Public Debt and the Demand for Government Spending and Taxation*

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Abstract

We examine how beliefs about the debt-to-GDP ratio affect people's attitudes towards government spending and taxation. Using a representative sample of the US population, we provide half of our respondents with information about the debt-to-GDP ratio in the US. We find that most people underestimate the debt-to-GDP ratio and favor a cut in government spending once they learn about the actual amount of debt, but do not alter their attitudes towards taxation. The treatment effects operate through changes in beliefs about fiscal sustainability and persist in a four-week follow-up.

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1 Introduction

Government debt in many of the largest economies in the world has increased over the last few decades. For example, the debt-to-GDP ratio in the United States reached a level of 104.81 percent in 2016. High levels of government debt can have important implications for the tax burden of future generations, the sustainability of public finances, and the possibility of a fiscal crisis. Moreover, recent evidence suggests that the build-up of public debt can have negative effects on output growth (Chudik et al., 2016). While the ultimate effects of government debt on the economy are still being debated among economists, far less attention has been devoted to people's beliefs and preferences regarding government debt. Are individuals' estimates of the debt-to-GDP ratio in line with underlying facts? Do voters have a preference for lowering levels of debt? And how do beliefs about the level of government debt affect attitudes towards government spending and taxation? Answering these questions has important implications for understanding voting behavior, patterns of debt accumulation and the optimal design of government policies.

In this paper, we conduct several pre-registered online experiments in the United States in which we measure people's beliefs and preferences regarding government debt. We first elicit people's beliefs about the debt-to-GDP ratio. Then we provide a random subset of our respondents with information about the debt-to-GDP ratio and study how this affects their attitudes towards government spending and taxation measured using both self-reports and behavioral measures. We recruit 800 respondents from an online panel that is representative of the US population in terms of age, income, gender and region. Moreover, we recruit 800 individuals on Amazon Mechanical Turk (MTurk), whom we re-survey four weeks after the main experiment.

We start by documenting a series of stylized facts about people's beliefs and preferences regarding government debt. We show that most individuals underestimate the degree of indebtedness of the US government. The median respondent's estimate of the debt-to-GDP ratio is 56.23 percent, almost 50 percentage points below the actual debt-to-GDP ratio (104.81 percent). Moreover, the median respondent thinks that the

government should aim to achieve an even lower debt-to-GDP ratio of 25 percent.

We find that individuals who receive information about the true debt-to-GDP ratio become more likely to consider the prevailing level of government debt as too high and become more supportive of cutting the overall amount of debt by approximately 0.26 of a standard deviation. Moreover, people who receive the information also become significantly more likely to prefer government spending cuts in all spending categories except for defense. Our estimated effect sizes for views on government spending are large and correspond to approximately 0.14 of a standard deviation. However, people's views on taxation are not affected by the information treatment. We provide evidence that people's beliefs about debt also affect their political preferences as measured with a behavioral measure. Specifically, respondents provided with the information donate 0.15 of a standard deviation more to a think tank which advocates downsizing the government. This is a large effect size and corresponds to 54 percent of the gap in donations between Democrats and Republicans. However, we find no evidence that treated respondents change their willingness to sign a petition in favor of a balanced budget rule.

Do treatment effects persist over time? Using data from the four-week follow-up we show that the information about government debt persistently shifts people's views on cutting government debt and total government spending. The follow-up also shows that respondents in the treatment group have significantly lower biases in beliefs about the debt-to-GDP ratio. This suggests that a substantial part of the effects operate through genuine changes in beliefs about the debt-to-GDP ratio rather than through short-lived emotional responses to the treatment.

We also shed light on the mechanisms through which the perceived level of government debt increases people's support for reducing the amount of government debt through spending cuts. We provide evidence that beliefs about public debt causally affect people's perception of the sustainability of public finances, even though we find no strong evidence of changes in expected government spending and taxation in ten years. We interpret this as suggestive evidence that people demand immediate spending reductions as a result of a desire to smooth the consumption of public goods over time. We find no evidence that

beliefs about government debt causally affect people's trust in the government or their beliefs about rent-seeking and inefficiencies in the public sector, which could similarly lead to a reduction in desired spending levels.

Our paper adds to the literature on the political economy of government debt which tries to understand why governments accumulate high levels of debt (Alesina and Passalacqua, 2015; Alesina and Tabellini, 1990; Battaglini and Coate, 2008; Cukierman and Meltzer, 1989; Müller et al., 2016; Persson and Svensson, 1989; Song et al., 2012).[1] We add to this literature by providing the first evidence that biased beliefs about the level of government debt can make voters prefer higher levels of government spending than if they were aware of the true level of debt. Biased beliefs could therefore contribute to the accumulation of suboptimal levels of government debt.[2] Our evidence is also related to Lergetporer et al. (2016) and West et al. (2016), who show that informing people about current levels of government spending on different categories sharply reduces people's support for spending increases in these categories.

We also contribute to the literature on the determinants of people's attitudes towards the size of the government and redistributive policies (Alesina and La Ferrara, 2005; Alesina and Giuliano, 2010; Fisman et al., 2016, 2015; Giuliano and Spilimbergo, 2014; Roth and Wohlfart, 2016; Weinzierl, 2017). Alesina et al. (2017) provide evidence that left-wing respondents increase their support for government redistribution and policies that promote equality of opportunity when exposed to information about low intergenerational mobility, while right-wing respondents do not adjust their attitudes. Kuziemko et al. (2015) show that people's demand for redistribution is fairly inelastic to information about inequality. Our paper extends this literature by providing the first evidence on the role of people's perceptions of government debt in the formation of attitudes towards the size of the government and redistributive policies, such as spending on income support and social insurance programs. Our findings suggest that people become less supportive

[1] Battaglini et al. (2016) provide evidence from an abstract laboratory experiment which studies political distortions in the accumulation of public debt.

[2] Moreover, our paper contributes to a small correlational literature examining whether voters punish governments for running budget deficits, which provides indirect evidence on voters' preferences over government debt (Alesina et al., 2012, 1998; Brender and Drazen, 2008; Peltzman, 1992).

of such policies if they think that levels of government debt are high. Moreover, we add to the literature on attitudes towards the size of the government by introducing two novel behavioral measures: first, we measure people's willingness to donate money to an NGO advocating the downsizing of the government. Second, we capture people's willingness to sign a real online petition in favor of a balanced budget rule.[3]

Finally, by examining whether people's expectations about future taxes and future government spending change in response to changes in beliefs about government debt, we provide evidence on whether our respondents take into account the intertemporal budget constraint of the government when forming their expectations. The assumption that consumers act in line with the intertemporal government budget constraint is at the core of many macro models and is one of the key assumptions underlying the Ricardian Equivalence Theorem (Barro, 1974). We find mixed evidence on whether people form their expectations in line with the intertemporal budget constraint of the government. People who learn about the high level of public debt change their beliefs about fiscal sustainability, but we find no evidence of changes in expectations about the levels of government spending and taxation in ten years.[4]

The rest of this paper is structured as follows. In section 2 we provide some background on the intertemporal budget constraint of the government and the hypotheses we test in the experiment. Section 3 presents the design as well as the setting and samples used in the information experiments. We present our main results in section 4 and provide evidence on mechanisms and robustness checks in section 5. Section 6 concludes.

[3]More generally, we contribute to a literature on the experimental manipulation of beliefs. For instance, Cruces et al. (2013) and Karadja et al. (2016) provide evidence that people change their demand for redistribution in response to information about their position in the income distribution. Our work is also related to an experimental literature on the formation of expectations about economic variables, such as inflation, house prices and income (Armona et al., 2016; Coibion et al., 2017; Kumar et al., 2015).

[4]A small correlational literature has used survey data to examine the assumptions underlying the Ricardian Equivalence Theorem (Allers et al., 1998; Hayo and Neumeier, 2016; Heinemann and Hennighausen, 2012). This literature documents a low level of awareness of the level of public debt and finds little support that individuals' consumption and savings decisions are influenced by the perceived level of debt.

2 Conceptual framework

In this section we present a simple conceptual framework which motivates the experiment and the main hypotheses on how voters should adjust their policy preferences when updating their beliefs about the amount of government debt. Voters form their expectations about future government spending and taxation and their policy preferences subject to the perceived intertemporal government budget constraint:

$$\sum_{t=1}^{\infty} \frac{p_t}{(1+r)^t} = \alpha \left[B_0 + \sum_{t=1}^{\infty} \frac{T_t}{(1+r)^t} \right]$$

where p_t is public good provision in period t, T_t is total tax revenue collected in period t and B_0 is net wealth of the government in period 0.[5] α lies in the interval $[0, 1]$ and captures the efficiency of the bureaucratic process. In our experiment we create exogenous variation in our respondents' perceived level of government debt, $-B_0$. If respondents understand the intertemporal budget constraint of the government, then an increase in the perceived level of government debt, $\Delta B_0 < 0$, should lead to a decrease in the perceived net present value of the stream of public good provision, $\sum_{t=1}^{\infty} \frac{p_t}{(1+r)^t}$, or to an increase in the perceived net present value of tax revenue, $\sum_{t=1}^{\infty} \frac{T_t}{(1+r)^t}$.

If respondents expect that adjustments in spending or taxation will be necessary during their lifetimes, or if they care about the utility of future generations, then an inclination to smooth the consumption of public goods over time could lead them to immediately demand lower levels of government spending in response to learning that debt is higher then they previously thought. Alternatively, respondents could favor immediate tax increases in order to smooth the tax burden for themselves and their children. If respondents do not expect that adjustments will be necessary during their lifetimes, and if they do not care about future generations, they may not respond to the treatment and may want to postpone the necessary adjustments in spending or taxes.

[5] For simplicity we abstract from the distributional aspects of taxation and from how the tax burden is spread across the electorate.

In addition, our respondents could adjust their beliefs about the wastage that occurs in the bureaucratic process. Specifically, upon learning that government debt is higher than they previously thought, respondents could hold more pessimistic beliefs about the rate at which the government transforms tax revenue into public goods, α. Consequently, respondents may want to shift consumption away from public goods towards private goods, and therefore reduce the size of the government.

In section A in the online Appendix we demonstrate how an increase in the perceived level of government debt leads to a lower demand for government spending and to an increase in the net present value of total tax revenue collected in a simple two-period model.

3 Experimental design

In this section we present our experimental design and explain the structure of the main experiment and the follow-up survey. The full experimental instructions are available at `https://goo.gl/SMYC9f`. We pre-registered our experimental design, the sample sizes, as well as the specifications estimated in the paper on the AEA RCT registry.[6]

3.1 Main experiment

3.1.1 Belief elicitation

Our experiment is structured as follows: First, we ask all respondents questions about some of their demographics, namely gender, age, region and income, and about their political affiliation. Second, we elicit all participants' beliefs about the debt-to-GDP ratio. In order to make this statistic more meaningful to our respondents, we tell them that government debt refers to the "total amount owed by the Federal government" and that GDP refers to the "market value of all final goods and services that are produced by

[6]The pre-analysis plans are available at `https://www.socialscienceregistry.org/trials/1960`. In this trial entry we also pre-specified an experiment examining how people's support for government spending programs varies by the proposed mode of financing, which will be used as the basis for a separate paper and which is not included in this paper for brevity's sake. Results are available upon request.

an economy within one year". Moreover, Ansolabehere et al. (2013) argue that providing people with meaningful anchors increases the data quality and reduces noise in the belief elicitation of abstract statistics. In order to reduce the likelihood that people give random responses as they may not have a sense of the likely magnitude of the debt-to-GDP ratio, we therefore inform our respondents about the debt-to-GDP ratio in 1970 (34.78 percent) before asking them to estimate the current debt-to-GDP ratio in the US. Our respondents receive the following instructions:

> In 1970 the debt-to-GDP ratio was 34.78 percent. This means that the Federal Government owed around a third of what the country produced within one year. What do you think was the debt-to-GDP ratio in 2016?

We ran a pilot experiment on Amazon Mechanical Turk with 200 participants in order to test how the anchor affects people's beliefs about the level of public debt in 2016. We describe the results in section 4.1.

3.1.2 Information treatment

Thereafter, respondents in the treatment group receive information about the actual debt-to-GDP ratio in the US in 2016 (104.81 percent), while respondents in the control group do not receive any information. Treated respondents receive the following message:

> We now would like to provide you with information about the debt-to-GDP ratio in the US. In 2016, the federal debt-to-GDP ratio was 104.81 percent. This means that the Federal Government owed a bit more than what the country produced within one year.

Our respondents also are shown a figure contrasting the debt-to-GDP ratio in 1970 with the debt-to-GDP ratio in 2016 (for an illustration of the treatment screen see Figure A.1). To ensure a high level of trust of our respondents in this statistic we provide them with the official source of the data (the Federal Reserve Bank of St. Louis).

3.1.3 Measuring political preferences: Survey measures

To analyze the effects of our information treatment, we first measure our respondents' subjective beliefs about government debt. We ask all of our respondents whether they think that there is too much government debt in the US and whether the government should reduce the amount of debt. We measure people's agreement to these statements on 5-point Likert scales reaching from "Strongly Agree" to "Strongly Disagree". Thereafter, we ask them a series of questions on their attitudes towards government spending. They first answer a question on whether they would like the overall level of government spending to be increased or decreased. Then we provide our respondents with explanations of several spending categories. For each category, we ask them whether they would like to increase or decrease spending.[7] The answer categories for these questions range from 1 "It should be increased a lot" to 5 "It should be decreased a lot". Subsequently, our respondents answer a series of questions on whether income taxes of different income groups should be increased or decreased, whether the government should introduce a wealth tax and whether the estate tax should be increased or decreased.

3.1.4 Measuring political preferences: Behavioral measures

To examine whether the information also affects political behavior, we employ revealed preference measures of political attitudes. Specifically, we use two (randomly ordered) behavioral measures that capture people's attitudes towards government spending and the size of the government. We employ these measures with our sample from Amazon Mechanical Turk.[8]

Our respondents can make a donation to an NGO which advocates downsizing the government. Our respondents are told that one out of 20 participants will receive an additional $5 at the end of the experiment, and they have to decide how much to keep for themselves and how much to donate in case they are selected. We believe that this

[7] We focus on the following spending categories: defense, infrastructure, schooling, social security, social insurance, health, and environment.

[8] We could not include these behavioral measures in the experiment with the representative online panel due to constraints from our online panel provider.

is a particularly suitable behavioral measure as donations to political organizations are an important real-life tool for people to support particular political causes. Donations to political NGOs and campaigns have been used previously to measure political preferences (Grigorieff et al., 2016; Perez-Truglia and Cruces, 2016).

Moreover, we give all of our respondents the opportunity to sign a real online petition on the White House webpage in favor of introducing a balanced-budget rule. Individuals in the treatment and in the control group receive different links to identical petitions. This allows us to observe the actual numbers of signatures for the petition for people in the treatment group and for people in the control group.

3.1.5 Mechanisms: Post-treatment beliefs

To understand why our respondents may change their views on government spending and taxation, we collect a rich set of post-treatment beliefs. Specifically, we measure our respondents' expectations about future taxation and government spending as well as their beliefs about the sustainability of public finances. For example, we ask them whether they agree that "the current levels of government spending and taxation are not sustainable". Thereafter, we measure our respondents' trust towards the government and their beliefs about the effectiveness of the government and about the corruption of politicians. For example, we ask them whether they agree that "the government makes good use of taxpayers' money". Finally, we ask our respondents a series of questions on their demographics.

3.2 Follow-up survey

One concern could be that responses to the information treatment are very short-lived in nature and do not persist over time. To examine the persistence of effects over time, we conduct a follow-up survey four weeks after the main experiment, in which we do not administer any additional treatment. We ask our respondents the same set of questions on their views regarding government spending and taxation. At the very end of the follow-up survey we also ask people about their estimate of the current debt-to-GDP

ratio to test whether posterior beliefs about the debt-to-GDP ratio persistently respond to the information.

3.3 Setting and sample size

3.3.1 Sample: Representative online panel

Our main evidence comes from an experiment with a representative online sample that we conducted in February 2017. We collect data through an online survey in collaboration with the market research company Research Now which is widely used in economics research (Almås et al., 2016; de Quidt et al., 2017; Enke, 2017). This sample of 813 respondents is representative of the adult US population in terms of region, income, age, and gender. Table A.4 displays summary statistics for our sample and the American Community Survey. 55 percent of our respondents are female, a slightly larger fraction than among the American population (51 percent). Moreover, our sample is very similar to the US population in terms of the age profile and regions. While the mean household income in our sample ($62,487) is lower than that of the US population ($84,568), the median household income in our sample ($62,500) is very close to the median household income in the US ($59,039). The attrition rate in our experiment is very low and does not differ across treatment arms.

3.3.2 Sample: Amazon Mechanical Turk

In addition to conducting our experiment with the representative online panel, we also recruit participants from Amazon Mechanical Turk (MTurk), an online labor market which is increasingly used to conduct experimental research (Cavallo et al., 2017; Kuziemko et al., 2015). We conduct our experiment on the MTurk platform for several reasons: first, it allows us to employ behavioral measures which are difficult to implement with representative online panels. Second, it enables us to conduct a four-week follow-up with a much higher response rate compared to the response rates of follow-up surveys from the representative online panel.

We ran the experiment on Amazon Mechanical Turk (MTurk) on the 27$^{\text{th}}$ of January

2017. We recruit participants currently living in the United States who have completed at least 500 tasks with an overall rating of more than 95 percent. In our experiment on MTurk we recruited 802 participants who completed the experiment. The attrition rate is below 2 percent and not statistically different for respondents in the treatment and the control group. Table A.2 in the online Appendix summarizes the characteristics of the sample. 56 percent of our respondents are male, the median income in our sample is $62,500 which is only slightly higher than the median income in the US population. Respondents from the MTurk sample are more educated than respondents from the general population and there are more Democrats in our MTurk sample compared to the US population. 74 percent of the respondents who completed the main experiment also completed our four-week follow-up survey. The sample composition is virtually unchanged compared to the main experiment and the attrition rate from the main experiment to the follow-up is similar and not statistically different between treatment and control group.

