Money is where the fun ends: material interests and individuals' preference for direct democracy

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Money is where the fun ends: material interests and individuals' preference for direct democracy

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Abstract:

Are people's attitudes towards referenda as a decision-making procedure driven by their material self-interest, or do individuals predominantly value direct democracy as such, regardless of the material payoffs associated with anticipated policy outcomes? To answer this question, we use a survey data set that offers information on respondents' support for referenda as a procedure to decide on tax policy, their general views on direct democracy and redistribution, their income levels, socio-economic characteristics, and, most importantly, their expectation about the majority's support for higher taxes. Allowing for alternative motives to welcome or oppose direct democracy, we find that income *per se* does not influence individuals' procedural preferences. However, if respondents expect a clear population majority in favor of or against more redistribution their attitude towards referenda as a procedure to decide on taxation is clearly aligned with their income position.

Keywords: constitutional choice, direct democracy, redistribution

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1. Introduction

There is a well-established literature in political economics that analyzes the effect of institutions and constitutional rules on economic and social outcomes (see Persson and Tabellini 2003, Acemoglu et al. 2005, and Voigt 2011 for surveys). More recently, however, researchers in political economics have started to *endogenize* the choice of these institutions, explaining the emergence of different "rules of the game" as the outcome of a struggle between different interests in a heterogeneous society. Diverse as they may be, these contributions share a common logic: individuals prefer those procedures which maximize the likelihood that the eventual political-economic equilibrium furthers their material interests.[3]

While the logic underlying these contributions is consistent with economic reasoning, it does not go uncontested: in a recent contribution, Rodrik (2014) deplores the rather negligent treatment of "ideas" in the political-economic analysis of policy innovations, arguing that "…much human behavior is driven by abstract ideals, sacred values, or conceptions of loyalty that cannot be reduced to economic ends" (Rodrik 2014:191). In a similar spirit, political science, psychology and behavioral economics offer a wealth of alternative motives beyond pure material interest that contribute to understanding the choice of decision-making procedures. Given the potential relevance of *intrinsic* motives, which evaluate procedures with respect to their transparency, fairness, practicability etc., but not with respect to their consequences for individual payoffs, the importance of *instrumental* motives, emphasized by standard economic analysis, is ultimately an empirical question.

In this paper, we put the idea that material interests are important in shaping individuals' preferences over alternative decision-making procedures to a test: we use data from a self-designed survey among German residents that asks individuals whether they support the use of referenda as a procedure to decide on redistributive taxation. Along with the answer to this question, the survey provides us with information on respondents' *general* support for direct democracy and for government interventions in favor of lower economic inequality, as well as on their income and other socio-economic characteristics. Most importantly, the survey asks participants whether

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[3] Of course, this requires that individuals can clearly identify their interests, i.e. that the "veil of ignorance" is lifted.

they expect a *clear majority* of the population to be *in favor of* or *against* higher taxes. Unlike other empirical studies of endogenous constitutional choice, we thus do not have to rely on a mere *conjecture* that individuals are able to correctly anticipate the political-economic equilibrium emerging from alternative constitutional choices. Instead, these expectations are made explicit by the survey data, and we can test the simple hypothesis that individuals with a lower (higher) income are more (less) likely to support referenda if they expect a clear majority to be in favor of higher taxes. If the support (or rejection) of direct democracy was predominantly driven by intrinsic motives – say, the belief that referenda are an optimal procedure in terms of fairness, transparency and practicability – neither individuals' income nor their expectation about the majority's position should play a role for their procedural preferences.

Our empirical results, however, support the notion that material self-interest *does* matter for individuals' preferences over decision-making procedures: while income *per se* does not affect respondents' support for direct democracy, its marginal effect is negative for those individuals who expect that a clear majority of the population is in favor of higher taxes. This result holds even if we control for other – intrinsic or instrumental – motives that may determine individuals' procedural preferences. And it demonstrates that money is where the fun ends: however large the enthusiasm for direct democracy may be on principal grounds, this support is severely dampened once individuals expect their net income to be reduced if referenda are used to decide on tax issues.

The rest of this paper is structured as follows: Section 2 surveys the relevant literature, while Section 3 presents a simple model that motivates the subsequent empirical analysis. Section 4 introduces the structure of our survey data set. In Section 5, we test whether the desire for redistributive taxation is affected by respondents' income. Section 6 turns to individuals' support for referenda as a mechanism to decide on taxes. We first analyze the direct effect of income (along with other potential determinants). In a next step, we then explicitly consider respondents' expectations on the majority's position. Section 7 offers a summary and some conclusions. Regression outputs as well as detailed definitions and information on our survey data are given in the Appendix.

2. Related literature

Our study is related to several strands of literature: the notion that individuals' preferences over procedures reflect their material self-interest is at the heart of contributions that interpret the emergence of political institutions as the result of rational agents' anticipation of how alternative institutional choices will affect individual (or group-specific) benefits. In an influential study, Acemoglu and Robinson (2000) explain the extension of the franchise on the basis of a cost-benefit analysis of incumbent rulers who grant the right of political participation to the broad population in order to reduce the threat of upheaval and revolution.[4] Aghion et al. (2004) describe the optimal distribution of power in a society as reflecting a trade-off between efficient decision-making and the control of a potentially self-serving ruler. In their analysis, they both derive the constitutional design that is desirable behind the veil of ignorance, and the design that is likely to emerge once (wealth) heterogeneity and individiuals' conflicting interests are explicitly taken into account. Ticchi and Vindigni (2009) relate the choice among alternative democratic constitutions (majoritarian vs. consensual) to the underlying economic inequality, while Robinson and Torvik (2016) describe the emergence of presidentialism as resulting from a struggle between groups that differ with respect to their political orientation, but also with respect to their preferences over the provision of public goods. Acemoglu et al. (2015) show how the evolution of coalitions between different groups in society gives rise to changing patterns of political liberalization and repression. Finally, Mukand and Rodrik (2015) define liberal democracy as an institutional setting that combines the protection of property rights, electoral rights, and minority rights, and show that its emergence is rather an exception than the rule, relying on a specific constellation of group sizes as well as social and identity cleavages.

What unites the contributions mentioned above is the premise that individuals (or groups) never value specific constitutional choices *per se*, but that they favor those procedures that are most likely to further their own – usually material – interests. From a political science perspective, this logic seems surprisingly poor. For example, preferences for "democratic innovations", i.e. non-representative forms of decision-

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[4] Aidt and Franck (2015) offer a recent empirical analysis that supports the „preemptive democratization" hypothesis of Acemoglu and Robinson (2000).

making such as direct democracy or deliberative citizen forums are explained as the result of the more general value shift towards post-materialism (see Inglehart 1990), referring to the idea that, in times of affluence, non-material values, including political participation, become more important than wealth. According to this view, citizens demand ever more opportunities to have a direct say in policy-making, they become "critical citizens" (Norris 1999). A number of contributions that study citizens' attitudes towards specific democratic decision-making procedures point out the importance of differing normative conceptions of representation and democracy for procedural preferences (Wenzel, Bowler et al. 2000; Bengtsson and Wass 2010; Landwehr and Steiner 2017). In these studies, support for specific procedures or reforms of them is regarded as derived from a more comprehensive understanding of democracy in which values such as equality, autonomy, the protection of liberties as well as institutional capacity and effectiveness are weighed and combined.

The idea that individuals' assessment of alternative decision-making procedures does not just depend on their material interests is also underlying those contributions that emphasize the gains in individual well-being associated with the possibility of participating in the political process (Stutzer and Frey 2005, 2006; Pacheco and Lange 2010) as well as theoretical and empirical analyses of procedural fairness (Tyler and Lind 2000, Bolton et al. 2005). Moreover, it is reflected in the concept of "expressive voting", which "…captures the idea that voting may be motivated by concerns other than a concern for the eventual outcome of the election – concerns that are more directly and immediately linked to the act of voting, or of voting for a particular candidate or option, itself" (Hamlin and Jennings 2011: 645).

Finally, our analysis explores the role of material interests in determining individuals' support for *referenda* as a particular procedure to decide on redistributive taxation. It is thus also related to the voluminous literature on the determinants and effects of direct democracy, as surveyed, e.g., by Matsusaka (2008), and to contributions that analyze how the use of referenda as a decision-making procedure affects fiscal outcomes like government spending, public debt, and taxation (Feld and Kirchgässner 2001, Funk and Gathmann 2011, Asatryan et al. 2017a, Asatryan et al. 2017b). Even closer to our analysis are those studies that use survey or voting data to identify the determinants of people's support for direct democracy (Donovan and Karp 2006, Bowler et al. 2007, Dyck and Baldassare 2009, Collingwood 2012, Arnold et al. 2016). None of these contributions, however, shares our focus on a specific policy

issue – i.e. redistributive taxation – and none of them explicitly elicits individuals' expectations on the majority opinion.

