Preferences over Taxation of High Income Individuals: Evidence from Online and Laboratory Experiments

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Abstract

Mobility of high income individuals across borders puts pressure on governments to lower taxes. A central tenet of the underlying theoretical and empirical models is that mobile individuals react to tax differentials through migration, and in turn immobile households vote for lower taxes in the face of a migration threat. In light of research on behavioural economics it is not clear, however, whether this premise holds. We use an experimental survey design and elicit answers from more than 3,000 households in the German Internet Panel (GIP), who are assigned roles as rich or poor and must choose a redistributive tax. We use various treatments to understand the role of mobility and ideology in tax choice. We observe substantial deviations from the predicted theoretical equilibrium. In many cases comparative static results prevail however. Political ideology matters: left-leaning households choose higher taxes than right-leaning persons, and center-right leaning individuals tend to emigrate more when the tax at home is high. We compare the results with those from a closely related lab experiment, in which subjects appear to behave more in line with standard predictions.

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1 Introduction

Globalization of factor markets entails tax competition for mobile factors. According to a standard economic argument, this leads to lower taxes for the mobile than in a closed economy. Since international mobility tends to increase in income, this argument implies that tax schemes will – and should – become less progressive in more globalized countries (see, for example, Simula and Trannoy (2010) and Bierbrauer et al. (2013)).

However, not all governments, voters and politicians appear to be fully convinced and often advocate what appear to be excessively high taxes on the rich. An example is the announcement of French president Hollande in 2012 to impose a 75% income tax on very high income levels in France. The subsequent and well-covered move of the famous French actor Gérard Dépardieu, who exchanged his French for the Russian citizenship to pay lower taxes, constitute salient but inconclusive evidence for the textbook argument and can hence be justly ignored by the proponents of highly progressive taxation. More systematic evidence is hard to generate. Recent survey (Heinemann and Janeba, 2011) and experimental evidence (Janeba, 2014) suggests that political ideology may play a role in the setting of tax policies (that goes beyond the well understood roles of differences in endowments) and the beliefs about the effects of taxes in open economies. The relatively low number of survey observations and the design of the experiment make the findings not fully conclusive however.

In this context two related questions arise: First, are the rich and mobile really as ready to act upon their advantage and migrate for tax reasons, as predicted by the above textbook argument, or are Dépardieu-like migration decisions rare exceptions? Second, do those on the left and those on the right of the political spectrum differ in their answer to this question and therefore in their views on how progressive taxes should be? Or do they hold on to purely ideological views about appropriate taxation that are independent of the expected intensity of tax competition? We address these questions in a large survey experiment with a representative sample of subjects and complement the study by a standard lab experiment. In the former, we implement an online experiment in the 18th wave of the German Internet Panel (GIP), a large online panel of more than 3,000 households representative of the German population aged 16 to 75. In the online experiment, we randomly assign the roles of rich and poor and two treatment conditions to our subjects and use the strategy-method to elicit their voting choices between three possible tax rates (high, medium, and low) for different levels of tax rates in a fictitious neighboring country. In the baseline treatment, subjects are all immobile; in the control treatment, the rich may migrate into the neighboring country, then bearing some migration cost that is lower than the difference between the high and the medium tax rate but higher than the difference between the medium and the low tax rate. Hence, the rich are predicted to migrate if and only if they are mobile, taxes in their home country are high, and low or medium in the other country. Again, we use the strategy method to elicit migration choices.

We also elicit beliefs about the choices of the subjects in the other role, i.e., what subjects in the role of the poor believe about the choices of the subjects in the role of the rich

(tax rate and migration) and vice versa. We match these experimental data with data obtained in the other parts of the German Internet Panel, in particular self-declared attitudes on redistribution, party adherence, position on the left-right spectrum, and social demographics like income, age, gender and education. We use both non-parametric tests and ordered logit regressions to analyze the determinants of tax and migration choices and to isolate the treatment effect and the effect of political ideology on these choices. In the lab experiment, we implement an extended design that contains the full game of tax competition in the control treatment, i.e., tax choices and, afterwards, migration choices are made simultaneously in two ex ante symmetric countries. Moreover, the roles of rich and poor are earned during a real-effort task, not randomly assigned as in the survey experiment. In the online experiment, we find that the mobile migrate on average less than predicted by standard economic arguments. However, this is not the reason why leftists want to tax them highly; instead, experimental subjects across the entire political spectrum expect the mobile to act selfishly and migrate whenever it pays. Still, leftists want to tax the mobile more than rightists; hence, we find that ideology matters, independently of the – well-understood – monetary migration incentives created by design.

Moreover, we find a compromise effect on tax choices: Both subjects in the role of the rich and in the role of the poor choose medium-range tax rates far more often than predicted by standard economic considerations. Since their beliefs exhibit both a good understanding of the incentive structure and a projection of the homo oeconomicus on other subjects, we conclude that they have preferences that differ from the standard economic assumptions but underestimate such deviations by others. In the lab experiment, we do not find any of these substantive deviations; instead, most subjects play close to equilibrium, and the standard textbook argument is supported by the data. This sheds doubt on the use of isolated lab experiments when studying the role of political ideology for redistributive attitudes. At the same time, further work under both experimental approaches seems necessary. We discuss this at the end of our paper.

Our work relates to a large theoretical and empirical literature on taxation and migration. The standard approach to optimal income taxation by Mirrlees (1971) applied to a closed economy situation. Mirrlees (1971, p. 176) noted himself, however, that "the threat of migration is a major influence on the degree of progression in actual tax systems". While early contributions like Wilson (1980) considered the problem of optimal linear income taxation when workers are mobile, the theoretical literature on optimal taxation with labor mobility has advanced and generalized Mirrlees' approach in various ways. Simula and Trannoy (2010) analyze the optimal nonlinear income tax schedule when workers are mobile at a cost, while holding tax policy in the outside country fixed. Among their results is that marginal tax rates decrease everywhere relative to the case without mobility even when the policy maker pursues a Rawlsian social welfare function. Moreover, in numerical simulations for France the effect on the tax schedule is quantitatively large even if only few highly productive individuals are potentially mobile. Those individuals who find emigration just not attractive share a large burden from potential migration of high income individuals, a phenomenon that is termed the

"curse of the middle class". Recent work has analyzed optimal income taxation when competition among governments of several countries takes place(Bierbrauer et al., 2013; Blumkin et al., 2015; Lehmann et al., 2014; Morelli et al., 2012; Piaser, 2007), which is modeled as a Nash game. The contributions differ in terms of the level and distribution of migration cost for individuals and the number of skill types, among other things. For example, Blumkin et al. (2015) show that the optimal non-linear tax system involves a zero tax rate at the top asymptotically even when the skill distribution is unbounded. In simulations it is shown that the zero tax result is not only a local property at the very top, but extends further down the skill distribution. This is in line with Bierbrauer et al. (2013) who demonstrate that in a discrete-type Mirrlees model with strategic government behaviour the highest type pays no tax when labor is perfectly mobile, and the lowest type does not receive any subsidy.

These and other, similar, contributions postulate standard social welfare objectives for policy makers who select the tax schedule. By contrast Morelli et al. (2012) introduce political economy considerations into a model with three skill types. Decentralized tax setting, and thus tax competition, may lead to higher output and consumption but lower welfare than a uniform (centralized) regime. Whether at a constitutional stage an independent regime or a uniform (centralized) tax regime is chosen by a majority of voters depends on the preferences of the middle type, and their relative skill position in particular.

In sum, a robust finding of the theoretical literature is that if labor is mobile, especially at the top of the income distribution, then tax competition between governments reduces redistribution from high-income earners to lower segments of the income distribution. However, the theoretical literature largely ignores behavioral factors such as social preferences or biased beliefs, which might affect results. If, for instance, voters are inequality averse with respect to their own country but do not take other countries into account, they will tend to vote for highly progressive taxes even if such taxes drive the top earners out of the country. Alternatively, if high-income earners are sufficiently inequality averse, they might refrain from migrating despite high taxes in their home country. Moreover, beliefs about the willingness to migrate might be biased among voters. Hence, empirically testing the standard predictions about tax competition in an open political economy is a worthwhile enterprise. The effect of taxation on the mobility of high income individuals has already been the subject of recent empirical research. For example, Kleven et al. (2013) analyze the role of taxes on the incentives for foreign football players to play in Denmark. They find an elasticity of the probability of playing in a foreign country with respect to the net-of tax rate to be around 0.5 and substantially higher for younger and top players. The result is in line with (Kleven et al., 2014) who find high elasticities of working abroad for high income individuals in a study of preferential income taxation in Denmark. Elasticities around 1 are also found by Akcigit et al. (2016) for foreign superstar inventors, while much lower elasticities prevail for domestic inventors. Overall, the empirical studies suggest that mobility of top earners is substantial.

