Identifying the Role of Self-interest when Investigating Redistributive Preferences

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Recent scholarship on redistributive preferences in the United States identifies the following puzzle: Income inequality has increased over recent decades, but public support for redistribution has failed to rise over the same period. As documented in the updated data to Piketty and Saez (2003), the top 10% of families saw a 97% growth in real income between 1975 and 2014 as opposed to a 1% *loss* for those in the bottom 90%.[1] More broadly, the overall skewness of the income distribution has increased, with a marked rise in the ratio of the mean to median household income. At the same time, however, there has not been a corresponding rise in the demand for redistribution as measured in large national surveys.[2]

The divergence between trends in economic conditions and public opinion appears to challenge a basic intuition—we expect the public to favor greater redistribution when the average income level exceeds that of the median voter. This expectation arises from a canonical model put forth in Meltzer and Richard (1981) (henceforth "MR"). In their stylized model, society is made up of voters that have a distribution of gross incomes and the government imposes a flat tax on society where the resulting revenue is transferred back equally to each voter. Each voter chooses a tax rate to maximize their net income after transfers and the median voter's choice is implemented. MR show that under these parameters, a rise in income inequality will be met with an increase in redistribution due to the self-interested calculations of the median voter.

This key prediction of the MR model—that economic self-interest *should* be a sufficient driver of redistributive preferences—has been subject to frequent and long-standing empirical critiques. The modal study of public opinion on redistribution argues that the predictive power of the MR model is limited at best and that citizens are fundamentally motivated by considerations other than self-interest. One such line of research posits that redistributive preferences are a function of a citizen's standing in society within and with respect to politically salient groups.[3] Relatedly, researchers have shown that citizens' perceptions of out-groups and sociotropic dispositions affect

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[1] See `http://eml.berkeley.edu/~saez/TabFig2014prel.xls`, "Table_Incomegrowth" tab. The Excel formulas to calculate growth for each group are $C106/C67 - 1$ and $J106/J67 - 1$.

[2] For a detailed account, see Ashok, Kuziemko and Washington (2015) and Kenworthy and McCall (2007).

[3] See, e.g., Lupu and Pontusson (2011); Alt and Iversen (2017); Feierherd, Schiumerini and Stokes (2017).

their willingness to redistribute.[4] Another line of research focuses on examining the influences of institutional rules, societal norms, and political trust on mass demands for government actions that could curb economic inequality.[5]

In light of these non-economic explanations for redistributive demand, recent work attempts to reconsider self-interested motives by investigating the role of (mis-)information. To this end, researchers show that citizens misperceive their position in the income distribution and have difficulty linking public policy to personal finances.[6] Consequently, a small but burgeoning experimental literature seeks to identify the causal effect of economic information on attitudes toward redistribution.[7]

To do so, researchers have deployed interventions that inform randomly selected survey respondents about their position in the income distribution—the effects of these informational treatments have been mixed. Kuziemko et al. (2014) find that showing respondents multiple interactive presentations of economic inequality in the United States has only modest effects on increasing support for most redistributive policies. Cruces, Perez-Truglia and Tetaz (2013) ask Argentinians to estimate the number of people earning less than them, finding that those who believe that they are richer than they actually are and are randomly assigned to have this bias corrected show greater support, on average, for the government helping the poor, relative to those in a control condition. And, employing a similar research design in Spain, Fernández-Albertos and Kuo (2015) find that citizens who learn they are relatively poor or have this prior perception confirmed by an informational treatment support greater tax progressivity, on average, relative to other groups.

While these experiments show that economic information can shift certain attitudes, it remains unknown why these shifts occur. Take for example, a respondent in any of the survey experiments above, who learns that the income distribution is more skewed than they had previously imagined,

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[4]See, e.g., Alesina, Glaeser and Sacerdote (2001); Kelly and Enns (2010); Compton and Lipsmeyer (2019); Goerres, Karlsen and Kumlin (2018); Cavaillé and Trump (2015).

[5]See, e.g., Iversen and Soskice (2006); Alesina and Angeletos (2005); Trump (2017); McCall et al. (2017); Bartels (2008); Hacker and Pierson (2010); Mettler (2011); Gilens (2005, 2009); Kalla and Broockman (2014).

[6]See, e.g., Norton and Ariely (2011); Kiatpongsan and Norton (2014); Gimpelson and Treisman (2017); Chambers, Swan and Heesacker (2014); Bartels (2005); Mettler (2011).

[7]For a comprehensive review, see Clark and D'Ambrosio (2015).

and as a result becomes more supportive of redistribution. This change could be the result of two distinct considerations—self-interest, as a potential beneficiary of any new transfers, *and* aversion to inequality.[8,9] To conclude that information about an individual's place in the income distribution causes them to change their redistributive preferences due to economic self-interest, they must be able to understand the impact of a given policy on their net income. This requires a clear articulation of both a taxing and spending rule when measuring experimental outcomes.

In this article, I develop and test an instrument for measuring redistributive preferences that explicitly connects government spending to individual tax burdens in a survey experiment. I employ a research design where a new policy proposal institutes a linear tax while varying the way in which resulting revenues are transfered back to citizens—either as an equal per capita transfer or through an act of Congress. Additionally, a given respondent's standing in the income distribution—relative to the average income level—is manipulated. This approach allows for the first test of the MR model in a survey context, of which I am aware, and identifies a critical mechanism whereby self-interested motivations could be attenuated in the real world—the political process required to spend tax revenues.

To anticipate my findings, citizens state redistributive demands in accordance with their economic self-interest when the consequences of the proposed policy on their net income is straightforward. This result is stronger for citizens that exhibit greater economic sophistication. I also present evidence for a behavioral theory that explains how citizens moderate their self-interest due to beliefs about government efficacy. When Congress is charged with implementing the proposed spending measure, a respondent's relative income has no significant effect on their demands for redistribution. I find that beliefs about government revenues being diverted towards waste, fraud, and abuse when Congress implements taxes and transfers could be a particularly salient consideration when citizens form preferences for redistribution in the real world.

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[8]Fehr and Schmidt (1999, p. 819) define *inequality aversion* as people "resist[ing] inequitable outcomes; i.e., they are willing to give up some material payoff to move in the direction of more equitable outcomes." I use the term to capture any consideration other than self-interest (net income after taxes and transfers) whereby information about the income distribution affects attitudes.

[9]For a formalization of this intuition see Online Appendix.

EVIDENCE THAT CITIZENS STATE SELF-INTERESTED PREFERENCES FOR REDISTRIBUTION

Studies, thus far, that explicitly test the MR model—implementing its linear tax and equal per capita transfer parameters—use a laboratory setting.[10,11] While this environment has many advantages for evaluating models of voter behavior, the stylized context is problematic when studying redistributive preferences, those often formed around particular public policies. To confront this challenge to external validity, I take the pivotal features of the MR framework and employ them in a survey experiment.

I randomly assign respondents to one of two informational treatments. The treatments manipulate a respondent's standing in the income distribution as being $5,000 above or below the average household. I then describe a new government fund that raises revenue through a flat tax and distributes the proceeds on an equal per capita basis. A respondent's preferred tax rate for this policy is the main outcome. Respondents in this study, were recruited by the firm SSI in January 2015 to a survey hosted on the Qualtrics survey platform.[12] Respondents are nationally representative with respect to age, race, and gender with household incomes that range between $50,000 and $80,000—this restriction on incomes ensures that the mild deception in the treatment is credible.[13,14]

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[10]See, Agranov and Palfrey (2014); Durante, Putterman and van der Weele (2014); Großer and Reuben (2013).