3. Distributional interests, expectations, and individuals' support for referenda: A simple model

On the following pages, we will develop a simple model that allows disentangling the various forces which potentially determine an individual's choice between alternative procedures. More specifically, we will differentiate between individuals' *substantial policy preferences* – here, on redistributive taxation – and their *procedural preferences*, which refer to the way the decision on a given policy issue is taken. These procedural preferences can be *intrinsic*, i.e. the support for a given procedure is independent of, and unaffected by substantial preferences, or they may be *instrumental*, i.e. support for a specific procedure is conditional on the belief that it will bring about desired outcomes.[5]

We consider an economy that is inhabited by a large number of individuals who are indexed by *i* and receive an exogenous income y_i. The cross-sectional distribution of incomes is common knowledge, characterized by an average income $\bar{y}$ and a median income $\tilde{y}$, and skewed to the right, i.e. $\bar{y} > \tilde{y}$. The government levies a linear income tax and uniformly redistributes tax revenues among all citizens. For simplicity, we assume that redistribution is restricted to being either complete ($\tau = 1$) or totally absent ($\tau = 0$). The decision on the tax rate τ is either taken through a referendum or by the government tossing a coin.

We assume that individuals' preferences over decision-making procedures have an *intrinsic* component, which assesses different procedures according to their inherent fairness, transparency, feasibility etc., and an *instrumental* component, which reflects the utility an individual derives from the outcome she expects as resulting from a given procedure.[6] We thus write individual *i*'s total utility as

(1) $V_i = \pi_i + \phi\, U_i(\tau)$

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[5] In Harms and Landwehr (2017), we further discuss this difference and explore the importance of intrinsic vs. instrumental procedural preferences with respect to a wide array of policy issues.

[6] As we will argue below, this part of total utility does not only depend on an individuals' material payoff.

In (1), π_i reflects the additional utility that individual *i* derives from the use of a specific procedure, regardless of her view on taxation. We assume that $\pi_i = \rho_i$ for a referendum and $\pi_i = 0$ for a coin toss. Note that ρ_i is individual-specific, and that we do not impose any restrictions on its sign or absolute size. The term $U_i(\tau)$ is the utility derived from a specific tax rate τ, and also depends on individual characteristics. Finally, $\phi \geq 0$ is the relative weight given to *instrumental* (as opposed to *intrinsic*) motives. Note that, for simplicity, we assume that ϕ is identical across individuals. If instrumental considerations are completely irrelevant in shaping individuals' attitudes towards referenda, we have $\phi = 0$. Conversely, if ϕ becomes infinitely large, procedural preferences entirely reflect instrumental motives.

The utility an individual derives from a specific tax rate $U_i(\tau)$ is a linear function of her after-tax income and of a term that reflects her *general* attitude towards taxation:

(2) $$U_i(\tau) = (1-\tau) y_i + \tau \bar{y} - \theta_i \tau$$

If θ_i is positive, individual *i* has a generally critical attitude towards taxation, regardless of her own income position. This may be because she emphasizes the potentially detrimental incentive effects associated with higher taxes. Conversely, a negative value of θ_i reflects a generally positive attitude towards taxation – due, e.g., to inequity aversion (Fehr and Schmidt 1999) that induces an individual to prefer a more even income distribution.

We assume that the distribution of the parameter θ_i is not observable, and that individuals assign *subjective probabilities* to all potential realizations of θ_i in the population. This results in a *subjective expected value* $\bar{\theta}_i$, which potentially differs across individuals, i.e. individuals may have different expectations on citizens' average support or rejection of redistributive taxation. For the sake of simplicity, we assume that all individuals agree on the fact that θ_i is not correlated with y_i. Moreover, individual i's own general attitude towards redistribution, as reflected by θ_i, may, but need not coincide with $\bar{\theta}_i$.

Given the government's choice between complete redistribution ($\tau = 1$) and no redistribution at all ($\tau = 0$), the utility function in (2) obviously implies that individual i prefers a tax rate of 100 percent if $\bar{y} > y_i + \theta_i$. This expression has a straightforward interpretation: a higher general aversion against taxation ($\theta_i > 0$) has the same effect as a higher income, possibly inducing an individual to reject taxation even if her income is below the mean. Conversely, if an individual is generally positive about redistribution ($\theta_i < 0$), she may support a 100-percent tax although her income is above the mean. For a given distribution of θ_i, however, individuals with a higher income are more likely to reject redistributive taxation. In our empirical analysis of section 4, we will start by testing this hypothesis.

If a referendum is used to decide on redistributive taxation, the outcome depends on the distribution of incomes and the distribution of θ_i. From the perspective of individual i, the expected outcome of the referendum is

$$(3) \qquad \mathbf{E}_i\left(\tau \mid \text{referendum}\right) = \begin{cases} 0 & \text{if} \quad \bar{y} - \tilde{y} \leq \bar{\theta}_i \\ 1 & \text{if} \quad \bar{y} - \tilde{y} > \bar{\theta}_i \end{cases}$$

Note that, since $\bar{\theta}_i$ is based on individual i's personal beliefs, the expected outcome of the referendum is subjective, too. The expression in (3) is a slightly modified version of Meltzer and Richard's (1981) result: if individual i believes that the general attitude towards taxation is hostile on average ($\bar{\theta}_i > 0$), she expects the referendum to result in complete redistribution only if the difference between average and median income is large enough. Conversely, complete redistribution is perceived as a sure thing if individual i believes that the skewness of the income distribution is augmented by a positive view on redistribution prevailing, on average, among the population ($\bar{\theta}_i < 0$).

Obviously, all individuals are aware that the coin toss results in $\tau = 1$ with a probability of 0.5, and in $\tau = 0$ with a probability of 0.5, hence $\mathbf{E}_i\left(\tau \mid \text{coin toss}\right) = 0.5$. Confronted with the question whether a referendum or the coin toss should be used as a procedure to decide on taxation, the individual compares the utility specified in (1) for the two procedures. For the individual to support the referendum, the following condition has to be satisfied:

(4) $\quad \rho_i + \phi \left\{ \left[1 - \mathbf{E}_i \left(\tau \mid \text{referendum} \right) \right] y_i + \mathbf{E}_i \left(\tau \mid \text{referendum} \right) \left(\bar{y} - \theta_i \right) \right\} \geq \frac{\phi}{2} \left(y_i + \bar{y} - \theta_i \right),$

where $\mathbf{E}_i \left(\tau \mid \text{referendum} \right)$ is given by (3). Adding an error term, which reflects random factors that determine an individual's support for referenda and which follows a cumulative distribution function *F*, we can use the above expression to derive p_i , i.e. the probability that individual *i* opts in favor of a referendum:

(5) $\quad p_i = 1 - F \left\{ \phi \left[\mathbf{E}_i \left(\tau \mid \text{referendum} \right) - 0.5 \right] \left(y_i - \bar{y} + \theta_i \right) - \rho_i \right\}$

The condition in (5) illustrates that an individual's support for referenda as a procedure to decide on redistributive taxation depends on the following factors:

- The higher the general appeal of direct democracy for individual *i* (ρ_i), the greater the likelihood that she chooses a referendum as a procedure to decide on taxation for given expectations about the majority's opinion and a given relative income position.

- If ϕ = 0, instrumental motives are irrelevant, and an individual's support for using a referendum to decide on taxation only depends on her general attitude towards direct democracy. Neither an individual's income, nor her expectation about the majority's opinion or her general attitude towards redistribution matter.

- If ϕ > 0, an individual's support for using a referendum to decide on taxation depends on her general attitude towards direct democracy (ρ_i), but also on her relative income position ($y_i - \bar{y}$), her general attitude towards redistribution (θ_i), and her expectation about the majority's support for complete redistribution, as reflected by $\left[\mathbf{E}_i \left(\tau \mid \text{referendum} \right) - 0.5 \right]$. Importantly, whether being rich (poor) reduces (raises) the likelihood of supporting the use of a referendum crucially depends on whether the individual expects the referendum to result in $\tau = 1$ or $\tau = 0$. Hence, if $\phi > 0$ the marginal effect of an individual's

income on the likelihood of her supporting a referendum is negative if the individual expects a majority to support complete redistribution.