However, it is difficult to construct counterfactuals with field data only; and it is difficult to correctly estimate the tendency to migrate without the construction of counterfactuals. Here, experimental work can complement standard empirical research. In an experiment, it is possible to construct counterfactuals and pin down causality for individual decisions, such as migration and voting decisions, by treatment comparisons. Hence, we use a simple model of tax competition in an open political economy to test whether migration decisions and votes for specific taxes on top earners are driven by (a) rational beliefs and (b) standard preferences, or whether behavioral factors such as social preferences or ideological bias must become part of the story. In doing so, we contribute to a relatively recent but growing experimental literature on tax choices through voting (see Lorenz et al. (2015), p. 2, for a relatively recent review of this literature). Sausgruber and Tyran (2011) find that biased beliefs – in this case about the effects that taxes imposed on sellers have on prices – distort voting behavior; and Höchtl et al. (2012) find that inequality aversion affects democratic redistribution if and only if high-income earners are in the majority, and that a poor majority does not expropriate the rich. This latter finding, which we corroborate in our online experiment, is in line with the (standard) model of Meltzer and Richard (1981) and recent experiments and surveys. For instance, Weinzierl (2017), in a survey among 2500 U.S. citizen, finds that between 50% and 95% percent of respondents believe that full equalization of endowments that are due to luck would be unjust. Instead, they advocate the idea that post-tax incomes should depend on pre-tax endowments and that there is an entitlement to one's own endowments even in the absence of effort. Relatedly, Charité et al. (2015) report results from two experiments suggesting that loss-averse subjects project their own loss-aversion into others and hence redistribute less when knowing pre-tax endowments of the better-off or when reference points to be more deeply engrained.

We contribute to this literature by (1) experimentally investigating an open political economy in which the top earners can avoid excessive taxation if they migrate, (2) relating individual decisions in our online experiment to survey data about political attitudes and beliefs, and (3) comparing the results of our representative online experiment with those of a twin lab experiment.

The rest of the paper is organized as follows. In the next section we present the simple model of redistributive taxation that is used in the empirical implementation. Section 3 we first explain in detail the setup of the online experiment within the German Internet Panel, then we discuss the hypotheses based on the theoretical model and the literature, and finally present the main results. The lab experiment, including the setup and results, is covered in section 4. Section 5 concludes.

2 A Simple Model of Redistributive Taxation

A country (Home) is populated by two types of individuals $i = \{p, r\}$, called poor and rich, with exogenously given incomes $y_p = 20$ and $y_r = 90$. In the base case (closed economy: no migration) the country has two poor and one rich inhabitant. We model

a purely redistributive tax-transfer system. A rich person pays a tax that is distributed among the poor. The set of feasible tax rates is limited to three - low, medium, high - with the following values:

$$t_L = 10 \ \ t_M = 20 \ \ t_H = 40 \tag{1}$$

A rich individual pays the tax $t_k = \{L, M, H\}$, which is then divided to the two poor. Under a balanced government budget without other spending the transfer to each poor individual becomes $T = t_k/2$. The net income $z(y_i)$ of a person as function of the tax rate is therefore for a poor person

$$z_p = 20 + \frac{t_k}{2} \tag{2}$$

and for a rich individual

$$z_r = 90 - t_k \tag{3}$$

Notice that even under the highest tax the ranking of pre-tax incomes is preserved post tax and transfer, that is, $z_p < z_r$ holds under any tax.

In the experimental design the tax rate is chosen by a random dictator mechanism. We therefore derive the preferred tax rate for each type. It is straightforward to see that in a closed economy without migration the most preferred tax rate of a poor person is the highest possible tax rate t_H, which generates net incomes of $z_p(t_H) = 40$ and $z_r(t_H) = 50$. By contrast, the net income maximizing tax rate of a rich person is the lowest tax rate t_L, which gives a poor person a net income of $z_p(t_L) = 25$, and for the rich person $z_r(t_L) = 80$.

We now modify the model and allow for migration of the rich person (open economy) to a a second country, called foreign, in which the rich person earns the same gross income $y_r = 90$. The tax rate in the foreign country is exogenously given and from the same set of feasible tax rates: $t_k^* \in \{10, 20, 40\}$. Migration is costly for the rich, however, and involves an expense of $m = 15$. If the rich person emigrates to the other country, there is no tax revenue generated at home. In that case the net income of a poor person in home equals his gross income: $z_p = y_p$.

The timing of decisions is as follows: First the home country chooses its tax (by a random dictator mechanism in the experimental setup), and then the rich person, observing the tax at and home and abroad, makes the decision to migrate or not. Finally, taxes are collected and transfers paid (in home when applicable).

Solving the model from the back, migration of a rich person is beneficial for her if and only if the net income at home is less than net income abroad, that is $z_r(t_k) = 90 - t_k < 90 - t_k^* - m = z_r^*(t_k^*)$, which is equivalent to

$$m < t_k - t_k^* \tag{4}$$

Given the model parameters migration therefore occurs if and only if the tax rate at Home is high (40), but medium (20) or low (10) in foreign. In all other cases the rich person stays at Home.

Moving to the stage of tax setting, a rich person at home still prefers the lowest possible tax t_L. Migration is never optimal then because migration is costly and the lowest tax rates are the same across both countries. For a poor person the preferred tax rate depends on the tax level in the foreign country. Emigration of the rich person is the worst case for the poor as the transfer becomes zero, while the transfer is positive whenever the rich person stays at home. Therefore the preferred tax rate of a poor must be consistent with no migration, that is, must violate (2). From the previous step we know that migration happens only if the tax rate at home is high but lower than that in foreign. Therefore the net income maximizing tax rate of a poor is t_M if $t^* \in \{t_L, t_M\}$ and t_H if $t^* = t_H$.

In the lab experiment we consider the case with two countries, home and foreign, that compete for rich individuals. Countries are symmetric in terms of the initial number of rich and poor individuals, gross incomes, set of tax rates, and migration cost for the rich. Countries set tax rates simultaneously, and thus play a Nash game. After observing the tax rates the rich individuals in both countries decide on migration, and finally tax revenues are distributed as transfers. If the rich end up in the same country, the transfer to a poor person is $T = t_k$ instead of $t_k/2$ (analogously in foreign), because two rich individuals finance the transfer to two poor households. The subgame perfect equilibrium of that game is as follows: Without migration option (closed economy), the equilibrium mirrors the closed economy case described above. With migration (open economy), the rich still prefer the low tax rate. The poor have a (weakly) dominant preference for a medium tax in both countries and in equilibrium no migration occurs. Undercutting a medium tax is not worthwhile because the rich person of the other country does not move because of too high moving cost.

3 Online Experiment

3.1 German Internet Panel (GIP)

We implement the above-described model of optimal redistributive taxation in an experimental setting using the German Internet Panel (GIP), a probability-based longitudinal panel survey conducted by the Collaborative Research Center "Political Economy of Reforms" (SFB 884) at the University of Mannheim. Although the GIP is online-based, it is representative for the general population in Germany aged from 16 to 75 living in private households. This is achieved by providing households without internet connection with the necessary devices to participate in the panel as well as clear technical instructions on their usage (Blom et al. 2015). The selection of the panel is based on a stratified random sample of both the online and offline population. In comparison to other population statistics the GIP shows high congruence with regard to personal characteristics like age, unemployment, urbanity, and regionality (Blom et al., 2016, 2015).

All participants of the GIP are first recruited in face-to-face interviews and then take part in bimonthly surveys of around 20 minutes resulting in a panel data set. The GIP started in September 2012 and has a special focus on the opinions and preferences of the population on political reforms. The surveys are accompanied by quality assurance measures such as extensive plausibility tests conducted by an expert team of the GIP as well as a pre-test concerning the technical implementation. These provisions are in place to ensure the comprehensibility of questions about complex issues for the general population. In order to maintain the GIP's high retention rates (73% - 80%) there is an incentive scheme in place (Blom et al., 2015). Participants are getting 4€ for every survey that they take place in and on top of that there is a bonus for those who participated in every survey of the year (10€) and those who only missed one survey (5€) respectively.