[11]There are two notable exceptions: Doherty, Gerber and Green (2006) and Brunner, Ross and Washington (2011) test the MR model in naturalistic settings. While these studies identify the causal effect of economic conditions on attitudes toward redistribution, subjects do not know the tax-and-transfer consequences of their responses.

[12]A number of recent articles in political science have used SSI samples. See, e.g., Berinsky, Margolis and Sances (2014); Malhotra, Margalit and Mo (2013); Malhotra and Margalit (2010).

[13]While the permissible range of respondent incomes may appear narrow, it contains both the average and median US household income levels ($71,274 and $51,017, according to the 2013 March Supplement of the Current Population Survey). Additionally, a pilot study fielded on Amazon's Mechanical Turk contained a manipulation check of the treatment. For the selected respondent household income range, there was no difference ($\alpha = 0.05$) in the proportion of respondents who believed the information about the average household was accurate between treatment groups.

[14]Respondents in this study are debriefed at the end of the survey about the deception.

Figure 1: Example Treatments for Respondent
with Household Income $50,000 - $54,999

(a) Above Average

	Yearly Earnings
The bottom 10% of households earn on average	$6,478
Average household earns	$45,000
YOUR household earns	$50,000 - $54,999
The top 10% of households earn on average	$240,928

(b) Below Average

	Yearly Earnings
The bottom 10% of households earn on average	$6,478
YOUR household earns	$50,000 - $54,999
Average household earns	$60,000
The top 10% of households earn on average	$240,928

For example, a respondent who indicates that their household earns between $50,000 and $54,999, would view one of the treatments shown in Figure 1. There is only one subtle difference in the information that is presented between the treatments: The average household's income and the placement of the respondent's household income. The information describing the tails of the income distribution is kept constant. Thus, these treatments are designed to isolate the mechanism whereby income affects preferences—any treatment effect is due to the respondent's position relative to the average household rather than due to changes in the overall perception of the income distribution.

After viewing the treatment, respondents are presented with a description of a new policy that raises revenue through a flat (linear) tax. Critically, these funds are redistributed on an equal per capita basis, where every household receives the same dollar amount from the government:

> Keeping everything else in current tax laws and government spending exactly as is, suppose a new policy was proposed in which every household paid an additional percentage of its pre-tax household income into a new national government fund (all households would contribute the same percentage share of their pre-tax income, but high income households would pay a larger dollar amount into the fund than low income households). **All of the money from this fund would then be distributed to each household equally, meaning that high income households would get the <u>exact same dollar amount</u> from the fund as low income households**.

The main outcome asks respondents to indicate their preferred tax rate for this new policy.

Measuring redistributive preferences by leveraging this hypothetical policy proposal provides advantages over current experimental designs. First, the explicit specification of the transfer mechanism, allowing respondents to make a cost-benefit assessment before indicating their preferred tax rate is a novel contribution to the survey experimental literature. Absent this information, respondents would need to make assumptions as to how the additional revenue will be used. Second, the flat tax proposal in the vignettes parallel those commonly discussed by political groups and campaigns, appearing more realistic than rules in a lab experiment.[15] Accordingly, I expect subsequent responses to be more indicative of real-world preferences than those elicited in the lab.

I use an unambiguous prediction of the MR model to hypothesize how the treatment should affect preferred tax rates for the new policy (Meltzer and Richard, 1981, pp. 921–22):

> HYPOTHESIS 1: respondents who are told their incomes are below the average income will strictly prefer a higher tax rate than respondents who are told their incomes are above the average income.

I expect respondents to state preferences that are self-interested—under the policy, households earning less (more) than the average household will gain (lose) more as the tax rate increases.[16]

While the subtle incorporation of the MR model's parameters in a survey vignette allows for a more realistic test of the model's predictions, we may still be curious if participants can recognize the self-interested motive for redistribution at all. Indeed, it is well established that citizens vary in their economic sophistication.[17] Thus, I further hypothesize the following:

> HYPOTHESIS 2: the difference in preferred tax rates between treatment groups will be

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[15]For an example of a political group which advocates a flat consumption tax see FreedomWorks: `http://www.freedomworks.org/issue/fundamental-tax-reform`.

[16]I note two important caveats: First, under the strict framework of the MR model, individuals with gross incomes (productivity) above the mean level will prefer a 0% tax rate as they are net worse-off after taxes and transfers under any positive tax. Given that (1) preferences over tax rates in the real-world are a function of a multitude of factors and (2) the brevity of the survey instrument, I relax this expectation and focus on sign of the difference between treatment groups. Second, while individuals with gross incomes below the mean are generally made better-off after taxes and transfers, their gains are diminishing with increases to the tax rate due to the effects of taxation on labor supply. I consider this limiting factor in the following section.

[17]See, e.g., Lusardi and Mitchell (2011, 2014).

greater for respondents who show higher levels of economic sophistication relative to the general population.

I operationalize economic sophistication in a short comprehension module at the end of the survey, following the experimental treatments and measurement of outcomes. Respondents are presented with a hypothetical economy with three households that have pre-tax incomes below, at, and above the average level. A 10% tax is levied and the revenue is distributed equally to each household—the financial consequences of this policy for each household are explicitly shown to respondents. After viewing this information, respondents answer comprehension questions where they are asked to imagine themselves with three possible incomes: any income less than the average household, earning $20,000 (below average), and $80,000 (above average). In each hypothetical, they are asked whether they will get back less than, more than, or about the same in benefits as they paid in taxes.[18]