3.3.3 Integrity of randomization

We provide evidence that our representative online panel is balanced between treatment and control group in terms of observables (see Table A.5). We find balance for all covariates except for the fraction of Republicans which is significantly higher in the control group. A joint F-test when regressing the treatment indicator on all covariates confirms that covariates are globally balanced (p=0.243). We deal with the imbalance of the Republican indicator by including all covariates as control variables in our main specification. Note that the larger fraction of Republicans in the control group works against finding a significant effect of the information on views on government spending, given that Republicans are generally more likely to demand spending cuts.

Moreover, also the MTurk sample is balanced in terms of the pre-specified observables (see Table A.6). Indeed, we find no imbalance for any of the pre-specified covariates included in the balance test. We also find that the covariates are not jointly significantly related to the treatment indicator (p=0.1311). Finally, we find balance also for respondents in our follow-up survey (see Table A.7). Specifically, we find that all 13 variables

in our balance test except one (full-time employment) are balanced. A joint F-test when regressing the treatment indicator on all covariates confirms that covariates are globally balanced (p=0.333). Again, we include all covariates as control variables in our estimations on the MTurk sample to make sure that our results are not driven by imbalances between treatment and control group.

4 Beliefs about the debt-to-GDP ratio

4.1 Prior beliefs

The US debt-to-GDP substantially increased over the last decades from about 35 percent in the 1960s and 1970s to more than 100 percent today (see Figure A.2 in the online Appendix).[9] Figure 1 shows data characterizing people's beliefs about the debt-to-GDP ratio in 2016. We find that people widely under-estimate the actual debt-to-GDP ratio in 2016 (104.81 percent). The median respondent believes that the debt-to-GDP ratio is 55.10 percent and more than 90 percent of our respondents underestimate the debt-to-GDP ratio.[10] These findings are consistent with previous evidence that voters have incorrect perceptions of the level of government debt (Allers et al., 1998; Mayer, 1995).

We provide respondents with a historical anchor in order to make sure that their estimate of the debt-to-GDP ratio today and the information treatment are meaningful to them. However, it could be the case that our respondents underestimate the debt-to-GDP ratio because they are given the historical anchor. To rule out this concern we ran a pilot experiment on MTurk with 200 respondents in which we elicited people's beliefs about the debt-to-GDP ratio. Half of the respondents are given information about the debt-to-GDP ratio in 1970, while the remaining respondents do not receive this information. The patterns are very similar for respondents that do not receive the historical anchor. While the median respondent thinks that the debt-to-GDP ratio is 61.5 percent when not provided with an anchor, the median respondent who is given the historical anchor

[9] The online Appendix is available at `https://goo.gl/fcQCNb`.

[10] As pre-specified, we winsorize people's beliefs about the debt-to-GDP ratio at 200 in order to deal with outliers.

believes that the true value is 56.23 percent. Even though this difference is statistically significant, it is of small magnitude. Overall, the provision of the anchor reduces the dispersion of beliefs and leads to a lower number of outliers, suggesting that the anchor reduces noise in prior beliefs (see Figure A.5).

4.2 What is our respondents' desired debt-to-GDP ratio?

In the pilot experiment on MTurk we also ask people about their views on what debt-to-GDP ratio the government should aim to achieve. People answer this question after estimating the current debt-to-GDP ratio in the United States. Figure A.4 shows the distribution of desired changes in the debt-to-GDP ratio, which is defined as the difference between people's desired debt-to-GDP ratio and their belief about the actual debt-to-GDP ratio. The figure highlights that people predominantly want to reduce the amount of debt in the US. Figure A.3 displays the distribution of beliefs about the debt-to-GDP ratio as well as the desired debt-to-GDP ratio in the group of respondents who received the historical anchor. While the median respondent's estimate of the debt-to-GDP ratio is 56.23 percent, she thinks that the government should aim to achieve a debt-to-GDP ratio of 25 percent.[11]

4.3 Do respondents update their beliefs?

Do our respondents persistently update their beliefs about the debt-to-GDP ratio in response to the provision of official statistics? We provide evidence that our information treatment durably shifts people's beliefs about the debt-to-GDP ratio using data from the follow-up survey on MTurk we conducted four weeks after the information provision. The distribution of posterior beliefs is described in Figures 2 and A.7. Specifically, people in the treatment group report significantly higher estimates of the debt-to-GDP ratio (p=0.002). The median belief in the treatment group is that the debt-to-GDP ratio is 75 percent, while it is 62 percent in the control group. Figure 3 shows treatment effects

[11] People's stated preference over their desired debt-to-GDP ratio could be much higher if people fully understood what moving to a lower debt-to-GDP ratio would entail in terms of spending cuts or tax increases.

on posterior beliefs depending on our respondents' prior beliefs. The figure highlights that treated subjects who under-estimated the debt-to-GDP ratio strongly shift their belief upward, while treated respondents who over-estimated the debt-to-GDP ratio shift their belief downward (although this effect is noisily measured). This evidence strongly suggests that the information treatment leads to genuine updating of beliefs (Cavallo et al., 2017).

Moreover, Figure A.8 depicts updating of beliefs about the debt-to-GDP ratio using the posterior belief in the follow-up survey and the prior belief from the main survey. We observe substantial changes in beliefs also in the control group. However, we cannot reject the equality of means of the beliefs about debt-to-GDP in the main survey and the follow-up survey in the control group (p=0.107), suggesting that information acquisition in the control group is of little concern.

We also examine which covariates predict persistent shifts in beliefs in response to our treatment. We regress the change in the estimated debt-to-GDP ratio between the initial survey and the follow-up survey in the treatment group on a set of demographic variables and people's prior estimate of the debt-to-GDP ratio. Table A.8 shows that people with a higher prior belief about the debt-to-GDP ratio update less, and that male respondents update more. However, none of the other covariates, such as people's political affiliation, is significantly correlated with the degree of belief updating. Taken together, we find that our treatment leads to strong and persistent updating of beliefs about the debt-to-GDP ratio towards the true value, and the change in beliefs is greater for individuals with more biased beliefs before the treatment.

4.4 Correlates of beliefs about the debt-to-GDP ratio

To shed light on the determinants of respondents' beliefs about the level of debt, we regress people's perceived debt-to-GDP ratio on a set of demographics.[12] As more than 90 percent of our respondents underestimate the debt-to-GDP ratio, higher estimates largely correspond to less biased beliefs. Men and older individuals report higher es-

[12]We winsorize the estimates of the debt-to-GDP ratio at 200 percent in order to take care of outliers.

timates of the debt-to-GDP ratio, even though these effects are significant only in the representative sample and only in the MTurk sample, respectively (see Table A.28 in the online Appendix). Education and income, by contrast, are not correlated with people's perceived level of debt.

5 The causal effect of information about government debt

In this section we describe the results from our information experiments which allow us to provide evidence on the causal effect of beliefs about the debt-to-GDP ratio on people's views on government debt, public spending and taxation.

5.1 Empirical specification

We regress our outcome variables y_i on a treatment indicator, Treatment_i, which takes the value one for people who receive the information treatment, and zero otherwise. We estimate the following equation using OLS:

$$y_i = \pi_0 + \pi_1 \text{Treatment}_i + \Pi^T \mathbf{X_i} + \varepsilon_i$$

where X_i is a vector of control variables, including all of the variables we use in the baseline balance check[13] and ε_i is an individual-specific error term. We include control variables as this increases our power to precisely estimate treatment effects and to account for the small imbalance we observe in the representative online panel for the Republican dummy. We report robust standard errors for all estimations.

[13]Specifically, we control for the belief about the debt-to-GDP ratio pre-treatment, gender, age, log income, the number of children, dummies for employment status, whether the respondent has a college degree and whether the respondent is a Republican. For ease of interpretation and to take care of outliers we deviate in some minor ways from the pre-specified set of controls. Namely, we include a dummy for "other employment status" and we top-code the number of children at five. We also include a dummy indicating missing values for income, a measure of trust in statistics and a dummy variable for Independents. The two latter control variables help us to increase efficiency, while not affecting the coefficient estimates. Results without controls are presented in the online Appendix.

We report results for all pre-specified outcome variables which are normalized using the mean and standard deviation from the control group. To deal with the issue of multiple hypotheses testing we create indices of outcomes for views on government debt, for government spending and for taxation, respectively, as described in Anderson (2008). Moreover, within each of these families of outcomes we provide p-values that control for a false discovery rate of 5 percent, i.e. the expected proportion of rejections that are type I errors (Anderson, 2008).

5.2 Does the information affect views on government debt?

Do people's subjective views on government debt respond to factual information about the debt-to-GDP ratio? Table 1 shows that people who received information about the true debt-to-GDP ratio are significantly more likely to think that there is too much government debt and that the government should reduce the overall amount of government debt. The estimated effects are large in magnitude: People become 0.32 of a standard deviation more likely to think that there is too much debt and 0.26 of a standard deviation more inclined to think that the government should reduce the amount of government debt. This corresponds to 75 percent of the greater support for debt reduction among Republicans than among Democrats. Moreover, the effects are very similar for the representative online panel and the MTurk sample, which highlights the robustness of our results.

5.3 Does the information affect policy views?

After establishing that people who receive the information want to reduce government debt, we now turn to the question whether people would like to achieve the reduction in debt through spending cuts or through tax increases. Table 2 highlights that participants who were provided with the information are 0.18 of a standard deviation more in favor of reducing the overall amount of government spending. People become significantly more likely to demand spending cuts on infrastructure, schooling, social services, health and the environment, but not on defense. Overall, we find fairly large effect sizes of about 0.14 of a standard deviation. Our treatment shifts policy preferences by one third of the

preference gap for these variables between Republicans and Democrats. Even though the effect sizes are larger for the representative online panel than for the MTurk sample, these differences are not statistically distinguishable. Our evidence highlights that beliefs about the debt-to-GDP strongly affect people's views on government spending.

Moreover, we examine people's views on taxation. Table 3 shows that people who learn about the true debt-to-GDP ratio become marginally significantly more likely to favor an increase in the overall amount of taxes collected by the government. While treated respondents in the representative sample favor an increase in the estate tax, treated respondents in the MTurk sample become more supportive of increasing income taxes for the bottom 50 percent. However, these results are not robust to adjusting p-values for multiple hypothesis testing. All in all, our results suggest that learning that the debt-to-GDP ratio is higher than previously thought makes people more supportive of government spending cuts, but does not strongly change their support for changes in taxation.

The differential responses for government spending and taxation could be due to several factors. First, the perceived marginal disutility of a tax increase could be higher than the perceived marginal disutility of a government spending cut. For instance, this could be due to people's belief that a large fraction of government spending is wasteful. Second, tax increases affect some people's income with certainty, while it is less clear whether individuals will be directly affected by cuts in government spending.[14]

5.4 Does the information affect behavior?

To examine whether the information also changes actual political behavior, we analyze our respondents' inclination to donate to a political NGO advocating government spending cuts and their willingness to sign real online petitions (Grigorieff et al., 2016). We find that respondents who receive the information donate significantly more money to an NGO lobbying for downsizing the government in the United States. Table 4 shows that

[14]In unreported regressions we examined whether treated respondents favor tax increases in other income groups than their own. However, we found no strong evidence of such an effect. These results are available upon request.

donations increase by 0.15 of a standard deviation, which corresponds to 54 percent of the gap in donations between Republicans and Democrats. People in the control group donate on average around 58 cents of the 5 dollars, while people in the treatment group donate around 72 cents on average, i.e. donations increase by 24 percent.

However, treated respondents do not become more willing to sign a petition in favor of introducing a balanced budget rule. Table 4 highlights that the effects are of small size and statistically insignificant for the self-reported intention to sign the petition. We also calculate the proportion of actual signatures on the petition websites for the treatment and the control group which confirms the conclusions from the self-reports.

5.5 Do the treatment effects persist?

One concern with survey experiments is that treatment effects could reflect short-lived emotional responses to the information or experimenter demand rather than true changes in beliefs and policy views. Following Cavallo et al. (2017), we address these concerns by examining the persistence of our main results in the MTurk sample in a four-week follow-up.[15] We first show that the effects on views regarding government debt persist and remain very large in magnitude. As shown in Panel D of Table 1, even four weeks after receiving the treatment respondents remain 0.16 of a standard deviation more likely to think that there is too much debt and 0.18 of a standard deviation more inclined to think that the government should reduce the amount of government debt.[16] This corresponds to approximately 60 percent of the effect size in the main study. Moreover, we find a persistent treatment effect of 0.15 of a standard deviation on people's attitudes towards cutting the overall amount of government spending (Panel D of Table 2). This effect size corresponds to 83 percent of the effect size in the main study.

Even though the effects become weaker and are not significantly different from zero for the individual spending categories, they are statistically indistinguishable from the

[15]Haaland and Roth (2017) employ 'demand treatments' (de Quidt et al., 2017) to provide evidence that follow-up surveys are an effective way of dealing with experimenter demand effects.

[16]In Tables A.13 - A.15 in the online Appendix we provide evidence on the persistence of results controlling for sample composition effects.

effects in the main experiment. It is worth noting that the effect sizes on individual spending categories estimated in the main study were slightly smaller in the MTurk sample than in the representative sample to begin with. Moreover, Table 3 shows little persistence of the effects on people's views on whether to increase the overall amount of taxes. We find suggestive evidence that treated respondents favor an introduction of a wealth tax and an increase in taxes for the bottom 50 percent when re-interviewed after four weeks. However, none of these results are robust to adjusting p-values for multiple hypothesis testing. Naturally, our evidence from the follow-up is not as highly powered as the evidence from the main experiment as we only conducted the follow-up on MTurk where we successfully recontacted 75 percent of the original sample. Taken together, the fact that most of our findings persist in a four-week follow-up suggests that our results reflect true updating of beliefs and policy views, and that short-lived responses to our treatment are not an important concern.

5.6 Is there a heterogeneous response to the information?

Our information treatment is designed to be more effective for people who have highly biased beliefs about the debt-to-GDP ratio. We find evidence that respondents who reported lower estimates of the debt-to-GDP ratio ex-ante respond more strongly to our information treatment. In Figures 4, 5 and A.9 we examine the treatment effects by prior beliefs. Respondents with prior beliefs of a debt-to-GDP ratio below 50 percent respond most strongly to the information in terms of their views on debt reduction and government spending. For respondents who initially over-estimated the debt-to-GDP ratio and receive the treatment, on the other hand, we find noisily measured null effects. The fact that the treatment effects are stronger for individuals with a lower prior belief and non-existent for individuals with unbiased prior beliefs suggests that our results reflect true updating of beliefs rather than emotional responses and priming effects.

In Table A.16 in the online Appendix we also present heterogeneous treatment effects according to a winsorized measure of people's prior belief about the debt-to-GDP ratio.[17]

[17]As pre-specified, we winsorize this variable at an estimate of the debt-to-GDP ratio of 200 (i.e. a

We include an interaction term of this measure with the treatment dummy and also add it as a control without any interaction. While the estimated coefficients on the interaction term go into the expected direction, they are not statistically significant. We believe that there are two main reasons for the lack of significance. First, the bias is noisily measured as there is substantial variation in people's ability to estimate abstract statistics. Second, the size of the bias is correlated with many unobserved variables which could affect the response to the information treatment. For example, one could imagine that more highly biased respondents are also less numerate and thus less capable of using our information to update their beliefs. This could lead to a downward bias of the estimated coefficient on the interaction term.

We also test whether our treatment has heterogeneous effects across demographic groups. Specifically, we estimate specifications including interaction terms of the treatment indicator with a dummy taking value one for Republicans, an indicator variable taking value one if our respondents have at least one child, age, a dummy for high income, and a dummy for respondents with at least a bachelor degree. As shown in Table A.16, we find no significant treatment heterogeneity for any of these variables. We provide a more detailed discussion of these results in section B.6 in the online Appendix.

5.7 Assessing the external validity of our experimental findings

How externally valid are our experimental estimates? We assess the external validity by analyzing the correlations of control group respondents' prior beliefs about the debt-to-GDP ratio with their attitudes towards debt reduction, government spending and taxation, their inclination to donate to the Cato Institute and their willingness to sign the petition in favor of a balanced budget rule. In line with our experimental estimates, we show that people who think that the debt-to-GDP ratio is higher are more likely to think that the government should reduce the amount of public debt and that the government should reduce spending (see Table 5). Moreover, we find no correlation of this belief with people's attitudes towards taxation, consistent with our experimental

bias of 95.19) to make sure that our results are not driven by outliers.

findings. However, unlike in the experiment, we find no significant relationship between beliefs about the debt-to-GDP ratio and donations to the Cato institute, even though the coefficient estimate goes into the expected direction. Finally, in contrast to the experimental findings, respondents who think that there is more debt are significantly more likely to sign the petition for the introduction of a balanced budget-rule.

Taken together, the fact that we find significant correlations between beliefs about the debt-to-GDP ratio and views on debt reduction and government spending, but not views on taxation, and that all correlations have the same sign as our experimental estimates, reassures us of the external validity of our experimental findings. The differences in significance of experimental and correlational estimates for the behavioral outcomes could be due to endogeneity of the OLS results or differential effects of beliefs on policy preferences for the compliant subpopulation of respondents who update their beliefs in response to the information.

6 Mechanisms

6.1 Why do respondents want to decrease government debt?

In what follows, we examine mechanisms through which our information intervention may increase people's willingness to reduce government debt and to cut government spending.

