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Social Mobility and Redistributive Taxation

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Introduction

How would citizens decide if they could directly choose the amount of income redistribution? We investigate this question experimentally, taking into account how fluctuations of wage rates may affect the choices of redistributive taxes. A cornerstone of political economy on this question is the theory developed by Meltzer and Richard (1981), and our analysis experimentally tests the validity of this model. Their analysis rests on a concept of rational citizens who maximize their own, narrowly defined interests. In the economic sphere they choose their own work effort given their individual abilities and given the regime of income taxation currently in place. In the political sphere they vote on the regime of redistributive taxation. Applying median voter theory and assuming that the median voter anticipates the distortion effects and redistribution effects of a higher tax rate, Meltzer and Richard predict an outcome in which the tax rate chosen just balances the median voter's marginal benefit and cost of an increase of the redistributive tax. The level of redistribution increases with the ratio of the mean income in society to the income of the median voter.¹

The framework of Meltzer and Richard (1981) abstracts from many further aspects of wage-earning activities and electoral choices about redistribution that interact with the trade-off between redistributive taxation and tax distortion.² First, intertemporal considerations and the dynamics of own income generating ability may be important. While Meltzer and Richard assume a fixed productivity, individuals who are currently well-off may like to commit to a system of income redistribution if they fear that they may lose their high income position and become the beneficiaries of this redistribution in the future. Redistribution may then have the role of insurance for them (Varian 1980). Similarly, currently poor individuals may favor income redistribution less strongly if they feel that they (or their children) may rise in the income hierarchy in future periods (Piketty 1995). Second, preferences about status, positional concerns or other-regarding preferences may be important. There is potentially a large number of motives behind such preferences.³ Preferences about relative standing or status may be subject to the prevailing institutional or historical framework in which relative income may be instrumental for desirable non-market goods (Cole, Mailath and Postlewaite 1992, Corneo and Grüner 2000). The willingness to share with others may depend on the perceptions of the causes of social mobility that prevail in a society (Bénabou and Ok 2001). Third, citizens may have what could be called "social preferences" about how the distribution of incomes should look like. Determinants of such preferences may, for instance, be feelings of empathy, group identity, national identity or solidarity.⁴ Also, whether individuals perceive income distribution as a result of individual effort ("merit"), or as a result of pure chance, may affect their views about redistribution.⁵ Such motivations may add to, counteract, or cloud the basic underlying logic of the Meltzer-Richard concept.

Assuming that a society's redistribution policy has rather a long-term character compared to changes in individual income, the individuals' expectations about their future income, their past experience, and their perception of current wage inequality will crucially shape individual attitude toward redistribution. Here, although voters' perceptions of income inequality are important, they need not be correct.⁶ Voters may misjudge the degree and the dynamics of inequality (Bartels 2009, Norton and Ariely 2010), and their assessment of inequality may depend both on their own income position and on their perception of income mobility and opportunity (Fong 2001, Osberg and Smeeding 2006). Moreover, the voters' preferences how the ideal distribution of income should look like need not to be consistent with their concrete policy preferences (Bartels 2005, McCall and Kenworthy 2009).

Factors like personal experience and subjective evaluation of own income mobility appear difficult to measure and their impact on redistributive preferences, taking into account other-regarding preferences, can only be partially assessed using survey data. By making individuals decide on redistribution in the controlled environment of the laboratory, this paper contributes to understanding the relation between (the perception of) income mobility and actual preferences for income redistribution in a framework in the spirit of Meltzer and Richard (1981) where individuals assume both the role of workers and voters, earn money and redistribute. Our setup abstracts from all different kinds of other-regarding preferences and focuses on the role of an exogenously imposed and commonly known pattern of social mobility where wage fluctuations are purely random and cannot be influenced by individual decisions.

First, we consider an environment without any wage fluctuations or uncertainty and ask: does the simple and intuitively compelling theory of Meltzer and Richard (1981) hold if income earning and voting on redistribution takes place in an experimental laboratory and under ideal conditions? In a framework in which the additional sets of motivations are absent by construction, we find: individuals seemingly understand the structure of the Meltzer-Richard problem. Their income-generating efforts react to higher taxes, and the taxes have the distortionary effects that are predicted by theory. Individuals also understand the consequences of their electoral choices. They understand both the negative effect of higher taxes on national incomes and the redistributive consequences, and they vote in line with their material interest. They seemingly can see through the fiscal veil of taxation and redistribution and correctly anticipate the consequences of higher taxes for work effort and hence for redistribution. This provides the benchmark and an important reference point for the second set of questions we ask.

Second, we address the aspect of income mobility and analyze how wage fluctuations affect voting on redistributive taxes. We compare three different mobility regimes to our benchmark case where individuals have a constant ability/productivity throughout all rounds of the experiment. In the first mobility regime, the ability of individuals randomly fluctuates from one round to another, but is known with certainty within one round. Does this perceived social mobility affect the subjects' choices of the redistributive tax even if the electoral choice of the redistributive tax takes place each round and applies only to the current round? In the second mobility regime, when voting on redistribution, individuals have a signal, but not perfect information about their productivity at the point in time when income can be earned. Thus, contrary to the first mobility regime, there is actual income mobility within one round of the experiment. In the third mobility framework, the choice of taxes occurs under a complete veil of ignorance: individuals know the income distribution in society, but not their own income. In the first mobility regime, perceived mobility has an effect on the choices of the tax rate, and median tax rates are significantly lower than in the benchmark case. The same is true for the second mobility regime; here, under actual social mobility, median tax rates are similar to those in the first mobility regime under perceived social mobility. In the third mobility regime, behind a veil of ignorance, we identify two different types of behavior:

almost one half of the subjects take into account the tax distortion effects and choose tax rates in line with their material interest; the other half of the subjects state tax rates that are very close to the average of potentially optimal future tax rates. By and large, the different types of mobility have effects that are in line with narrowly selfish electoral and earnings choices.

