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BILLIONAIRE SUPERSTAR: PUBLIC IMAGE AND DEMAND FOR TAXATION

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ABSTRACT

In the United States, there are 741 billionaires with a combined net worth of $5.2 trillion. Despite this extreme inequality, billionaires face effective tax rates lower than those of the average American. We examine how the public image of billionaires shapes support for taxing them, using a pre-registered survey experiment with 9,013 Americans. Subjects were randomly assigned to one of four treatments, each emphasizing a different aspect of billionaires' public image: the role of luck in building the billionaires' wealth, their lavish consumption, the scale of their fortunes, and their average tax rates. All four treatments significantly and strongly affected the intended beliefs—for instance, information about how the billionaires made their fortunes significantly increased the perceived role of luck. Moreover, all treatments elicited strong emotional reactions. A panel of academic experts predicted that all four treatments would substantially increase demand for taxation. In sharp contrast, we find that only one treatment—providing information about lavish lifestyles—had a robust positive effect on support for taxation, while another—focused on effective tax rates—had a strong negative effect. We discuss implications for both researchers and policymakers.

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A data appendix is available at
http://www.nber.org/data-appendix/w32712
A randomized controlled trials registry entry is available at
https://www.socialscienceregistry.org/trials/11845

1 Introduction

Due to scalable markets and winner-takes-all dynamics (Rosen, 1981), a select group of individuals can achieve immense fortunes. The epitome of this superstar phenomenon can be seen in billionaires. In the United States, there are 741 billionaires with a combined net worth of $5.2 trillion.[1] Their fortunes are part of a broader trend of increasing wealth concentration at the very top (Piketty and Saez, 2006; Saez and Zucman, 2020). For example, the top 1% Americans own 30% of the total net worth.[2] On the other end of the income distribution, the rates of homelessness have reached a record high, with around one in every 500 Americans experiencing homelessness.[3] The middle class is also struggling: only half of the children born in the 1980s earn more than their parents did (Chetty et al., 2017), and most Americans say they live paycheck to paycheck.[4] The fortunes of the ultra-wealthy are far from being hidden from the public eye. In contrast, American billionaires lead public lives. Their romantic relationships and other aspects of their personal lives are widely covered in the media. Even some of the most beloved superhero characters, such as Iron Man and Batman, are portrayed as billionaires.[5]

Considering the extreme inequality, some may expect Americans to rally for higher taxes on billionaires. Yet billionaires are estimated to pay lower effective tax rates than the average American (e.g., New York Times, 2019; Leiserson and Yagan, 2021; ProPublica, 2023; EU Tax Observatory, 2024; Zucman, 2024). In recent years, however, there have been some proposals to increases taxes on billionaires. For example, Congresswoman Alexandria Ocasio-Cortez has been vocal about her advocacy for a wealth tax, proposing a 70% marginal tax rate on income over $10 million (CBS, 2019). Although not as radical, former President Biden also supported higher taxes on the wealthy, proposing to raise the top income tax rate to 39.6% and increase capital gains taxes for those earning over $1 million annually (Tax Foundation, 2023). More recently, former Vice President Kamala Harris proposed that taxpayers with a net wealth above $100 million pay a minimum tax on their unrealized capital gains, a policy

[1] Estimates from the Americans for Tax Fairness (ATF) as of November 2023: https://americansfortaxfairness.org/u-s-billionaires-now-worth-record-5-2-trillion/.

[2] Sources: https://fred.stlouisfed.org/series/WFRBSTP1300 and https://fred.stlouisfed.org/series/WFRBS99T999273.

[3] According to data from the Department of Housing and Urban Development, 653,104 people in the United States were homeless in January 2023 (DeParle, 2023).

[4] According to a 2024 survey, 65% of Americans say that they live paycheck to paycheck (CNBC, 2024).

[5] Tony Stark, also known as Iron Man, is portrayed as a billionaire, a genius inventor, and an industrialist who owns Stark Industries. His wealth and resources are key elements of his character. Similarly, Bruce Wayne, also known as Batman, is often portrayed as a billionaire in various comic books, movies, and television shows. As the owner of Wayne Enterprises, his wealth provides the resources needed for his crime-fighting activities.

some refer to as the "Harris Billionaire Minimum Tax."[6]

Despite its significance, there is limited direct evidence on what drives public demand for taxing billionaires. This question matters not only because of the substantial potential for tax revenue, but also due to the growing economic and political influence that billionaires—and the companies they control—exert on the country's future. Extreme wealth gives billionaires the opportunity to wield extreme influence over political outcomes through campaign spending, lobbying, media ownership, and other channels. The 2024 presidential election was perhaps the clearest showcase yet of this influence. A billionaire himself, Donald Trump was re-elected to the highest office. Moreover, several of President Trump's key appointees were either billionaires, married to billionaires, or had near-billionaire status (The Guardian, 2024). Among them, Elon Musk—one of the five billionaires featured in our experiment—illustrates the avenues through which extreme wealth can translate into political influence. Musk is estimated to have spent a record $277 million supporting Trump's campaign (Washington Post, 2024). After acquiring one of the largest social media platforms for $44 billion, changes made under his ownership have been alleged to benefit Trump's electoral odds (New York Times, 2024). Despite a later public rift with Trump, Musk took on a prominent role within the administration, during which he made spending cuts that were criticized for harming the world's most vulnerable populations (New York Times, 2025).

In this paper, we conduct a pre-registered survey experiment to study Americans' demand for taxing billionaires and the companies they founded. We measure the public's perceptions of billionaires, including their lifestyles, level of wealth, and business acumen. Furthermore, we use experimental variation to assess whether providing information about billionaires significantly affects the demand for taxation.

At the beginning of the survey, each subject is randomly assigned to one of the following five billionaires, chosen from Forbes World's Billionaires List of 2023: Elon Musk, Jeff Bezos, Bill Gates, Mark Zuckerberg, and Michael Bloomberg. Our experimental design deliberately focuses on specific billionaires for several reasons—for example, these prominent individuals are among the most visible and are therefore likely to shape public perceptions of the billionaire class. Subjects are then randomized into different treatment arms. We begin by asking respondents a few questions related to the billionaire they have been assigned. Then, there is an information-provision stage, in which the respondents are randomly allocated to a piece of information about the billionaire. For example, in the luxury treatment arm, the respondent may be shown a picture of a lavish home owned by the billionaire. We measured some beliefs related to the information, both before the information-provision stage (referred to as prior beliefs) and after (referred to as posterior beliefs). These data allow us to document whether

[6]Source: https://www.cnbc.com/2024/09/05/harris-economic-plan-tax-unrealized-gains.html

the subjects had significant misperceptions initially and whether they update their beliefs in response to treatments. The last part of the survey consists of a battery of questions to serve as outcome variables, such as the respondent's preferred income tax rate for billionaires.

We study four different treatment arms, some inspired by prior research on the demand for redistribution and by the arguments made by academics, journalists, and the general public in favor of taxing the ultra-wealthy.

In the *luxury treatment*, we explore perceptions about the consumption habits of billionaires. Some billionaires seem to have made their frugality a central tenet of their public personas. For example, Warren Buffett is renowned for his modest living; he resides in the same house he purchased in the late 1950s. However, other billionaires live in extravagant homes that reflect their immense wealth. In this treatment, we provide a picture of one of the luxurious homes purchased by the billionaire, as well as information about the home's price and characteristics.

In the *luck treatment*, we provide information on the role that luck played in the buildup of billionaires' wealth. According to a large body of work on fairness preferences (e.g., Almås et al., 2020), individuals are more inclined to reduce the inequalities that arise from luck (e.g., a coin toss) than those that result from effort (e.g., performance in a task). In this arm, we randomized subjects with information demonstrating that factors other than the billionaire's honest and hard work played a key role in how he made his fortune. For example, we provide an excerpt from an interview with Jeff Bezos in which he explains that luck played a major role in his success with Amazon.

In the *earnings treatment*, we teach subjects about how much billionaires actually earn. There is evidence that individuals are averse to inequality (e.g., Fehr ⓡ al., forthcoming) and that they also hold significant misperceptions about the income distribution (e.g., Cruces et al., 2013). We provide a side-by-side comparison between the earnings of billionaires and the earnings of the average American. For example, we mention that since 2012, Elon Musk has made $16.18 billion per year on average. Since subjects may not be able to wrap their heads around how large a billion is, we translated the information into an hourly basis: divided by the 8,760 hours in a year, Elon earned $1,847,000 per hour during this period.

In the last treatment arm, we explore perceptions about the taxes paid by billionaires. There is evidence suggesting that fairness considerations are important to understand taxation preferences (Stantcheva, 2021) and that individuals have significant misperceptions about tax rates of others (Nathan et al., 2023). If individuals learn that billionaires pay lower tax rates than the typical American, they may conclude that billionaires are not contributing their fair share. In the *tax rate treatment*, we share the results from a report by ProPublica (2023) according to which billionaires paid an average total tax rate of 16%; in

comparison, a typical American pays a rate of 21%. In addition to whether they pay low or high tax rates, the public may care about whether billionaires are playing by the rules or cheating the system. To test this hypothesis, we cross-randomized an additional piece of information. In the *tax loophole treatment*, in addition to information about tax rates, subjects receive information on two accounting strategies often used by billionaires to reduce their tax burden: receiving compensation in stocks and borrowing against them, and setting up shell companies in tax havens.

The first and main outcome of interest is the billionaire income tax. Inspired by an actual policy proposal, we ask respondents to imagine that the U.S. government is planning to introduce a new personal income tax rate specifically for individuals earning more than $10 million annually. Respondents are given the authority to set this federal top income tax rate and are asked to use a slider to select a rate between 0% and 100%. To study whether perceptions about billionaires affect demand for taxation of the companies they founded, we describe a hypothetical corporate tax rate for large businesses and ask subjects to select a rate between 0% and 100%. Individuals may want to tax billionaires for efficiency reasons or for fairness reasons. To probe the fairness channel more directly, we also include a question on whether, from a perspective of fairness, the taxes paid by the billionaire in question are too high or too low.

In addition to the tax preferences described above, we also elicit the respondents' support for existing policy proposals. We construct an index of policy support based on six distinct measures. As part of this, respondents are asked whether they support or oppose four policy proposals, including the "Billionaire Minimum Income Tax." We let individuals split a budget in donations to two organizations, one of which has the goal of requiring big corporations and the wealthy to pay their fair share in taxes. Lastly, we give respondents the opportunity to sign a petition organized by Oxfam to increase the taxes on the ultra-wealthy. To provide complementary evidence on the mechanisms at play, we construct a sentiment index based on five different metrics such as whether the billionaire deserves his wealth or whether he is trustworthy.

To measure the persistence of treatment effects, we invited all subjects to complete an obfuscated follow-up survey about a month later. This survey again measured their posterior beliefs, along with the same outcomes measured in the baseline survey. We conducted the survey with a sample of 9,013 Americans recruited via Prolific and following best practices. Approximately 82% of these subjects also completed the follow-up survey.

We conducted a couple of complementary surveys. First, we conducted a supplemental survey, with a different subject pool, to explore individuals' emotional reactions to the treatments. Respondents were shown one of the information treatments and were asked about

their reactions through a combination of multiple-choice and open-ended questions. And to determine whether the results were surprising or predictable, we conducted a forecast survey with a sample of 81 experts, primarily professors with research experience on related topics. Experts were shown each of the treatments and asked to predict its effects on the main outcome of interest: the preferred top income tax rate. There is a strong consensus among experts that all treatments would have a significant and positive effect on the preferred income tax rate, with the average predicted effect ranging from around 5 to 10 percentage points (pp), depending on the treatment.

We begin by documenting the views of individuals in the control group to establish a baseline for comparison. While support for taxing the ultra-wealthy varies considerably across individuals, the average respondent tends to favor such measures. The average subject prefers a top income tax rate of 42.5%, which is somewhat higher than the current top income tax rate (37%). This average masks substantial heterogeneity, with preferred tax rates ranging from a 10th percentile of 16% to a 90th percentile of 75%. Most subjects support policy proposals such as the California Extreme Wealth Tax, are willing to sign a petition to increase taxes on the ultra-rich, and choose to donate to Americans for Tax Fairness.