Panel a of Figure 2 shows average preferred tax rates under each treatment condition. In the full sample, I find that respondents who are told they earn $5,000 less than the average household prefer a higher tax rate ($\widehat{ATE} = 0.5$ percentage points; $p = 0.074$), on average, than those who are told they earn $5,000 more than the average household.[19] While the magnitude of the treatment effect may seem small, it represents a 11% increase and would raise an additional $50 billion in new tax revenue.[20] More importantly, this result provides evidence in support of Hypothesis 1—citizens below the mean demand greater redistribution than those above the mean.
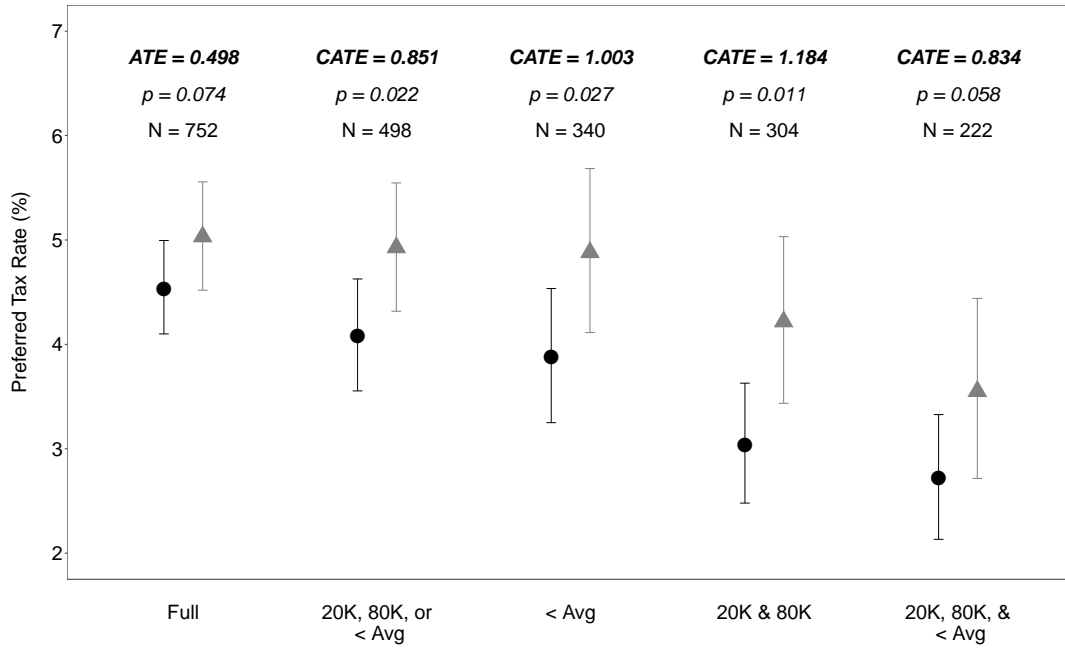
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[18]See Online Appendix Figure A.3.

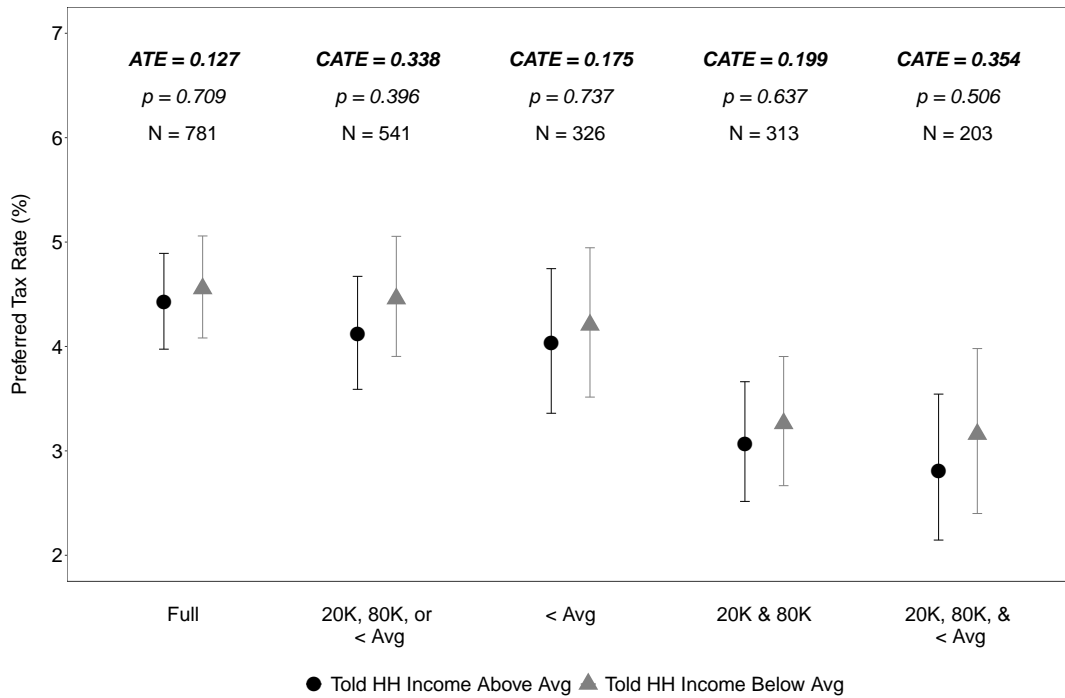[19]Per Hypothesis 1, I specify a one-sided alternate hypothesis ($H_a : \mu_{below-avg} > \mu_{above-avg}$).

[20]Based on a calculation from total income reported on individual tax returns in 2014. See: `https://www.irs.gov/pub/irs-soi/14inintaxreturns.pdf`.

Figure 2: Preferred Tax Rates by Treatment

(a) Equal Per Capita Spending Rule

ATE = 0.498	CATE = 0.851	CATE = 1.003	CATE = 1.184	CATE = 0.834
p = 0.074	p = 0.022	p = 0.027	p = 0.011	p = 0.058
N = 752	N = 498	N = 340	N = 304	N = 222

Preferred Tax Rate (%)

Full | 20K, 80K, or < Avg | < Avg | 20K & 80K | 20K, 80K, & < Avg

(b) Congress Determined Spending Rule

ATE = 0.127	CATE = 0.338	CATE = 0.175	CATE = 0.199	CATE = 0.354
p = 0.709	p = 0.396	p = 0.737	p = 0.637	p = 0.506
N = 781	N = 541	N = 326	N = 313	N = 203

Preferred Tax Rate (%)

Full | 20K, 80K, or < Avg | < Avg | 20K & 80K | 20K, 80K, & < Avg

● Told HH Income Above Avg ▲ Told HH Income Below Avg

Notes: Results are shown for all respondents and those who correctly answer subsets of net gain (loss) questions in the hypothetical scenario used to measure comprehension of the MR model. Bootstrapped 95% CIs and p-values are shown; hypothesis tests in panel a are one-sided.

To conclude that individual self-interest is the mechanism behind the treatment effect, respondents' preferences must only be affected by their household's income relative to the average household, without any extraneous considerations. Though it is impossible to measure every factor that might affect a respondent's shift in preferences, I test one mechanism outside of the MR model—awareness of income inequality. I find that the treatments did not differentially affect perceptions that income inequality is a serious problem in the US nor with awareness of income inequality growing in recent decades (see Online Appendix Table A.3). By ruling out inequality awareness as a possible mechanism, I more narrowly identify the causal channel highlighted in the MR model than the current literature.

To determine the extent to which self-interested demand for redistribution is salient in the public, I examine citizen subgroups that vary in their levels of economic sophistication. As discussed above, I divide respondents by their answers to three questions embedded in a comprehension module to create a proxy measure. These respondent subsamples are determined by correct answers to: at least one comprehension question ("20K, 80K, or < Avg"), a question where they earn an income below the average household ("< Avg"), questions where they earn \$20,000 and \$80,000 ("20K & 80K"), or all comprehension questions ("20K, 80K, and < Avg"). I find that respondents with the highest level of comprehension are less likely to identify as a minority (black and Latinx), less likely to identify as a Democrat, more likely to identify as a Republican, and more likely to have a college degree, compared to those with lower levels of comprehension (see Online Appendix Table A.4).