6.1.1 Intertemporal government budget constraint

First, we examine the role of the intertemporal budget constraint of the government. As discussed in section 2, if people form their beliefs in line with the intertemporal government budget constraint, learning that government debt is higher than previously thought should lead them to expect higher taxes or lower government spending in the future. An inclination to smooth the consumption of public goods and taxes over time could then lead them to demand immediate cuts in government spending. To shed light on this channel, we ask our respondents whether they think that the current levels of spending and taxation are sustainable, whether they expect changes in spending and

taxation for future generations, and how they expect the level of government spending and the tax burden to change between the time of the survey and ten years after the survey.[18]

As can be seen in Table 6, we find mixed evidence that our main findings operate through changes in beliefs about future government spending and taxation. We find no significant treatment effects on expectations about spending and taxation in ten years, even though the coefficient estimates go into the expected directions (columns (1) and (2)). As columns (3) and (4) show, people neither significantly update their expectations regarding the levels of spending and taxation that future generations will experience. However, in column (5) of Table 6 we show that respondents who receive information about the level of government debt become significantly more likely to think that current public finances are not sustainable. This effect is strongly significant, large in size, robust to adjustment for multiple hypothesis testing, and present for both the MTurk sample and the representative sample. Finally, we find no evidence that treated respondents become more likely to think that it will become more expensive for the government to borrow in the future (column (6)).

Combined, we view these results as suggestive that our findings operate through the perceived intertemporal budget constraint of the government and a consumption-smoothing motive. Treated individuals expect some adjustment of government spending and taxation to become necessary in the future, while the exact changes they expect as a result of a shift of the perceived level of debt are less clear. One potential explanation for this latter result is that it is very hard for people to predict future government spending or that the time-horizon we picked (ten years) is too short as only very long-run expectations are altered by our treatment.

[18] We chose the time span of ten years because at this point a new administration will be in office, and we want participants to abstract from specific goals of the current government. Moreover, participants should still be able to form meaningful expectations over this time span, while ten years seems to be far enough in the future that spending cuts or tax increases may become necessary.

6.1.2 Beliefs about wastage and government efficiency

Alternatively, our results could work through reduced trust towards the US government and changes in beliefs about the efficiency of the government. First, after learning that the debt-to-GDP ratio has reached a higher level than they previously thought respondents could become less likely to think that the government can be trusted to do what is right.[19] More specifically, they could become less likely to think that the government makes good use of tax money or that the government is forward-looking in its spending and taxation. Second, once people learn about the large amount of government debt, they may update their beliefs about the wastage that occurs in the bureaucratic process. Such wastage could occur through general inefficiencies in the public sector or through rent-seeking activities of politicians. Less trust towards the government and lower perceived efficiency of the public sector could make our respondents more favorable to downsizing the government. As shown in Table 7, we find no evidence that the information treatment changes people's trust in the government or their beliefs about wastage in the bureaucratic process.

All in all, the results suggest that our effects operate through the perceived intertemporal government budget constraint and a desire to smooth the consumption of public goods over time rather than through changes in beliefs about wastage and government efficiency.

6.2 Robustness

6.2.1 Do the effects operate through genuine changes in beliefs?

On the one hand, our treatment could alter people's policy preferences through genuine changes in beliefs as a result of information. On the other hand, the treatment could change people's self-reported policy preferences through channels other than information, such as short-lived emotional responses or priming on the issue that debt is very high.

[19] Kuziemko et al. (2015) find that providing people with information about high levels of inequality reduces their trust towards the US government, explaining why support for government policies aimed at reducing inequality does not respond strongly to their information treatment.

While priming effects should be rather short-lived in nature, effects working through genuine updating of beliefs should persist (Cavallo et al., 2017). In addition, effects working through genuine updating of beliefs should be stronger for individuals with more biased prior beliefs, while this should not be the case for priming effects. Since we find evidence of (i) changes in beliefs about the debt-to-GDP ratio and views on policies that are stronger for individuals with more biased prior beliefs and (ii) persistence of most of our main treatment effects four weeks after the treatment administration it seems likely that our treatment works through information and updating of beliefs rather than priming effects.

6.2.2 Experimenter demand effects

We believe that it is unlikely that our results are driven by experimenter demand for at least three reasons. First, we collected data on whether people thought that our survey was politically biased. Overall, 85 percent of respondents felt that the survey was not politically biased. Moreover, our treatment did not shift people's beliefs about whether the survey was politically biased (see Table A.27 in the online Appendix). Second, we provide evidence that our effects persist in a four-week follow-up which is much less likely plagued by demand effects (Haaland and Roth, 2017). Third, de Quidt et al. (2017) find that respondents in online experiments change their behavior in standard preference measures only very moderately in response to explicit demand manipulations that signal the experimental hypothesis to subjects.

7 Conclusion

We provide novel evidence on people's beliefs and preferences regarding government debt. We document several stylized facts using both a representative online panel and an online convenience sample. First, people strongly underestimate the amount of government debt in the US. Second, people's desired amount of government debt is significantly below their estimate of the current debt-to-GDP ratio.

Moreover, we provide new results on the causal effects of beliefs about the debt-to-GDP ratio on people's attitudes towards government spending and taxation. We find strong evidence that respondents who learn that the debt-to-GDP ratio in the US is higher than they thought want the government to reduce the amount of debt and become more supportive of cutting government spending. We even find that people provided with the information donate significantly more money to an NGO lobbying for downsizing the government. By contrast, people provided with the information do not alter their views on taxation nor do they become more likely to support a petition in favor of a balanced budget rule. Taken together, our results suggest that learning about the actual amount of government debt lowers people's demand for state-financed public good provision.

We show that our treatment effects persist in a four-week follow-up and that respondents in the treatment group have significantly lower biases in beliefs about the debt-to-GDP ratio four weeks after the treatment was administered. This suggests that a substantial part of the effects operate through changes in beliefs about the level of debt and that short-lived emotional responses to our treatment are less important. Finally, we provide suggestive evidence that our findings operate through changes in beliefs about the sustainability of public finances and a consumption-smoothing motive rather than through changes in trust towards politicians or beliefs about inefficiencies in the public sector.

Our results have several implications. First, our finding that beliefs about the level of government debt causally affect people's policy preferences indicates that voters are forward-looking and take into account economically relevant statistics when forming their views on government policies. Second, our results suggest that support for spending increases could diminish at times when voters update their beliefs about government debt, which could restrict the political feasibility of implementing fiscal stimulus programs during a fiscal crisis such as the recent crises in Europe. Finally, our finding that voters demand higher levels of spending when they underestimate the level of debt suggests that biased beliefs could contribute to the accumulation of high levels of debt as observed in many industrial countries (Alesina and Passalacqua, 2015).

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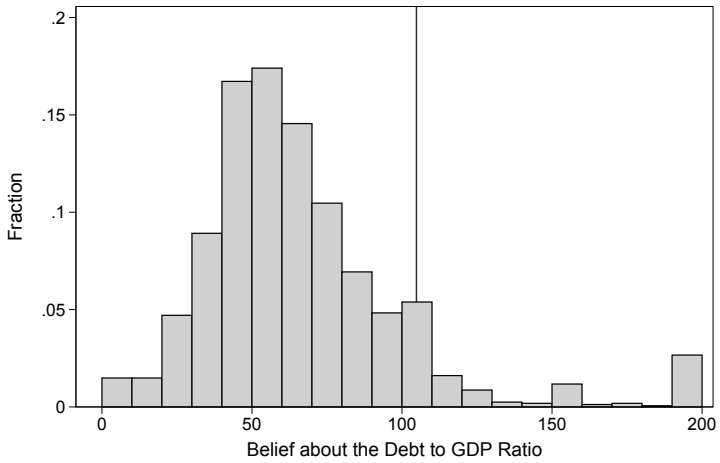
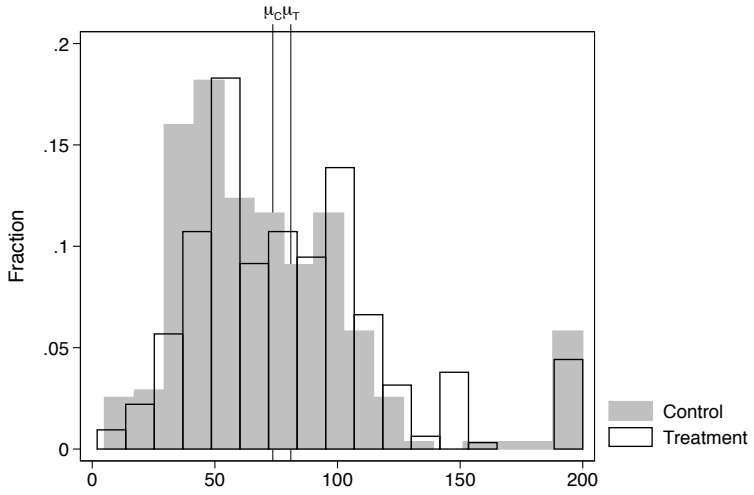
Main figures

Figure 1: Beliefs about the debt-to-GDP ratio (pooled sample)



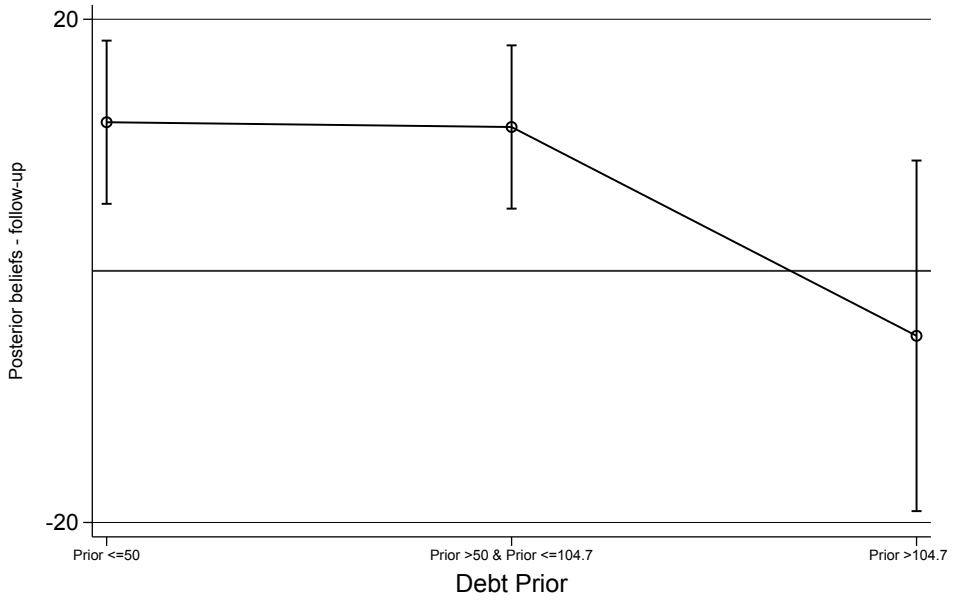
Notes: In this figure we display people's beliefs about the current debt-to-GDP ratio using data on 1612 respondents from the representative online panel and MTurk. The estimates are winsorized at a debt-to-GDP ratio of 200 percent.

Figure 2: Beliefs about the debt-to-GDP ratio in the four-week follow-up



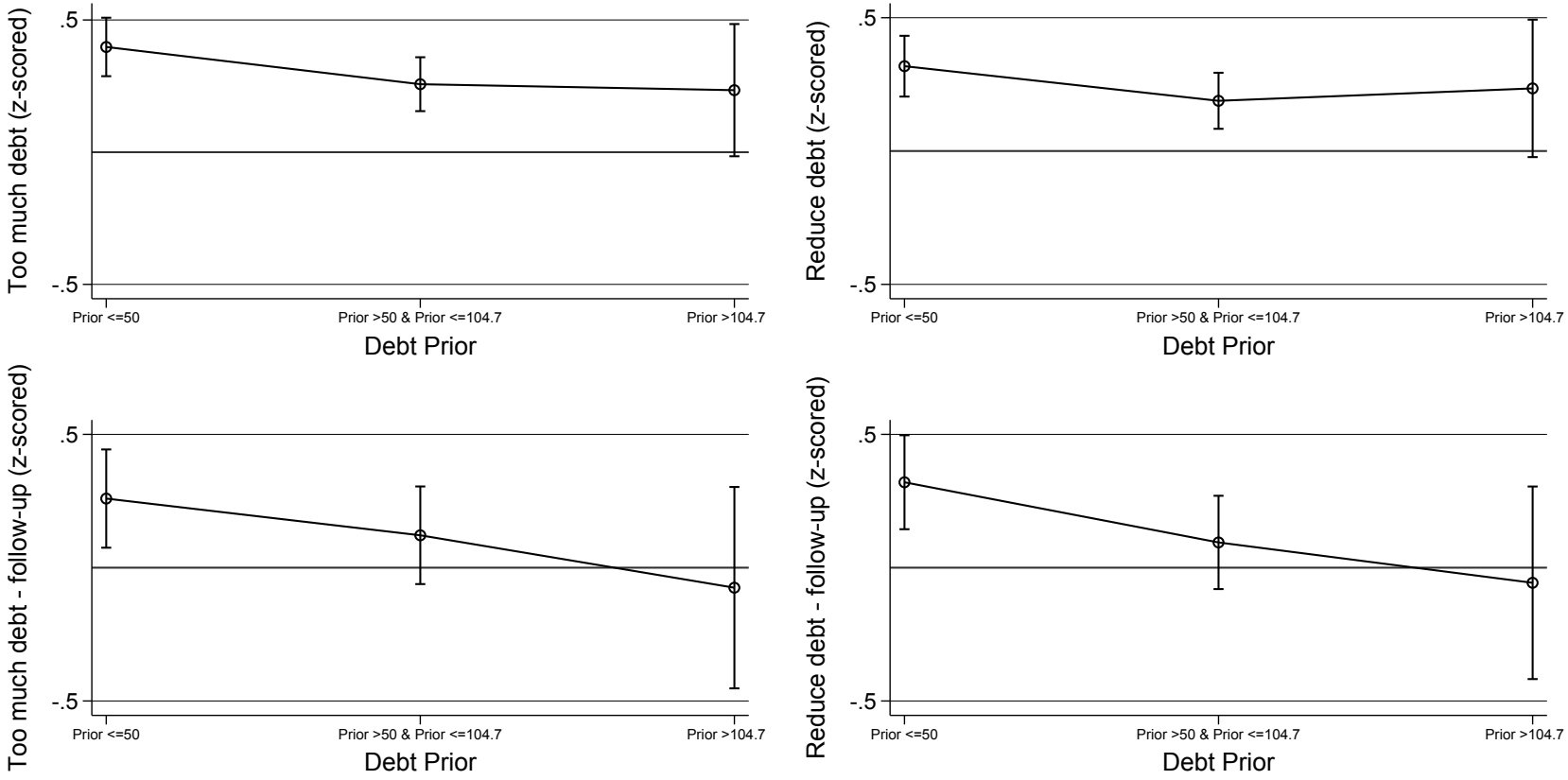
Notes: This figure describes the distribution of beliefs about the debt-to-GDP ratio in the four-week follow-up experiment for the treatment and the control group. This is based on 592 respondents who completed the follow-up. The estimates are winsorized at a debt-to-GDP ratio of 200 percent. The median belief in the treatment group is that the debt-to-GDP ratio is 75 percent, while it is 62 percent in the control group. A Kolmogorov–Smirnov test reveals that the distribution of beliefs is statistically different between the treatment and control group (p=0.018). Also the mean belief about the debt-to-GDP ratio in the treatment group is statistically different from the mean in the control group (p=0.001).

Figure 3: Heterogeneous effects on posterior beliefs about the debt-to-GDP ratio: by prior beliefs



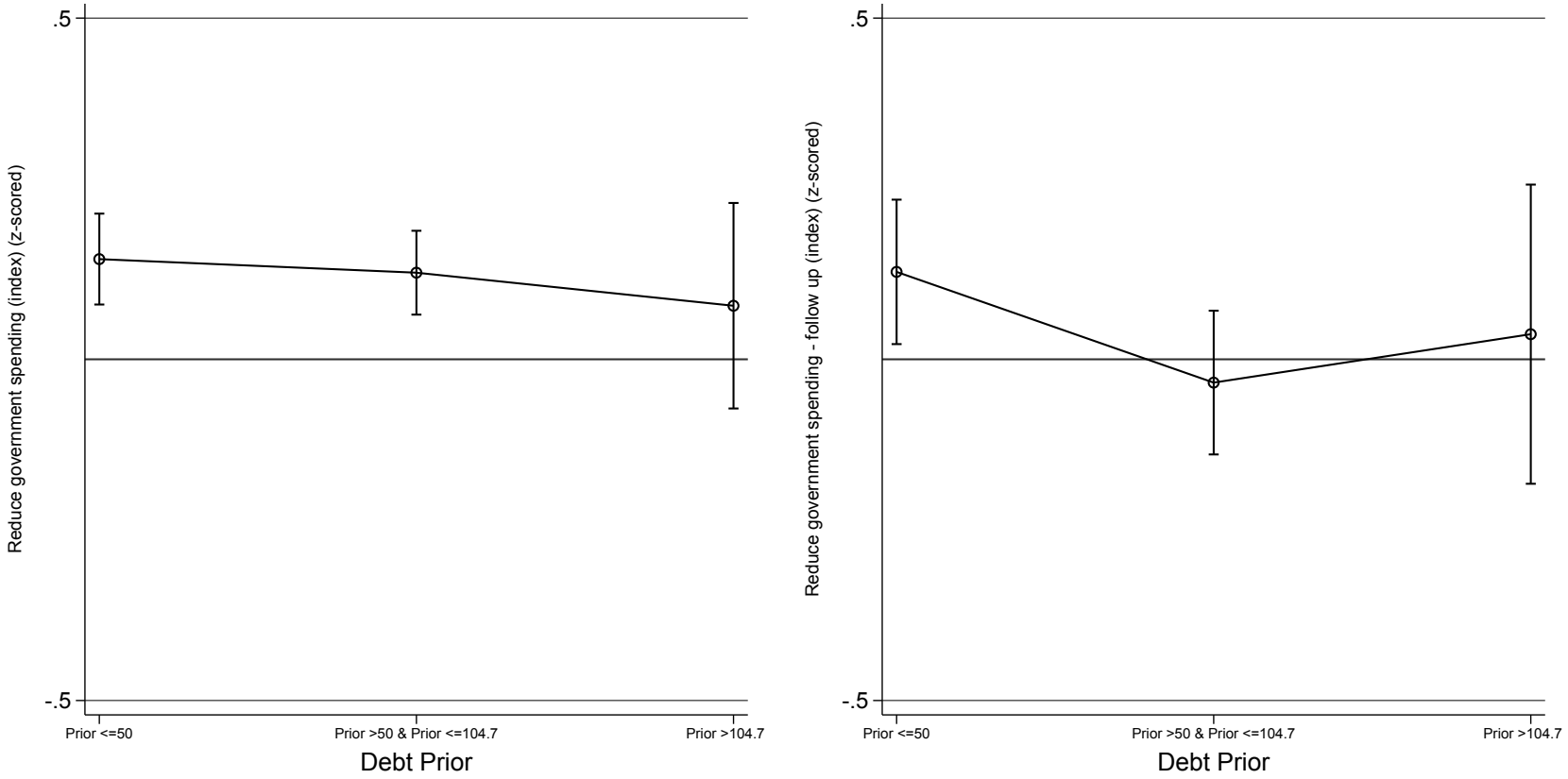
Notes: This figure describes treatment effects on posterior beliefs about the debt-to-GDP ratio by people's prior beliefs about the debt-to-GDP ratio. The figure displays the point estimate of the treatment effects with 90 percent confidence interval estimated on data from the follow-up survey on MTurk. The treatment effect estimates control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, and the respondent's number of children (top-coded at five).

