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## WORKING PAPER 239

# The Wealth Distribution and Redistributive Preferences: Evidence from a Randomized Survey Experiment

Nicolás Albacete, Pirmin Fessler, Peter Lindner

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# The Wealth Distribution and Redistributive Preferences: Evidence from a Randomized Survey Experiment\*

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## Abstract

We analyze a large-scale randomized experiment on redistributive preferences within the Austrian part of one of the most comprehensive wealth surveys - the Eurosystem Household Finance and Consumption Survey. Austria displays a nearly perfect laboratory for such an experiment as it has very low levels of wealth taxation and no inheritance tax but at the same time a rather high level of wealth inequality. We estimate the causal effect of information of one's own rank in the wealth distribution on preference for wealth taxation. Previous literature has mostly focused on the income distribution instead of wealth. We find the average treatment effect to be very small and insignificant. For the group however, who overestimates their own position in the wealth distribution information on their true rank has a strong positive effect, while for the group underestimating their position originally the effect turns out to be negative. Both combined show up as the null effect overall. As theory suggests, information thus has a different effect depending on prior beliefs.

**JEL Classifications:** H20, C92, D10, D31

**Key Words:** Wealth taxation, tax preference, experiment, HFCS

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\*The views expressed in this paper are exclusively those of the authors and do not necessarily reflect those of the OeNB or the Eurosystem.

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## Non-technical summary

Research on policy preferences with regard to redistributive policies has strongly increased in recent years. One reason is, that also inequality has risen to rather high levels, in particular when it comes to wealth inequality. Taxing wealth is one of the most contentious issues in modern tax policy.

At the same time, understanding preferences for policies is essential to design policies efficiently. Therefore, this paper aims to answer the following question: can we find a causal effect of information about one's own rank in the wealth distribution (and about the distribution of wealth in general) on the preference for wealth taxation?

We use the most recent wave of the Household Finance and Consumption Survey (HFCS) in Austria. The survey is coordinated and reviewed by the European Central Bank (ECB) and is the main wealth survey in Europe used by international organizations and policy makers as well as academic researchers. Within this framework we set up a customized randomized experiment to answer the research question. To this extend we asked all households the same set of questions concerning wealth taxation but only 50% of households were randomly informed about the net wealth distribution and their position therein.

We find effects of the information of one's own position in the wealth distribution on preferences for taxation to be overall small and insignificant. However, the overall effect consists of different local effects on two groups: a larger group who underestimates or correctly estimates their position in the wealth distribution. In their case the information consists of the knowledge that they are actually higher up in the wealth distribution than they thought. The treatment effect for them is on average negative; they are less likely in favor of taxation than without treatment. A smaller group overestimates their position in the wealth distribution. If treated they learn, that they actually are on a lower step on the wealth ladder. The average treatment effect in their case is positive; they are more likely in favor of taxing wealth. This finding is consistent with theory. If the treatment makes you think to be affected by a tax with higher probability or to a larger degree than you thought, you will more likely be against the tax. As theory suggests, information thus has a different effect depending on prior beliefs.

We contribute to the literature in several dimensions: To the best of our knowledge, we are the first to analyze a randomized experiment on redistributive preferences within a state of the art representative wealth survey. We also consider it a main advantage of our survey compared to many online experiments in the redistributive preferences literature, that we also have rather extensive metadata to control and analyze the process of unit- and item non-response. Furthermore, we are able to use these data to personalize the treatment based on calculations using already given answers on wealth during the survey itself. We are also the first focusing on the wealth distribution and preferences with regard to the taxation of wealth (instead of income). And finally, we use an almost ideal laboratory for our experiment: Austria

has hardly any wealth taxation and no inheritance tax, but a rather high degree of wealth inequality.

The results found show that information about the wealth distribution per se is not able to change preference for taxation. Only when this information is targeting certain groups (although they might be hard to identify) support for such a policy might increase.

Future research could concentrate on the identification of the reasons for this findings. Although we are confident with regard to the external validity of our results, different cultural or institutional settings in other countries might lead to different results. This paper gives an example of our conviction that experiments within large scale surveys can enrich the literature on redistributive preferences usually based on access panel experiments, which do not fulfill the high standards of data collection that large (wealth) surveys (such as the SCF or HFCS) deliver.

# 1 Introduction

Understanding preferences about policies is essential to design policies efficiently. Research on policy preferences with regard to redistributive policies has strongly increased in recent years. One reason is, that also inequality has risen to rather high levels, in particular when it comes to wealth inequality. Taxing wealth is one of the most contentious issues in modern tax policy. Based on a randomized survey experiment we investigate the causal effect of information about one's own rank in the wealth distribution (and about the distribution of wealth) on the preference for taxation.

We contribute to the literature in several dimensions: To the best of our knowledge, we are the first focusing on the wealth distribution and preferences with regard to the taxation of wealth (instead of income) within such an experimental setting. We use an almost ideal laboratory for our experiment: Austria has hardly any wealth taxation and no inheritance tax, but a rather high degree of wealth inequality. The results therefore are relevant for policy discussions across many industrialized countries. The results are also interesting for the academic literature on preferences for redistribution, which has mostly focused on support for income taxation. We are also the first to analyze a randomized experiment on redistributive preferences within a state of the art representative wealth survey. While so far the literature was mostly based on online survey data coming from access panels this allows us to make statements about a well defined population of interest sampled in a state of the art way based on high quality data gathered by computer assisted personal interviewing. We therefore have high quality information on income and wealth and a large number of characteristics of the surveyed individuals and their households. We consider it a main advantage of our survey compared to many online experiments in the redistributive preferences literature, that we not only have an arguably representative population sample but also rather extensive metadata to control and analyze the process of unit- and item non-response. Specifically we are able to use these data to personalize the treatment based on calculations using already given answers on wealth during the survey itself. External validity of our results should therefore be rather credible.

Although there are extensive studies focusing on redistributive preferences for income we are not aware of any study doing that for wealth. One may expect different results for wealth than for income. During the last decades, wealth and income have developed differently. As prominently showed by [Piketty \(2018\)](#), the capital-to-income ratio has been rising, indicating a growing importance of capital accumulation and inherited wealth. The functions of wealth are also different from those of income. While income can be either used for consumption or for saving, the functions of wealth are manifold: it can serve as a resource of consumption in times with little or no income, as a source of non-cash income (e.g. home-ownership), as a source of considerable cash income (e.g. ownership of self-employed businesses and/or real

estate wealth for renting), as a source of status, of transfer, and/or power (see [Fessler and Schürz \(2021\)](#)). All these peculiarities about wealth may make households react in a different way to an information shock about their wealth rank than to one about their income rank.

We use the most recent wave of the Household Finance and Consumption Survey (HFCS) in Austria, coordinated and reviewed by the European Central Bank (ECB). The survey collects information on the whole balance sheet of households and strives for the highest quality standards in terms of methodology applied in all steps of data production. It is comparable to its role model the US Survey of Consumer Finances and is the main wealth survey used by international organizations and policy makers as well as academic researchers. Within this framework we set up a customized randomized experiment in order to investigate whether information about the wealth distribution and one's own position therein causally impacts the preferences on taxation. To this extend we asked all households the same set of questions concerning wealth taxation but only 50% of households were informed about the net wealth distribution and their position therein. The randomization was implemented stratified and a priori so that each selected household in the sample had a 50% chance of being selected into the treatment group. Closest to our work is the work of [Cruces et al. \(2013\)](#), [Brown-Iannuzzi et al. \(2015\)](#), [Karadja et al. \(2017\)](#), [Fernández-Albertos and Kuo \(2018\)](#) and [Fehr et al. \(forthcoming\)](#). All these studies reveal a similar mechanism which we retrieve in case of wealth for an information treatment on income. For example, [Fernández-Albertos and Kuo \(2018\)](#) find that revealing the true rank in the income distribution increases support for tax progressivity, but mainly for poor individuals who in fact learn that they are poorer than they thought. [Brown-Iannuzzi et al. \(2015\)](#) find that people who overestimate their income position report higher demand for redistribution upon being informed about their true position, while the opposite holds for those who underestimate their position.

We find effects of the information of one's own position in the wealth distribution on preferences for taxation to be overall small and insignificant. However, the overall effect consists of different local effects on two groups: a larger group who underestimates or correctly estimates their position in the wealth distribution.<sup>1</sup> In their case the information consists of the knowledge that they are actually higher up in the wealth distribution than they thought. The treatment effect for them is on average negative; they are 4 percentage points less likely in favor of taxation than without treatment. A smaller group overestimates their position in the wealth distribution. If treated they learn, that they actually are on a lower step on the wealth ladder. The average treatment effect in their case is positive; they are 8 percentage points more likely in favor of taxing wealth. Put differently, for those who underestimated their rank in the wealth distribution the statistically significant information treatment effect leads to an about 12 percentage points lower probability of being in favor of a wealth tax

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<sup>1</sup>The tendency of respondents to misclassify their household with a strong bias towards the middle of the wealth distribution has been already documented in [Fessler et al. \(2016\)](#) and [Fessler et al. \(2018\)](#).



than for the group overestimating their rank. These findings are consistent with theory. If the treatment makes you think to be affected by a tax with higher probability or to a larger degree than you thought, you will more likely be against the tax, and vice versa. As theory suggests, information thus has a different effect depending on prior beliefs.

In the literature theoretical as well as empirical investigations which are related to our analysis can be found. Starting with the more theoretical contributions, [Meltzer and Richard \(1981\)](#) provide in their classic work a (general equilibrium) model to show that the median voter in terms of income is decisive for the size of the government in terms of spending as well as taxes since there is a balanced budget. The higher the inequality and thus the mean income is away from the median income the higher is the level of government spending and thus its size. Here we can see the theoretical connection between inequality and redistribution. Using a neoclassical type model [Benabou and Ok \(2001\)](#) rationalize the hypothesis that a poor median voter refrains from redistribution because of enough mobility and her expectation about this. It seems enough if the children have a prospect of high income. Income dynamics for that need to be concave so that in absolute terms poor incomes increase more and risk-aversion needs to be low enough as well. More recently, [Iversen and Soskice \(2015\)](#) use a model to argue that the generally thought idea of inequality favouring “left” of center politics needs not to hold. The mechanism works through information; more inequality means less information and the information is biased to the right. Uninformed voters might position themselves in the center and thus inequality might actually yield more support for “right” of the center politics. This might explain why so many people in Austria are against taxation of inheritance and wealth.<sup>2</sup>

A relatively general view on redistribution, without focusing on either income, inheritances, or wealth, is taken by other authors. [Gimpelson and Treisman \(2017\)](#) basically make two points. First, they show that the perception of inequality is far away from the “true” inequality in a society. They use data from various countries to argue for that. Then they correlate inequality as well as perception of it with political preferences to see that it is actually the latter that is significant and not the former. [Starmans et al. \(2017\)](#) argue that people do not care about inequality but rather fairness. It seems, that at the actual level of inequality people prefer less inequality but as reported not completely equal societies but a ‘moderate’ level of inequality. [Alesina et al. \(2018\)](#) use an experimental design with a survey (including follow-up) in combination with register data on inter-generational mobility to study the connection between preference for redistribution and mobility in a society (US, SE, IT, FR and UK). The authors report that shifting the belief of inter-generational mobility has no significant overall effect on the preference for redistribution. Only for left leaning people this effect is significant. [Kerr \(2014\)](#) investigate the correlation between the level of income inequality and the support for redistribution, and show that more unequal societies have less support for redistribution, but if inequality increases the support also increases.

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<sup>2</sup>[Alesina and Giuliano \(2011\)](#) provide a theoretical as well as empirical overview.

So far most of the literature concentrates on income and income taxation. For example, [Ballard-Rosa et al. \(2017\)](#) provide an overview of the preferences of Americans for progressive income taxation that is more variable (elastic) at the top than at the bottom. [Luttmer and Singhal \(2011\)](#) concentrate on how large the impact of the cultural background is on re-distributional taxation and [Bailey et al. \(2013\)](#) analyse the preference for redistribution as well as attitudes towards welfare recipients in connection to neighborhood effects (in the UK). The authors find additional to the normal income and socio-demographic effects there seems to be a correlation between local deprivation and the support for redistribution. [Nair \(2018\)](#) shows people, who are informed about the “real” inequality, are more in favour of aid policies and generally policies that help poorer nations. This is actually somewhat in contrast to our results. The reason for this different finding might be that it is not about taxation but spending or domestic agricultural policy. [Fisman et al. \(2017\)](#) analyse the preference for taxation of income and wealth using an online survey tool. They find that wealth should be taxed (say around 1-2%) and income should be taxed around 16%.