3.2 Survey Design

In the experiment every questionee of the panel is randomly assigned a treatment according to the model. One quarter of the panel is acting as the control group by getting the *no mobility* treatment, which is referring to the reduced model without migration, while the rest gets the *mobility* treatment. Within both the mobile and immobile partition of the panel two-thirds are assigned to be *poor* and one third to be *rich*. The *mobility* types are also exogenously assigned to a foreign tax rate, 40% are facing a low foreign tax rate, 40% are facing a medium foreign tax rate and 20% are facing a high foreign tax rate (see Table 1 for an overview). Respondents are told that they are part of a hypothetical country which they share with two other questionees such that each country consists of one *rich* and two *poor* respondents. Because of the nature of an online survey the respondents cannot interacted directly and are matched only ex post to their respective country by a random mechanism. Therefore, those questions which involve interaction with another hypothetical country, name migration decisions and beliefs, are asked using the strategy method (all questions are described in more detail later in this section). All participants of the panel are required to go through a detailed explanation of the model - the questionees took an average time of about eleven minutes to do so - specifically tailored to their type and treatment(s). This includes detailed step-by-step descriptions and multiple examples of possible outcomes written in easy language as well as simple graphics illustrating the timing of events and the voting system. Furthermore, tables visualizing all potential outcomes of the model are presented not only during the explanation, but also depicted when individuals have to make their decisions. After reading the description of the model and before making their tax rate and immigration choices, the participants are made aware that there is an extra incentive scheme on top of the general GIP scheme described above. After the experiment 20 out of 1020 experimental countries are randomly drawn and the participants, who were part of these countries, are getting their hypothetical income from the game as a bonus

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Table 1: Treatment assignment

		mobility			
	no mobility	foreign tax low	foreign tax middle	foreign tax high	total
poor	16.67%	20%	20%	10%	66.7%
rich	8.33%	10%	10%	5%	33.3%
total	25%	30%	30%	15%	100%

payment. This translates into 60 out of 3060 participants receiving an average bonus payment of 41,33€. Depending on their type, treatment and their own decisions this payment can range between 20€ (poor type when the rich migrates) and 80€ (rich type if she stays and low taxes are elected). Finally, all participants are asked the following questions: (1) What tax do you vote for? (2) Which tax do you think will the respective other type vote for? If the participant is part of the *mobility* treatment and of the type *rich*, she is additionally asked conditional on every single possible tax rate in her home country (low, medium and high) whether she would migrate. Analogously, *mobility* participants of the type poor are asked whether they believe that the *rich* in their country will migrate again conditional on every possible tax rate at home. We resort to the strategy method to determine migration choices and beliefs since respondents cannot interact directly in the online survey.

To sum up, we collect data not only on tax and migration decisions, but also on the beliefs about the behavior of other participants. The random assignment of treatments allows us to identify the treatment effects of mobility, type, and foreign tax rate on the tax and migration choice as well as tax and migration belief by (ordered) logistic[1] regressions. Using our rich data set we can link these variables to various questions about political opinions and party preference as well as personal characteristics such as gender, age, and education level (see Table 10 in the Appendix for summary statistics). It is important to differentiate these variables from our treatments since their are not randomly assigned. Their effect should therefore be interpreted as (conditional) correlations, not causal effects.

3.3 Hypotheses

Based on the equilibrium predictions of the game theoretic model, we can derive the following hypotheses:

Hypothesis 1 (Equilibrium predictions: voting)**.**

  a Without mobility, rich players vote for low taxes and poor players vote for high taxes.

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[1]Results are very similar when using ordered probit regressions. Results are available upon request.

b With mobility, rich players vote for low taxes and poor players vote for medium taxes if taxes in the foreign country are low or medium (and vote for high taxes if foreign taxes are high).

Experimental participants frequently deviate from theoretical point predictions. Thus we would not expect all participants to follow the predicted behavior exactly. However, comparative static predictions often hold. Hence we expect weaker versions of the previous two hypotheses to be supported:

Hypothesis 2 (Comparative statics predictions: voting)**.**

a Rich players vote for lower taxes than poor players.

b Under mobility with taxes in the foreign country being low or medium, poor players vote for lower taxes than either without mobility or with mobility and taxes in the foreign country being high.

In other words, poor players are more likely to vote for L or M with mobility and low or medium high foreign taxes than without mobility or with high foreign taxes under mobility.

In equilibrium, players should have correct expectations. That implies the following hypotheses for beliefs that replicate those for behavior.

Hypothesis 3 (Equilibrium predictions: beliefs)**.**

a Without mobility, poor players expect rich players to vote for low taxes and rich players expect poor players to vote for high taxes.

b With mobility, poor players expect rich players to vote for low taxes and rich players expect poor players to vote for medium taxes if taxes in the foreign country are low or medium (and to vote for high taxes if foreign taxes are high).

Hypothesis 4 (Comparative statics predictions: beliefs)**.**

a Poor players expect rich players to vote for lower taxes than the tax levels rich players expect poor players to vote for.

b Rich players expect poor players to vote for lower taxes with mobility if the taxes in the foreign country are low or medium than without mobility, or if taxes in the foreign country are high. More specifically, rich players expect poor players to be more likely to vote for L or M with mobility and low or medium higher foreign taxes than without or with high foreign taxes.

Furthermore, based on intuitive considerations about the impact of general political views on tax and migration choices, we derive the following hypotheses:

Hypothesis 5 (Political attitudes and voting)**.** *Supporters of left-of-center parties vote for higher taxes than supporters of right-or-center parties, both if they are rich and if they are poor.*

Regarding migration, we expect the standard theoretical prediction is that rich players migrate if and only if it pays:

Hypothesis 6 (Equilibrium predictions: migration). *In the mobility treatment, rich players migrate if and only if they domestic taxes are high and foreign taxes are low or medium.*

Social preferences or norms may prevent rich players from migration even if it pays. Not migrating even if it pays to do so appears to be more consistent with left-wing ideology. Hence, assuming that not all rich players migrate whenever it pays, we derive the following comparative statics hypothesis regarding migration choices and political preferences:

Hypothesis 7 (Political attitudes and migration). *Left-leaning participants and those more in favor of government redistribution have a lower propensity to migrate when it pays than other participants.*

3.4 Results

In this section, we will first show that while tax and migration choices frequently deviate from equilibrium predictions, beliefs are much closer to equilibrium, which suggests that deviations from equilibrium are not primarily due to misunderstanding of the underlying game. We will also show that comparative statics predictions are largely supported. We will then show that political ideology has the expected impact on tax and migration choices, but does not influence beliefs in an important way. As a first step, in order to make sure that the randomization worked properly, we regress treatment dummies on observable characteristics and reassuringly, we do not find any significant effects (see Table 11 in the appendix). Following standard conventions, we understand statistical significance being at the 5%-level and will note weak significance at the 10% level explicitly.

3.4.1 Tax Choices and Beliefs

Figure 1 shows the distribution of tax choices by rich and poor players when rich players cannot migrate. Behavior is rather far from equilibrium, as more than 60% of choices are for the medium tax rate and less than 20% of poor people and less than 30% of rich people choose their equilibrium action, H, or L, respectively. We thus find no support for Hypothesis 1[a]. Furthermore, while the results are in line with the comparative statics predictions, the differences between rich and poor players are relatively small. The statistical support for the weaker comparative statics hypothesis 2[a] is mixed. In the *no mobility* treatment, while the distributions of voting decisions are significantly different according to a chi-square test, they differ only weakly according to a Mann-Whitney-U test and an ordered logit regression (see Panel B in Table 2).

Compared to the *no mobility* treatment, in the *mobility* treatment, the medium tax rate is again the dominant choice (see Figure 2). Poor people, however, react to the
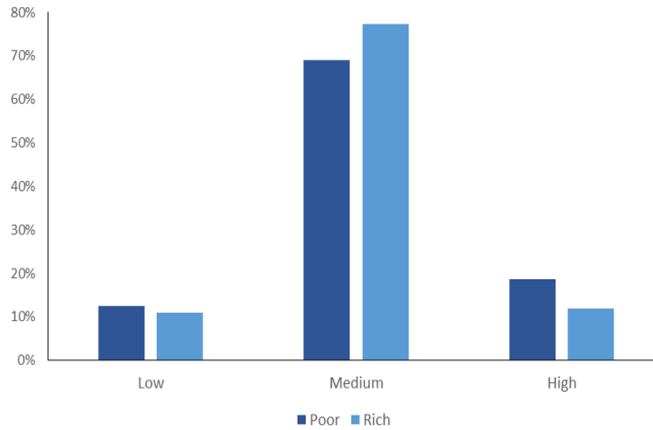
Figure 1: Distribution of tax choices by type in the *no mobility* treatment

possibility of emigration by the rich because the frequency of high tax choices decreases by about a third (from 18.7% to 12.2%). Moreover, poor players qualitatively react to the foreign tax rate as expected, because the frequency of high tax choices is nearly identical when foreign taxes are low or medium (9.7% and 10.6%, respectively), but substantially and significantly higher when foreign taxes are high (17.8%), see Figure 3. Hence the only result supporting Hypothesis 1[b] (in the sense that the equilibrium prediction is the most frequent choice) is that poor players choose most often medium taxes if foreign taxes are low or medium, but the latter appears to be more a coincidence because the prediction in this case agrees with the strong general tendency for the medium tax rate for both player types in both treatments. The comparative statics prediction 2[b] finds statistical support, even though the effect is small. In an ordered logit regression the marginal effects of mobility on choosing low taxes are 5.1 and 5.4 percentage points for rich and poor players, respectively and on choosing high taxes they are -3.4 and -5.1 for rich and poor, respectively (see Panels C and D in Table 2).