Measurement of policy choices on redistributive taxation in countries, or by questionnaires about preferences about redistribution and the like, have limits that suggest laboratory experiments as an important complementary tool. The experimental setup has three important advantages for studying these questions. First, it is difficult to identify the Meltzer-Richard logic in the empirical data, given that it could be clouded by all the other effects discussed above. In the laboratory individuals can be placed in a framework in which most or all aspects that add, counteract or potentially conceal this logic can be controlled for or removed. We use a simple device for removing all status considerations and possible types of other-regarding preferences from the picture. Second, for the Meltzer-Richard logic to materialize it would be important for voters to anticipate the equilibrium behavior of the vast majority of other individuals. The choice of tax rate that maximizes their material payoff is, for instance, lower (higher) if the tax is more (less) distortionary for actual behavior than what it should be from the perspective of a worker who chooses his labor supply according to narrowly defined selfish interests. This type of 'strategic uncertainty' can also be controlled for in the laboratory, by embedding the subjects in a computer-simulated environment. At the same time, this setup eliminates any repeated games effects. Third, for the Meltzer-Richard logic to emerge it is important that the conditions of the median voter theorem apply. There are numerous reasons why the median voter outcome need not emerge in the 'field'.⁷

Empirical evidence on the Meltzer-Richard (1981) theory is inconclusive⁸, and given the large number of aspects that add and potentially obliterate the benchmark effects, inconclusive evidence should not be surprising. Existing experimental analyses of income redistribution focus mainly on other-regarding or non-material preferences. Krawczyk (2010), for instance, studies the revealed preferences for redistribution of randomly generated income if individuals know their mutual probabilities of winning a high income. He finds that differences in win probability do not lead to stronger preferences for redistribution, but that more redistribution was preferred by the subjects if the win probability was randomly assigned ("luck") than if it was the outcome of individual effort/ability ("merit"). Similarly, Esarey, Salmon and Barrilleaux (2010) use a laboratory experiment to measure the role of left-wing or right-wing ideology for redistributive preferences, and Durante and Putterman (2009) focus on the role of fairness considerations in a framework with redistributive taxes. Further important experimental work on voting on redistribution has been done by Tyran and Sausgruber (2006), who analyze a case where subjects endowed with different income levels vote on a fixed amount of redistribution. They find that Fehr-Schmidt-type inequity aversion may explain their experimental results on voting on redistribution. For an experimental analysis of the motivations underlying the Meltzer-Richard results, we choose an experimental design which eliminates any direct fairness considerations and income comparisons from the picture.⁹ Moreover, our design allows us to study the importance of income mobility, detached from the impact of other-regarding preferences that could distort the effect of income mobility in a way hardly to be predicted and interpreted. In the experiment, dynamics of own income prove to be important: we find that individual social mobility strongly affects voter preferences and reduces the amount of redistribution.

The Setup

The theoretical framework of the experiment follows closely the model by Meltzer and Richard (1981) - hereafter MR - with simplifications and minor adaptations. We consider an

economy consisting of three individuals who act as voters and workers. Individuals only differ in their productivity, measured by the wage rate w_i , where $w_i \in \{0, 3, 6\}$.

The distribution of wages within the society is drawn - with equal probability - from the set P of permutations of the tuple $(0, 3, 6)$. Thus, each individual has a probability of $1/3$ of having a wage of 0, 3, or 6, and the aggregate wage distribution is the same for all possible random draws. To allow for social mobility, we assume that the distribution of wages for the upcoming working period may change after the tax rate has been chosen. This is the case, for instance, if a tax policy, once implemented, is more sticky than the distribution of wages. By construction, this allows for individual income mobility, but the distribution of incomes remains unchanged.

We consider the following two-stage game. At the beginning of stage 1, one element of P is randomly drawn, and each individual learns his *prospective wage rate*. Then, the individuals simultaneously state their preferred tax rate $\tau_i \in [0, 1]$, $i = 1, 2, 3$, knowing that the median choice will be implemented.¹⁰ At the beginning of stage 2, with probability p , a new element of the set P of possible wage distributions is chosen (possibly identical to the old one). With the remaining probability $1 - p$, no reassignment of wages takes place. (In the basic MR game, $p = 0$.) If the wage distribution has changed, individuals learn their *actual wage rate*. In addition, individuals learn the implemented tax rate. Then, they simultaneously choose their work effort $x_i \geq 0$, $i = 1, 2, 3$. The payoff of an individual only depends on the final wage rate valid in stage 2 and is equal to

$$\pi_i = (1 - \tau)w_i x_i - \frac{1}{2}x_i^2 + \frac{1}{2} \sum_{j \neq i} \tau w_j x_j. \quad (1)$$

It consists of three terms. First, an individual's gross income is equal to $w_i x_i$, and each individual pays a proportional tax τ on this income. Second, the individual bears an effort cost of generating income that rises with his own work effort and equals $\frac{1}{2}x_i^2$; this effort cost is not deductible from the tax base. Third, the tax revenue is solely used to finance lump-sum redistribution. More precisely, each individual i receives a transfer that is equal to half of the tax revenue obtained from taxing the other individuals in his group. Note that the transfer which an individual receives does not depend on his own tax payment.¹¹

At stage 2, individuals take the tax rate τ and their own actual wage rate w_i as given. Individual i chooses his own work effort x_i in order to maximize π_i in (1) with respect to x_i . This leads to an optimal choice of effort

$$x^*(w_i, \tau) = (1 - \tau)w_i. \quad (2)$$

Note that this choice only depends on the tax rate and on the own final wage rate, and it is independent of p , since the wage rate is known with certainty when individuals choose their work effort.

Turn now to the tax rate choice in stage 1. Assuming subgame-perfect play, individuals anticipate the choices of own and other individuals' work effort $x^*(w_i, \tau)$ as a function of the tax rate and their wage. The tax rate that is preferred by individual i depends on the probability p that a new wage distribution will be assigned. If $p < 1$, maximization of (1) and subgame-perfect play yields the following conclusions. An individual who has a prospective wage of $w = 0$ benefits from at least some redistribution and therefore prefers a tax rate that is strictly positive. An individual with the prospective wage $w = 3$ also prefers a strictly positive tax rate whenever his income is not higher than the mean income in the

society.¹² An individual, however, that has the high prospective wage $w = 6$ always prefers a tax rate of zero. This individual loses in expectation from redistribution. With probability $1 - p$, the individual keeps the high wage rate as the actual wage and then prefers that there is no redistribution. With the remaining probability, there is an equal chance of obtaining either of the three possible wage rates; the optimal tax rate in this case is the one that maximizes expected surplus which, due to the tax distortion effects, is a tax rate of zero. If $p = 1$ and the prospective wage becomes irrelevant, all individuals prefer a tax rate of zero; each of them earns one third of the expected surplus, and this surplus is maximal if $\tau = 0$.

When determining his preferred tax rate, the median voter trades off the increase in redistribution with the higher tax distortion. His preferred tax rate is decreasing in p : the more likely it becomes that a new wage distribution will be assigned, the more important becomes the tax distortion effect when his expected payoff is maximized.