Panel a of Figure 2 also reports average preferred tax rates and conditional average treatment effects by level of respondent comprehension. These estimates can be thought of as identifying the effects of the treatment for theoretically important subgroups—those who are predisposed to understand the consequences of the experimental manipulations on individual economic well-being. I find that the conditional average treatment effect is larger for respondents with *any* level of comprehension relative to the average treatment effect for the full sample ($\widehat{CATE}$ range: 0.834–1.184 percentage points). The effect of the treatment is strongest for respondents who correctly

state that earning \$20,000 (\$80,000) in the hypothetical economy—with an average income of \$55,000—allows them to receive more (less) in benefits than they paid in taxes ($\widehat{CATE} = 1.184$ percentage points, 39 percent increase, $p < 0.05$). In sum, the size of the treatment effect appears to be positively correlated with economic sophistication, in support of Hypothesis 2. However, the relationship is not monotonic—that is, respondents who answered all the comprehension questions correctly did not account for the largest conditional average treatment effect.

EVIDENCE THAT SELF-INTEREST IS ATTENUATED BY POLITICS

What limits citizens' support for higher tax rates? And, does the normal spending process—via Congress—create an impediment for greater redistribution? To answer these questions, I implement an experimental manipulation that changes the way in which revenues raised by the flat tax are spent. A second set of respondents—recruited with those in the previous experiment—are randomly assigned to follow the same protocol described above with one exception. Tax revenue raised by the new policy is no longer distributed on an equal per capita basis, but reflects the real world political process:

> **All of the money from this fund would then be distributed to households or spent according to the laws passed by Congress.**

Changing the spending rule, isolates the effect of an important disjuncture between the MR model and the usual legislative process required to spend tax revenues.

Panel b of Figure 2 shows average preferred tax rates and corresponding treatment effects when Congress determines the spending rule.[21] In the full sample and at each level of economic sophistication, I find that there is no meaningful difference in average preferred tax rates between respondents who are told they earn \$5,000 less than the average household and those who are told they earn \$5,000 more than the average household. That is, an individual's standing in the income distribution relative to the average earner no longer affects their redistributive preferences.

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[21]We may be concerned that mentioning "Congress" might prime considerations other than than the institution's role in spending tax revenue—e.g., political trust. I find, inter alia, that compared to considering "the federal process that determines how to spend the money," respondents are not more or less likely to trust "Congress." See Online Appendix for a detailed discussion and supporting analysis.

It is important to note, however, that differences between average treatment effects under the equal per capita and Congress-determined spending policies are not statistically significant (see Online Appendix Table A.5).

Prior research argues that trust in government and perceptions regarding its efficacy at implementing fiscal policy influences citizens' redistributive preferences.[22] Respondents, when faced with a new policy that explicitly involves Congress, could "fill in" details about how tax revenues will be spent. To check for this possibility, I ask respondents to estimate the number of cents out of each dollar raised under each policy—at four possible tax rates—that will be diverted away towards waste, fraud, and/or abuse.

Panel a of Figure 3 shows average respondent estimates under each spending rule. I find that at each proposed tax rate, respondents assigned to view the policy where Congress determines the spending rule believe that a larger percentage of tax revenues will be wasted, on average, compared to respondents assigned to view the equal per capita transfer (approx. 4–5 percentage points at each tax rate, $p < 0.01$).

In addition to measuring perceptions of government efficacy, I also ask respondents whether increasing taxes under the new policy will cause people to work less hours or fewer business to ender the marketplace—a factor that limits preferred tax rates in the MR model. I find that, regardless of how tax revenues are spent, respondents believe that raising new taxes will lower the level of employment (see Panel b of Figure 3).

In sum, I show that citizens do think about the efficiency implications of pursuing new tax-and-transfer policy. Most importantly, the evidence presented in this section suggests that perceptions of the political process needed to spend tax revenues may vitiate otherwise self-interested demands for redistribution.
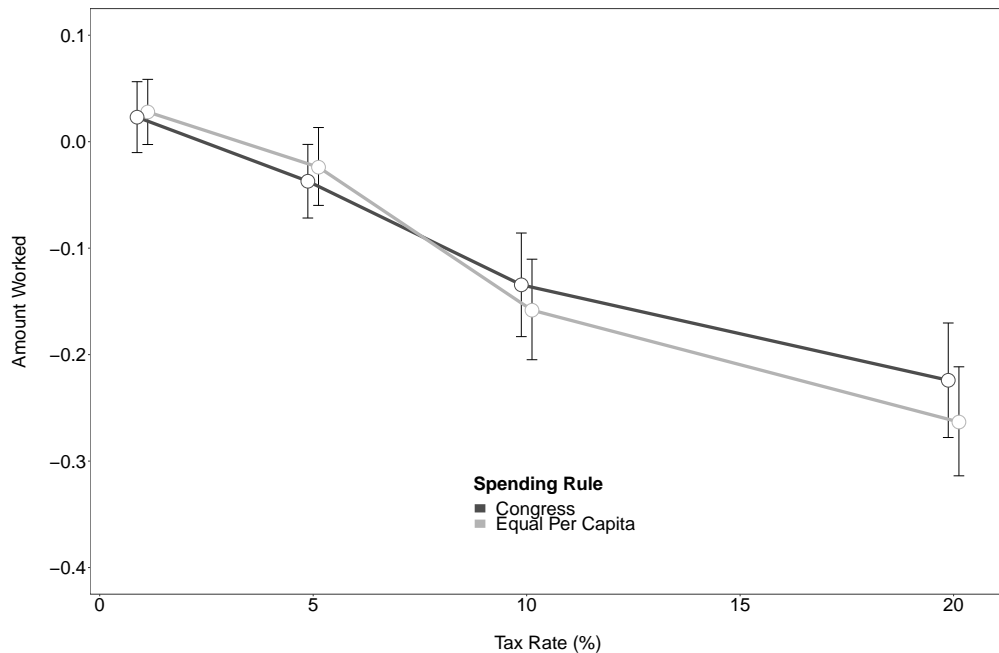
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[22]See, e.g., Hetherington (2005); Kuziemko et al. (2015); Durante, Putterman and van der Weele (2014); Alesina and Angeletos (2005).

Figure 3: Perceived Effects of Policy

(a) Perceptions of Government Efficacy
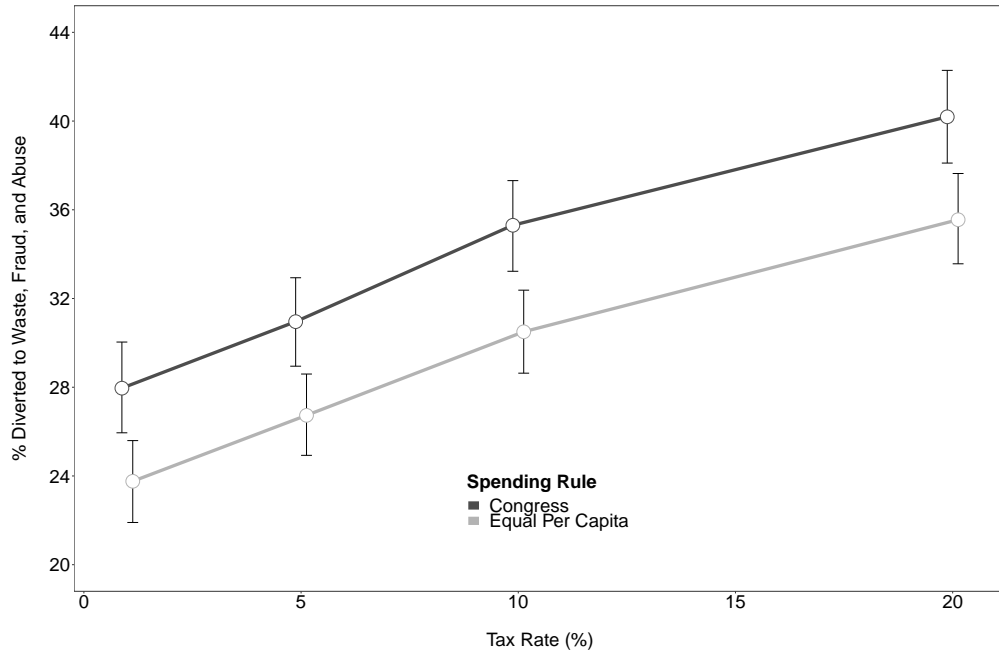
(b) Perceptions of Labor Distortion