The statistical support for the comparative statics hypothesis 2[a] is stronger than in the *no mobility* treatment. All three tests (chi-square test, Mann-Whitney-U test, and an ordered logit regression) find a significant difference between rich and poor, but the effect is small. The marginal effect of being rich increases the probability of choosing low taxes by 2.8 percentage points and decreases the probability of voting for the high tax rate by -2.1 percentage points (see Panel A in Table 2).

We summarize our observations on the tax choices in

Result 1. *Tax choices in all conditions have a strong tendency towards the medium tax rate and hence deviate from equilibrium predictions except when this happens to be the medium tax rate. Comparative statics predictions with respect to differences between rich and poor players are supported in the mobility treatment, but at best weakly so in the no mobility treatment. They*
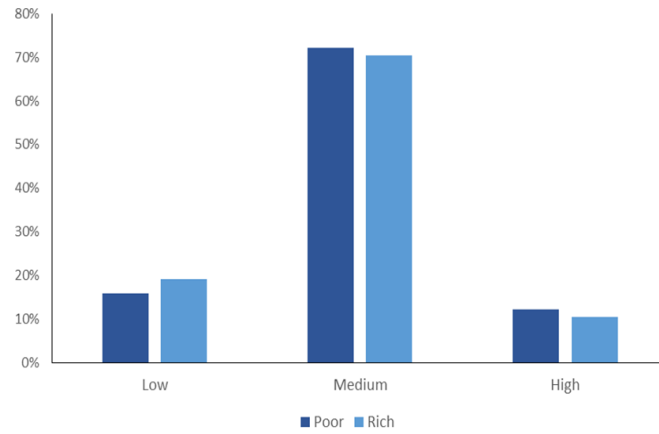
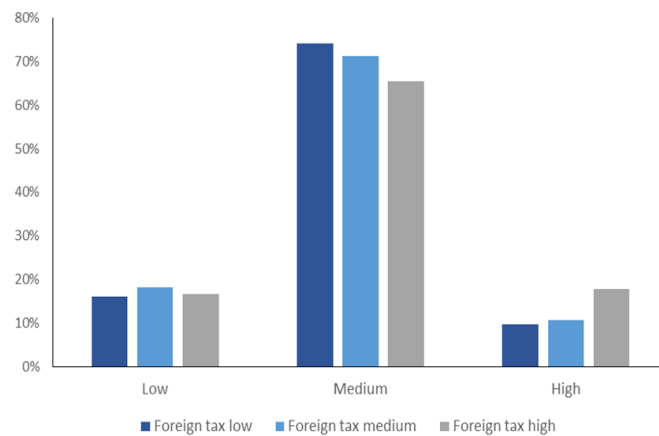Figure 2: Distribution of tax choices by type in the *mobility* treatment

Figure 3: Distribution of tax choices of poor type in the *mobility* treatment by foreign tax level

Table 2: Tax choice and belief

	Tax choice			Tax belief		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: only mobile	Low	Medium	High	Low	Medium	High
Role reference category: poor						
rich	0.028**	-0.008*	-0.021**	-0.445***	0.188***	0.257***
	(0.014)	(0.004)	(0.010)	(0.012)	(0.007)	(0.012)
N	2,250	2,250	2,250	2,246	2,246	2,246
Panel B: only immobile	Low	Medium	High	Low	Medium	High
Role reference category: poor						
rich	0.031*	0.009	-0.040*	-0.504***	0.149***	0.355***
	(0.017)	(0.007)	(0.022)	(0.022)	(0.012)	(0.014)
N	770	770	770	769	769	769
Panel C: only rich	Low	Medium	High	Low	Medium	High
Mobility reference category: immobile						
mobile	0.051**	-0.017*	-0.034**	0.100***	0.065***	-0.165***
	(0.021)	(0.009)	(0.019)	(0.022)	(0.015)	(0.036)
N	982	982	982	981	981	981
Foreign tax reference category: low						
medium	0.005	-0.002	-0.003	-0.036	-0.020	0.055
	(0.027)	(0.011)	(0.017)	(0.023)	(0.013)	(0.036)
high	-0.011	0.004	0.007	0.041	0.023	-0.063
	(0.035)	(0.014)	(0.021)	(0.030)	(0.016)	(0.045)
N	725	725	725	725	725	725
Panel D: only poor	Low	Medium	High	Low	Medium	High
Mobility reference category: immobile						
mobile	0.054***	-0.003	-0.051***	0.036	-0.029	-0.007
	(0.015)	(0.004)	(0.014)	(0.024)	(0.019)	(0.005)
N	2,038	2,038	2,038	2,043	2,043	2,043
Foreign tax reference category: low						
medium	0.009	-0.002	-0.007	-0.024	0.019	0.005
	(0.016)	(0.003)	(0.013)	(0.027)	(0.021)	(0.005)
high	-0.058**	0.011**	0.046**	-0.048	0.038	0.010
	(0.023)	(0.006)	(0.019)	(0.033)	(0.026)	(0.006)
N	1,525	1,525	1,525	1,521	1,521	1,521

Notes: * $p<0.1$, ** $p<0.05$, *** $p<0.01$ Robust standard errors in parentheses. Each horizontal line indicates a new regression. The presented coefficients are average marginal effects.

are statistically significant with respect to treatment differences and foreign tax rate. While economically not negligible, these effects are relatively small.

While it is common that experimental results do not support theoretical point predictions and that comparative statics predictions are supported qualitatively, but not quantitatively, the strong concentration of tax choices on the medium level and the relatively weak difference between player types, treatments and foreign tax rates is surprising. A possible reason could be misunderstanding of the experimental task, which is arguably more likely to be a problem in an online experiment than in a laboratory experiment because participants cannot ask clarifying questions and also because a sample with a larger variety in terms of education and age than a typical student sample may on average have more problems understanding the task.

For two reasons, we do not believe that misunderstanding is the dominant factor behind our relatively weak support for the theoretical predictions. First, we run robustness checks for our tests where we exclude participants who appear most likely to be confused, namely those who are the fastest or slowest in completing the experiment. Very fast players are likely to not have carefully read the instructions and to have thought deeply about their decisions. Very slow players are likely to think long because they have trouble understanding. Excluding either the fastest 30% of participants, or the slowest 30% of participants, or both the fastest 20% and the slowest 20% does not overall affect our test results much[2]. Furthermore, we regress a dummy for deviating from equilibrium on the respondents' education level, the time they took to complete the survey and a dummy equaling one if the respondent interrupted the survey at some point. As one can see in Table 3, none of these factors can explain deviations from equilibrium both in tax choices and beliefs.

The second reason why we do not believe that participants' misunderstanding is the main driver for the tendency to choose the medium tax is that beliefs about others' choices are much closer to the equilibrium prediction. Indeed, 64.6% of poor players expect rich players to choose the low tax rate and 50.4% of rich players expect poor players to choose a high tax rate and 29.8% a medium tax rate if rich players are immobile or the foreign tax rate is high, whereas 42.2% of rich players expect poor players to choose the medium tax rate and 40.7% the high tax rate if foreign taxes are low or medium. Hence in all cases, while we obviously do not find perfect support for the equilibrium predictions of Hypothesis 3, it is qualitatively supported because the modal belief equals the equilibrium prediction, in contrast to actual behavior. Beliefs about tax choices significantly differ from actual tax choices in all cases according to chi-square tests ($p < 0.001$ for all combinations of roles, treatments, and foreign taxes). With the beliefs much closer to equilibrium predictions, the weaker comparative statics hypothesis 4[a] finds clear support. In both treatments, beliefs by rich participants differ significantly from those of poor participants (see Table 2 panels A and B). The support for 4[b] is mixed. While the rich expect the poor to vote for lower taxes when the rich are mobile (see Table 2

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[2]Results are available upon request.

Table 3: Deviation from theoretical equilibrium

Deviation from EQ	(1) tax choice	(2) tax choice	(3) tax belief	(4) tax belief
Education reference category: lower education				
higher education	-0.0327*	-0.0282	-0.0356	-0.0219
	(0.0187)	(0.0217)	(0.0188)	(0.0219)
Interruption reference category: did not interrupt the survey				
interrupt	0.0022	0.0058	0.0165	0.0208
	(0.0317)	(0.0345)	(0.0316)	(0.0343)
minutes spend on the survey	0.0001	0.0001	-0.0000	0.0000
	(0.0001)	(0.0001)	(0.0002)	(0.0002)
N	2,754	2,299	2,750	2,296
Controls	no	yes	no	yes

Notes: * p<0.1, ** p<0.05, *** p<0.01 Robust standard errors in parentheses. The presented coefficients are average marginal effects. The mean time spend on the survey is 11 minutes. Controls include dummies for gender, marital status, four age dummies (30-39, 40-49, 50-59, > 60), two dummies for household size (2 and 3 or more household member) and dummies for all parties.

panel C), the expected reaction to the foreign tax rate is insignificant (see Table 2 panel D).