If $p = 0$ (as in the basic MR game), the individuals' preferred tax rates¹³ are equal to

$$\tau^*(w = 0) = \frac{1}{2}, \tau^*(w = 3) = \frac{1}{3}, \text{ and } \tau^*(w = 6) = 0. \quad (3)$$

If $p = 0.75$ (as we will choose in the experiment), this results in optimal tax rates

$$\tau^*(w = 0) = \frac{1}{4}, \tau^*(w = 3) = \frac{1}{8}, \text{ and } \tau^*(w = 6) = 0. \quad (4)$$

With social mobility, the preferred tax rate of both the individual with the low and the medium wage are lower than in the basic game. For $p = 1$, the choice of the tax rate takes place behind the veil of ignorance; all three individuals prefer a tax rate of

$$\tau^* = 0. \quad (5)$$

Here, as discussed above, maximization of expected payoff corresponds to maximization of total expected surplus.¹⁴

Experimental Design

In order to identify the effect of the individual income position on preferences for redistribution together with the impact of individual mobility, we conducted four treatments. To have voting choices from individuals with low, middle and high wages, we grouped players into sets consisting of 3 voters: one with a low wage rate, one with a medium wage rate and one with a high wage rate. Only one of the three players in each set is a 'real' player; the co-players in this set are simulated by the computer. This was made common knowledge. Also, subjects were told that each simulated player would make his choices as to maximize his own monetary payoff.¹⁵ This approach eliminates the possible effects stemming from other-regarding preferences; in addition, it removes any strategic uncertainty about the co-players' effort choices for a given tax rate and therefore allows for precise predictions about the behavior of one's co-players in a given set.

<i>Treatment</i>	<i>Description</i>	<i># rounds</i>	<i># groups</i>
BASE(LINE)	Subjects keep wage throughout experiment	12	24
RAND(OM)	Subjects randomly get new wage each round	12	24
MOBIL(ITY)	Subjects get new wage within round with prob. $\frac{3}{4}$	12	24
IGNOR(ANCE)	Subjects learn wage only after choice of tax rate	12	24

Table 1. Experimental design

Each of the treatments consisted of 24 groups, each with one ‘real player’ and two ‘simulated players’. One session consisted of 12 rounds. Table 1 summarizes the design of the experiment. The BASE(LINE) treatment implements the framework of Meltzer and Richard (1981) setting $p = 0$: individuals know their wage with certainty when choosing the tax rate, as the prospective wage rate is always equal to the actual wage rate. Each individual was randomly assigned a wage rate at the beginning of the experiment, and the individuals knew that they would keep their wage rate throughout the entire experiment. Thus, the one-period voting game was played 12 times, each time with the same wage rate and the same wage distribution within a group.

The second treatment, the RAND(OM) treatment, is designed to identify the effect of past experience and future income mobility on preferences for redistribution, focusing only on "perceived mobility" and abstracting from "actual mobility". Here, again $p = 0$, that is, individuals kept their wage rate within a round; they were, however, randomly assigned a new wage rate in each of the 12 rounds. The stage game therefore is identical to the stage game in the BASE treatment; rounds are completely independent, and there is no uncertainty about the individual income position within a given round. But in the RAND treatment, individuals experienced different wage rates in the past, and anticipated different income positions in the future. Although the theory predictions for this treatment are precisely the same as for the BASE treatment, this "perceived mobility" may already affect the voters’ preferences for redistribution.

In the third treatment, the MOBIL(ITY) treatment, we add the possibility of actual social mobility prior to a possible adjustment of the tax rate. As in the RAND treatment, individuals obtain a new randomly chosen prospective wage rate in each new round. In addition, with probability $p = 0.75$, wages are reassigned once the individuals have stated their preferred tax rate and before choosing their work effort.

The last treatment, called IGNOR(ANCE), focuses entirely on the aspect of uncertain future income by assuming that individuals learn their wage rate only after having decided on the tax rate. (From a theory perspective, this corresponds to $p = 1$ in the game above.) As there is perfect income mobility, this is equivalent to the choice of taxes taking place behind the veil of ignorance.

Table 1 summarizes the design of the experiment. The experiment was programmed and conducted with the experiment software z-Tree (Fischbacher 2007) and run at the MELESSA lab of the University of Munich. The subjects (96 in total) were students from a large variety of fields of study.¹⁶ Earnings in the experiment were measured in a currency called "Taler". Before the experiment started, the subjects had to answer questions regarding

their understanding of the experiment; by answering the questions, they earned an endowment of 10 Taler. The exchange rate used in all treatments was 6 Taler = 1 Euro.

Each of the four treatments consisted of 12 rounds. At the beginning of each round (except for the IGNOR treatment), the subjects were informed of their wage in this round. In the MOBIL treatment, it was indicated that, in 3 out of 4 cases, the wage distribution would change. Subjects were asked to state their preferred tax rate in percentage, as an integer between 0 and 100. The preferred tax rates of the two simulated voters were chosen as to maximize the players' monetary payoff. The computer selected the tax rate that was implemented in this round. With a probability of 0.8, the computer selected the median choice, and with the remaining probability, the computer selected either the lowest or the highest of the three proposed tax rates within a group. This ensured that the individuals with low or high wage would have an (economic) interest to honestly state their preferred tax rate.¹⁷ The way the computer would select the tax rate implemented for the group was explained in the instructions.

At the beginning of the second stage, the subjects learned the implemented tax rate, and, in treatments MOBIL and IGNOR, their (possibly new) wage. They had to choose their work effort as a real number between 0 and 6. At this point, the subjects were shown a cross table, computing for different possible choices of effort their gross income, the taxes they would have to pay, and their cost of effort. For the two simulated players, the computer chose their payoff-maximizing work effort. At the end of each round, subjects were displayed their own preferred tax rate, the tax rate selected for their group, their own work effort, and their own monetary payoff in this round.

The finite number of rounds rules out possible repeated game effects for equilibrium play if players are motivated by material interests only. However, such effects may emerge nevertheless. We consider such effects as very unlikely in our environment, because subjects knew that they interact with independent computer-simulated players in each round, and that these computer-simulated players maximize monetary payoffs in each single round.

Theoretical Predictions

The optimal tax rate choices crucially depend on whether subjects understand the tax distortion effect and choose their work effort according to the theory prediction given in (2). Similarly, if material interest drives the choice of the tax rate, we should expect preferred tax rates to be strictly decreasing in the wage rate; the theoretically predicted tax rate choices are given in (3) for the BASE and the RAND treatment and in (4) and (5) for the MOBIL and the IGNOR treatment, respectively. To analyze the effect of income mobility, we will mainly focus on the median voters' choices which are most reliable because they are most likely the tax rates being selected within the group.

For the BASE treatment, we expect tax rates to be close to the theory prediction. Both here and in the RAND treatment, subjects know their wage with certainty when they choose the tax rate, and therefore risk preferences do not play any role. In the BASE and in the RAND treatment, the game in each round is exactly the same. Moreover, rounds are fully independent, and it is explained that the assignment of the wage rate is perfectly random. As subjects decide in a computer-simulated environment, they cannot establish a relation between their current choice and their co-players' future choices. Hence, from a theory perspective, there is no reason why behavior should be different, and thus the theory prediction is that median tax rates in the BASE and the RAND treatment are the same.

In the RAND treatment, however, subjects experience being in either of the roles, which, in fact, is the only difference with respect to the BASE treatment. This "perceived mobility" may affect their behavior. If there is an effect of perceived mobility, then median

tax rates should be lower in the RAND treatment than in the BASE treatment: perceived mobility might result in a reaction similar to the one in the MOBIL treatment. The perceived randomness might cause median voters to take the tax distortion effect better into account and to choose lower tax rates.¹⁸ The following hypothesis summarizes the theory prediction and, as a counterhypothesis, the potential effect of perceived social mobility.