Fewer contributions tackle inheritance taxation. In a very recent work, [Bastina and Waldenström \(2019\)](#) use an experiment in a survey in Sweden to show that support for inheritance taxation in their main specification is increased by about 8pp starting from a low support of 24,5% through providing information to the respondents. [Kuziemko et al. \(2015\)](#) use an experiment to analyze the effect of information has on various political preferences. Among other results they report that there is a large effect on the estate tax. Also [Sides \(2016\)](#) designs and evaluates an experiment in a political (online-)survey in the U.S. to evaluate factual information as well as moral arguments on the preference for estate taxation. It is found that both work as expected, thus information increases support and argument usually work in the right direction, but still no large majority for estate tax.

As mentioned above more closely related to our paper are [Cruces et al. \(2013\)](#), [Brown-Iannuzzi et al. \(2015\)](#), [Karadja et al. \(2017\)](#), [Fernández-Albertos and Kuo \(2018\)](#) and [Fehr et al. \(forthcoming\)](#). [Cruces et al. \(2013\)](#) show that there is a mean reversion for the perception of an individuals income rank. The authors use a special purpose survey from Argentina (actually Buenos Aires) to check miss-perception of the income rank to show that poor participants over- and affluent under-estimate their rank and go on with a experimental design to investigate the preference for redistribution with treatment of people having been told their rank. They reveal that only the ones that have over-estimate are impacted by the treatment to demand higher redistribution. [Karadja et al. \(2017\)](#) use Swedish register data together with a randomized survey to find that being informed about ones position in the income distribution shifts political preferences to the right (less redistribution, more conservative party, insignificant decrease tax). This finding comes from people that were right of the center to begin with. They also show the bias in perception where an individual is located in the income distribution, as we can do for wealth. Finally, [Fehr et al. \(forthcoming\)](#) do not find evidence that correcting

misperceptions on global relative income affects support for policies related to global inequality. However, they find that individuals care about their national income rank: at least among the left-leaning respondents, individuals who find out that they are higher in the national income distribution tend to decrease their support for global redistribution.

Comparing our estimated effects with those in the studies mentioned focussing on the perceived rank in the income distribution we can see that they are similar: overall the effects are small and statistically insignificant, but for those who underestimate their position in the respective distribution the effects are negative and for those who overestimate it they are positive. However, when comparing the magnitudes of these effects one can see that they are larger and statistically more significant in our study focusing on the wealth distribution than in the other studies focusing on the income distribution. It is difficult and beyond the scope of our paper to speculate what is driving these differences in effect sizes. Any of the peculiarities of wealth explained at the beginning of this section could play a role.

We structure the paper as follows. First we introduce our experimental design, the data, and Austria as a laboratory in section 2. The main part of the paper is section 3, which shows and discusses the results. Section 4 discusses robustness checks and additional results. Concluding remarks sum up the article (section 5).

## 2 The Survey Experiment

We set up a customized random experiment within the Austrian part of the most comprehensive European wealth survey, the Household Finance and Consumption Survey (HFCS). The randomization was implemented a priori so that each selected household in the sample had a 50% chance of being selected to the treated group. This selection was stratified by federal state to prevent that we end up with a large regional disparity just by chance. The realization of the number of treated households over federal states, however, is not exactly 50% in the final sample due to differences in unit non-response behavior.

### 2.1 Experimental Set-Up

The group of non-treated households went through the questionnaire from one question to the next without a break before the questions on taxation.

The treated group on the other hand were shown specified information on net wealth. This information was threefold:

1. "Your net wealth recorded in the HFCS is  $XXX\text{€}$ ." Here the actual net wealth was calculated based on all information provided by the household and provided in  $XXX$ . In case of item non-response some wealth component potentially was missing.

2. Depending on the level of wealth the household was assigned to a net wealth decile (according to the distribution of the second wave HFCS-information) and then was appropriately shown one of the following three statements:
  - "You are in the first decile of the net wealth distribution in Austria, meaning that more than 90% of households own more wealth than you." (in case the households belongs to the first net wealth decile)
  - "You are in the  $YYY$ th decile of the net wealth distribution in Austria, meaning that more than  $ZZZ\%$  of households own more wealth than you." (in case the households belongs to the  $YYY$  net wealth decile, and thus the according  $ZZZ\%$  of households own more)
  - "You are in the tenth decile of the net wealth distribution in Austria, meaning that less than 10% of households own more wealth than you." (in case the households belongs to the top net wealth decile)
3. Finally, households were presented a card showing various percentiles (see table 1) and given the information that "10% of households in Austria own more than about 520.000€."

Table 1: Show card: "Table 1: Net wealth percentiles"

	Net wealth in thous. €
10 <sup>th</sup> Percentile	1,0
20 <sup>th</sup> Percentile	6,4
30 <sup>th</sup> Percentile	15,8
40 <sup>th</sup> Percentile	34,4
50 <sup>th</sup> Percentile	85,9
60 <sup>th</sup> Percentile	162,5
70 <sup>th</sup> Percentile	252,5
80 <sup>th</sup> Percentile	363,8
90 <sup>th</sup> Percentile	518,1

Source: HFCS 2017, OeNB.

Thus depending on the actual level of wealth reported in the survey the information a households gets varies in its content and is thus customized. That, in our view, best mimics the real world experience of a person since all policy as well as the distribution of wealth is state dependent in the sense that it depends on one's own level of wealth and thus the position in the distribution. The HFCS is an extraordinary good vehicle for such an experimental set-up.

In this experiment all financially knowledgeable persons (FKP, i.e. the individual best informed about household finances and answering at least all household level questions) are

asked about their attitudes towards taxation. These questions cover preferences on wealth and inheritance taxation, its level, as well as a potential exemption threshold. The aim of the set-up is to identify the causal link between knowledge of distributional information and taxation preferences. Put the other way around we ask: is the preference for taxation causally influenced by what an individual knows about the wealth distribution?

When asking the households about their attitudes towards taxation we intentionally do not restrict them to answer a very detailed question. In order to capture the main feeling about tax preferences of the households, we first ask a very general question and then a specification of it. For example, when it comes to preferences on wealth taxation we first ask the households whether they support the introduction of a wealth tax in Austria or not. After they stated their support of a wealth tax they are asked about potential thresholds for such a tax, namely the amount policymakers should leave untaxed.

## 2.2 Data Collection

The Household Finance and Consumption Survey (HFCS) is a euro area (and beyond) wide initiative - coordinated and reviewed by the European Central Bank (ECB) - to collect information on the whole balance sheet of households. The aim is a full harmonization (ex ante) of the survey for comparability reasons. It aspires for the highest quality standards<sup>3</sup> in terms of methodology applied in all steps of data production. The survey is intended to be conducted every three years. It covers a large internationally agreed set of core variables and some additional information at the country level. The Experiment was implemented in the third wave conducted in 2017 in Austria (AT).<sup>4</sup>

The third wave of the HFCS in AT comprises 3.072 successful interviews at the household-level. Based on the sample design household weights are constructed correcting for survey design, unit non-response and poststratification. Item non-response in the HFCS is dealt with a multiple imputation approach based on chained equations. In one of our robustness checks we also take advantage of a large number of variables gathered in the survey and take into account both complex survey weights and multiple imputations.

The questionnaire of the HFCS in Austria collects (in the following order) information on the general characteristics of the households, consumption, real assets combined with mortgages, other liabilities, business participations, financial assets, and asset transfers. This information at the household level is supplemented for each individual (with at least 16 years of age) with data on employment income and pensions. At the end of the questionnaire the randomized trail was implemented.

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<sup>3</sup>Usually regarded as the methodology implemented by the Survey of the Consumer Finances (SCF) of the U.S. Federal Reserve.

<sup>4</sup>An extensive overview about the methodology and a general overview of the results of the survey is provided in [Albacete et al. \(2018\)](#) and [Fessler et al. \(2018\)](#) respectively.

Fieldwork of the 2017 wave took place from November 2016 to July 2017. All interviews were Computer-Assisted Personal Interviews. Interviewers had a full day of training and most of them already have experience with this specific survey while all have experience as interviewers. All households received a personalized letter from the governor of the Austrian Central Bank (Oesterreichische Nationalbank) and an information leaflet distributed by the survey company before they were contacted by the interviewers. The interviewers had instructions to make up to five contact attempts per household over a period of at least three weeks. At least two of these attempts were to be made in person, at least one attempt was to be made on a weekend and another outside regular working hours (9:00 a.m. to 5:00 p.m.). Interviewers are closely monitored during fieldwork and follow-up queries by telephone take place extensively. The response rate achieved was 49.8%. Note, that also information is gathered for those households not taking part in the survey, which is then used to calculate non-response weights. The methodological details can be found in [Albacete et al. \(2018\)](#) as well as on the surveys website [www.hfcs.at/en/](http://www.hfcs.at/en/).

### 2.3 Austria as Laboratory

For several reasons Austria is an ideal laboratory to conduct a survey experiment on redistributive preferences regarding wealth taxation.

First, wealth taxation is really low in Austria in an international comparison. So the question on the preference with regard to a wealth tax should be straight forward to individuals as there was hardly any wealth taxation for a long time. A general tax on wealth was abolished in the 1990ies. [Gaisbauer et al. \(2011\)](#) provide a detailed overview on the stepwise abolishment of most forms of wealth taxes in Austria. Inheritance and gift tax has been abolished in 2008. Misconceptions about the status-quo with regard to wealth taxation are therefore rather unlikely. [Figure 1](#) shows tax as percent of revenues including both property as well as transfer taxation from the OECD.<sup>5</sup> It seems obvious that over the whole time-span presented Austria has one of the lowest level of taxation on wealth.<sup>6</sup>

Second, wealth inequality is rather high and relatively stable in recent years in AT. Again, therefore strong misconceptions about the current state of inequality are less likely and understanding one owns position with regard to potential tax thresholds should be relatively easy (see e.g. [Fessler et al. \(2018\)](#) and the HFCS statistical tables of the ECB).

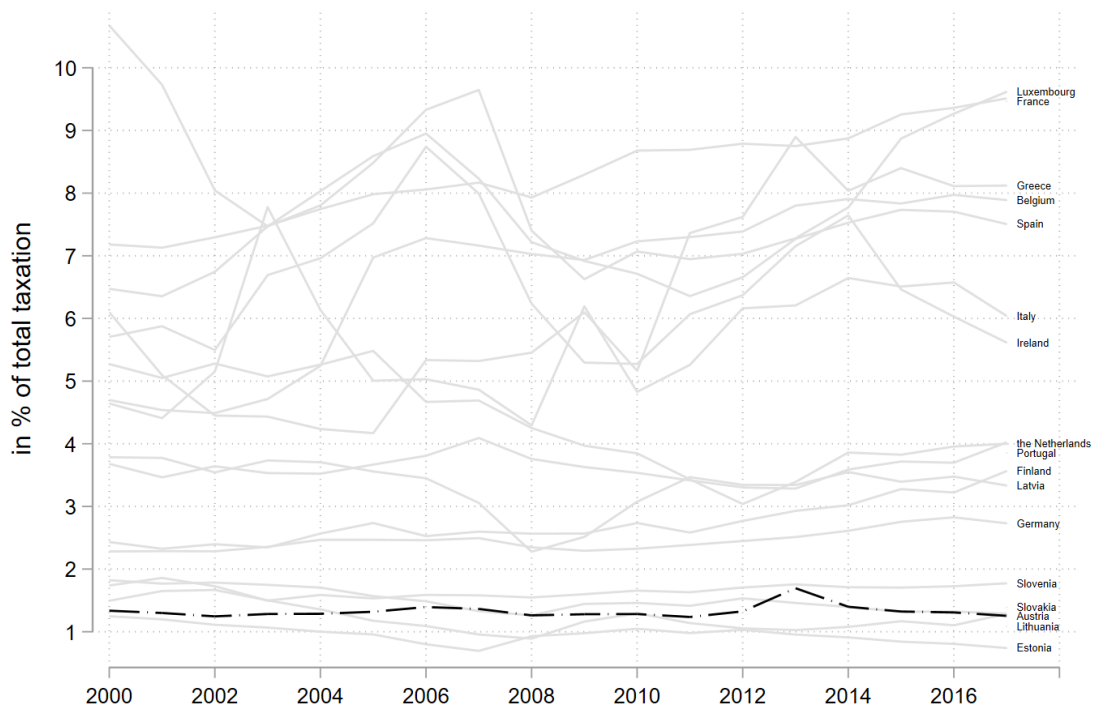
Third, the portfolios of most Austrian households are rather simple. With regard to financial assets most households hold current (99.5%) and savings accounts (86.6%). Retirement provision is mostly organized via the state pension system. That is why only 12.3% of households hold private pension funds, only 8.5% mutual funds, 5% stocks and 2.6% bonds. Holding

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<sup>5</sup>OECD (2019), Tax on property (indicator). doi: 10.1787/213673fa-en (Accessed on 16 January 2019)

<sup>6</sup>This wealth taxation information includes estate taxation into the definition of wealth taxation.

