

# Inequality, Information, and Income Tax Policy Preferences in Austria and Germany<sup>1</sup>

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## **Abstract**

Inequality has increased over recent decades in many advanced industrial democracies, but taxes have rarely become more progressive. One possible explanation for the lack of a policy response is that, despite rising inequality, voters support higher taxes on incomes and wealth weakly, if at all. Using original representative surveys in Austria and Germany, we employ two strategies to elicit (a) voters' preferences over the progressivity of tax policy and (b) whether exposing them to accurate information about inequality affects those preferences. Voters, we find first, express an abstract preference for progressivity but concretely support tax plans only slightly more progressive than the status quo. Second, we find little evidence that, in either Austria or Germany, informing subjects about aggregate inequality or their own place in the income distribution significantly affects support for progressive taxation. While it seems likely that muted preferences for redistribution help explain why countries have not countered rising inequality with more progressive tax policies, low information does little on the whole to explain those preferences.

Keywords: Inequality, Income Tax, Information, Policy Preferences, Survey Experiments, Political Economy

JEL: D31, D72, H11, H23, H24, P16

# 1 Introduction

Inequality of incomes has risen in many democratic states over the last several decades, but these states have rarely responded with tax and transfer policies that significantly counter this rise. The lack of a policy response to rising inequality has two broad interpretations. The first is that democracy is failing to deliver the policies that voters want, because either (a) institutions fail to represent them (e.g., money counts for more than votes), or (b) considerations of efficiency or competitiveness constrain governments from meeting voter demands. The second is that voters simply do not demand more redistributive tax and transfer policies.

This second account, however, immediately raises the question of why preferences for redistribution are muted in the presence of high inequality. The existing literature has emphasized a range of possible answers to this question. Voters may themselves be concerned about the efficiency costs of redistribution (Durante, Putterman and van der Weele, 2014; Stantcheva, 2020). They may hold beliefs about (a) the fairness of economic outcomes (McCall and Kenworthy, 2009; Page and Jacobs, 2009; Alesina and Giuliano, 2011; Dimick, Rueda and Stegmueller, 2016; Cavaille and Trump, 2015; Bechtel, Liesch and Scheve, 2018; Roth and Wohlfart, 2018; Kerschbamer and Müller, 2020; Stantcheva, 2020), (b) the deservingness of the rich and the poor (Piketty, 1995; Gilens, 1999; Luttmer, 2001; Fong, 2001; Alesina and Glaeser, 2004; Alesina and La Ferrara, 2005; Alesina and Angeletos, 2005; Krawczyk, 2010; McCall, 2013; Durante, Putterman and van der Weele, 2014; McCall et al., 2017; Ballard-Rosa, Martin and Scheve, 2017; Stantcheva, 2020), or (c) whether state policies treat citizens equally (Scheve and Stasavage, 2016, Forthcoming; Limberg, 2020). Any of these may, on balance, constrain support for redistribution despite high and increasing inequality. Another line of research, however, suggests a much simpler answer to the question: voters lack information about inequality, either in the aggregate or with respect to their own standing in the distribution (Bartels, 2005, 2008; Cruces, Perez-Truglia and Tetaz, 2013; Kuziemko et al., 2015; McCall et al., 2017; Boudreau and MacKenzie, 2018;

Fernández-Albertos and Kuo, 2018; Gimpelson and Triesman, 2018).

Our paper aims to address the question of whether redistributive preferences differ from status quo policies and, if not, whether information about inequality explains why. The starting point of our study is to focus on taxation as a policy tool for redistribution and investigate how progressive tax policy preferences are in Austria and Germany. The existing literature on tax policy opinions is dominated by studies of the United States, which is something of an outlier both in the extent of its inequality and in the small size of its public sector. Moreover, the public opinion evidence that we have on tax preferences in these countries lacks a compelling measurement strategy that accurately portrays the multi-dimensional character of modern tax systems—different marginal rates are applied to different income groups and multiple taxes (e.g. income and VAT) determine overall progressivity. Germany is in many ways an ideal case to study. Its levels of income inequality are near the middle of the distribution for high income countries, but they have risen significantly over the last twenty years. At the same time, there is little evidence of a response in tax policy—top rates of income taxation, for example, are slightly lower today than they were twenty years ago. Austria serves as a contrasting case with somewhat lower and more stable income inequality but higher rates of income taxation. The first question we ask in this paper is whether current policies broadly reflect the policy preferences of voters in each country or is there evidence of unmet demand.

We fielded original surveys of 2,100 respondents representative of the adult population in each country. We employed two strategies for measuring multi-dimensional tax preferences. Our menu estimates presented respondents with “slider” questions, in which respondents chose their preferred marginal tax rate for each existing income bracket. Our experimental conjoint estimates elicited preferred rates, and intensity of preferences, from respondents’ repeated choices among pairs of randomly constructed alternative tax schemes.

Our estimates suggest that the mass public in both countries prefers tax policies that are only slightly more progressive than current ones. For example, our menu estimates indicate

that in Austria, the median preferred top rate was 58 percent compared to the current rate of 55 percent. At lower income levels, respondents preferred somewhat lower rates than current policy but the differences were similarly small. The conjoint estimates suggest a similar pattern of tax preferences that are somewhat more progressive than the status quo but not dramatically so. In Germany, our menu estimates indicate that the median respondent preferred a rate of 51 percent, which is a bit higher than the status quo policy of 45 percent. Further, as in Austria, the median respondent in Germany preferred somewhat lower rates for the lower but not the lowest income brackets. The conjoint estimates could be read as providing evidence of strong preferences for more progressive income taxes, as they indicate greatest support for top tax rates of 55 and 60 percent, compared to the current rate of 45 percent. The difference in these estimates, however, is not statistically significant, which suggests that voters have somewhat inelastic preferences among relatively high rates for high earners. Taken together, our evidence suggests support for progressive tax systems, and possibly for modestly more progressive systems than currently prevail, in Austria and Germany; but it is inconsistent with the idea that there is significant unmet demand for dramatically more progressive tax policies.

This result raises the question of why, in Austria and Germany, preferences are not more progressive. The question is relevant for both countries but is of particular interest for Germany given its relatively higher level of inequality, recent increases in inequality, and lower rates of income taxation. In this paper, we investigate whether a lack of information about inequality is a compelling answer.

We randomly assigned respondents to four treatment groups and a control group. The first two treatment groups provided respondents with information about aggregate inequality in the form of the 99/50 and 99/10 income ratios and the constituent incomes associated with those percentiles. The other two treatment groups elicited the respondent's income and then reported the percentage of income earners who earned more, or who earned less, than they did. We found (a) that the aggregate inequality treatments increased preferred

tax rates on high incomes in Austria and (b) that relative income information increased preferred top tax rates in Germany. In each case, however, the effects were relatively small (3 to 5 percentage points).

We conclude our analysis by investigating why information has so little impact. While it is certainly not the case that respondents already have detailed knowledge about inequality, we do present evidence that those with more information are less affected by the treatments. It may be that individuals have enough of a general sense about inequality that more detailed knowledge is not decisive in forming policy opinions. Alternatively, the information may have different effects on different individuals. The implication, of course, is that a lack of knowledge about inequality is not likely the main reason for muted demands for redistribution through the tax system. We further show that there is little evidence that the modest effects are driven by a lack of trust in government. We suggest that it is more likely that other factors, such as fairness commitments and beliefs about the economic effects of taxation, account both for why tax opinions are not more progressive and why providing more information has so little effect.

The paper makes two main contributions. The first is to measure the multiple-dimensional tax preferences of representative samples of citizens in Austria and Germany using two alternative measurement strategies. We find that respondents have progressive tax preferences but they are at most modestly more progressive than current policies. This finding is important for the political economy of redistribution literature as it suggests that muted preferences for redistribution through the tax system are likely one reason that tax policy has not responded to higher inequality in countries like Germany. This is an important corrective to the literature which has often emphasized special interests or some other failure of representation to explain the lack of a policy response to rising inequality (Bartels, 2005, 2008). It should be emphasized that the findings here speak only to the tax system as an equalizing policy instrument. It may be that other policy instruments, for example spending on education, exhibit greater evidence of unmet demand.

The second contribution of the paper is to provide new evidence on whether information about inequality helps to explain why tax preferences are not more progressive. Existing studies examining the effect of information about inequality on policy preferences report contrasting results. A number of correlational studies emphasize that misperceptions about inequality explain the disconnect between inequality and support for redistributive policies (see e.g. Bartels (2005, 2008); Gimpelson and Triesman (2018)). Cruces, Perez-Truglia and Tetaz (2013) present experimental evidence in Argentina that providing information increases support for redistribution among respondents who overestimated their relative position in the income distribution. Fernández-Albertos and Kuo (2018) find a similar result for Spain but with measures of preferred progressivity of the tax system as the outcome variable rather than general questions about support for redistribution. Boudreau and MacKenzie (2018) study voters in California and find that providing information about the level of, and increases in, income inequality increased support for raising the state income tax among Republicans though not Democrats.

In contrast, Kuziemko et al. (2015) experimentally manipulate information about inequality in the United States and find that the treatment increases concern about inequality but only slightly influences policy preferences over taxes and transfers. The authors argue that respondents' low trust in government accounts partially for the small policy effects. Lergetporer, Werner and Woessmann (2020) study educational inequality in Germany but find somewhat similar patterns in that providing information about educational inequality increases concerns but only slightly expands support for equity-oriented education policies. There is not, however, evidence that low trust explains the result. Karadja, Mollerstrom and Seim (2017) in an experimental study in Sweden find that information about relative income matters for some respondents. But in the Swedish context most respondents underestimate their income and correcting this bias only results in a demand for *less* redistribution among already more conservative respondents. This effect, of course, does not suggest that a lack of information explains why redistributive demands are suppressed. Bublitz (2020) also re-

ports that correcting a negative bias results in less demand for redistribution in Germany and Russia but finds on average no significant effects in the other four cases studied.

Our paper is closest to Kuziemko et al. (2015) but we study Germany and Austria, experimentally vary information about both aggregate inequality and the respondent’s relative position in the income distribution, and, like Ballard-Rosa, Martin and Scheve (2017) and Fernández-Albertos and Kuo (2018), adopt a measurement strategy that allows us to study the multiple-dimensional characteristics of the tax system as a concrete policy instrument for redistribution. Our findings resonate with Kuziemko et al. (2015) in that providing information about inequality has no large effect on tax policy preferences. This is important for at least two reasons. First, the findings from these studies are starting to accumulate. There is little evidence of a large average treatment effect of information on redistributive policy opinions. The studies that find effects of important magnitude typically find them for a subset of voters. These results are important for understanding differences between objective and perceived inequality. But for the larger question of whether societies would choose substantially greater amounts of redistribution if only everyone knew how much inequality there is, the answer that is emerging is a negative one. Second, in comparative studies trust in government is substantially higher in Austria than the United States and even higher in Germany.<sup>1</sup> This suggests the possibility that trust in government may not be as important for understanding the disconnect between concern about inequality and policy preferences as argued by Kuziemko et al. (2015). At the very least, we find little evidence that it is main factor in our two cases. It seems more likely that various fairness considerations are responsible for the disconnect.

## 2 Public Opinion about Tax Progressivity

Tax progressivity is fundamentally multidimensional in that it is a function of tax rates applied on different levels of income. Moreover, citizens in modern states are subject to

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<sup>1</sup>See <https://data.oecd.org/gga/trust-in-government.htm>.



an array of different types of taxes that together determine the overall progressivity of the tax system. Studies of public opinion over tax policies employ two main strategies to study multidimensional tax policies.<sup>2</sup> Menu approaches ask survey respondents about each dimension simultaneously but provide response options that allow the respondent to indicate a preferred policy option for each dimension. Choice-based experimental conjoint methods ask respondents to choose repeatedly between two alternative multi-dimensional tax plans to measure how different plan features—such as the rate of the income tax for a particular level of income—influence the probability of supporting a plan.<sup>3</sup>

Menu approaches have the advantage of being relatively simple for respondents to understand. They further allow researchers to control in a straightforward manner the type and amount of information available to the respondent when expressing an opinion. That said, menu approaches do not recover information about the relative importance of the different dimensions to respondents. They also may be more susceptible to response biases, such as social desirability bias.

Choice-based experimental conjoint methods have a number of different advantages. First, we can separately identify whether a given rate alternative for a particular dimension of tax policy—e.g. an income tax levied on a specific income category—makes it on average more or less likely that respondents prefer a tax plan. Second, we can identify the relative weight that respondents attach to each tax dimension: measuring the *elasticities* of support allows us to identify not only the direction of individual tax preferences for different income groups, but also the relative intensity of such preferences. By capturing not only ideal tax rates, but the responsiveness of support to different rates, we can provide evidence on how individuals prefer the tax burden to be distributed and which tax brackets have the

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<sup>2</sup>The most common approaches to studying tax opinions are unidimensional. Researchers ask respondents about raising or lowering taxes in general or focus on taxation targeted at a single group. Studies that use this latter approach and that focus on top rates of taxation, or taxes on the “rich,” can be thought of as approximating preferences for progressivity under the assumption that the poor do not pay taxes (see e.g. Franko, Tolbert and Witko (2013); McCall and Kenworthy (2009)).

<sup>3</sup>See Robert and Hite (1994); Robert, Hite and Bradley (1994); Gaines, Rivers and Vavreck (2009) for other approaches to investigating public opinion about progressivity.

largest effect on support. Third, conjoint experiments are less susceptible to response biases.

The main disadvantages of conjoint experiments are: they are generally more difficult for respondents to understand; there is a potential for respondents to focus on the dimension or dimensions that they care most about, which while informative will lead to very little information about the other dimensions; and conjoint experiments are designed to recover the average effect of the components of each dimension. If the intensity of preferences is heterogeneous, this average effect will not correspond to the preferences of the median voter or the overall popularity of the policy.<sup>4</sup>

Given these strengths and weaknesses our study employs both approaches for measuring the progressivity of tax policy opinions.

## 2.1 Data and Methods

We implemented both measurement strategies in nationally representative surveys in Austria and Germany.<sup>5</sup> Both studies were conducted by YouGov over the internet.<sup>6</sup> The Austrian survey was conducted in October 2018 with a sample size of 2,100 adults. The German survey was fielded in March 2019 and also had a sample size of 2,100.

We implemented the menu method by presenting respondents with sliders with which they could indicate preferred tax rates for each of the eight (Austria) or five (Germany) existing income tax brackets. The sliders were set at the status quo tax rates for each

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<sup>4</sup>See Ballard-Rosa, Martin and Scheve (2017) for further discussion of conjoint methods for measuring tax opinions.

<sup>5</sup>Respondents first completed the conjoint choice task. They then answered a block of sociodemographic questions before being asked the menu tax questions. Both the conjoint itself and the block of intervening questions limited the potential for anchoring across the measurement strategies. Further, respondents were only given information about current policy in the menu option; hence the sequencing provides us a set of estimates not influenced by making salient status quo rates. Note however that in pilot testing we found that adding information about current rates increased top tax preferences by about three to five percentage points and so if anything induced more progressive opinions.