Notes: Panel a shows average responses to the question, "For the following tax rates for this policy, how many cents out of each dollar raised do you think will be diverted due to waste, fraud, and/or abuse?" Panel b shows average responses to the question, "Some people think that raising taxes will cause people to work less (for example, work fewer hours) and discourage new businesses from entering the marketplace. For the following tax rates proposed for this policy, indicate whether you think people's work habits will change." Answers are coded as follows: Less = -1, About the same = 0, More = 1. Bootstrapped 95% CIs are shown.

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Conclusion

The standard model of political economy posits that economic self-interest is a sufficient motive for a majority of voters to favor redistribution in periods of rising income inequality. Analysts of public opinion generally conclude that this theoretical claim is empirically unsupported. In this article, I show that this conclusion is an artifact of measurement strategies that do not properly conceptualize redistribution as the sum of both taxes *and* transfers.

I find that when citizens face a new policy that proposes a flat tax and equal per capita transfer, they state self-interested preferences for redistribution. Respondents who are told their income is below average prefer a higher tax rate than those who are told their income is above average. This effect is larger for those respondents who are more economically sophisticated. To my knowledge, these results are the first test—and validation—of the MR model in a survey context.

In order to better parallel the real world, I also modify a critical feature of the MR model. When Congress determines how tax revenues raised under the new policy are spent, respondents' relative incomes no longer affect their preferred tax rates. And, citizens perceive the legislative process as more prone to waste, fraud, and abuse than an equal per capita transfer.

The approach developed in this article provides a framework to more accurately measure mass preferences for redistributive policies that is easily transferable to large scale national and cross-national surveys. Furthermore, I open a new line of inquiry to understand how perceptions of the political process affect the demands citizens make on government.

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ONLINE APPENDIX A.   SUPPORTING INFORMATION

A FORMALIZATION OF MULTIPLE PATHWAYS

Suppose individual i's support for redistribution S_i can be expressed as the sum of three separable concerns (or traits): non-income characteristics X_i, including age, race, and partisanship, self-interest f_i, and inequality-aversion g_i (note: α_i, λ_i, and ρ_i are simply the weights placed on each input to S_i). Then, S_i can be written as

$$S_i(D|\cdot) = \alpha_i X_i + \lambda_i f_i \big(D(e_i - \bar{e}) + (1 - D)(e_i - \hat{\bar{e}}) \big) + \rho_i g_i \left(D\frac{\bar{e}}{e_m} + (1 - D)\frac{\hat{\bar{e}}}{\hat{e}_m} \right) \tag{1}$$

where f_i and g_i are functions that map the relevant features of the income distribution on to a respondent's support for redistribution. The arguments to f_i and g_i depend on the treatment $D \in \{0, 1\}$. When a respondent is assigned to treatment $D = 1$, they receive information about their position in the income distribution $e_i - \bar{e}$, distance from the mean income, and inequality $\frac{\bar{e}}{e_m}$, the mean to median income ratio, through the intervention; when assigned to control $D = 0$, respondents must rely on their prior perceptions of these quantities $(e_i - \hat{\bar{e}})$ and $\frac{\hat{\bar{e}}}{\hat{e}_m}$.[1]

As the information conveyed in the treatment ($e_i - \bar{e}$ and $\frac{\bar{e}}{e_m}$) is allowed to affect support S_i through two separable channels—self-interest f_i and aversion to inequality g_i—the resulting treatment effect has two distinct components. To see this, we can take the support function specified in Equation 1

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[1] I specify a respondent's position in the income distribution as being relative to a central feature, without regard to the shape of the distribution itself. For ease of exposition, I choose an individual's distance from the mean, per the MR model. Similarly, I choose the mean to median income ratio to represent a feature of the income distribution regarding inequality. Without loss of generality, we can substitute other measures of a respondent's standing (e.g., the distance from the median income) and inequality (e.g., the average incomes of individuals at the bottom and top 10%).

and place it into the standard potential outcomes framework:[2]

$$\text{Let,} \quad ATE = E[S_i(1)] - E[S_i(0)] \tag{2}$$

$$= E\left[\alpha_i X_i + \lambda_i f_i\left(e_i - \bar{e}\right) + \rho_i g_i\left(\frac{\bar{e}}{e_m}\right)\right] \tag{3}$$

$$- E\left[\alpha_i X_i + \lambda_i f_i\left(e_i - \hat{\bar{e}}\right) + \rho_i g_i\left(\frac{\hat{\bar{e}}}{\hat{e}_m}\right)\right]$$

$$= E\left[\lambda_i f_i\left(e_i - \bar{e}\right) + \rho_i g_i\left(\frac{\bar{e}}{e_m}\right)\right] - E\left[\lambda_i f_i\left(e_i - \hat{\bar{e}}\right) + \rho_i g_i\left(\frac{\hat{\bar{e}}}{\hat{e}_m}\right)\right] \tag{4}$$

$$= E\left[\lambda_i f_i\left(e_i - \bar{e}\right) - \lambda_i f_i\left(e_i - \hat{\bar{e}}\right)\right] + E\left[\rho_i g_i\left(\frac{\bar{e}}{e_m}\right) - \rho_i g_i\left(\frac{\hat{\bar{e}}}{\hat{e}_m}\right)\right] \tag{5}$$

$$= ATE_{self-interest} + ATE_{inequality-aversion} \tag{6}$$

Thus, the treatment effect ATE estimated in Kuziemko et al. (2015); Cruces, Perez-Truglia and Tetaz (2013) can be thought of as the sum of the effect of treatment via self-interest $ATE_{self-interest}$ and the effect of treatment via inequality aversion $ATE_{inequality-aversion}$.[3]

Though it is not uncommon for informational treatments to have a bundled effect—operating through multiple channels simultaneously—it is problematic for understanding the disconnect between the predictions of the MR model that rising inequality will be met with self-interested voters demanding greater redistribution and the lack of public support for redistributive policies. The information-rich treatment used by Kuziemko et al. (2015) likely manipulates both self-interest f_i and inequality-aversion g_i as respondents are shown a graphic of the entire income distribution along with additional information about the growth of inequality. On the other hand, the treatment used by Cruces, Perez-Truglia and Tetaz (2013) is minimal, only informing respondents of their true percentile in the income distribution. However, given that their analysis is conditional on whether

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[2]See for example, Gerber and Green (2012, p. 35).