Several of the information treatments included factual content, such as the value of a billionaire's home. By comparing respondents' prior beliefs with this information, we find that the general public holds significant misperceptions about billionaires. Most importantly, all four treatments had strong and significant effects on the targeted beliefs—for example, information about how billionaires accumulated their wealth significantly increased the perceived role of luck. Additionally, our supplemental survey shows that each treatment elicited emotional reactions, with negative emotions significantly outweighing positive ones.

Despite the significant effects on perceptions and emotional responses—and contrary to expert predictions that all four treatments would substantially increase preferred tax rates—we find that only one treatment had a robust positive effect on demand for taxation, and one treatment had strong negative effects.

The luxury treatment not only raises the average perceived value of the billionaire's home but also, more importantly, generates positive effects on the demand for taxation across the board. Relative to the control group, individuals who received the information prefer a top income tax rate that is 2.0 pp higher. The treatment increases the preferred corporate tax rate by 1.8 pp, so the effects spill over to the companies that the billionaire created. The treatment increases the perception that billionaire taxes are unfairly low by 0.08 standard deviations. And there is a significant effect on the support for tax policies of 0.08 standard deviations. A deeper analysis suggests that the effects are not driven by learning the precise value of the billionaire's home but are a product of the qualitative information, such as the

narrative and the picture of the home.

The luck treatment causes individuals to believe that honest and hard work played a less important role in the billionaire's wealth. This information also has a strong negative effect on the sentiment of the billionaire, such as the feeling of admiration. However, the effects of this information on demand for taxation are close to zero and statistically insignificant across the board. This result goes against the experts' prediction that this treatment would increase the demand for taxation substantially. This finding is also surprising in light of a body of work in experimental studies showing that individuals want more redistribution when the outcomes are allocated by the flip of a coin. Our preferred interpretation is that, contrary to these experimental settings, in reality, economic success is seen as a product of a complex interplay of factors including skill, hard work, opportunity, and circumstances. This complexity makes it difficult to attribute wealth solely to luck and, therefore, harder to justify taxation. In fact, this interpretation is consistent with laboratory evidence indicating that people tend to be more accepting of inequalities caused by market forces or unequal circumstances, even if these forces are beyond the individual's control (Yusof ⓡ Sartor, 2024; Andre, 2024).

The earnings treatment increases subjects' perceptions of the billionaire's income. This treatment has positive effects, notably by increasing the desired income and corporate tax rates (1.9 pp and 1.46 pp, respectively). However, these effects should be taken with a grain of salt for the following reasons. First, they dissipated completely at follow-up. Second, we do not find significant effects along the other margins—the perception that billionaires pay unfairly low taxes and the support for related policies. Like the luxury treatment, the earnings treatment is intended to highlight the extreme inequalities between billionaires and the average American. However, the luxury treatment has a more robust effect on preferences for taxation. Our preferred interpretation is that images are more effective than statistics because they are easier for people to relate to.

The tax rate treatment lowers the perception of the tax rates that billionaires face by about 5.5 pp on average. This treatment causes a higher perception that the taxes of billionaires are unfairly low by about 0.22 standard deviations. However, rather than increasing demand for redistribution, this treatment causes a reduction in the desired income tax rate of about 3.9 pp, a reduction in the corporate tax rate of 3.9 pp, and a reduction in the policy support of 0.11 standard deviations. We propose that the negative effects originate from a reference-point or status-quo effect. Specifically, individuals are reluctant to raise rates significantly above the status quo. Therefore, when they learn that billionaires pay low taxes, it lowers the ceiling on the tax rates they feel they can demand.

In a sub-treatment, individuals receive additional information on the accounting strategies

used by billionaires to reduce their tax burden. Although at baseline, most people already believed that billionaires abuse the tax system, this treatment increases that belief even further. This treatment also has a strong negative effect on the sentiment of billionaires, such as their perceived trustworthiness. The treatment does not significantly affect subjects' preferences regarding top income or corporate tax rates, but it does increase overall policy support by 0.08 standard deviations. Our preferred interpretation is that individuals see little value in raising tax rates—since they can be circumvented anyway—but become more receptive to addressing the root of the problem through broader tax reform.

We present several robustness checks. First, we show that most of the effects persisted in the follow-up survey conducted a month later, although at about half their original size. We show that none of the results are driven by any single billionaire. And we show that the results are robust across alternative specifications. Moreover, we compare the experimental estimates with the expert forecasts. Quantitatively, we can confidently reject the null hypothesis that the experimental estimates are equal to the average forecasts.

This paper relates and contributes to several strands of literature. More generally, this study is related to a literature on demand for redistribution and the role of misperceptions (e.g., Cruces et al., 2013; Kuziemko et al., 2015). More precisely, this paper relates to studies on the demand for taxation at the top of the income distribution. In particular, some studies explore the preferences for redistribution from business oligarchs (Di Tella et al., 2021), the top-1% (Hope et al., 2023), and CEOs (Kiatpongsan and Norton, 2014). We contribute to this literature by examining public demand for taxing billionaires and the companies they have founded. These topics are important not only because of the substantial potential for tax revenue but also due to the growing economic and political influence that billionaires and their companies exert on the world's future. Our contribution lies in leveraging existing insights and applying them to the context of billionaire taxation—an important yet surprisingly underexplored area of research. Our findings show that some conventional mechanisms from the broader literature on redistribution preferences—such as the distinction between effort and luck—do not explain support for billionaire taxes. Meanwhile, perceived lavishness—a channel that has received limited attention in prior research—proves to be the most effective.

The rest of the paper proceeds as follows. Section 2 describes the research design and implementation of the experiment. Section 3 presents the main results. The last section concludes.

2 Experimental Design and Implementation

2.1 Overview of the Research Design

The samples of the baseline and follow-up survey instruments are attached as Appendix C and Appendix D, respectively. Moreover, the structure of the surveys is summarized as a flow chart in Figure 1.

In the baseline survey, each participant is randomly assigned to one of five billionaires. The survey begins with a brief introduction to the billionaire chosen for the respondent, as well as one of the companies they are best known for: Elon Musk (founder of Tesla), Jeff Bezos (Amazon), Bill Gates (Microsoft), Mark Zuckerberg (Meta), and Michael Bloomberg (Bloomberg L.P.). The five billionaires used in our experiment were selected from the top ten richest individuals in the world according to Forbes World's Billionaires List of 2023.[7]

We deliberately chose to focus on real, well-known billionaires rather than hypothetical or generic profiles. First, these prominent individuals are particularly interesting to study because they lead highly public lives and likely play a disproportionate role in shaping public perceptions of the ultra-wealthy. They are frequently featured in the media for both their business achievements and personal activities. For instance, Elon Musk and Jeff Bezos have been named Time magazine's Person of the Year, while Michael Bloomberg served as mayor of New York City and even ran for president. Indeed, the vast majority of our survey participants reported being familiar with these billionaires.[8] The companies associated with them also rank among the most recognizable and valuable in the world. Focusing on specific billionaires, rather than a generic one, offers a second key advantage: it allows us to tailor the information treatment to real individuals, making the content more tangible and credible for participants. For example, a generic message stating that billionaires "got lucky" may be far less persuasive than a narrative about how specific billionaires built their fortunes, supported by journalistic accounts.

The subjects are randomized into different treatment arms. Within each treatment arm, we conduct an information-provision experiment: each subject is randomly assigned to receive a piece of information (treatment group) or to not receive any information (control group). Each information treatment provides a narrative that can contain not only numerical information (e.g., the hourly earnings of the billionaire) but also other elements, such as a picture of the billionaire's house or a screenshot of a newspaper headline. In all of the treatments, we explicitly provide a source for the information, typically a newspaper article,

[7] The choice of five billionaires instead of a larger group was arbitrary; the research design can accommodate a larger set.

[8] For more details, see Appendix B.1.

with a link to it. To assess whether an information treatment had any effect on perceptions, we ask a question related to the information contained in the message, both before the information-provision stage (prior belief) and after the information-provision stage (posterior belief). For example, the luxury message mentions, among other things, the estimated price of the billionaire's home. In the prior and posterior beliefs, we ask the subjects to guess the price of the billionaire's home. This will allow us to document some of the initial misperceptions, as well as whether they updated their perceptions in the expected direction. After the elicitation of posterior beliefs, the next block of questions, which is identical across all subjects, includes the outcome variables. Finally, at the very end of the survey, we collect some standard background information about the subject, such as demographics.

We took several steps to prevent respondents from making unintentional inferences due to being provided with information. For instance, respondents might assume they were chosen to receive information because their prior belief was inaccurate. To mitigate this concern, we made the randomization process explicit: we first informed respondents that some participants would be randomly selected to receive information and that they would find out on the next screen if they were chosen. Another concern is that when subjects are asked about their posterior beliefs, they might think the repeated question indicates their initial response was incorrect. To address this, we clearly informed respondents that all survey participants are asked the same question twice, regardless of their initial guesses or whether they received information.

2.2 Treatment Arms

We designed four different treatment arms, summarized below. Some treatments were inspired by previous research on the demand for redistribution and the arguments made by academics, journalists, and the general public advocating for taxing the ultra-wealthy. Figure 2 provides a sample screenshot of each information treatment. Although panels (e) and (f) are common to all billionaires, panels (a) through (d) are specific to the billionaire selected for the respondent. In Figure 2, we use Bill Gates as an example. The corresponding screenshots for each of the other four billionaires are reported in Figures B.1 to B.4.

Luxury Treatment Arm: Motivated by the observation that some billionaires deliberately cultivate a frugal image (Del Valle, 2018), we investigate public perceptions of their consumption habits and examine how people respond to evidence of lavish spending. Specifically, we provide a picture of one of the luxurious homes purchased by a billionaire, along with information about the home's price and features. Panel (a) of Figure 2 shows a sample screenshot for Bill Gates, noting that he owns a $130 million mansion in Washington, which boasts extensive amenities such as luxurious pools, a movie theater, and a reception area that

can accommodate 200 guests. In this and other treatment arms, we used neutral language in the information treatments by providing factual information (e.g., a picture, a figure) and refraining from endorsing any policies explicitly.[9]

Luck Treatment Arm: According to a large body of work on social preferences (Cappelen et al., 2007; Durante et al., 2014; Almås et al., 2020; Cohn et al., 2023), individuals are more inclined to reduce inequalities that arise from luck (e.g., a coin toss) rather than those that result from effort (e.g., performance in a task). In this arm, we randomized subjects with information illustrating that other factors besides the billionaire's honest and hard work played a significant role in how they made their fortune. Panel (b) of Figure 2 shows a sample screenshot for Bill Gates, mentioning a newspaper article arguing that Bill Gates stole the idea for Microsoft. For one of the billionaires, Michael Bloomberg, we were not able to find an article from a reputable source that would be a good fit for this treatment. For that reason, in this treatment arm, subjects are randomized to one of the other four billionaires.

Earnings Treatment Arm: We teach subjects about how much billionaires actually earn. When arguing for higher taxation for billionaires, supporters of these policies often mention the unthinkable levels of wealth amassed by billionaires (e.g., Zucman, 2024). According to a body of work on social preferences, some individuals are averse to inequality (Fehr ⓡ al., forthcoming). Additionally, research shows that individuals have significant misperceptions about the income distribution (Cruces et al., 2013; Kuziemko et al., 2015). In this treatment arm, we provide a side-by-side comparison between the earnings of billionaires and the earnings of the average American.[10] One potential concern we had with this treatment arm was that billionaires' earnings may be so astronomical that individuals are unable to grasp their true magnitude. For example, individuals rarely have to deal with billions of dollars in their day to day lives. To address this concern, subjects are randomized to one of two conditions: the main condition of hourly earnings (assigned with $\frac{2}{3}$ probability) and the alternative condition of annual earnings ($\frac{1}{3}$ probability). The hourly sub-treatment is identical to the annual sub-treatment, except that it includes additional text converting the annual salaries into their hourly equivalents. For the sake of brevity, and to maximize statistical power, the main specification pools these two conditions—in any case, we do not find significant differences between them (results reported in Appendix B.2). Panel (c) and (d) of Figure 2 show screenshots of the hourly and annual treatments for Bill Gates. While the typical American earns $64,000 per year, Gates earns $3.05 billion per year. For the

[9]Despite our efforts, the mere fact of studying the taxation of the ultra-wealthy may be perceived as partisan. At the end of the follow-up survey, we asked respondents whether they thought the survey was biased: 71.4% said the survey was unbiased, 25.8% said it had a left-wing bias, and 2.8% said it had a right-wing bias.