Hypothesis 1. RAND vs. BASE *a) In the RAND treatment, the median voter's preferred tax rate is the same as in the BASE treatment.*

b) (Counterhypothesis "perceived mobility effect") In the RAND treatment, the median voter's preferred tax rate is lower than in the BASE treatment.

Next, we analyze the effect of actual social mobility by comparing the MOBIL treatment to the BASE treatment. Here, theory predicts that, due to the possibility of obtaining a new wage in the *same* round, i.e., for the then fixed tax rate, the median voter's preferred tax rate is lower in the MOBIL treatment than in the BASE treatment.

Hypothesis 2. MOBIL vs. BASE *In the MOBIL treatment, the median voter's preferred tax rate is lower than in the BASE treatment.*

Contrary to the BASE and the RAND treatments, where subjects know their wage with certainty when choosing the tax rate, preferred tax rates in the MOBIL treatment will depend on how subjects react to uncertainty. Strong risk aversion could diminish or even reverse the effect of actual social mobility, because the median tax rate in the MOBIL treatment is higher the stronger the risk aversion.¹⁹ Moreover, risk aversion would imply that voters who have a high wage when choosing the tax rate would prefer a higher tax rate than voters with a high wage in the BASE treatment.

Finally, the IGNOR treatment incorporates the effect of choices taking place behind the veil of ignorance. We expect preferred tax rates in the IGNOR treatment to be lower than the median tax rates in the BASE treatment, since the consideration of the tax distortion effect should be stronger in the IGNOR treatment, where in fact all voters are median voters.

Hypothesis 3. IGNOR vs. BASE *Preferred tax rates in the IGNOR treatment are lower than the median tax rates in the BASE treatment.*

Preferred tax rates in the IGNOR treatment may differ from predicted behavior, for a number of reasons. Due to the uncertainty about the future wage, risk aversion could matter, resulting in higher preferred tax rates. Also, choices could express maximin preferences which would result in preferred tax rates being equal to the optimal choice of the voter with the low wage.

In the treatments with income mobility, past experience may affect the individuals' preferred tax rates. In the estimations, we control for a possible impact of the wage in the previous period on preferred tax rates.

Estimation Results

To analyze the results of the experiment, we first estimate the subjects' choices of work effort as a function of tax rate and wage. Then, we determine the impact of social mobility on median tax rates. Before we turn to the estimation results, Figure 1 illustrates average preferred tax rates per period and dependent of the wage rate (the dashed horizontal line corresponds to the predicted median tax rate).

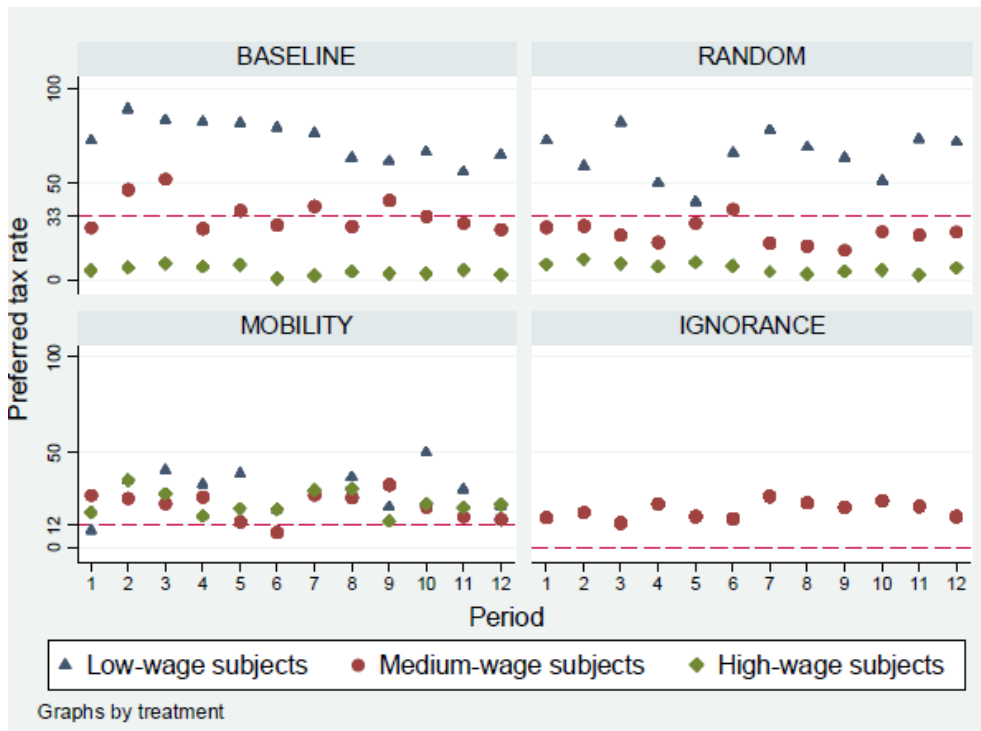


Figure 1. Average preferred tax rates per treatment and type.

The exact values for the average tax rates are summarized in Table 2 (below). Here, preferred tax rates of the different types of individuals are calculated both using all data and, in order to control for learning effects, using only data from late periods. If we focus on experienced behavior, in the BASE treatment the average preferred tax rate of voters with the low wage is equal to 65.1% and thus higher than the theory prediction of 50% ; the average choice of voters with the median tax rate is 32.8% and thus very close to the theoretically predicted choice of 33% . The average preferred tax rate of voters with the high wage (3.3%) is slightly higher than the predicted choice of 0%. In the RAND treatment, average choices of individuals with low or high wage are similar to the BASE treatment, but the median tax rate, 20.5% , is much lower, indicating that perceived mobility clearly seems to matter.

All periods								
	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.
$w = 0$	50	73.4 (6.5)	50	63.9 (6.6)	25	31.2 (4.7)		-
$w = 3$	33	34.6 (4.5)	33	23.9 (2.8)	12.5	22.2 (3.2)		-
$w = 6$	0	4.6 (1.8)	0	6.3 (1.5)	0	23.2 (3.8)		-
Avg.							0	19.9 (3.1)
Experienced behavior								
	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.
$w = 0$	50	65.1 (8.2)	50	67.4 (6.7)	25	31.5 (6.1)		
$w = 3$	33	32.8 (3.4)	33	20.5 (2.9)	12.5	24.5 (5.0)		
$w = 6$	0	3.3 (1.5)	0	4.2 (1.7)	0	23.6 (4.0)		
Avg.							0	22.7 (4.2)

Note: Tax rates in percentage. Standard errors adjusted for clusters in parentheses.
Experienced behavior: data from rounds 7 – 12.