Figure 1: Wealth taxation - an international perspective over time



*Notes:*

(i) *Source:* OECD (2019), Tax on property (indicator) for euro area countries (17). doi: 10.1787/213673fa-en (Accessed on 16 January 2019).

(ii) Highlighted in black is Austria.

(iii) Property tax is shown in relation to total taxation.

debt is relatively uncommon too. Only 34% of households hold any debt (16.5% collateralized debt and 20.4% uncollateralized debt including credit card debt and overdrafts). Most households have few items in their set of financial assets which will be comparably easy to overview. The same is true for real assets. Only 46% own their main residence, only 13% have other real estate than the main residence and only 7% hold any form of direct business participation.

### 3 Results of the Survey Experiment

Three variables gathered within the HFCS are at the core of our survey experiment: The experimental information treatment described in section 2, the self assessment regarding one's own rank in the wealth distribution and the preference for wealth taxation. While the information treatment is our intervention to assess how information changes redistributive preferences and the preference for a wealth tax (YES/NO) is our main outcome variable, the self-assessment in the wealth distribution which the respondent provides well before the treatment helps us to identify the nature of the treatment for the individual. It can (i) confirm the believe of the individual about her own position in the wealth distribution or (ii) contradict her believe. If it contradicts her believe, she might have either underestimated or overestimated her own position in the wealth distribution. The theory suggests, that if she has underestimated her own position and the treatment therefore shifts her believe up the wealth ladder, she will more likely be against wealth taxation than without the treatment. So the treatment effect for her should be negative. If she overestimated her wealth position, the treatment shifts her believe down the wealth ladder. She thought she was relatively richer than she really is and the theory suggests that therefore under treatment she should more likely be in favor of wealth taxation than without the information about her actually lower position.

Out of the 3,072 respondents in the net sample 1517 received the treatment while the other 1555 did not receive it. The slight differences stems from random differences in non-response patterns. In the case of the treatment naturally, no missing values due to item non-response exist. The treatment was personalized as it confronts the respondent with her position in the wealth distribution. Therefore it relies on previous answers on wealth and uses the sum of all wealth items of the full wealth survey to calculate the decile (of the last survey) in which the respondent falls given her answers. With regard to the rather sensitive question on the preference for wealth taxation 257 of the 3,072 respondents refused to answer or said they do not know. The question on the self-assessment in the wealth distribution was refused/not known by 71 individuals. Given some overlap in the missing patterns this leaves us with 2,768 respondents for our main analysis. Note that we deal with the topics of unit and item non-response in section 4. We consider it a main advantage of our survey compared to many online experiments in the redistributive preferences literature, that we not only have an arguably representative sample of the target population but also extensive meta-data to



Table 2: Self-Assessment and Personalized Treatment

Wealth Decile	Self-Assessment		Personalized Treatment	
	Count	Percent	Count	Percent
1	222	8.0	253	9.1
2	339	12.2	298	10.8
3	626	22.6	349	12.6
4	450	16.3	373	13.5
5	553	20.0	333	12.0
6	286	10.3	262	9.5
7	205	7.4	260	9.4
8	69	2.5	241	8.7
9	14	0.5	155	5.6
10	4	0.1	244	8.8

*Notes:* This table shows the distribution of self-assessment and personalized treatment.

*Source:* HFCS 2017, ECB, OeNB.

control and analyze the process of unit- and item non-response.

### 3.1 Summary Statistics of Main Variables

Table 2 shows the distribution of self-assessment and personalized treatment. Both are not equally distributed across wealth deciles. In the case of self-assessment the reason is that individuals have a tendency to place themselves in the (lower) middle of the distribution. This has been already documented in [Fessler et al. \(2016\)](#) and [Fessler et al. \(2018\)](#).

In the case of the personalized treatment the reasons are unit and item non-response, weighting and misreporting, but also the fact that the preliminary wealth level calculated bases on the previous answers of the respondent is sorted into the wealth distribution of the last survey which we use as a proxy for the wealth distribution at the time of the survey wave we use. However, clearly the tendency to the middle is much smaller than in the self-assessment case and the allocation into wealth deciles is much closer to the true 10% each. The personalization of the treatment based on the respondents already given answers on her households wealth seems to work quite well. For additional robustness checks comparing these calculations to the distribution which finally resulted from the survey see section 4.

Table 3 shows a transition matrix combining the self-assessment to the personalized treatment. Every row depicts the probabilities a respondent faced that given her self-assessment her household has a certain level of wealth which leads to a certain personalized treatment. Put simply, the transition matrix shows the degree of under- or overestimation of one's own wealth position. The area below the diagonal means overestimation, the diagonal means a cor-

Table 3: Self-Assessment and Personalized Treatment

		Personalized Treatment										
		1	2	3	4	5	6	7	8	9	10	Total
Self-Assessment	1	<b>45.5</b>	28.8	10.8	4.5	5.4	2.3	0.0	1.8	0.5	0.5	100
	2	17.4	<b>25.4</b>	20.9	12.4	9.7	5.0	2.9	2.9	1.8	1.5	100
	3	5.9	11.0	<b>21.1</b>	23.0	13.9	9.4	6.2	3.8	2.9	2.7	100
	4	4.2	6.7	13.1	<b>18.2</b>	17.1	10.9	13.6	8.0	3.3	4.9	100
	5	4.5	6.7	6.1	10.5	<b>11.4</b>	15.0	13.0	15.4	5.6	11.8	100
	6	1.7	1.7	6.3	8.0	14.7	<b>9.4</b>	12.6	17.1	14.0	14.3	100
	7	3.4	2.4	5.4	4.4	6.3	9.3	<b>17.6</b>	10.7	14.1	26.3	100
	8	0.0	2.9	0.0	5.8	8.7	4.3	8.7	<b>14.5</b>	17.4	37.7	100
	9	0.0	0.0	0.0	7.1	0.0	0.0	0.0	7.1	<b>14.3</b>	71.4	100
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	<b>75.0</b>	100

*Notes:* This table shows the transition matrix from self-assessment to personalized treatment. Rows therefore sum up to 100 Percent.

*Source:* HFCS 2017, ECB, OeNB.

rect assessment and the area above the diagonal means underestimation of one’s own wealth position.

That is how we can characterize the different implicit contents of the treatment. For those below the diagonal the information of the treatment is an update to the individuals belief that her household is actually relatively poorer than she thought. Those on the diagonal get their prior belief view confirmed, while those above the diagonal are informed that they actually rank higher in the wealth distribution than they estimated.

One can clearly see that most weight of the matrix is close to the diagonal. Individuals have some clue about their households position in the wealth distribution. However, the weight above the diagonal is much higher than the weight below. Individuals have a tendency to underestimate their own position, while the tendency to overestimate is much lower. While about 19.8% (17.8 using population weights) of the respondents lie on the diagonal, about 57.9% (62.5 using population weights) underestimate their position and about 22.3% (19.8 using population weights) overestimate their position. If overestimation occurs, the extent is on average also smaller than in the case of underestimation.

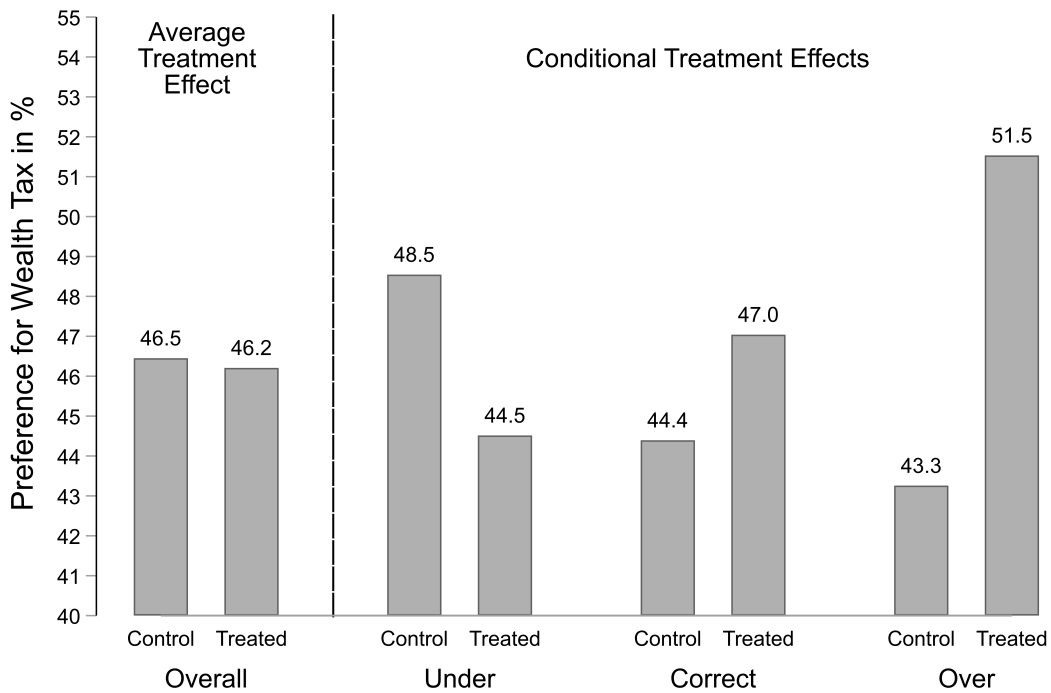
### 3.2 Main Results

Figure 2 shows the main result of our experiment at a glance.<sup>7</sup> First, the left part of figure 2 shows the level of support for wealth taxation for both treatment and control group. It turns out, that there is hardly any difference. If any average treatment effect (ATE) is visible, than

<sup>7</sup>From here on we use population weights in our analysis. See the appendix for unweighted results.

it is a small negative effect. Second, the right part of figure 2 shows the level of support for wealth taxation for both treatment and control group conditional on prior beliefs. While for the control group support is lower for people overestimating their wealth position (denoted “Over”), it is actually higher for the treated group. The treatment effect is negative for those who are confronted with actually being richer than they thought (denoted “Under”), while it is positive for those who are informed that they are actually poorer than they thought. Also for those who correctly estimated their wealth decile the effect is positive. The conditional effects for individuals who under- and over estimate are therefore as theory suggests. In case of those who are confirmed in their belief about their wealth position the effect is also positive. This could be a hint that they actually expected to be richer than they stated in the self-assessment question as the confirmation has an effect as if they overestimated their position.

Figure 2: Main Result: Treated versus Control in favor of Wealth Tax



Source: HFCS 2017, ECB, OeNB.

As a next step we perform a statistical analysis to see to what degree these effects are statistically significant. In order to keep interpretability as easy as possible throughout the following analyses we decided to use one major workhorse. We employ a fully integrated linear model with a functional form allowing for heterogeneous treatment effects and straight forward

interpretation, which was proposed for randomized experiments in [Imbens and Rubin \(2015\)](#).

To allow the treatment effect to be heterogeneous across different individuals, we interact the treatment dummy with all covariates in  $X$ . This model allows the treatment effect to be different for individuals with different characteristics. As [Imbens and Rubin \(2015\)](#) propose, we include the covariates in deviations from the sample average, so that the estimated coefficient on the treatment indicator  $\beta$ , can be interpreted as an estimate for the average treatment effect of the treatment in the population. The effects estimated for the interaction terms  $\theta$  convey the heterogeneity of the treatment effects across subpopulations and can be added directly to the average treatment effect. Implicitly this specification allows for separate slope coefficients for treated and control regression functions.

$$Y_i = \alpha + \beta \cdot T_i + (X_i - \bar{X})\gamma + T_i(X_i - \bar{X})\theta + \varepsilon_i \quad (1)$$

In equation (1),  $\varepsilon_i$  denotes an error term with mean zero and  $\sigma^2$  variance. For our main results  $X$  only includes dummies for belonging to the group of individuals who correctly estimate their households position in the wealth distribution and belonging to the group who overestimates it, while the largest group, the underestimators are used as a benchmark. Later in section 4 we will include many more variables to analyze treatment effect heterogeneity for other groups and do several robustness checks.