We summarize the results on beliefs in

Result 2. *Beliefs about participants in the other role are much closer to equilibrium predictions than actual behavior.*

We interpret this observation as follows: Most participants understand the incentives quite well and expect others to choose in line with their incentives, but they themselves typically do not choose the expected-payoff maximizing option. Possibly social preferences are a strong motivator but participants underestimate that this is true also for other participants. Specifically, for both player types the medium tax rate is kinder towards the other player than the equilibrium prediction, while still not the worst for players themselves, so they might consider it a good compromise between self-interest and satisfying some kind of social preferences such as altruism. It would appear surprising, however, that such a high share of participants have an intermediate level of altruism that makes the intermediate tax rate the preferred choice. This is particularly true because the choice of the medium tax rate is only consistent with an altruistic utility function that is concave in the other players' income from the experiment. But then assuming the same distribution of altruism parameters for the rich as for the poor, we would expect more altruistic behavior by the rich than by the poor and hence more non-selfish choices by the rich than by the poor, which is not what we observe.[3]

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[3]We further note that for poor players the deviation from self-interest is also inconsistent with inequality aversion (Bolton and Ockenfels, 2000; Fehr and Schmidt, 1999) because even with high taxes, the rich

What could then explain this tendency towards intermediate tax levels? One possibility is that people take real tax rates as sensible benchmarks into account. Indeed, $2/9 = 22.2\%$ is a reasonable approximation for the average tax rate of the median income person in Germany, while $4/9 = 44.4\%$ is much higher. However, people have a tendency to confuse average and marginal tax rates (De Bartolome, 1995). Coupled with the effect that we explicitly talk about taxing the "rich" in this experiment and that Germany has a "rich tax" with a marginal tax rate of 45% (for incomes above 250,000 Euros for unmarried individuals and 500,000 for married couples), the 44.4% tax rate actually appears rather appropriate.

Alternatively, people could take their personal tax rate as a guidance of an appropriate tax rate. If that was true, we would expect that tax rate choices in the experiment correlate with actual household income, but we do not find such an effect[4].

The most likely explanation for the concentration of choices on the medium tax rate thus appears to us to be perceived social norms. It seems that many participants, both in the rich and poor roles, have the impression that it is appropriate that the rich share some of their income but that it would be excessive to tax them so highly that the difference is almost eliminated. At the same time, they appear to be expect others to be influenced less by such a norm. For many of our participants the experiment was probably also an unusual situation and hence they may have been unsure about the appropriate action. Choosing then the "middle" may have looked for many as a good compromise that makes them neither look like too greedy nor like a fool for forgoing too much.

We also check whether answers to questions in the GIP that are not related to this experiment also have a tendency to center in the middle. We find that other questions with three or five item response options show a tendency towards the center, though much weaker. Across all questions with three items in waves 17 and 18 of the GIP, the distribution across left, middle, and right is 37%, 41%, and 23%. Participants shy away more from extremes in questions with five items, where the distribution of answers across the five options from left-most to right-most is (11%/36%/27%/26%/2%). These questions were typically less complicated than ours and hence participants may have felt less unsure and thus show a weaker tendency towards the center.

3.4.2 Mobility Choices and Beliefs

We next address migration choices by rich players in the *mobility* treatment and the beliefs of poor players regarding these. In contrast to tax choices, mobility choices are

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players still have higher payoffs than the poor players. Choosing high taxes increases poor player's own payoff while also reducing inequality. Hence, inequality-averse poor players should choose high taxes when rich players are not mobile or foreign taxes are high. While inequality aversion could explain in principle that rich players choose high or medium tax rates, the linearity of the Fehr-Schmidt model implies that if rich players are sufficiently inequality averse in order not to choose low taxes, they should choose high, but not medium taxes. Also if one considers non-linear forms such as the Bolton-Ockenfels model that could in principle allow for interior solutions, it does not appear too plausible that more than 70% of rich players have such an intermediate level of inequality aversion.

[4]Results are available on request.

Table 4: Migration choices and beliefs

	(1) Migration choice	(2) Migration belief
Foreign tax rate reference category: low		
medium	-0.022	-0.021*
	(0.017)	(0.011)
high	-0.091***	-0.113***
	(0.022)	(0.016)
Home tax rate reference category: low		
medium	0.031	0.107***
	(0.021)	(0.009)
high	0.520***	0.759***
	(0.026)	(0.012)
Interaction of home and foreign tax rates		
foreign tax medium x home tax medium	-0.021	-0.064**
	(0.042)	(0.032)
foreign tax medium x home tax high	0.004	-0.053
	(0.054)	(0.034)
foreign tax high x home tax medium	0.043	-0.083**
	(0.051)	(0.037)
foreign tax high x home tax high	-0.285***	-0.338***
	(0.067)	(0.050)
N	2,175	4,442

Notes: * p<0.1, ** p<0.05, *** p<0.01 Standard errors in parentheses are clustered at the individual level. The presented coefficients are average marginal effects. The calculation of the average marginal interaction effects is based on the methods described in Karaca-Mandic et al. (2012).

reasonably in line with equilibrium predictions. If the tax rates are such that moving is maximizing payoffs (i.e., if domestic taxes are high, while foreign are not), then 62.6% of rich players move, whereas if moving is not maximizing payoffs (i.e., domestic taxes are low or medium or foreign taxes are high), only 9.8% of rich players move (see Figure 4). These observations are confirmed by the regression analysis shown in Table 4. The home tax being high increases migration by 52 percentage points compared to low home taxes, but this effect is dampened by 38 percentage points when the foreign tax is also high. Qualitatively, this patterns supports Hypothesis 6, but again, the deviation from the point prediction is quite large, though not as substantial as for the tax choices.

The deviation from the equilibrium prediction is again largely in line with altruism (or in this case also inequality aversion), as the more frequent deviation of not moving when it pays is increasing the poor players' payoff. Interestingly, beliefs appear again to largely disregard these social preferences. Poor players expect rich players to migrate much more frequently when it pays (90.2% of the time, see Figure 4). When moving does not pay, poor players expect rich players to move somewhat more frequently (18.1%) than they actually do (see Figure 4). They seem to either consider rich players to be less rational or outright spiteful than they actually are. Alternatively, since beliefs are hypothetical, poor players may think less hard about rich players' choices than the rich players themselves, and may hence simply not consider how motives other than selfishness will also influence mobility choices. Migration beliefs and choices differ significantly according to chi-square tests ($p < 0.001$) except for the case where taxes in the home country are low. We summarize the mobility choices and beliefs in

Result 3. *Modal mobility choices are in line with equilibrium prediction. The far more common deviation not to migrate when this pays is in line with social preferences such as altruism or inequality aversions. Beliefs on migration choices are again more in line with selfish choices and slightly more with irrational or spiteful choices that actual decisions.*

3.4.3 Political Attitudes and Tax and Mobility Choices

Our main research question addresses whether controlling for observable variables such as gender, age, household size and education, political attitudes have an impact on preferences about taxation. In order to address this, we relate experimental tax and mobility choices both to political party preferences as well as to a direct question about preferences for redistribution.

Table 5 shows the results of a ordered logistic regression of tax choices on various political preference variables. The effects displayed in Panel C are consistent with an intuitive view of the preferences of followers of different parties. Compared to the supporters of the most left-leaning party in Germany, the left Party ("Die Linke"), supporters of centrist or right-leaning parties vote for medium and high taxes less often. These differences are statistically significant at the conventional levels as well as economically important with an effect size varying from 9 to 13 percentage points depending on the respective party. Note, that these results are robust to the inclusion of control variables