Figure 4: Heterogeneous effects on views on government debt: by prior beliefs



Notes: This figure describes treatment effects on views on government debt by people's prior beliefs about the debt-to-GDP ratio. The outcome variables are z-scored using the mean and standard deviation in the control group. The figure displays the point estimate of the treatment effects with 90 percent confidence intervals. The figures on the top are based on pooled data from the main experiments on the representative sample and MTurk, while the figures on the bottom are based on the follow-up survey on MTurk. The treatment effect estimates control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample.

Figure 5: Heterogeneous effects on attitudes towards government spending (index): by prior beliefs



Notes: This figure describes treatment effects on an index of attitudes towards government spending by people's prior beliefs about the debt-to-GDP ratio. The outcome variable is z-scored using the mean and standard deviation in the control group. The figure displays the point estimate of the treatment effects with 90 percent confidence intervals. The figure on the left is based on pooled data from the main experiments on the representative sample and MTurk, while the figure on the right is based on the follow-up survey on MTurk. The treatment effect estimates control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample.

Main Tables

Table 1: Views on government debt

	There is too much debt	Gov. should reduce debt	Index
Panel A: Pooled			
Treatment	0.326	0.259	0.280
	(0.044)	(0.045)	(0.043)
Adjusted p-value	[0.001]	[0.001]	
Observations	1614	1614	599
Panel B: Rep. Sample			
Treatment	0.346	0.293	0.309
	(0.063)	(0.062)	(0.060)
Adjusted p-value	[0.001]	[0.001]	
Observations	812	812	812
Panel C: MTurk			
Treatment	0.301	0.218	0.245
	(0.063)	(0.065)	(0.062)
Adjusted p-value	[0.001]	[0.001]	
Observations	802	802	802
Panel D: Follow-up Sample			
Treatment	0.159	0.177	0.168
	(0.075)	(0.073)	(0.070)
Adjusted p-value	[0.033]	[0.033]	
Observations	599	599	599

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. In Panel D we show the results from the MTurk follow-up. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table 2: Attitudes towards government spending

	Reduce Overall Sp.	Reduce Defense Sp.	Reduce Infrastr. Sp.	Reduce Schooling Sp.	Reduce Social Sec. Sp.	Reduce Social Ins. Sp.	Reduce Health Sp.	Reduce Environm. Sp.	Index
Panel A: Pooled									
Treatment	0.177	0.011	0.142	0.186	0.174	0.152	0.156	0.137	0.142
	(0.046)	(0.046)	(0.049)	(0.046)	(0.046)	(0.045)	(0.046)	(0.044)	(0.026)
Adjusted p-value	[0.001]	[0.111]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	
Observations	1613	1613	1613	1613	1613	1613	1613	1613	1613
Panel B: Rep. Sample									
Treatment	0.184	0.045	0.217	0.219	0.212	0.137	0.191	0.164	0.171
	(0.068)	(0.066)	(0.070)	(0.069)	(0.068)	(0.066)	(0.067)	(0.065)	(0.039)
Adjusted p-value	[0.007]	[0.065]	[0.005]	[0.005]	[0.005]	[0.015]	[0.005]	[0.009]	
Observations	811	811	811	811	811	811	811	811	811
Panel C: MTurk									
Treatment	0.163	-0.004	0.052	0.131	0.100	0.153	0.094	0.093	0.098
	(0.063)	(0.063)	(0.068)	(0.064)	(0.063)	(0.063)	(0.063)	(0.060)	(0.036)
Adjusted p-value	[0.067]	[0.313]	[0.222]	[0.086]	[0.128]	[0.067]	[0.128]	[0.128]	
Observations	802	802	802	802	802	802	802	802	802
Panel D: Follow-up Sample									
Treatment	0.156	-0.025	0.047	0.025	0.077	0.085	0.073	-0.042	0.050
	(0.073)	(0.074)	(0.082)	(0.074)	(0.079)	(0.074)	(0.071)	(0.070)	(0.043)
Adjusted p-value	[0.339]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	
Observations	599	597	597	597	597	597	597	597	597

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. In Panel D we show the results from the MTurk follow-up. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table 3: Attitudes towards taxation

	Increase overall amount of taxes	Increase income tax: top 10	Increase income tax: next 40	Increase income tax: bottom 50	Introduce wealth tax	Increase estate tax	Index
Panel A: Pooled							
Treatment	0.091	0.015	0.002	0.049	-0.040	0.063	0.024
	(0.046)	(0.047)	(0.048)	(0.049)	(0.048)	(0.047)	(0.028)
Adjusted p-value	[0.421]	[1.000]	[1.000]	[0.999]	[0.999]	[0.807]	
Observations	1613	1612	1612	1612	1611	1610	1610
Panel B: Rep. Sample							
Treatment	0.061	-0.027	-0.045	-0.036	0.037	0.134	0.010
	(0.068)	(0.069)	(0.069)	(0.072)	(0.066)	(0.068)	(0.040)
Adjusted p-value	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[0.399]	
Observations	811	810	810	810	809	809	809
Panel C: MTurk							
Treatment	0.131	0.067	0.050	0.135	-0.096	-0.003	0.047
	(0.062)	(0.064)	(0.066)	(0.068)	(0.069)	(0.067)	(0.039)
Adjusted p-value	[0.171]	[0.422]	[0.489]	[0.171]	[0.280]	[0.803]	
Observations	802	802	802	802	802	801	801
Panel D: Follow-up Sample							
Treatment	0.030	-0.138	0.012	0.151	0.144	-0.085	0.017
	(0.074)	(0.082)	(0.075)	(0.079)	(0.080)	(0.079)	(0.039)
Adjusted p-value	[0.691]	[0.222]	[0.733]	[0.222]	[0.222]	[0.268]	
Observations	597	597	597	597	596	593	593

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. In Panel D we show the results from the MTurk follow-up. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table 4: Behavioral measures

	Petition in favor of a balanced budget rule				Donation to
	Want to sign	Report: Signed	Index: Self-reports	Actual signatures	Cato Institute
	(1)	(2)	(3)	(4)	(5)
Treatment	0.0419	-0.0105	0.00659	0.031	0.154
	(0.032)	(0.028)	(0.027)	(0.019)	(0.077)
Control group mean	0.000	0.000	0.000	0.060	0.000
Observations	802	802	802	802	802

Notes: The outcome variables in columns 1, 2, 3 and 5 are z-scored using the mean and standard deviation in the control group. All estimations are based on the MTurk sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). Robust standard errors are in parentheses.

Table 5: Correlates of the demand for government spending and taxation

	Debt Reduction Index	Reduce Total sp.	Increase Total taxes	Petition Index	Donation to Cato Inst.
Est. Debt-to-GDP / 100	0.263	0.209	0.097	0.274	0.093
	(0.107)	(0.091)	(0.101)	(0.127)	(0.134)
Male	-0.118	-0.008	0.130	0.065	0.077
	(0.067)	(0.068)	(0.071)	(0.102)	(0.105)
Age	0.005	0.005	-0.004	-0.001	-0.010
	(0.003)	(0.003)	(0.003)	(0.005)	(0.006)
Log(Income)	0.089	-0.031	0.002	-0.031	0.161
	(0.048)	(0.047)	(0.050)	(0.072)	(0.078)
Number of children	-0.003	0.064	-0.032	0.073	0.061
	(0.025)	(0.025)	(0.029)	(0.045)	(0.055)
Employed Full-Time	-0.028	0.112	-0.164	0.058	-0.069
	(0.126)	(0.141)	(0.142)	(0.222)	(0.177)
Employed Part-Time	-0.209	0.135	0.006	-0.076	0.048
	(0.153)	(0.155)	(0.161)	(0.246)	(0.224)
Unemployed	0.053	0.158	-0.336	0.281	-0.200
	(0.152)	(0.179)	(0.175)	(0.286)	(0.274)
Retired	-0.079	-0.071	0.106	0.466	-0.185
	(0.181)	(0.181)	(0.187)	(0.525)	(0.294)
Student	0.103	0.320	-0.316	0.413	0.385
	(0.208)	(0.215)	(0.224)	(0.417)	(0.468)
High Education	-0.146	-0.028	0.034	-0.143	-0.056
	(0.070)	(0.070)	(0.071)	(0.104)	(0.095)
Republican	0.408	0.574	-0.560	0.141	0.174
	(0.071)	(0.073)	(0.077)	(0.119)	(0.127)
Observations	812	811	811	384	384

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each column shows one estimation. All estimations are based on the control group in the pooled data from the representative sample and MTurk. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table 6: Expectations about future government spending and taxation and beliefs about fiscal sustainability

	Exp: Increase future taxes	Exp: Decrease future gov. spending	More taxes for future generation	Less gov. spending for future generation	Levels of spend. not sustainable	More expensive to refinance
Panel A: Pooled						
Treatment	0.069	0.048	0.026	0.048	0.148	0.059
	(0.050)	(0.050)	(0.048)	(0.050)	(0.048)	(0.048)
Adjusted p-value	[0.525]	[0.704]	[0.525]	[0.525]	[0.011]	[0.525]
Observations	1609	1609	1607	1607	1606	1606
Panel B: Rep. Sample						
Treatment	0.115	-0.025	0.044	0.043	0.169	0.039
	(0.071)	(0.071)	(0.068)	(0.074)	(0.068)	(0.068)
Adjusted p-value	[0.365]	[0.927]	[0.843]	[0.843]	[0.085]	[0.843]
Observations	807	807	805	805	804	804
Panel C: MTurk						
Treatment	0.028	0.108	0.014	0.046	0.120	0.068
	(0.071)	(0.073)	(0.069)	(0.069)	(0.067)	(0.067)
Adjusted p-value	[1.000]	[0.697]	[1.000]	[1.000]	[0.697]	[0.697]
Observations	802	802	802	802	802	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table 7: Trust in the government and beliefs about government efficiency

	Trust the Gov.	Gov. makes good use of tax money	Gov. is forward-looking	Gov. bureaucracy not efficient	Politicians do not work for public
Panel A: Pooled					
Treatment	0.010	-0.011	-0.050	-0.019	-0.016
	(0.045)	(0.045)	(0.047)	(0.049)	(0.050)
Adjusted p-value	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]
Observations	1606	1606	1606	1606	1605
Panel B: Rep. Sample					
Treatment	-0.049	-0.069	-0.104	0.063	-0.028
	(0.065)	(0.065)	(0.067)	(0.070)	(0.074)
Adjusted p-value	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]
Observations	804	804	804	804	803
Panel C: MTurk					
Treatment	0.069	0.039	0.013	-0.089	0.011
	(0.061)	(0.062)	(0.066)	(0.068)	(0.065)
Adjusted p-value	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]
Observations	802	802	802	802	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Online Appendix: Public Debt and the Demand for Government Spending and Taxation

Christopher Roth and Johannes Wohlfart

Summary of the online appendix

In Section A we formally show how an increase in people's beliefs about government debt affects their attitudes towards government spending and taxation in a simple two-period model.

In Section B.1 we display summary statistics and provide evidence on the integrity of the randomization by showing that respondents in the treatment and control groups are balanced in terms of observables. In Section B.2 we provide evidence on correlates of belief updating.

In Section B.3 we replicate our main results from the information experiments without the pre-specified set of control variables. In Section B.4 we present results on the persistence of treatment effects accounting for sample composition by presenting the treatment effects in the main experiment for the subsample of respondents who participated in the follow-up experiment. In Section B.5 we describe heterogeneous treatment effects in response to the information about the debt-to-GDP ratio. In Section B.6 we provide additional results on beliefs about political bias, and correlates of beliefs about the debt-to-GDP ratio.

In Section C.2 we illustrate the treatment screen, the actual evolution of the debt-to-GDP ratio in the US, beliefs about debt-to-GDP, the desired debt-to-GDP ratio, updating in response to the information and heterogeneous response of preferred taxation by prior beliefs. Finally, in Section D.1 we provide additional evidence on the effect of information about the debt-to-GDP ratio on debt-vs. tax-financed spending programs.

A Theoretical appendix

In this section we demonstrate how an increase in the perceived level of government debt affects people's policy preferences in a simple two-period model.

A representative voter who lives for two periods, $t = 1, 2$, has utility over private consumption, c_t, and over consumption of public goods, p_t. We assume that utility is separable between private and public good consumption, and allow for different discount factors for consumption of private and public goods, β and γ:

$$U = u(c_1) + \beta u(c_2) + v(p_1) + \gamma v(p_2)$$

The government can raise revenue by taxing labor income, w_t, in the two periods, which we assume to be exogenous. Given taxes, τ_t, and public good provision by the government, the voter chooses private consumption such as to maximize utility subject to the voter's intertemporal budget constraint. We assume that the voter can borrow and save at the rate $1 + r$:

$$\max_{c_1, c_2} U \qquad \text{s.t.}$$
$$c_1 + \frac{c_2}{1+r} \leq w_1(1-\tau_1) + \frac{w_2(1-\tau_2)}{1+r}$$

The voter believes that the government faces the following intertemporal budget constraint:

$$p_1 + \frac{p_2}{1+r} + \frac{\underline{B_3}}{(1+r)^2} \leq \alpha \left[\tau_1 w_1 + \frac{\tau_2 w_2}{1+r} + B_1 \right]$$

where B_1 is the ex-ante net wealth of the government at the beginning of the first period (the negative of government debt), $\underline{B_3}$ is an exogenous lower bound to net wealth of the government at the end of the second period.[1] α lies in the interval $[0, 1]$ and captures the efficiency of the bureaucratic process. We assume that the government can borrow and save at the same rate as the voter, $1 + r$, i.e. that there are no general equilibrium effects on the interest rate.[2]

The voter forms his or her policy preferences by choosing public good provision and taxes in the two periods such as to maximize utility, taking into account the government intertemporal budget constraint and that private consumption will be chosen optimally given taxes and public good provision.

Assuming log utility for the consumption of private and public goods, $u_t = \log c_t$ and $v_t = \log p_t$, it can be shown that the voter's preferred levels of consumption of private and public goods are given by:

[1] The constraint that debt cannot exceed a certain threshold at the end of the second period captures in a stylized fashion considerations such as constraints to the government's ability to refinance when debt reaches a level that is too high.

[2] One motivation of this is that the government can borrow in international markets.

$$
\begin{aligned}
c_1^\star &= \frac{1}{2+\beta+\gamma}\left[w_1 + \frac{w_2}{1+r} + B_1 - \frac{\underline{B_3}}{\alpha\left(1+r\right)^2}\right] \\
c_2^\star &= \frac{\beta\left(1+r\right)}{2+\beta+\gamma}\left[w_1 + \frac{w_2}{1+r} + B_1 - \frac{\underline{B_3}}{\alpha\left(1+r\right)^2}\right] \\
p_1^\star &= \frac{1}{2+\beta+\gamma}\left[\alpha\left(w_1 + \frac{w_2}{1+r} + B_1\right) - \frac{\underline{B_3}}{\left(1+r\right)^2}\right] \\
p_2^\star &= \frac{\gamma\left(1+r\right)}{2+\beta+\gamma}\left[\alpha\left(w_1 + \frac{w_2}{1+r} + B_1\right) - \frac{\underline{B_3}}{\left(1+r\right)^2}\right]
\end{aligned}
$$

Thus, the voter's demand for public spending is increasing in the perceived level of net wealth of the government, B_1, i.e. decreasing in the level of government debt that is inherited in the first period. It is also decreasing in the exogenous lower bound on government net wealth at the end of the second period, B_3, increasing in exogenous labor income in both periods, w_t, and in the efficiency of the government, α.