In what follows, we will start by analyzing the relationship between individuals' income and their attitude towards higher taxes. In a next step, we will explore whether we can reject the hypothesis that material motives are irrelevant in determining individuals' support for the use of referenda to decide on redistributive taxation, i.e. that $\phi = 0$. When doing so, we can exploit the fact that our data set offers information on the different variables that enter the expression in (5).

4. Data

To identify the importance of material interests in shaping individuals' attitudes towards the use of referenda, we designed a survey experiment that was fielded via the GESIS panel in 2016 (GESIS, 2017). The GESIS panel is a mixed-mode access panel started in 2013, representative of the German-speaking population between 18 and 70 in Germany (Bosnjak, Dannwolf et al., 2017). Since 2013, panelists have been participating in bi-monthly waves of surveys.[7] The GESIS data include, besides specific survey items, a wide range of sociodemographic questions as well as standard attitudinal constructs. The waves we draw on are wave 10 ("ce", October-December 2015) and 15 ("dd", August-October 2016).[8]

The main dependent variable in our survey is the discrete choice of the procedure "referendum" over alternative procedures for a decision about redistributive taxation. More specifically, participants were asked the following question:

"Currently, there is a lot of discussion about fair taxation and tax policy. How do you think a decision about this should be taken?

a)   After a public debate, a referendum should be held.

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[7] Due to the experimental design of our survey, only panelists in the online-access mode could participate.

[8] Variable definitions and summary statistics are reported in Appendix 1.

b)   The Bundestag [German parliament] should decide on the basis of discussions within the political parties.

c)   An independent expert commission should develop a recommendation which is then implemented.

d)   Representatives of all affected groups should come together at a table and jointly find a solution."[9]

On the subsequent screen, we asked participants about their own substantial attitudes on the matter: "Are you in favor or against implementing a higher tax on high incomes?" Respondents reacted by choosing an answer on a five-point scale ranging from "absolutely in favor" (1) to "absolutely against" (5). In our subsequent regressions, we will turn this information into the dummy variable *No_higher_taxes*, which takes a value of one if an individual stated to be *against* or *absolutely against* higher taxes.

On a third and final screen, we asked participants about their assessment of the *majority* opinion: "Do you think that, in Germany, there is a majority in favor or against higher taxes on high incomes?" Again, respondents could choose their answer on a five-point scale, ranging from "clear majority in favor of higher taxes" (1) to "clear majority against higher taxes" (5). The answer to this question allows us to identify individuals' expectations about the outcome of a referendum: if a respondent expects a clear majority to be in favor of higher taxes on the rich, she or he expects these taxes to materialize if tax policy is decided by means of a referendum. Hence, the answer to this question reflects the sign of the expression $\left[\mathbf{E}_i \left(\tau \mid \text{referendum} \right) - 0.5 \right]$ introduced in Section 3.

The additional information we use in our analysis concerns individuals' gender, age, citizenship, educational attainment, and income, all of which potentially affect individuals' attitude towards taxation and referenda. Based on the gender-related information, we define a dummy variable *Female*. The variable *Age* is based on the difference between 2016 and individuals' birth year.[10] *German citizen* is a dummy

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[9] This is, of course, a much richer menu of alternatives than the choice between a referendum and a coin toss modelled in Section 3. However, we argue that, if an individual expects a clear majority in favor of or against higher taxes, she finds the outcome of a referendum easier to predict than the outcome of any of the alternatives b) – d).

[10] Since the GESIS panel uses the value of 1943 (1995) for all respondents that were born in 1943 or earlier (1995 or later), we originally introduced the dummy variables *Old* (*Young*) for all individuals born

variable meant to control for respondents' citizenship, *University entrance degree* is a dummy variable that indicates respondents' educational attainment, reflecting an individual's eligibility to enroll at a university or a university of applied sciences.

The income variables are, of course, of central relevance to our research question: The GESIS survey records individuals' income both at the personal and at the household level. For reasons detailed below, we will focus on the information given on respondents' *net household income*.[11] Income may fall into one of nine brackets, with the lowest bracket (1) comprising all incomes below 900 Euros per month, and the highest bracket (9) comprising all incomes of 6000 Euros per month and above. In the subsequent analysis, we will start by using these categories as regressors. However, this may be problematic, since the distance between the brackets' boundaries increases as we move towards higher incomes. As an alternative, we therefore use the medium value within each bracket as a regressor. This leaves us with the problem of how to treat the top bracket (net household incomes per month above 6000 Euros). Fortunately, we can rely on the information provided by German statistical authorities (Destatis 2015), which report the share of households within certain income brackets, but also the average income of households within these brackets. Appendix 2 describes how we use this information in order to assign the value of 8700 Euros per month to the top income bracket in the GESIS panel.

This, however, leaves us with the question how much every individual earner within a household actually brings home: while a net income of 5000 Euros in a single-income household would put that entity among Germans' top earners, the same amount earned by a two-adult household looks less impressive. Since GESIS provides information on household size and on the number of children below 16, we adopt two approaches: The first one defines the number of income earners as the difference between the size of the household and the number of children younger than 16 years – suggesting that there may be more than two income earners in a household. The second approach only admits single-earner and double-earner households, with the

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in 1943 or earlier (1995 or later). However, these variables were never significant, such that we eventually dropped them. We also abstained from using both the level and the *squared value* of *Age* since it turned out that the latter was not significant in any specification.

[11] Of course, information about households' *gross* income would allow for an even clearer characterization of their preferences towards redistribution. However, since net income is closely related to gross income, we consider the former an appropriate measure of individuals' relative income position.

latter defined by a number of children which is smaller than the total household size minus one. For both approaches, we compute a household's *income per earner* by dividing net household income per month (in thousands of euros) by the number of earners.[12]

Finally, we characterized high- and low-income households by defining the dummy variables *Household income above 4000 Euros* and *Household income below 1700 Euros*. The boundaries were defined to roughly capture the bottom and top quartiles of the income distribution in the GESIS panel. In our survey, 18 percent of all respondents fall into the low-income category, while 31 percent fall into the high-income category – percentages that roughly coincide with the shares in the German population.[13] While the use of these dummy variables neglects the information about households at the center of the income distribution, it allows identifying those respondents who are likely to be aware of their relative prosperity levels.[14]

5. Household income and individuals' support for redistributive taxation

While our key objective is to identify the determinants of individuals' support for referenda as a decision-making procedure, we start by exploring whether material interest determines citizens' attitude towards redistributive taxation. Recall from the model in Section 3 that an individual rejects higher taxes if $y_i > \bar{y} - \theta_i$. For a given

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[12] An obvious alternative would be to consider respondents' *personal* income, as reported in the GESIS panel. However, the focus of official German statistics on *household* incomes makes it hard to reliably define the income of individuals in the top bracket. Moreover, individuals living in the same household are likely to define their distributional interests with respect to household income rather than personal income.

[13] According to Destatis (2015), 15 percent of all households in Germany report to receive an income below 1700 Euros per month, 48 percent report to receive an income above 3600 Euros, and 27 percent report an income above 5000 Euros. Since the distribution within the 3600-5000 bracket is likely to be skewed to the right, we believe that the share of households in Germany that receive a net income above 4000 Euros is not much higher than the 31 percent of the GESIS panel.

[14] Item *cfba067a* of the GESIS panel allows assessing whether respondents know their relative income position by asking them if they consider their financial wealth to be *(far) below average*, or *(far) above average*. It turns out that this perception is highly correlated with respondents' reported (household) income level.

distribution of θ_i, this suggests that respondents with a higher income are less likely to be enthusiastic about more redistributive taxation.