[3]This conclusion is a direct implication of the stylized support function specified in Equation 1 which assumes that respondents' preferences for redistribution are the sum of two separable concerns specific to the income distribution, f_i and g_i. An exact formulation of a respondent's support is not necessary—or feasible—for this example, which merely formalizes the intuition that informational treatments that reveal multiple features of the income distribution can affect respondent attitudes through multiple considerations.

respondents under, over, or properly estimate their place in the income distribution, we might imagine each of these subgroups respond to treatment differently—i.e., those told their position is lower than they had imagined might respond via f_i and g_i whereas those who accurately place themselves may only respond through f_i. Though it is impossible to say with certainty which channels are and *are not* being activated by the treatments in these studies, it is clear that the mechanisms whereby the treatments affect attitudes remain largely obscured.

Congress as the Spender

The intent behind the Congress spending vignette is to add a level of real-world complexity to the MR framework. Any effect of this treatment should be the result of a "bundle" of considerations. If respondents think of influences on the federal budgetary process other than Congress when stating their preferred tax rate, this would be a feature of the design and not a threat to inference.

However, in light of the staggeringly low public approval of Congress in recent years, responses could also reflect a general negative affect towards the institution. This possibility could pose a challenge for the way we interpret the effect of the Congress spending treatment relative to an equal per capita transfer. Specifically, if respondents' opinions about Congress, independent of its role in the spending process, are activated, then the corresponding treatment effect captures preferences other than those affected by the change in the spending rule. However, it is important to note that this would represent a level effect and not an interaction effect.

To address this concern, I collect supplementary data to better understand what citizens consider regarding the role of Congress in spending tax revenues. This follow-on survey experiment was conducted in July 2017, also with the assistance of SSI, to ensure a consistent sampling methodology. Respondents in the study are randomly assigned to one of two "spender treatment" arms, where the description of the institution that spends tax revenues is manipulated. The experimental design is shown in Table A.1. Respondents assigned to the first treatment arm are asked to select the top three influences on Congress as well as indicate their overall level of trust that Congress will do what is right when it determines how taxes are spent. Those assigned to the second treatment arm are asked the same questions, however mentions of "Congress" are replaced with a more generic reference to "the federal process" that determines how taxes are spent. Additionally, respondents assigned to this second treatment choose the top four influences on the federal process, with Congress being an option they can select.

The logic behind this research design is simple. The federal process treatment serves as a baseline that measures beliefs about the real-world spending process, without explicitly priming respondents to think about Congress. Thus, any difference in responses to the Congress treat-

Table A.1: Spender Description Experimental Design

Treatment - Question	Question Wording
Congress - Q1	Thinking about current day politics, which 3 people and/or groups do you think have the most influence on Congress when it determines how to spend the money raised by your taxes? [The president, Ordinary citizens, Wealthy citizens, Special interest groups (e.g., industry associations and unions), Lobbyists, Republicans, Democrats]
Congress - Q2	Thinking about current day politics, how much of the time do you think you can trust Congress to do what is right when it determines how to spend the money raised by your taxes? [Almost always, Most of the time, Some of the time, Almost never]
Federal Process - Q1	Thinking about current day politics, which 4 people and/or groups do you think have the most influence on the federal process that determines how to spend the money raised by your taxes? [The president, Ordinary citizens, Wealthy citizens, Special interest groups (e.g., industry associations and unions), Lobbyists, Republicans, Democrats, Congress]
Federal Process - Q2	Thinking about current day politics, how much of the time do you think you can trust the federal process that determines how to spend the money raised by your taxes to do what is right? [Almost always, Most of the time, Some of the time, Almost never]

Respondents are randomly assigned to one of two treatment arms: Congress or Federal Process. Questions are presented in random order.

ment are attributable to the explicit mention of the institution apart from its role in the spending process. Rows 1–8 of Table A.2 show the proportion of respondents that select each influence on the government spending process by treatment. Considering the 7 influences common to both treatments, we observe a statistically significant effect in 4 cases: Respondents assigned to the Congress treatment are less likely to think of the president, lobbyists, Republicans, and Democrats as influences, on average, as compared to respondents assigned to the federal process treatment.

Table A.2: Spender Description Results

Outcome	Congress	Federal Process	p-value
President	0.33	0.45	0.00
Ordinary citizens	0.11	0.11	0.88
Wealthy citizens	0.64	0.60	0.11
Special interest groups	0.67	0.69	0.41
Lobbyists	0.60	0.65	0.03
Republicans	0.41	0.45	0.06
Democrats	0.25	0.32	0.00
Congress		0.73	
Trust	0.83	0.82	0.93
n	1,133	1,131	

Notes: Rows 1–8 show the proportion of respondents who select the given "influence" by treatment assignment. Row 9 shows the mean levels of trust by treatment assignment. Trust is coded as follows: "Almost never" = 0, "Some of the time" = 1, "Most of the time" = 2, "Almost always" = 3. I report p-values from Pearson χ^2 and 2-sample t tests.

Though, it is also worth noting that the highest proportion of respondents (73%) assigned to the federal process treatment selected Congress as a top influence on government spending. With respect to trust, however, respondents are, on average, unaffected (Row 9 of Table A.2, $p = 0.93$) by the treatment—respondents assigned to both treatment arms have similarly low levels of trust that Congress or the federal process will do what is right when deciding how to spend tax revenues.

Taken together these supplementary findings clarify and validate the experimental design of the main study. First, I show that, relative to the baseline federal process treatment, when asked to think about Congress, citizens give substantially less weight to the president and minority party (Democrats) as influencing policy-making. This might mean that when citizens are explicitly asked to think about Congress' role in spending tax revenues, they focus on dynamics within the legislature over external factors.

Second, we observe that the mere mention of "Congress" does not disproportionately affect levels of trust, relative to the baseline spender scenario. This finding has implications for interpreting responses to the Congress treatment in the main study—respondents may not be expressing

generically negative views specific to Congress that do not already exist when citizens think about overall federal process required to spend tax revenues.

Supporting Tables and Figures

Figure A.1: Main Treatments

(a) Respondent Told Household Above Average

Presented below is some information about the US economy.

	Yearly Earnings
The bottom 10% of households earn on average	$6,478
Average household earns	$45,000
YOUR household earns	$50,000 - $54,999
The top 10% of households earn on average	$240,928

Did you know that the average household in the top 10% earns 37 times more than the average household in the bottom 10%?

○ Yes

○ No

Did you know that the average US household makes approximately $5,000 LESS than YOUR household?

○ Yes

○ No

(b) Respondent Told Household Below Average

Presented below is some information about the US economy.

	Yearly Earnings
The bottom 10% of households earn on average	$6,478
YOUR household earns	$50,000 - $54,999
Average household earns	$60,000
The top 10% of households earn on average	$240,928

Did you know that the average household in the top 10% earns 37 times more than the average household in the bottom 10%?

○ Yes

○ No

Did you know that the average US household makes approximately $5,000 MORE than YOUR household?

○ Yes

○ No

Figure A.2: Spending Rule Treatments

(a) Equal per capita Transfer

Keeping everything else in current tax laws and government spending exactly as is, suppose a new policy was proposed in which every household paid an additional percentage of its pre-tax household income into a new national government fund (all households would contribute the same percentage share of their pre-tax income, but high income households would pay a larger dollar amount into the fund than low income households). **All of the money from this fund would then be distributed to each household equally, meaning that high income households would get the _exact same dollar amount_ from the fund as low income households.**

Please use the slider bar below to select the additional percentage in taxes you believe everyone should pay under this policy. For example, selecting 10% means that people would pay an additional 10 cents in taxes for every dollar earned.