[10]In the question about prior beliefs, we informed subjects about the earnings of the typical American, so this information was available both in the treatment and control groups.

typical American, if you divide the annual income of $64,000 by the 8,760 ($= 365 \cdot 24$) hours in a year, it comes out to about $7 per hour. For Bill Gates, the corresponding estimate would be $348,015 per hour.

Tax Treatment Arm: There is evidence that, when it comes to tax compliance, individuals care about fairness (Nathan et al., 2023). According to some accounts, billionaires pay lower effective tax rates than the typical American (e.g., New York Times, 2019; Leiserson and Yagan, 2021; ProPublica, 2023; EU Tax Observatory, 2024; Zucman, 2024). If the public learns about this fact, they may conclude that billionaires are not paying their fair share. In the tax rate treatment, we provide a side-by-side comparison between the tax rate paid by the typical American and the tax rate paid by the 25 richest billionaires. A screenshot of the treatment is shown in panel (e) of Figure 2: according to ProPublica (2023), billionaires paid an average tax rate of 16%; in comparison, the average American pays a tax rate of 21%.[11] It is possible that individuals do not mind that billionaires face low tax rates if they play by the rules, but they may react differently if they perceive that billionaires are cheating their way into low taxes. For example, evidence from laboratory experiments shows that individuals are more willing to redistribute resources from those perceived to have cheated (Di Tella et al., 2015; Bortolotti et al., 2023). To test this additional hypothesis, we cross-randomized an additional message. A screenshot of the treatment is shown in panel (f) of Figure 2. In addition to the tax rate information, some individuals receive an additional screen with information on two common accounting strategies used by billionaires to reduce their tax burden: receiving compensation in stocks and borrowing against them to avoid taxes until sold, and setting up smaller companies in tax havens to transfer profits and minimize tax liabilities.

In each of the treatment arms, we asked for prior and posterior beliefs related to the information provided in that arm. All of these questions are listed in Table 1 and summarized below. In the luxury treatment arm, we asked subjects to guess the value of the billionaire's home.[12] In the luck treatment arm, we elicited prior and posterior beliefs by asking the extent to which the respondent agrees with the statement that the billionaire "earned his wealth through honest and hard work." In the earnings treatment arm, we asked the respondent to guess the earnings of the billionaire (hourly or annual, depending on the sub-treatment assigned to the respondent). In the tax treatment arm, we included two questions for prior and posterior beliefs. The first question, designed with the tax rate information in mind,

[11] In the question about prior beliefs, we informed subjects about the tax rate paid by the typical American, so this information was available both in the treatment and control groups.

[12] Given that the amounts individuals could enter are so large, there is a concern for large outliers due to typos. For that reason, in this and other numerical questions, we included a numerical validation—for more details, see Appendix A.2.

asked the subject to guess the effective tax rate paid by the billionaire to which they were assigned. The second question, designed with the information about the tax loophole in mind, asked subjects to determine to what extent they agree with the statement that "billionaires abuse loopholes in the tax code to avoid paying taxes."

2.3 Outcomes of Interest

At the end of the survey, we included a series of questions that make up the outcome variables and are listed in Table 2.[13] The outcome variables can be categorized into three broad groups, as summarized below.

Taxation Attitudes: The primary outcome of interest is the top income tax rate for billionaires. This outcome is inspired by real-world policy proposals to establish a top income tax rate for billionaires, such as those proposed by President Biden, Vice-President Harris and Congresswoman Ocasio-Cortez.[14] We ask respondents to imagine that the U.S. government is planning to introduce a new personal income tax rate specifically for individuals earning more than $10 million annually, and ask them to use a slider to select a marginal tax rate between 0% and 100%.[15] The next question is intended to examine whether perceptions about billionaires influence the demand for taxation of the companies they founded. Respondents are asked to imagine that the U.S. government is planning to introduce a corporate tax for companies that make profits exceeding $10 million—we explicitly mention that this would include large businesses such as the one owned by their assigned billionaire. Subjects can use a slider to select a corporate tax rate between 0% and 100%. Recognizing that individuals may want to tax billionaires for reasons of efficiency or fairness, we also include a question probing the fairness aspect directly. This question asks whether, from a fairness perspective, the taxes paid by the billionaire are too high or too low on a 7-point scale.

Policy Support: We construct an index of policy support based on six different metrics and standardize it so that the control group has a mean of 0 and a standard deviation of 1.[16] We describe four real policy proposals and for each of them, we elicit the respondent's

[13]Note that while some of the information treatments are tailored to specific billionaires, the outcome variables tend to capture respondents' general attitudes toward taxing the ultra-wealthy.

[14]The government has other mechanisms to increase taxes on the ultra-wealthy, such as raising the top capital gains tax. Given that billionaires can avoid income taxes, raising the top income tax rate may not be the most effective policy (see e.g., The Economist, 2024). However, we considered this an appropriate outcome because, while not all subjects pay capital gains taxes, a strong majority are subject to income taxes and thus are probably familiar with it.

[15]To avoid influencing their choices, this and other sliders do not have a default position. The subject needs to click somewhere on the horizontal line for the slider bar to appear.

[16]We standardize all the individual items of the index using the mean and standard deviation of the control group. To create the index, we take the average of the standardized items and then standardize this average again using the mean and standard deviation in the control group.

support on a 7-point scale from strongly oppose to strongly support. The four proposals are: (i) a proposal that would require the wealthiest American households to pay a minimum of 20% of their total income in taxes; (ii) the introduction of an international corporate tax at an annual rate of 0.2% of the company's market value; (iii) a proposal to introduce a wealth tax for individuals with wealth over $50 million;[17] (iv) a newly introduced law that allocated $80 billion in funding to the IRS to strengthen tax enforcement.[18] To incentivize subjects to answer truthfully, we informed them that we would share the anonymous survey results with politicians and relevant organizations. Previous studies found this approach to increase subjects' perceptions of how consequential their responses are (e.g., Elías et al., 2019). Additionally, we elicited two revealed-preference measures of policy support. First, we allow individuals to allocate a $300 budget for donations to two organizations: World Relief, a Christian non-governmental organization that provides humanitarian aid and development assistance to vulnerable communities around the world; and Americans for Tax Fairness, which advocates for big corporations and the wealthy to pay their fair share in taxes. To give subjects incentives to be truthful, we tell them we will split the donations according to the choices of one randomly chosen respondent. Second, respondents are given the opportunity to sign a petition organized by Oxfam to increase taxes on the ultra-rich. We asked respondents whether they want to sign the petition and, if they say yes, we show them a screen with a link to sign it.[19]

Sentiment: Providing information about basic aspects such as how much billionaires pay in taxes or how truly wealthy they are may change the sentiment towards them. While sentiment is not an outcome of interest in itself, it can shed light on the causal mechanisms behind the effects on preferences for taxation. To achieve that goal, we construct a sentiment index based on five different metrics. Like in the policy index, we construct an standardized index with a mean of 0 and a standard deviation of 1. We ask respondents whether they believe the billionaire deserves his wealth, whether they find the billionaire trustworthy, and if they admire and respect him. Additionally, we measure respondents' feelings towards the company founded by the billionaire. First, we use a subjective question to assess whether the individual has a positive sentiment towards the company. Second, we use a revealed-preference method. Subjects are shown a picture of a backpack with the logo of the company. Using a multiple price list method, we elicit the willingness to pay for the backpack. Intuitively, subjects with a negative image of the company should not want to walk around with the

[17] While this tax was proposed for the state of California, we asked subjects whether they would support a similar policy in their own state of residence.

[18] We randomized the order in which subjects saw the proposals.

[19] In addition, we collect some data to validate the petition outcome. The results are presented in Appendix B.4.

company's logo on their back and, therefore, should be willing to pay less for the backpack.

2.4 Background Characteristics

The final block of questions collected background information about the respondents, which can be used for descriptive analysis, as control variables, and for heterogeneity analysis. We included a standard set of questions regarding the gender, age, ethnicity, income, and education of the subjects. Additionally, we elicited the subjects' partisan identity. We also assessed subjects' general attitudes towards redistribution on an 11-point scale ranging from no redistribution to complete redistribution. Furthermore, we measured trust in the federal government on a 4-point scale from low trust to high trust.

2.5 Follow-up Survey

To assess the persistence of treatment effects, we invited all subjects to complete a follow-up survey approximately one month after the baseline. This follow-up survey measured the same posterior beliefs and outcome variables collected in the baseline survey, with just two minor exceptions.[20] In an effort to mitigate experimenter demand effects, we took several measures to obfuscate the connection between the baseline and follow-up surveys (Haaland et al., 2023). First, we used different Prolific accounts for the surveys: subjects were invited to the baseline survey from a UC-Berkeley account and to the follow-up survey from a University of Zurich account. Second, we changed the layout of the follow-up survey, such as using different fonts and colors, and replaced the UC-Berkeley logo with the University of Zurich logo. Additionally, to further obfuscate the connection to the baseline survey, the follow-up survey began with a series of filler questions about the subjects' use of and attitudes towards generative artificial intelligence.

2.6 Implementation of the Experiment

We conducted the pre-registered survey with a sample of 9,013 Americans recruited via Prolific.[21] We advertised the study on Prolific as "Scientific study" with an estimated duration of 10 minutes and a participation reward of $2. We collected responses in two waves, in January and March 2024.[22] About 82% of these participants also completed the follow-up

[20] In the follow-up survey, we did not ask subjects if they wanted to sign the petition again, as one cannot sign a petition twice (we did ask subjects if they had heard of the petition before, for a validation check). Second, to keep the follow-up survey short, we did not elicit the willingness to pay for the backpack.

[21] The experiment was pre-registered at the AEA RCT Registry (AEARCTR-0011845).

[22] The first wave was open from January 27 to 31 of 2024, with a total of 6,016 responses. The second wave was open from March 28 to 30 of 2024, with 2,997 responses.

survey, which had an estimated duration of 5 minutes and offered a participation reward of $1.50. The median time elapsed between the baseline and the follow-up survey was 24 days.[23] We limited our participant pool to U.S. residents, adhering to best practices for recruiting and ensuring high-quality responses. In both the baseline and follow-up survey, we included Captcha verification. Furthermore, we included different attention checks in both surveys, which 99% of subjects passed—subjects who did not pass the attention checks were excluded from the analysis. The median completion times were 9 minutes for the baseline survey and 6 minutes for the follow-up survey. At the end of the baseline survey, we asked respondents about the difficulty of the survey, and 89% indicated that our survey was "easy to understand."

2.7 Descriptive Statistics and Balance Checks

Table 3 presents descriptive statistics. Column (1) corresponds to the full sample. Approximately 49% of the subjects are female, 47% are 35 years old or younger, 65% have an annual household income above $50,000, 69% have a college degree, 63% self-identify as White, 15% as Black, 10% as Asian, and 8% as Hispanic. Our sample is not perfectly representative of the U.S. general population, but it is not very dissimilar either—for more details, see Appendix B.3. The most noticeable difference is that, as is common in online samples, the subject pool skews toward younger, more educated, and left-leaning individuals.[24]

Columns (2) - (13) of Table 3 present a breakdown of the sample by treatment status. For example, columns (2) - (4) correspond to the luxury treatment arm. Columns (2) and (3) show the average characteristics in the control and treatment groups, respectively. In turn, column (4) shows the p-value corresponding to the null hypothesis that the average characteristics are the same across the treatment and control groups. Observable characteristics are balanced between the treatment and control groups, indicating a successful random assignment.[25]

The final row of Table 3 shows the participation rates in the follow-up survey. On average, 82% of the subjects who participated in the baseline survey also participated in the follow-up survey. Follow-up participation rates are similar across treatments, indicating that we do

[23]For each wave, we published the follow-up survey three weeks after completing the baseline survey, keeping it online for 35 days in wave 1 and 21 days in wave 2, respectively. In both waves, 90% of the follow-up data was collected within the first week.