To check this claim, we start by running a regression that uses the binary variable *No_higher_taxes* as a regressand: as described in the previous section, this variable takes on a value of one if respondents are *against* or *strongly against* higher taxes on high incomes, and a value of zero otherwise. As regressors, we use the dummy variable *Female*, respondents' *Age*, a dummy for their educational attainment (*University entrance degree*) and, most importantly, a variable reflecting individuals' *Income*:

(6) $\text{No\_higher\_taxes}_i = \beta_0 + \beta_1 \cdot \text{Income}_i + \sum_i \gamma_k x_{ki} + \varepsilon_i$

In equation (6), the vector x_k reflects the control variables mentioned above. We estimate this equation both by using the OLS estimator – the "linear probability model" – and the logit estimator. Table 1 gives coefficients and t-statistics (based on a robust covariance matrix) for the OLS estimates, and average marginal effects and robust t-statistics for the logit estimates. Interestingly, *Age* has a consistently *negative* effect on respondents' opposition against higher taxes. Less surprisingly, *Income* has a positive effect for all variants. This supports the claim that individuals are well aware of their material interests when defining their attitude towards tax policy. Ceteris paribus, a respondent in the top-income category (9) is 17 percentage points more likely to reject higher taxes than a respondent in the bottom income category (1). The dummies for high- and low household income also have the expected effect – with high-income earners being more likely to reject higher taxes and low-income earners being less likely to be against higher taxes. However, the t-statistic of the low-income dummy narrowly misses the threshold for a 90-percent significance level.

Table 1 near here

The results in Table 1 confirm our conjecture that individuals' rejection of higher taxes increases in their income. However, while the model of Section 3 used the simplifying assumption that an individual's general attitude towards taxation, as reflected by the parameter θ_i, was uncorrelated with her income, this assumption may not be satisfied in reality. More specifically, it might be the case that rich individuals hold stronger views

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about the disincentive effects and economy-wide losses associated with high tax rates. If this were correct, the estimated effect of individuals' income on the attitude towards higher taxes would not necessarily reflect their material interests. In order to account for this possibility, we explicitly control for θ_i by using a variable from the October-December 2015 wave of the GESIS panel, i.e. the wave that took place roughly one year before individuals were asked about their attitude towards higher taxes. In that wave, respondents were asked to give their *general* opinion on the government's role in reducing economic inequalities. More specifically, they were confronted with the following statement: "The government should enforce the reduction of differences between the poor and the rich." Answers could be given on a seven-point scale from 1 (fully agree) to 7 (fully disagree). Based on this information, we constructed the variable *No_redistribution*, which takes a value of 1 if respondents chose 6 or 7, i.e. uttered a strongly negative attitude towards redistribution. Including this variable as an additional regressor in the above equation allowed controlling for other motives that may instill skepticism towards higher taxes and that may be correlated with respondents' income.

Table 2 near here

Table 2 demonstrates that, not surprisingly, a generally negative view on the government's role in reducing economic inequalities significantly raises the probability that survey participants are against or strongly against higher taxes imposed on the rich. Interestingly, however, there is an *additional* effect of income, no matter whether we simply use the income categories defined by the GESIS panel, or consider monetary magnitudes, either for the total household, or on a per-earner basis.[15]

We interpret these results as evidence that material self-interest is important in defining participants' attitude vis-à-vis tax policy: even if we control for the possibility that participants may reject redistribution for reasons that have nothing to do with their own interests – e.g. because of general concerns about fairness or economic efficiency

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[15] Using wave-c information on respondents' age, gender, educational attainment and income, we found that women are less likely to reject government intervention to reduce "differences between the poor and the rich", while educational attainment and income have a significantly positive effect on *No redistribution*. Hence, the total – direct and indirect – effect of the right-hand-side variables in equation (6) on people's rejection of higher taxes may actually be higher than suggested by the coefficients displayed in Table 2.

– we find that richer individuals are more likely to oppose higher taxes.[16] Endowed with these insights, we will now turn to the question whether material self-interest also affects individuals' support of referenda as a procedure to decide on tax policy.

6. Household income and individuals' support for referenda on taxation

As mentioned above, economic self-interest does not have to be the only motive that guides individuals' attitudes towards various constitutional designs. In fact, material motives may even be of second-order importance, and individuals may support direct democracy simply because they consider it a democratic, participatory and transparent way of arriving at public decisions. Or they may reject direct democracy because they anticipate the peril of voters succumbing to populist rhetorics. In the model of Section 3, the relative importance of intrinsic (as opposed to instrumental) motives was captured by the parameter ϕ. The goal of this section is to test whether we can reject the hypothesis that $\phi = 0$, i.e. that procedural choices are completely dominated by intrinsic considerations. This, of course, requires to specify the empirical model such that it properly reflects individuals' material interests.

To achieve our goal, we use the information already described in Section 4: the GESIS panel asks respondents to state which procedure should be used to decide on the question whether higher taxes are imposed on the rich. In a first step, we explore whether an individual's income *per se* has an effect on the likelihood that she picks a referendum.

However, we must be aware that an individual's attitude towards referenda as a procedure to decide on taxation may be driven by a generally positive or critical attitude vis-à-vis direct democracy. This, in fact, was the role of the parameter ρ_i in the model of Section 3. If this parameter is correlated with y_i, a negative coefficient of an individual's income does not necessarily prove the importance of material interests.

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[16] As an additional check, we tested whether accounting for respondents' expectations about their *future* financial situation changed our results. Using individuals' reply to item *debl244a* in the GESIS panel ("I expect that my financial situation will be significantly improved in the near future "), we found that, *ceteris paribus*, participants with an optimistic view on their financial future were more likely to reject higher taxes imposed on the rich. However, including this variable in the regression had no impact on the effect of *current* income.

To control for ρ_i, we therefore use a variable from the December-2015 wave of the GESIS panel, which reflects respondents' *general* view on referenda. Specifically, this item confronted respondents with the following statement: "There should be more referenda in Germany." Participants could choose on a seven-point scale, reaching from "fully disagree" (1) to "fully agree" (7). Including this variable (*Referendum_Preference*) in our regression controls for all motives – instrumental and intrinsic – that may determine an agent's general view on direct democracy. It thus helps to isolate the effect of individuals' income on their choice of referenda as a procedure to decide on tax policy.[17]

We control for other characteristics that might affect individuals' view on whether referenda should be used to decide on taxation by controlling for respondents' age (*Age*) and by using dummy variables that reflect respondents' gender (*Female*), their educational attainment (*University entrance degree*), as well as their citizenship (*German citizen*).

We start by ignoring the role of individuals' expectations about the outcome of a referendum and estimate the following equation:

$$(7) \qquad \text{Referendum}_i = \beta_0 + \beta_1 \cdot \text{Income}_i + \beta_2 \text{Referendum\_Preference}_i + \sum_i \gamma_k x_{ki} + \varepsilon_i$$

In (7), *Referendum* is a dummy variable which equals 1 if respondent *i* chooses a referendum as a procedure to decide on tax policy, and zero otherwise. As in Section 5, we estimate this equation using both OLS and the logit estimator. Table 3 gives coefficients, average marginal effects (for logit estimation), and t-statistics based on robust standard errors.

Table 3 near here

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[17] Regressing *Referendum_Preference* on various socio-economic characteristics (as reported in wave c of the GESIS panel) revealed that household income, the *Female* dummy and the *University entrance degree* dummy had a negative effect on individuals' *general* support for referenda. To check whether the inclusion of *Referendum_Preference* was driving our results, we also ran all subsequent regressions dropping this variable. While this omission substantially reduced the explanatory power of our model, it did not affect our key results.

The coefficients in the first row of Table 3 indicate that, indeed, individuals' *general* enthusiasm for direct democracy has a strong effect on their view whether referenda should be used as a procedure to decide on tax policy. In addition, older and better-educated individuals are less likely to support the use of referenda for this policy issue. However, there does not seem to be a separate effect of income that goes beyond its influence on agents' *general* attitude towards direct democracy.[18]

In the light of the model presented in Section 3, the irrelevance of individuals' income for their support of referenda on taxation does not come as a surprise. As we have demonstrated in Section 3, the marginal effect of income depends on the sign of $\left[\mathbf{E}_i \left(\tau \mid \text{referendum} \right) - 0.5 \right]$, i.e. on individuals' expectation on whether a referendum will result in higher taxes or not. To account for the role of expectations, we use the GESIS panel's information on respondents' assessment of the majority's opinion (see Section 4). More specifically, we define two variables: *Majority attitude on taxation* takes a value of *one* if a respondent expects a *clear majority in favor of* higher taxation, a value of *minus one* if she or he expects a *clear majority against* taxation, and zero otherwise. Interacting this variable with agents' income allows testing the hypothesis that the marginal effect of income on the support for referenda depends on the expected majority opinion: a higher income should make individuals more skeptical about referenda if they expect a *clear majority in favor of* higher taxation. Conversely, agents with a higher income should be more enthusiastic about referenda if they expect a *clear majority against* higher taxation. The second variable we use is the dummy variable *Majority pro tax*, which takes on a value of one if a respondent expects a *clear majority in favor of higher taxes* and zero otherwise. Again, we interact this variable with respondents' income in order to test the hypothesis that individuals with a higher income are more likely to reject a referendum if they expect a clear majority in favor of higher taxes. Unlike *Majority attitude on taxation*, the dummy variable *Majority pro tax*

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[18] The analysis by Meya et al. (2015) suggests that individuals are more likely to abstain from voting if participation would confront them with a conflict between their social preferences and their distributional interests. Such a conflict could also reduce rich individuals' overall support for direct democracy. To test whether this constellation influences our results, we created a dummy variable that equaled one if a respondent supported more redistribution in general, but belonged to the group of high-income earners with a net household income above 4000 Euros per month. Using this dummy variable as an additional control variable in equation (7) yielded a negative, but insignificant coefficient.

does not take any stand on how individuals' income affects their attitude towards referenda if they expect a clear majority *against* higher taxes.