If the perceived efficiency of the government, α, positively depends on the perceived level of government net wealth, B_1, this will amplify the negative effect of updating beliefs about the level of debt on the voter's demand for public spending:

$$
\frac{\delta \mathbf{p_t^\star}}{\delta \mathbf{B_1}} = \left.\frac{\delta p_t^\star}{\delta B_1}\right|_{\Delta\alpha=0} + \frac{\delta p_t^\star}{\delta \alpha}\frac{\delta \alpha}{\delta B_1} > 0
$$

The net present value of the total tax revenue raised by the government is given by:

$$
\tau_1 w_1 + \frac{\tau_2 w_2}{1+r} = \frac{1+\gamma}{2+\beta+\gamma}\left[w_1 + \frac{w_2}{1+r}\right] - \frac{1+\beta}{2+\beta+\gamma}B_1 + \frac{1+\beta}{\alpha\left(2+\beta+\gamma\right)}\frac{\underline{B_3}}{\left(1+r\right)^2}
$$

The specific timing of taxes is indeterminate in this model. However, the net present value of taxes increases in the level of government debt at the beginning of the first period. Moreover, in this model a reduced perceived efficiency of the government, $\Delta\alpha < 0$, leads to an increase in total tax revenue collected. Intuitively, if the government works less efficiently, a higher level of taxes will be required for the government to respect the exogenous upper bound on government debt at the beginning of the third period, $-\underline{B_3}$.[3]

Taken together, in a simple two-period model with a representative voter who has log utility over the consumption of public and private goods, an increase in the perceived level of government debt leads to an immediate reduction in the preferred level of government spending. In addition, there is an increase in the net present value of total tax revenue collected. If voters update their beliefs about the efficiency of the government upon learning that government debt is higher than they thought, then this reinforces both the

[3]The efficiency of the government affects the relative price of public good consumption, which should lead to both income and substitution effects. Assuming log utility these effects cancel out. The only channel through which the perceived efficiency of the government affects optimal public good provision and taxes is that it makes it more or less difficult to achieve the exogenous lower bound on government net wealth at the end of the second period.

negative effect on the demand for government spending and the positive effect on the net present value of total taxes.

B Additional tables

B.1 Summary statistics and balance

Table A.1: Summary statistics: Representative online panel

	Mean	SD	Median	Min.	Max.	Obs.
Male	0.45	0.50	0.00	0.00	1.00	813
Income	62487.70	49004.72	62500.00	0.00	250000.00	813
Age	42.32	15.69	35.00	21.00	70.00	813
Any Children	0.61	0.49	1.00	0.00	1.00	813
Full-time Employed	0.40	0.49	0.00	0.00	1.00	813
Part-time Employed	0.10	0.30	0.00	0.00	1.00	813
Unemployed	0.08	0.27	0.00	0.00	1.00	813
At Least Bachelor	0.40	0.49	0.00	0.00	1.00	813
Republican	0.36	0.48	0.00	0.00	1.00	813
Prior Belief About Debt-to-GDP Ratio	64.78	32.73	60.00	0.00	200.00	813

Table A.2: Summary statistics: MTurk experiment

	Mean	SD	Median	Min.	Max.	Obs.
Male	0.56	0.50	1.00	0.00	1.00	802
Income	58513.09	39100.10	62500.00	0.00	250000.00	802
Age	24.76	11.42	21.00	1.00	57.00	802
Any Children	0.44	0.50	0.00	0.00	1.00	802
Full-time Employed	0.63	0.48	1.00	0.00	1.00	802
Part-time Employed	0.14	0.34	0.00	0.00	1.00	802
Unemployed	0.07	0.26	0.00	0.00	1.00	802
At Least Bachelor	0.51	0.50	1.00	0.00	1.00	802
Republican	0.28	0.45	0.00	0.00	1.00	802
Prior Belief About Debt-to-GDP Ratio	64.28	36.97	55.10	0.00	200.00	802

Table A.3: Summary statistics: MTurk follow-up survey

	Mean	SD	Median	Min.	Max.	Obs.
Male	0.57	0.50	1.00	0.00	1.00	594
Income	58059.76	38875.32	62500.00	0.00	250000.00	594
Age	25.56	11.45	21.00	1.00	57.00	594
Any Children	0.45	0.50	0.00	0.00	1.00	594
Full-time Employed	0.61	0.49	1.00	0.00	1.00	594
Part-time Employed	0.14	0.35	0.00	0.00	1.00	594
Unemployed	0.08	0.27	0.00	0.00	1.00	594
At Least Bachelor	0.52	0.50	1.00	0.00	1.00	594
Republican	0.27	0.45	0.00	0.00	1.00	594
Prior Belief About Debt-to-GDP Ratio	65.15	37.81	56.50	0.00	200.00	594

Table A.4: Characteristics of the representative sample compared to the American Community Survey (ACS)

	Mean: Rep. Online sample	Mean: ACS
Female	0.55	0.51
Age 18-24	0.113	0.126
Age 25-34	0.211	0.177
Age 35-44	0.187	0.165
Age 45-54	0.169	0.174
Age 55-64	0.189	0.165
Age 65 and older	0.131	0.193
Northeast	0.187	0.179
Midwest	0.225	0.211
South	0.370	0.375
West	0.218	0.24
Total household income	62,487	84,568

Notes: This table summarizes the characteristics of our sample from the representative online panel as well as the characteristics of the 2015 American Community Survey.

Table A.5: Balance: Representative online panel

	Treatment	Control	P-value(Treatment - Control)	Observations
Prior Belief About Debt-to-GDP Ratio	63.98	65.50	0.507	813
Male	0.44	0.45	0.780	813
Age	42.10	42.51	0.711	813
Log(Income)	10.54	10.63	0.414	813
Number of Children	1.26	1.29	0.734	803
Unemployed	0.07	0.09	0.398	813
Part-time Employed	0.10	0.10	0.853	813
Full-time Employed	0.41	0.40	0.660	813
Retired	0.18	0.20	0.395	813
Student	0.05	0.05	0.713	813
Other Employment Status	0.09	0.09	0.898	813
At Least Bachelor	0.41	0.40	0.819	813
Republican	0.30	0.41	0.002	813

The p-value of a joint F-test when regressing the treatment dummy on all covariates is 0.2431.

Table A.6: Balance: MTurk experiment

	Treatment	Control	P-value(Treatment - Control)	Observations
Prior Belief About Debt-to-GDP Ratio	62.71	65.99	0.211	802
Male	0.59	0.53	0.120	802
Age	25.37	24.08	0.108	802
Log(Income)	10.66	10.52	0.199	802
Number of Children	0.90	0.89	0.892	802
Unemployed	0.08	0.06	0.191	802
Part-time Employed	0.14	0.13	0.583	802
Full-time Employed	0.61	0.66	0.135	802
Retired	0.03	0.02	0.100	802
Student	0.03	0.03	0.858	802
Other Employment Status	0.06	0.06	0.768	802
At Least Bachelor	0.50	0.52	0.552	802
Republican	0.28	0.28	0.974	802

The p-value of a joint F-test when regressing the treatment dummy on all covariates is 0.1311.

Table A.7: Balance: MTurk follow-up

	Treatment	Control	P-value(Treatment - Control)	Observations
Prior Belief About Debt-to-GDP Ratio	63.99	66.49	0.424	594
Male	0.59	0.54	0.278	594
Age	25.85	25.23	0.509	594
Log(Income)	10.65	10.55	0.413	594
Number of Children	0.88	0.91	0.728	594
Unemployed	0.09	0.07	0.500	594
Part-time Employed	0.16	0.12	0.206	594
Full-time Employed	0.57	0.66	0.018	594
Retired	0.04	0.02	0.128	594
Student	0.03	0.02	0.212	594
Other Employment Status	0.06	0.07	0.638	594
At Least Bachelor	0.50	0.53	0.476	594
Republican	0.26	0.28	0.581	594

The p-value of a joint F-test when regressing the treatment dummy on all covariates is 0.3326.

B.2 Belief updating

Table A.8: Correlates of belief updating

	Change in est. debt-to-GDP ratio
Est. Debt-to-GDP / 100	-73.149
	(7.084)
Male	8.192
	(3.941)
Age	0.182
	(0.173)
Log(Income)	1.423
	(2.839)
Number of children	-1.332
	(1.847)
Employed Full-Time	-12.491
	(9.969)
Employed Part-Time	-8.534
	(11.052)
Unemployed	-7.053
	(11.579)
Retired	-10.471
	(13.000)
Student	-22.512
	(11.999)
High Education	2.208
	(4.195)
Republican	-0.608
	(4.805)
Observations	316

Notes: The estimation is based on the treatment group in the MTurk subsample that completed the follow-up. The specification controls for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). Robust standard errors are in parentheses.

B.3 Main tables without controls

Table A.9: Views on government debt: Without controls

	There is too much debt	Gov. should reduce debt	Index
Panel A: Pooled			
Treatment	0.284	0.221	0.241
	(0.045)	(0.046)	(0.044)
Adjusted p-value	[0.001]	[0.001]	
Observations	1614	1614	1614
Panel B: Rep. Sample			
Treatment	0.295	0.245	0.260
	(0.063)	(0.063)	(0.061)
Adjusted p-value	[0.001]	[0.001]	
Observations	812	812	812
Panel C: MTurk			
Treatment	0.272	0.197	0.221
	(0.066)	(0.068)	(0.065)
Adjusted p-value	[0.001]	[0.001]	
Observations	802	802	802
Panel D: Follow-up Sample			
Treatment	0.117	0.138	0.128
	(0.080)	(0.076)	(0.074)
Adjusted p-value	[0.158]	[0.158]	
Observations	599	599	599

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. Panel D present results from the follow-up experiment on MTurk. The estimations on the pooled sample control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table A.10: Attitudes towards government spending: Without controls

	Reduce Overall Sp.	Reduce Defense Sp.	Reduce Infrastr. Sp.	Reduce Schooling Sp.	Reduce Social Sec. Sp.	Reduce Social Ins. Sp.	Reduce Health Sp.	Reduce Environm. Sp.	Index
Panel A: Pooled									
Treatment	0.127	0.052	0.109	0.141	0.132	0.087	0.103	0.082	0.104
	(0.050)	(0.050)	(0.050)	(0.050)	(0.049)	(0.049)	(0.050)	(0.049)	(0.029)
Adjusted p-value	[0.027]	[0.115]	[0.040]	[0.027]	[0.027]	[0.065]	[0.041]	[0.065]	
Observations	1613	1613	1613	1613	1613	1613	1613	1613	1613
Panel B: Rep. Sample									
Treatment	0.114	0.103	0.187	0.131	0.161	0.026	0.105	0.067	0.112
	(0.072)	(0.070)	(0.072)	(0.072)	(0.070)	(0.071)	(0.072)	(0.070)	(0.042)
Adjusted p-value	[0.168]	[0.168]	[0.079]	[0.166]	[0.084]	[0.238]	[0.168]	[0.238]	
Observations	811	811	811	811	811	811	811	811	811
Panel C: MTurk									
Treatment	0.141	0.001	0.030	0.152	0.102	0.149	0.101	0.096	0.096
	(0.068)	(0.070)	(0.071)	(0.069)	(0.067)	(0.068)	(0.070)	(0.069)	(0.040)
Adjusted p-value	[0.114]	[0.327]	[0.289]	[0.114]	[0.163]	[0.114]	[0.163]	[0.163]	
Observations	802	802	802	802	802	802	802	802	802
Panel D: Follow-up Sample									
Treatment	0.105	-0.012	0.014	0.007	0.054	0.040	0.047	-0.073	0.023
	(0.077)	(0.083)	(0.083)	(0.079)	(0.083)	(0.082)	(0.081)	(0.081)	(0.048)
Adjusted p-value	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	
Observations	599	597	597	597	597	597	597	597	597

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. Panel D present results from the follow-up experiment on MTurk. The estimations on the pooled sample control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table A.11: Attitudes towards taxation: Without controls

	Increase overall amount of taxes	Increase income tax: top 10	Increase income tax: next 40	Increase income tax: bottom 50	Introduce wealth tax	Increase estate tax	Index
Panel A: Pooled							
Treatment	0.128	0.060	0.037	0.030	-0.007	0.102	0.043
	(0.049)	(0.050)	(0.049)	(0.051)	(0.050)	(0.050)	(0.030)
Adjusted p-value	[0.059]	[0.437]	[0.787]	[0.787]	[0.841]	[0.113]	
Observations	1613	1612	1612	1612	1611	1610	1610
Panel B: Rep. Sample							
Treatment	0.102	0.044	0.011	-0.059	0.092	0.193	0.040
	(0.071)	(0.073)	(0.070)	(0.073)	(0.069)	(0.069)	(0.042)
Adjusted p-value	[0.437]	[0.574]	[0.771]	[0.574]	[0.437]	[0.032]	
Observations	811	810	810	810	809	809	809
Panel C: MTurk							
Treatment	0.154	0.078	0.064	0.120	-0.106	0.010	0.046
	(0.068)	(0.069)	(0.069)	(0.070)	(0.072)	(0.071)	(0.043)
Adjusted p-value	[0.171]	[0.358]	[0.400]	[0.282]	[0.314]	[0.634]	
Observations	802	802	802	802	802	801	801
Panel D: Follow-up Sample							
Treatment	0.089	-0.102	0.045	0.155	0.122	-0.057	0.041
	(0.080)	(0.086)	(0.079)	(0.079)	(0.084)	(0.083)	(0.041)
Adjusted p-value	[0.499]	[0.499]	[0.665]	[0.439]	[0.499]	[0.665]	
Observations	597	597	597	597	596	593	593

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. Panel D present results from the follow-up experiment on MTurk. The estimations on the pooled sample control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table A.12: Behavioral measures: Without controls

	Petition in favor of a balanced budget rule				Donation to
	Want to sign	Report: Signed	Index: Self-reports	Actual signatures	Cato Institute
	(1)	(2)	(3)	(4)	(5)
Treatment	0.0386	-0.0105	0.00554	0.031	0.141
	(0.032)	(0.027)	(0.027)	(0.019)	(0.077)
Control group mean	0	0	0	0.06	0
Observations	802	802	802	802	802

Notes: The outcome variables in columns 1, 2, 3 and 5 are z-scored using the mean and standard deviation in the control group. All estimations are based on the MTurk sample. Robust standard errors are in parentheses.

B.4 Persistence of the effect accounting for sample composition

Table A.13: Views on government debt: Sample composition effects

	There is too much debt	Gov. should reduce debt	Index
Panel A: MTurk Main			
Treatment	0.301	0.218	0.245
	(0.063)	(0.065)	(0.062)
Adjusted p-value	[0.001]	[0.001]	
Observations	802	802	802
Panel B: MTurk Main (follow-up sample)			
Treatment	0.378	0.287	0.317
	(0.074)	(0.075)	(0.071)
Adjusted p-value	[0.001]	[0.001]	
Observations	599	599	599
Panel C: MTurk Follow-up			
Treatment	0.159	0.177	0.168
	(0.075)	(0.073)	(0.070)
Adjusted p-value	[0.033]	[0.033]	
Observations	599	599	599

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the MTurk sample from the main Experiment, Panel B shows estimations on the results from the main experiment from the MTurk sample that completed the follow-up and Panel C shows results from the follow-up experiment. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table A.14: Attitudes towards government spending: Sample composition effects

	Reduce Overall Sp.	Reduce Defense Sp.	Reduce Infrastr. Sp.	Reduce Schooling Sp.	Reduce Social Sec. Sp.	Reduce Social Ins. Sp.	Reduce Health Sp.	Reduce Environm. Sp.	Index
Panel A: MTurk Main									
Treatment	0.163	-0.004	0.052	0.131	0.100	0.153	0.094	0.093	0.098
	(0.063)	(0.063)	(0.068)	(0.064)	(0.063)	(0.063)	(0.063)	(0.060)	(0.036)
Adjusted p-value	[0.067]	[0.313]	[0.222]	[0.086]	[0.128]	[0.067]	[0.128]	[0.128]	
Observations	802	802	802	802	802	802	802	802	802
Panel B: MTurk Main (follow-up sample)									
Treatment	0.152	-0.043	0.091	0.168	0.102	0.142	0.137	0.101	0.107
	(0.070)	(0.071)	(0.078)	(0.075)	(0.072)	(0.074)	(0.072)	(0.069)	(0.041)
Adjusted p-value	[0.135]	[0.262]	[0.163]	[0.135]	[0.135]	[0.135]	[0.135]	[0.135]	
Observations	599	597	597	597	597	597	597	597	597
Panel C: MTurk Follow-up									
Treatment	0.156	-0.025	0.047	0.025	0.077	0.085	0.073	-0.042	0.050
	(0.073)	(0.074)	(0.082)	(0.074)	(0.079)	(0.074)	(0.071)	(0.070)	(0.043)
Adjusted p-value	[0.339]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	
Observations	599	597	597	597	597	597	597	597	597

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the MTurk sample from the main Experiment, Panel B shows estimations on the results from the main experiment from the MTurk sample that completed the follow-up and Panel C shows results from the follow-up experiment. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table A.15: Attitudes towards taxation: Sample composition effects

	Increase overall amount of taxes	Increase income tax: top 10	Increase income tax: next 40	Increase income tax: bottom 50	Introduce wealth tax	Increase estate tax	Index
Panel A: MTurk Main							
Treatment	0.131	0.067	0.050	0.135	-0.096	-0.003	0.047
	(0.062)	(0.064)	(0.066)	(0.068)	(0.069)	(0.067)	(0.039)
Adjusted p-value	[0.171]	[0.422]	[0.489]	[0.171]	[0.280]	[0.803]	
Observations	802	802	802	802	802	801	801
Panel B: MTurk Main (follow-up sample)							
Treatment	0.155	0.000	0.101	0.160	-0.105	0.010	0.054
	(0.071)	(0.073)	(0.077)	(0.080)	(0.081)	(0.079)	(0.046)
Adjusted p-value	[0.154]	[0.499]	[0.246]	[0.154]	[0.246]	[0.499]	
Observations	597	597	597	597	596	593	593
Panel C: MTurk Follow-up							
Treatment	0.030	-0.138	0.012	0.151	0.144	-0.085	0.017
	(0.074)	(0.082)	(0.075)	(0.079)	(0.080)	(0.079)	(0.039)
Adjusted p-value	[0.691]	[0.222]	[0.733]	[0.222]	[0.222]	[0.268]	
Observations	597	597	597	597	596	593	593

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

B.5 Heterogeneous effects

In what follows, we discuss some of the heterogeneous treatment effects.