Table 4 shows regression results estimating equation 1. While the overall treatment effect of the information treatment on the probability of being in favor of a wealth tax is not different from zero, it is significantly larger for those who overestimated their rank in the wealth distribution. For this subgroup the statistically significant information treatment effect leads to an about 12 percentage points higher probability of being in favor of a wealth tax than for the group underestimating their rank. While the effect on those who correctly estimated their own position is also economically relevant at about 7 percentage points more, it is statistically insignificant. Without treatment both groups show on average similar levels of endorsement of a wealth tax as the reference group which underestimates its position. Furthermore, we find evidence that this statistically significant information treatment effect works through genuine changes in beliefs rather than short-lived emotional responses or priming (see section 4).

Table 4: Effects of Randomized Information Treatment on Preference for Wealth Taxation

	Est	Est	Est
Treated	<b>-0.005</b> <b>(0.020)</b>	<b>-0.005</b> <b>(0.020)</b>	<b>-0.000</b> <b>(0.020)</b>
Intercept	0.468 (0.014)	0.469 (0.014)	0.466 (0.014)
Correct		-0.008 (0.026)	-0.042 (0.037)
Over		0.011 (0.025)	-0.053 (0.035)
Treated X Correct			<b>0.067</b> <b>(0.053)</b>
Treated X Over			<b>0.123</b> <b>(0.050)</b>
Linear Controls		Yes	Yes
Heterogenous TE			Yes
<i>N</i>	2768	2768	2768

*Notes:* This table shows the average treatment effect of information on one's own rank in the wealth distribution on the preference for wealth taxation based on population weighted regression of the survey experiment. Heterogeneous treatment effects across under- (benchmark), correct- and overestimation of one owns position in the wealth distribution are included. Demeaned variables are used for all covariates and interactions.

*Source:* HFCS 2017, ECB, OeNB.

## 4 Robustness and Additional Results

In this section we discuss the robustness of our results in subsection 4.1 and show additional results in subsection 4.2.

### 4.1 Robustness

In this subsection we discuss robustness by including missings via multiple imputations, check the randomization, run a doubly robust estimation assessing the heterogeneity of results, assess the validity of personalized treatment we designed, run a placebo test, and evaluate the persistence of the effects.

#### Multiple Imputations

An important source of bias might be item non-response. Not all respondents answered the basic questions needed for our experiment and in order to be able to check for balance of covariates across the treatment and control group and analyse further heterogeneity of treatment effects we need to take patterns of missings into account.

The HFCS includes a large number of variables at the level of the individual and the household. Besides socio-economic characteristics, detailed information on income and the assets and liabilities of the household it also includes regional information and detailed information on the dwellings and the surrounding of the households. To be able to build on this rich set of potential control variables we use the multiple imputations we provide for the HFCS Austria in the standard user database.

These imputations are based on a Bayesian broad conditioning approach using a system of chained equations. Details on the imputation procedure can be found in [Albacete et al. \(2018\)](#). To also include the uncertainty from the imputation procedure itself into the final estimate we use 5 imputed values for each missing value and combine these five imputations with bootstrap replicate weights to also take into account the complex survey design as well as non-response and poststratification weights. In this way we make sure that we can enrich our experiment with all the advantages in terms of external validity a high-quality standardized survey has to offer.

We replicate the standard regression from our main results (4), but for the complete sample (3072 observations instead of 2768) based on multiple imputations and using complex survey weights and replicate weights. As can be seen in table 5 the main result is confirmed. For those who overestimated their rank in the wealth distribution the information treatment effect leads to an about 12 percentage points higher probability of being in favor of a wealth tax than for the group underestimating their rank. Note again, that the effect for the reference group who underestimated their position is actually negative (see the main result figure 2).

Table 5: Effects of Randomized Information Treatment on Preference for Wealth Taxation

	Est	Est	Est
Treated	0.000 (0.014)	-0.000 (0.014)	0.000 (0.014)
Intercept	0.464 (0.013)	0.464 (0.013)	0.463 (0.013)
Correct		0.001 (0.015)	-0.025 (0.030)
Over		0.013 (0.019)	-0.051 (0.024)
Treated X Correct			0.052 (0.054)
Treated X Over			0.125 (0.055)
Linear Controls		Yes	Yes
Heterogenous TE			Yes
<i>N</i>	3072	3072	3072

*Notes:* This table shows the average treatment effect of information on one’s own rank in the wealth distribution on the preference for wealth taxation based on a regression of the survey experiment using multiple imputations and complex survey weights as well as replicate weights. Heterogeneous treatment effects across under- (benchmark), correct- and overestimation of one owns position in the wealth distribution are included. Demeaned variables are used for all covariates and interactions.

*Source:* HFCS 2017, ECB, OeNB.

### Randomization

Another important source of bias is the degree to which randomization in its current realization in the experiment at hand achieved balance with regard to potential confounders in the treatment and control group. To control the randomness in treatment assignment we present the sample characteristics by treatment status in table 6. It illustrates that randomization worked well, which makes us confident that our interpretation as causal effects of our treatment is justified. Both, treatment and control group show indistinguishable distributions across potential confounders such as age, gender, education, occupation, household-size, tenure status, a wealth transfer received dummy, income and wealth quintiles as well as Austrian provinces.

Table 6: Sample Characteristics by Treatment Status

		All	Treated	Control
<i>Age</i>	0-24 years	0.040 (0.003)	0.040 (0.005)	0.040 (0.006)
	25-39 years	0.215 (0.005)	0.222 (0.006)	0.209 (0.008)
	40-59 years	0.372 (0.007)	0.371 (0.011)	0.373 (0.006)

(Continued)

Table 6: Sample Characteristics by Treatment Status (*Continued*)

		All	Treated	Control
	60+ years	0.373 (0.010)	0.367 (0.013)	0.378 (0.007)
<i>Gender</i>	Female	0.560 (0.007)	0.570 (0.009)	0.551 (0.016)
<i>Education</i>	Primary	0.536 (0.009)	0.532 (0.016)	0.540 (0.012)
	Secondary	0.335 (0.008)	0.343 (0.015)	0.328 (0.007)
	Tertiary	0.129 (0.003)	0.126 (0.005)	0.132 (0.008)
<i>Occupation</i>	Self-employed	0.053 (0.005)	0.050 (0.006)	0.056 (0.004)
	Worker	0.153 (0.005)	0.145 (0.008)	0.160 (0.008)
	Employee	0.291 (0.007)	0.293 (0.013)	0.289 (0.008)
	Civil servant	0.033 (0.003)	0.030 (0.003)	0.037 (0.003)
	Farmer	0.010 (0.002)	0.011 (0.002)	0.008 (0.002)
	Pension	0.366 (0.012)	0.368 (0.017)	0.363 (0.010)
	Other	0.095 (0.004)	0.102 (0.005)	0.088 (0.004)
<i>Household size</i>	1-person	0.370 (0.001)	0.364 (0.007)	0.376 (0.008)
	2-persons	0.351 (0.005)	0.355 (0.012)	0.347 (0.008)
	3-persons	0.127 (0.004)	0.129 (0.007)	0.125 (0.006)
	4+ persons	0.152 (0.002)	0.152 (0.005)	0.152 (0.007)
<i>Tenure status</i>	Owner	0.459 (0.006)	0.467 (0.017)	0.452 (0.012)
	Renter	0.468 (0.001)	0.460 (0.008)	0.476 (0.009)
	Free usage	0.072 (0.006)	0.073 (0.010)	0.072 (0.008)
<i>Wealth transfer</i>	Yes	0.379 (0.006)	0.375 (0.006)	0.383 (0.015)
<i>Income</i>	1st quintile	0.200 (0.006)	0.203 (0.011)	0.198 (0.007)
	2nd quintile	0.200 (0.011)	0.205 (0.012)	0.196 (0.016)
	3rd quintile	0.200 (0.009)	0.202 (0.010)	0.198 (0.013)
	4th quintile	0.200 (0.012)	0.192 (0.019)	0.208 (0.009)
	5th quintile	0.200 (0.009)	0.199 (0.012)	0.201 (0.010)

*(Continued)*



Table 6: Sample Characteristics by Treatment Status (*Continued*)

		All	Treated	Control
<i>Net wealth</i>	1st quintile	0.200 (0.007)	0.208 (0.014)	0.193 (0.012)
	2nd quintile	0.200 (0.004)	0.192 (0.010)	0.207 (0.006)
	3rd quintile	0.200 (0.006)	0.202 (0.006)	0.198 (0.009)
	4th quintile	0.200 (0.004)	0.192 (0.010)	0.208 (0.006)
	5th quintile	0.200 (0.006)	0.206 (0.010)	0.194 (0.009)
<i>Federal State</i>	Vorarlberg	0.042 (0.001)	0.047 (0.004)	0.038 (0.004)
	Tyrol	0.083 (0.001)	0.093 (0.005)	0.074 (0.005)
	Salzburg	0.063 (0.001)	0.066 (0.004)	0.060 (0.004)
	Upper Austria	0.159 (0.000)	0.162 (0.006)	0.157 (0.006)
	Carinthia	0.064 (0.000)	0.062 (0.005)	0.065 (0.005)
	Styria	0.138 (0.000)	0.137 (0.007)	0.139 (0.007)
	Burgenland	0.031 (0.000)	0.032 (0.002)	0.031 (0.002)
	Lower Austria	0.189 (0.002)	0.189 (0.009)	0.188 (0.008)
	Vienna	0.230 (0.001)	0.211 (0.007)	0.249 (0.007)

*Note:* This table shows covariate distributions in the full sample and within the treatment and control group.

*Source:* HFCS 2017, ECB, OeNB.

## Doubly Robust Estimation and Heterogeneity of Effect

Even though the randomization seem to have worked rather well, it is still useful to enrich our standard specification with (i) the full set of control variables as well as a (ii) set of interaction terms between the treatment dummy as well as the control variables. While the former controls for potential remaining random imbalances and implements a doubly robust specification the latter allows for heterogenous treatment effects across all included variables.<sup>8</sup> Again we use demeaned variables for all covariates and interactions as proposed in [Imbens and](#)

<sup>8</sup>In order to control for different household groups holding differential biases about their position in the wealth distribution and therefore facing information shocks / perception gaps of different size, we have also estimated an alternative specification as the one estimated in [11](#) but additionally interacting the control variables with the terms “Treated”, “Perception gap” and “Treated x perception gap”. Although the statistical power of this exercise is very low, the sign of the heterogeneity of the effect of the information treatment is the same for most control variables.

Rubin (2015) in order to allow for the straight forward interpretation of the coefficient of the treatment effect dummy as average treatment effect and all interactions as additive deviations from it.

Table 7 presents the regression results. Again all main results hold. On top of that, the specification remains interesting findings about further heterogeneity of the effect of the information treatment. While age does not seem to play any role, being a female seems to slightly increase the effect. Also for farmers and the retired the effect is relatively larger. The effect of the information treatment seems to decrease with household size but does not vary with income, wealth or region. Note that of course part of the variation in wealth is already partially covered through the inclusion of the treatment groups, as the rich tend to underestimate their true wealth rank more often than the poor.