<sup>6</sup>YouGov employs matched sampling to approximate a random sample of the adult population. Matched sampling involves taking a stratified random sample of the target population and then matching available internet respondents to the target sample (Rivers, 2011). Ansolabehere and Rivers (2013) and Ansolabehere and Schaffner (2014) show that matched sampling produces accurate population estimates and replicates the correlational structure of random samples using telephones and residential addresses. Further description and discussion of the two samples is provided in Appendix Section A.

bracket.<sup>7</sup> The English translation of the question is:

Please choose your preferred tax rates (marginal rates, in %) on the following income brackets:

In order to make clear the revenue consequences of each respondent’s combined selections, we included the following sentence below the last slider: “The total amount of revenue raised through your selected rates relative to current rates (% of current revenue): XX” where “XX” was set equal to the percent of current revenue that would be raised under the selected tax rates assuming no effect on income earned in each income bracket.

Our implementation of conjoint analysis methods to study tax preferences follows Ballard-Rosa, Martin and Scheve (2017). The translated text for the Austrian conjoint instructions was the following:<sup>8</sup>

Many observers in Austria have discussed the possibility of changing the income tax and VAT to address a number of issues. We are interested in what you think about how taxation in Austria should look.

We will now provide you with several proposals for new tax plans. We will always show you two possible proposals in comparison. For each comparison we would like to know which of the two tax plans you prefer. You may like both or not like either one. In any case, choose the one you prefer the most. In total, we will show you six comparisons.

When referencing income taxes, all tax brackets refer to individual taxation. Also, all tax rates refer to marginal rates – this means that all individuals only pay that rate on the portion of their income that falls into that income category. For example, if someone makes 15,000 Euros annually and income below 11,000 Euros is not taxed, they would not be taxed on the first 11,000 Euros and would pay the marginal rate (for example, 10 per cent) on the next 4,000 Euros of income, for a total tax of 400 Euros. You will be considering tax plans that set these marginal rates for different ranges of income.

People have different opinions about this issue and there are no right or wrong answers. Please take your time when reading the potential tax plans.

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<sup>7</sup> Austria: €0-€11,000 (0%); €11,000-€18,000 (25%); €18,000-€25,000 (35%); €25,000-€31,000 (35%); €31,000-€60,000 (42%); €60,000-€90,000 (48%); €90,000-€1,000,000 (50%); €>1,000,000 (55%). Germany: €0-€8,131 (0%); €8,132-€13,470 (19%); €13,471-€52,882 (33%); €52,883-€250,731 (42%); €>250,731(45%).

<sup>8</sup>See Appendix B for the Austrian and German text in German along with English translations for each country.

The tax plans presented had nine dimensions in Austria and seven dimensions in Germany. The dimensions were the current income tax brackets in each country plus a dimension that presented different rates for the Value Added Tax and a dimension that indicated the total amount of revenue raised through the tax plan as a percent of current revenue given the rates in each category and assuming that the rates had little impact on the amount of income in each bracket.<sup>9</sup> The rates or attribute levels for the income tax bracket and VAT were all independently and randomly assigned (see Appendices B.1 and B.2 for further information on dimensions and attribute levels). The revenue percentage was a function of the other rates plus a small amount of random error to reflect uncertainty about the incentive effects of a particular combination of rates.<sup>10</sup>

Respondents were shown randomly-generated pairs of tax plans to choose between and repeated the task six times; therefore each respondent considered twelve plans in total. Using this style of forced-choice design, we are able to evaluate the direction and relative weight individuals place on each dimension of the tax plans. For our analysis, we constructed a binary measure *Tax Plan Support* that equals one if a respondent selected a particular plan as their preferred choice, and zero otherwise.

We estimate an ordinary least squares regression of *Tax Plan Support* on dichotomous indicator variables for all treatment categories, with the exception of the baseline—the lowest tax rate—for each conjoint dimension.<sup>11</sup> This estimation yields the average marginal component-specific effect (AMCE) for each treatment group relative to the baseline.<sup>12</sup> Stan-

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<sup>9</sup>In the conjoint for Austria, we collapsed the €18,000-€25,000 and €25,000-€31,000 brackets into one to simplify the task.

<sup>10</sup>For each tax plan presented in the study, we calculate the change in revenue as follows. We first project revenue by multiplying the marginal tax rates with the status quo income in the corresponding income tax brackets, disregarding possible labour supply effects. Then, we take the ratio of projected revenue to current tax revenue in each country and add noise drawn i.i.d from  $N(0, \sigma^2)$ , where  $\sigma = 0.09$  in Germany and 0.08 in Austria. Lastly, we assign one of the following labels to this noisy estimate and show this label in the choice task: “much more revenue (more than 125%)”, “more revenue (105-125%)”, “about the same revenue (95-105%)”, “less revenue (75-95%)”, “much less revenue (less than 75%)”.

<sup>11</sup>The estimates presented employ survey weights that were used to adjust each survey for remaining imbalances after YouGov’s matched sampling procedures.

<sup>12</sup>Technically, two additional assumptions are needed: that the attributes are fully randomized, and that there are no profile-order or carry-over effects. See Hainmueller, Hopkins and Yamamoto (2014) for further discussion.

dard errors are clustered at the respondent level.

Intuitively, the coefficients give the average change in probability of selecting a tax plan with a specific rate over a tax plan that contains the lowest rate for that income bracket. Positive (negative) coefficients thus indicate that a given rate makes a plan more (less) likely to be selected, relative to a plan with the lowest rate.<sup>13</sup>

## 2.2 Menu Estimates

Figure 1 reports our menu estimates for Austria and Germany. For each tax bracket, we report box plots that indicate the current actual rate, the median preferred rate, and the interquartile range. Generally, the figure suggests that tax preferences in both countries are progressive but not significantly more so than current rates.

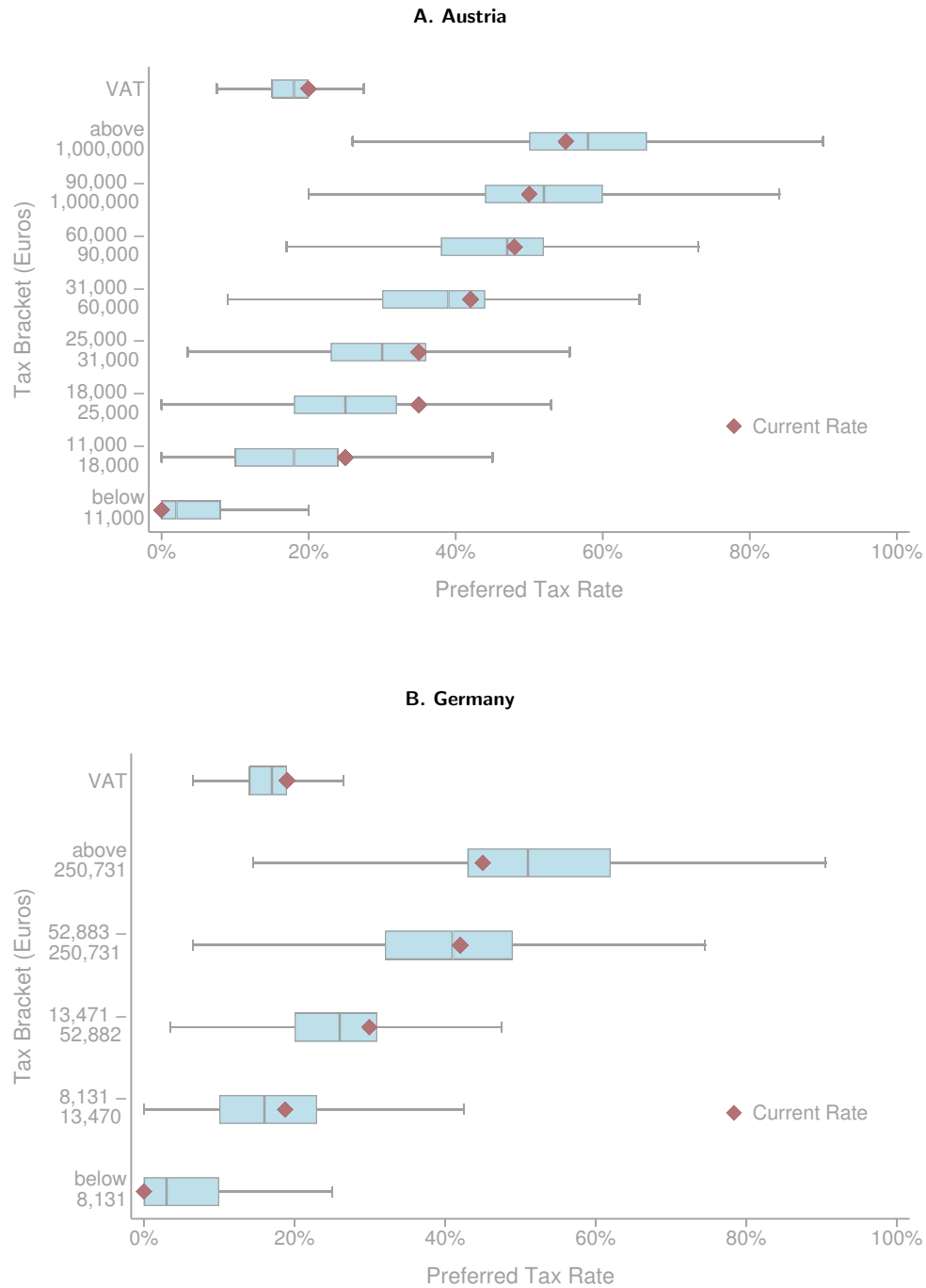
In Austria, the median preferred rates for the top three income brackets, and for the bottom bracket, are quite close to the prevailing rates. For the top bracket, with incomes over one million euros, the median preferred rate was 58 percent compared to current rate of 55 percent. For some of the other lower income brackets, respondents preferred somewhat lower rates than current policy. This was also the case for preferred rates over the Value Added Tax.

In Germany, the top bracket is set at a much lower threshold, €250,731, but the median respondent preferred a rate of 51 percent – a bit higher than the status quo policy of 45 percent. There is some slight evidence that, as in Austria, the median respondent preferred somewhat lower rates for the lower income brackets and a rate close to the current one of zero for the lowest bracket. Similarly, the median preferred rate for the Value Added Tax was somewhat lower than current policy.

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<sup>13</sup>Recent work by Abramson, Koçak and Magazinnik (2019) shows that the AMCE is a function of both the direction and intensity of respondents' preferences, and the sign of the AMCE need not correspond with the preferences that a majority of the population holds. Instead, Abramson, Koçak and Magazinnik (2019) show that the AMCE can be given a structural interpretation as an average of respondents' ideal points. With these results in mind, we refrain from making statements about the median voter based on our results.

Figure 1: Menu Estimates of Preferred Tax Rates in Austria and Germany



*Notes:* For the brackets 8,131-13,470EUR and 13,471-52,882EUR, we plot the marginal tax rates for the median income within those brackets. The actual tax rates increase linearly in those brackets from 14% to 24% and from 24% to 42% respectively.

## 2.3 Conjoint Estimates

Figure 2 presents the conjoint estimates for both countries. As an example of how to interpret the results, consider the *Less than €11,000* dimension for Austria and the estimate for the *20% rate*. The dot is the point estimate, and the bars indicate the 95% confidence interval for this estimate. The point estimate for the *20% rate* is -0.142, which indicates that respondents had a 14.2 percentage point lower probability of choosing a tax plan with a 20% rate compared to plans that had a 0% rate option for the *Less than €11,000* dimension. This is the average marginal component-specific effect, and it has a causal interpretation.

Again, for both countries, the estimates suggest that respondents have progressive tax preferences but ones that do not dramatically differ from status quo policies. In Austria, the estimates indicate that respondents are generally more likely to pick tax plans with lower rates for the bottom four income tax brackets and the highest rates for the top bracket. Further, the AMCE is the most positive for the top bracket at the 60% rate, which is close to the current rate of 55%. The general pattern is the same for Germany, with perhaps one notable difference. For the top income bracket, the AMCEs for the 55% and 65% rates are somewhat higher than for the status quo rate of 45%, although these differences are not statistically significant.<sup>14</sup>

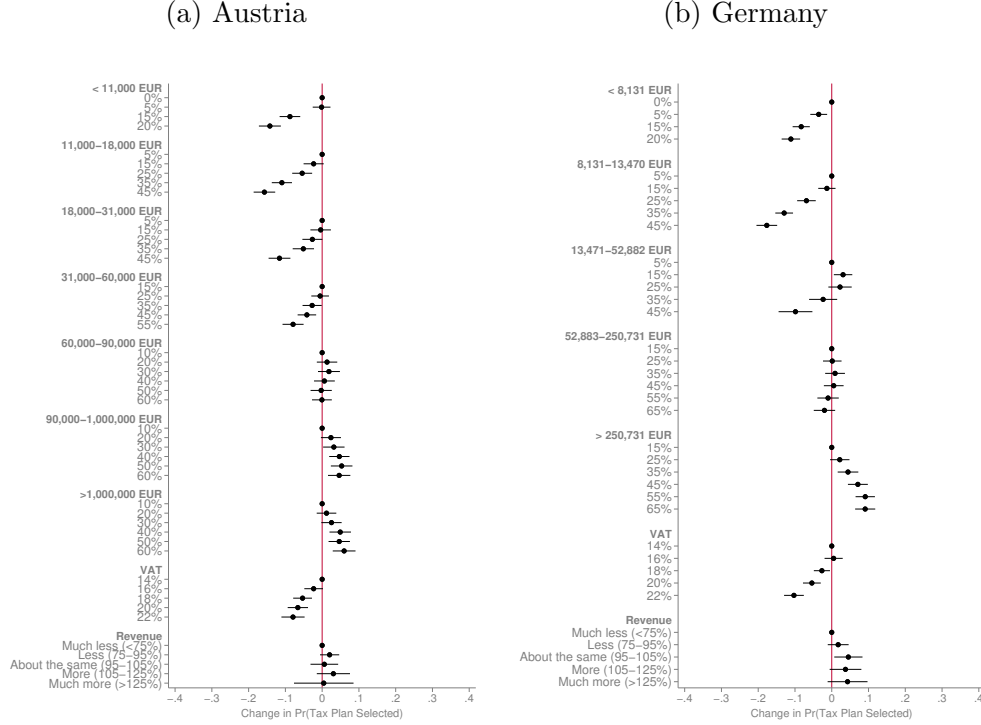
Figure 3 reports variation in choices explained by each tax code dimension. This provides a relative indication of the importance of each dimension in determining preferred tax plans. Figures 2 and 3 combined highlight two patterns that were also documented by Ballard-Rosa, Martin and Scheve (2017) for the United States. First, preferences are highly elastic for rates on lower incomes. Second, rates on higher incomes matter but are somewhat inelastic across a wide range of higher rates. In Austria, the estimates for the highest bracket are not

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<sup>14</sup>Appendix Section E presents conjoint estimates of income tax preferences in the United Kingdom. Here too the estimates suggest some preference for higher rates on high incomes but the estimates are not significantly different from status quo policy. The section also explores the possibility that one reason that preferences are not more progressive in the conjoint experiments is that they do not explicitly bundle the revenue raised with specific categories of government spending (Stantcheva, 2020). At least in the UK, we find little evidence that bundling with spending categories affects tax preferences.

significantly different for the 40%, 50%, and 60% rates and we already noted that this was the case for the 45%, 55%, and 65% rates in Germany. Individuals prefer higher rates on top incomes but do not have sharp opinions about how high.