[24]For example, 50% of respondents self-report as Democrats, 32% as Independents, and the remaining 18% as Republicans.

[25]The differences between treatment and control groups are always small in magnitude. Four of the differences are statistically significant at the 10% level. However, those differences are probably spurious: given that 60 tests are reported in this table, we expect that about 6 of them should be statistically significant at the 10% level just by chance.

not observe selective attrition.[26] Additionally, we observe virtually no attrition within the baseline survey.[27]

2.8 Expert Forecast Survey

To assess whether the experimental results were surprising, we conducted a forecast survey to elicit predictions from a sample of 81 experts who had published research on related topics.

A sample of the full survey instrument is attached as Appendix E. Following the best practices (Dreber et al., 2015; DellaVigna et al., 2020), we start by describing the context of the experiment and the main outcome of interest, which is the preferred top income tax rate. Next, we introduce each of the treatments in a random order. We display a screenshot of the information treatment and ask the subjects to predict its effect.[28] In the tax treatment arm, we elicit the effects of the tax rate information treatment as well as the additional effect of the information on tax loopholes. The survey included a few additional questions, such as how confident the participant was in his or her own predictions.

We invited a sample of 512 academics with published research on related topics by email. The final sample includes 81 experts, comprised of Professors (76%), Postdocs (15%), researchers (7%) and PhD students (2%).[29] The experts are from the fields of Economics (65%), Political Science (17%), Psychology (7%) and Sociology (5%). Approximately 89% of the experts report having done research on preferences for redistribution, and 64% have done research on taxation.

There was a strong consensus among experts that all treatments would positively impact the preferred income tax rate. This is perhaps unsurprising, given that we designed treatments with the intention of increasing support for taxation, drawing inspiration from prior research on the demand for redistribution, and considering arguments made by academics, journalists, and the general public. Experts predicted not only positive effects, but also large effects, ranging from 5 pp to 10 pp, depending on the specific treatment.[30]

[26] However, there is one exception: in the tax treatment arm, the response rate is lower for individuals that saw the tax loophole (78.1%) than for those who only saw the tax rate (83.8%) and those in the control group (82.2%), with the difference being statistically statistically significant (p-value=0.008).

[27] 98.5% of the subjects who started the survey completed it. And conditional on reaching the information-provision stage, 99% of participants completed the survey.

[28] For the wealth arm, we elicited separately the effects for the two sub-treatments (hourly and annual) and take a weighted average of the two predictions using the same weights from the randomization: $\frac{2}{3}$ for the hourly prediction and $\frac{1}{3}$ for the annual prediction.

[29] We excluded one respondent who explicitly asked to be excluded because he or she had difficulties understanding the survey.

[30] While respondents had expertise on the subject matter, they were not highly confident about their own forecasts. On a scale from 1 (not confident at all) to 5 (extremely confident), the mean confidence was 2.5—for more details, see Figure B.10.

2.9 Supplemental Emotions Survey

To explore subjects' emotional reactions to the information treatments, we conducted a supplemental survey referred to as the "emotions survey." We present the same information about billionaires as in the baseline survey, but then elicit the respondents' emotional reaction to the treatments using a combination of multiple-choice and also open-ended questions (e.g., Haaland et al., 2024). We conducted this survey with a sample of 300 Americans recruited via Prolific in August 2024.[31] A sample of the full survey instrument is included in Appendix F. Similar to the baseline survey, each subject was randomly assigned to one of five billionaires and provided with a brief introduction to that individual. Subjects were then randomized into one of the information treatments.[32] After reviewing the information, subjects described their thoughts and feelings in response through an open-ended question. Following this, we included a multiple-choice question asking respondents to select the emotions they experienced from a pre-determined list.

We analyzed the answers to the open-ended question in two steps. First, we used an Large Language Model (LLM) to categorize the responses into the two most common categories.[33] Moreover, we asked the LLM to summarize each of the two categories in 40 or fewer words, which were later refined for consistency. In the second step, two research assistants were given the category descriptions and were asked to independently match each response to one of the two main categories or a residual category denominated as "other" (i.e., if it did not fit into either of the two main categories). We used Krippendorff's alpha to measure intercoder reliability (ICR), with the average ICR across the two categories being 69%. In cases where the two coders disagreed, one of the authors acted as a tie-breaker and assigned the open-text answer to the category deemed the best match.

3 Results

3.1 Baseline Attitudes

We start by describing the baseline beliefs, preferences, and attitudes in the control group.

Figure 3 presents histograms with a selection of key outcomes of interest—the rest of

[31] The median completion time was 6 minutes, and subjects received a reward of $1.45 for their participation. Subjects who had already taken part in the baseline survey were not eligible to participate in the emotions survey. We included Captcha verification and attention checks, which 95% of subjects passed. Those who passed the attention checks were included in the analysis.

[32] To maintain consistency with the baseline survey, we first elicited subjects' prior beliefs before presenting them with the information treatment.

[33] More precisely, we used the following prompt in ChatGPT-4o: "Can you give me the two most common feelings described in these responses to a survey?"

the outcomes are presented in Figures B.6 and B.7. This evidence shows that while there is considerable variation in support for taxing billionaires, preferences are skewed in favor of higher taxation. For example, panel (a) of Figure 3 shows that the average participant prefers a top income tax rate of 42.5%; for reference, this rate is not substantially higher than the current top income tax rate of 37%. Moreover, there is substantial heterogeneity in the preferred tax rates, ranging from a 10th percentile of 16% to a 90th percentile of 75%. In turn, panel (b) of Figure 3 shows the distribution of the preferred top corporate tax rates. The results mimic those of the income tax rate: on average, individuals prefer a 39.8% corporate rate, but there is large variation between individuals. The average preferred rate of 39.8% is substantially higher than the current flat rate of 21%, and even higher than the maximum rate of 35% that was effective before the Tax Cuts and Jobs Act of 2017. Support for taxation is even stronger when participants are asked explicitly about fairness: they are much more likely to say that the taxes billionaires pay are too low than to say that they are too high, as shown in panel (c) of Figure 3.

Furthermore, a majority of subjects support the policy proposals aimed at increasing the taxation of the ultra-wealthy. For example, panel (d) of Figure 3 shows that 78.5% support the billionaire minimum income tax proposal. The other three policy proposals received similar support.[34] The support for policy change is also reflected in the revealed-preferences measures. For example, panel (e) of Figure 3 shows that when asked to divide the $300 donation between two charities, a strong majority (84.7%) allocated at least some amount to Americans for Tax Fairness. Furthermore, most subjects (59.7%) are willing to sign a petition to increase taxes on the ultra-rich.

In terms of sentiment towards the billionaires and the companies they founded, there is considerable variation across subjects, but the sentiment is slightly skewed in the positive direction. For example, panel (f) of Figure 3 shows the responses to the question on whether billionaires deserve their wealth. On a scale from "not deserving" (0) to "deserving" (6), the average response is 3.3, which is slightly closer to the positive end of the spectrum. The respect for billionaires and the sentiment towards their companies are also skewed positively; however, billionaires score consistently low in measures of trustworthiness.[35]

We also find that the subjects had significant misperceptions about the billionaires. Three of the information treatments include some numerical facts for which we elicited prior beliefs. By comparing these prior beliefs to the facts provided in the messages, we find significant

[34] For more details, see Figure B.6.
[35] For more details, see Figure B.7.

misperceptions.[36] In the luxury treatment arm, we asked the subject to guess the value of one of the billionaire's homes. Only a small share (3.3%) of the participants could correctly guess the value of the home (i.e., within ± 5% of the truth), and most subjects were off by a wide margin.[37] Furthermore, subjects were more likely to under-estimate than to over-estimate this value.[38] Likewise, only a small minority of individuals (0.8%) could correctly guess the earnings of the billionaire (i.e., within ± 5% of the truth), again with more individuals under-estimating than over-estimating.[39] Lastly, we asked about the effective tax rate faced by the billionaire. The true tax rates that each billionaire pays are not publicly available, so we cannot compare the guesses to the true rate. However, we can compare the guesses to the average tax rate for the top 25 richest billionaires estimated by ProPublica (2023).[40] Only a small share (1.2%) of guesses came close (within ± 2.5 pp) to ProPublica's estimate. Moreover, subjects are more likely to guess above than below ProPublica's estimate.

3.2 Luxury Treatment Arm

We begin by documenting the effects of the luxury treatment on beliefs. Figure 4 shows a histogram of the distribution of posterior beliefs. Each panel corresponds to a different treatment arm. In each panel, the red bins represent individuals in the treatment group (who received the information), while the gray bins correspond to individuals in the control group (who received no information). In panel (a), for the luxury treatment arm, the x-axis shows the difference between the individual's guess for the value of the billionaire's home and the true value (i.e., according to the treatment). For example, a value of $0 means that the guess is accurate, while a value of -$1 million means that the individual under-estimated the home value by $1 million. In the control group, only a small minority of subjects have accurate posterior beliefs. In contrast, in the treatment group, a large majority of subjects have accurate posterior beliefs. The fact that subjects in the treatment group have more accurate beliefs suggests that subjects paid attention to the information and found

[36] In all the results presented in this paper, we mitigate sensitivity to outliers by winsorizing prior and posterior beliefs about the value of the billionaire's home, hourly and annual earnings, and the total tax rate. The threshold used for winsorization is based on the 95th percentile of absolute prior misperceptions.

[37] To make it directly comparable to the rest of the statistics reported in this subsection, this and the next statistics correspond to individuals in the control groups. However, since this is a pre-treatment outcome, the results are almost identical for individuals in the treatment group.

[38] For more details, the full distributions of prior beliefs are reported in Figure B.8.

[39] The result on under-estimation, however, is clear when the earnings were elicited hourly but not clear when they were elicited annually.

[40] This comparison has to be taken with a grain of salt, because the estimate is subject to error. Moreover, there may be significant differences between how much each of the billionaires pay in tax rate and the average for the top-25.

it reliable.[41]

Evidence from the supplemental emotions survey indicates that, in addition to paying attention to the information, most participants were emotionally engaged with the information treatment. Figure 5 presents the results from the multiple-choice question asking respondents to select the emotions they experienced. Among those exposed to the luxury message, a small share (8.3%) chose either no emotions or indifference. While participants reported a mix of positive and negative emotions, negative emotions were far more common (66.1%) than positive ones (25.6%). Additionally, we asked participants to describe their emotional reaction through an open-ended question. These responses are summarized in Table 4. The most common reaction to the luxury message (46.8% of participants) was frustration or anger at the extreme wealth disparity, with many perceiving such luxury as excessive and wasteful. In sum, given the prevalence of negative emotions, one may expect that, if anything, the luxury message would increased support for taxation.

Appendix B.6 provides a more detailed analysis of the effects of information. We find that individuals updated their posterior beliefs in the direction of the information provided. Individuals who initially under-estimated the value tend to update their posterior beliefs upward, while those who initially over-estimated the value tend to update their posterior beliefs downward. Despite some participants updating upward and others downward, on average, the luxury treatment leads individuals to perceive that billionaires live in more expensive homes. Panel (a) of Figure 4 shows that the treatment caused an increase of \$4.01 million (p-value=0.189) in the average belief about the billionaire's home value. For numeric elicitations like this one, a common concern is that outliers, often due to typos or misunderstanding of the question, may disproportionately influence the difference in means. For that reason, Figure 4 also reports the difference in medians. Panel (a) shows that the treatment caused an increase in the median belief of \$9.00 million (p-value<0.001).

Next, we measure the average effects of the luxury treatment on the demand for taxation. To estimate these effects, we used a simple linear regression model. Let Y_i^{post} be the outcome of interest. For example, the main outcome is the respondent's preferred top income tax rate. Let T_i be an indicator variable that takes the value 1 if the respondent was randomly assigned to receive information.[42] The regression of interest is as follows:

[41] As a falsification test, we also compare the distribution of prior beliefs between the treatment and control groups. Since prior beliefs were elicited before the information-provision stage, the treatment should not have any effect on them. This is confirmed by our findings, as discussed in Appendix B.5.