Table 7: Effects of Randomized Information Treatment on Preference for Wealth Taxation

	Est	Est	Est
Treated	0.000	-0.004	-0.004
	(0.014)	(0.014)	(0.012)
Intercept	0.463	0.465	0.465
	(0.013)	(0.014)	(0.013)
Correct	-0.025	-0.046	-0.047
	(0.030)	(0.026)	(0.023)
Over	-0.051	-0.092	-0.089
	(0.024)	(0.026)	(0.025)
Treated X Correct	0.052	0.050	0.042
	(0.054)	(0.044)	(0.039)
Treated X Over	0.125	0.127	0.120
	(0.055)	(0.052)	(0.040)
Treated X Age of rp: 25-39 years			0.143
			(0.106)
Treated X Age of rp: 40-59 years			0.077
			(0.073)
Treated X Age of rp: 60+ years			-0.071
			(0.117)
Treated X Gender of rp: female			0.046
			(0.023)
Treated X Education of rp: secondary education			0.041
			(0.045)
Treated X Education of rp: tertiary education			0.001
			(0.091)
Treated X Occupation of rp: self-employed			0.028
			(0.082)
Treated X Occupation of rp: employee			-0.064
			(0.053)
Treated X Occupation of rp: civil servant			0.112
			(0.137)
Treated X Occupation of rp: farmer			0.143
			(0.058)
Treated X Occupation of rp: pension			0.145
			(0.074)

(Continued)

Table 7: Effects of Randomized Information Treatment on Preference for Wealth Taxation  
(Continued)

	Est	Est	Est
Treated X Occupation of rp: other			-0.024 (0.076)
Treated X Household size: 2-person			-0.050 (0.036)
Treated X Household size: 3-person			-0.085 (0.087)
Treated X Household size: 4+ person			-0.153 (0.067)
Treated X Tenure status: renter			-0.023 (0.073)
Treated X Tenure status: free Usage			0.085 (0.074)
Treated X Wealth transfer: yes			0.044 (0.029)
Treated X Income quintile: 2			-0.010 (0.050)
Treated X Income quintile: 3			-0.003 (0.060)
Treated X Income quintile: 4			0.017 (0.066)
Treated X Income quintile: 5			0.102 (0.073)
Treated X Net wealth quintile: 2			0.028 (0.070)
Treated X Net wealth quintile: 3			0.058 (0.056)
Treated X Net wealth quintile: 4			-0.013 (0.117)
Treated X Net wealth quintile: 5			-0.058 (0.111)
Treated X Federal state: Vorarlberg			-0.094 (0.076)
Treated X Federal state: Tyrol			-0.064 (0.091)
Treated X Federal state: Salzburg			-0.034 (0.052)
Treated X Federal state: Upper Austria			-0.055 (0.023)
Treated X Federal state: Carinthia			-0.044 (0.050)
Treated X Federal state: Styria			0.015 (0.042)
Treated X Federal state: Burgenland			0.105 (0.103)
Treated X Federal state: Lower Austria			-0.072 (0.059)
Linear Controls		Yes	Yes
Heterogenous TE			Yes
N	3072	3072	3072

(Continued)

Table 7: Effects of Randomized Information Treatment on Preference for Wealth Taxation  
(Continued)

	Est	Est	Est
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*Note:* This table shows the average treatment effect of information on one's own rank in the wealth distribution on the preference for wealth taxation based on a regression of the survey experiment using multiple imputations, complex survey weights and replicate weights. Heterogeneous treatment effects across under- (benchmark), correct- and overestimation of one's own position in the wealth distribution and across many additional variables are included. Demeaned variables are used for all covariates and interactions. Coefficients for linear controls of potential confounders not shown.

*Source:* HFCS 2017, ECB, OeNB.

### Personalized treatment

Another potential issue is the quality of our personalized treatment, which is constructed during the survey itself. Recall that we used the information gathered during the interview to calculate net wealth of the responding household and used the net wealth distribution of the last wave of the survey to construct the information treatment consisting of the “true net wealth decile” the respondent is located in. The quality of this information treatment depends on the quality of the answers of the respondent household as well as the quality of the last wave to be a proxy for the current wave in terms of deciles of the wealth distribution. Specifically missing items could not be taken into account for the ad-hoc calculation, which could in principle lead to relevant bias for the proxied location of the household in the wealth distribution.

To assess this quality of our information treatment we check how the constructed treatment correlates with the final measured distribution of wealth.

Table 8 shows that the personalized treatment is highly correlated with measured net wealth distribution and table 9 shows that it is almost perfectly aligned with the measured net wealth deciles. In the case of deciles which are used directly for the information treatment the average correlation coefficient (across all 1000 replicate weights) is 0.937. That confirms that our ad-hoc calculation implemented within the surveys computer assisted personal interviewer tool that combined individual wealth information just provided by the respondent with the distributional data of the last wave of the survey (second HFCS wave 2014) produced reasonable proxies of the location of the household in the wealth distribution measured at the time of the interview (third HFCS wave 2017).

Table 8: Correlation between personalized treatment and real net wealth

	Est
Personalized treatment	1.044 (0.301)
Intercept	-553.350 (60355.890)
Average R-squared	.5643
Lower 95% confidence limit	.1731
Upper 95% confidence limit	.8221
Average Correl. coeff. R	.7512
Lower 95% confidence limit	.4160
Upper 95% confidence limit	.9067
<i>N</i>	3072

*Notes:* This table shows the relationship between the personalized treatment and the real net wealth based on a regression using MI and complex survey weights, replicate weights etc.

*Source:* HFCS 2017, ECB, OeNB.

Table 9: Correlation between personalized treatment deciles and real net wealth deciles

	Est
Personalized treatment decile	0.975 (0.012)
Intercept	0.236 (0.070)
Average R-squared	.8793
Lower 95% confidence limit	.8363
Upper 95% confidence limit	.9117
Average Correl. coeff. R	.9377
Lower 95% confidence limit	.9145
Upper 95% confidence limit	.9548
<i>N</i>	3072

*Notes:* This table shows the relationship between the personalized treatment deciles and the real net wealth deciles based on a regression using MI and complex survey weights, replicate weights etc.

*Source:* HFCS 2017, ECB, OeNB.

## Placebo test

As a further robustness check we randomly created a placebo treatment dummy in our data. Table 10 shows that if we use that placebo treatment no significant effect remain. Thus, our main result is not due to a pure random effect.

Table 10: Randomness of Effects of Randomized Information Treatment on Preference for Wealth Taxation

	Est	Est	Est
Placebo	0.028 (0.020)	0.027 (0.020)	0.028 (0.020)
Intercept	0.452 (0.014)	0.452 (0.014)	0.452 (0.014)
Correct		-0.007 (0.026)	0.016 (0.037)
Over		0.011 (0.025)	-0.022 (0.036)
Placebo X Correct			-0.048 (0.053)
Placebo X Over			0.065 (0.050)
Linear Controls		Yes	Yes
Heterogenous TE			Yes
<i>N</i>	2768	2768	2768

*Notes:* This table shows the average treatment effect of a placebo dummy on one owns rank in the wealth distribution on the preference for wealth taxation based on population weighted regression of the survey experiment. Heterogeneous treatment effects across under- (benchmark), correct- and overestimation of one owns position in the wealth distribution are included. Demeaned variables are used for all covariates and interactions.

*Source:* HFCS 2017, ECB, OeNB.

## Persistence of effects

Our study does not include a follow-up survey in order to check whether information persistently changes the households' attitudes. Such persistence is often interpreted as evidence that the treatment works through genuine changes in beliefs rather than short-lived emotional responses or priming (see Haaland et al. (forthcoming)). However, we provide an alternative way to check whether genuine belief updating is a driver of the treatment effects or not.

Following the discussion in Haaland et al. (forthcoming), we run the standard regression

from our main results (Table 4), but instead of using the dummies for over- and underestimation we include a perception gap defined as the difference between the respondent’s self-assessed wealth decile and her actual personalized wealth decile. This is a specification that uses the full variation in the extent to which people over- (positive perception gap) or underestimate (negative perception gap) their own position, and should increase power. Moreover, the coefficient of the interaction effect between the treatment dummy and the perception gap indicates the extent to which effects work through the implied information shock / perception gap and therefore through genuine changes in beliefs. Whereas the coefficient of the main effect of the treatment dummy should capture other effects of the treatment like priming or salience that are not proportional to the gap.

Table 11 shows results estimating this regression equation. We find a statistically significant coefficient on “Treated X perception gap” which can be viewed as providing evidence that the treatment effects are working at least partially through genuine changes in beliefs. Additionally, the statistically insignificant coefficient on “Treated” suggests that salience or priming are not driving our results.

Table 11: Persistence of Effects of Randomized Information Treatment on Preference for Wealth Taxation

	Est	Est	Est
Treated	-0.005 (0.020)	-0.005 (0.020)	-0.004 (0.020)
Intercept	0.468 (0.014)	0.468 (0.014)	0.468 (0.014)
Perception gap		-0.002 (0.004)	-0.013 (0.006)
Treated X perception gap			0.021 (0.009)
Linear Controls		Yes	Yes
Heterogenous TE			Yes
<i>N</i>	2768	2768	2768

*Notes:* This table shows the average treatment effect of information on one’s own rank in the wealth distribution on the preference for wealth taxation based on a regression of the survey experiment using multiple imputations and complex survey weights as well as replicate weights. Heterogeneous treatment effects over the perception gap defined as the difference between the respondent’s self-assessed wealth decile and her actual personalized wealth decile are included. Demeaned variables are used for all covariates and interactions.

*Source:* HFCS 2017, ECB, OeNB.

## 4.2 Additional Results

In this subsection we exploit our rich dataset and discuss additional results. We assess the effects along the differences between the self-assessment and the measured wealth position, the support for wealth taxation across socioeconomic characteristics, analyze effects across political preferences, assess effects on a potential wealth-transfer tax, evaluate effects on tax exemption thresholds for those in favor of a tax, present differences across the wealth and income distributions as well as the joint distribution of wealth and income, and compare preferences for wealth taxation with other attitudes and along different functions of wealth.

### Distance from the measured wealth position

According to our main results, the treatment effect on wealth tax preferences differs significantly depending on whether households over- or underestimate their position in the wealth distribution. A further interesting question is whether the degree of under- and overestimation also matters.

We therefore run the standard regression from our main results (Table 4), but instead of using the dummies for over- and underestimation we include the following ones: one dummy for belonging to the group of individuals who overestimate their household position in the wealth distribution by far (i.e. +6 to +9 deciles), one for belonging to the group who overestimates it by a lesser degree (i.e. +1 to +5 deciles), and one for belonging to the group who underestimates it by a lesser degree (i.e. -1 to -5 deciles), while the group who underestimates it by far (i.e. -6 to -9 deciles) is used as a benchmark. The dummy for belonging to the group who correctly estimate their household position in the wealth distribution remains the same as before.

Table 12 shows results estimating this regression equation. We can see that the treatment effect of the information treatment on the probability of being in favor of a wealth tax is still significantly larger for those who overestimated their rank in the wealth distribution, but it is much larger for those who overestimated it by far than for those who overestimated it by a lesser degree. While for the latter subgroup the information treatment effect leads to an about 29 percentage points higher probability of being in favor of a wealth tax than for the group underestimating their rank by far, for the far overestimators it leads to an about 89 percentage points higher probability. This reinforces our main results.



Table 12: Further Heterogeneity of Effects of Randomized Information Treatment on Preference for Wealth Taxation

	Est	Est	Est
Treated	-0.005 (0.020)	-0.005 (0.020)	-0.004 (0.020)
Intercept	0.468 (0.014)	0.469 (0.014)	0.467 (0.014)
Under		-0.037 (0.058)	-0.133 (0.084)
Correct		-0.043 (0.061)	-0.168 (0.088)
Over		-0.023 (0.061)	-0.174 (0.087)
Far over		-0.065 (0.178)	-0.611 (0.082)
Treated X Under			0.182 (0.115)
Treated X Correct			0.239 (0.121)
Treated X Over			0.288 (0.120)
Treated X Far over			0.886 (0.222)
Linear Controls		Yes	Yes
Heterogenous TE			Yes
<i>N</i>	2768	2768	2768

*Notes:* This table shows the average treatment effect of information on one's own rank in the wealth distribution on the preference for wealth taxation based on a regression of the survey experiment using multiple imputations and complex survey weights as well as replicate weights. Heterogeneous treatment effects across far under- (benchmark: -9 to -6 deciles), under- (-5 to -1 deciles), correct- (0 deciles), over- (+1 to +5 deciles) and far overestimation (+6 to +9 deciles) of one owns position in the wealth distribution are included. Demeaned variables are used for all covariates and interactions.

*Source:* HFCS 2017, ECB, OeNB.

### Support for Wealth Tax across socioeconomic characteristics

Table 13 shows the share of households supporting wealth taxation across socioeconomic characteristics. Support of wealth taxation rises somewhat with age and education and is also

somewhat higher in the case of women versus men. The self-employed and farmers show low support of a wealth tax, while tenure status hardly seem to matter, even though most owner-occupiers are in the upper half of the wealth distribution while renters are predominantly found in the lower half. Households in the lowest income and lowest wealth quintile show a higher support, but other than that no large differences occur across the income and wealth distribution. The results also point towards some regional disparities which are shown in annex table [A.2](#).

