-0.004 (0.115)
Low income	-0.209** (0.082)	-0.180** (0.080)	-0.159** (0.078)
High income	-0.176* (0.093)	-0.190** (0.096)	-0.124 (0.096)
Low education	-0.069 (0.086)	-0.077 (0.085)	-0.113 (0.093)
High education	0.242*** (0.079)	0.218*** (0.079)	0.212** (0.085)
Municipal employee		0.091 (0.075)	0.026 (0.077)
Newspaper		0.211** (0.086)	0.235*** (0.090)
Left			0.312*** (0.084)
Right			-0.277*** (0.087)
Good services			0.139* (0.071)
Low trust			-0.047 (0.073)
Low knowledge			-0.259*** (0.092)
Observations	1,093	1,093	1,093
Municipalities	242	242	242
Log likelihood	-1,192	-1,187	-1,154
Pseudo R ²	0.011	0.015	0.043

Dependent variable ranges from 1 for "abolish/decrease a lot" to 5 for "increase a lot." Standard errors in parentheses. Standard errors are clustered at the municipalities. *** p<0.01, ** p<0.05, * p<0.1.

The coefficients on political views (left and right) are highly significant, as is the coefficient on low level of knowledge about society. The coefficient on perceived good municipal services is less significant, while that on the level of distrust is not statistically significant at conventional levels. Reverse causality may be a problem when it comes to the variables on political views, though not including these variables does not change the significance levels and marginal effects of the other variables very

much. An explanation for why tax base and intergovernmental grants do not have statistically significant effects could be that people do not know or assess this information when it comes to their preferences for the municipal income tax rate.

While most of the previous coefficients (and their significance levels) do not change much in the three different specifications, the coefficient on high income is now insignificant. Apparently, after controlling for political views and level of knowledge about society, perceptions about public services, and newspaper readership, the pure effect of income on support for municipal taxes becomes less pronounced. This implies that it is not high income per se, but rather political views and knowledge that is important. As in the other specifications, gender, being old, and having preschool children have no statistically significant effects.

Table 6: Marginal effects based on ordered probit estimations of attitudes toward municipal income tax

	Abolish/ decrease a lot	Decrease some	Keep unchanged	Increase some
Tax rate	0.006	0.012	-0.013	-0.005
Tax base	0.001	0.002	-0.002	-0.001
Grants	0.002	0.005	-0.005	-0.002
Women	0.004	0.009	-0.010	-0.003
Old (65-85)	-0.014	-0.032	0.033	0.013
Children	-0.001	0.001	-0.001	-0.000
Low income	0.022*	0.040**	-0.046*	-0.015**
High income	0.017	0.032	-0.036	-0.012
Low education	0.015	0.029	-0.033	-0.011
Higher education	-0.026***	-0.058**	0.060**	0.022**
Municipal employee	-0.003	-0.007	0.007	0.003
Newspaper	-0.032***	-0.060***	0.069***	0.022***
Left	-0.038***	-0.085***	0.088***	0.034***
Right	0.038***	0.070***	-0.081***	-0.027***
Good services	-0.018*	-0.037*	0.040*	0.014*
Low trust	0.006	0.012	-0.014	-0.005
Low knowledge	0.038**	0.062***	-0.077***	-0.023***

Marginal effects for continuous variables and first difference for dummies following Specification 3, Table 5. Increase a lot not presented due to few observations.

*** p<0.01, ** p<0.05, * p<0.1.

Also in this specification, the coefficient on the tax rate is statistically insignificant. Thus, the tax rate that people actually face in their municipality does not seem to have an effect on their level of support for municipal taxes in this specification. But what drives this result? As noted above, high education and regularly reading a newspaper are associated with living in a low tax municipality. Excluding both these variables (*High education* and *Newspaper*) turns the coefficient on actual tax rate statistically significant at the 10 percent level. Another variable for indicating media consumption, whether the respondent listens to or watches local news broadcasts regularly, is not associated with whether the respondent lives in a low-tax municipality. Including this

variable as an explanatory variable in place of *Newspaper* shows that it has no explanatory power for attitudes to the tax rate. Neither does it change the significance levels or marginal effects of the other variables very much.⁶ This indicates that it is not information per se that is of importance for tax preferences. The results regarding the effect of the actual tax rate are clearly sensitive to model specification; only in some specifications is it statistically significantly associated with tax attitudes. In the next section, the possible effect of the actual municipal tax on attitudes toward this tax will be investigated further.