Table 5: Tax choices and ideology

	(1) Low	(2) Low	(3) Low	(4) Medium	(5) Medium	(6) Medium	(7) High	(8) High	(9) High
Panel A *Redistribution preference* reference category: against redistribution									
indifferent	-0.032**	-0.035**	-0.029	0.005*	0.005*	0.003	0.027**	0.030**	0.026
	(0.016)	(0.016)	(0.022)	(0.003)	(0.003)	(0.003)	(0.013)	(0.014)	(0.019)
pro redistribution	-0.062***	-0.068***	-0.070***	0.009**	0.009**	0.007	0.053***	0.058***	0.062***
	(0.014)	(0.014)	(0.018)	(0.004)	(0.004)	(0.006)	(0.013)	(0.012)	(0.016)
N	2,776	2,711	1,312	2,776	2,711	1,312	2,776	2,711	1,312
Panel B *Ideology* reference category: right wing									
left wing	-0.042***	-0.035***	-0.029*	0.007**	0.005*	0.002	0.036***	0.030***	0.027*
	(0.012)	(0.013)	(0.017)	(0.003)	(0.003)	(0.003)	(0.010)	(0.011)	(0.015)
N	2,160	2,115	1,033	2,160	2,115	1,033	2,160	2,115	1,033
Panel C *Party preference* reference category: The Left									
AFD	0.092***	0.089***	0.102**	-0.015**	-0.013*	-0.010	-0.077***	-0.076***	-0.092**
	(0.029)	(0.030)	(0.041)	(0.007)	(0.007)	(0.010)	(0.024)	(0.025)	(0.036)
FDP	0.133***	0.126***	0.163***	-0.022**	-0.018**	-0.016	-0.111***	-0.108***	-0.147***
	(0.032)	(0.032)	(0.043)	(0.009)	(0.009)	(0.014)	(0.027)	(0.027)	(0.039)
CDU/CSU	0.094***	0.093***	0.109***	-0.015**	-0.014**	-0.011	-0.078***	-0.079***	-0.098***
	(0.024)	(0.024)	(0.032)	(0.007)	(0.006)	(0.010)	(0.020)	(0.021)	(0.029)
SPD	0.104***	0.102***	0.133***	-0.017**	-0.015**	-0.013	-0.087***	-0.087***	-0.120***
	(0.025)	(0.024)	(0.033)	(0.007)	(0.007)	(0.011)	(0.021)	(0.021)	(0.030)
The Greens	0.025	0.038	0.065*	-0.004	-0.006	-0.006	-0.021	-0.032	-0.059*
	(0.026)	(0.026)	(0.034)	(0.004)	(0.004)	(0.006)	(0.021)	(0.022)	(0.031)
N	2,349	2,300	1,119	2,349	2,300	1,119	2,349	2,300	1,119
Controls	no	yes	yes	no	yes	yes	no	yes	yes
Migration beliefs	no	no	yes	no	no	yes	no	no	yes

Notes: * p<0.1, ** p<0.05, *** p<0.01 Robust standard errors in parentheses. Each horizontal line indicates a new regression. The presented coefficients are average marginal effects. Results for very small parties (NPD and Pirate Party) as well as non-voters are not presented. Note that the drop in the number of observations when including migration beliefs is explained by limiting the sample to poor respondents. Controls include dummies for gender, marital status, higher education, four age dummies (30-39, 40-49, 50-59, > 60), and two dummies for household size (2 and 3 or more household member).
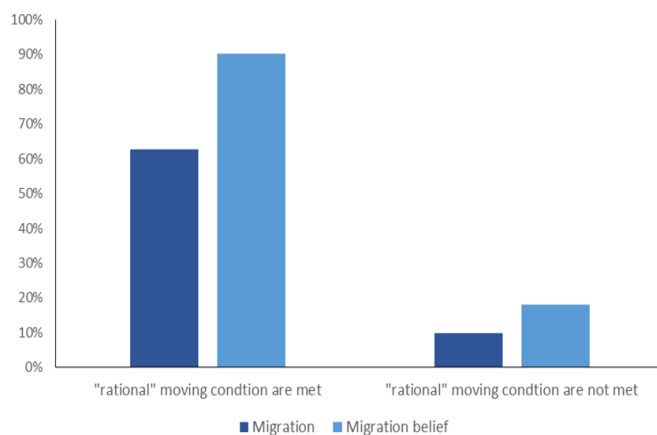
Figure 4: Migration and migration beliefs when "rational" conditions (home tax is high and foreign tax is not high) are met and otherwise.

and even beliefs of the poor about migration decisions of the rich. Hence the impact of ideology on chosen tax rates does not work exclusively through beliefs about others' migration choices, as one could expect. Indeed, migration beliefs and political party preferences are not significantly related (see Table 9 in the Appendix) and hence the estimates for the party dummies on tax choices are not substantially changed if we add migration beliefs.

In order to study the effect of party preferences in a more systematic way, we follow the sorting of parties by the Comparative Manifesto Project[5] on a left-right scheme. The results in Panel B show that supporters of more left-leaning parties choose significantly higher taxes than supporters of more right-leaning parties in all specifications. The effect is considerably smaller when compared to the party specification which can be explained by the behavior of the centre-left (SPD) respondents, who vote much more in line with right-leaning respondents.

Using a direct question about an individual's preference for redistribution ("Should the government employ policies to lower income inequality?"), we show that these preferences play an important role in determining tax preferences in our experiment. Those who support government redistribution vote for significantly higher taxes. This also holds when controlling for beliefs of the poor about migration decisions and other demographic background variables. The effects varies between 5 to 6 percentage points increased support for the high tax rate. To sum up, we can largely confirm Hypothesis 5 as left-leaning participants generally vote for higher taxes.

Political ideology also matters for migration decisions as one can see in Table 6. Supporters of the left party migrate less, while AfD supporters migrate more. Similarly, participants who believe that the government should redistribute income are more likely to

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[5]Data and information at https://manifesto-project.wzb.eu/

Table 6: Migration and ideology

| | full sample | | "migration rational" | |
| | (1) | (2) | (3) | (4) |
	Migration choice	Migration choice	Migration choice	Migration choice
Panel A *Redistribution preference* reference category: against redistribution				
indifferent	-0.020	-0.039*	-0.063	-0.056
	(0.022)	(0.022)	(0.064)	(0.063)
pro redistribution	-0.049**	-0.065***	-0.137**	-0.128**
	(0.019)	(0.019)	(0.055)	(0.055)
N	2,013	1,974	536	528
Panel B *Ideology* reference category: right wing				
left wing	-0.028	-0.025	-0.137***	-0.124***
	(0.018)	(0.018)	(0.046)	(0.048)
N	1,551	1,524	405	401
Panel C *Party preference* reference category: The Left				
AFD	0.077**	0.077**	0.239**	0.237**
	(0.038)	(0.038)	(0.113)	(0.113)
FDP	0.072	0.077	0.181	0.181
	(0.050)	(0.050)	(0.127)	(0.121)
CDU/CSU	-0.004	-0.012	0.053	0.034
	(0.036)	(0.036)	(0.085)	(0.083)
SPD	0.007	0.001	-0.007	-0.012
	(0.038)	(0.037)	(0.087)	(0.086)
The Greens	-0.020	0.010	-0.062	-0.070
	(0.041)	(0.040)	(0.092)	(0.070)
N	1,686	1,659	443	439
Controls	no	yes	no	yes

Notes: * p<0.1, ** p<0.05, *** p<0.01 Standard errors in parentheses are clustered at the individual level. Each horizontal line indicates a new regression. The presented coefficients are average marginal effects. Results for very small parties (NPD and Pirate Party) as well as non-voters are not presented. Columns (1) and (2) show results for the full sample, while columns (3) and (4) are estimated on the sub sample, in which migration is always optimal. Controls include dummies for gender, marital status, higher education, four age dummies (30-39, 40-49, 50-59, > 60), and two dummies for household size (2 and 3 or more household member).

migrate.[6] These effects become even stronger when we restrict the sample to "rational migration" conditions, that is the scenarios, in which it is always optimal to migrate according to the model (i.e. the home tax is high and the foreign tax is not high). In this case (columns 3 and 4), left-leaning respondents as well as respondents who are in favor of redistribution are 12 to 13 percentage points less likely to migrate. Supporters of the right wing populist party AfD are even 23 percentage points more likely to migrate when compared to the Left party. This result is in line with Hypothesis 7.

While ideology matters for tax choices, Table 8 in the appendix shows that political preferences are completely uncorrelated with tax beliefs. Neither redistributive preferences (Panel A) nor party party preference (Panel C) or our right-left classification (Panel B) can significantly explain tax beliefs.

We summarize our results on the impact of political ideology in

Result 4. *Left-leaning participants are more likely to vote for higher taxes and less likely to migrate than right-leaning participants. Beliefs about others' tax or migration choices are not systematically affected by political ideology.*

Our main insights from the online experiment are thus, that while behavior deviates substantially from equilibrium predictions, this does not seem to be primarily driven by noise because beliefs about others' choices are much closer to equilibrium. Furthermore, political ideology has a substantial impact on the choices, which further supports that our deviations from equilibrium are not just noise but frequently expressions of personal views on appropriate levels of redistribution.

4 Laboratory Experiment

4.1 Experimental design

Prior to the online experiment we ran a more conventional laboratory experiment, in which 108 individuals (mostly students) participated. The general setup parallels the one described above in section 2. In particular, we kept the composition of a country with one rich and two poor individuals, identical distribution of gross incomes, the set of tax rates, the cost of mobility, and the random dictator voting mechanism. At the same time there are several relevant differences conceptually and in the empirical implementation.