Table 2. Summary of experimental results

In the BASE and the RAND treatment, the tax rates strictly decrease with the wage. This is less obvious in the MOBIL treatment. Here, in particular for the voters with medium or high wage, tax rates are higher than the theoretically predicted ones. The average preferred tax rate of the high-wage type is almost the same as the average preferred tax rate of the medium-wage type (23.6% compared to 24.5% under experienced behavior).²⁰ This may be explained by the relatively large degree of mobility (wages reassigned with probability 75%), as average tax rates are similar to the average tax rates in the IGNOR treatment, where voters did not know their wage when choosing the tax rate. In the latter case (the IGNOR treatment), the average preferred tax rate in periods 7–12 is 22.7% and hence clearly above zero, which would be the optimal choice of risk-neutral individuals.²¹

The predictions on the preferred tax rates are based on the assumption that voters choose their payoff-maximizing effort in stage 2 of the game. Therefore, before examining median tax rates, we estimate the voters' work effort as a function of their wage and the implemented tax rate.

Work Effort Theory predicts an effort choice equal to $x_{it} = (1 - \tau_{it}) w_{it}$ which is equal to subject i 's net wage in round t . The individual should adjust its effort if the net wage increases by $\partial x_{it} / \partial ((1 - \tau_{it}) w_{it}) = 1$. We use the effort choices of the subjects made in the experiment to estimate this coefficient. For detailed results see the Appendix, and, in particular, Table 5. We find a strictly positive impact of the net wage on work effort in the BASE treatment, which is statistically indistinguishable from its theoretical prediction. Moreover, we find that choices of work effort do not differ significantly across treatments. The fact that observed effort choices are very close to the theoretically predicted choices is an important finding, for three reasons. First, it suggests that, in the absence of other-regarding preferences, voters react to the distortionary effects of redistributive taxes and they behave

accordingly. An income tax distorts their work effort, and the distortion is equal to its theoretically predicted size. Second, as the individuals react to taxes in this way, they can understand that taxes also distort the effort choices of other subjects. Third, this behavior is essential as a justification of our hypotheses about tax rate choices. These hypotheses are the predictions of rational behavior in stage 1 only if players behave in line with the predictions from rational behavior in stage 2, and this condition can now be taken as being confirmed. And because the distortionary effects of taxation are the same across treatments, differences in preferred tax rates across treatments can be reliably attributed to the different patterns of social mobility.

Median tax rates To test the effect of income mobility on the median voters' preferred tax rates (Hypotheses 1-3), we estimate a linear regression of the form

$$\tau_{it} = \alpha \times \text{TREAT} + \beta (w_{i,t-1} - \bar{w}) \times \text{TREAT} + \varepsilon_{it} \quad (6)$$

where TREAT contains a variable equal to 1 for all observations as well as dummies for RAND, MOBIL and IGNOR.²² Our focus is on the size of the tax rate that is chosen by the median voter, and on size differences between different treatments. The coefficient α_1 measures the average median voter's tax rate choice in the BASE treatment; α_2 to α_4 measure average deviations of tax rate choices in the treatments RAND, MOBIL and IGNOR with respect to the BASE treatment.

In addition, for the treatments with social mobility, we also consider possible dynamic effects, in particular, effects of past wage rate experience. For this purpose, we include in (6) a variable $w_{i,t-1} - \bar{w}$, which captures the previous wage normalized by subtracting the average wage rate ($\bar{w} = 3$) an individual can have.²³ Thus, if $w_{i,t-1} - \bar{w} > 0$, the individual had been richer than the median voter; in the RAND and the MOBIL treatment (where $w_{it} = 3$), this expresses downward mobility, whereas $w_{i,t-1} - \bar{w} < 0$ expresses upward mobility (the median voter in period t had been the low-wage type in the previous round).

For the BASE, RAND, and the MOBIL treatment, only choices of the median voter (the individual with the median wage) are included in the estimation; for the IGNOR treatment, all observations are included, since all voters can be considered as median voters. The estimation results are shown in the first part of Table 3 (below), while the second part of Table 3 tests whether median voters' behavior in the four treatments is in line with the theory prediction. The first estimation uses data from all periods, while the second estimation uses only observations from the second half of the experiment.

Median tax rate		
Estimated equation		
$\tau_{it} = \alpha \times \text{TREAT} + \beta (w_{i,t-1} - \bar{w}) \times \text{TREAT} + \varepsilon_{it}$		
Estimation results	All periods	Experienced behavior
α_1 (BASE)	35.239*** (4.667)	32.750*** (3.430)
α_2 (Δ RAND)	-11.630** (5.507)	-12.264*** (4.526)
α_3 (Δ MOBIL)	-14.335*** (5.458)	-9.121 (5.544)
α_4 (Δ IGNOR)	-14.975*** (5.678)	-10.073* (5.463)
β_2 ($(w_{i,t-1} - \bar{w}) \times \text{RAND}$)	0.942 (0.809)	0.046 (1.025)
β_3 ($(w_{i,t-1} - \bar{w}) \times \text{MOBIL}$)	1.428 (1.038)	1.162 (1.720)
β_4 ($(w_{i,t-1} - \bar{w}) \times \text{IGNOR}$)	0.232 (0.583)	0.282 (0.602)
R^2 (overall)	0.063	0.032
N	516	281
Hypothesis testing	All periods	Experienced behavior
H_0 (BASE): $\alpha_1 = 33$	$p = 0.633$	$p = 0.942$
H_0 (RAND): $\alpha_1 + \alpha_2 = 33$	$p = 0.002$	$p < 0.001$
H_0 (MOBIL): $\alpha_1 + \alpha_3 = 12$	$p = 0.002$	$p = 0.009$
H_0 (IGNOR): $\alpha_1 + \alpha_4 = 0$	$p < 0.001$	$p < 0.001$
H_0 (RAND=MOBIL): $\alpha_2 = \alpha_3$	$p = 0.508$	$p = 0.552$

Note: Tax rates in percentage. *** (**) significant at 1% (5%). Standard errors in parentheses. Experienced behavior: data from rounds 7-12. H_0 tested by means of two-tailed Wald tests.

Table 3. Regression results and hypothesis testing for median tax rates

In the BASE treatment, the average preferred tax rate of the median voter (measured by α_1) is equal to 35.2% (32.75% if we consider only experienced behavior) and therefore close to the predicted choice of 33%. This is a very strong confirmation of the tax rate derived in the Meltzer-Richard framework and provides strong support for the predictive power of its underlying logic.

Surprising, however, is a significant treatment effect (α_2) if we introduce perceived social mobility: even if the game is exactly the same in each round and rounds are clearly independent, median tax rates in the RAND treatment are about 12% lower than in the BASE treatment.