4.2 Tiebout bias

Why does the actual tax rate not seem to have a clearer effect on respondent attitudes toward municipal taxes? It is possible that some kind of Tiebout effect is at work (Tiebout, 1956). The municipal labor income tax is the only tax that varies across municipalities in Sweden and respondents might be more satisfied with this tax because of the possibility of moving to a municipality with a tax rate more to their liking. An indication of this is that the municipal income tax is the tax that most people are satisfied with according to the data used in this study (as we saw in Table 1).

If location of residence is exogenous and respondents are randomly distributed over municipalities, we would expect those paying higher taxes to be more supportive of decreasing tax rates than those paying lower taxes. In a Tiebout setting, where location is endogenous, a person who does not like the tax rate in her municipality could move to one with a tax rate more to her liking. In this case, the estimated coefficient of the effect of tax rates on desire to change them would be underestimated in our regressions. That is, some of those who prefer low tax rates might already have moved to lower tax municipalities. The more their choice of residence has already been affected by the municipal tax rate, the smaller the coefficient for the effect of the tax rate. We could call this a Tiebout bias. Following Rubinfeld et al. (1987) and Ahlin and Johansson (2000), the problem can be described in the following way. We know from before (equation 1) that an individual's preferred municipal tax rate is given by

$$t_i^* = \beta_0 + \mathbf{x}_i \boldsymbol{\beta} + \varepsilon_i, \quad (2)$$

where $\mathbf{x}_i$ is a vector of variables explaining the unobserved preferred tax rate (t_i^*), and ε_i is an independently and identically distributed random error term. Not all individuals in a municipality will have the tax rate they prefer because they may have moved there (or not moved away) based on other factors. The difference between the actual rate they pay (t_i) and their preferred tax rate (t_i^*) can be expressed as

$$t_i - t_i^* = \gamma_0 + \mathbf{x}_i \boldsymbol{\gamma} + u_i \quad (3)$$

⁶ These results are available upon request.

Variables in (3) include variables in (2); for example, income might affect both the preferred tax rate and mobility. There can also be variables in (3) not affecting the preferred tax rate; i.e. some β 's and γ 's might be zero. If ε_i and t_i are correlated there is a Tiebout bias; the preferred tax rate affects the choice of residential municipality. That is, if the choice of which municipality to reside in is influenced by the preferred tax rate we will underestimate the actual relation between the actual and preferred tax rate.

As proposed by Rubinfeld et al. (1987), instrumental variable estimation might correct the bias due to the endogeneity problem. Instrumental variable estimation is conducted via a two-step procedure where the endogenous variable is regressed on the instrumental variables and the exogenous variables from the original estimation. In the second stage, the regression of interest is estimated as usual, except that in this stage, the endogenous variable is replaced with the predicted values from the first stage regression.

We use four variables assumed to affect the preference municipality mismatch but not the preferred tax rate; the choice of variables follows Rubinfeld et al. (1987) and Ahlin and Johansson (2000). The idea is that these variables should explain the tax rate that an individual faces but not the tax rate that she actually prefers. The first variable indicates whether the individual lives in one of the three major urban regions in Sweden (*Urban*), and is meant to measure the availability of municipality choice. There are multiple municipalities within commuting distance in each region, and this should decrease the mismatch, since it is possible to choose from several municipalities with different tax rates. By the same token, a variable indicating a recent move is included (*Moved*), since more recent movers should be more satisfied with the tax rate in the municipality they have chosen to move to. The other two variables measure the change in the municipal tax rate from 2002 to 2003, or from 2003 to 2004 (*Change '03* and *Change '04*). Since moving is costly, people might choose not to move even though the tax rate has recently changed from their preferred level. A large change in the tax rate would, at least if unexpected, make the mismatch larger.

Using these variables (*Urban*, *Moved*, *Change '03*, and *Change '04*) as instruments for the actual tax rate, we can test for a potential Tiebout bias and, in the case of a bias, improve the estimation of the causal effect of the actual municipal tax rate on the attitudes towards this tax. The instrumental variable regressions, as well as an ordered probit comparison, are presented in Table 7.

The dependent variable in the first step is the actual tax rate in the municipality where the respondent lives. In Table 7, Panel B we can see that the municipal tax rate is indeed correlated with the chosen instruments (which are supposed to affect municipal choice but not the preferred tax rate).⁷ This is supported by the Cragg-Donald statistic,

⁷ People living in urban regions tend to face higher tax rates, while those who have moved recently live in municipalities with lower tax rates. When it comes to municipalities that recently changed their tax rates, the effects go in different directions; municipalities that increased their tax rates in 2003 tend to have lower tax rates than others, while those who increased their tax rates in 2004 instead tend to have higher tax rates than others. The reason for this is that municipalities that increased their tax rates in

which indicates that the instruments are not weak. This implies that the instruments are good predictors of the actual tax rate and that the predicted values have enough variation to be used as instruments. The Sargan test suggests that the instruments are valid. This implies that the instruments do not seem to affect tax rate preferences directly, but only the mismatch, as we have assumed.