[42] This specification applies to the treatment arms with a single treatment group. In the tax treatment arm, we include two treatment variables: one dummy indicating whether the subject received the information on tax rates, and another dummy indicating whether the subject received the additional information on tax loopholes.

$$Y_i^{post} = \nu_0 + \nu_T \cdot T_i + X_i^{pre}\nu_X + \varepsilon_i \tag{1}$$

ν_T is the main coefficient of interest, corresponding to the Average Treatment Effect (ATE) of the information. X_i^{pre} corresponds to the vector of control variables from the module on background characteristics: gender, age, income, education, ethnicity, a dummy for Democrat, a dummy for Republican, the general attitude towards income redistribution, and the trust in the federal government.[43] Since the treatment was randomized, the control variables are not needed for causal identification. However, they can help reduce the variance of the error term and thus improve statistical precision (McKenzie, 2012).[44] In any case, as discussed below, the results are similar if we include a more limited set of controls or if we do not include any controls.

The estimated ATEs are reported in Table 5. Each row corresponds to a different treatment, and each column corresponds to a different outcome variable: column (1) corresponds to the main outcome, the preferred top income tax rate; column (2) corresponds to the preferred corporate tax rate; column (3) corresponds to perceived tax fairness; column (4) corresponds to the policy index; and column (5) corresponds to the sentiment index. Given the large number of combinations between treatments and outcomes, it is important to account for multiple hypothesis testing. For each p-value reported in Table 5, we also provide the corresponding sharpened q-value in brackets (Benjamini et al., 2006; Anderson, 2008). The q-value represents the minimum false discovery rate (i.e., the expected proportion of rejected null hypotheses that are actually true) at which the null hypothesis would be rejected for that specific test, considering all tests reported in the same table.

The top row of Table 5 reports the results for the luxury treatment. This treatment has positive effects on the demand for taxation and across the different outcomes. Column (1) shows that, relative to the control group, individuals exposed to the luxury treatment prefer a top income tax rate that is 2.0 pp higher (p-value=0.036). Column (2) shows that the treatment also raises the preferred corporate tax rate by 1.8 pp (p-value=0.053), indicating that the increased demand for taxation extends to companies founded by the billionaire. Column (3) shows that treatment increases the perception that billionaire taxes are unfairly low, by 0.12 points (p-value=0.048), equivalent to 0.082 standard deviations. Furthermore, column (4) shows a significant effect on policy support of 0.075 standard deviations (p-

[43] We control for partisan identity following other studies (e.g., Alesina et al., 2023).

[44] Due to potential survey fatigue, we included the background questions at the end of the survey. In theory, the treatment could affect the responses to these questions because they were elicited after the information-provision stage. In practice, this is not a concern: Table 3 shows that there were no treatment effects on any of the background characteristics.

value=0.034).[45] All of these effects are statistically significant even after accounting for multiple hypothesis testing (q-values of 0.083, 0.095, 0.094 and 0.083, respectively).

There are a few additional results reported in the Appendix. While Table 5 aggregates the policy and sentiment questions into two indices, Table B.3 presents the disaggregated results for each individual outcome. For example, Table 5 shows that the luxury treatment increases the policy index by 0.075 standard deviations. In turn, Table B.3 shows that the luxury treatment had a consistently positive effect on all items that comprise the index, with the most significant effects on the support for a wealth tax (p-value=0.086) and the donation to Americans for Tax Fairness (p-value=0.010).

Some individuals reacted to the luxury treatment by increasing their beliefs about the value of the billionaire's home, while other individuals updated their beliefs downward. The treatment did not only include the value of the home, but also an image, a description, and a narrative that connected all the pieces of information. Thus, the effect of this treatment may be driven by the belief about the home's value or by the other pieces of information. If the effects of the treatment operated solely through the belief about the home value, we would expect asymmetric effects: individuals who updated their beliefs upwards should react in the opposite direction than those who updated their beliefs downward. Table B.5 replicates Table 5, except that it breaks down the sample by subjects who started under-estimating (and thus will update their beliefs upwards) versus those who over-estimated (and thus will update beliefs downwards). There are no significant differences in treatment effects between these two groups. This evidence suggests that the effect of the treatment was not primarily driven by quantitative information about the value of the home. Instead, our preferred interpretation is that the treatment effects are due to the qualitative information, such as the impressive picture of the billionaire's residence and the description of the luxurious amenities. For instance, individuals may not react strongly to the numerical information because home values are so far beyond their experience that they struggle to differentiate between a $10 million home and a $100 million home. Our evidence is consistent with other survey experiments showing that, when it comes to policy preferences, individuals can be more responsive to qualitative than to quantitative information (e.g., Rasooly, 2024); and qualitative anecdotes and narratives can influence redistributive preferences more strongly than factual information (see e.g., Kuziemko et al., 2015; Alesina et al., 2023). The effects of the luxury treatment are also consistent with evidence that people are more willing to redistribute from the rich when the rich are described as greedy rather than prosocial (Hansen,

[45] Column (5) shows that the effects on sentiment are close to zero (-0.022 standard deviations), precisely estimated and statistically insignificant. That is, when an individual is provided with information about a billionaire's lavish home, it does not change how they feel about the billionaire, such as whether they respect him.

2023).

3.3 Luck Treatment Arm

The luck treatment reduces the belief that honest and hard work played a significant role in the billionaire's wealth. Panel (b) of Figure 4 shows the distribution of posterior beliefs that honest and hard work played a significant role in the success of the billionaire, on a scale from 0 to 6. The luck treatment shifts the distribution to the left. More precisely, the information causes a reduction in the average belief of 0.9 points (p-value<0.001), or equivalent to 0.46 standard deviations. This strong effect suggests that subjects paid attention to the information and found it reliable. If the luck treatment persuaded individuals that the billionaire's success goes beyond his honest and hard work, it may change the sentiment towards the billionaire. We can test this hypothesis by examining the effects on the sentiment index. The second row of Table 5 reports the average treatment effects of the luck treatment. Column (5) shows that this treatment reduced the sentiment towards the billionaire by 0.135 standard deviations (p-value<0.001). This negative effect was prevalent across all items in the sentiment index, but was most significant for feelings of deservingness of wealth, respect, and sentiment towards the company (for details, see Table B.3).

The supplemental emotions survey again indicates that, in addition to paying attention to the information, most respondents engaged with it emotionally. The luck message elicited more negative emotions (52.5%) than positive ones (27.2%)—see Figure 5 for details. Analysis of the open-ended responses indicates that the most common response, provided by 42.9% of participants, is to became more skeptical of claims of self-made success among billionaires (see Table 4 for details).

Despite the strong negative effect on the perception that the billionaire achieved his success through honest and hard work, the luck treatment did not have any significant effects on the demand for taxation. The coefficients are mostly close to zero and always statistically insignificant: column (1) shows an effect of -0.144 pp (p-value=0.885) on the preferred income tax rate; column (2) shows an effect of 0.730 pp (p-value=0.450) on the preferred corporate tax rate; column (3) shows an effect on the belief that taxes are unfairly low of 0.089 points (p-value=0.123), equivalent to 0.060 standard deviations; and column (4) shows an effect on policy support of 0.016 standard deviations (p-value=0.649).[46] Although for specific outcomes we sometimes cannot rule out small or modest effects, taken together, the coefficients suggest that the treatment was largely ineffective in increasing demand for taxation.

This result contradicts experts' predictions that the luck treatment would substantially

[46]We do not find any significant differences between individuals with different prior beliefs about the role of honest and hard work—results reported in Table B.5.

increase the demand for taxation. This finding also goes against evidence from laboratory studies showing that individuals are more willing to redistribute resources when outcomes are determined by chance, such as the flip of a coin. Indeed, that research served as motivation for this treatment arm and is probably what motivated experts to predict positive effects for this treatment. Our preferred interpretation is that, unlike laboratory settings, in real-world settings economic success is perceived as the result of a complex interplay of factors, including luck, skill, hard work, and opportunity. As a result, while the luck treatment persuades individuals that honest and hard work is not the sole driver of wealth, it may not translate into a greater demand for taxation. In fact, this interpretation is consistent with some recent laboratory evidence. For example, Yusof ⓡ Sartor (2024) shows that people tend to accept market-driven inequalities even if they are outside the individual's control. And Andre (2024) shows that individuals hold others responsible for their choices even if these choices have been shaped by unequal circumstances.

3.4 Earnings Treatment Arm

The earnings treatment has a significant effect on the perception of the billionaire's earnings. Panels (c) and (d) of Figure 4 show the distribution of posterior beliefs about the billionaire's hourly and annual earnings, respectively. In the control group, only a small group of subjects have accurate guesses of the billionaire's earnings. In comparison, in the treatment group, a strong majority of subjects provide accurate guesses. This strong effect of the treatment suggests that subjects paid attention to the information and found it trustworthy. Moreover, panel (c) of Figure 4 shows that individuals in the control group systematically under-estimate earnings in the main hourly condition. As a result, the treatment has a strong positive effect on both the mean and the median posterior belief, of about \$253K (p-value<0.001) and \$401K (p-value<0.001) respectively.[47] In the annual condition, shown in panel (d), there is a significant fraction of very large outliers that complicates the interpretation.[48]

The emotions survey suggests that the individuals engaged with the information emotionally. Although the earnings information occasionally evoked positive emotions like admiration

[47] Given that individuals are learning that the billionaires are earning more than they thought, one might expect positive effects on the billionaire's sentiment. Column (5) of Table 5 shows that there is a small positive effect of 0.045 standard deviations, but it's statistically insignificant (p-value=0.181).

[48] More precisely, in the control group there is a significant fraction of around 20% of individuals who vastly over-estimate the annual earnings, by over \$20 billion. Our best guess is that those individuals thought that the question was about the net worth of the billionaire instead of his annual earnings. Therefore, our interpretation is that these individuals did not really learn that billionaires earn less but rather learned that the question was asking about annual earnings instead of net worth. Indeed, as described in the pre-registration, one reason we assigned higher probability to the hourly condition is that participants may struggle with amounts in billions of dollars.

and motivation (30.8% of subjects, from Figure 5), the majority of reactions were negative (61.3%). The analysis of the open-ended responses further supports this pattern: while some participants expressed mixed feelings, the predominant reaction was disgust and frustration over the extreme inequality (36.6% of subjects, from Table 4).

When individuals are informed about the true wealth of billionaires, the evidence shows positive effects, although weaker, on the demand for taxation. The third row of Table 5 reports the average treatment effects of the earnings treatment. On the one hand, columns (1) and (2) show some significant positive effects on the desired income and corporate tax rates, of 1.9 pp and 1.46 pp (p-values of 0.018 and 0.064, and corresponding q-values of 0.065 and 0.106). On the other hand, we do not find statistically significant effects on the other outcomes related to demand for taxation: column (3) shows an effect on perceived tax unfairness of 0.054 points (p-value=0.267), equivalent to 0.037 standard deviations; and column (4) shows an effect on policy support of 0.015 standard deviations (p-value=0.610).[49]

Similar to the luxury treatment, the earnings treatment aims to highlight the extreme inequalities between billionaires and the average American. However, the luxury treatment has a more robust impact on preferences for taxation, significantly affecting the feeling of unfairness and the support for policy in addition to the effects on the preferred tax rates. The evidence suggests that seeing a picture of the billionaire's extravagant home can trigger a more significant reaction than merely presenting statistics—indeed, even in the luxury treatment we find that the numeric information (i.e., the value of the home) does not have a significant effect above and beyond the effect of the numeric information.

3.5 Tax Treatment Arm

The information about the effective tax rates that billionaires pay has strong effects on beliefs and in the expected direction. Panel (e) of Figure 4 shows the distribution of posterior beliefs about the average tax rate paid by the billionaire. This figure breaks down the treatment group by sub-treatments: individuals who received information only on the average tax rate are denoted in red bins, and those who received additional information on tax loopholes are denoted in green bins. In the control group, a negligible share of respondents guessed that their billionaire paid a tax rate close to ProPublica's estimate. In the treatment groups, a near-majority of subjects guessed that their billionaire paid a tax rate close to ProPublica's estimate. The fact that the respondents updated their beliefs so strongly suggests that they were paying attention to the information and trusted it. Furthermore, the provision of infor-

[49] Table B.5 explores the heterogeneity by prior beliefs. The results are mixed: we find some suggestive evidence that the effects on preferred tax rates are stronger for individuals with high prior beliefs, but the opposite is true for the effects on policy index.

mation about the tax rate shifted beliefs to the left: relative to the control group, receiving ProPublica's estimate lowered the perceived tax rate by about 5.5 pp (p-value<0.001). In turn, receiving additional information about tax loopholes did not have any *additional* effect on the perceived tax rate (difference p-value = 0.322).