For the treatment effect in the MOBIL and the IGNOR treatment (coefficients α_3 and α_4), learning plays a role (the estimated coefficient and the significance level differ in the two estimations in Table 3). Overall, tax rates are considerably lower (about 10–15%) than in the BASE treatment, both for actual social mobility (α_3) and behind the veil of ignorance (α_4). The perception of social mobility seems to have an important impact on the voters' decisions. Past experience, however, does not further affect choices of tax rates in the current round (see coefficients β_2 to β_4 in Table 3). Since the estimated coefficients are positive, subjects that have been rich in the past and experienced downward mobility rather choose higher tax rates, while subjects that have experienced upward mobility tend to choose lower tax rates; the overall effect of the wage rate in the previous round is not significant.

The second part of Table 3 tests whether median tax rate choices correspond to the theory prediction. Here, we cannot reject that $\alpha_1 = 33$, that is, we cannot reject that median voters in the BASE treatment behave exactly according to the theory. Implementing the logic of Meltzer and Richard (1981) in its purest form, we observe median tax rates that are fully in line with the theory. This is our first key result. Adding different notions of social mobility leads to behavior which significantly differs from the theory prediction. This holds even if there is no actual social mobility between tax rate choice and earnings decisions: in the RAND treatment, median tax rates are significantly lower than predicted. This is the second key result of this paper. These effects emerge here even though other-regarding preferences or social preferences can be ruled out as possible explanations. They are important for the interpretation of earlier findings on preferences for redistribution and social mobility. The results hint at explanations for these findings that do not rely on other-regarding preferences. Finally, in the MOBIL and the IGNOR treatment, the median voter's preferred tax rate is significantly higher than the theory prediction. We will offer an explanation for this further below.

In the RAND treatment, there is only perceived social mobility (possibly different wages experienced in the past, or anticipated for rounds some time in the future) whereas in the MOBIL treatment, actual social mobility (wage fluctuations within the round) is added. Both patterns of mobility significantly and very similarly reduce the preferred amount of redistribution; comparing the treatment effects of the MOBIL and the RAND treatment, we do not find a significant difference (see last row in Table 3). Hence, there is no additional effect of adding actual social mobility to perceived social mobility, suggesting that the entire effect of social mobility has already been captured in the RAND treatment.²⁴

Whereas the lower preferred taxes in case of actual mobility are in line with maximization of pecuniary payoffs, the similarity of the effects of perceived mobility (RAND) and actual mobility (MOBIL) is more difficult to interpret. Subjects may follow a simple heuristic ("intuition", "gut feeling") that tells them that lower tax rates are better for them in the presence of income mobility. Such a heuristic as a choice rule performs very well compared to a full optimization programme in an empirical environment in which the sequencing of income changes and tax rate changes typically is not as deterministic and less clear cut than in the two treatments. The subjects may have adopted such a heuristic in this more natural environment, and, instead of solving the specific optimization problem at hand, they may use this heuristic in all instances of income mobility.²⁵

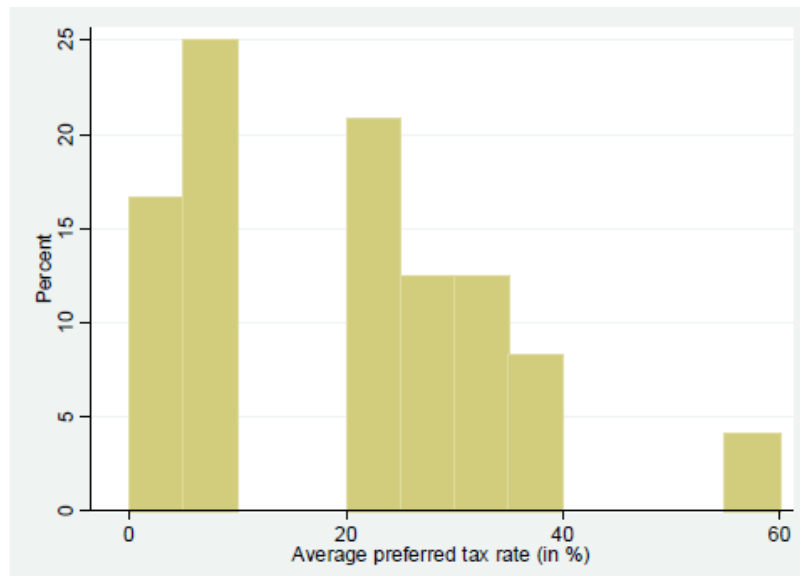


Figure 2. Distribution of average tax rates in the IGNOR treatment

In the IGNOR treatment, tax rates are significantly higher than predicted by theory. We will conclude the empirical analysis of our results by examining in more detail the choices made behind the veil of ignorance. Figure 2 shows the distribution of tax rates that each single individual in the IGNOR treatment chose on average. (Recall that in total there are 24 subjects in this treatment.) An interesting pattern evolves in the histogram. It basically identifies three groups of subjects. A first group, of about 42% of the subjects, chose on average a tax rate below 10%, the mean of this group being a tax rate of 4.78%. A second group, involving about 54% of the subjects, chose a tax rate between 20% and 40%. The average choice within this group is equal to 28.46%. A third group which, in fact, consists of only one subject, chose an average tax rate of 60%.

The choice of the first group is, although positive (4.78%), close to the theory prediction of a tax rate of zero.²⁶ Thus, the decisions of this group of subjects take into account the tax distortion effects; risk aversion does not affect this choice of the tax rate. The majority of subjects, however, chose a higher tax rate which is between the median voters' choice of the tax rate in the BASE and the RAND treatment.²⁷

Another interpretation of the behavior of the second group can be given if one remembers the situation in which individuals decide: they have to choose a tax rate knowing that they will end up with either a low, a medium, or a high wage. If they knew their wage, they would optimally choose a tax rate of 50%, 33%, and 0%, respectively. Their actual choice under uncertainty (28.46% on average) is almost exactly equal to the average of the three potentially optimal tax rates (which would be 27.67%). This may suggest that a large part of individuals employs a simple - but wrong - heuristic when deciding on the tax rate: they simply choose the average of the tax rates they would prefer in the three possible outcomes of the wage assignment.

<i>Hypothesis</i>	<i>Result</i>
H1: RAND VS. BASE	Perceived mobility induces a preference for less redistribution. Median tax rates are lower than in the BASE treatment.
H2: MOBIL VS. BASE	Actual social mobility induces a preference for less redistribution. Median tax rates are lower than in BASE, but not significantly different from the case of perceived mobility (RAND).
H3: IGNOR VS. BASE	Average tax rate choices behind the veil of ignorance are lower than in the BASE treatment; choices reveal two different types of behavior.

Table 4. Summary of the main results.

Overall, we find strong support for the theory prediction on work effort and median tax rates in a framework where uncertainty and income mobility are absent. Allowing for fluctuations in the wage rate does not affect choices of work effort, but leads to choices of tax rates that are only partly in line with the predictions of standard economic theory. Table 4 relates our main findings to the main hypotheses.