Table 7: Testing for Tiebout bias

Dependent variable: attitudes towards municipal income tax rate

	Oprobit	IV 1	IV 2	IV 3
Panel A: Second stage results				
Tax rate	-0.046 (0.026)	-0.233** (0.105)	-0.217** (0.104)	-0.210** (0.069)
Panel B: First stage results for tax rate				
Urban		0.052 (0.169)	0.051 (0.169)	
Change '03		-0.419*** (0.137)	-0.422*** (0.138)	-0.405*** (0.141)
Change '04		0.742*** (0.164)	0.741*** (0.166)	0.739*** (0.165)
Moved			-0.076 (0.107)	
Observations	1,093	1,085	1,085	1,085
Hausman p-value		0.110	0.145	0.156
Cragg-Don. F-value		62.45	46.40	92.12
Sargan p-value		0.359	0.145	0.495

Estimated with 2SLS. Only results for tax rate and instruments presented. Standard errors clustered at the municipal level in parenthesis. The Hausman-, Cragg_Donald-, and Sargan tests were conducted using a linear version of the IV-procedure.

*** p<0.01, ** p<0.05, * p<0.1.

The dependent variable in the second step is the level of support for municipal taxes, ranging from 1 for "abolish/decrease a lot" to 5 for "increase a lot." This step was conducted using ordered probit regressions. Here the tax rate is replaced with the predicted values of the tax rate from the first stage regression. The second-stage results show that (instrumented) tax rate has a statistically significant negative effect on tax attitudes (Table 7, Panel A).⁸

Using the Hausman test, we can test whether the tax rate is endogenous in our estimations; i.e., whether the tax rate is correlated with the error term. The Hausman test does not suggest that the IV-specification is preferable for any of the tested combinations of instruments. That is, the null that the municipal tax rate is exogenous is not rejected (the p-value ranges from 0.110 to 0.156 in the three specifications presented in Table 7). This is true for all possible combinations of our four instruments. The specifications presented in Table 7 are closest to passing the

2003 increased it from a relatively low level, while this is not the case for municipalities that increased their rates in 2004.

⁸ A modified Breuch-Pagan test (not presented) suggests that heteroskedasticity is not a problem, hence I do not use robust standard errors (although doing so does not change the results).

Hausman test. Thus, the results of the test are robust to the inclusion of different instruments.

This suggests that a Tiebout bias is not a problem in this setting, yet the results from previous studies have been sensitive to the choice of instrumental variables (Ahlin and Johansson, 2000). The result of the Hausman test should therefore be accepted only with some caution. Even though it is not possible to reject the null of no Tiebout bias, when the municipal tax rate is instrumented for, the coefficients get considerably larger (and statistically significant at the 5 percent level) than in the non-instrumented ordered probit counterpart (see second stage in Table 7). This is at least an indication that some kind of Tiebout sorting may be going on, and that actual tax rates may matter for attitudes. From descriptive statistics we know that the highly educated and people regularly reading a newspaper – two factors related to not wanting to decrease the tax rate – tend to live in municipalities with lower taxes. This is what we would expect if these people have moved to municipalities with tax rates to their liking. However, for other variables which are important for tax preferences (political affiliation, satisfaction with municipal services, and income) there is no tendency for these groups to reside in either high- or low-tax municipalities.

But why is the case for Tiebout not sorting stronger? One reason could be that people are not aware of the different tax rates in nearby municipalities, or do not know whether they live in a high- or low-tax municipality. Such systematic misconceptions about key fiscal parameters are called fiscal illusion (Oates, 1988). In this case, their desire to change the municipal tax rate might depend, to some extent, on misperceptions of how high their tax rate actually is (see e.g. Gemmell et al., 2004 for a similar argument). An indication of this is that people have unrealistic expectations about taxes and government budgets: about 64 percent of the respondents would like to decrease their tax rate, while only 27 percent would like to decrease the public services provided by the public sector financed by the taxes. That knowledge about taxes in the Swedish general population is sparse is also supported by Sandaji and Wallace (2010), who find that people underestimate the share of an average worker's income that is transferred to the public sector. Another reason why people might not move as a result of differences in municipal tax rates is "editing," whereby people rule out less important factors in their decision-making (Kahneman and Tversky, 1979); the municipal tax rate may be one such less important factor. A status quo bias, in which individuals prefer the tax rate they have to a tax rate that they do not have, may also be a possibility (Kahneman et al., 1991). John et al. (1995) found that, although there is some support for Tiebout sorting, there are generally more important factors to consider when deciding where to live, such as buying a first home, and job opportunities.