However, even a negative sign of the interactive terms mentioned above does not necessarily prove the importance of individuals' material self-interest in defining their preferences over alternative procedures. As demonstrated in Section 3, respondents may be reluctant to support referenda if they expect a clear majority in favor of higher taxation, but not necessarily for material reasons: they might just have stronger views on the economy-wide effects of redistribution and therefore oppose the anticipated policy outcome. If these views, as reflected by a positive value of θ_i, are correlated with income, this may result in an erroneous interpretation of whatever effect we estimate. To solve this problem and to account for instrumental, but not necessarily material motives to support or reject referenda, we introduce two additional dummy variables: the dummy variable *Attitudes_aligned* assumes a value of one if respondents are in favor (or strongly in favor) of higher taxes *and* expect a clear majority of the population to share this view, or if they are against (or strongly against) higher taxes *and* expect a clear majority of the population to oppose higher taxes as well. Otherwise, the dummy variable takes on a value of zero – either if respondents do not utter an opinion on taxation, or if they do not expect a clear majority in either direction. Conversely, the dummy variable *Attitudes_contrasting* is one if a respondent sees herself or himself in opposition to the expected majority, and zero otherwise. While both dummy variables allow identifying an *instrumental* motive behind agents' support or rejection of referenda, this instrumental motive does not necessarily reflect *material* self-interest. Including *Attitudes_aligned* and *Attitudes_contrasting* as control variables thus further contributes to isolating the purely material considerations behind individuals' attitude towards referenda. The regression equation we estimate looks as follows:

(8) $\quad \text{Referendum}_i = \beta_0 + \beta_1 \cdot \text{Referendum\_Preference}_i + \beta_2 \cdot \text{Attitudes\_aligned}_i$

$\quad + \beta_3 \cdot \text{Attitudes\_contrasting}_i + \beta_4 \cdot \text{Majority}_i + \beta_5 \cdot \text{Income}_i + \varphi \cdot \text{Majority}_i \cdot \text{Income}_i$

$\quad + \sum_k \gamma_k x_{ki} + \varepsilon_i$

Our key regressor of interest is the interactive term between a respondent's expectation on the majority's position (*Majority$_i$*) – captured either by the variable

Majority attitude on taxation or by the dummy variable *Majority pro tax* – and one of the (household) income variables introduced in Section 4. The claim that material considerations play a role in determining individuals' attitude towards direct democracy is reflected by the hypothesis that the coefficient φ is significantly negative.

Identifying non-linear marginal effects in discrete choice models is far from trivial (see Ai and Norton 2003, and Greene 2010 for a discussion). The core of the problem is that not even the sign of the estimated coefficient – let alone its absolute value and standard error – is informative about the marginal effect of a variable, with the latter strongly depending on the properties of the underlying (logistic or normal) distribution and on the point where it is measured. In order to avoid such problems – and since the results in Tables 1 to 3 suggest that the OLS coefficients don't differ substantially from the average marginal effects for the logit estimator – we decided to estimate equation (8) by OLS.

Table 4 near here

The results presented in Table 4 indicate that the negative influence of *Age* and *University entrance degree* on the support for referenda over taxation can still be observed for the new specification. Moreover, *Attitudes_aligned* has a strictly positive impact on individuals' support for referenda while *Attitudes_contrasting* does not seem to matter: apparently a respondent's enthusiasm for direct democracy is significantly enhanced if the majority is expected to share her or his opinion. Conversely, the expectation that a clear majority holds a view which is in contrast to one's own opinion does not seem to affect individuals' attitude towards referenda. Most importantly, while respondents' income and expecations about the majority *per se* do not have a significant impact on their attitude towards referenda, the coefficient of the interaction term is significantly negative for columns (1) to (8). This suggests that – regardless of her/his general attitude towards direct democracy – a higher (lower) income reduces (raises) an individual's support for referenda as a procedure to decide on taxation if she or he expects a clear majority in favor of more redistribution. Columns (9) and (10) which use the dummy variables for high and low household income as well as their interactions with the *Majority* variable suggest that the effect of income is predominantly driven by the low-income recipients: ceteris paribus – i.e. regardless of agents' income position – the expectation of a clear majority in favor of higher taxes

dampens individuals' support for direct democracy (see the fourth and fifth row in columns (9) and (10)). Enthusiasm for referenda is further reduced for participants who receive a low income. However, if these participants expect a clear majority in favor of taxation, the likelihood of supporting a referendum as a procedure to decide on tax policy increases substantially. More specifically, the results displayed in column (10) suggest that participants who expect a clear majority to support taxation are 12 percentage points less likely to choose a referendum than (otherwise identical) persons who either have no clear view on the majority position or expect the majority to oppose higher taxes. By contrast, a low-income individual who expects the majority to be in favor of higher taxes is 23 percentage points *more* likely to pick 'referendum' as her preferred procedure than a low-income individual without such expectations, and 27 percentage points more likely to pick a referendum than an individual who does not receive a low income, but shares these expectations. While it is surprising that we do not find a particularly strong opposition against referenda by those high-income individuals who expect a majority in favor of higher taxes, our results support the notion that material interest does play an important role for individuals' preferences over decision-making procedures.

So far, our analysis has focused on respondents' choice of referenda as a procedure to decide on taxation, lumping together all other procedures – parliamentary decisions, expert decisions, decisions after deliberation among all affected groups – into one (composite) "alternative choice". In a last step, we test whether individuals' income – combined with their expectations about the majority's position –also affects the support for these other procedures. If the pattern discernible in Table 4 were also discernible for alternative ways of arriving at a decision, our findings would lose a lot of their bite, since we argued that the clear relationship between majority expectations and anticipated policy outcomes is a specific property of referenda. We thus re-ran regression (8), subsequently replacing the dependent variable *Referendum* by dummy variables (*Parliament, Experts, Deliberation*) that took a value of one whenever a respondent chose one of these procedures. Once more, we used the OLS regressor. And to save space, we restricted our attention to two particular versions of equation (8) – the one that used the level of net household income (in million Euros) as a proxy for respondents' prosperity, and the one that used the high- and low-income dummies.

Moreover, we only show the results for the specifications that used the *Majority pro tax* dummy to represent respondents' expectation about the majority's opinion.[19]

Table 5 near here

For the sake of comparability, the first two columns of Table 5 replicate columns (4) and (10) of Table 4, i.e. the effect of agents' characteristics, income, and expectations on the likelihood of preferring a referendum. The coefficients and significance levels shown in the other columns support our conjecture that respondents' household income, combined with their expectation on the majority opinion, are particularly relevant for their choice of *referenda* as a decision-making procedure. By contrast, these variables do not seem to matter for respondents' support or rejection of *parliamentary decisions*. Interestingly, however, respondents tend to support *expert decisions* when they expect a majority to be in favor of higher taxes, but the enthusiasm for this procedure is substantially muted for low-income respondents who share these expectations. Understandably, this group of individuals prefers the use of referenda to decide on taxation. Finally, a higher income per se seems to reduce individuals' support for *deliberative* procedures that give a voice to all affected groups, but this result is neither driven by low-income nor by high-income individuals. There is thus no other procedure for which individual support, ceteris paribus, depends on the specific combination of income and majority expectations as it is the case for referenda. We interpret these results as further evidence that material motives affect individuals' preferences over procedures.