Conclusion

The seminal theory of Meltzer and Richard (1981) provides an important concept for redistributive taxation in a context of political decision-making: material interests determine the choice of redistributive taxes, taking into account incentive effects of higher taxes on individual work effort. To identify this logic in empirical studies, however, is difficult, due to the many factors that may cloud the picture and that cannot easily be controlled for. The laboratory creates an environment in which most of these additional factors can be removed or controlled for. Indeed, implementing the Meltzer-Richard logic in its purest form in a laboratory experiment shows that the individuals understand the consequences of decisions on redistributive taxation and vote in line with their material interest. In our baseline treatment, where the individuals' productivity was known and fixed throughout the experiment, voting decisions were driven by individual productivity and the subjects correctly anticipated the incentive effects of higher taxes. The median voter's choice of the tax rate was almost perfectly in line with the theory prediction of Meltzer and Richard.

As soon as factors other than individual productivity become relevant, the voters' choices may change. In three further treatments, we examined the consequences of individual social mobility as one of the very important factors that influence preferences for redistribution and that can be identified in the laboratory. We considered three different regimes of individual income mobility. In the first regime, the setup in each single round was exactly as in the baseline treatment implementing Meltzer-Richard, with the only exception that in each round individual productivity was randomly assigned and thus changed during the experiment. With this "perceived social mobility", material interest still determined the choices of redistributive tax rates. However, even though the rounds were completely independent, the median voter's tax rate was significantly lower than in the baseline treatment, suggesting that perceived social mobility - i.e. a history of changes in own wage in the past and prospects of changes in own wage in the future - causes preferred tax rates to be

lower.

In a second mobility regime, we added actual social mobility: when deciding on redistributive taxation, the individuals only had an imperfect signal about their actual productivity in a given round and learned their actual productivity only after the tax rate was chosen. As a consequence of this income mobility, median tax rates were lower than in the baseline treatment, but they did not differ from the first mobility regime where productivity only fluctuated between rounds.

In the third mobility regime, individuals did not know their income position when deciding on taxation. Two major types of behavior emerged: one part of the individuals chose tax rates close to the theory prediction, taking into account disincentive effects from taxation; a second group of subjects chose tax rates close to the average of potentially optimal tax rates.

In all treatments, we embedded the subjects in an environment where the co-players were simulated by computers. This largely removed the individuals' strategic uncertainty regarding the distortionary effect of taxation on their co-players' work effort and enables us to focus on choices of redistributive taxes. More importantly, it creates an environment that can identify the driving forces in the Meltzer-Richard model and the role of social mobility in a framework in which other-regarding preferences or social preferences have no relevance. As a key result, we find that both perceived and actual individual social mobility matter for the choice of tax rates and induce the median wage earners to choose lower taxes. These results would be in line with some of the theories of other-regarding preferences or with preferences about an equitable income distribution in a society. Interestingly, however, these effects emerge here even though other-regarding preferences or social preferences can be ruled out as possible explanations; there is no room for social preferences if the society consists of only one real player, who is teamed up with two computerized players. These observations are important for the interpretation of earlier findings on preferences for redistribution and social mobility. The results hint at possible different explanations for these findings.

Appendix

This section reports the results of two estimations for the choice of work effort as a function of actual tax rates. We estimate the work effort in stage 2 according to the equation²⁸

$$x_{it} = \alpha \times \text{TREAT} + \beta(1 - \tau_{it}) w_{it} \times \text{TREAT} + \varepsilon_{it}$$

The vector TREAT contains a variable equal to 1 for all observations and, in addition, dummy variables for the treatments RAND, MOBIL, and IGNOR. By interacting the net wage with the vector TREAT, we allow for treatment-specific intercepts.

Work effort		
Estimated equation		
$x_{it} = \alpha \times \text{TREAT} + \beta(1 - \tau_{it}) w_{it} \times \text{TREAT} + \varepsilon_{it}$		
Estimation results	All periods	Experienced behavior
α_1 (BASE)	0.177 (0.107)	0.118 (0.087)
α_2 (Δ RAND)	0.134 (0.160)	0.124 (0.145)
α_3 (Δ MOBIL)	-0.073 (0.123)	-0.060 (0.106)
α_4 (Δ IGNOR)	0.081 (0.146)	0.045 (0.153)
β_1 ($(1 - \tau_{it}) w_{it}$, BASE)	1.002*** (0.021)	1.005*** (0.020)
β_2 ($(1 - \tau_{it}) w_{it}$, Δ RAND)	0.017 (0.037)	-0.017 (0.029)
β_3 ($(1 - \tau_{it}) w_{it}$, Δ MOBIL)	-0.020 (0.032)	-0.006 (0.042)
β_4 ($(1 - \tau_{it}) w_{it}$, Δ IGNOR)	-0.071 (0.045)	-0.062 (0.057)
R^2 (overall)	0.863	0.884
N	1152	576

Note: *** (**) significant at 1% (5%). Standard errors in parentheses. Experienced behavior: data from rounds 7-12.

Table 5. Estimation results for effort choices

The first estimation uses data from all periods, while the second estimation uses only observations from the second half of the experiment. The constant α_1 estimates the average work effort of voters with a wage of zero in the BASE treatment, and the coefficients $\alpha_2 - \alpha_4$ control for treatment differences with respect to the BASE treatment. None of these coefficients is significantly different from zero.²⁹ More importantly, there is a strictly positive impact of the net wage on work effort in the BASE treatment (measured by β_1). The estimated

coefficient is very close to one, which is the impact of an increase of the net wage predicted by theory. Again, we do not find treatment effects: the coefficients $\beta_2 - \beta_4$, which measure the difference of the remaining three treatments with respect to the BASE treatment, are not significantly different from zero.³⁰