At the conceptional level, there are at least a number of important differences. One concerns the nature of strategic interaction. In the online experiment we paired subjects ex post to determine payoffs and used the strategy method to see how subjects make choices conditional on assumed behavior elsewhere. By contrast, in the lab experiment we paired subjects into countries during the experiment and thereby created full strategic interaction. This also allowed us to match countries into pairs where tax choices

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[6]Ironically, thus, supporters of this anti-immigration party are most likely to be economic migrants in our study.

were endogenously chosen in both rather than being matched with a foreign country with exogenously given tax rate. As a result, countries could not only lose a rich player, but also attract one from another country. A further consequence is that tax payment of a rich player who migrates are not lost because they are paid in another country consisting of experimental participants. As a further difference, the laboratory setting with strategic interaction allowed us to study behavioural dynamics as we repeated rounds of tax and migration choices. After each round subjects are informed about tax rate and migration choices in both countries. Role assignments and the matching of participants into countries and countries into pairs remained fix during the course of the experiment. A further difference relates to the assignment of roles. In the lab experiment the roles of rich and poor were based on the outcome of simple, five minute counting exercise. The best performing third of subjects in adding four two-digit numbers were awarded the role of a rich person, who has much higher gross income. Finally, in the online experiment we have a representative sample of the German adult population, while subjects in the lab experiment are mostly students. The difference between the Internet panel experiment and laboratory experiment does not originate from behavioral differences between students and non-students. Among the 3000 observations in the GIP experiment, about 200 are students. These show a similar bias towards the medium tax rate.

In the lab experiment we considered two treatments. In the *ImmobMob* treatment subjects repeated the closed economy setup with no migration option for the rich 15 rounds, followed by another 15 rounds of the open economy setup with potential migration of the rich. In the second treatment *MobMob*, subjects interacted 30 rounds in the same setup with the migration option. In both treatments subjects were informed about the nature of the interaction in the second phase only after phase 1. At the beginning of the experiment, however, subjects were told that the experiment lasts for 30 periods and new instructions are provided after 15 rounds of play. The two treatments allow us to compare the role of mobility both across subjects pools (periods 1-15 in the two treatments) as well as within the same subject pool (periods 16-30 versus periods 1-15).

Subjects were paid on the basis of one randomly chosen period of each phase. Four points in the experiment translated into one Euro payout. No show-up fee was paid. The experiment was conducted in the computerized mLab at the University of Mannheim, using z-Tree (Fischbacher, 2007) and ORSEE (Greiner, 2015).

4.2   Results

Table 7 displays the distribution of tax votes by treatment, phase and type. A large majority of tax votes is in line with the equilibrium prediction. Particularly noteworthy are the 92% of poor voting for high tax rates in the absence of mobility, as well as the almost fully selfish play by rich subjects who choose almost always low tax rates, although there are some votes for medium tax rates in the absence of mobility. Interestingly there are also some votes for high taxes among the poor when the rich are mobile. Note that phase 2 behavior is nearly identical across treatments.

Table 7: Tax choices in the lab

Treatment	Phase	Poor			Rich		
		L	M	H	L	M	H
ImmobMob	1	2.4%	5.6%	92%	88.5%	11.1%	0.4%
	2	7%	73%	20%	97.8%	2.2%	0%
MobMob	1	5.4%	57.2%	37.4%	99.6%	0.4%	0%
	2	5.2%	69.3%	25.6%	97.4%	2.6%	0%

We test for treatment differences using linear and ordered probit regressions with standard errors clustered at individual level or linear regression with individual-level random effects. For poor subjects we find that they vote for higher taxes without mobility (as expected) and vote for lower taxes in the second than in the first phase of treatment 2 (*MobMob*). As for rich subjects, they vote for higher taxes without mobility (contrary to expectation), and there are no differences across phases, as well as no treatment difference in second phase.

As in the online experiment it is important to understand who deviates from equilibrium. Among rich players in the *MobMob* treatment, 7 out of 8 votes for the medium tax M come from the same female subject, who would vote for the center-right party CDU, but thinks that both socialism and capitalism are in principle good ideas and society is not very fair. In the first treatment (*ImmobMob*) 17 out of 36 votes for M in phase 1 come from the same male subject, who switches to the low tax rate L after period 17. This individual would vote for the Pirate Party (a niche party), thinks socialism is in principle a good idea and that society is largely fair. Another 8 votes for the medium tax M come from two CDU voters.

We also take a closer look at the role of party preference for the tax vote. We use linear regressions with individual-level random effects in which the omitted category are those without stated party preference. For poor subjects green voters choose higher taxes (p<0.05), FDP (p< 0.05) and Left Party (!) (p<0.1) voters choose lower taxes. Among rich players Pirate party supporters choose higher taxes (p<0.05). There are no other significant differences. In general these results are derived from a low number of observations and thus have little statistical power (40 out of 108 subjects in the lab experiment did not answer the question about party preference). An exception are the results for supporters of the Green Party.

As substitute for party preference, we use survey questions on political attitudes among participants in the lab experiment. We ask to rate various statements such as i) socialism/capitalism is a good idea, ii) the rich should show solidarity with the poor, and iii) society is largely fair. Essentially none of them has a significant impact once we control for dependence of observations. Only the attitude toward socialism and a dummy for the role of luck for economic outcomes are significant for the tax choice of the rich if we include treatment and other controls. However, many coefficients do not

even have the expected sign. An example is that the belief that luck determines income is related to lower tax choices of the rich.

We finally turn to an analysis of the migration behaviour by rich subjects. Rich players almost always switch when they should: When the tax rate in the own country is high, while low or medium in the other country, and thus the condition for profitable migration is met, the switch rates are between 82% and 100%. Rich players very rarely switch when they should not. Exceptions are the following: Migration rates are 19% from a medium tax country to a low tax country, and 12.5% between high tax countries. These choices could be attempts to try to force poor participants in one's own country to vote for lower taxes even if these migrations choices are costly in the short term. Overall, out of 131 migration choices made by rich players only 19 are not in line with subgame-perfect Nash equilibrium.

More systematic analysis using probit regression with individual-level random effects shows that the probability to migrate increases in the tax rate in own country and decreases in the tax rate in other country, as one would expect. Supporters of the center-left Social Democrats (SPD) are more and supporters of center-right Christian Democrats are less likely (p<0.05) to migrate than those without stated party preference. Interestingly those individuals who are thinking society is fair and those thinking income is determined by luck, or by achievement, are all less likely to migrate (p<0.05).

We summarize our results from the laboratory experiment as follows:

Result 5. *Tax and migration choices in the laboratory experiment are to a very large degree in line with equilibrium predictions. Political ideology is partly correlated with choices in an expected way, but partly contrary to expectations. The inconsistent patterns are probably to a large degree due to few observations in some categories, in particular with respect to party preferences.*

5   Conclusion

We studied voting on taxation in a very simple game in an online experiment as well as in a laboratory experiment. In the online experiment, voting differs very often from equilibrium predictions, though comparative statics predictions are confirmed. Interestingly, beliefs on others' voting behavior is much closer to equilibrium predictions than actual voting behavior, which suggests that the latter is not (primarily) due to misunderstanding of the incentives. Rather participants appear to be driven by social norms but expect others to be more selfish. Migration choices by participants with high (experimental) income are also less selfish than predicted but again satisfy comparative statics predictions. Beliefs of low-income participants again lean more towards selfish behavior than experimental migration choices do.

Our main interest, though, was whether political attitudes impact on experimental behavior and beliefs once we control for demographic characteristics such as age, income, and education. We find that behavior does, and in a predictable way. Left-leaning

participants tend to be more likely to vote for higher taxes, independent of whether they benefit from them and migrate less, even if it pays. Beliefs, however, are not affected by political attitudes. There are two interesting implications of these results. First, political attitudes do not simply reflect easily measurable characteristics. Second, this impact of political attitudes on behavior is not the result of different expectations about others' behavior.

In our laboratory experiment, behavior is much closer to equilibrium predictions. We discuss several possible reasons for this stark difference to the online experiment. We do not find sufficient variation in political attitudes in order to provide a meaningful analysis of these in the laboratory experiment.