Table 13: Support for Wealth Taxation across Household Characteristics

		Support for Wealth Taxation
	All	0.464 (0.012)
<i>Age</i>	0-24 years	0.440 (0.029)
	25-39 years	0.421 (0.019)
	40-59 years	0.461 (0.019)
	60+ years	0.493 (0.009)
<i>Gender</i>	Male	0.456 (0.012)
	Female	0.470 (0.015)
<i>Education</i>	Primary	0.429 (0.015)
	Secondary	0.508 (0.017)
	Tertiary	0.491 (0.017)
<i>Occupation</i>	Self-employed	0.388 (0.042)
	Worker	0.409 (0.025)
	Employee	0.440 (0.021)
	Civil servant	0.513 (0.051)
	Farmer	0.398 (0.110)
	Pension	0.498 (0.010)
	Other	0.523 (0.030)
<i>Household Size</i>	1-person	0.461 (0.012)
	2-persons	0.455 (0.010)
	3-persons	0.480 (0.039)

(Continued)

Table 13: Support for Wealth Taxation across Household Characteristics (*Continued*)

		Support for Wealth Taxation
	4+ persons	0.476 (0.018)
<i>Tenure status</i>	Owner	0.460 (0.015)
	Renter	0.468 (0.013)
	Free usage	0.461 (0.033)
<i>Wealth transfer</i>	No inheritance received	0.453 (0.011)
	Inheritance received	0.482 (0.019)
<i>Income</i>	1st quintile	0.531 (0.027)
	2nd quintile	0.435 (0.021)
	3rd quintile	0.436 (0.022)
	4th quintile	0.472 (0.022)
	5th quintile	0.445 (0.022)
<i>Net wealth</i>	1st quintile	0.518 (0.018)
	2nd quintile	0.459 (0.018)
	3rd quintile	0.446 (0.020)
	4th quintile	0.455 (0.027)
	5th quintile	0.441 (0.010)

*Note:* This table shows the distribution of households that support wealth taxation across household characteristics.

*Source:* HFCS 2017, ECB, OeNB.

## Political Preferences

Table 14 shows regression results estimating preference for wealth taxation and using also information on political preferences. While individuals usually voting right-wing parties in the political spectrum show lower support for wealth taxation than those in the reference group usually voting for left-wing parties, the treatment effect of the information treatment does not differ along political preferences of the treated.

Table 14: Effects of Randomized Information Treatment on Preference for Wealth Taxation using information on political preference

	Est	Est	Est
Treated	-0.002 (0.020)	0.001 (0.020)	0.000 (0.020)
Intercept	0.465 (0.014)	0.464 (0.014)	0.464 (0.014)
Political spectrum: None		0.001 (0.025)	0.032 (0.035)
Political spectrum: Right-wing		-0.116 (0.024)	-0.102 (0.033)
Treated X Political spectrum: None			-0.063 (0.050)
Treated X Political spectrum: Right-wing			-0.029 (0.047)
Linear Controls		Yes	Yes
Heterogenous TE			Yes
<i>N</i>	2815	2815	2815

*Notes:* This table shows the average treatment effect of information on one owns rank in the wealth distribution on the preference for wealth transfer taxation based on a regression of the survey experiment using MI and complex survey weights, replicate weights etc. Heterogeneous treatment effects across the household's political spectrum left-wing (benchmark), right-wing or none and across many additional variables are included. Demeaned variables are used for all covariates and interactions.

*Source:* HFCS 2017, ECB, OeNB.

### Wealth Transfer Taxation

Table 15 shows regression results estimating the effect of the information treatment on the preference for wealth transfer taxation, namely a tax on gifts and inheritances. We use an analogous specification to our main result table, where the preference for a wealth tax is the dependent variable. While generally the support for a gift and inheritance tax is about half the one for a wealth tax in this case the information treatment does not show any effect. In the case of the wealth transfer taxation it additionally also shows no heterogeneity of its effect between those who overestimate their rank in the wealth distribution and those who underestimate it. As one's own rank in the wealth distribution does not matter for a potential gift and inheritance tax, we interpret this as further support, that our individually tailored information treatment works well.

Table 15: Effects of Randomized Information Treatment on Preference for Wealth Transfer Taxation

	Est	Est	Est
Treated	-0.022 (0.016)	-0.022 (0.016)	-0.022 (0.016)
Intercept	0.207 (0.012)	0.207 (0.012)	0.207 (0.012)
Correct		0.009 (0.021)	-0.029 (0.029)
Over		0.005 (0.020)	-0.006 (0.028)
Treated X Correct			0.075 (0.042)
Treated X Over			0.022 (0.039)
Linear Controls		Yes	Yes
Heterogenous TE			Yes
<i>N</i>	2816	2816	2816

*Notes:* This table shows the average treatment effect of information on one owns rank in the wealth distribution on the preference for wealth transfer taxation based on a regression of the survey experiment using MI and complex survey weights, replicate weights etc. Heterogeneous treatment effects across under- (benchmark), correct- and overestimation of one owns position in the wealth distribution and across many additional variables are included. Demeaned variables are used for all covariates and interactions.

*Source:* HFCS 2017, ECB, OeNB.

This result also extends to the case where we use political preferences instead of one's own position in the wealth distribution. Again, in table 16 individuals leaning towards right-wing political parties show less support for a gift and inheritance tax, but the information treatment is not heterogeneous across these groups. In case of the wealth transfer tax the differences in support are stronger across political preferences, but still the information provided does neither change original believes nor is it significantly different across groups with opposing political preferences.

Table 16: Effects of Randomized Information Treatment on Preference for Wealth Transfer Taxation using information on political preference

	Est	Est	Est
Treated	-0.019 (0.016)	-0.015 (0.016)	-0.015 (0.016)
Intercept	0.205 (0.011)	0.204 (0.011)	0.203 (0.011)
Political spectrum: None		-0.077 (0.020)	-0.097 (0.029)
Political spectrum: Right-wing		-0.133 (0.018)	-0.131 (0.026)
Treated X Political spectrum: None			0.042 (0.041)
Treated X Political spectrum: Right-wing			-0.003 (0.037)
Linear Controls		Yes	Yes
Heterogenous TE			Yes
<i>N</i>	2875	2875	2875

*Notes:* This table shows the average treatment effect of information on one owns rank in the wealth distribution on the preference for wealth transfer taxation based on a regression of the survey experiment using MI and complex survey weights, replicate weights etc. Heterogeneous treatment effects across the household's political spectrum left-wing (benchmark), right-wing or none and across many additional variables are included. Demeaned variables are used for all covariates and interactions.

*Source:* HFCS 2017, ECB, OeNB.

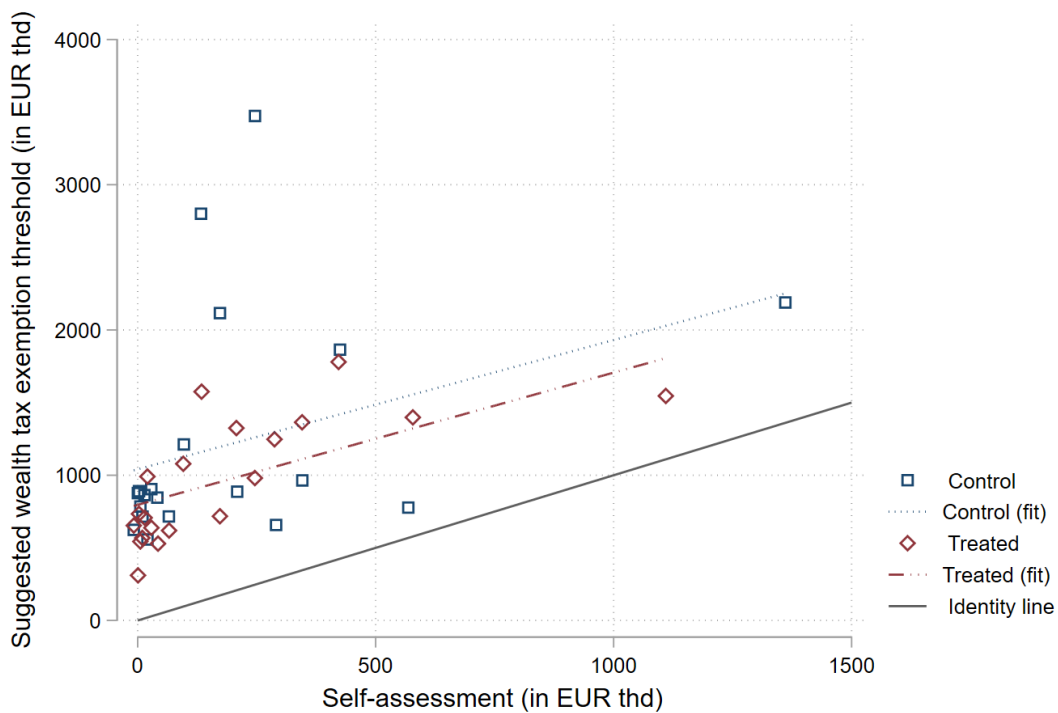
### Different Tax Thresholds

As a next step we analyze the subset of individuals who are in favor of a wealth tax. After they stated their support of a wealth tax they are asked about potential thresholds for such a tax, namely the amount policymakers should leave untaxed.

Figure 3 shows a binned scatter plot between the potential wealth tax exemption threshold suggested by households supporting the wealth tax and the self-estimated amount of their total net wealth by treatment status. See the appendix for the same plot when using alternative measures of net wealth. The suggested wealth tax exemption threshold is increasing in wealth and all points lie above the identity line, suggesting that households supporting the wealth tax tend to propose potential thresholds for such a tax that are higher (on average almost twice as high) than their self-assessed net wealth, meaning that their amount of wealth would be left untaxed in such a case. At the same time the information treatment seems to have

a negative impact on the exemption value. This effect seems to have a similar magnitude across all wealth bins. It might reflect that households not having the treatment information have a higher uncertainty about their wealth and this could make them propose even higher thresholds for a potential wealth tax in order to be sure that their wealth would be left untaxed.

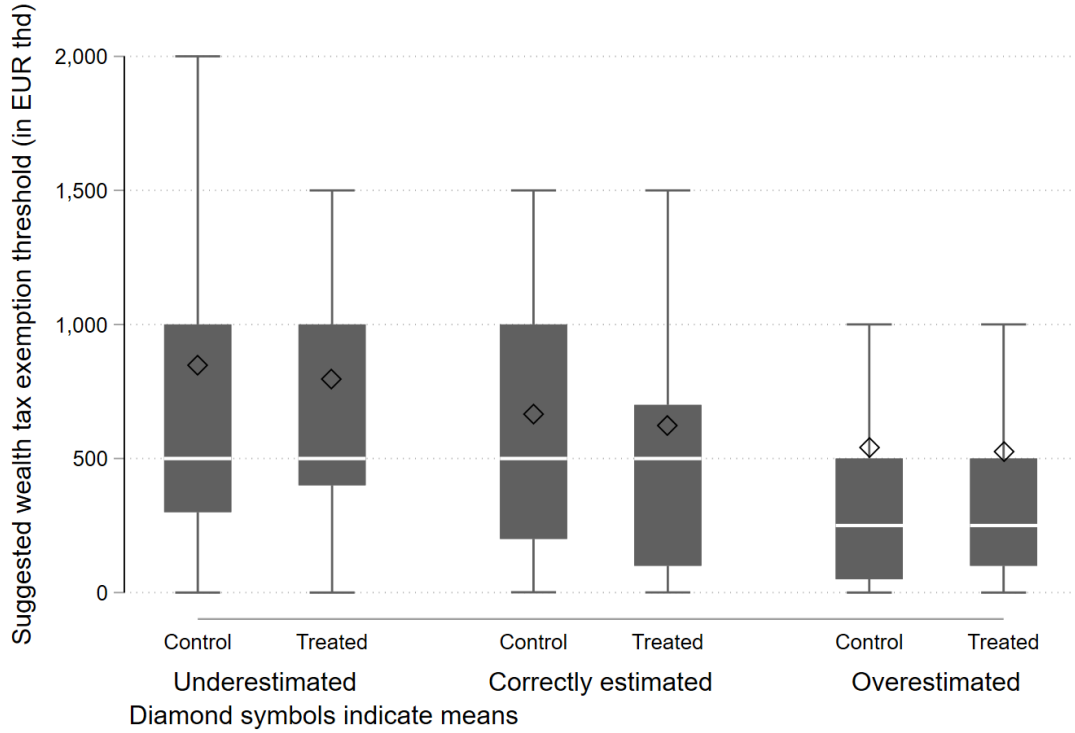
Figure 3: Wealth tax exemption threshold: Treated vs. Control conditional on believed amount of net wealth



Source: HFCS 2017, ECB, OeNB.