Evidence from the emotions survey suggests that in addition to finding the information trustworthy, most subjects had an emotional reaction to it. While there is a small share of positive reactions to the tax rate message (11.8%, from Figure 5), there is a substantial share of negative emotions (83.8%). The analysis of the open-ended responses suggests the most common reactions were a general sense of unfairness and injustice (41.2% of subjects, from Table 4) and anger and frustration due to the wealthy not paying their fair share in taxes (33.3%).

The last two rows of Table 5 report the estimates for the average treatment effects in the tax rate treatment arm. There are two coefficients. The Tax Rate coefficient corresponds to the effects of the tax rate information. The Tax Loophole coefficient corresponds to the effect of showing additional information on tax loopholes. The tax rate treatment causes a stronger perception that billionaires' taxes are unfairly low: column (3) shows a positive effect of 0.327 points (p-value<0.001), or about 0.221 standard deviations. Given that the tax rate treatment persuaded subjects that billionaires pay lower tax rates and that they pay unfairly low taxes, one may expect this treatment to raise the demand for taxation. In contrast, we find a robust negative effect. Column (1) shows that the tax rate information has a negative effect on the desired income tax rate of about 3.9 pp (p-value<0.001); column (2) shows a negative effect on the corporate tax rate of 3.9 pp (p-value<0.001); and column (4) shows a negative effect on policy support by 0.112 standard deviations (p-value=0.001). All of these negative effects are strongly significant even after accounting for multiple hypothesis testing (q-values of <0.001, <0.001 and 0.006, respectively).

Our preferred interpretation is that these negative effects are due to a reference-point or status-quo effect. When individuals learn that billionaires are paying low rates, they may feel more uncomfortable about increasing those rates relative to the status quo. For example, consider an individual who thinks that billionaires pay a tax rate of 30% but believes that they should pay a tax rate of 40% instead—that is, the individual demands a 10 pp increase in the tax rate. In response to the treatment, this individual now believes that billionaires pay a tax rate of 20%. For simplicity, let us assume that this individual still believes that, in an ideal world, billionaires should pay a tax rate of 40%. Since they learn that billionaires pay half of that, the individual should be more likely to say that billionaires pay unfairly low taxes. However, what tax rate would the individual pick? Asking billionaires to pay a 40% rate would now amount to increasing the tax rate by 20 pp relative to the status quo, or

effectively doubling the tax rate. If, due to status-quo bias, the individual feels comfortable asking for up to a 10 pp rate increase, then the individual will now demand a tax rate of 30%. If the individual does not care about the status quo, the individual will still demand a tax rate of 40%. Most likely, the chosen rate would fall somewhere between 30% and 40%, depending on the strength of the status-quo bias.

In fact, we find some suggestive evidence consistent with this interpretation. According to this mechanism, the negative effects should be driven by individuals who started out overestimating the billionaire's tax rate. Indeed, Table B.5 provides evidence that the effects were stronger in this group.[50] Moreover, our interpretation is consistent with evidence from Charite et al. (2022). In a laboratory experiment where individuals can redistribute resources between third parties, they provide evidence of reference-point effects around the status-quo allocations.

Next, we discuss the effects of the additional information about the tax loopholes. Although most people already believed that billionaires abuse the tax system, this information reinforces that belief even further. More precisely, panel (f) of Figure 4 shows the distribution of posterior beliefs that billionaires abuse the tax code to avoid taxes. The first thing to notice is that the belief is strongly right-skewed even in the control group. Even among individuals who did not receive any information on the tax rate or tax loophole, a majority (57.6%) already strongly agreed (i.e., chose a 6 on a 0–6 scale) with the statement that billionaires abuse the tax code. Information about tax rates on its own does not have a significant impact on this belief (p-value=0.471). However, the additional information about tax loopholes increases this belief by 0.20 points (p-value=0.011). The modest size of this effect may be due to some inattention: compared to the others, this message is wordier and more technical, so some individuals may not have paid close enough attention or fully understood it. However, the modest size of the effect is probably due to the very high baseline level of belief: i.e., a majority of individuals already chose the highest score in their prior beliefs, so they maxed out on the scale, leaving no room to further increase their beliefs.[51]

The data from the emotions survey indicate that reactions to the loopholes message were as negative, if not more so, than reactions to the tax rate information alone (for details, see Figure 5). This is also reflected in the open-ended data, according to which the most

[50] However, one exception is that, as shown in column (4) of Table B.5, the negative effects on policy support are stronger for the individuals who started out under-estimating. A natural interpretation is that individuals who learn that billionaires pay more taxes than they thought see less need for policies to increase taxation.

[51] Finding out that billionaires abuse the tax code may cause negative sentiment towards them. According to the results from column (5) of Table 5, the tax loophole information had a negative but statistically insignificant effect on the sentiment index. A closer inspection reveals a stronger picture: Table B.3 shows that the treatment had strong negative effects on perceptions of trustworthiness and the deservingness of their wealth.

common reactions were anger and frustration (38.5% of subjects, as shown in Table 4) and criticism of the unfair tax system (36.5%).

The last row of Table 5 shows the average treatment effects of the tax loophole information on the different outcomes. On the one hand, the tax loophole treatment does not appear to significantly increase the preferred tax rates: column (1) shows an effect of 0.456 (p-value=0.563) on the preferred income tax rate; and column (2) shows an effect of 0.340 (p-value=0.662) on the preferred corporate tax rate. Column (3) shows no significant effect on the belief that billionaires pay unfairly low taxes either (coefficient of 0.038, p-value=0.482). On the other hand, we observe a significant effect on policy support: column (4) shows an effect of 0.079 standard deviations (p-value=0.022, q-value=0.068).[52] We speculate that, upon finding out about tax loopholes, individuals may perceive little value in raising tax rates, since billionaires can simply avoid them. Instead, they may be more inclined to address the root of the problem through tax reform. Indeed, Table B.3 shows that the positive effects on the policy index are driven primarily by support for two specific policies aimed at mitigating the impact of existing loopholes: the minimum income tax and a new international tax for large corporations.

3.6 Comparison to Expert Forecasts

To assess the degree to which the experimental findings are surprising, Figure 6 provides a comparison between the estimated effects on the preferred income tax rate and the corresponding predictions of experts.[53] In general, the average expert prediction was far from the experimental estimates.[54] For instance, while experts predicted positive effects between 5 pp and 10 pp, we find effects that range between -4 pp and 2 pp. All pairwise differences between expert predictions and corresponding experimental estimates are highly statistically significant, even when the forecasts were directionally right. For example, experts predicted an effect of the luxury treatment of 6.790 pp while we found an effect of 2.018 pp (difference p-value<0.001). Since this is the first study on the demand for taxation of billionaires, it may be unreasonable to expect experts to have a good sense of the magnitude of the effects. However, the predictions are not very accurate even under alternative approaches. In terms of the qualitative direction of the findings, experts predicted that all treatments would have

[52] As reported in Table B.5, we do not find any significant heterogeneity by prior beliefs.

[53] As with the experimental estimates, we pool the experts' predictions for the hourly and annual earnings treatments and take a weighted average. Experts predicted an effect for the hourly earnings treatment (11.1 pp) that is somewhat larger than the predicted effect for the annual earnings treatment (8.4 pp).

[54] For each prediction, there is substantial heterogeneity across experts. For more details, Figure B.10 shows the histogram of the predicted treatment effects. This figure shows that, for each prediction, only a minority of experts came close to the experimental estimates.

positive effects on the preferred income tax rate.[55] By contrast, one treatment had precise null effect (luck) and another had a strong and significant negative effect (tax rate).

3.7 Additional Results and Robustness Checks

In Appendix B.7, we show that the results are consistent across alternative specifications. More precisely, we show that the estimates are similar when we use a more basic set of controls or when we do not include any control variables at all. Additionally, we show that the results are not affected by dropping individuals who are outliers in terms of their prior misperceptions, nor by excluding the minority of subjects who found the survey difficult. In the baseline specification, as specified in the pre-registration, we pool the data across the five billionaires. In Appendix B.8, we provide evidence that the results do not seem to be driven by any single billionaire, insofar the estimates are consistent when we exclude one billionaire at a time.

Other studies report that the reaction to information related to preferences for redistribution can sometimes be different for individuals of different political parties (e.g., Karadja et al., 2017; Alesina et al., 2018; Fehr et al., 2022). With that in mind, we report the heterogeneity by political affiliation in Appendix B.9. We do not find statistically significant differences by political party, although we do not have sufficient statistical power to rule out modest differences. If anything, there is weakly suggestive evidence that Democrats may have experienced a weaker reaction to the luxury treatment arm and a stronger reaction to the earnings treatment arm.

As with any survey experiment, a potential concern is experimenter demand effects; that is, subjects may alter their survey responses to please the experimenter, even if their underlying views remain unchanged. We selected treatments that could plausibly increase the demand for taxation. In fact, experts expected that all the treatments would have positive effects on the preferred top income tax rate. Thus, if experimenter demand was strong, we would expect all treatments to increase support for redistribution. Contrary to this expectation, the data show varied effects. For example, while the luxury treatment increased demand for taxation, the luck treatment had no effects, and the tax rate treatment had strong negative effects. To attribute our findings solely to experimenter-demand effects, one would have to assume that some treatments (e.g., luxury) induced experimenter demand but others did not, which seems unlikely.

One common way to address concerns about experimenter demand is by looking at behavior instead of survey responses. With this in mind, we included two behavioral measures

[55] Figure B.11 presents additional results from the other questions of the expert forecast survey.

of support for taxation, which are part of the policy support index: (i) the decision to split a real donation budget between World Relief and the Americans for Tax Fairness; (ii) the decision to sign the Oxfam petition. In fact, as shown in Table B.3, we find some significant effects on behavioral outcomes. More precisely, the luxury treatment increases donations to the Americans for Tax Fairness by \$11 (p-value=0.010), and the tax rate treatment reduces the share of respondents signing the petition by 4.9 pp (p-value=0.021).

Another common way to assess whether the effects are due to experimenter demand is to look at the persistence of the effects (Cavallo et al., 2017; Haaland et al., 2023). One caveat though is that as time passes, one naturally expects the effects to dissipate, as individuals forget about the information they received in the past and may gather new data. For example, Cavallo et al. (2017) conducted an experiment that provided information on inflation to households. When they re-interviewed these households four months later, they found that 45.6% of the belief updates during the baseline survey persisted in the follow-up period. In the case of inflation, it may be expected that individuals retain valuable information more readily because it is useful on a daily basis. However, information about billionaires is not particularly actionable outside of specific contexts, such as voting in a presidential election, and for that reason, individuals may forget it more easily.

Using the responses to the follow-up survey, we document that the effects of the information persisted, at least partially, a month later. Figure 7 replicates Figure 4 but uses the posterior beliefs in the follow-up survey instead of the baseline survey. The impact on the posterior beliefs remained, at least to some extent, a month later. More precisely, individuals were unlikely to remember a month later the precise numerical information that was given to them during the baseline survey.[56] However, the treatments had a persistent shifting effect on the distribution of posterior beliefs. For example, panel (a) of Figure 4 shows that the luxury treatment caused an increase in the median belief about the billionaire's home value of \$9.00 million (p-value<0.001) as measured in the baseline survey. In turn, panel (a) of Figure 7 shows that the luxury treatment caused a corresponding increase of \$8.00 million (p-value = 0.008) measured a month later in the follow-up survey. A comparison of the different panels between Figure 4 and Figure 7 shows effects that are directionally consistent between the baseline and follow-up survey, although quantitatively weaker at follow-up.