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A   Appendix

A.1   Additional Analysis

Table 8: Tax beliefs and ideology

	(1) Low	(2) Low	(3) Low	(4) Medium	(5) Medium	(6) Medium	(7) High	(8) High	(9) High
Panel A *Redistribution preference* reference category: against redistribution									
indifferent	-0.011	-0.014	-0.025	0.005	0.006	0.021	-0.003	0.006	0.004
	(0.026)	(0.026)	(0.036)	(0.011)	(0.011)	(0.030)	(0.015)	(0.015)	(0.007)
pro redistribution	0.029	0.028	0.014	-0.011	-0.012	-0.011	-0.016	-0.017	-0.003
	(0.022)	(0.023)	(0.031)	(0.009)	(0.010)	(0.025)	(0.013)	(0.013)	(0.006)
N	2,771	2,706	1,310	2,771	2,706	1,310	2,771	2,706	1,310
Panel B *Ideology* reference category: right wing									
left wing	-0.015	-0.019	0.008	0.006	0.008	-0.007	0.009	0.011	-0.001
	(0.020)	(0.021)	(0.029)	(0.009)	(0.009)	(0.024)	(0.012)	(0.012)	(0.005)
N	2,156	2,111	1,032	2,156	2,111	1,032	2,156	2,111	1,032
Panel C *Party preference* reference category: The Left									
AFD	0.071	0.093**	0.075	-0.030	-0.040**	-0.061	-0.040	-0.053**	-0.014
	(0.046)	(0.047)	(0.062)	(0.020)	(0.020)	(0.051)	(0.027)	(0.027)	(0.012)
FDP	0.042	0.058	0.097	-0.018	-0.025	-0.079	-0.024	-0.033	-0.018
	(0.049)	(0.049)	(0.071)	(0.021)	(0.021)	(0.058)	(0.028)	(0.028)	(0.014)
CDU/CSU	-0.019	-0.001	0.021	0.008	0.001	-0.017	0.011	0.001	-0.004
	(0.037)	(0.038)	(0.050)	(0.016)	(0.016)	(0.040)	(0.021)	(0.022)	(0.009)
SPD	-0.005	0.006	0.049	0.002	-0.003	-0.040	0.003	-0.004	-0.009
	(0.040)	(0.040)	(0.053)	(0.017)	(0.017)	(0.043)	(0.022)	(0.023)	(0.010)
The Greens	-0.002	0.022	0.095*	0.001	-0.009	-0.077*	0.001	-0.012	-0.18*
	(0.041)	(0.042)	(0.055)	(0.018)	(0.018)	(0.044)	(0.024)	(0.024)	(0.011)
N	2,345	2,296	1,118	2,345	2,296	1,118	2,345	2,296	1,118
Controls	no	yes	yes	no	yes	yes	no	yes	yes
Migration beliefs	no	no	yes	no	no	yes	no	no	yes

Notes: * p<0.1, ** p<0.05, *** p<0.01 Robust standard errors in parentheses. Each horizontal line indicates a new regression. The presented coefficients are average marginal effects. Results for very small parties (NPD and Pirate Party) as well as non-voters are not presented. Note that the drop in the number of observations when including migration beliefs is explained by limiting the sample to poor respondents. Controls include dummies for gender, marital status, higher education, four age dummies (30-39, 40-49, 50-59, > 60), and two dummies for household size (2 and 3 or more household member).

Table 9: Migration beliefs and ideology

	full sample		"migration rational"	
	(1)	(2)	(3)	(4)
	Migration belief	Migration belief	Migration belief	Migration belief

Panel A *Redistribution preference* reference category: against redistribution

indifferent	0.033**	0.027	-0.028	-0.025
	(0.016)	(0.016)	(0.026)	(0.026)
pro redistribution	0.015	0.009	-0.004	-0.004
	(0.014)	(0.014)	(0.026)	(0.023)
N	4,103	4,007	1,113	1,086

Panel B *Ideology* reference category: right wing

left wing	0.019	0.017	0.003	0.002
	(0.012)	(0.012)	(0.020)	(0.020)
N	3,220	3,155	872	855

Panel C *Party preference* reference category: The Left

AFD	0.023	0.024	0.027	0.026
	(0.025)	(0.025)	(0.053)	(0.053)
FDP	-0.039	-0.026	-0.028	-0.026
	(0.030)	(0.031)	(0.053)	(0.053)
CDU/CSU	-0.041	-0.035	-0.043	-0.043
	(0.019)	(0.019)	(0.039)	(0.039)
SPD	-0.006	-0.010	-0.012	-0.014
	(0.021)	(0.021)	(0.042)	(0.042)
The Greens	-0.007	0.010	-0.052	-0.052
	(0.022)	(0.022)	(0.041)	(0.042)
N	3,487	3,418	939	920
Controls	no	yes	no	yes

Notes: * $p<0.1$, ** $p<0.05$, *** $p<0.01$ Standard errors in parentheses are clustered at the individual level. Each horizontal line indicates a new regression. The presented coefficients are average marginal effects. Results for very small parties (NPD and Pirate Party) as well as non-voters are not presented. Columns (1) and (2) show results for the full sample, while columns (3) and (4) are estimated on the sub sample, in which migration is always optimal. Controls include dummies for gender, marital status, higher education, four age dummies (30-39, 40-49, 50-59, > 60), and two dummies for household size (2 and 3 or more household member).

Table 10: Summary statistics

Variable	mean	sd	min	max	N	source
tax choice	1.97	0.54	1	3	3,020	GIP wave 18
tax belief	1.68	0.76	1	3	3,015	GIP wave 18
migration	0.24	0.43	0	1	2,175	GIP wave 18
migration belief	0.38	0.48	0	1	4,442	GIP wave 18
female	0.49	0.50	0	1	3,019	GIP wave 18
age: 16 - 29	0.17	0.40	0	1	3,018	GIP wave 18
age: 30 - 39	0.15	0.42	0	1	3,018	GIP wave 18
age: 40 - 49	0.20	0.43	0	1	3,018	GIP wave 18
age: 50 - 59	0.24	0.49	0	1	3,018	GIP wave 18
age: > 60	0.24	0.50	0	1	3,018	GIP wave 18
married	0.60	0.49	0	1	3,019	GIP wave 18
higher education	0.48	0.50	0	1	2,955	GIP wave 18
hh size: 1	0.16	0.37	0	1	3,014	GIP wave 18
hh size: 2	0.43	0.50	0	1	3,014	GIP wave 18
hh size: 3 or more	0.41	0.49	0	1	3,014	GIP wave 18
left wing	0.51	0.50	0	1	2,160	GIP wave 16
redistribution preference	2.59	1.04	1	5	2,776	GIP wave 16
NPD	0.01	0.09	0	1	2,349	GIP wave 16
AFD	0.10	0.30	0	1	2,349	GIP wave 16
FDP	0.06	0.23	0	1	2,349	GIP wave 16
CDU/CSU	0.28	0.45	0	1	2,349	GIP wave 16
SPD	0.22	0.41	0	1	2,349	GIP wave 16
The Greens	0.16	0.36	0	1	2,349	GIP wave 16
Pirate Party	0.02	0.12	0	1	2,349	GIP wave 16
The Left	0.09	0.29	0	1	2,349	GIP wave 16
non-voter	0.07	0.25	0	1	2,349	GIP wave 16

Table 11: Randomization check

	(1) mobile	(2) rich	(3) foreign tax low	(4) foreign tax medium	(5) foreign tax high
Gender reference category: male					
female	-0.024	0.030*	-0.001	-0.006	0.006
	(0.016)	(0.017)	(0.021)	(0.021)	(0.017)
N	3,019	3,019	2,250	2,250	2,250
Age reference category: < 30					
30 to 39	-0.021	-0.003	0.006	-0.017	0.011
	(0.028)	(0.030)	(0.036)	(0.037)	(0.030)
40 to 49	-0.007	-0.001	0.035	-0.030	-0.005
	(0.026)	(0.028)	(0.034)	(0.034)	(0.027)
50 to 59	-0.025	-0.042	-0.029	-0.012	0.041
	(0.025)	(0.027)	(0.033)	(0.033)	(0.027)
> 60	0.004	-0.037	0.023	-0.020	-0.003
	(0.025)	(0.027)	(0.032)	(0.032)	(0.026)
N	3,018	3,018	2,249	2,249	2,249
Marital status reference category: not married					
married	-0.013	-0.032*	0.012	-0.008	-0.004
	(0.016)	(0.017)	(0.021)	(0.021)	(0.017)
N	3,019	3,019	2,249	2,249	2,249
Educational status reference category: lower education					
higher education	0.006	0.009	0.022	-0.032	0.009
	(0.016)	(0.017)	(0.021)	(0.021)	(0.017)
N	2,955	2,955	2,205	2,205	2,205
HH size reference category: 1					
2	0.020	-0.006	-0.034	0.005	0.029
	(0.024)	(0.025)	(0.031)	(0.030)	(0.024)
3 or more	0.023	-0.011	-0.048	0.027	0.021
	(0.024)	(0.025)	(0.031)	(0.031)	(0.024)
N	3,014	3,014	2,249	2,249	2,249
Ideology reference category: right wing					
left wing	0.009	-0.000	-0.007	0.003	0.004
	(0.019)	(0.020)	(0.024)	(0.024)	(0.020)
N	2,160	2,160	1,624	1,624	1,624
Redistribution preferences reference category: against redistribution					
indifferent	-0.027	0.027	0.007	-0.008	0.001
	(0.024)	(0.026)	(0.032)	(0.032)	(0.025)
pro redistribution	-0.001	0.029	-0.002	-0.037	0.039*
	(0.021)	(0.023)	(0.028)	(0.028)	(0.022)
N	2,776	2,776	2,079	2,079	2,079

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Notes: * $p<0.1$, ** $p<0.05$, *** $p<0.01$ Robust standard errors in parentheses. The presented results are based on a linear regression of the form $Y_i = \beta_0 + \beta_1 Covariate_i + \epsilon_i$, where Y_i is a dummy for the respective treatment variable (mobile, rich, foreign tax low, foreign tax medium, foreign tax high) and $Covariate_i$ is the respective covariate. Each horizontal line indicates a new regression.