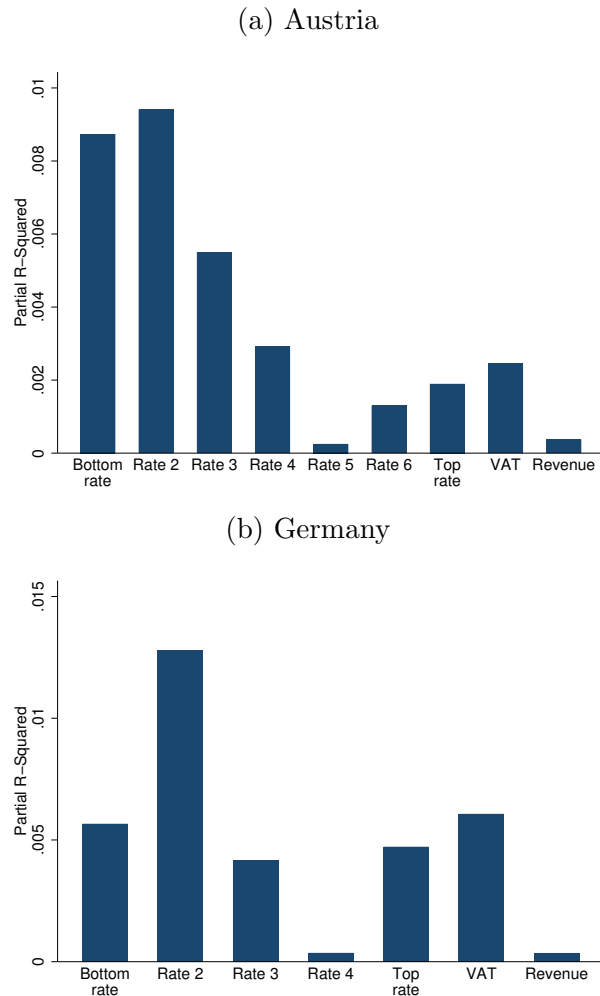
Figure 2: Conjoint Estimates of Preferred Tax Rates



*Notes:* Experimental conjoint estimates of tax preferences. Each panel in this figure shows estimates (AMCE) of the effect of randomly assigned attribute values (tax rates) for different tax plan dimensions (primarily income groups) on the probability of supporting a tax plan. Estimates are based on the regression of *Tax Plan Support* on dummy variables for the values of the tax plan dimensions with SEs clustered by respondent. The bars indicate 95% confidence intervals, and the points without bars indicate the reference category for a given tax plan dimension.



Figure 3: Variation in Tax Plan Support Explained by Tax Code Brackets



*Notes:* Figure 3 shows the partial  $R^2$  for each dimension (marginal rates, VAT, revenue) of the tax plans in our conjoint experiment. It measures the variation in participants' tax plan choices that can be explained by that dimension but not by the other dimensions. We estimate this statistic as  $R_d^2 = \frac{RSS_{-d} - RSS_{all}}{RSS_{-d}}$ , where  $d$  is a given dimension and  $RSS$  is the residual sum of squares of a regression of tax plan choice on all dimensions (*all*) or excluding the given dimensions ( $-d$ ).

### 3 Inequality Information and Tax Opinions

One of the most salient explanations for the absence of increased public demand for redistribution in response to higher economic inequality is that voters are imperfectly informed about the extent of inequality. According to this hypothesis, individuals form their preferences about taxation based on the information to which they are exposed, and they are poorly informed about the rise in inequality that has occurred in recent decades.

In this section, we test this hypothesis by randomizing survey participants in Germany and Austria into four different informational treatments that provide current statistics about their national pre-tax distribution of individual incomes. We manipulated two types of information. Treatment arms A.1 and A.2 show *aggregate* data about the income distribution, whereas treatment arms B.1 and B.2 present *individualized* information about economic disparities relative to the respondent’s annual income. The participants in the surveys described in the previous section were randomly assigned to receive one of these treatments (or were assigned to the control group without any information about inequality) at the beginning of the survey. The conjoint choice task followed the informational treatment, which allows us to estimate the causal effect of the informational treatments on the choice behavior in the conjoint experiments and the menu questions.<sup>15</sup> According to the information hypothesis, we should expect improved information to induce more progressive tax preferences.

### 3.1 Inequality Information Experiments

We randomized respondents with equal probability into one of the following four treatments or the control group. Each treatment consisted of a separate survey page that displayed information on income distributions; we present the text for the German survey below:<sup>16</sup>

- Treatment A.1 (99/50): “In 2015, German individuals with incomes in the top 1% earned at least 124,997 euros annually before taxes, while German individuals with incomes in the middle of the income distribution (where half of individuals earned more, and half less) earned 21,000 euros annually. This means that in 2015 the ratio between the top 1% of earners and those at exactly the middle was 5.95.”
- Treatment A.2 (99/10): “In 2015, German individuals with incomes in the top 1%

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<sup>15</sup>The placement of the information treatments at the beginning of the survey raises the question of whether the characterization of the results presented in Section 2 is a function of pooling across informational treatments and the control group. The analysis presented in this section, particularly the results for the control group, suggest that this is not the case.

<sup>16</sup>Appendix C presents the German and English translation for the information treatments for both countries.

earned at least 124,997 euros annually before taxes, while German individuals with incomes near the bottom of the income distribution (bottom 10%) earned at most 4,536 euros annually. This means that in 2015 the ratio between the top 1% of earners and the bottom 10% was 27.56.”

- Treatment B.1 (earn more): Respondents are asked to enter their gross monthly individual income. Then, the survey displays the following sentence: “X% of German individuals who have incomes earn more than you.”
- Treatment B.2 (earn less): Respondents are asked to enter their gross monthly individual income. Then, the survey displays the following sentence: “X% of German individuals who have incomes earn less than you.”

Treatments A.1 and A.2 show general statistics about inequality: ratios between different pre-tax income percentiles that highlight the extent of economic inequality in each country (computed using data from the Luxembourg Income Study (LIS) (2019)). However, it is not clear whether what is important to citizens in determining their support for progressive taxation is aggregate levels of inequality or their own relative positions in the income distribution. Further, it is not clear whether responses to knowing that position in the income distribution are influenced by whether the information is presented in terms of who earns more or who earns less. To investigate these questions, we deploy treatments B.1. and B.2, which locate respondents on the income distribution and display what percentage of earners earn more or less than them.

## **3.2 Inequality Information Estimates**

### **Effects on Knowledge about Inequality**

We conducted a manipulation check to investigate whether our treatments improved knowledge about inequality. In both Austria and Germany, treated individuals generally provided

closer estimates of income statistics in questions concerning the information provided in their treatment. Specifically, we asked all respondents, in a multiple-choice exercise in a later part of the survey, to identify the incomes at the 99th, 50th, and 10th percentile of the distribution. Appendix Figures A.1 and A.2 plot our results, which show a higher near-identification rate (whether respondents selected the correct or an adjacent response in the multiple-choice question) for income thresholds shown in a group’s treatment.

In Austria, the near-identification rate of group A.1 for the 50th percentile income is 35.08% compared to 29.63% in the control group (SE: 4.25%). In Germany, group A.1 identifies the correct or an adjacent response in 30.46% of cases compared to 23.68% in the control group (SE: 3.84%). We observe similar differences in group A.2, which near-identifies the 10th percentile income correctly in Austria in 31.64% of cases compared to 25.71% in the control group (SE: 4.22%). In Germany, the rate increases from 21.68% to 28.15% (SE: 3.56%). Of course, treatment groups A.1 and A.2 also learn about income levels at the 99th percentile. With one exception, these differences are also in the right direction, with treated respondents having more accurate responses. A caveat to this characterization is that, although the differences are substantively important, they are imprecisely estimated with relatively large standard errors. It should also be noted that we don’t observe consistent differences for treatment groups B.1 and B.2, who were not given the relevant information. Taken together, this evidence suggests that the experiment successfully modified participants’ information about aggregate economic inequality.

### Effects on Tax Opinions

Figures 4 and 5 report the menu estimates of our informational treatments for Austria and Germany respectively. Each figure includes four panels. Panel (a) reports the mean for the preferred tax rate for each income bracket for the control group and aggregate inequality information treatment groups A.1 and A.2. Panel (b) reports the same quantity of interest but combines treatment groups A.1 and A.2 into a single combined aggregate inequality

treatment group. Panel (c) shows the mean of the preferred tax rate for each income bracket for the control group and the relative earnings treatment groups B.1 and B.2. Finally, panel (d) reports the results combining B.1 and B.2 into a single relative earnings treatment group.

In Austria, the estimates in panel (a) indicate no significant difference in preferred tax rates between treatment groups A.1 (90/50 ratio) and A.2 (90/10 ratio); and, consequently, we focus our attention on panel (b), which combines the groups. Here, we see no difference between the treatment group A, providing aggregate inequality information, and the control group for the four lowest income brackets; but we do see small but statistically significant differences in preferred rates across the four highest income brackets, including the top bracket (see also Figure 6). The difference for the top bracket is 4.44 with a standard error of 1.74. There are no significant differences in preferred rates for the earnings treatments B.1 and B.2, which provide information about the percentage of income earners who earn more or less than the respondent.

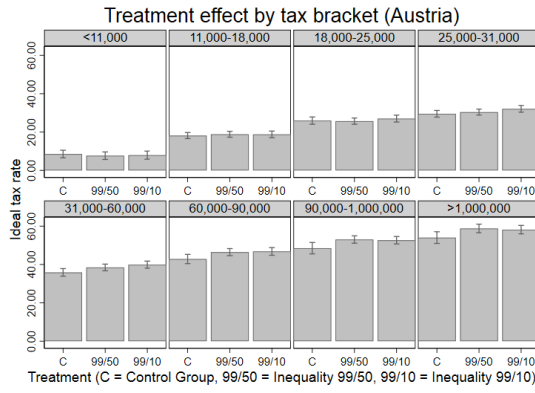
In Germany, panels (a) and (b) provide very little evidence of an effect of aggregate inequality information on preferred tax rates. While it is the case that, as in Austria, respondents in treatment group A prefer higher tax rates on the top income bracket, the difference is small and not statistically significant. In contrast, the estimates in panels (c) and (d) indicate that respondents in treatment group B preferred marginal tax rates 3.23 percentage points higher on incomes above 250,731 euros (see also Figure 6). The panel (c) estimate suggests that this is driven by the “earn less” treatment B.2. There are no significant differences between treatment group B and the control group with respect to other income brackets.

Taken together, our menu estimates indicate that exposing individuals to information about inequality has at most modest effects on preferred tax rates. Most of the differences between treatment and control are statistically insignificant, and even the statistically significant differences are substantively small.

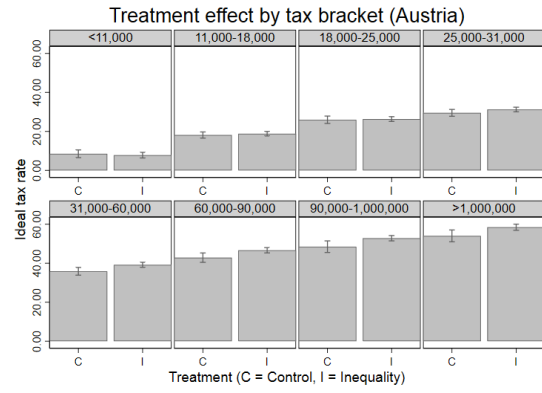
One potential weakness of our analysis of the menu estimates is that we focus our atten-

Figure 4: Menu Estimates of Information Effects (Austria)

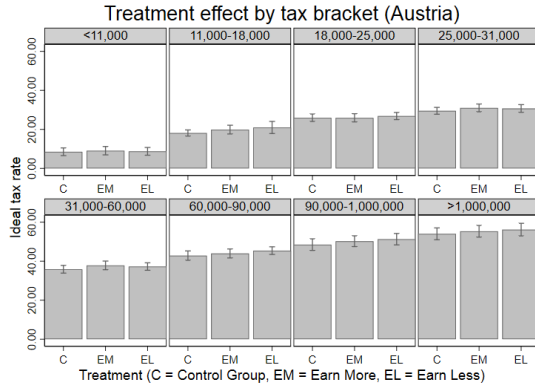
(a) Inequality treatments



(b) Combined inequality



(c) Earnings treatments



(d) Combined earnings

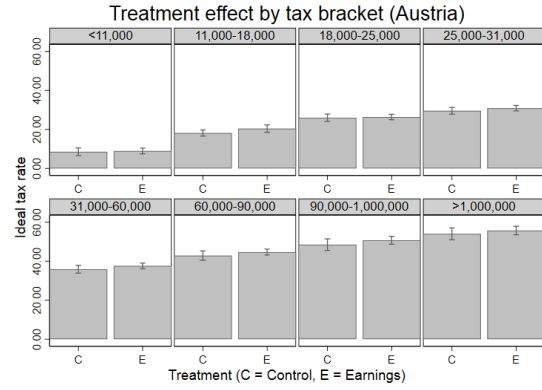


Figure 5: Menu Estimates of Information Effects (Germany)