7. Summary and conclusions

While few economists would contest the idea that individuals' attitudes towards specific policy issues – e.g. redistributive taxation – reflect their material self-interest, it is far less obvious that such considerations should also play a role at the constitutional stage, i.e. when the rules of the political process are defined. It could be argued that values

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[19] Running these regressions for the full set of income variables and using the variable *Majority attitude on taxation* as an alternative to the *Majority pro tax* dummy yielded similar results. Moreover, while the inclusion of *Referendum_Preference* enhances the explanatory power of our model, it does not affect the other qualitative results displayed in Table 5.

such as democratic autonomy, procedural fairness, citizen participation and transparency are far more important than material self-interest in determining agents' preferences over decision-making procedures.

Focusing on individuals' support for referenda as a procedure to decide on taxation, our analysis has tried to shed light on this issue. Using a survey that we designed within the German GESIS panel, we first demonstrated the positive relationship between respondents' income and the likelihood that they reject redistributive taxation. We showed that this relationship emerges even if we control for other, not necessarily materialist motives to oppose more redistribution. Turning to individuals' support for referenda, we then demonstrated that income *per se* does not have a significant effect on individuals' procedural choices. However, once we accounted for respondents' expectations about the majority opinion, we could demonstrate that the support for direct democracy decreases with income if individuals expect a clear majority in favor of taxation. Contrary to other contributions that merely *assume* agents' ability to anticipate the political-economic equilibrium, our analysis makes these expectations explicit and thus documents the importance of material interests in shaping individuals' preferences over alternative democratic decision-making procedures.

While our results indicate that the traditional political-economic, interest-based explanation of constitutional choices is alive and well, we also have to stress that our findings do not rule out the relevance of intrinsic motives for procedural preferences in general, and for supporting referenda and direct democracy in particular: as we have argued above, the highly significant variable *Referendum preference* is likely to reflect a mix of intrinsic and instrumental considerations. Moreover, the generally low R^2 values, which our study shares with most survey-based empirical analyses, signals that we are still far away from completely understanding procedural choices. Nevertheless, our findings demonstrate that material self-interest is a factor to be taken seriously when it comes to explaining individuals' attitudes towards referenda.

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Tables

Table 1: The effect of income on the rejection of imposing higher taxes on the rich

	(1) OLS	(2) Logit (m.e.)	(3) OLS	(4) Logit (m.e.)	(5) OLS	(6) Logit (m.e.)	(7) OLS	(8) Logit (m.e.)	(9) OLS	(10) Logit (m.e.)
Househ. inc. (category)	0.0213	0.0223								
	(3.256)***	(3.177)***								
Househ. inc. (averages)			0.0220	0.0197						
			(3.038)***	(3.388)***						
Househ. inc. per earner 1 (averages)					0.0469	0.0413				
					(2.570)**	(2.884)***				
Househ. inc. per earner 2 (averages)							0.0471	0.0420		
							(3.186)***	(3.572)***		
Househ. inc. above 4000 Euros									0.0904	0.0855
									(2.632)***	(2.540)**
Househ. inc. below 1700 Euros									-0.0452	-0.0549
									(-1.463)	(-1.545)
Female	0.00533	0.00539	0.00782	0.00776	-0.00211	-0.00235	0.00634	0.00625	0.00275	0.00206
	(0.195)	(0.197)	(0.285)	(0.282)	(-0.0674)	(-0.0744)	(0.230)	(0.226)	(0.100)	(0.0754)
Age	-0.00195	-0.00207	-0.00196	-0.00206	-0.00226	-0.00233	-0.00199	-0.00210	-0.00194	-0.00205
	(-1.857)*	(-1.913)*	(-1.861)*	(-1.903)*	(-1.832)*	(-1.879)*	(-1.867)*	(-1.921)*	(-1.859)*	(-1.922)*
Univ. entrance degree	0.00138	-0.000493	-0.00150	-0.00178	0.0141	0.0156	-0.00318	-0.00310	-0.00296	-0.00253
	(0.0475)	(-0.0169)	(-0.0511)	(-0.0594)	(0.416)	(0.456)	(-0.107)	(-0.102)	(-0.102)	(-0.0860)
Constant	0.116		0.155		0.167		0.153		0.215	
	(1.701)*		(2.373)**		(2.151)**		(2.275)**		(3.345)***	
Observations	613	613	613	613	501	501	609	609	613	613
Adjusted R-squared	0.017		0.017		0.020		0.020		0.019	
Pseudo R-squared		0.0304		0.0287		0.0326		0.0322		0.0341
Percent correctly predicted		86.3		86.3		85.6		86.2		86.3

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2: The effect of income on the rejection of imposing higher taxes on the rich (controlling for the general rejection of redistribution)

	(1) OLS	(2) Logit (m.e.)	(3) OLS	(4) Logit (m.e.)	(5) OLS	(6) Logit (m.e.)	(7) OLS	(8) Logit (m.e.)	(9) OLS	(10) Logit (m.e.)
Househ. inc. (category)	0.0157	0.0161								
	(2.564)**	(2.524)**								
Househ. inc. (averages)			0.0129	0.0115						
			(2.018)**	(2.170)**						
Househ. inc. per earner 1 (averages)					0.0220	0.0200				
					(1.371)	(1.474)				
Househ. inc. per earner 2 (averages)							0.0288	0.0256		
							(2.184)**	(2.367)**		
Househ. inc. above 4000 Euros									0.0659	0.0610
									(1.963)*	(1.864)*
Househ. inc. Below 1700 Euros									-0.0482	-0.0571
									(-1.592)	(-1.677)*
No redistribution	0.467	0.438	0.464	0.439	0.569	0.544	0.460	0.432	0.465	0.438
	(5.112)***	(4.561)***	(5.058)***	(4.518)***	(5.802)***	(4.895)***	(5.020)***	(4.442)***	(5.053)***	(4.528)***
Female	0.00124	0.00198	0.00136	0.00161	-0.0136	-0.0129	0.000638	0.000764	-0.000548	-4.12e-05
	(0.0466)	(0.0744)	(0.0508)	(0.0600)	(-0.456)	(-0.430)	(0.0238)	(0.0284)	(-0.0206)	(-0.00155)
Age	-0.00178	-0.00181	-0.00174	-0.00175	-0.00182	-0.00182	-0.00178	-0.00181	-0.00179	-0.00184
	(-1.724)*	(-1.716)*	(-1.682)*	(-1.682)*	(-1.551)	(-1.572)	(-1.705)*	(-1.712)*	(-1.749)*	(-1.749)*
Univ. entrance degree	-0.0139	-0.0142	-0.0118	-0.0109	0.001000	0.00247	-0.0138	-0.0126	-0.0178	-0.0170
	(-0.495)	(-0.501)	(-0.416)	(-0.377)	(0.0316)	(0.0771)	(-0.480)	(-0.428)	(-0.634)	(-0.597)
Constant	0.122		0.160		0.171		0.158		0.200	
	(1.868)*		(2.497)**		(2.300)**		(2.416)**		(3.114)***	
Observations	591	591	591	591	484	484	587	587	591	591
Adjusted R-squared	0.104		0.101		0.140		0.102		0.107	
Pseudo R-squared		0.100		0.095		0.123		0.097		0.106
Percent correctly predicted		87.65		87.65		88.02		87.56		87.31

Robust t-statistics in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3: The effect of income on the support for referenda as a procedure to decide on taxation (OLS and logit estimates)