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Endnotes

- ¹ In the presence of imperfect insurance markets inequality can have a non-monotonic effect on redistributive preferences (Bénabou 2000). Moreover, if welfare expenditures are targeted to the poor, inequality negatively affects the support for redistribution (Moene and Wallerstein 2001).
- ² See, e.g., Rehm (2009) for a related classification.
- ³ Such considerations have a long history in social science. In economics, relative-standing comparisons have been recognized by Veblen (1899) and their consequences have been developed more formally, e.g. by Frank (1984, 1985), Glazer and Konrad (1996), and Fehr and Schmidt (1999), among others.
- ⁴ The idea of moral sentiments is, evidently, very old in the history of ideas. It has been given formal consideration, for instance, by Hochman and Rogers (1969). Recent work by Shayo (2009) suggests that preferences about redistribution may be linked to concepts of social or national identity.
- ⁵ Piketty (1995) analyzes the role of own mobility history for redistributive preferences and focuses on the role of beliefs about whether economic success is predetermined or whether individual effort is more important for economic achievements. See Isaksson and Lindskog (2009) for an international comparison.
- ⁶ Such information effects can be important for voting outcomes (Bartels 1996).
- ⁷ These are, for instance, standard types of violations of assumptions made for the median voter theorem (one-dimensional policy space, single-peaked preferences), issues such as parties' ability to commit, accountability, and candidate competence issues, voter abstention and expressive voting (Glazer 1987, Huck and Konrad 2005, Feddersen, Gailmard and Sandroni 2009) or other types of non-sincere voting. The median voter model of redistribution also disregards many features of the political process. These include interest group politics (Olson 1965, Becker 1983) and commitment issues that may ask for inefficient, specifically targeted transfers (Acemoglu and Robinson 2001). Both lobbying and strategic aspects of political decision making can be removed from the picture in the laboratory.
- ⁸ Neustadt and Zweifel (2009) find that Swiss citizens' demand for redistribution increases with income and higher self-positioning, which they interpret as being in contradiction with the Meltzer-Richard (1981) model. Corneo and Grüner (2002) find a negative impact of higher income for individuals' desire for more income redistribution, but they also show that social rivalry and social norms are relevant determinants. Krusell and Ríos-Rull (1999) argue that their calibration model of a dynamic Meltzer-Richard framework predicts transfers that are "quite close" to empirical data. Moene and Wallerstein (2003) show that deviations from the Meltzer-Richard prediction on the impact of inequality can be explained by distinguishing among different categories of welfare spending. Ravallion and Lokshin (2000) find evidence for a strong relationship between own earnings prospects and attitudes towards redistribution for Russia.
- ⁹ Konrad and Morath (2011) consider a related setup. They focus on the differential effect of interacting with computers versus interacting with real players. In the latter framework other-regarding preferences can play a role and can be measured, but are absent by definition in the present paper.
- ¹⁰ Compared to the actual political process in a median voter framework, this is a shortcut which yields the same outcomes as predicted by the median voter theorem. As the number of voters is uneven, the tax rate is uniquely determined by the median choice.
- ¹¹ This redistribution mechanism makes sure that a player does not internalize any return on being taxed himself, which is the equivalent to a model with a large atomless distribution of individuals.

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- ¹² If the three possible wages are $w_l < w_m < w_h$ then $\tau^*(w_m) > 0$ if and only if $w_m^2 < (w_l^2 + w_h^2)/2$. Note that $w_m^2 < (w_l^2 + w_h^2)/2$ is fulfilled if $w_m \leq w_h/2$.
- ¹³ Note that in the equilibrium of the two-stage game, the tax rates chosen by the low and the high-wage individual are not uniquely determined, as they will not be implemented as long as they do not constitute the median choice. The notion "preferred tax rate" corresponds to the tax rate that, if implemented, maximizes an individual's monetary payoff, given that all individuals choose the payoff-maximizing effort in (2).
- ¹⁴ Expected income (or its generalized version -expected utility- where the marginal utility is not constant across levels of income) is generally accepted as an objective by economists. However, as Rawls has argued, if the choice of the tax rate takes place behind the veil of ignorance, voters' preferences would represent fair opinions on redistribution, and he favoured a maximin social welfare function in this case. If voters indeed have maximin preferences, this would lead to a tax rate equal to the preferred tax rate of the low-wage individual ($\tau = 1/2$).
- ¹⁵ The simulated players' optimal choice of work effort is not affected by the real player's effort (compare (2)) and vice-versa. In contrast, optimal tax rate choices of simulated players depend on the real player's effort choice, but since tax rate choices of the players are independent of each other and we do not analyze the simulated players' choices, we are able to implement the simulated players' strategy independent of the real players' choices.
- ¹⁶ The participants were recruited using the software ORSEE (Greiner 2004).
- ¹⁷ Note also that this deviation from the strict median voter framework does not affect the equilibrium choices of tax rates or work effort in the theoretical framework in section 2. Work effort is always chosen once the actual tax rate is known, and also the median voter cannot benefit by deviating from his most preferred tax rate.
- ¹⁸ Changing the roles throughout the experiment might also lead to a better identification with the poor (and the rich) subject and therefore strengthen the median voter's "sense of justice/fairness". However, as co-players are simulated, such considerations are eliminated in our experiment.
- ¹⁹ Risk aversion is usually defined as a willingness to sacrifice expected income in exchange for a reduction in variance. As has been discussed also in the context of experimental economics, the von-Neumann-Morgenstern utility function is approximately linear for variations of lifetime incomes in a range of \$20, suggesting locally risk-neutral behavior. Nevertheless, individuals seemingly exhibit risk aversion also with respect to such "small" lotteries in laboratory experiments, which can possibly be explained by rank-dependent utility and other deviations from expected utility.
- ²⁰ Controlling for outliers, this also holds for the choices of voters with a low wage.
- ²¹ Estimating the subjects' preferred tax rate as a function of their wage w_{it} (and w_{it}^2 in order to allow for non-linear effects) shows that both in the BASE and in the RAND treatment, the wage rate has a significantly negative effect (at the 1%-level) on preferred tax rates. In the MOBIL treatment, the impact of w_{it} is only weakly significant. In all treatments, the subjects' wage rate in the previous period (w_{it-1}) does not have a significant impact on the preferred tax rate: past experience seems not to influence current tax rate choices.
- ²² We control for possible non-independence of observations by clustering the standard errors on individual level (using the cluster option provided by STATA).
- ²³ Since in the treatments with social mobility, different wages were assigned with equal probability, this variable has an expected value of zero.
- ²⁴ We also run non-parametric tests on group means (being defined as average chosen tax rate within a group, i.e. per subject). The results are exactly the same: we cannot reject that the median tax rate in the BASE treatment is equal to 33%, but we can reject in the other

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- treatments that subjects behave exactly according to theory. Moreover, we find a significant treatment effect of both the RAND and the MOBIL treatment, but we do not find a significant difference between median tax rates in the RAND and the MOBIL treatment.
- ²⁵ Work by psychologists (see, e.g., Gigerenzer 2007) suggests that heuristics play a major role governing human behavior. Whether or not heuristics or some other factors explain the similarity in tax rate choices in the two mobility treatments would have to be explored in a separate analysis.
- ²⁶ As shown in Table 2, in the BASE treatment individuals with a high wage chose a similar tax rate (on average 4,6%) even if a zero tax rate is predicted by theory.
- ²⁷ Only one subject chose a much higher tax rate; this choice is similar to the preferred tax rates of voters with the low wage in the BASE and the RAND treatment and could thus be considered as expressing maximin preferences.
- ²⁸ We control for possible non-independence of observations by clustering the standard errors on individual level (using the cluster option provided by STATA).
- ²⁹ In the RAND treatment, average work effort of low-wage individuals ($\alpha_1 + \alpha_2$) is significantly different from zero both using data from all periods and under experienced behavior. These "mistakes" of low-wage subjects choosing positive effort, however, do not occur very often.
- ³⁰ In all treatments, we cannot reject the hypothesis that the marginal effect of the net wage on work effort is equal to one. (As the only exception, when considering the IGNOR treatment and using data from all periods, we can reject at the 10%-level that $\beta_1 + \beta_2 = 1$.)