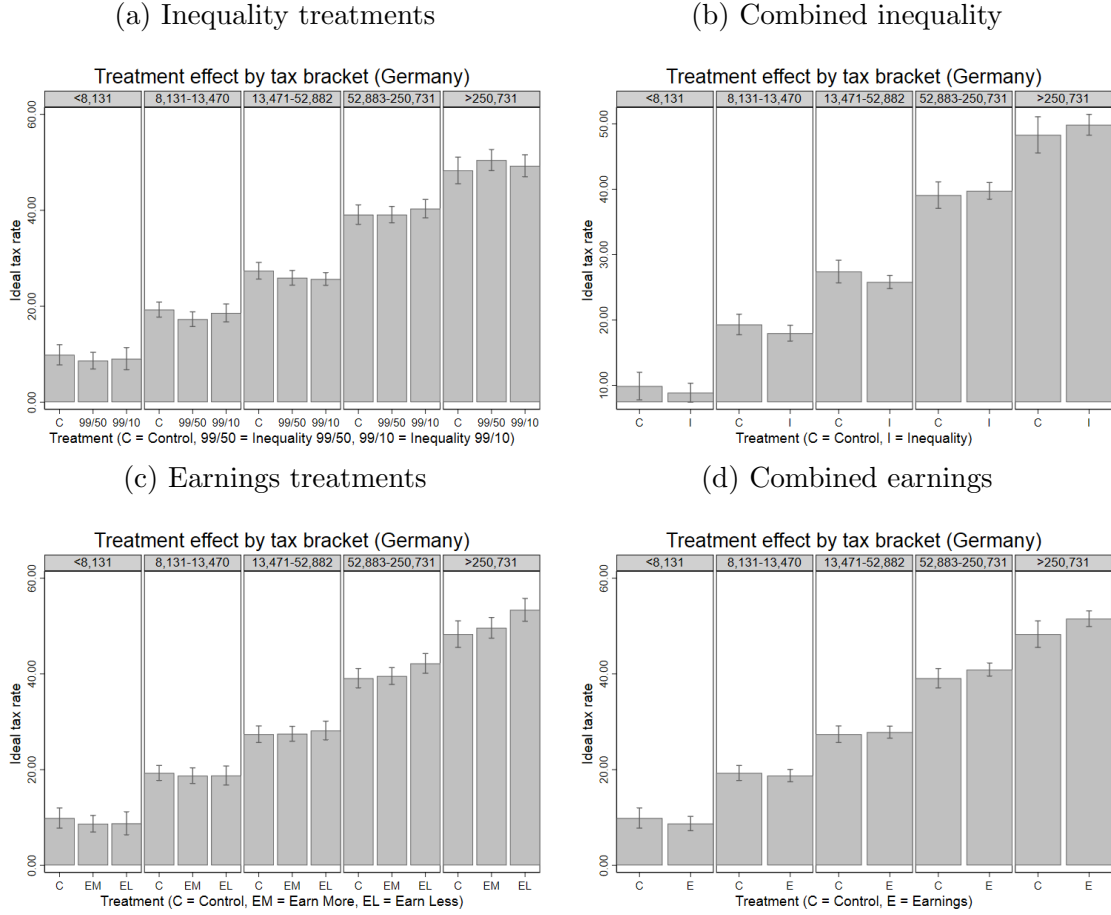
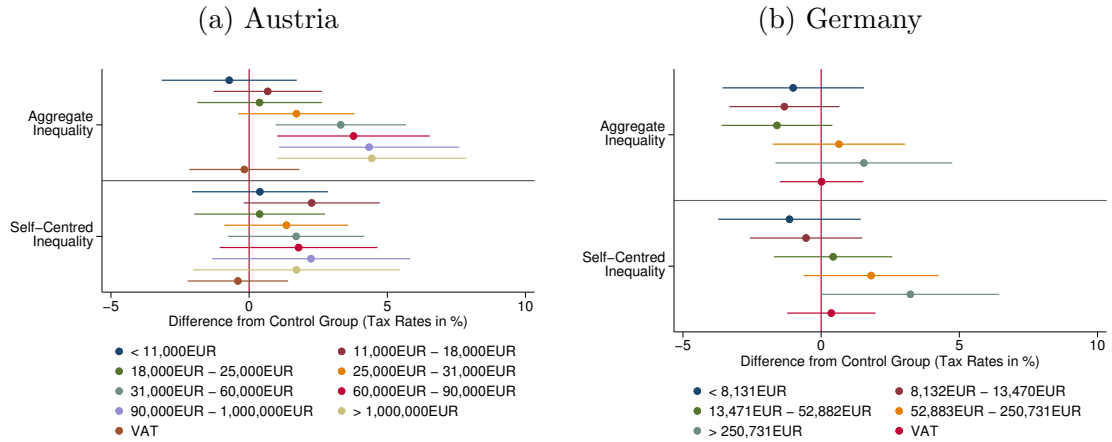


Figure 6: Menu Preferences for Pooled Treatments



tion on the estimates for each income bracket individually but do not have a formal strategy for assessing whether overall tax preferences are more or less progressive. To address this issue, we used the menu estimates to construct the *Kakwani* progressivity index (Kakwani, 1977). The index measures the extent to which tax burdens—or, in our case, tax burdens under respondents’ preferred rates elicited by the menu method—increase with rising incomes in Austria and Germany;<sup>17</sup> it assigns a higher score to more progressive tax systems and a lower score to those that are less progressive. We plot the Kakwani Index scores by treatment group in Appendix Figure A.3 and find that in Austria they do not differ significantly from those in the control group. In Germany, indices are 0.009 higher in Group A.1 (99/50 ratio) and 0.010 higher in Group B.1 (earn more) compared to the control group, and the differences are significant at  $p < 0.05$ . The pooled treatment groups A and B, however, do not differ significantly from the control group in either country. These results confirm our interpretation of the menu estimates above: there is no clear evidence that the treatments led to substantively and statistically significant increases in the progressivity of tax preferences.

We now turn to our conjoint estimates to determine whether the informational treatments had a systematic effect on the preferred tax plans selected by respondents. Figure 7 pools aggregate inequality treatment groups A.1 and A.2 and reports the conjoint estimates for the control group and treatment group A for each country.<sup>18</sup> The panel (a) estimates for Austria generally indicate no difference in the AMCEs between the Aggregate Inequality treatment group A and the control group. A few exceptions are in the direction predicted by the information hypothesis. For the second highest income bracket, the estimate for group A is larger than the estimate for the control group for the two highest rates—50% and 60%. Further, for the top rate the group A estimate is larger than the control estimate for the

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<sup>17</sup>The *Kakwani* index is twice the area between the Lorenz curve of tax incidence and the Lorenz curve of income and thus measures the deviation of a tax system from proportionality. It is equal to the difference between the Gini index and its tax incidence counterpart, the concentration index of taxes.

<sup>18</sup>Appendix Figure A.4 reports the conjoint estimates for treatment groups A.1, A.2, B.1, and B.2 separately. The estimates for A.1 and A.2 and B.1 and B.2 are not different from each other and so we focus on the pooled groups A and B to increase power and simplify the presentation in the main text.

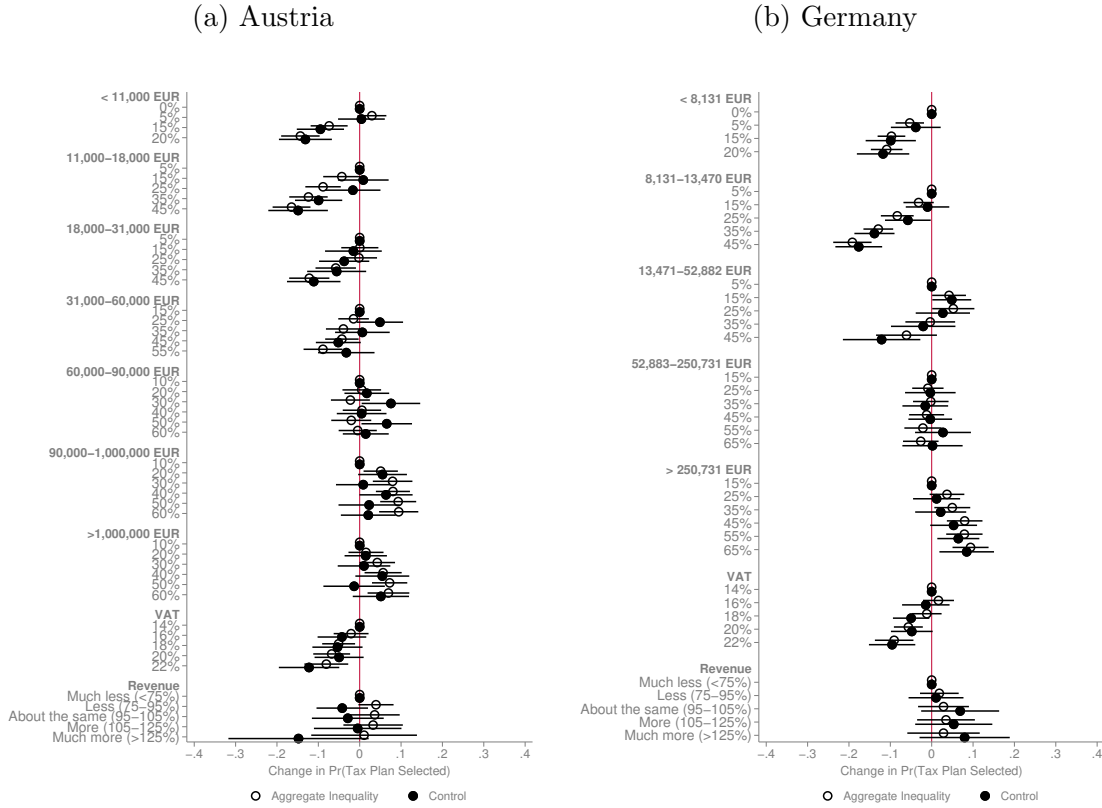


50% rate (but not the 60% rate). The difference, however, is not large (8.59% is the largest of the three). Moreover, when we turn to panel (b) for Germany we find that the aggregate inequality treatment had no effect on any of the conjoint coefficient estimates.

Figure 8 pools the relative earnings treatment groups B.1 and B.2 and reports the conjoint estimates for the control group and treatment group B—self-centered inequality—for each country. Generally, we do not find any difference in the AMCE estimates across these two groups. The one notable exception is that in Germany for the top income tax bracket the estimate for treatment group B for the 50% rate is larger than that for the control group, which is what one might expect if the informational hypothesis was true. That said, this is not the case for the 60% rate in Germany or any other relevant German rates or any rates in Austria.

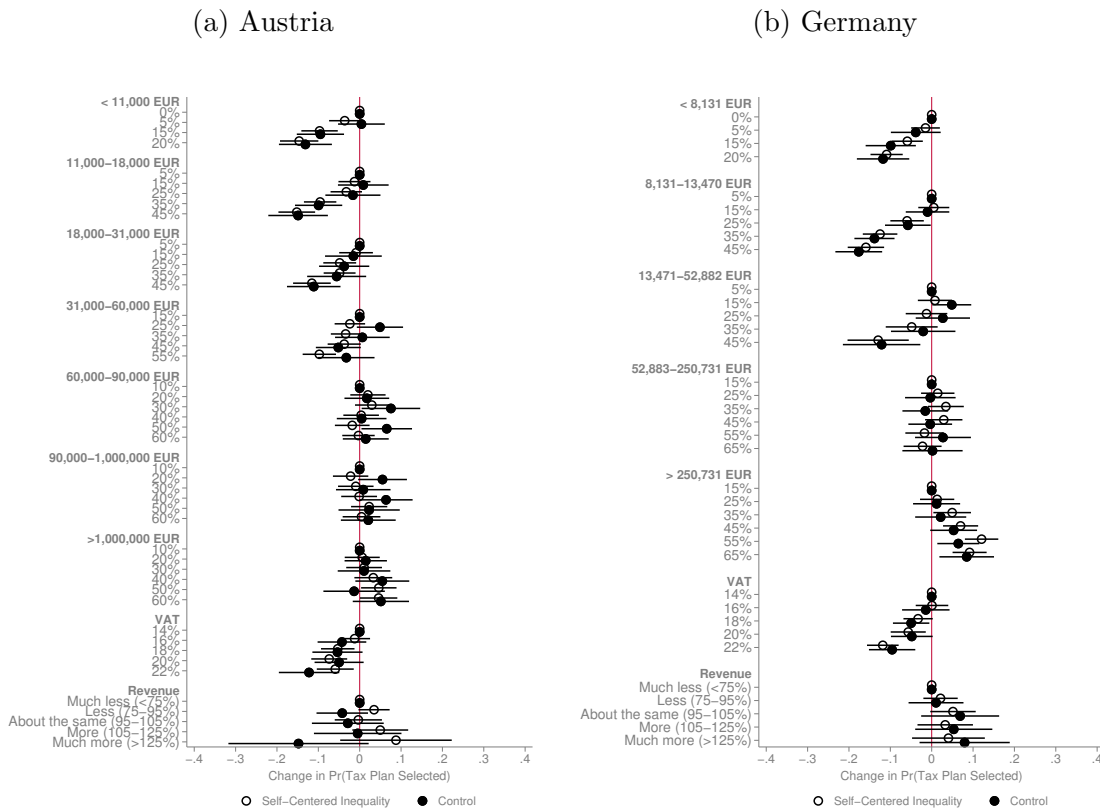
Overall, the conjoint estimates resonate with the menu estimates. There is some evidence that information about aggregate inequality has a small effect in Austria and that information about relative inequality has a small impact in Germany; but the magnitudes are small, and the overall pattern does not support the idea that, if only voters knew more about inequality, they would demand more progressive tax systems.

Figure 7: Information about Aggregate Inequality and Tax Preferences in Austria and Germany: Conjoint Estimates



*Notes:* Experimental conjoint estimates of tax preferences by whether respondent received treatment information about aggregate inequality (A.1 and A.2). Each panel in this figure shows estimates (AMCE) of the effect of randomly assigned attribute values (tax rates) for different tax plan dimensions (primarily income groups) on the probability of supporting a tax plan for treatment and control groups. Estimates are based on the regression of *Tax Plan Support* on dummy variables for the values of the tax plan dimensions with SEs clustered by respondent. The bars indicate 95% confidence intervals, and the points without bars indicate the reference category for a given tax plan dimension.

Figure 8: Information about Self-Centered Inequality and Tax Preferences in Austria and Germany: Conjoint Estimates



*Notes:* Experimental conjoint estimates of tax preferences by whether respondent received treatment information about relative inequality (B.1 and B.2). Each panel in this figure shows estimates (AMCE) of the effect of randomly assigned attribute values (tax rates) for different tax plan dimensions (primarily income groups) on the probability of supporting a tax plan for treatment and control groups. Estimates are based on the regression of *Tax Plan Support* on dummy variables for the values of the tax plan dimensions with SEs clustered by respondent. The bars indicate 95% confidence intervals, and the points without bars indicate the reference category for a given tax plan dimension.

## 4 Why Doesn't Inequality Information Matter More?

Explanations for why the tax preferences of survey respondents don't respond more strongly to information about inequality can be classified into two different categories.

First, citizens may already be broadly aware of levels of aggregate inequality and/or of

their own position in the income distribution. At first pass, this explanation seems inconsistent with our data. Appendix Figures A.1 and A.2 indicate that only small minorities of untreated respondents are able to identify even approximately the incomes associated with the 99th, 50th, and 10th percentiles of the income distribution. Moreover, there is evidence that being exposed to information about inequality, by being assigned to a relevant treatment group, does in fact increase information levels. Nonetheless, it seems plausible that citizens have a broad sense of current levels of inequality and whether they are increasing; and that they already use this information in forming their opinions about taxation. Inequality, it appears, matters for tax opinions; but many individuals know enough already that exposing them to more specific information does not greatly affect their policy preferences. This would also imply, however, that a dearth of information about inequality is not the main reason why tax preferences are not more progressive or why they have not changed more in a context of rising inequality.

One way to evaluate the idea that voters know enough about inequality is to investigate treatment effects by estimated prior knowledge. For the control group (which was never exposed to information about inequality), we estimated a logit model regressing whether they were able to nearly identify the correct income levels for the 99th percentile on gender, education, income, age, and attention to the survey.<sup>19</sup> We then used the coefficients from this regression to generate predicted levels of prior knowledge for all respondents, and subsequently divided them into low knowledge (below the median) and high knowledge (above the median) groups.