0	2	4	6	8	10	12	14	16	18	20

Additional % in taxes ●

(b) Congress Transfer

Keeping everything else in current tax laws and government spending exactly as is, suppose a new policy was proposed in which every household paid an additional percentage of its pre-tax household income into a new national government fund (all households would contribute the same percentage share of their pre-tax income, but high income households would pay a larger dollar amount into the fund than low income households). **All of the money from this fund would then be distributed to households or spent _according to the laws passed by Congress_.**

Please use the slider bar below to select the additional percentage in taxes you believe everyone should pay under this policy. For example, selecting 10% means that people would pay an additional 10 cents in taxes for every dollar earned.
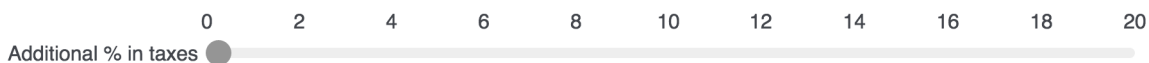
0	2	4	6	8	10	12	14	16	18	20

Additional % in taxes ●

Figure A.3: Module to Measure Comprehension of MR Model

(a) Hypothetical Economy

A prominent tax reform proposal is to abolish the current federal income tax system in favor of a "flat" income tax. This means that everyone, regardless of their income, would pay the same federal income tax rate.

Suppose the benefits from this tax were distributed equally to each household. This means that high-income households would get the exact same dollar amount in benefits as low-income households.

For example, if there were 3 households in the US and the **average income was $55,000**, a flat tax of 10% would result in the following:

Household	Income Before Taxes	Tax Rate	Amount Paid in Taxes	Income After Taxes	Amount Received in Benefits	Final Income (Income After Taxes + Benefits)
1	$10,000	10%	$1,000	$9,000	$5,500	$14,500
2	$55,000	10%	$5,500	$49,500	$5,500	$55,000
3	$100,000	10%	$10,000	$90,000	$5,500	$95,500
TOTAL	$165,000		$16,500	$148,500	$16,500	$165,000

Note that this flat tax proposal would not alter payroll, state, or municipal taxes.

(b) Comprehension Questions

Suppose you **earn less than the average household (less than $55,000)**, do you think you will get back less than, more than, or about the same in federal benefits as you paid in taxes?

○ Less than

○ More than

○ About the same

○ Not enough information to tell

Suppose you **earn $20,000**, do you think you will get back less than, more than, or about the same in federal benefits as you paid in taxes?

○ Less than

○ More than

○ About the same

○ Not enough information to tell

Suppose you **earn $80,000**, do you think you will get back less than, more than, or about the same in federal benefits as you paid in taxes?

○ Less than

○ More than

○ About the same

○ Not enough information to tell

Table A.3: Placebo Results for Full Sample
(Equal Per Capita Spending Rule)

Income inequality...	Told HH Inc > Avg	Told HH Inc < Avg	p-value
...serious problem in US?	0.72	0.73	0.82
...in US has increased in recent decades?	0.63	0.67	0.31
n	372	380	

Notes: Table shows proportions of respondents in agreement with placebo questions by treatment. Bootstrapped p-values are shown.

Table A.4: Respondent Characteristics by MR Model Comprehension Level

Covariate	Highest Comprehension	Lower/No Comprehension	p-value
Age (years)	43.55	41.21	0.00
Black (1 = yes)	0.07	0.13	0.00
Latino (1 = yes)	0.04	0.10	0.00
Democrat (1 = yes)	0.38	0.49	0.00
Republican (1 = yes)	0.35	0.27	0.00
Ideology (see notes)	0.50	0.48	0.12
College (1 = yes)	0.51	0.43	0.01
Income (see notes)	62.86	62.46	0.38
n / F test	425	1108	0.00

Notes: Respondents who correctly answer all comprehension questions are denoted as "Highest Comprehension." Independents who say they are closer to the Democratic (Republican) Party are coded as such. Ideology is measured on a five-point scale (0 = very liberal, 1 = very conservative). Income is coded as the midpoint of the $5,000 interval selected by the respondent in the pre-survey. Means, proportions, and bootstrapped p-values for two-sample comparisons are shown. A dummy variable for comprehension is regressed on age, ideology, dummies for minority identification and college degree, and income-group fixed effects to test for the joint orthogonality of pre-treatment covariates and model comprehension; the p-value from the corresponding F test is reported.

Table A.5: Full & MR Model Comprehension Subsample Regression Results: Effect of Treatment on Preferred Tax Rates

Sample	N	Spending Treatment	Controls	Estimate	SE	Hypothesis	p-value
Full	752	Equal per capita	No	0.50	0.35	one-sided	0.076
Full	781	Congress	No	0.13	0.34	two-sided	0.707
Full	1533	Diff-in-diff	No	0.37	0.48	two-sided	0.444
Full	1439	Equal per capita	Yes	0.69	0.34	one-sided	0.023
Full	1439	Congress	Yes	-0.12	0.33	two-sided	0.711
Full	1439	Diff-in-diff	Yes	0.81	0.48	two-sided	0.090
20k, 80k, or < Avg.	498	Equal per capita	No	0.85	0.43	one-sided	0.023
20k, 80k, or < Avg.	541	Congress	No	0.34	0.40	two-sided	0.399
20k, 80k, or < Avg.	1039	Diff-in-diff	No	0.51	0.59	two-sided	0.381
20k, 80k, or < Avg.	982	Equal per capita	Yes	0.93	0.42	one-sided	0.014
20k, 80k, or < Avg.	982	Congress	Yes	0.05	0.39	two-sided	0.892
20k, 80k, or < Avg.	982	Diff-in-diff	Yes	0.87	0.58	two-sided	0.129
< Avg.	340	Equal per capita	No	1.00	0.52	one-sided	0.027
< Avg.	326	Congress	No	0.18	0.51	two-sided	0.731
< Avg.	666	Diff-in-diff	No	0.83	0.73	two-sided	0.254
< Avg.	627	Equal per capita	Yes	1.09	0.51	one-sided	0.017
< Avg.	627	Congress	Yes	0.11	0.49	two-sided	0.816
< Avg.	627	Diff-in-diff	Yes	0.98	0.71	two-sided	0.170
20k & 80k	304	Equal per capita	No	1.18	0.50	one-sided	0.009
20k & 80k	313	Congress	No	0.20	0.43	two-sided	0.647
20k & 80k	617	Diff-in-diff	No	0.99	0.66	two-sided	0.138
20k & 80k	582	Equal per capita	Yes	1.45	0.50	one-sided	0.002
20k & 80k	582	Congress	Yes	-0.09	0.41	two-sided	0.820
20k & 80k	582	Diff-in-diff	Yes	1.54	0.64	two-sided	0.016
20k, 80k, & < Avg.	222	Equal per capita	No	0.83	0.53	one-sided	0.059
20k, 80k, & < Avg.	203	Congress	No	0.35	0.53	two-sided	0.508
20k, 80k, & < Avg.	425	Diff-in-diff	No	0.48	0.75	two-sided	0.525
20k, 80k, & < Avg.	397	Equal per capita	Yes	0.98	0.52	one-sided	0.030
20k, 80k, & < Avg.	397	Congress	Yes	0.17	0.49	two-sided	0.730
20k, 80k, & < Avg.	397	Diff-in-diff	Yes	0.82	0.71	two-sided	0.250

Notes: Results for full sample and respondents who correctly answer subsets ("Sample") of net gain (loss) questions for households earning $20,000, $80,000, and any income below average in the hypothetical scenario used to measure comprehension of the MR model. Controls include age, minority ID, party ID, ideology, college degree, and income group fixed effects; robust standard errors are shown.