Table 6 shows the ATEs on the different outcomes, with a side-by-side comparison between the outcomes measured in the baseline versus the follow-up survey. Due to the attrition rate, the sample sizes are 18% smaller for follow-up outcomes than for the baseline outcomes, and

[56]For example, panel (a) of Figure 4 shows that in the baseline survey, the treatment had a dramatically positive effect on the probability that the respondent guesses almost exactly the value of the billionaire's home. In comparison, Figure 7 shows that this effect still exists in the follow-up survey, but is not nearly as large.

thus the effects are less precisely estimated. Moreover, as documented in previous studies (e.g. Cavallo et al., 2017), and consistent with the decay of effects in posterior beliefs, we expect the effects on the follow-up outcomes to be a fraction of the corresponding effects on baseline outcomes. The combination of lower sample sizes and smaller effect sizes makes it more difficult to detect effects on specific follow-up outcomes. In terms of point estimates, Table 6 shows that, due to a lack of power, we often fail to reject the null hypothesis of zero effects. However, in most cases, we cannot reject the hypothesis that the point estimates are the same in the baseline and follow-up surveys. The pairwise comparisons from Table 6 suggest that the effects on follow-up outcomes are typically half as large as the corresponding effects on the baseline outcomes. The main exception is the earnings treatment, where we observe that the effects on the desired income and corporate tax rates seem to have completely disappeared after a month. As described in Section 3.4 above, the effects of the earnings treatment were noted to be weaker, as they did not affect perceived tax fairness or policy support. The lack of persistence in these effects reinforces this conclusion.

In order to maximize statistical power, rather than focus on a specific coefficient, Figure 8 provides a more systematic comparison, pooling all the different coefficients. In this scatter-plot, each observation corresponds to a pair of coefficients from Table 6: the x-axis shows the average effect of a given treatment on the baseline outcome (e.g., the effect of the luxury treatment on the preferred income tax rate), while the y-axis shows the corresponding effect on the follow-up outcome.[57] To be able to compare the results between different outcomes, we standardize all coefficients using the standard deviation of the relevant outcome variable in the control group.[58] Figure 8 shows a strong linear relationship between the effects on the baseline outcomes and the corresponding effects on the follow-up outcomes. The slope of this linear relationship suggests that, on average, the effects on follow-up outcomes were 51.3% as strong as the effects on baseline outcomes.

4 Conclusions

This paper examined public demand for taxing billionaires using a pre-registered survey experiment. We provided respondents with four different information treatments about the lives and careers of well-known billionaires. We find that the public holds substantial misper-

[57] The policy and sentiment indices are defined slightly different between baseline and follow-up surveys, because the follow-up survey does not include the petition and the willingness to pay for the company's backpack. However, panel (a) of Figure B.14 shows that the results are consistent if we compare the effects on the individual questions and exclude these two questions that do not overlap.

[58] Another caveat is that, due to attrition, the follow-up coefficients are estimated on a sub-sample of the data used for the baseline coefficients. However, panel (b) of Figure B.14 that the results are similar if we restrict the sample to subjects who participated in the follow-up survey.

ceptions about key facts—for example, how much billionaires earn or pay in taxes. All four treatments significantly affected individuals' beliefs; for instance, the treatment about how billionaires accumulated their wealth led respondents to view luck as playing a larger role. Across all four treatments, respondents also exhibited strong emotional reactions. Contrary to expert predictions that all four treatments would increase support for taxing billionaires, we find that only one—the treatment highlighting lavish consumption—had a robust positive effect. Moreover, one treatment—revealing that billionaires pay low effective tax rates—had a significant negative effect.

Our findings raise some questions about conventional wisdom in the academic literature. First, they suggest that classic fairness distinctions—such as the difference between outcomes due to luck versus effort—that feature prominently in laboratory settings do not directly translate into support for taxing billionaires, perhaps because people view real-world economic success as stemming from a complex mix of factors. Second, our results highlight the limits of factual or statistical information: quantitative information appeared to have less impact than qualitative narratives and imagery. Third, we uncover a status quo or reference-point effect: when individuals learn that billionaires currently pay very low tax rates, they become less inclined to support large increases.

Our findings also have implications for how communication strategies around tax policy are designed. Recent efforts have focused on estimating and publicizing the effective tax rates of billionaires and the strategies they use to minimize their tax burdens (e.g., Leiserson and Yagan, 2021; EU Tax Observatory, 2024). This study highlights the need to carefully consider how such insights are communicated to the public. The luxury treatment—which included visual and narrative elements depicting a billionaire's lavish lifestyle—significantly increased support for higher taxes. In contrast, the earnings treatment, which presented statistical information about the billionaire's income, had a weaker effect on policy preferences. This disparity indicates that qualitative information may be more effective than statistics in shaping public opinion on redistribution. Exploring these differences further represents a promising direction for future research.

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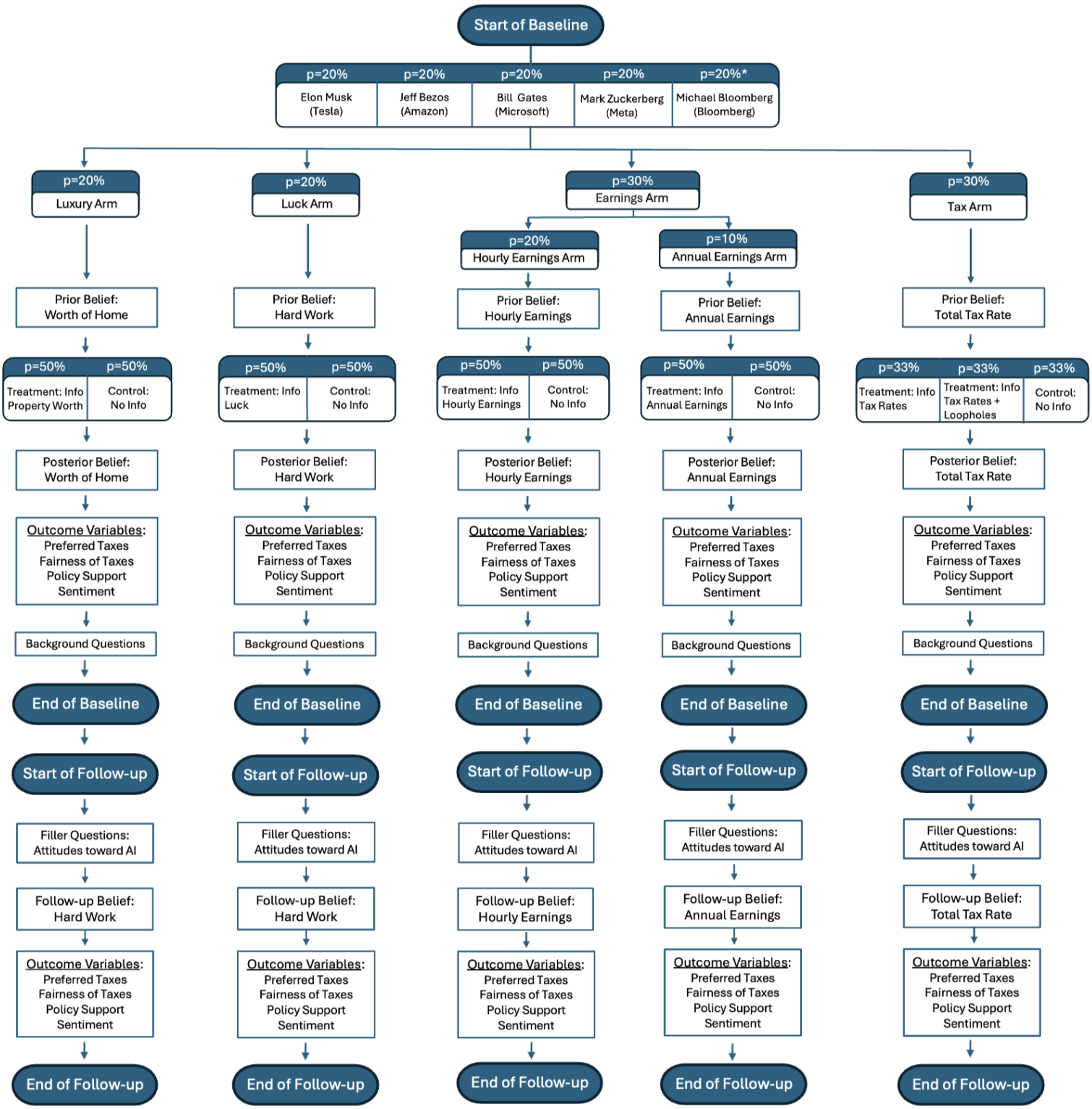
Figure 1: Survey Outline



Notes: * Due to a lack of suitable information for Bloomberg, subjects in the Luck treatment were randomly assigned to one of the four other billionaires (with a 25% probability for each). This figure summarizes the structure of the baseline and follow-up surveys. The belief questions in the follow-up survey were identical to those in the baseline survey. The outcome variables were also identical in the follow-up, except that we did not ask about the willingness to sign the petition or the willingness to pay for the backpack.

Figure 2: Screenshots of Treatments (Using Bill Gates as an Example)

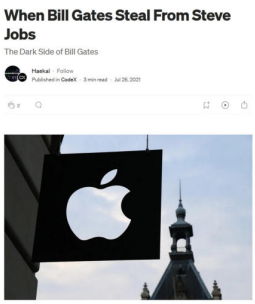
(a) Luxury

According to some accounts, **Bill Gates lives in a $130 million mansion in Medina, Washington**. The 66,000 square-foot complex features a pool with an underwater music system, a trampoline room, a 2,500 square foot gym, a movie theater, a library, and a reception hall that can accommodate up to 200 guests.

Source: Business Insider

(b) Luck

Bill Gates faced accusations of stealing the idea for Windows.



After the launch of the first version of Windows in 1985, Steve Jobs claimed that Gates had stolen the idea for the graphical user interface from Apple. "They just ripped us off completely, because Gates has no shame," Jobs once said. In response, Gates admitted that they both he and Jobs had copied the idea from the Xerox research institute: "I think it's more like we both had this rich neighbor named Xerox and I broke into his house to steal the TV set and found out that you had already stolen it."

Source: Medium, Business Insider

(c) Hourly Earnings

Bill Gates' earnings have significantly increased since he became a billionaire in 1987.

Between 1987 and 2023, his wealth has grown from around $1.25 billion to $111 billion.

This means that, on average, Bill Gates has earned about $3.05 billion per year during this period.

If we divide this yearly amount by the number of hours in a year, it means **Bill Gates has earned about $348,015 per hour** during this time.

Source: Forbes, 2023.

(d) Annual Earnings

Bill Gates' earnings have significantly increased since he became a billionaire in 1987.

Between 1987 and 2023, his wealth has grown from around $1.25 billion to $111 billion.

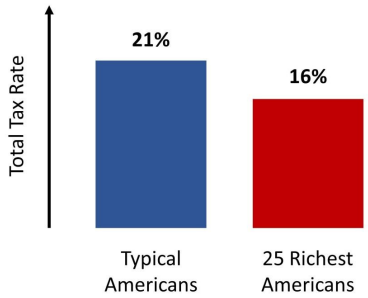
This means that, on average, **Bill Gates has earned about $3.05 billion per year** during this period.

Source: Forbes, 2023.

(e) Tax Rate

A single American worker who earns $45,000 per year has a total tax rate of 21% on average.

Bill Gates is one of the 25 richest Americans by net worth. Recent research has shown that **people in this group have a total tax rate of 16% on average**.



Source: ProPublica, 2022

(f) Tax Loophole

According to some accounts, billionaires manage to pay even lower tax rates through a variety of accounting strategies.

Billionaires often get paid in stocks.

Billionaires do not need to pay taxes on the stocks they hold until they sell it. By refraining from selling their stocks, billionaires can avoid generating taxable income. Instead, billionaires can access their wealth by borrowing against their stocks, which does not incur taxes.