Figure 9 reports the treatment effects on top tax rate opinions by estimated low and high knowledge for Austria (panel a) and Germany (panel b).<sup>20</sup> Consider first panel (b)

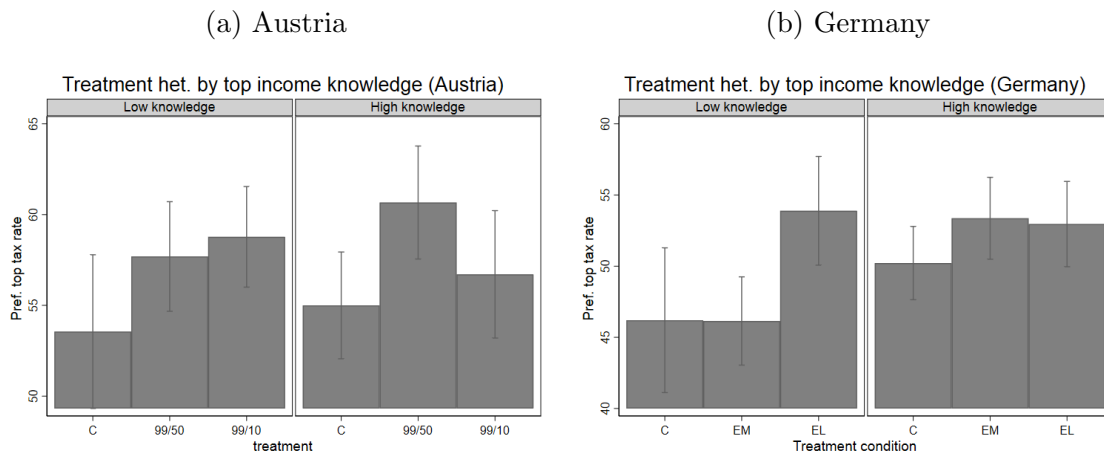
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<sup>19</sup>Our attention check involved embedding a request for respondents to only select specific colors within a question that began by asking them to report their favorite color. 72% of respondents in the German survey passed this attention check, and 64% of respondents in the Austrian sample passed.

<sup>20</sup>For Austria, we report estimates for Treatments A.1 and A.2. For Germany, we report estimates for Treatments B.1 and B.2. As discussed above, when there is evidence of some effect for information treatments, it is for aggregate inequality in Austria and relative income in Germany. For the unreported treatment effects by estimated prior knowledge, there is no evidence of an effect across the treatments and low and high prior knowledge.

for Germany. Descriptively, respondents in the control group with higher knowledge prefer higher top tax rates. Further, the treatment effect for B.2 (Earn Less) is much larger for the low knowledge group than for the high knowledge group. That said, there is no evidence that the B.1 (Earn More) treatment had an effect for the low knowledge group, while it seems to have had a small effect in the high knowledge group. The evidence for Austria in panel (a) is also mixed. Overall, the evidence in Figure 9 provides some support for the explanation that part of the reason why information does not seem to have a big effect on tax policy preferences is that those with relatively more information—albeit without very precise information about inequality—have enough sense of inequality to inform their policy preferences. Other reasons appear to play a more decisive role in accounting for why opinions are not more progressive.<sup>21</sup>

Figure 9: Treatment effects by estimated prior knowledge



The second category of explanations for why information doesn't seem to matter more is based on alternative theories – ones not based on lack of information – for why tax preferences are not more progressive. As discussed in the introduction, three of the most commonly cited alternatives to the information hypothesis are (a) some citizens have low trust in government

<sup>21</sup>A different but complimentary version of this category of explanation is that while specific information levels of about inequality is low, introducing information has heterogeneous effects and on average does not move policy opinions very much. Some of the previous research that has emphasized how certain subsets of voters are influenced by information is consistent with this view of the weakness of the average effects of information.

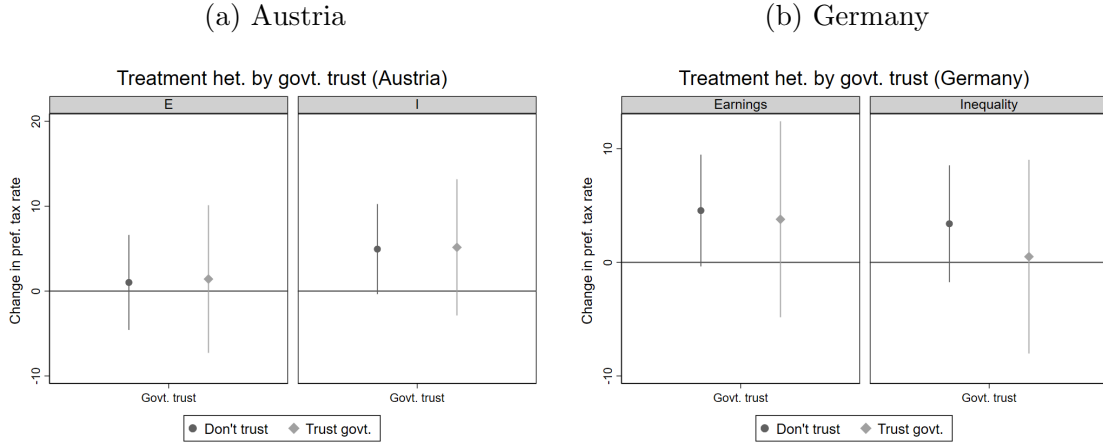
and therefore are skeptical of policy interventions to address inequality even if they think it is a problem (b) some think that high taxes are economically inefficient and (c) some citizens hold fairness beliefs that mitigate their support for progressivity. We first consider whether these factors are correlated with progressive tax opinions. We do not find evidence that individuals with relative high trust in government have more progressive tax opinions (see conjoint evidence in Appendix Figure A.5). We do find that individuals who do not think high taxes on the rich slow economic growth support higher taxes on high incomes in both countries (see conjoint evidence in Appendix Figure A.6). There are a number of alternative accounts of how fairness considerations influence tax opinions. Here, we highlight a common measure that focuses on the deservingness of the rich and the poor—whether economic success is determined by luck, hard work, or both. We show that this view is correlated with tax preferences on high incomes in Austria and Germany (see conjoint evidence in Appendix Figure A.7).

This evidence does not, however, directly speak to why information about inequality has so small an effect on tax opinions. Following the logic of Kuziemko et al. (2015), if trust in government is the reason that information about inequality does not affect policy opinions, one would expect our information treatments to have an effect on those with high trust but no effect on those with low trust. However, as indicated in the estimates in Figure 10, we find little evidence consistent with this prediction.<sup>22</sup>

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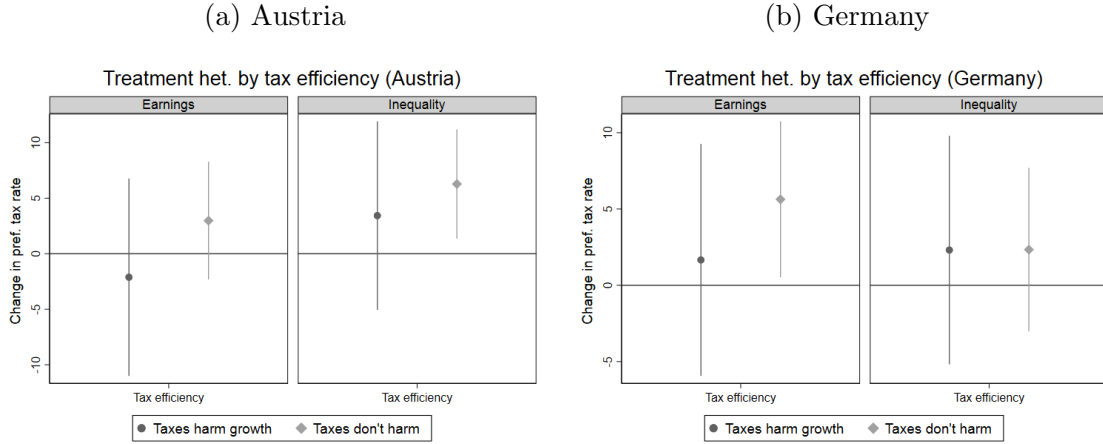
<sup>22</sup>We also investigated whether our inequality treatments had an impact on trust in government but again there was no evidence consistent with this prediction.

Figure 10: Treatment effect by government trust



Now consider beliefs about the effect of taxes on economic efficiency. Individuals who believe that high taxes harm economic growth should be less responsive to learning that inequality is high than individuals who believe that such taxes have minimal efficiency costs. Figure 11 tests this idea by reporting the effect of informational treatments A (inequality) and B (earnings) on top tax rate opinions by whether respondents believed taxes harm economic growth. Panel (a) reports results for Austria. For both inequality and earnings, the change in the preferred top rate is higher for individuals who do not believe that taxes harm growth, although the differences are imprecisely estimated. The results for Germany, reported in panel (b), are similar for the earnings informational treatment but almost exactly the same for the inequality treatment. Taken together, there is some evidence consistent with the idea that beliefs about the efficiency costs of taxation mitigate responsiveness to greater information about inequality.

Figure 11: Treatment effect by tax efficiency

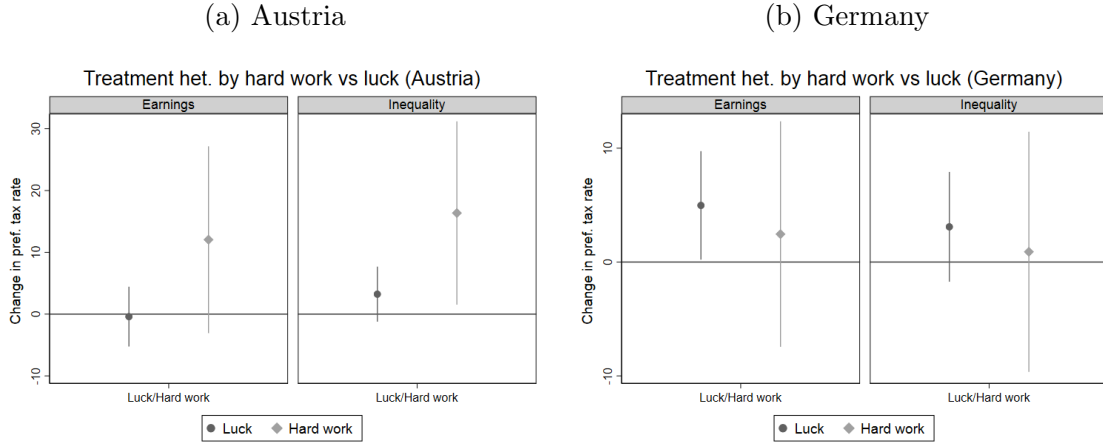


An analogous argument can be made for fairness beliefs. If the rich and poor deserve their incomes, the extent of the differences between those outcomes is less relevant to preferred progressivity. Figure 12 reports the effect of the informational treatments on top tax rate opinions again but by whether respondents believed luck or hard work was primarily responsible for economic success.<sup>23</sup> The estimates for Germany in panel (b) are somewhat consistent with this explanation in that respondents who believe that luck determines economic success are more affected by the informational treatments than those who believe hard work at least plays some role. These differences, however, are small and imprecisely estimated. Moreover, the Austria results are, if anything, in the opposite direction from this prediction.

<sup>23</sup>In both countries, few respondents answered “hard work only” and so this category was collapsed with luck and hard work determine economic success.

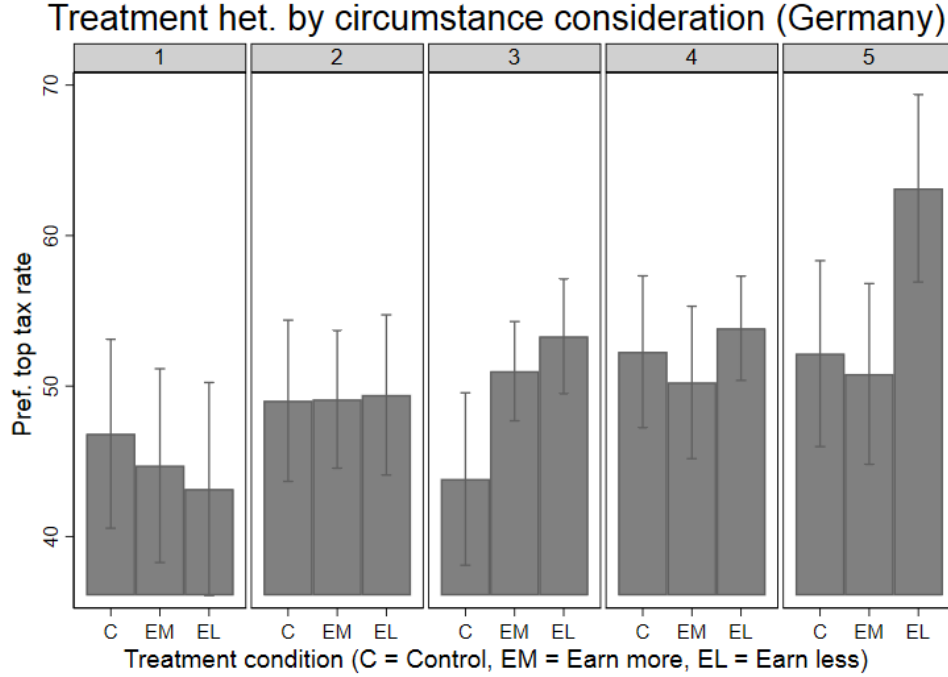


Figure 12: Treatment effect by hard work vs luck



In the German study, we had available an alternative measure of fairness belief that captured a commitment to treating citizens equally versus taking into account advantages or disadvantages that they may have (Scheve and Stasavage (Forthcoming)). In this fairness argument, we would expect inequality information to have no impact for people committed to equal treatment beliefs—it is unfair to treat the rich differently by taxing them at higher rates regardless of levels of inequality—but have more of an effect on those less committed to the norm of equal treatment. Figure 13 reports the mean preferred top tax rates for the control group and treatment groups B.1 and B.2 indicating the relative earnings treatments. For those respondents with the strongest equal treatment beliefs (1), there are no significant differences in mean top tax preferences, while for those with the weakest equal treatment beliefs (5), the earn less treatment (B.2) induced significantly higher preferred top tax rates. The difference is over 10 percentage points and is statistically significant. Overall, the evidence that fairness concerns mitigate the effect of inequality information is somewhat mixed. We clearly find some evidence consistent with this hypothesis, especially for equal treatment beliefs but less so for beliefs about the role of luck and hard work in determining economic success.

Figure 13: Preferred Top Tax Rates (Germany)



Note: 1=Treat all citizens equally; 5=Take into account economic advantage/disadvantage

## 5 Conclusion

While objective economic inequality has expanded substantially over the past several decades, few countries have sought to ameliorate disparities in income through the use of more progressive taxation. In this paper, we draw on a multitude of measurement strategies to establish: first, that citizens in Austria and Germany do have preferences for progressivity in the tax code; but also that average preferences for taxes across the income distribution do not vary much from current levels in either country. This suggests that, absent heightened public demand for much higher taxes, the reluctance of politicians to increase taxes on the rich may be consistent with the overall view of the public.