	(1) OLS	(2) Logit (m.e.)	(3) OLS	(4) Logit (m.e.)	(5) OLS	(6) Logit (m.e.)	(7) OLS	(8) Logit (m.e.)	(9) OLS	(10) Logit (m.e.)
Referendum preference	0.0713	0.0892	0.0710	0.0889	0.0680	0.0839	0.0704	0.0879	0.0710	0.0892
	(7.905)***	(6.801)***	(7.876)***	(6.802)***	(6.860)***	(6.074)***	(7.797)***	(6.697)***	(7.861)***	(6.775)***
Househ. inc. (category)	0.00650	0.00475								
	(0.823)	(0.614)								
Househ. inc. (averages)			0.00353	0.00166						
			(0.454)	(0.203)						
Househ. inc. per earner 1 (averages)					0.0179	0.0160				
					(0.998)	(0.852)				
Househ. inc. per earner 2 (averages)							0.00926	0.00579		
							(0.593)	(0.363)		
Househ. inc. above 4000 Euros									0.0149	0.0152
									(0.402)	(0.394)
Househ. inc. below 1700 Euros									-0.00680	0.00312
									(-0.143)	(0.0725)
Female	-0.0418	-0.0314	-0.0426	-0.0324	-0.0393	-0.0314	-0.0439	-0.0338	-0.0434	-0.0323
	(-1.289)	(-0.995)	(-1.307)	(-1.019)	(-1.119)	(-0.910)	(-1.352)	(-1.070)	(-1.339)	(-1.024)
Age	-0.00542	-0.00583	-0.00537	-0.00581	-0.00436	-0.00469	-0.00513	-0.00555	-0.00537	-0.00582
	(-4.290)***	(-4.644)***	(-4.264)***	(-4.634)***	(-3.245)***	(-3.482)***	(-4.076)***	(-4.392)***	(-4.246)***	(-4.651)***
German citizen	-0.00406	-0.00609	-0.00357	-0.00530	-0.0345	-0.0389	-0.00601	-0.00829	-0.00323	-0.00544
	(-0.0417)	(-0.0595)	(-0.0367)	(-0.0516)	(-0.310)	(-0.357)	(-0.0621)	(-0.0817)	(-0.0332)	(-0.0532)
Univ. entrance degree	-0.148	-0.139	-0.145	-0.137	-0.141	-0.132	-0.138	-0.130	-0.145	-0.138
	(-3.958)***	(-3.946)***	(-3.857)***	(-3.800)***	(-3.618)***	(-3.493)***	(-3.705)***	(-3.647)***	(-3.908)***	(-3.908)***
Constant	0.185		0.206		0.169		0.188		0.215	
	(1.391)		(1.578)		(1.144)		(1.445)		(1.663)*	
Observations	583	583	583	583	482	482	579	579	583	583
R-squared	0.142		0.141		0.136		0.136		0.141	
Pseudo R-squared		0.162		0.161		0.159		0.156		0.162
Percent correctly predicted		80.62		80.45		81.95		81.17		80.27

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4: The effect of income and majority expectations on the preference for referenda as a procedure to decide on taxation (OLS estimates)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Referendum preference	0.0690	0.0694	0.0690	0.0694	0.0665	0.0674	0.0685	0.0688	0.0683	0.0694
	(7.746)***	(7.750)***	(7.741)***	(7.728)***	(6.764)***	(6.751)***	(7.673)***	(7.652)***	(7.656)***	(7.757)***
Attitudes alligned	0.146	0.147	0.148	0.149	0.117	0.114	0.146	0.144	0.130	0.138
	(2.221)**	(1.991)**	(2.253)**	(2.024)**	(1.591)	(1.392)	(2.168)**	(1.941)*	(2.017)**	(1.906)*
Attitudes contrasting	0.0717	0.0849	0.0726	0.0881	0.0468	0.0890	0.0653	0.0901	0.0706	0.0798
	(0.643)	(0.743)	(0.640)	(0.762)	(0.439)	(0.814)	(0.599)	(0.796)	(0.633)	(0.699)
Majority attitude on taxation	0.119		0.0526		0.0244		0.0584		-0.0986	
	(1.186)		(0.766)		(0.309)		(0.817)		(-2.124)**	
Majority pro tax		0.166		0.0838		0.118		0.107		-0.121
		(1.208)		(0.893)		(1.105)		(1.111)		(-1.965)**
Househ. inc. (category)	0.0104	0.0149								
	(1.370)	(1.879)*								
Househ. inc. (cat.)#majority	-0.0319									
	(-2.034)**									
Househ. inc. (cat.)#majority pro tax		-0.0393								
		(-1.893)*								
Househ. inc. (averages)			0.00694	0.0111						
			(0.929)	(1.385)						
Househ. inc. (av.)#majority			-0.0309							
			(-2.203)**							
Househ. inc. (av.)#majority pro tax				-0.0381						
				(-2.053)**						
Househ. inc. per earner 1 (averages)					0.0217	0.0362				
					(1.225)	(1.865)*				
Househ. inc. per earner 1#majority					-0.0592					
					(-1.764)*					
Househ. inc. per earner 1#majority pro tax						-0.106				
						(-2.659)***				
Househ. inc. per earner 2 (averages)							0.0143	0.0250		
							(0.934)	(1.534)		
Househ. inc. per earner 2#majority							-0.0628			
							(-2.124)**			
Househ. inc. per earner 2#majority pro tax								-0.0853		
								(-2.255)**		
Househ. inc. above 4000 Euros									0.0168	0.0130
									(0.448)	(0.322)
Househ. inc. below 1700 Euros									-0.0428	-0.0822
									(-0.935)	(-1.665)*
Househ. inc. Above 4000#majority									0.00225	
									(0.0340)	
Househ. inc. below 1700#majority									0.273	
									(2.868)***	
Househ. inc. above 4000#majority pro tax										0.0294
										(0.347)
Househ. inc. lower 1700#majority pro tax										0.350
										(2.784)***
Control variables: included										
Observations	584	584	584	584	483	483	580	580	584	584
Adjusted R-squared	0.147	0.143	0.145	0.141	0.138	0.134	0.141	0.137	0.153	0.148

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: The effect of income and majority expectations on the preference for different decision-making procedures (OLS estimates)

	(1) Referendum	(2) Referendum	(3) Parliament	(4) Parliament	(5) Experts	(6) Experts	(7) Deliberation	(8) Deliberation
Referendum preference	0.0694	0.0694	-0.0613	-0.0606	-0.0202	-0.0221	0.0121	0.0132
	(7.728)***	(7.757)***	(-6.263)***	(-6.185)***	(-1.815)*	(-1.990)**	(1.093)	(1.193)
Majority pro tax	0.0838	-0.121	0.0343	0.0461	-0.0587	0.145	-0.0595	-0.0700
	(0.893)	(-1.965)**	(0.413)	(0.807)	(-0.571)	(1.885)*	(-0.562)	(-0.895)
Househ. inc. (averages)	0.0111		0.00579		0.0113		-0.0282	
	(1.385)		(0.655)		(1.054)		(-2.971)***	
Househ. inc. (av.)#majority pro tax	-0.0381		0.00599		0.0308		0.00123	
	(-2.053)**		(0.298)		(1.238)		(0.0575)	
Househ. inc. above 4000 Euros		0.0130		0.0430		0.0222		-0.0783
		(0.322)		(1.025)		(0.463)		(-1.636)
Househ. inc. below 1700 Euros		-0.0822		-0.0344		0.0213		0.0952
		(-1.665)*		(-0.939)		(0.382)		(1.543)
Househ. inc. above 4000#majority pro tax		0.0294		0.0134		-0.0704		0.0276
		(0.347)		(0.135)		(-0.592)		(0.264)
Househ. inc. below 1700#majority pro tax		0.350		0.0483		-0.409		0.0102
		(2.784)***		(0.463)		(-4.485)***		(0.0768)
Attitudes alligned	0.149	0.138	-0.0120	-0.0179	-0.0373	-0.0238	-0.0994	-0.0965
	(2.024)**	(1.906)*	(-0.196)	(-0.290)	(-0.526)	(-0.345)	(-1.318)	(-1.267)
Attitudes contrasting	0.0881	0.0798	-0.0967	-0.0883	-0.0306	-0.0203	0.0392	0.0288
	(0.762)	(0.699)	(-1.446)	(-1.332)	(-0.304)	(-0.189)	(0.348)	(0.262)
Female	-0.0446	-0.0456	-0.0913	-0.0926	0.00638	0.000196	0.129	0.138
	(-1.367)	(-1.418)	(-3.059)***	(-3.143)***	(0.173)	(0.00535)	(3.314)***	(3.569)***
Age	-0.00573	-0.00565	0.00132	0.00125	0.000239	0.000251	0.00418	0.00414
	(-4.608)***	(-4.540)***	(1.133)	(1.081)	(0.158)	(0.167)	(2.899)***	(2.892)***
German citizen	0.00765	0.00139	-0.0283	-0.0290	-0.0753	-0.0606	0.0959	0.0882
	(0.0752)	(0.0139)	(-0.297)	(-0.305)	(-0.693)	(-0.578)	(1.010)	(0.924)
Univ. entrance degree	-0.147	-0.153	0.114	0.107	0.0878	0.107	-0.0542	-0.0611
	(-3.968)***	(-4.193)***	(3.358)***	(3.126)***	(2.095)**	(2.554)**	(-1.249)	(-1.426)
Constant	0.188	0.243	0.413	0.430	0.347	0.364	0.0518	-0.0358
	(1.426)	(1.878)*	(3.164)***	(3.321)***	(2.111)**	(2.310)**	(0.352)	(-0.246)
Observations	584	584	584	584	584	584	584	584
Adjusted R-squared	0.141	0.148	0.125	0.125	0.019	0.027	0.062	0.058

Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 1: Data Definitions, Sources and Summary Statistics

VARIABLES	Definition	Source
Referendum Preference	Answer to question: To what extent do you agree with the following statements? There should be more referenda in Germany. 1: fully disagree/ … / 7: fully agree	GESIS panel, wave ce, Variable ceaz116a
No_redistribution	Dummy variable: 1: Respondent reacts to statement "The government should enforce the reduction of differences between the poor and the rich" by choosing 6 or 7 (with 1: fully agree,…, 7: fully disagree) 0: otherwise	GESIS panel, wave ce, Variable ceaz128a
Referendum	Dummy variable: 1: Respondent chooses "referendum" as answer to question "Currently, there is a lot of discussion about fair taxation and tax policy. The following is about your opinion on taxes. How do you think this should be decided?" 0: Respondent chooses another procedure.	GESIS panel, wave dd Variable ddaz149a
No_higher_taxes	Dummy variable: 1: Respondents' reaction to question "Are you in favor of or against implementing a higher income tax on high incomes?" is: against or strongly against 0: otherwise	GESIS panel, wave dd, Variable ddaz150a
Majority pro tax	Dummy variable: 1: Respondents' reaction to question "Do you think that, in Germany, there is a majority in favor of or against higher taxes on high incomes?" is "Clear majority in favor of higher taxation" 0: otherwise	GESIS panel, wave dd, Variable ddaz151a
Majority attitude on taxation	1: Respondents' reaction to question "Do you think that, in Germany, there is a majority in favor of or against higher taxes on high incomes?" is "Clear majority in favor of higher taxes" -1: Respondents' reaction to question "Do you think that, in Germany, there is a majority in favor or against higher taxes on high incomes?" is "Clear majority against higher taxation" 0: otherwise	GESIS panel, wave dd, Variable ddaz151a
Attitudes_Aligned	Dummy variable: 1: respondent is in favor or strongly in favor of the higher taxes on high incomes and expects a clear majority in favor of higher taxes. 1: respondent is against or strongly against higher taxes on high incomes and expects a clear majority against higher taxes. 0: otherwise	GESIS panel, wave dd Variables ddaz150a, ddaz151a
Attitudes_Contrasting	Dummy variable: 1: respondent is in favor or strongly in favor of the higher taxes on high incomes and expects a clear majority against higher taxes. 1: respondent is against or strongly against higher taxes on high incomes and expects a clear majority in favor of higher taxes. 0: otherwise0: otherwise	GESIS panel, wave dd Variables ddaz150a, ddaz151a

Female	Dummy variable: 1: female / 0: male	GESIS panel, wave df, Variable dfzh037a
Age	2016 minus the answer to question: Please provide the year of your birth. 1943 for all respondents born in or before 1943; 1944, ..., 1994, 1995 for all respondents born in or after 1995	GESIS panel, wave df, Variable dfzh038c
German citizen	Dummy variable: 1: German citizen / 0: otherwise	GESIS panel, wave df, Variable dfzh039a
University Entrance Degree	Dummy variable: 1: Respondent reports to have advanced technical college certificate („Fachhochschulreife") or General qualification for university entrance („Abitur, allgemeine oder fachgebundene Hochschulreife") 0: otherwise	GESIS panel, wave df, Variable dfzh044a
Household Income (category)	Household monthly net income Answer to question: How high is the average net income of your household, meaning the sum of all net incomes and social security/welfare benefits of people living inside your household? (Net income is the sum of your earnings, including social security/welfare benefits after taxation. If you do not know your personal income please provide an estimate.) 1: Below 900 € 2: 900 to 1300 € 3: 1300 to 1700 € 4: 1700 to 2300 € 5: 2300 to 3200 € 6: 3200 to 4000 € 7: 4000 to 5000 € 8: 5000 to 6000 € 9: Above 6000 €	GESIS panel, wave df, Variable dfzh056c
Household Income (averages)	Household monthly net income in thousand €, Medium values for income brackets defined by Household Income (category) 0.45, if Income (categories) = 1 1.1 if Income (categories) = 2: 900 to 1300 € 1.5 if Income (categories) = 3: 1300 to 1700 € 2 if Income (categories) = 4: 1700 to 2300 € 2.75 if Income (categories) = 5: 2300 to 3200 € 3.6 if Income (categories) = 6: 3200 to 4000 € 4.5 if Income (categories) = 7: 4000 to 5000 € 5.5 if Income (categories) = 8: 5000 to 6000 € 8.7 if Income (categories) = 9: Above 6000 € (See Appendix 3 for computation of average income for highest category)	GESIS panel, wave df, Variable dfzh056c
Household income per earner 1 (averages)	Household Income (averages), divided by (number of household members – number of children below 16 years)	GESIS panel, wave df, Variables dfzh052c, dfzh053a, and dfzh054c
Household income per earner 2 (averages)	Household Income (averages), if number of househ. members = 1 Household Income (averages) if (number of househ. members – number of children below 16 years) = 1 Household Income (averages) divided by 2 if (number of househ. members – number of children below 16 years) > 1.	GESIS panel, wave df, Variables dfzh052c, dfzh053a, and dfzh054c

Note: Negative entries (e.g. -99 for item nonresponse) are treated as non-observables.

Summary Statistics

Variable	Obs*	Mean	Std. Dev.	Min	Max
Female	729	0.50	0.50	0	1
Age	725	49.76	14.21	21	73
German citizen	726	0.96	0.19	0	1
Univ. entrance degree	724	0.52	0.50	0	1
Househ. inc. (category)	618	5.41	2.14	1	9
Househ. inc. (averages 1000 Euros)	618	3.51	2.11	0.45	8.7
Househ. inc. per earner 1 (averages, 1000 Euros)	502	1.79	0.99	0.15	4.5
Househ. inc. per earner 2 (averages, 1000 Euros)	614	1.79	1.06	0.225	4.5
Househ. inc. above 4000 Euros	618	0.31	0.46	0	1
Househ. inc. below 1700 Euros	618	0.18	0.39	0	1
No redistribution	749	0.05	0.21	0	1
No_higher_taxes	786	0.14	0.35	0	1
Referendum_Preference	737	5.20	1.73	1	7
Referendum	787	0.24	0.43	0	1
Majority pro tax	787	0.17	0.38	0	1
Househ. inc. above 4000#majority pro tax	618	0.05	0.22	0	1
Househ. inc. lower 1700#majority pro tax	618	0.04	0.19	0	1
Attitudes alligned	787	0.10	0.29	0	1
Attitudes contrasting	787	0.02	0.15	0	1

* Number of observations refers to the subset of respondents selected for the experiment on redistributive taxation

Appendix 2: Computing (Average) Top Incomes

The GESIS panel does not offer any information on the income of households whose net income is in the top bracket, i.e. above 6000 Euros per month. However, we can use information offered by Destatis (2015) to compute the average income of households in this bracket. While this is made a bit more complicated by the fact that Destatis defines the top bracket to be between *5000* and 18000 Euros per month, the following equation can be applied to compute the expected income of a household, conditional on the fact that the household's income falls into the GESIS top income bracket:

(A.1) $\quad \mathrm{E}\left(y_i \mid y_i > 6000\right) =$

$$\left[\mathrm{E}\left(y_i \mid y_i > 5000\right) - \frac{\mathrm{E}\left(y_i \mid 5000 < y_i < 6000\right)}{P(5000 < y_i < 6000)} \cdot \frac{P(5000 < y_i < 6000)}{P(y_i > 5000)} \right] \cdot \frac{P(y_i > 5000)}{P(y_i > 6000)}$$

In equation (A.1), P(a < y_i < b) is the probability that the net income of household i is between a and b. These probabilities can be derived from relative frequencies in the GESIS panel. Moreover, $\mathrm{E}\left(y_i \mid y_i > 5000\right)$ amounts to roughly 7000 Euros, according to Destatis (2015). Finally, we set $\mathrm{E}\left(y_i \mid 5000 < y_i < 6000\right)$ equal to 5500. Combining all this information, we arrive at $\mathrm{E}\left(y_i \mid y_i > 6000\right) = 8700$. Interestingly, substituting this information into the income distribution of the GESIS sample generates an average net household income of 3317 Euros per month – a value that is not too different from the 3218 Euros per month reported by Destatis (2015).