Figure 4 shows a box-plot and mean of the potential wealth tax exemption threshold suggested by households supporting the wealth tax by treatment status conditional on prior beliefs. The group who underestimate themselves are the ones with the highest average wealth and those who overestimate themselves are the ones with the lowest average wealth. That might explain why the former states higher thresholds than the latter one. At the same time however the information treatment does not seem to have a relevant impact on the exemption value. One might expect that for example for the richer underestimators the negative treatment effect might not only show up in being against a wealth tax but also in higher thresholds among those treated still in favor of a wealth tax. However, for no group such effects can be found.

Figure 4: Wealth tax exemption threshold: Treated vs. Control conditional on prior beliefs



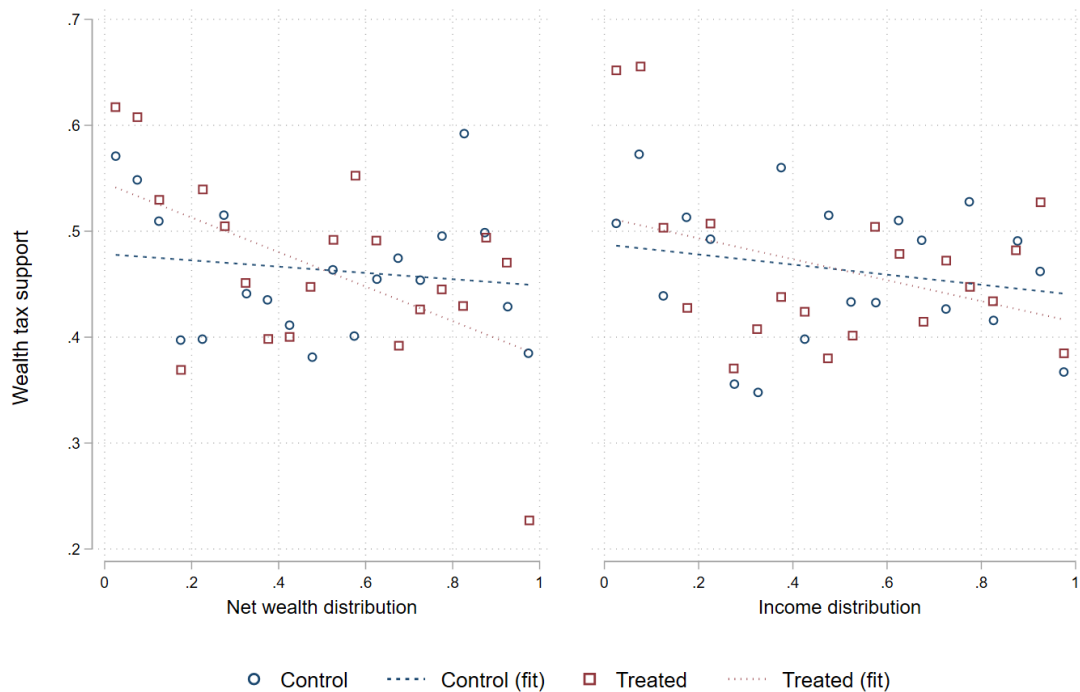
Source: HFCS 2017, ECB, OeNB.

### Differences Across Wealth and Income as well as their Joint Distribution

Figure 5 shows a binned scatterplot between the share of households supporting wealth taxation and the wealth distribution (left panel) or income distribution (right panel) by treatment status. Support for wealth taxation decreases across both the income and wealth distribution. The information treatment sharpens this relationship even more: while households at the bottom of the distributions strengthen their support for wealth taxation even more after receiving the treatment, those at the top weaken it.



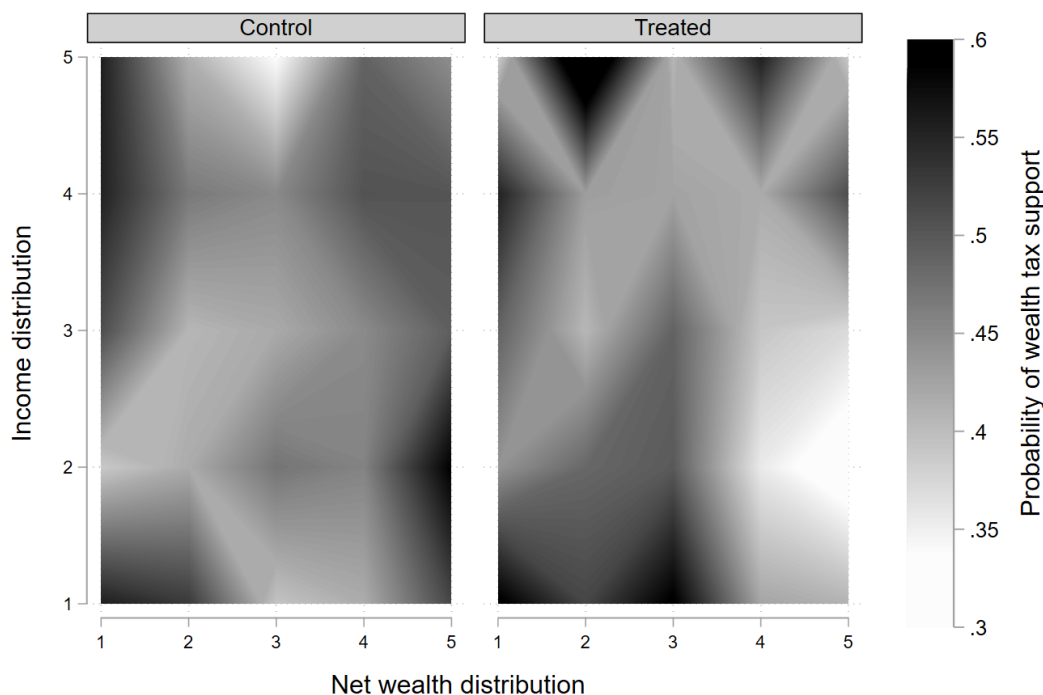
Figure 5: Wealth tax support across wealth and income: Treated vs. Control



Source: HFCS 2017, ECB, OeNB.

Figure 6 shows the same relationships as above, but looking at the joint distribution of income and wealth instead of each distribution separately by using a contour plot. It can be seen that the information treatment decreases the support for wealth taxation especially for households belonging to the top wealth and bottom income distribution and it increases it especially for those belonging to the bottom wealth and top income distribution.

Figure 6: Wealth tax support across joint distribution of wealth and income: Treated vs. Control



Source: HFCS 2017, ECB, OeNB.

### Wealth Tax Preference and Attitudes

Our survey data allows us to check if the preference for wealth tax is related to other attitudes. We therefore examine the support for the wealth tax in relation to other attitudes in figure 7.

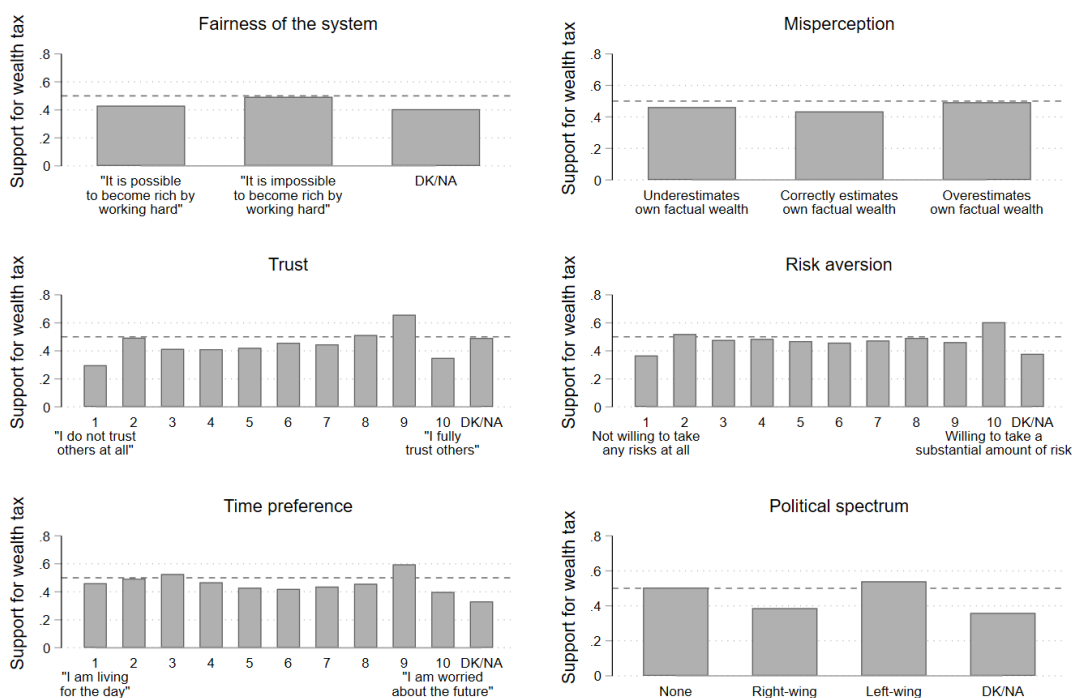
The support for wealth taxation is remarkably stable across all dimensions we observe. Even people who are in support of the statement “It is impossible to become rich by working hard” show not much more support than those who think that “It is possible to become rich by working hard”.

Also with regard to the measures of trust, risk aversion and time preference no clear patterns are visible and support for a wealth tax seems remarkably stable. Only usually voting “left-wing” compared to “right-wing” as well as belonging to the on average poorer group overestimating their wealth rank compared to those underestimating it makes somewhat of a difference.

We are confident, that also with regard to other attitudes our experiment seems to be rather clean in the sense that no other attitudes than the socioeconomic characteristics we

controlled for might drive our result. Additionally we also ran regressions including those attitudes as additional controls. As expected, our main results held.

Figure 7: Other attitudes: in favor of Wealth Tax



Source: HFCS 2017, ECB, OeNB.

## Wealth Tax Preference and Functions of Wealth

As recently elaborated by [Fessler and Schürz \(2021\)](#) wealth fulfills different functions for different people. These functions differ strongly across the income and wealth distribution. While wealth mostly is precautionary in the lower part of the wealth distributions it is used in the middle in the case of owner-occupiers and generates income further up on the wealth leader, while it is mostly about power for the very rich. Preferences for wealth taxation could have to do with attitudes about these functions.

Figure [A.4](#) shows the support for wealth taxation depending on these ideas about the functions of wealth for people in Austria. Again differences are rather limited. It is remarkable though that those who believe wealth is not used for consumption show less support for a wealth tax than those who do, while those who believe it fulfills the function of income are less in favor than those who do not believe so.

Figure A.5 shows the support for wealth taxation across the attitudes with regard to the functions of one's own wealth instead of about the general population.

Interestingly the support for the wealth tax is particularly small among those who believe that their own wealth fulfills the functions of status and power. All other combinations are rather in line with the ideas related to the general population's instead of one's own functions of wealth.

## 5 Summary remarks

Assuming purely myopic agents people without significant levels of wealth should be in favor of wealth taxation since there are no costs but at least there are some expected benefits from the distribution of public funds. The same holds for households not expecting a significant inheritance or gift. At least those households should be in favor of the introduction of taxation in this regard. Both lines of reasoning seem not to hold. In this study we investigate whether information on the wealth distribution and the lack thereof is connected to revealed preferences regarding wealth taxation.

We are able to establish a significant relation between the interaction of the correctness of self-assessment regarding one's position in the net wealth distribution and the preference for wealth taxation. In particular, we find that receiving information about the distribution of wealth increases the support for the introduction of wealth taxation only for those who overestimate their position. This main results is rather robust. Additional results confirm our prior beliefs in several directions. E.g. a potential proposed tax exemption limit increases with one's own wealth level.

We conclude that information about the wealth distribution per se is not able to change preference for taxation. Only when this information is targeting certain groups (although they might be hard to identify) support for such a policy might increase.