Yet why citizens do not demand more redistribution—in the form of greater taxes on the wealthy—still presents a puzzle. One influential explanation that has been put forward

suggests that citizens do not know the true extent of inequality in the economy; it is argued, therefore, that if citizens merely knew how unequal the income distribution really is, they would respond by demanding heightened progressivity in income taxes. To test this idea, we experimentally exposed survey respondents to information about both (a) general levels of inequality in their society, and (b) where respondents themselves fell in the income distribution. Overall, our results suggest at best that greater information about inequality weakly increases preferences for higher tax rates on top incomes.

In probing the lack of strong effects, we also detect some evidence that our treatments may have had the greatest effect on those who lacked prior knowledge about the shape of inequality; yet, if true, this suggests that even among citizens already relatively well informed about the income distribution, overall demands for tax progressivity are weak. It may be that even if individuals do not have precise information about levels of inequality, many of them have enough of a broad impression of inequality that a lack of information is not the primary reason that tax preferences are not more progressive than they are. We provide some descriptive evidence that other factors emphasized in prior research, such as fairness and economic efficiency concerns, may be more important in identifying individuals who prefer to tax the rich more (or less) and why those preferences seem more muted than we might expect.

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Online Appendix for  
“Inequality, Information, and Income Tax Policy Preferences in  
Austria and Germany”

## A Description of Surveys

### A.1 Austria sample

The survey was fielded from October 17, 2018 to October 29, 2018. YouGov interviewed 2146 respondents who were then matched down to a sample of 2100 to produce the final dataset. The respondents were matched to a sampling frame on gender, age, and education. The frame was constructed by stratified sampling from the 2013 Austrian Comparative Study of Electoral Systems Post-Election Survey with selection within strata by weighted sampling with replacements (using the general population weights on the public use file). The matched cases were weighted to the sampling frame using propensity scores. The matched cases and the frame were combined and a logistic regression was estimated for inclusion in the frame. The propensity score function included age, gender, and education. The propensity scores were grouped into deciles of the estimated propensity score in the frame and post-stratified according to these deciles. The weights were then post-stratified on 2017 vote choice, and a three-way stratification of gender, age (4-categories), and education (3-categories), to produce the final weight.

The final number of observations was 2,100. Table A.1 shows the distributions of the sociodemographics in the population, the weighted sample, and the raw sample.

- Interview period: October 2018
- Sample size: 2,100
- Source of data on population socio-demographics: Statistik Austria and International Social Survey Programme
- Weights range from 0.07 to 7.05, with a mean of 1 and a standard deviation of 0.92.

### A.2 Germany sample

The survey was fielded from March 27, 2019 to April 3, 2019. YouGov interviewed 2253 respondents who were then matched down to a sample of 2100 to produce the final dataset. The respondents were matched to a sampling frame on gender, age, and education. The frame was constructed by stratified sampling from the 2018 Eurobarometer with selection within strata by weighted sampling with replacements (using the general population weights on the public use file). The matched cases were weighted to the sampling frame using propensity scores. The matched cases and the frame were combined and a logistic regression was estimated for inclusion in the frame. The propensity score function included age, gender, and education. The propensity scores were grouped into deciles of the estimated propensity



Table A.1: Distribution of Socio-demographics in the Survey Sample and the Population.

Group	Population	Weighted Sample	Raw Sample
Gender: Male	49.2	48.0	48.9
Gender: Female	50.8	52.0	51.1
Age: 18-34	25.9	25.6	31.1
Age: 35-54	34.1	34.2	41.9
Age: 55+	40.0	38.6	25.2
Compulsory school not completed	0	0.88	0.52
Primary completed	11.87	9.57	6.71
Apprenticeship completed	42.12	42.31	29.38
Middle school, vocational	15.57	19.06	11.33
Second completed, Matura	6.13	6.72	13.33
Higher prof. school, BHS	10.75	8.95	19.67
Bachelor degree	5.24	3.52	6.62
Master Degree, Ph.D.	8.31	9.0	12.42

The table shows the distributions of socio-demographics in the population, the weighted sample, and the raw sample. See text for data sources on the population socio-demographics.

score in the frame and post-stratified according to these deciles. The weights were then post-stratified on 2017 vote choice, and a three-way stratification of gender, age (4-categories), and education (3-categories), to produce the final weight.

The final number of observations was 2,100. Table A.2 shows the distributions of the sociodemographics in the population, the weighted sample, and the raw sample.

- Interview period: March-April 2019
- Sample size: 2,100
- Source of data on population socio-demographics: Federal Statistical Office Germany
- Weights range from 0.20 to 7.01, with a mean of 1 and a standard deviation of 0.72.

### A.3 UK sample

The survey was conducted in July 2017 by YouGov. The respondents were matched to a sampling frame based on gender and age. The frame was constructed by stratified sampling from the 2015 Eurobarometer. The matched cases were then raked to known quantities for age by gender and vote choice in 2015 by region, and estimates for social grade and attention to politics. Weights were applied to remove remaining imbalances after the matching procedure; the weights were trimmed to a maximum value of 7. Table A.3 shows the distributions of the sociodemographics in the population, the weighted sample, and the raw sample.

- Interview period: July 2017
- Sample size: 1,913
- Source of data on population socio-demographics: 2015 Eurobarometer, 2013 ONS (Labour Force Survey)
- Weights range from 0.001 to 7.001, with a mean of 1 and a standard deviation of 0.57.

Table A.2: Distribution of Socio-demographics in the Survey Sample and the Population.

Group	Population	Weighted Sample	Raw Sample
Gender: Male	49.3	49.1	48.9
Gender: Female	50.7	50.9	51.1
Age: 18-34	24.4	24.8	26.2
Age: 35-54	32.5	26.3	29.1
Age: 55+	43.2	47.5	43.1
Presently attending schools	3.6	7.62	1.62
Secondary general school-leaving certificate	30.4	9.41	11.52
Certificate of ten-grade school of general education	6.6	4.61	6.33
Intermediate school-leaving certificate	23.1	23.38	30.62
Fachhochschule/University entrance qualification	14.2	19.1	24.81
No secondary general school-leaving certificate	4.0	0.29	0.43
Bachelor	2.2	8.61	6.57
Master	1.4	6.97	4.76
Diploma	12.9	17.89	11.95
Doctor's degree	1.2	2.12	1.38

The table shows the distributions of socio-demographics in the population, the weighted sample, and the raw sample. See text for data sources on the population socio-demographics.

Table A.3: Distribution of Socio-demographics in the Survey Sample and the Population.

Group	Population	Weighted Sample	Raw Sample
Gender: Male	49.1	49.4	45.7
Gender: Female	50.9	50.6	54.3
Age: 18-34	31.6	28.2	25.4
Age: 35-54	33.0	33.5	33.7
Age: 55+	35.4	36.8	38.9
Graduates:	38.0	40.7	45.3
A Levels:	21.0	19.4	19.5
Other Qualifications:	31.0	29.4	25.5
No Qualifications:	9.0	8.5	6.5

The table shows the distributions of socio-demographics in the population, the weighted sample, and the raw sample. See text for data sources on the population socio-demographics.

## B Conjoint Instructions

### B.1 Austria

#### German

Als nächstes würden wir Ihnen gerne einige Fragen über Besteuerung stellen.

Oft wird in Österreich die Möglichkeit diskutiert, die Einkommensteuer und Mehrwertsteuer aus verschiedenen Gründen zu verändern. Wir sind daran interessiert, wie Ihrer Ansicht nach die Besteuerung in Österreich aussehen sollte.

Wir werden Ihnen nun mehrere Vorschläge für neue Steuerpläne unterbreiten. Wir werden Ihnen dabei jedes Mal zwei mögliche Vorschläge zum Vergleich zeigen. Für jeden Vergleich würden wir gerne wissen, welchen der beiden Steuerpläne Sie

bevorzugen. Möglicherweise gefallen Ihnen beide oder keiner der beiden Pläne. Wählen Sie bitte jedoch den Plan, den Sie am meisten bevorzugen. Insgesamt werden wir Ihnen **sechs** Vergleiche zeigen.

Wann immer wir von Einkommensteuer sprechen beziehen wir uns auf *individuelle Besteuerung*. Außerdem sind alle Steuerraten *Grenzbelastungen* – Dies bedeutet, dass Personen eine Steuerrate nur für den Teil Ihres Einkommens zahlen, welcher in die entsprechende Einkommenskategorie fällt. Zum Beispiel, wenn jemand 15.000 € im Jahr verdient und Einkommen unter 11.000 € nicht besteuert wird, würde diese Person keine Steuern auf die ersten 11.000 € zahlen und würde die Grenzbelastung (z. B. 10%) auf die nächsten 4.000 € des Einkommens zahlen, eine Gesamtsteuer von 400 €.

Sie werden Steuerpläne abwägen, die diese Grenzbelastungen für verschiedene Einkommensbereiche ansetzen.

Verschiedene Menschen haben unterschiedliche Meinungen zu diesem Thema und es gibt keine richtigen oder falschen Antworten. Bitte nehmen Sie sich beim Lesen der möglichen Steuerpläne Zeit.

### English Translation

Next, we'd like to ask you some questions about taxation.

Many observers in Austria have discussed the possibility of changing the income tax and VAT to address a number of issues. We are interested in what you think about how taxation in Austria should look.

We will now provide you with several proposals for new tax plans. We will always show you two possible proposals in comparison. For each comparison we would like to know which of the two tax plans you prefer. You may like both or not like either one. In any case, choose the one you prefer the most. In total, we will show you **six** comparisons.

When referencing income taxes, all tax brackets refer to *individual taxation*. Also, all tax rates refer to *marginal rates* – this means that all individuals only pay that rate on the portion of their income that falls into that income category. For example, if someone makes 15,000 Euros annually and income below 11,000 Euros is not taxed, they would not be taxed on the first 11,000 Euros and would pay the marginal rate (for example, 10 per cent) on the next 4,000 Euros of income, for a total tax of 400 Euros. You will be considering tax plans that set these marginal rates for different ranges of income.

People have different opinions about this issue and there are no right or wrong answers. Please take your time when reading the potential tax plans.

<b>Tax Plan Dimension</b>	<b>Possible Levels</b>
<€11,000	0%, 5%, 15%, 20%
€11,000 - €18,000	5%, 15%, 25%, 35%, 45%
€18,000 - €31,000	5%, 15%, 25%, 35%, 45%
€31,000 - €60,000	5%, 15%, 25%, 35%, 45%, 55%
€60,000 - €90,000	10%, 20%, 30%, 40%, 50%, 60%
€90,000 - €1,000,000	10%, 20%, 30%, 40%, 50%, 60%
>€1,000,000	10%, 20%, 30%, 40%, 50%, 60%
VAT	14%, 16%, 18%, 20%, 22%
Total amt of revenue (% of current revenue)	Much Less Revenue (<75) Less Revenue (75-95) About the Same Revenue (95-105) More Revenue (105-125) Much More Revenue (125+)

Table A.4: *Conjoint Attribute Values (Austria)*. This table reports the attribute values for each dimension of the experiment. The first seven dimensions indicate the marginal tax rates on a given income bracket; the eighth dimension was the value-added tax rate. Respondents were presented with two randomly generated tax plans for comparison.

## Austria Conjoint Dimensions and Attribute Levels

### B.2 Germany

#### German

Als nächstes würden wir Ihnen gerne einige Fragen über Besteuerung stellen.

Oft wird in Deutschland die Möglichkeit diskutiert, die Einkommensteuer und Mehrwertsteuer aus verschiedenen Gründen zu verändern. Wir sind daran interessiert, wie Ihrer Ansicht nach die Besteuerung in Deutschland aussehen sollte.

Wir werden Ihnen nun mehrere Vorschläge für neue Steuerpläne unterbreiten. Wir werden Ihnen dabei jedes Mal zwei mögliche Vorschläge zum Vergleich zeigen. Für jeden Vergleich würden wir gerne wissen, welchen der beiden Steuerpläne Sie bevorzugen. Möglicherweise gefallen Ihnen beide oder keiner der beiden Pläne. Wählen Sie bitte jedoch den Plan, den Sie am meisten bevorzugen. Insgesamt werden wir Ihnen **acht** Vergleiche zeigen.

Wann immer wir von Einkommensteuer sprechen beziehen wir uns auf *individuelle Besteuerung* (ohne sogenanntes *Ehegattensplitting*). Außerdem sind alle Steuerraten *Grenzbelastungen* – Dies bedeutet, dass Personen eine Steuerrate nur für den Teil Ihres Einkommens zahlen, welcher in die entsprechende Einkommenskategorie fällt. Zum Beispiel, wenn jemand 12.000 € im Jahr verdient und Einkommen unter 8.000 € nicht besteuert wird, würde diese Person keine Steuern auf die ersten 8.000 € zahlen und würde die Grenzbelastung (z. B. 10%) auf die nächsten 4.000 € des Einkommens zahlen, also eine Gesamtsteuer von 400 €. Sie werden Steuerpläne abwägen, die diese Grenzbelastungen für die gegenwärtigen Einkommensbereiche ansetzen.

Verschiedene Menschen haben unterschiedliche Meinungen zu diesem Thema und es gibt keine richtigen oder falschen Antworten. Bitte nehmen Sie sich beim Lesen der möglichen Steuerpläne Zeit.

#### English Translation

Next, we'd like to ask you some questions about taxation.

Many observers in Germany have discussed the possibility of changing the income tax and VAT to address a number of issues. We are interested in what you think about how taxation in Germany should look.

We will now provide you with several proposals for new tax plans. We will always show you two possible proposals in comparison. For each comparison we would like to know which of the two tax plans you prefer. You may like both or not like either one. In any case, choose the one you prefer the most. In total, we will show you **eight** comparisons.

When referencing income taxes, all tax brackets refer to *individual taxation*. Also, all tax rates refer to *marginal rates* – this means that all individuals only pay that rate on the portion of their income that falls into that income category. For

example, if someone makes 12,000 Euros annually and income below 8,000 Euros is not taxed, they would not be taxed on the first 8,000 Euros and would pay the marginal rate (for example, 10 per cent) on the next 4,000 Euros of income, for a total tax of 400 Euros. You will be considering tax plans that set these marginal rates for different ranges of income.

People have different opinions about this issue and there are no right or wrong answers. Please take your time when reading the potential tax plans.

### Germany Conjoint Dimensions and Attribute Levels

Tax Plan Dimension	Possible Levels
<€8,131	0%, 5%, 10%, 15%
€8,132 - €13,470	5%, 15%, 25%, 35%, 45%
€13,471 - €52,882	5%, 15%, 25%, 35%, 45%
€52,883 - €250,731	15%, 25%, 35%, 45%, 55%, 65%
>€250,731	15%, 25%, 35%, 45%, 55%, 65%
VAT	14%, 16%, 18%, 20%, 22%
Total amt of revenue (% of current revenue)	Much Less Revenue (<75) Less Revenue (75-95) About the Same Revenue (95-105) More Revenue (105-125) Much More Revenue (125+)

Table A.5: *Conjoint Attribute Values (Germany)*. This table reports the attribute values for each dimension of the experiment. The first five dimensions indicate the marginal tax rates on a given income bracket; the sixth dimension was the value-added tax rate. Respondents were presented with two randomly generated tax plans for comparison.

## C Information Experiment Instructions

In both Austria and Germany, respondents were randomly assigned to four treatment groups that varied in the information about inequality presented to respondents and a control group. This Appendix Section reports the information presented in German and in English for both countries.