5. CONCLUSION

Coming back to the questions in the opening paragraph: Is it the case that people living in high-tax municipalities are more willing to decrease the tax and individuals living in low-tax municipalities are more willing to increase the tax? Or, following the Tiebout (1956) argument, do people vote with their feet – by moving – to pay taxes that accord with their preferences? People in high-tax municipalities are to some extent more likely to want lower tax rates, and people in low-tax communities are to some extent more likely to want higher tax rates. While it is tempting to interpret this

modest effect of the actual tax rate on tax preferences as a Tiebout effect – i.e., people move to municipalities with their preferred tax rate and do not like to change the tax – the evidence for this is not very strong. Another possible explanation is that people do not always know their actual tax rates or how they compare to tax rates in nearby municipalities, as suggested by previous work showing that knowledge about taxes tend to be low in the general public (Gemmell et al., 2004). Since better informed people may be less likely to want to decrease tax rates, measures to increase public knowledge about taxes may be important for the legitimacy of income tax collection.

But what other factors are important for municipal tax rate preferences? Possible self-interest variables, such as being a municipal employee, having young children, or being 65 or older, do not seem to be important in determining people's desire to change tax rates. This is in line with survey evidence indicating that voting and political preferences are not only driven by self-interest (e.g., Carlsson and Johansson-Stenman 2010). Those with low or high income (as compared to middle-income earners) are more likely to want to decrease their tax rates, however. That low-income earners would like to cut the tax rate is not in line with the standard Meltzer and Richard (1981) argument. One possible reason for this might be that the municipal income tax is not progressive, thus low-income earners prefer increases in other taxes instead.

Unsurprisingly, political views seem to be important in determining people's tax preferences: those who support the political right are more likely to want to decrease tax rates, while those who support the left are less likely. Of course, the self-interest factors (as having children or being a municipal employee) might affect political views, rather than tax preferences directly. Also, reverse causality may be a problem when it comes to including the variables on political views, though not including these variables does not change the results regarding the other variables to any great extent (as demonstrated by the successive introduction of variables in Specifications 1-3).

To further address the questions concerning what is important for people's tax preferences, it would be interesting to ask whether people know their actual tax rates and whether they know what their tax payments are used for. This would make it possible to ascertain whether people who know what their taxes are used for have different preferences regarding tax rates to those who do not.

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APPENDIX - TAXES IN SWEDEN

In 2004 the tax to GDP ratio in Sweden was 50.3 percent; the highest ratio in the world (Swedish Tax Agency, 2006). This is almost 15 percentage points higher than the OECD average. Note that many transfers are taxed in Sweden compared to other countries, if this is taken into account the tax to GDP ratio in Sweden is not particularly higher than many other European countries (Andersson et al., 2003). 64 percent of total tax revenues were taxes on labor (tax on earned income and social security contributions), 26 percent taxes on goods and services, and 10 percent taxes on capital. The main expenses of the public sector in 2004 were social security, education and health care (Swedish Tax Agency, 2006).

The earned income tax consists of a local income tax and a state income tax. The local earned income tax is proportional and includes two parts: one levied by the municipalities, and one levied by the counties. The average combined rate was 31.5 percent in 2004 (the average municipal tax was 20.8 percent, and the average county tax was 10.7 percent). It is the combined local tax that is generally considered when the municipal earned income tax is discussed in Sweden. The tax is paid in one chunk to the central government and then distributed to the municipalities (all taxes are collected by the Swedish Tax Agency). In 2004 the municipal income tax varied from about 29 percent to about 34 percent. The municipal income tax is the greatest source of revenue for the Swedish public sector (Swedish Tax Agency, 2006).

16 percent of the income earners above 20 years of age paid the state earned income tax in 2004, this tax consisted of an additional 20 percent on incomes exceeding SEK 291,800 (\$ 41,700). Those earning more than SEK 460,600 (\$ 65,800) paid an additional 5 percent tax on earnings above that amount (Swedish Tax Agency, 2006). For an individual living in an average tax municipality, the top marginal tax rate was thus 56.5 percent.

Other than the municipal earned income tax, all taxes are decided about on the central government level. Tax deductions, progressivity, income tax credits and other potential variations in the tax system are not in the hand of the local government to decide on. Thus, the only variation regarding taxes between municipalities is regarding the rate of the proportional earned income tax (Swedish Tax Agency, 2006).