Future research could concentrate on the identification of the reasons for these findings. Although we are confident with regard to the external validity of our results, different cultural or institutional settings in other countries might lead to different results. This paper gives an example of our conviction that experiments within large scale surveys can enrich the literature on redistributive preferences usually based on access panel experiments, which do not fulfil the high standards of data collection large (wealth) surveys (such as the SCF or HFCS) deliver.

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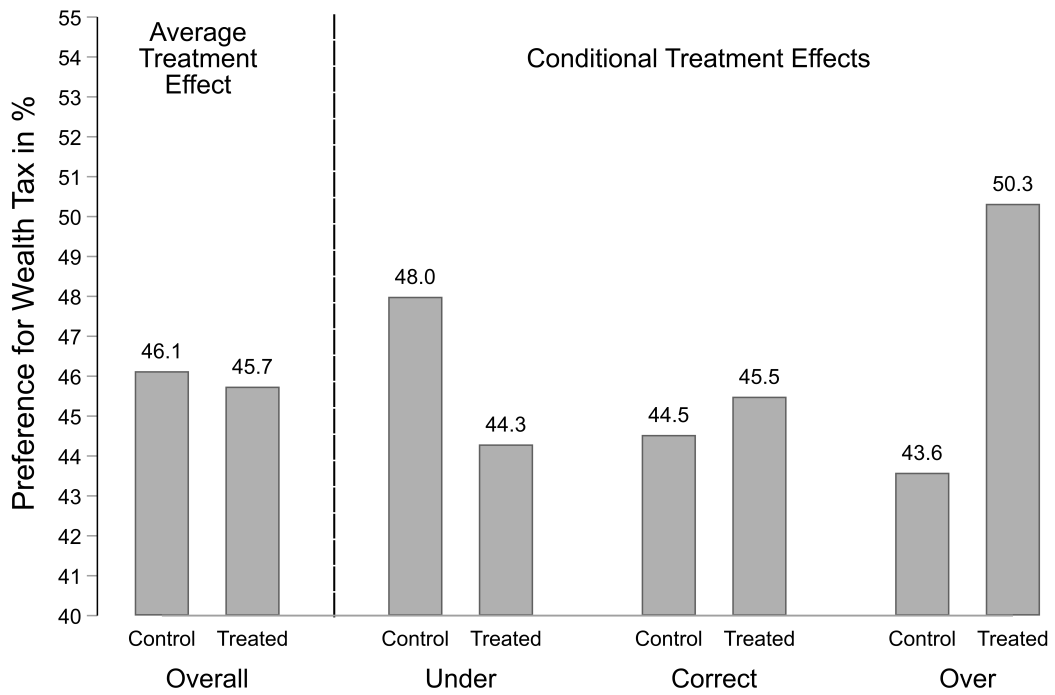
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# Appendix

## A Unweighted results

Figure A.1: Unweighted Main Result: Treated versus Control in favor of wealth tax



Source: HFCS 2017, ECB, OeNB.



Table A.1: Unweighted Effects of randomized information treatment on preference for wealth taxation using population weights

	Est	Est	Est
Treated	-0.005 (0.019)	-0.005 (0.019)	-0.005 (0.019)
Intercept	0.464 (0.013)	0.464 (0.013)	0.463 (0.013)
Correct		-0.011 (0.025)	-0.035 (0.035)
Over		0.009 (0.024)	-0.044 (0.034)
Treated X Correct			0.047 (0.049)
Treated X Over			0.104 (0.047)
Linear Controls		Yes	Yes
Heterogenous TE			YES
<i>N</i>	2768	2768	2768

*Notes:* This table shows the average treatment effect of information on one owns rank in the wealth distribution on the preference for wealth taxation based on population weighted regression of the survey experiment. Heterogeneous treatment effects across under- (benchmark), correct- and overestimation of one owns position in the wealth distribution are included. Demeaned variables are used for all covariates and interactions.

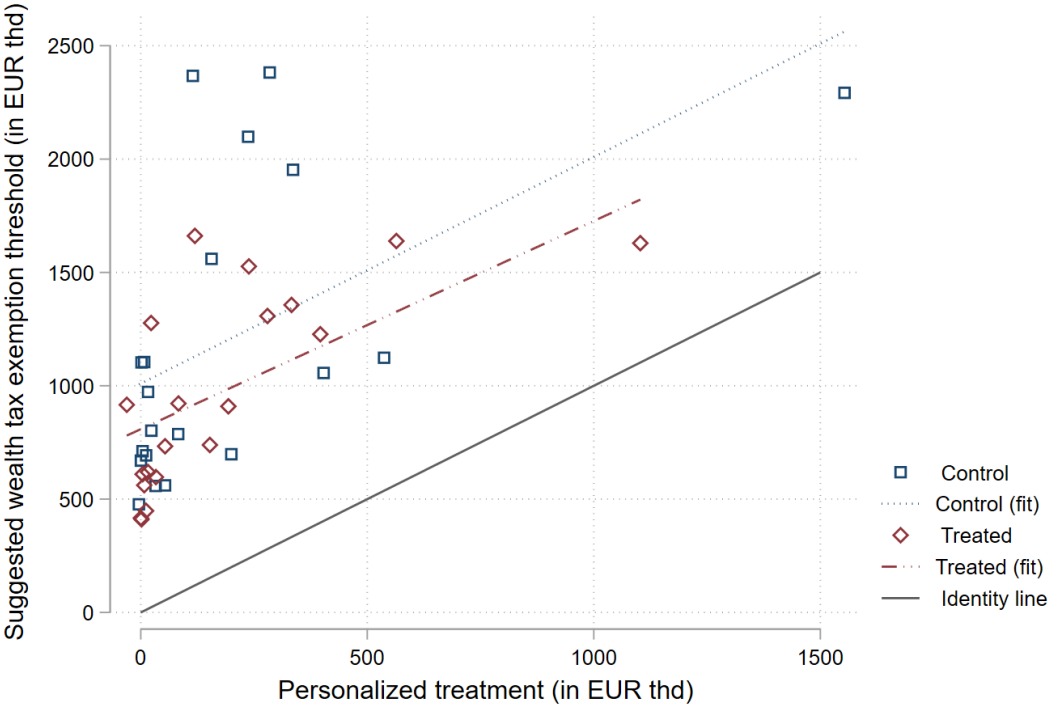
*Source:* HFCS 2017, ECB, OeNB.

Table A.2: Support for Wealth Taxation across Household region

		Support for Wealth Taxation
	All	0.464 (0.012)
<i>Federal State</i>	Vorarlberg	0.396 (0.037)
	Tyrol	0.574 (0.033)
	Salzburg	0.644 (0.025)
	Upper Austria	0.351 (0.029)
	Carinthia	0.447 (0.042)
	Styria	0.488 (0.033)
	Burgenland	0.643 (0.081)
	Lower Austria	0.406 (0.034)
	Vienna	0.478 (0.019)

*Notes:* This table shows the distribution of households that support wealth taxation across household region.  
*Source:* HFCS 2017, ECB, OeNB.

Figure A.2: Wealth tax exemption threshold: Treated vs. Control conditional on personalized amount of net wealth



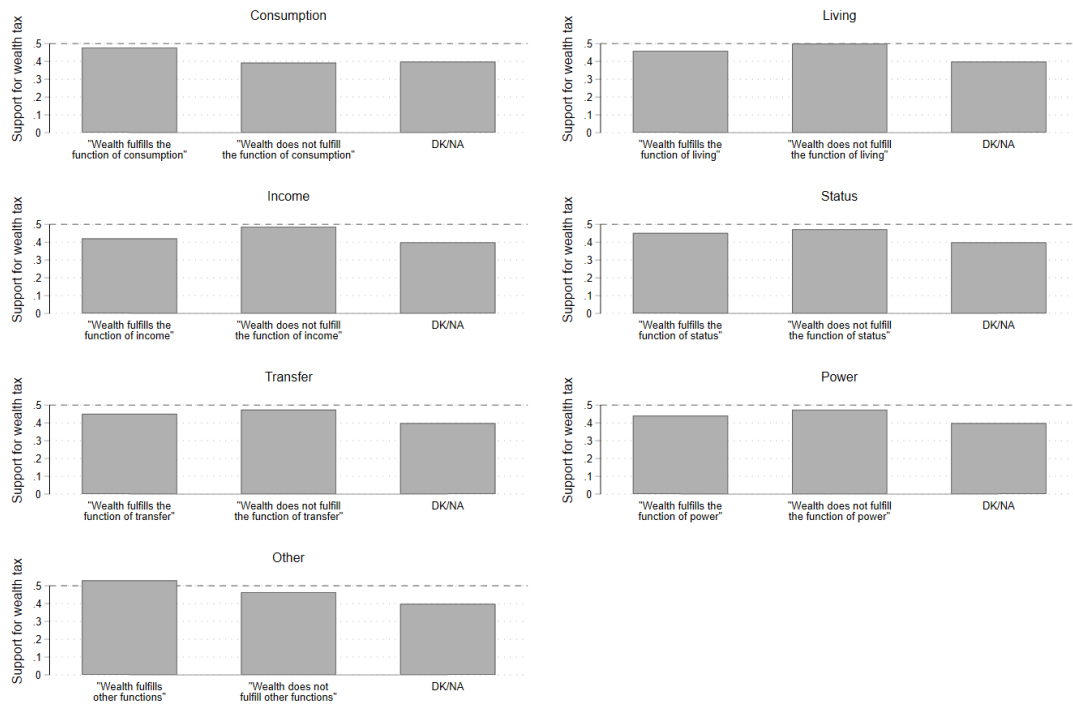
Source: HFCS 2017, ECB, OeNB.

Figure A.3: Wealth tax exemption threshold: Treated vs. Control conditional on net wealth



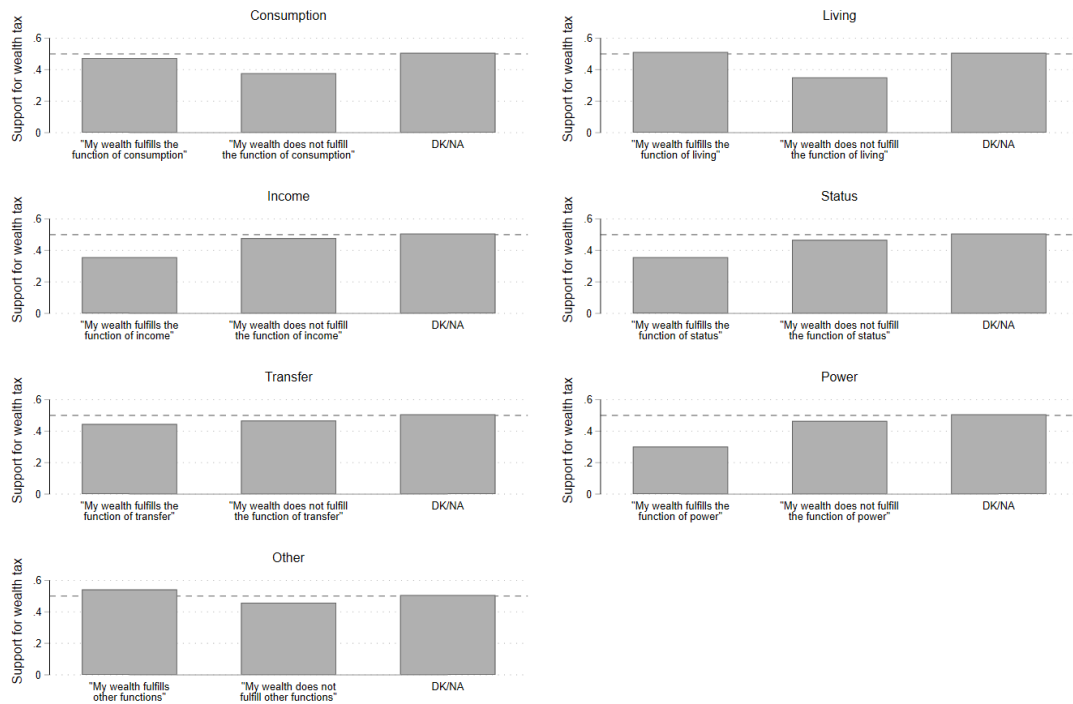
Source: HFCS 2017, ECB, OeNB.

Figure A.4: Functions of wealth attitudes: in favor of Wealth Tax



Source: HFCS 2017, ECB, OeNB.

Figure A.5: Functions of own wealth attitudes: in favor of Wealth Tax



Source: HFCS 2017, ECB, OeNB.

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