## C.1 Austria

### German

- Treatment A.1 (99/50): “Österreicher mit Einkommen in den oberen 1% verdienten in 2013 mindestens 132.669 € **im Jahr** brutto, während Österreicher mit Einkommen in der Mitte der Einkommensverteilung (wo die Hälfte mehr, und die andere Hälfte weniger verdient) 25.416 € im Jahr verdienten. Das bedeutet, dass in 2013 das Größenverhältnis von den oberen 1% zu denjenigen, die genau in der Mitte lagen 5,22 betrug.”
- Treatment A.2 (99/10): “Österreicher mit Einkommen in den oberen 1% verdienten in 2013 mindestens 132.669 € **im Jahr** brutto, während Österreicher mit Einkommen nahe dem unteren Ende der Einkommensverteilung (untere 10%) höchstens 5.449 € im Jahr verdienten. Das bedeutet, dass in 2013 das Größenverhältnis von den oberen 1% zu den unteren 10% 24,35 betrug.”
- Treatment B.1 (earn more): “Bitte tragen Sie Ihr persönliches monatliches Bruttoeinkommen hier ein: Wir meinen damit die Summe, die sich aus Lohn, Gehalt, Einkommen aus selbständiger Tätigkeit, Rente, Pension, Einkünften aus öffentlichen Beihilfen, Einkommen aus Vermietung, Verpachtung, Wohngeld, Kindergeld und sonstigen Einkünften **vor Abzug der Steuern und Sozialversicherungsbeiträge** ergibt.” [Then the survey displayed the following sentence:] “X% der österreichischen Verdiener verdienen mehr als Sie.”
- Treatment B.2 (earn less): “Bitte tragen Sie Ihr persönliches monatliches Bruttoeinkommen hier ein: Wir meinen damit die Summe, die sich aus Lohn, Gehalt, Einkommen aus selbständiger Tätigkeit, Rente, Pension, Einkünften aus öffentlichen Beihilfen, Einkommen aus Vermietung, Verpachtung, Wohngeld, Kindergeld und sonstigen Einkünften **vor Abzug der Steuern und Sozialversicherungsbeiträge** ergibt.” [Then the survey displayed the following sentence:] “X% der österreichischen Verdiener verdienen weniger als Sie.”

### English Translation

- Treatment A.1 (99/50): “In 2013, Austrian individuals with incomes in the top 1% earned at least 132,669 euros **annually** before taxes while Austrian individuals with incomes in the middle of the income distribution (where half of individuals earned more, and half less) earned 25,416 euros annually. This means that in 2013 the ratio between the top 1% of earners and those at exactly the middle was 5.22.”
- Treatment A.2 (99/10): “In 2013, Austrian individuals with incomes in the top 1% earned at least 132,669 euros **annually** before taxes while Austrian individuals with incomes near the bottom of the income distribution (bottom 10%) earned at most 5,449 euros annually. This means that in 2013 the ratio between the top 1% of earners and the bottom 10% was 24.35.”

- Treatment B.1 (earn more): “Please enter your gross monthly individual income before taxes in the box below. With this we mean the sum of all wages, salaries, income from freelance work, pensions, income from social security programs, income from rentals, child benefits and other income **before deducting taxes and social security contributions.**” [Then the survey displayed the following sentence:] “X% of Austrian individuals who have incomes earn more than you.”
- Treatment B.2 (earn less): “Please enter your gross monthly individual income before taxes in the box below. With this we mean the sum of all wages, salaries, income from freelance work, pensions, income from social security programs, income from rentals, child benefits and other income **before deducting taxes and social security contributions.**” [Then the survey displayed the following sentence:] “X% of Austrian individuals who have incomes earn less than you.”

## C.2 Germany

### German

- Treatment A.1 (99/50): “Deutsche mit Einkommen in den oberen 1% verdienten in 2015 mindestens 124.997 € **im Jahr** brutto, während Deutsche mit Einkommen in der Mitte der Einkommensverteilung (wo die Hälfte mehr, und die andere Hälfte weniger verdient) 21.000 € im Jahr verdienten. Das bedeutet, dass in 2015 das Größenverhältnis von den oberen 1% zu denjenigen, die genau in der Mitte lagen 5,95 betrug.”
- Treatment A.2 (99/10): “Deutsche mit Einkommen in den oberen 1% verdienten in 2015 mindestens 124.997 € **im Jahr** brutto, während Deutsche mit Einkommen nahe dem unteren Ende der Einkommensverteilung (untere 10%) höchstens 4.536 € im Jahr verdienten. Das bedeutet, dass in 2015 das Größenverhältnis von den oberen 1% zu den unteren 10% 27,56 betrug.”
- Treatment B.1 (earn more): “Bitte tragen Sie Ihr persönliches monatliches Bruttoeinkommen hier ein: Wir meinen damit die Summe, die sich aus Lohn, Gehalt, Einkommen aus selbständiger Tätigkeit, Rente, Pension, Einkünften aus öffentlichen Beihilfen, Einkommen aus Vermietung, Verpachtung, Wohngeld, Kindergeld und sonstigen Einkünften **vor Abzug der Steuern und Sozialversicherungsbeiträge** ergibt.” [Then the survey displayed the following sentence:] “X% der deutschen Verdienner verdienen mehr als Sie.”
- Treatment B.2 (earn less): “Bitte tragen Sie Ihr persönliches monatliches Bruttoeinkommen hier ein: Wir meinen damit die Summe, die sich aus Lohn, Gehalt, Einkommen aus selbständiger Tätigkeit, Rente, Pension, Einkünften aus öffentlichen Beihilfen, Einkommen aus Vermietung, Verpachtung, Wohngeld, Kindergeld und sonstigen Einkünften **vor Abzug der Steuern und Sozialversicherungsbeiträge** ergibt.” [Then the survey displayed the following sentence:] “X% der deutschen Verdienner verdienen weniger als Sie.”



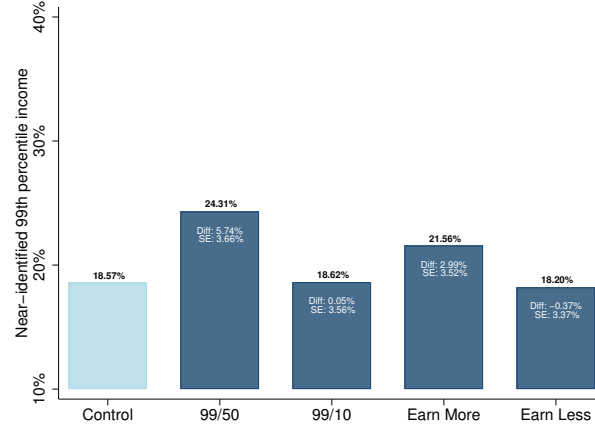
## English Translation

- Treatment A.1 (99/50): “In 2015, German individuals with incomes in the top 1% earned at least 124,997 euros **annually** before taxes while German individuals with incomes in the middle of the income distribution (where half of individuals earned more, and half less) earned 21,000 euros annually. This means that in 2015 the ratio between the top 1% of earners and those at exactly the middle was 5.95.”
- Treatment A.2 (99/10): “In 2015, German individuals with incomes in the top 1% earned at least 124,997 euros **annually** before taxes while German individuals with incomes near the bottom of the income distribution (bottom 10%) earned at most 4,536 euros annually. This means that in 2015 the ratio between the top 1% of earners and the bottom 10% was 27.56.”
- Treatment B.1 (earn more): “Please enter your gross monthly individual income before taxes in the box below. With this we mean the sum of all wages, salaries, income from freelance work, pensions, income from social security programs, income from rentals, child benefits and other income **before deducting taxes and social security contributions.**” [Then the survey displayed the following sentence:] “X% of German individuals who have incomes earn more than you.”
- Treatment B.2 (earn less): “Please enter your gross monthly individual income before taxes in the box below. With this we mean the sum of all wages, salaries, income from freelance work, pensions, income from social security programs, income from rentals, child benefits and other income **before deducting taxes and social security contributions.**” [Then the survey displayed the following sentence:] “X% of German individuals who have incomes earn less than you.”

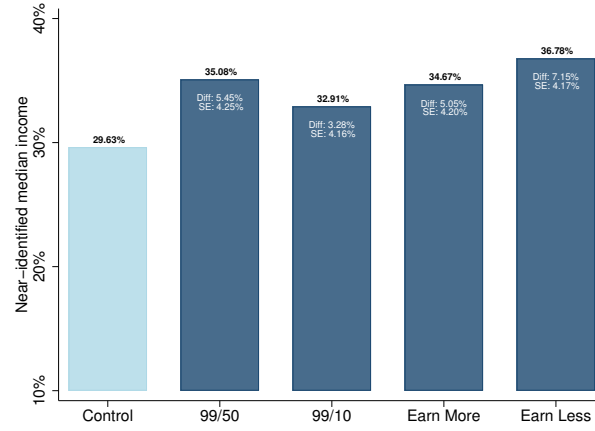
## D Additional Figures

Figure A.1: Knowledge about income thresholds by treatment (Austria)

(a) 99th Percentile



(b) 50th Percentile



(c) 10th Percentile

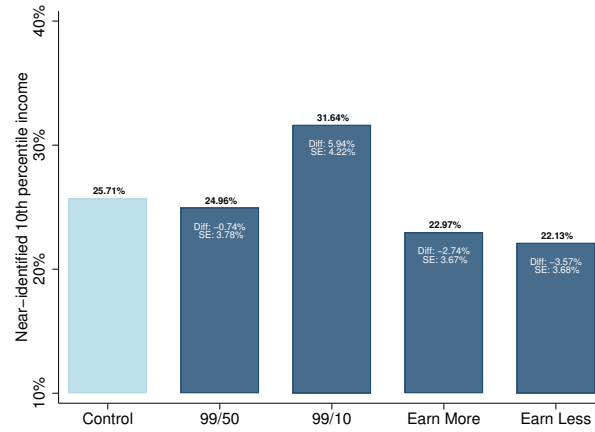
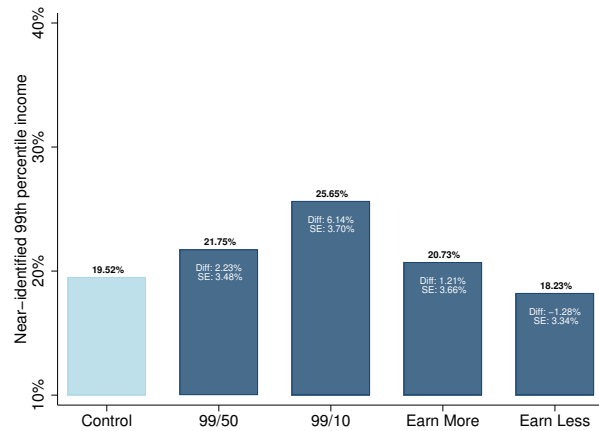
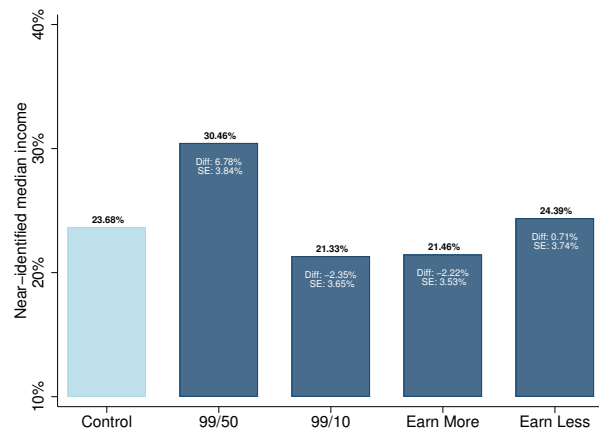


Figure A.2: Knowledge about income thresholds by treatment (Germany)

(a) 99th Percentile



(b) 50th Percentile



(c) 10th Percentile

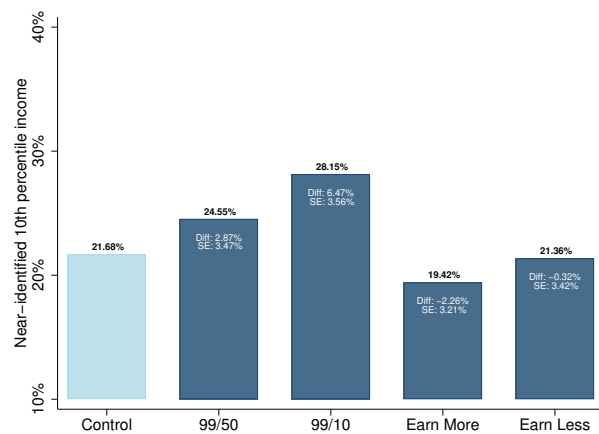
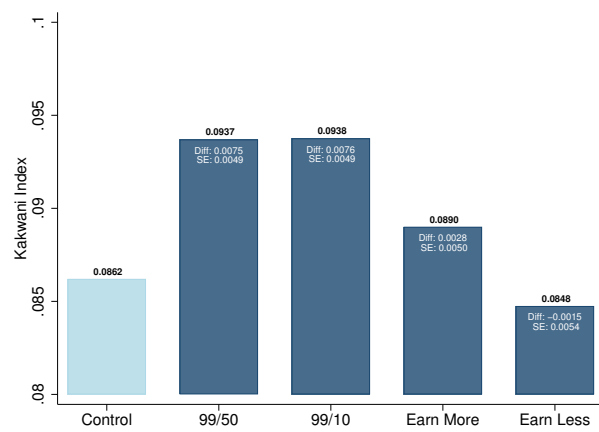


Figure A.3: Kakwani Index by Treatment

(a) Austria



(b) Germany

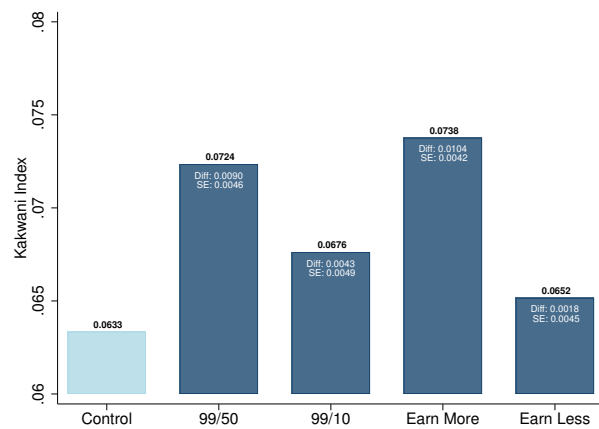
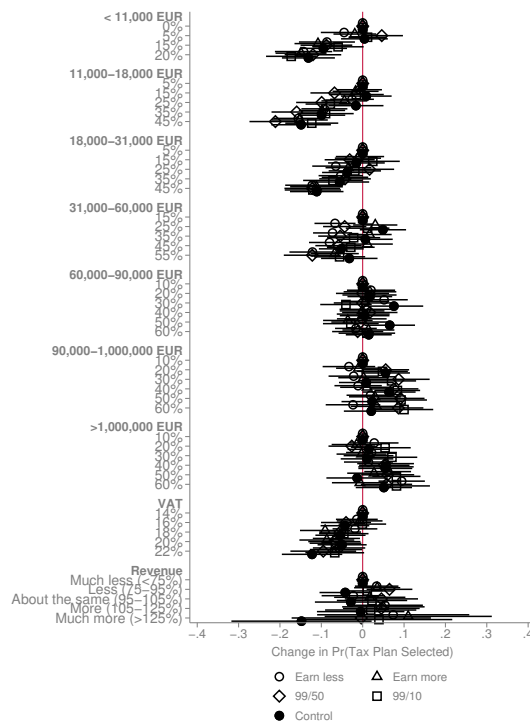