One could imagine that people's political affiliation plays an important role in shaping people's response to our information treatment. In particular, Republicans already have a very strong preference for downsizing the government, which reduces the available variation to change their preferences. However, it is also possible that Republicans could engage in motivated reasoning and use the high levels of debt as an excuse to demand further decreases in government spending. As can be seen in Table A.16, we find little evidence that the responses to our information treatment significantly depend on people's party affiliation.

It is possible that people with different levels of educational attainment respond differently to information about the debt-to-GDP ratio. On the one hand, it is possible that people with more education respond less to the information treatment as they are less biased about the true statistic than are people with low levels of education. On the other hand, they could respond more strongly to the treatment as they are more numerate. Table A.16 shows that there is little evidence that the strength of the treatment effect systematically depends on education. Moreover, Table A.16 highlights that we do not find strong evidence for heterogeneity according to income.

We also look at heterogeneous treatment effects by age. We expect young individuals to respond more strongly to the treatment as they are more likely to see higher taxes and lower government spending in the future which might become necessary in order to reduce government debt. As can be seen in Table A.16, we find no significant heterogeneity by age.

In order to test whether concerns for future generations moderate the response to our treatment, we also examine heterogeneity by a dummy variable taking value one if the respondent reports having at least one child. Table A.16 shows that there is no significant heterogeneous response along this dimension except for people's perception that debt is too high, which is stronger for respondents with children.

Table A.16: Heterogeneous treatment effects

	Debt Reduction Index	Reduce Overall Sp.	Increase overall Amount of taxes	Petition Index	Donation to Cato Inst.
Treatment ×	-0.102	-0.094	-0.078	-0.252	-0.076
Est. Debt-to-GDP / 100	(0.138)	(0.140)	(0.144)	(0.181)	(0.192)
Treatment ×	-0.093	-0.145	-0.022	0.127	0.109
Republican	(0.087)	(0.094)	(0.102)	(0.163)	(0.183)
Treatment ×	0.009	-0.072	0.091	0.214	-0.093
High Education	(0.089)	(0.099)	(0.098)	(0.141)	(0.155)
Treatment ×	0.079	0.175	0.025	0.169	-0.037
High Income	(0.089)	(0.099)	(0.100)	(0.149)	(0.161)
Treatment ×	-0.003	-0.003	-0.000	0.004	0.017
Age	(0.003)	(0.003)	(0.003)	(0.007)	(0.008)
Treatment ×	0.239	0.115	-0.025	-0.069	-0.121
Children	(0.093)	(0.100)	(0.103)	(0.154)	(0.164)
Treatment	0.198	0.159	0.037	-0.397	-0.220
	(0.126)	(0.136)	(0.142)	(0.216)	(0.251)
Observations	1614	1613	1613	802	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each column shows one estimation and every estimation is done on the pooled sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.17: Heterogeneous treatment effects: Low debt-to-GDP ratio

	Debt Reduction Index	Reduce Overall Sp.	Increase overall Amount of taxes	Petition Index	Donation to Cato Inst.
Treatment ×	-0.015	-0.043	0.281	0.212	0.334
Low Est. Debt-to-GDP	(0.128)	(0.131)	(0.136)	(0.185)	(0.208)
Treatment ×	-0.090	-0.142	-0.033	0.117	0.093
Republican	(0.087)	(0.094)	(0.102)	(0.163)	(0.183)
Treatment ×	0.009	-0.072	0.092	0.214	-0.091
High Education	(0.089)	(0.099)	(0.098)	(0.141)	(0.155)
Treatment ×	0.082	0.177	0.025	0.170	-0.021
High Income	(0.089)	(0.098)	(0.099)	(0.148)	(0.161)
Treatment ×	-0.003	-0.003	-0.000	0.003	0.018
Age	(0.003)	(0.003)	(0.003)	(0.006)	(0.008)
Treatment ×	0.242	0.119	-0.034	-0.069	-0.137
Children	(0.093)	(0.100)	(0.103)	(0.154)	(0.164)
Treatment	0.260	0.241	-0.170	-0.456	-0.474
	(0.152)	(0.164)	(0.173)	(0.251)	(0.293)
Observations	1614	1613	1613	802	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each column shows one estimation and every estimation is done on the pooled sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.18: Heterogeneous treatment effects: Below median debt-to-GDP ratio

	Debt Reduction Index	Reduce Overall Sp.	Increase overall Amount of taxes	Petition Index	Donation to Cato Inst.
Treatment × Below Median Est. Debt-to-GDP	0.159	0.089	-0.025	0.216	-0.025
	(0.085)	(0.093)	(0.093)	(0.140)	(0.149)
Treatment × Republican	-0.083	-0.139	-0.024	0.138	0.104
	(0.087)	(0.094)	(0.103)	(0.163)	(0.182)
Treatment × High Education	0.011	-0.071	0.089	0.209	-0.094
	(0.089)	(0.099)	(0.098)	(0.141)	(0.155)
Treatment × High Income	0.080	0.175	0.024	0.165	-0.042
	(0.089)	(0.099)	(0.100)	(0.149)	(0.161)
Treatment × Age	-0.003	-0.003	-0.000	0.004	0.017
	(0.003)	(0.003)	(0.003)	(0.007)	(0.008)
Treatment × Children	0.238	0.114	-0.022	-0.060	-0.115
	(0.092)	(0.100)	(0.103)	(0.154)	(0.164)
Treatment	0.146	0.148	0.088	-0.413	-0.168
	(0.122)	(0.135)	(0.138)	(0.217)	(0.248)
Observations	1614	1613	1613	802	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each column shows one estimation and every estimation is done on the pooled sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.19: Heterogeneous treatment effects: Spending categories

	Reduce Defense Sp.	Reduce Infrastr. Sp.	Reduce Schooling Sp.	Reduce Social Sec. Sp.	Reduce Social Ins. Sp.	Reduce Health Sp.	Reduce Environm. Sp.
Treatment ×	-0.233	-0.142	-0.039	-0.076	0.008	0.228	0.034
Est. Debt-to-GDP / 100	(0.138)	(0.152)	(0.140)	(0.125)	(0.124)	(0.139)	(0.133)
Treatment ×	-0.153	-0.122	0.014	-0.174	-0.140	0.074	0.052
Republican	(0.099)	(0.107)	(0.104)	(0.102)	(0.099)	(0.104)	(0.096)
Treatment ×	-0.165	-0.046	-0.123	-0.062	-0.070	0.059	0.002
High Education	(0.094)	(0.101)	(0.097)	(0.094)	(0.093)	(0.095)	(0.092)
Treatment ×	0.280	-0.070	-0.152	-0.100	-0.052	-0.101	-0.083
High Income	(0.096)	(0.102)	(0.099)	(0.095)	(0.095)	(0.097)	(0.094)
Treatment ×	-0.002	-0.002	0.002	0.001	-0.001	-0.001	-0.003
Age	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Treatment ×	-0.078	0.062	0.113	-0.009	0.176	0.146	0.105
Children	(0.099)	(0.104)	(0.099)	(0.099)	(0.097)	(0.100)	(0.096)
Treatment	0.006	0.200	0.165	0.236	0.178	0.214	0.204
	(0.139)	(0.150)	(0.146)	(0.142)	(0.133)	(0.142)	(0.138)
Observations	1613	1613	1613	1613	1613	1613	1613

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each column shows one estimation and every estimation is done on the pooled sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.20: Heterogeneous treatment effects: Tax categories

	Increase income tax: top 10	Increase income tax: next 40	Increase income tax: bottom 50	Introduce wealth tax	Increase estate tax
Treatment ×	0.106	-0.076	0.052	0.066	-0.146
Est. Debt-to-GDP / 100	(0.145)	(0.141)	(0.150)	(0.140)	(0.146)
Treatment ×	-0.107	0.046	-0.094	-0.024	-0.047
Republican	(0.113)	(0.111)	(0.108)	(0.111)	(0.105)
Treatment ×	0.031	0.108	0.162	0.027	-0.091
High Education	(0.097)	(0.099)	(0.103)	(0.100)	(0.098)
Treatment ×	0.043	-0.062	-0.017	0.072	0.043
High Income	(0.099)	(0.100)	(0.104)	(0.101)	(0.100)
Treatment ×	-0.006	-0.000	-0.002	0.002	0.004
Age	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Treatment ×	0.042	-0.036	-0.023	-0.009	-0.089
Children	(0.103)	(0.103)	(0.108)	(0.103)	(0.103)
Treatment	0.226	-0.028	0.099	-0.114	-0.044
	(0.144)	(0.139)	(0.157)	(0.143)	(0.145)
Observations	1612	1612	1612	1611	1610

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each column shows one estimation and every estimation is done on the pooled sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.21: Heterogeneous treatment effects: Separate regressions for demographics

	Debt Reduction Index	Reduce Overall Sp.	Increase overall Amount of taxes	Petition Index	Donation to Cato Inst.
Panel A: Republican					
Treatment ×	-0.050	-0.119	-0.027	0.127	0.106
Republican	(0.085)	(0.093)	(0.099)	(0.158)	(0.178)
Treatment	0.296	0.215	0.100	-0.023	0.122
	(0.056)	(0.060)	(0.057)	(0.077)	(0.088)
Observations	1614	1613	1613	802	802
Panel B: Education					
Treatment ×	0.026	-0.026	0.101	0.238	-0.065
High Education	(0.087)	(0.093)	(0.093)	(0.135)	(0.151)
Treatment	0.268	0.189	0.045	-0.110	0.186
	(0.056)	(0.061)	(0.064)	(0.101)	(0.116)
Observations	1614	1613	1613	802	802
Panel C: Income					
Treatment ×	0.113	0.168	0.045	0.206	-0.065
High Income	(0.087)	(0.093)	(0.094)	(0.139)	(0.154)
Treatment	0.220	0.087	0.068	-0.108	0.180
	(0.065)	(0.069)	(0.070)	(0.106)	(0.114)
Observations	1614	1613	1613	802	802
Panel D: Age					
Treatment ×	-0.001	-0.003	-0.001	0.003	0.015
Age	(0.003)	(0.003)	(0.003)	(0.006)	(0.008)
Treatment	0.326	0.261	0.120	-0.061	-0.222
	(0.098)	(0.102)	(0.102)	(0.162)	(0.213)
Observations	1614	1613	1613	802	802
Panel E: Children					
Treatment ×	0.203	0.087	-0.031	0.019	0.021
Children	(0.086)	(0.093)	(0.093)	(0.141)	(0.153)
Treatment	0.173	0.128	0.110	0.001	0.146
	(0.063)	(0.068)	(0.067)	(0.086)	(0.104)
Observations	1614	1613	1613	802	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each Panel shows results for a different dimension of heterogeneity. All estimations are based on the pooled data from the representative sample and from MTurk. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.22: Heterogeneous treatment effects: Separate regressions for measures of the bias

	Debt Reduction Index	Reduce Overall Sp.	Increase overall Amount of taxes	Petition Index	Donation to Cato Inst.
Panel A: Est. Debt-to-GDP (continuous)					
Treatment ×	-0.001	-0.001	-0.000	-0.002	-0.000
Est. Debt-to-GDP	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Treatment	0.209	0.100	0.101	-0.079	0.135
	(0.072)	(0.078)	(0.079)	(0.102)	(0.113)
Observations	1614	1613	1613	802	802
Panel B: Belief (low debt-to-GDP)					
Treatment ×	0.001	-0.039	0.262	0.207	0.330
Low Debt-to-GDP	(0.130)	(0.138)	(0.142)	(0.186)	(0.206)
Treatment	0.260	0.184	-0.102	-0.160	-0.122
	(0.121)	(0.127)	(0.132)	(0.170)	(0.190)
Observations	1614	1613	1613	802	802
Panel C: Below Median Est. Debt-to-GDP					
Treatment ×	0.178	0.120	-0.051	0.183	-0.061
Below Median Est. Debt-to-GDP	(0.086)	(0.095)	(0.096)	(0.138)	(0.153)
Treatment	0.168	0.088	0.145	-0.084	0.183
	(0.059)	(0.067)	(0.070)	(0.104)	(0.118)
Observations	1614	1613	1613	802	802
Panel D: Underestimators					
Treatment ×	0.044	0.057	0.097	-0.100	0.223
Underestimate	(0.163)	(0.182)	(0.192)	(0.227)	(0.234)
Treatment	0.217	0.097	0.032	0.097	-0.057
	(0.157)	(0.175)	(0.185)	(0.215)	(0.221)
Observations	1614	1613	1613	802	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each Panel shows results for a different dimension of heterogeneity. All estimations are based on the pooled data from the representative sample and from MTurk. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.23: Heterogeneous treatment effects: Separate regressions for demographics - spending categories

	Reduce Defense Sp.	Reduce Infrastr. Sp.	Reduce Schooling Sp.	Reduce Social Sec. Sp.	Reduce Social Ins. Sp.	Reduce Health Sp.	Reduce Environm. Sp.
Panel A: Republican							
Treatment ×	-0.156	-0.117	0.041	-0.174	-0.106	0.093	0.060
Republican	(0.097)	(0.104)	(0.101)	(0.098)	(0.096)	(0.101)	(0.093)
Treatment	0.061	0.180	0.173	0.230	0.185	0.126	0.118
	(0.055)	(0.060)	(0.055)	(0.055)	(0.055)	(0.055)	(0.054)
Observations	1613	1613	1613	1613	1613	1613	1613
Panel B: Education							
Treatment ×	-0.085	-0.066	-0.170	-0.091	-0.093	0.026	-0.022
High Education	(0.091)	(0.098)	(0.092)	(0.091)	(0.090)	(0.092)	(0.088)
Treatment	0.050	0.172	0.264	0.216	0.195	0.144	0.147
	(0.062)	(0.068)	(0.064)	(0.063)	(0.063)	(0.064)	(0.062)
Observations	1613	1613	1613	1613	1613	1613	1613
Panel C: Income							
Treatment ×	0.220	-0.079	-0.173	-0.130	-0.055	-0.059	-0.061
High Income	(0.091)	(0.098)	(0.093)	(0.092)	(0.090)	(0.092)	(0.089)
Treatment	-0.106	0.184	0.279	0.245	0.182	0.188	0.169
	(0.066)	(0.072)	(0.069)	(0.066)	(0.067)	(0.068)	(0.067)
Observations	1613	1613	1613	1613	1613	1613	1613
Panel D: Age							
Treatment ×	-0.004	-0.001	0.004	0.001	0.001	0.001	-0.001
Age	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Treatment	0.137	0.185	0.048	0.135	0.114	0.135	0.179
	(0.103)	(0.108)	(0.104)	(0.108)	(0.102)	(0.102)	(0.099)
Observations	1613	1613	1613	1613	1613	1613	1613
Panel E: Children							
Treatment ×	-0.082	0.018	0.124	-0.037	0.141	0.128	0.078
Children	(0.091)	(0.098)	(0.093)	(0.092)	(0.089)	(0.091)	(0.088)
Treatment	0.054	0.130	0.123	0.190	0.070	0.082	0.093
	(0.066)	(0.068)	(0.067)	(0.065)	(0.064)	(0.063)	(0.063)
Observations	1613	1613	1613	1613	1613	1613	1613

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each Panel shows results for a different dimension of heterogeneity. All estimations are based on the pooled data from the representative sample and from MTurk. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.24: Heterogeneous treatment effects: Separate regressions for measures of the bias - spending categories

	Reduce Defense Sp.	Reduce Infrastr. Sp.	Reduce Schooling Sp.	Reduce Social Sec. Sp.	Reduce Social Ins. Sp.	Reduce Health Sp.	Reduce Environm. Sp.
Panel A: Est. Debt-to-GDP (continuous)							
Treatment ×	-0.002	-0.002	-0.001	-0.001	-0.000	0.002	-0.000
Est. Debt-to-GDP	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)
Treatment	-0.030	0.056	0.115	0.109	0.101	0.192	0.079
	(0.076)	(0.080)	(0.084)	(0.072)	(0.076)	(0.080)	(0.078)
Observations	1613	1613	1613	1613	1613	1613	1613
Panel B: Belief (low debt-to-GDP)							
Treatment ×	0.116	0.129	0.169	0.188	-0.027	-0.164	0.068
Low Debt-to-GDP	(0.139)	(0.146)	(0.153)	(0.137)	(0.144)	(0.143)	(0.141)
Treatment	-0.051	0.014	0.007	-0.010	0.136	0.256	0.034
	(0.129)	(0.136)	(0.144)	(0.127)	(0.135)	(0.133)	(0.131)
Observations	1613	1613	1613	1613	1613	1613	1613
Panel C: Below Median Est. Debt-to-GDP							
Treatment ×	0.040	-0.053	0.039	0.005	0.073	-0.043	-0.013
Below Median Est. Debt-to-GDP	(0.097)	(0.099)	(0.098)	(0.094)	(0.096)	(0.098)	(0.097)
Treatment	0.027	0.153	0.127	0.146	0.076	0.133	0.097
	(0.070)	(0.070)	(0.074)	(0.068)	(0.071)	(0.071)	(0.070)
Observations	1613	1613	1613	1613	1613	1613	1613
Panel D: Underestimators							
Treatment ×	0.220	0.067	0.055	0.142	0.003	-0.171	0.036
Underestimate	(0.178)	(0.185)	(0.204)	(0.166)	(0.171)	(0.183)	(0.186)
Treatment	-0.151	0.060	0.097	0.017	0.108	0.270	0.055
	(0.171)	(0.177)	(0.197)	(0.159)	(0.163)	(0.176)	(0.179)
Observations	1613	1613	1613	1613	1613	1613	1613

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each Panel shows results for a different dimension of heterogeneity. All estimations are based on the pooled data from the representative sample and from MTurk. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.25: Heterogeneous treatment effects: Separate regressions for demographics - tax categories