Table A.6: Treatment Balance
(Full Sample, Equal Per Capita Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	41.71	42.39	0.46
Black (1 = yes)	0.11	0.10	0.65
Latino (1 = yes)	0.08	0.08	0.82
Democrat (1 = yes)	0.46	0.45	0.70
Republican (1 = yes)	0.29	0.32	0.41
Ideology (see notes)	0.49	0.47	0.44
College (1 = yes)	0.44	0.47	0.57
Income (see notes)	62.82	62.26	0.35
n / F test	380.00	372.00	0.56

Notes: Independents who say they are closer to the Democratic (Republican) Party are coded as such. Ideology is measured on a five-point scale (0 = very liberal, 1 = very conservative). Income is coded as the midpoint of the $5,000 interval selected by the respondent in the pre-survey. Means, proportions, and bootstrapped p-values for two-sample comparisons are shown. Treatment assignment is regressed on age, ideology, dummies for minority identification and college degree, and income-group fixed effects to test for the joint orthogonality of pre-treatment covariates and treatment assignment; the p-value from the corresponding F test is reported.

Table A.7: Treatment Balance
(Full Sample, Congress Determined Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	42.43	40.94	0.11
Black (1 = yes)	0.11	0.12	0.74
Latino (1 = yes)	0.08	0.08	0.72
Democrat (1 = yes)	0.45	0.47	0.62
Republican (1 = yes)	0.30	0.27	0.36
Ideology (see notes)	0.49	0.48	0.41
College (1 = yes)	0.51	0.40	0.00
Income (see notes)	62.24	62.96	0.22
n / F test	388.00	393.00	0.12

Notes: See notes to Online Appendix Table A.6.

Table A.8: Treatment Balance
(20k, 80k, or < Avg., Equal Per Capita Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	41.20	42.94	0.13
Black (1 = yes)	0.11	0.11	0.92
Latino (1 = yes)	0.07	0.05	0.38
Democrat (1 = yes)	0.45	0.46	0.90
Republican (1 = yes)	0.33	0.32	0.88
Ideology (see notes)	0.50	0.47	0.25
College (1 = yes)	0.44	0.48	0.38
Income (see notes)	62.68	62.38	0.68
n / F test	249.00	249.00	0.19

Notes: See notes to Online Appendix Table A.6.

Table A.9: Treatment Balance
(20k, 80k, or < Avg., Congress Determined Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	43.55	41.66	0.09
Black (1 = yes)	0.09	0.11	0.47
Latino (1 = yes)	0.09	0.07	0.49
Democrat (1 = yes)	0.40	0.47	0.09
Republican (1 = yes)	0.34	0.29	0.24
Ideology (see notes)	0.51	0.49	0.46
College (1 = yes)	0.49	0.44	0.23
Income (see notes)	62.15	62.85	0.32
n / F test	268.00	273.00	0.82

Notes: See notes to Online Appendix Table A.6.

Table A.10: Treatment Balance
(< Avg., Equal Per Capita Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	40.69	42.87	0.13
Black (1 = yes)	0.10	0.11	0.91
Latino (1 = yes)	0.08	0.05	0.41
Democrat (1 = yes)	0.46	0.47	0.85
Republican (1 = yes)	0.33	0.27	0.25
Ideology (see notes)	0.48	0.43	0.10
College (1 = yes)	0.47	0.50	0.52
Income (see notes)	62.82	62.92	0.91
n / F test	172.00	168.00	0.21

Notes: See notes to Online Appendix Table A.6.

Table A.11: Treatment Balance
(< Avg., Congress Determined Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	43.37	41.61	0.22
Black (1 = yes)	0.10	0.13	0.36
Latino (1 = yes)	0.09	0.05	0.18
Democrat (1 = yes)	0.47	0.47	0.98
Republican (1 = yes)	0.32	0.28	0.45
Ideology (see notes)	0.50	0.48	0.38
College (1 = yes)	0.55	0.45	0.10
Income (see notes)	62.00	63.53	0.08
n / F test	161.00	165.00	0.05

Notes: See notes to Online Appendix Table A.6.

Table A.12: Treatment Balance
(20k & 80k, Equal Per Capita Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	41.02	43.07	0.16
Black (1 = yes)	0.11	0.07	0.25
Latino (1 = yes)	0.07	0.03	0.10
Democrat (1 = yes)	0.43	0.40	0.70
Republican (1 = yes)	0.35	0.33	0.74
Ideology (see notes)	0.50	0.49	0.84
College (1 = yes)	0.45	0.51	0.29
Income (see notes)	62.97	62.28	0.42
n / F test	148.00	156.00	0.22

Notes: See notes to Online Appendix Table A.6.

Table A.13: Treatment Balance
(20k & 80k, Congress Determined Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	44.30	42.93	0.35
Black (1 = yes)	0.04	0.06	0.41
Latino (1 = yes)	0.04	0.05	0.55
Democrat (1 = yes)	0.35	0.36	0.88
Republican (1 = yes)	0.41	0.36	0.37
Ideology (see notes)	0.53	0.53	0.93
College (1 = yes)	0.52	0.44	0.15
Income (see notes)	61.70	63.14	0.11
n / F test	157.00	156.00	0.74

Notes: See notes to Online Appendix Table A.6.

Table A.14: Treatment Balance
(20k, 80k, & < Avg., Equal Per Capita Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	41.49	43.61	0.24
Black (1 = yes)	0.11	0.06	0.27
Latino (1 = yes)	0.07	0.03	0.14
Democrat (1 = yes)	0.42	0.39	0.66
Republican (1 = yes)	0.36	0.29	0.27
Ideology (see notes)	0.50	0.46	0.26
College (1 = yes)	0.46	0.53	0.29
Income (see notes)	62.99	62.73	0.80
n / F test	113.00	109.00	0.24

Notes: See notes to Online Appendix Table A.6.

Table A.15: Treatment Balance
(20k, 80k, & < Avg., Congress Determined Spending Rule)

Covariate	Told HH Income Above Avg	Told HH Income Below Avg	p-value
Age (years)	44.95	44.37	0.74
Black (1 = yes)	0.05	0.07	0.51
Latino (1 = yes)	0.04	0.02	0.50
Democrat (1 = yes)	0.38	0.32	0.39
Republican (1 = yes)	0.41	0.35	0.40
Ideology (see notes)	0.51	0.53	0.66
College (1 = yes)	0.58	0.45	0.06
Income (see notes)	61.72	64.05	0.04
n / F test	103.00	100.00	0.07

Notes: See notes to Online Appendix Table A.6.