Figure A.4: Conjoint Estimates for All Treatments

(a) Austria



(b) Germany

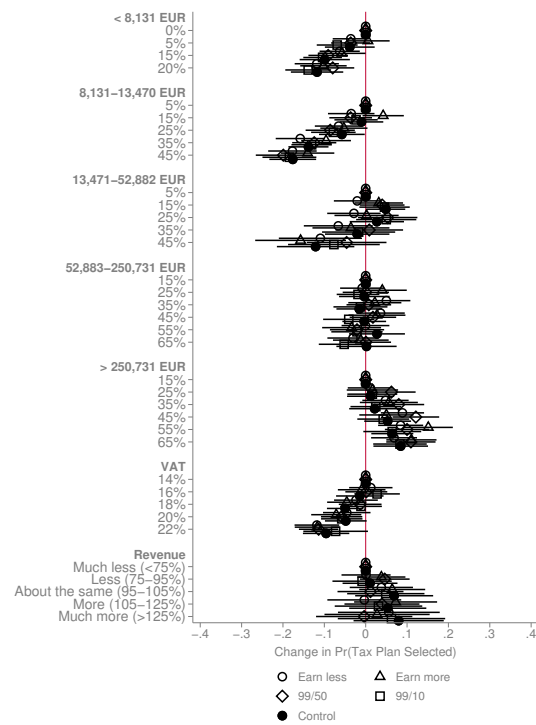
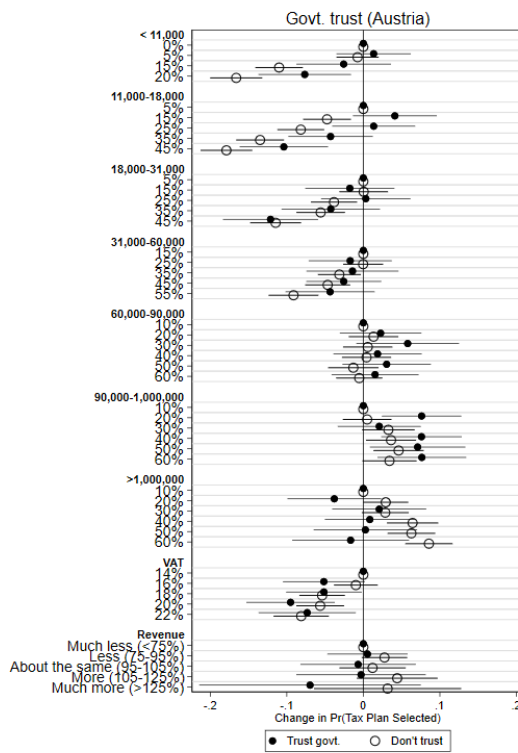


Figure A.5: Conjoint Estimates by Government Trust

(a) Austria



(b) Germany

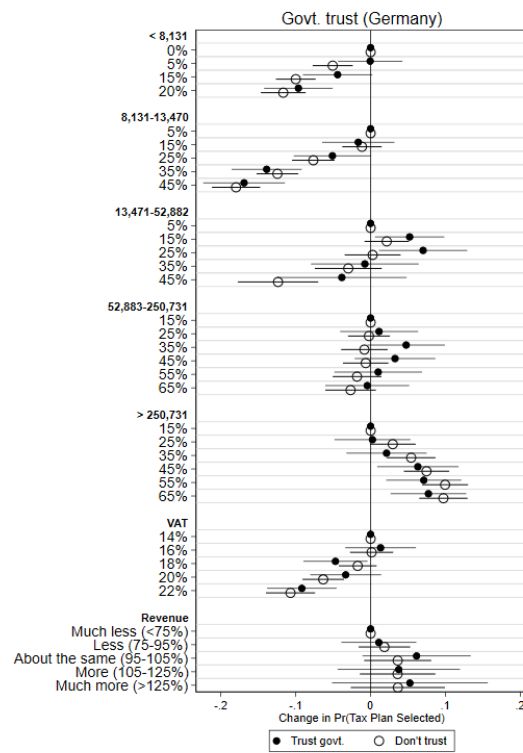
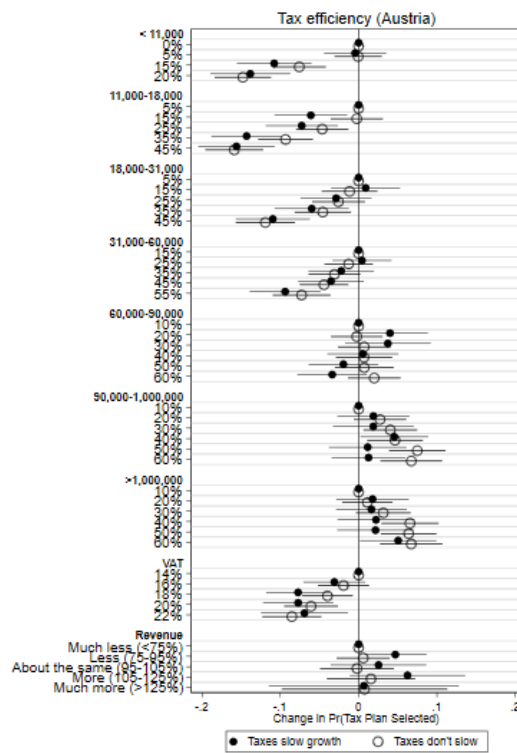


Figure A.6: Conjoint Estimates by Tax Efficiency

(a) Austria



(b) Germany

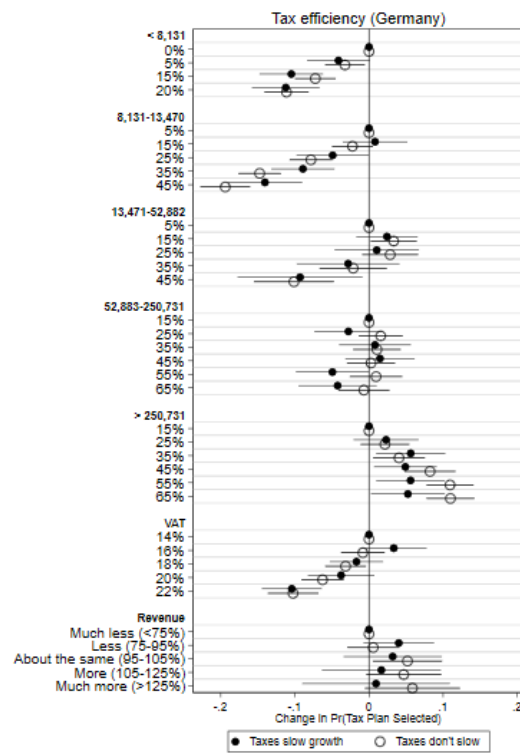
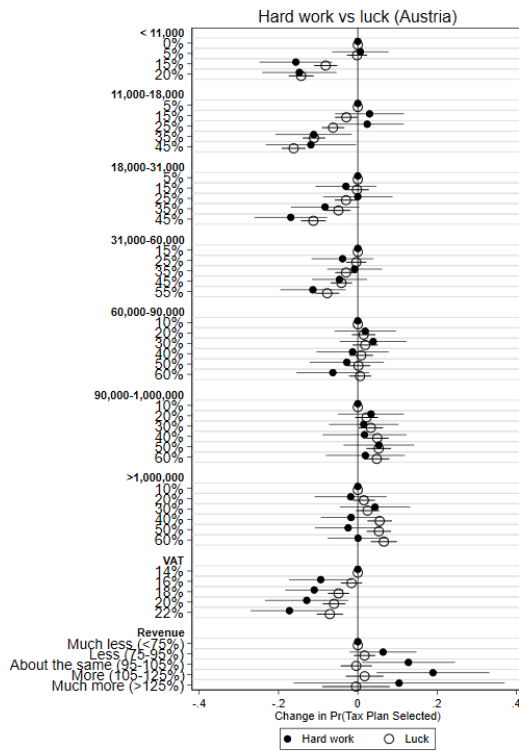
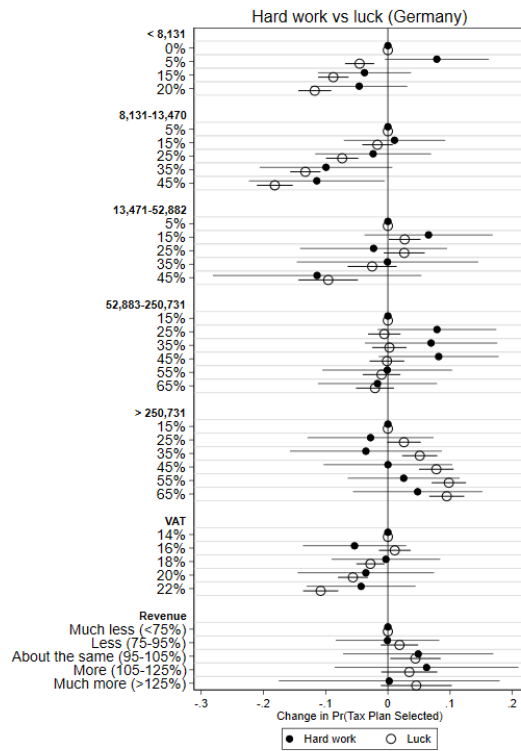


Figure A.7: Conjoint Estimates by Hard Work

(a) Austria



(b) Germany





## E Government Expenditures and Tax Opinions

The estimates that we present in the main body of the paper indicate that respondents in Austria and Germany have progressive income tax preferences but these preferences are not significantly more progressive than status quo policies. We further examine the extent to which a lack of information about inequality accounts for why preferences are not more progressive than they are.

Another potential explanation for why tax opinions are not more progressive than they are in the context of rising inequality is that individuals do not value what the revenue raised from progressive taxation is spent on. The menu and conjoint methods that we use in the main text do not explicitly bundle the revenue raised from taxes with specific categories of government spending. Our menu and conjoint methods did make salient the revenue consequences of the various tax policies but if the current actual or perceived distribution of spending is not on goods valued by respondents this may help explain why preferences are not more progressive. In this Appendix, we explore whether making spending categories more directly tied to tax proposals influences tax opinions.

### E.1 Government Expenditure Experiments

For this analysis, we employed a conjoint measurement approach nested within a survey experiment very similar to the design of the inequality experiments reported in the main text. This study was fielded by YouGov on a representative sample of 1,913 adults in the United Kingdom in July 2017 (see Appendix A for further details on the sample). We identified three categories of spending for which we wanted to estimate whether making these categories salient would affect tax policy preferences: *Welfare State*, *National Defense*, and *Higher Education and Research*.

The analysis has two objectives. First, to simply determine whether making spending bundles more salient affects tax preferences. Second, to learn if some types of spending reduce support for progressive taxation. Theoretically, it is, of course, possible that making any of these spending categories more salient would increase or decrease support for taxation generally and more progressive taxation specifically. Further, it is entirely likely that there may be significant heterogeneity across individuals with different spending preferences. That said, for our first objective, we simply want to know if making any of the spending categories more salient affects preferences on average compared to a control group which is equivalent to our studies in Austria and Germany in not explicitly linking revenue to a spending category. For the second objective, we hypothesized that making welfare state spending more salient would decrease support for progressive taxation because of differing beliefs about the deservingness of recipients (Gilens, 1999; Luttmer, 2001; Alesina and Glaeser, 2004; Alesina and Giuliano, 2011).

We randomly exposed our UK survey respondents to one of four potential frames (three spending treatments and control) immediately before they were asked to evaluate a conjoint tax experiment that otherwise was designed similarly to the Austrian and German conjoint experiments described in the main text.

- *Control*: “Many observers in the United Kingdom have discussed the possibility of changing the national tax bracket to address a number of issues. We are interested

in what you think about how income and corporate taxation in the United Kingdom should look.”

- *Welfare State*: “Many observers in the United Kingdom have discussed the possibility of changing the national tax bracket in order to spend more or less on **health, employment, and social security**. We are interested in what you think about how income and corporate taxation in the United Kingdom should look in light of the consequences of reform alternatives for spending on health, employment, and social security.”
- *National Defense*: “Many observers in the United Kingdom have discussed the possibility of changing the national tax bracket in order to spend more or less on **national defense**. We are interested in what you think about how income and corporate taxation in the United Kingdom should look in light of the consequences of reform alternatives for spending on national defense.”
- *Higher Education and Research*: “Many observers in the United Kingdom have discussed the possibility of changing the national tax bracket in order to spend more or less on **higher education and research**. We are interested in what you think about how income and corporate taxation in the United Kingdom should look in light of the consequences of reform alternatives for spending on higher education and research.”

## E.2 Results

We present estimates of the AMCE for different tax rates across the existing income tax brackets in the United Kingdom as a function of experimental exposure to different spending framings in Figure A.8. The estimates for the control group resonate with those for Austria and Germany in that they suggest that individuals have progressive tax preferences but not substantially more progressive than current policies. Respondents are particularly sensitive (negatively) to increases in tax rates on lower incomes. Notwithstanding our expectations that emphasizing different policy targets for government spending might influence public support for tax incidence, we recover little evidence that these spending frames systematically affected preferences for progressivity in the UK. As can be seen in the figure, for essentially all tax rates and across each tax bracket, respondent preferences do not vary systematically for any of the three explicit spending categories when compared against the baseline “control” results.<sup>24</sup> Of course, this is not to say that, were we to introduce a different set of potential spending targets, we might not uncover differential preferences for tax progressivity. This may be an important avenue for future research.

That said, the results from these framing experiments in the United Kingdom motivated us to exclude explicit expenditure targets from our German and Austrian studies. We doubt that including categories with a redistributive focus (such as the “welfare state” framing), would have systematically shifted our baseline estimates of tax progressivity discussed above. The lack of sensitivity to spending frames should be interpreted carefully. It means that there

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<sup>24</sup>There is some evidence that, relative to control, respondents who saw the “national defense” or “welfare state” framings reduced their support for rates of 10% or 20% on the Higher Rate income bracket; however, absent more systematic evidence of changing tax preferences, we do not take this as demonstrating a marked shift in demands for greater progressivity.

is no evidence that explicit framing matters but it should be clear that that may be because respondents have reasonable views that revenue is spent on these large categories already. The null result alone does not allow us to eliminate the possibility that what government spends revenue on helps account for why tax preferences are not more progressive though it is not consistent with that account. The null result further provides justification for excluding specific spending category references in our main Austrian and German studies.

Figure A.8: Expenditure Salience and Tax Preferences in the United Kingdom