	Increase income tax: top 10	Increase income tax: next 40	Increase income tax: bottom 50	Introduce wealth tax	Increase estate tax
Panel A: Republican					
Treatment × Republican	-0.115	0.031	-0.104	-0.015	-0.046
	(0.111)	(0.108)	(0.107)	(0.109)	(0.103)
Treatment	0.052	-0.008	0.082	-0.035	0.078
	(0.052)	(0.055)	(0.060)	(0.055)	(0.057)
Observations	1612	1612	1612	1611	1610
Panel B: Education					
Treatment × High Education	0.055	0.089	0.163	0.043	-0.087
	(0.093)	(0.096)	(0.099)	(0.096)	(0.094)
Treatment	-0.010	-0.039	-0.026	-0.060	0.103
	(0.065)	(0.066)	(0.068)	(0.062)	(0.063)
Observations	1612	1612	1612	1611	1610
Panel C: Income					
Treatment × High Income	0.063	-0.037	0.020	0.074	-0.004
	(0.094)	(0.097)	(0.099)	(0.096)	(0.095)
Treatment	-0.019	0.021	0.040	-0.079	0.067
	(0.072)	(0.072)	(0.074)	(0.069)	(0.071)
Observations	1612	1612	1612	1611	1610
Panel D: Age					
Treatment × Age	-0.006	-0.001	-0.002	0.002	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Treatment	0.206	0.032	0.118	-0.095	-0.033
	(0.107)	(0.105)	(0.113)	(0.107)	(0.107)
Observations	1612	1612	1612	1611	1610
Panel E: Children					
Treatment × Children	-0.031	-0.045	-0.065	0.012	-0.050
	(0.093)	(0.095)	(0.099)	(0.096)	(0.094)
Treatment	0.029	0.022	0.080	-0.049	0.087
	(0.067)	(0.067)	(0.073)	(0.069)	(0.067)
Observations	1612	1612	1612	1611	1610

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each Panel shows results for a different dimension of heterogeneity. All estimations are based on the pooled data from the representative sample and from MTurk. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.26: Heterogeneous treatment effects: Separate regressions for measures of the bias - tax categories

	Increase income tax: top 10	Increase income tax: next 40	Increase income tax: bottom 50	Introduce wealth tax	Increase estate tax
Panel A: Est. Debt-to-GDP (continuous)					
Treatment ×	0.001	-0.000	0.001	0.001	-0.001
Est. Debt-to-GDP	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Treatment	0.108	0.014	0.065	0.032	0.056
	(0.083)	(0.078)	(0.081)	(0.077)	(0.079)
Observations	1612	1612	1612	1611	1610
Panel B: Belief (low debt-to-GDP)					
Treatment ×	-0.186	0.027	0.144	-0.027	0.212
Low Debt-to-GDP	(0.154)	(0.143)	(0.151)	(0.142)	(0.144)
Treatment	0.206	0.005	-0.076	0.008	-0.088
	(0.145)	(0.133)	(0.142)	(0.131)	(0.134)
Observations	1612	1612	1612	1611	1610
Panel C: Below Median Est. Debt-to-GDP					
Treatment ×	-0.125	0.023	-0.152	-0.173	-0.039
Below Median Est. Debt-to-GDP	(0.099)	(0.098)	(0.099)	(0.099)	(0.098)
Treatment	0.117	0.017	0.120	0.073	0.112
	(0.075)	(0.074)	(0.071)	(0.071)	(0.072)
Observations	1612	1612	1612	1611	1610
Panel D: Underestimators					
Treatment ×	-0.284	-0.007	0.342	-0.073	0.194
Underestimate	(0.200)	(0.175)	(0.190)	(0.184)	(0.190)
Treatment	0.310	0.033	-0.266	0.050	-0.085
	(0.193)	(0.167)	(0.182)	(0.176)	(0.183)
Observations	1612	1612	1612	1611	1610

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Each Panel shows results for a different dimension of heterogeneity. All estimations are based on the pooled data from the representative sample and from MTurk. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent, the respondent's number of children (top-coded at five), and a dummy for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

B.6 Other

Table A.27: Beliefs about political bias

	Left-wing Biased	Right-wing Biased	No political Bias
Panel A: Pooled			
Treatment	0.001	0.013	-0.014
	(0.011)	(0.014)	(0.017)
Adjusted p-value	[1.000]	[1.000]	[1.000]
Observations	1615	1615	1615
Panel B: Rep. Sample			
Treatment	-0.017	0.020	-0.003
	(0.013)	(0.016)	(0.021)
Adjusted p-value	[0.486]	[0.486]	[0.486]
Observations	813	813	813
Panel C: MTurk			
Treatment	0.018	0.009	-0.027
	(0.017)	(0.023)	(0.028)
Adjusted p-value	[1.000]	[1.000]	[1.000]
Observations	802	802	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Panel A shows estimations on the pooled sample, Panel B shows estimations on the representative sample and Panel C shows estimations on the MTurk sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses. False-discovery rate adjusted p-values are in brackets.

Table A.28: Correlates of beliefs about the debt-to-GDP ratio

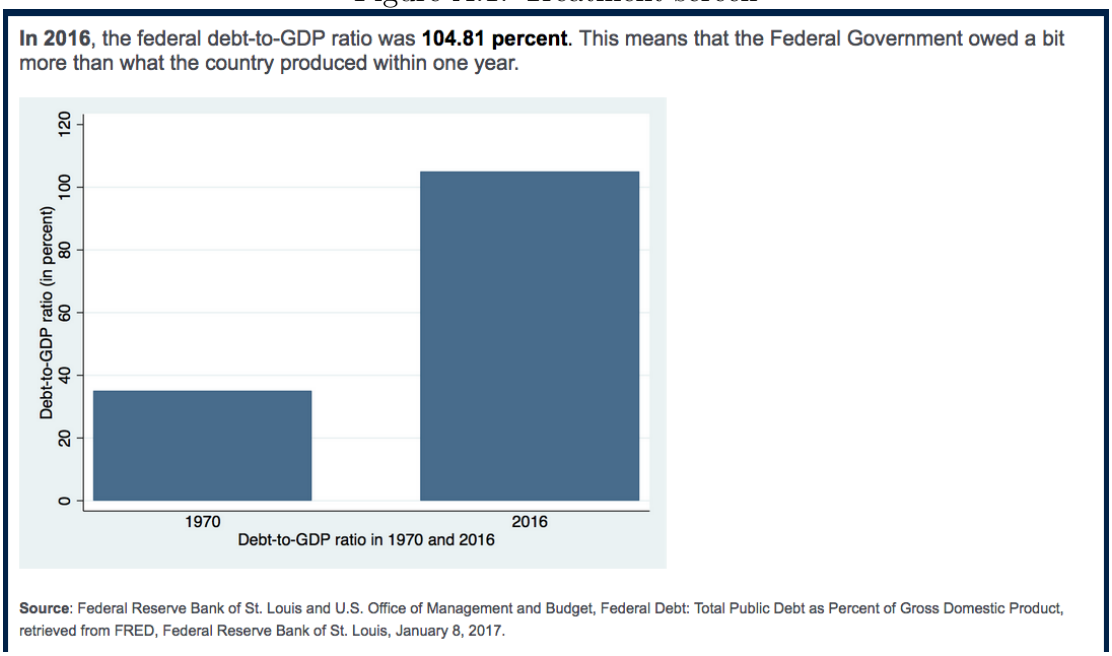
	Perc. Debt-to-GDP		
	Pooled Sample	Rep. Sample	MTurk Sample
Male	5.904	9.373	3.681
	(1.832)	(2.447)	(2.812)
Age	0.234	0.142	0.323
	(0.084)	(0.103)	(0.142)
Log(Income)	1.489	0.751	2.241
	(1.125)	(1.448)	(1.795)
Number of children	-0.978	-1.066	-1.089
	(0.830)	(0.994)	(1.456)
Employed Full-Time	2.732	-1.545	8.779
	(3.340)	(4.082)	(5.867)
Employed Part-Time	8.210	8.298	11.682
	(4.128)	(5.561)	(6.715)
Unemployed	0.779	-0.380	3.876
	(4.302)	(5.944)	(6.733)
Retired	0.278	-2.570	7.095
	(4.284)	(4.946)	(10.757)
Student	1.880	-5.477	9.597
	(4.991)	(6.453)	(8.023)
High Education	0.500	-0.617	0.954
	(1.893)	(2.548)	(2.803)
Republican	2.909	3.247	2.291
	(1.946)	(2.505)	(3.137)
Observations	1615	813	802

Notes: Column (1) shows the estimation on the pooled sample, column (2) shows the estimation on the representative sample and column (3) shows the estimation on the MTurk sample. All specifications control for age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

C Additional figures

C.1 Treatment screen

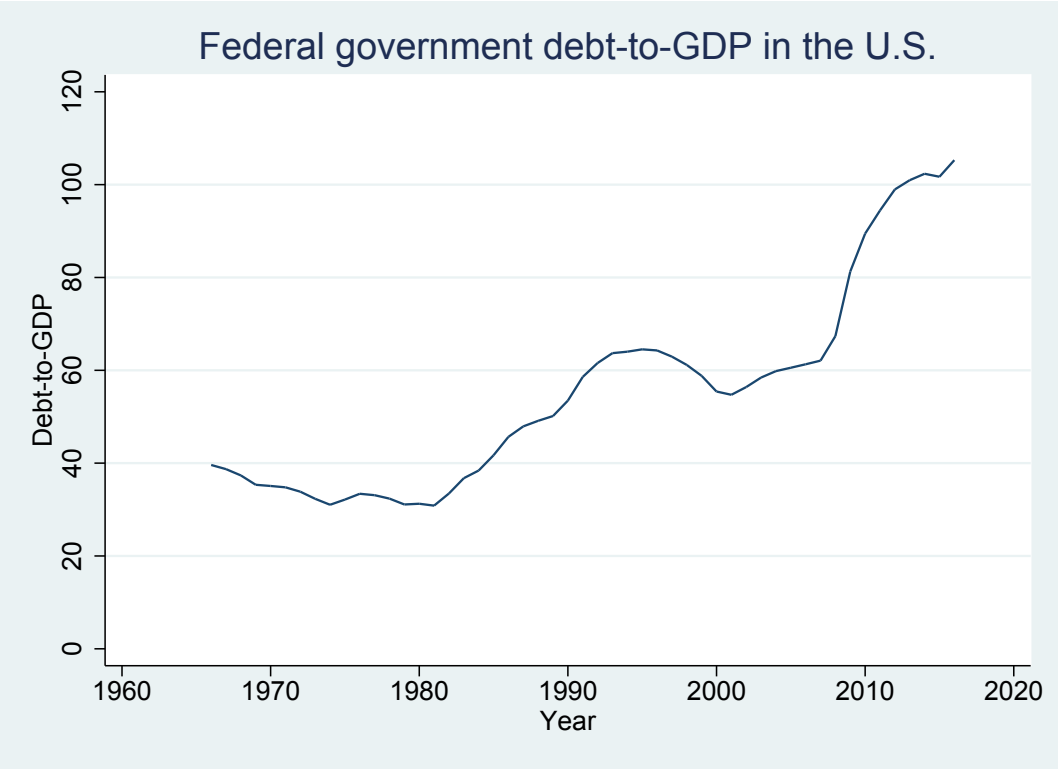
Figure A.1: Treatment screen



Notes: This is the screen shown to respondents in the "treatment group" after they estimated the debt-to-GDP ratio.

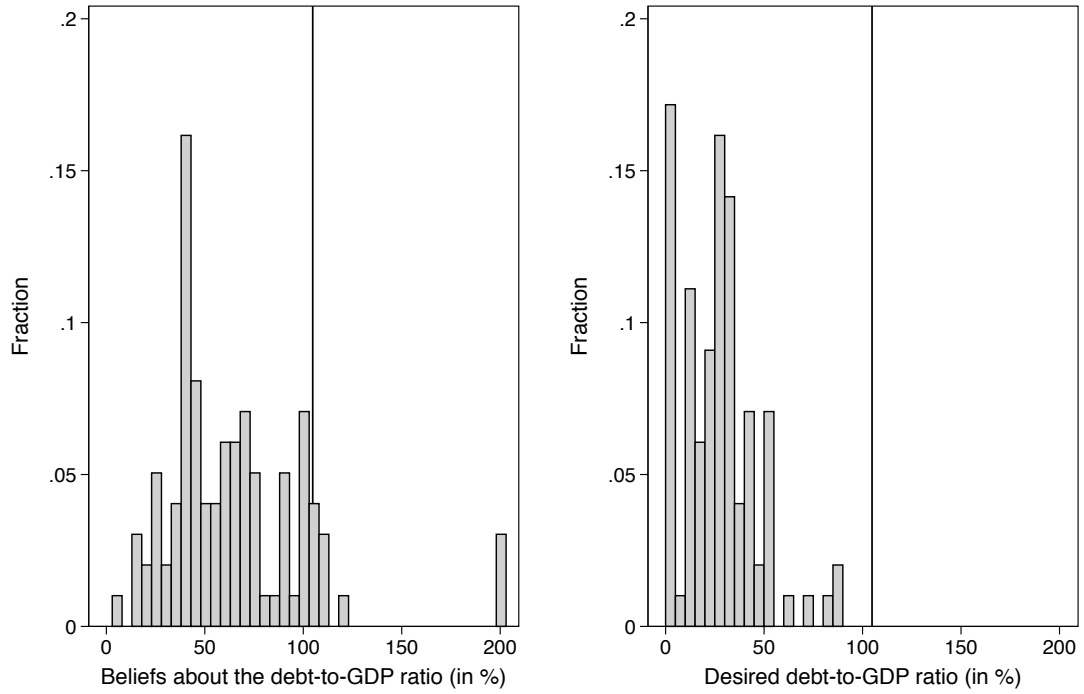
C.2 Beliefs about the debt-to-GDP ratio

Figure A.2: Evolution of debt-to-GDP ratio



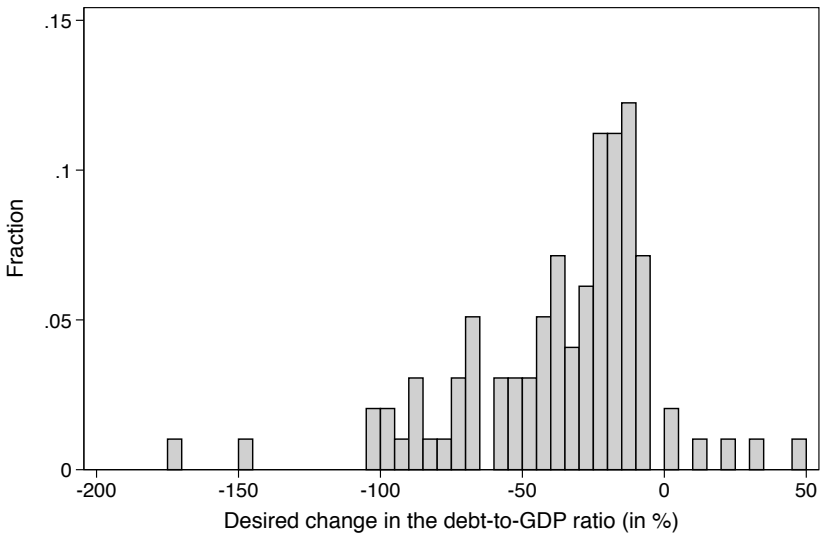
Notes: In this figure we display the evolution of the federal government debt-to-GDP ratio in the US from 1965 until 2016. Source: FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/GFDEGDQ188S, July 24, 2017..

Figure A.3: Beliefs about the debt-to-GDP ratio and desired debt-to-GDP ratio (pilot experiment)



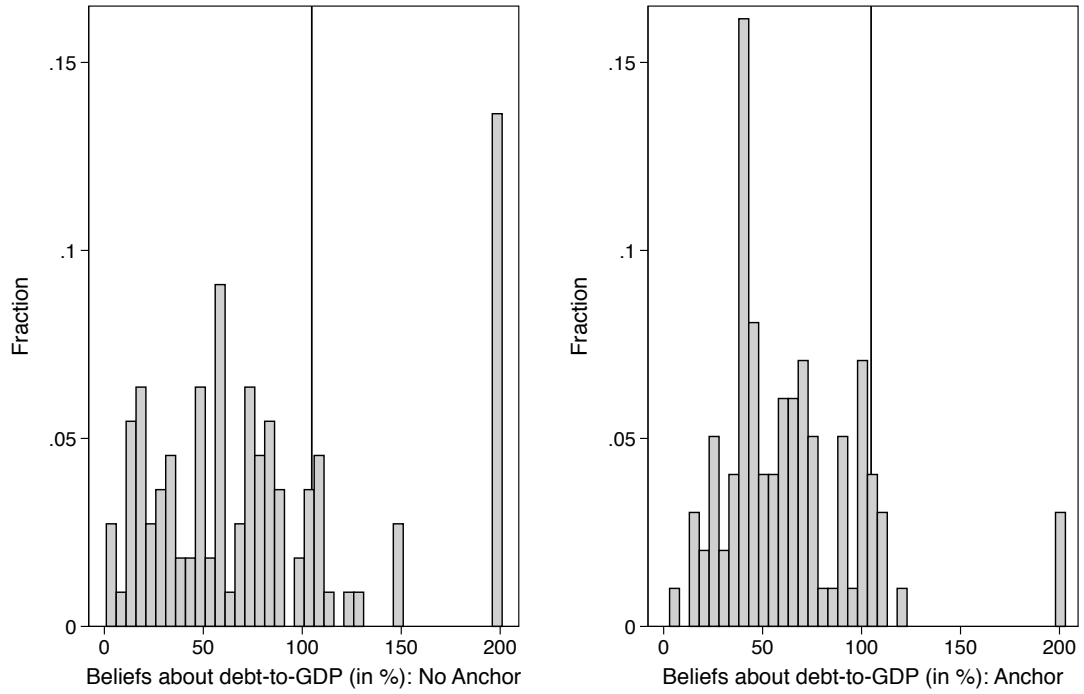
Notes: This figure describes the distribution of beliefs about the debt-to-GDP ratio in a pilot experiment with 200 respondents that we ran on MTurk. The figure is based on data from half of the respondents which we provided with a historical anchor. On the left we display people's beliefs about the debt-to-GDP ratio. On the right we show people's desired debt-to-GDP ratio. The estimated and desired debt-to-GDP ratios are winsorized at 200 percent. The median estimate is 56.23 percent and the median desired debt-to-GDP ratio is 25 percent.

Figure A.4: Desired change in debt-to-GDP ratio (pilot experiment)



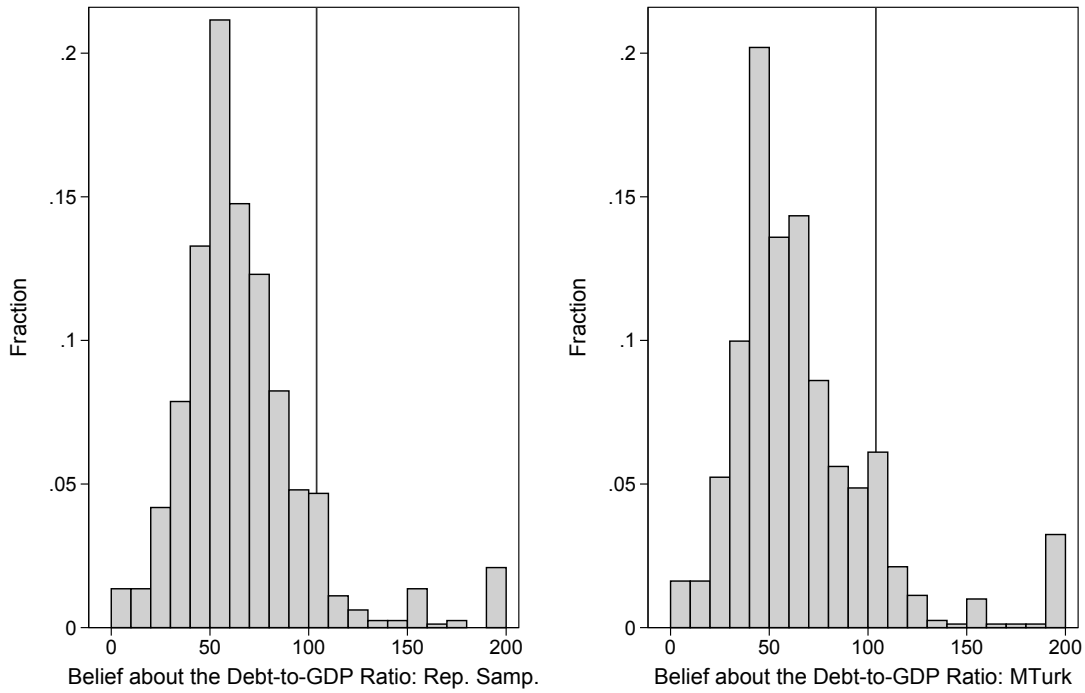
Notes: This figure describes the distribution of desired changes in the debt-to-GDP ratio in a pilot experiment with 200 respondents that we ran on MTurk. The figure is based on data from half of the respondents which we provided with a historical anchor.

Figure A.5: Beliefs about the debt-to-GDP ratio with and without anchor (pilot experiment)



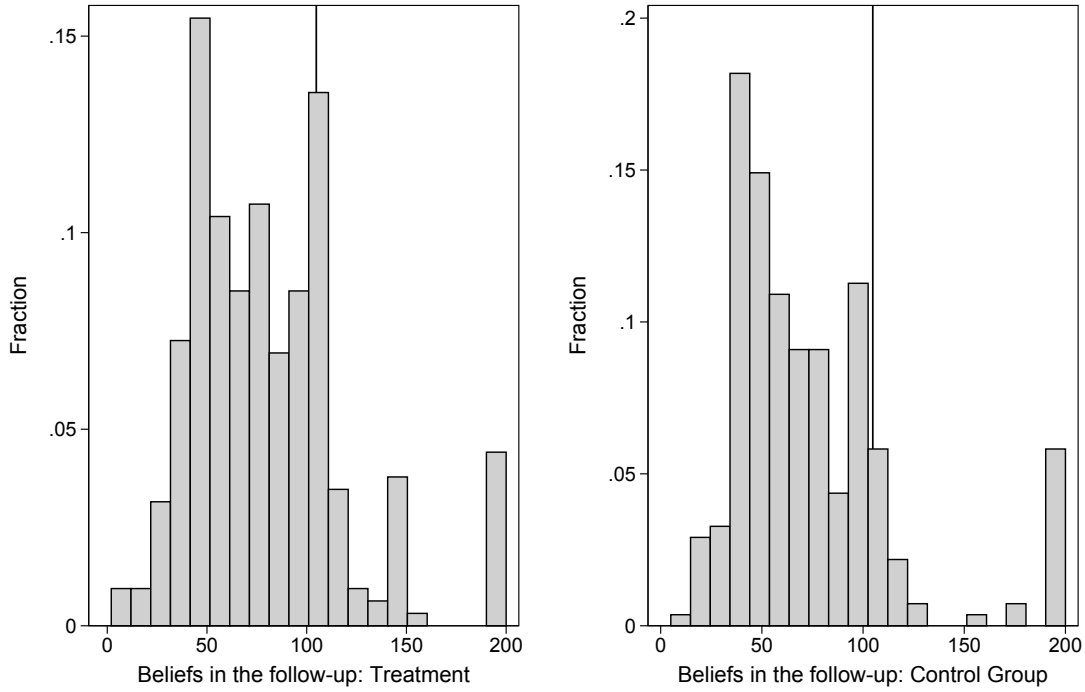
Notes: This figure describes the distribution of beliefs about the debt-to-GDP ratio in a pilot experiment with 200 respondents that we ran on MTurk. On the left we display people's beliefs when they are not given an anchor. On the right we display their beliefs when they are given a historical anchor. The estimates are winsorized at a debt-to-GDP ratio of 200 percent. The median estimate is 61.5 percent (56.23 percent) without (with) historical anchor.

Figure A.6: Beliefs about the debt-to-GDP ratio (representative sample and MTurk)



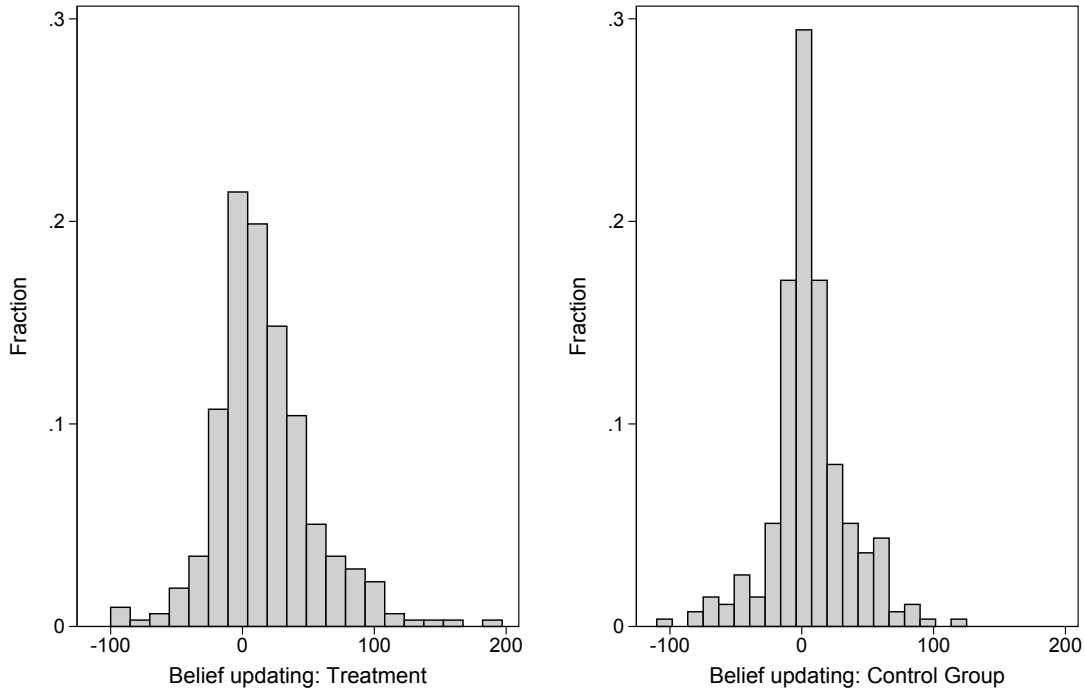
Notes: In this figure we display people's beliefs about the current debt-to-GDP ratio separately for the representative sample and for the MTurk sample. The estimates are winsorized at a debt-to-GDP ratio of 200 percent.

Figure A.7: Beliefs about the debt-to-GDP ratio in the follow-up



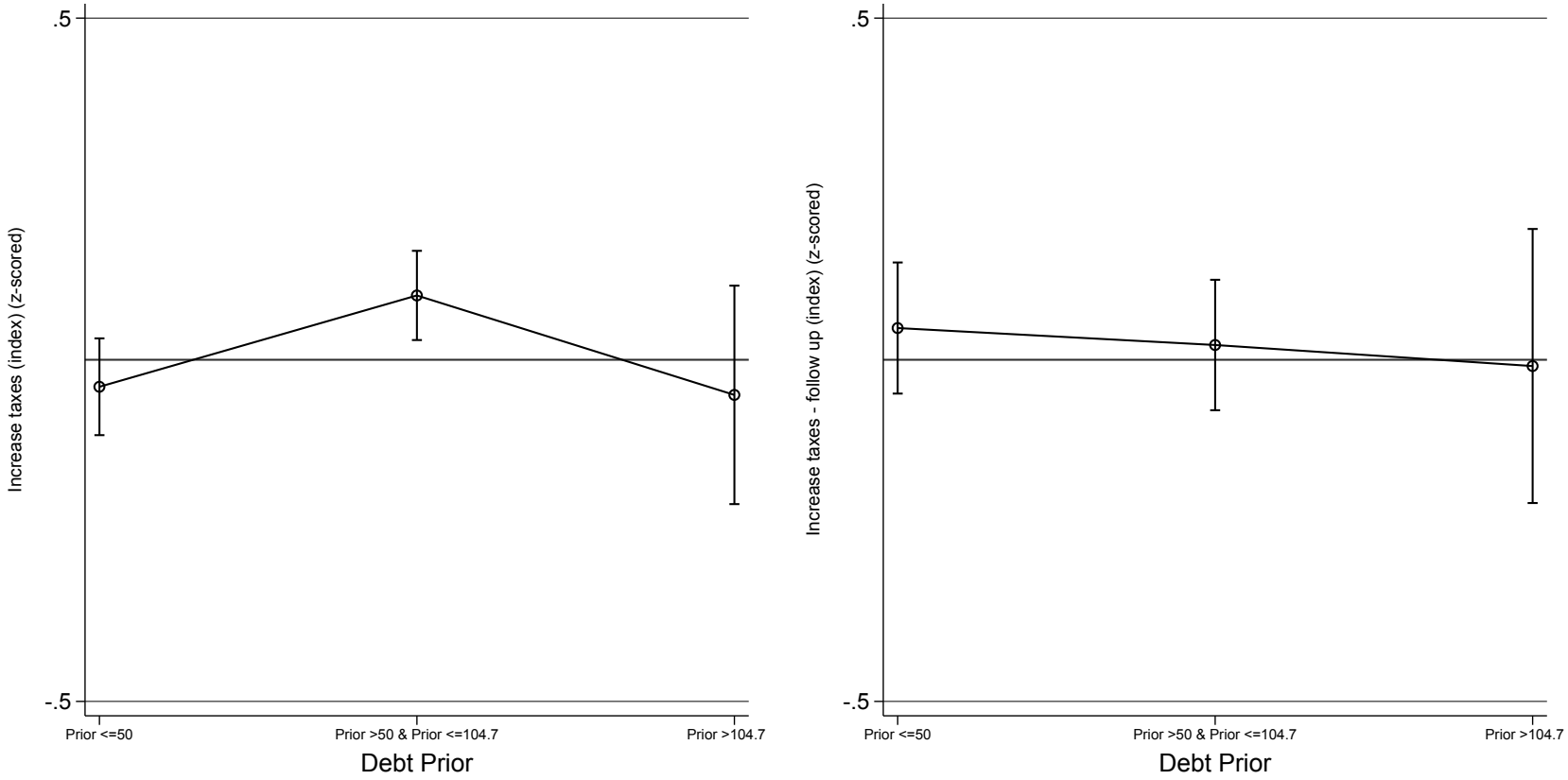
Notes: This figure describes the distribution of beliefs about the debt-to-GDP ratio in the four-week follow-up experiment. The estimates are winsorized at a debt-to-GDP ratio of 200 percent.

Figure A.8: Belief updating



Notes: This figure describes the distribution of changes in beliefs about the debt-to-GDP ratio between the main experiment and the four-week follow-up experiment across the two treatment arms.

Figure A.9: Heterogeneous effects on attitudes towards taxation (index): by prior beliefs



Notes: This figure describes treatment effects on an index of attitudes towards taxation by people's prior beliefs about the debt-to-GDP ratio. The outcome variable is z-scored using the mean and standard deviation in the control group. The figure displays the point estimate of the treatment effects with 90 percent confidence intervals. The figure on the left is based on pooled data from the main experiments on the representative sample and MTurk, while the figure on the right is based on the follow-up survey on MTurk. The treatment effect estimates control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample.

D Additional results

D.1 Effects of information on support for tax- vs. debt-financed spending program

We also ask our respondents about their support for an infrastructure program and randomly assign whether this program is tax-financed or debt-financed. This allows us to identify whether people's beliefs about government debt affect their support for new spending programs depending on the proposed mode of financing.

To analyze whether our information treatment has differential effects depending on whether a proposed spending program is tax-financed or debt-financed, we create the dummy variable $Debt_i$, which takes value one for participants who are asked about support for a debt-financed infrastructure program and value zero for participants who are asked about support for a tax-financed program. We estimate the following specification:

$$y_i = \pi_0 + \pi_1 Treatment_i \times Debt_i + \pi_2 Treatment_i + \pi_3 Debt_i + \Pi^T \mathbf{X_i} + \varepsilon_i$$

The coefficients π_1 and π_2 capture effects of our treatment on support for the program that potentially differ depending on the mode of financing. The coefficient π_3 captures whether people in the control group differentially support tax-financed and debt-financed infrastructure investments.

Table A.29 shows that people are more likely to support a government infrastructure investment program if it is financed by a temporary tax increase rather than by issuing new debt. We find no evidence that learning about the actual debt-to-GDP ratio affects people's support for this investment program – irrespective of the mode of financing.

This result differs from our previous finding that learning about the debt-to-GDP ratio decreases people's demand for government spending. We believe that this could be the case as (i) we have less variation available in the measure of people's support for the infrastructure program, (ii) we have less statistical power and (iii) the framing of the question on infrastructure spending is different.

Table A.29: Debt vs tax-based financing of an infrastructure investment program

	Support Infr. Inv. Program		
	Pooled Sample	Rep. Sample	MTurk Sample
Debt- vs. Tax-based Financing			
Debt-financed × Treatment	-0.012	0.035	-0.084
	(0.097)	(0.139)	(0.137)
Treatment	0.055	0.118	0.014
	(0.069)	(0.101)	(0.097)
Debt-financed	-0.265	-0.341	-0.184
	(0.069)	(0.096)	(0.099)
Observations	1611	809	802

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Column (1) shows the estimation on the pooled sample, column (2) shows the estimation on the representative sample and column (3) shows the estimation on the MTurk sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.

Table A.30: Debt vs. tax-based financing of an infrastructure investment program: Heterogeneity in control group

	Support Infr. Inv. Program		
	Pooled Sample	Rep. Sample	MTurk Sample
Debt- vs. Tax-based Financing			
Debt-financed × Debt-to-GDP	-0.394	-0.451	-0.406
	(0.188)	(0.267)	(0.255)
Debt-financed × Republican	-0.074	-0.038	-0.000
	(0.148)	(0.198)	(0.223)
Debt-financed × High Education	-0.069	0.011	-0.113
	(0.145)	(0.207)	(0.206)
Debt-financed × High Income	-0.026	-0.148	0.055
	(0.147)	(0.206)	(0.210)
Debt-financed × Age	0.002	0.004	0.010
	(0.004)	(0.006)	(0.009)
Debt-financed × Children	-0.057	0.144	-0.335
	(0.146)	(0.203)	(0.212)
Debt-financed	-0.374	-0.652	-0.413
	(0.214)	(0.335)	(0.322)
Debt-to-GDP	0.134	0.221	0.021
	(0.141)	(0.209)	(0.170)
Republican	-0.260	-0.085	-0.531
	(0.105)	(0.142)	(0.156)
High Education	0.066	-0.048	0.149
	(0.105)	(0.151)	(0.145)
High Income	0.177	0.156	0.268
	(0.136)	(0.192)	(0.198)
Age	-0.003	-0.004	-0.005
	(0.004)	(0.005)	(0.006)
Children	0.028	0.026	0.079
	(0.105)	(0.148)	(0.155)
Observations	811	427	384

Notes: The outcome variables are z-scored using the mean and standard deviation in the control group. Column (1) shows the estimation on the pooled sample, column (2) shows the estimation on the representative sample and column (3) shows the estimation on the MTurk sample. All specifications control for the perceived debt-to-GDP ratio (winsorized at 200 percent), age, gender, a dummy for whether the respondent has at least a bachelor degree, the log of total household income, dummies for full-time employment, part-time employment, unemployment, retirement, full-time education and other employment status, the respondent's trust in official US government statistics, dummies for being a Republican or an Independent as well as the respondent's number of children (top-coded at five). The estimations on the pooled sample also control for whether the respondent is part of the representative sample or the MTurk sample. Robust standard errors are in parentheses.