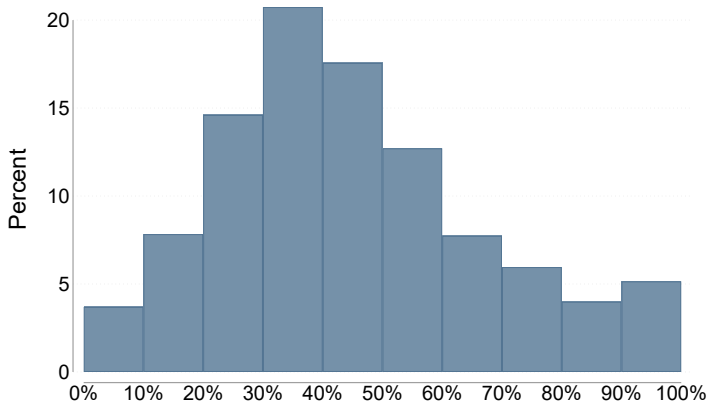
Billionaires set up smaller companies in tax havens.

Billionaires can transfer the profits of their companies to these smaller companies, which pay very little or no taxes. A recent study revealed that U.S. multinational companies moved over half of their foreign profits to low-tax countries, leading to an estimated loss of around $50 billion in tax revenue for the US government.

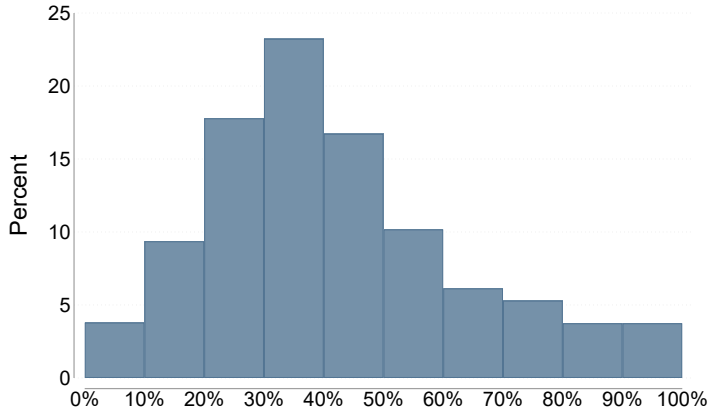
Sources: ProPublica, 2021, Tørsløv, Wier, Zucman (2023)

Figure 3: A Selection of Baseline Preferences and Attitudes

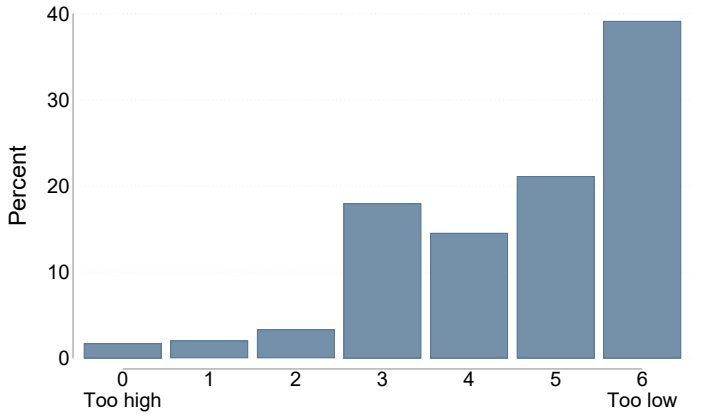
(a) Preferred Top Income Tax Rate



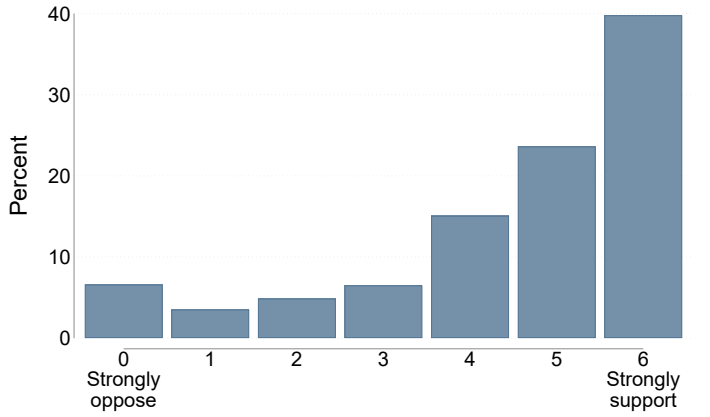
(b) Preferred Corporate Tax Rate



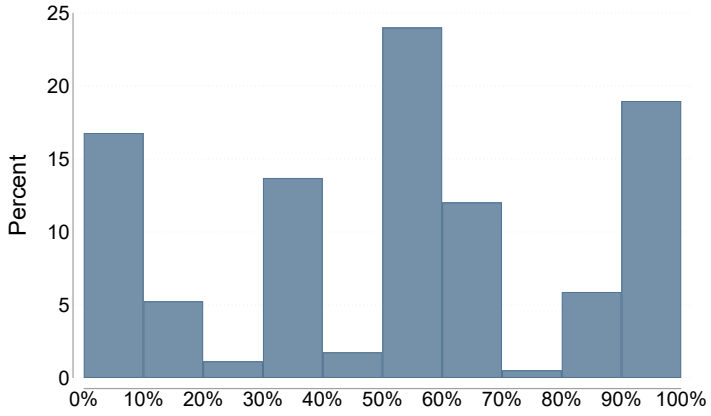
(c) Unfairness of Billionaire Taxes



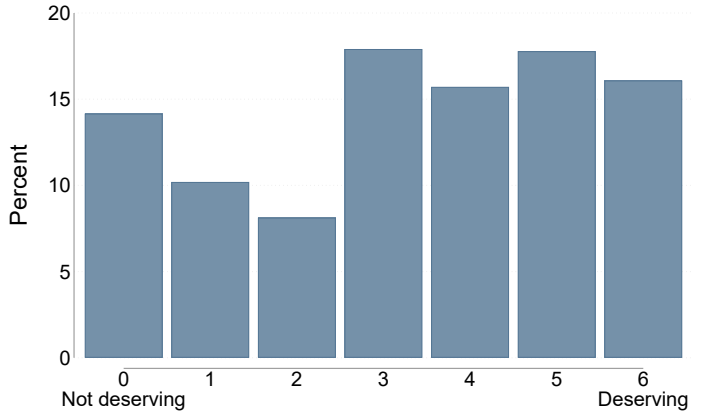
(d) Billionaire Minimum Income Tax



(e) Share Donated to Americans for Tax Fairness



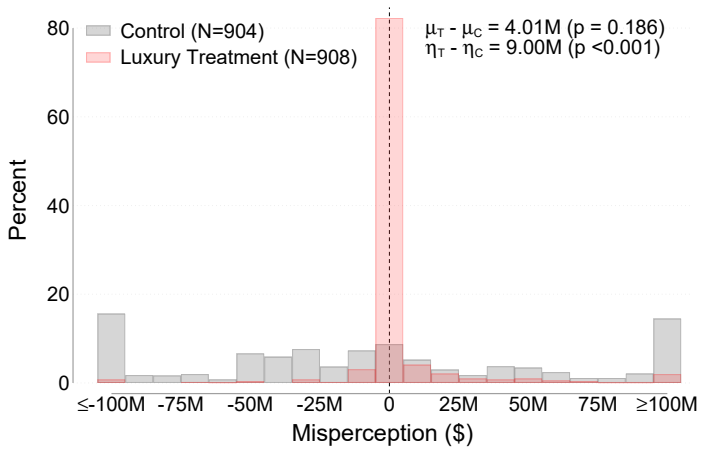
(f) Deservingness of Wealth



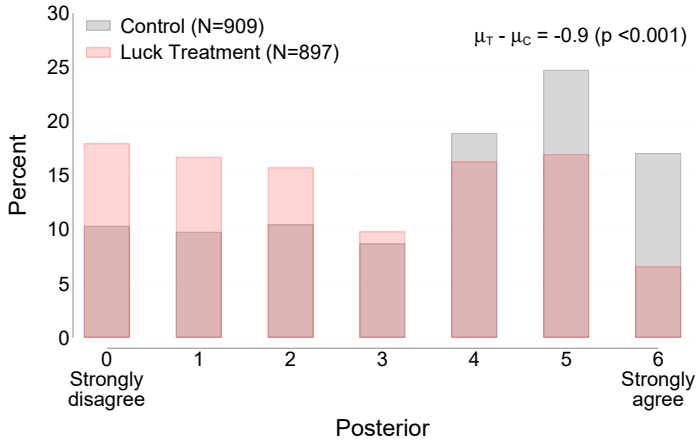
Notes: Histograms of a selection of preferences and attitudes for subjects in the control group. All survey questions used to measure these attitudes are listed in Table 2. Panel (a) is for the preferred top income tax rate for billionaires. Panel (b) is for the preferred corporate tax rate for billionaire-owned companies. Panel (c) is for opinions on whether taxes paid by billionaires are too high or too low from a fairness perspective. Panel (d) is for the support for a policy proposal on a billionaire minimum income tax. Panel (e) is for the share of the budged donated to Americans for Tax Fairness. Panel (f) is for the opinions on whether billionaires deserve their wealth.

Figure 4: Distribution of Posterior Beliefs

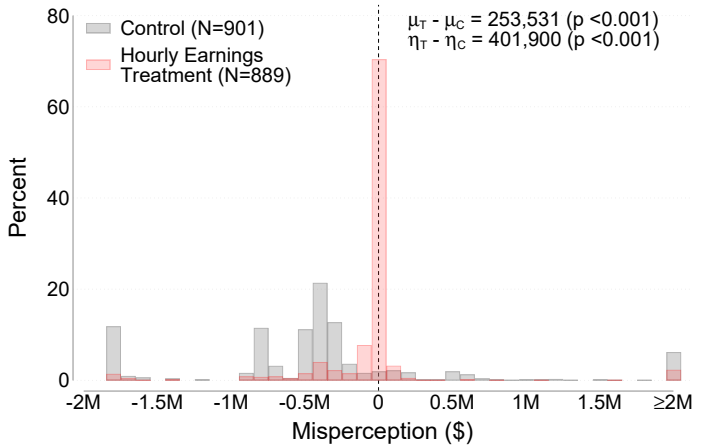
(a) Perceived Value of Billionaire's Home



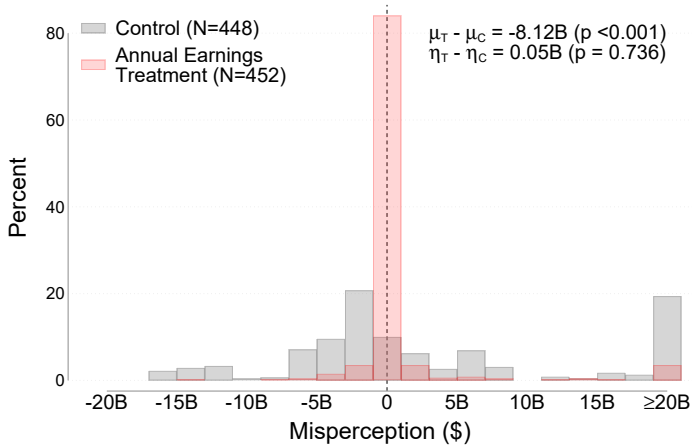
(b) Perceived Role Of Hard Work



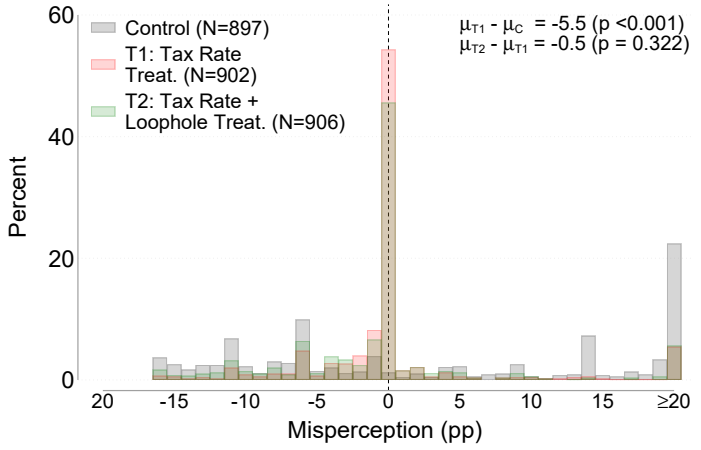
(c) Perceived Hourly Earnings



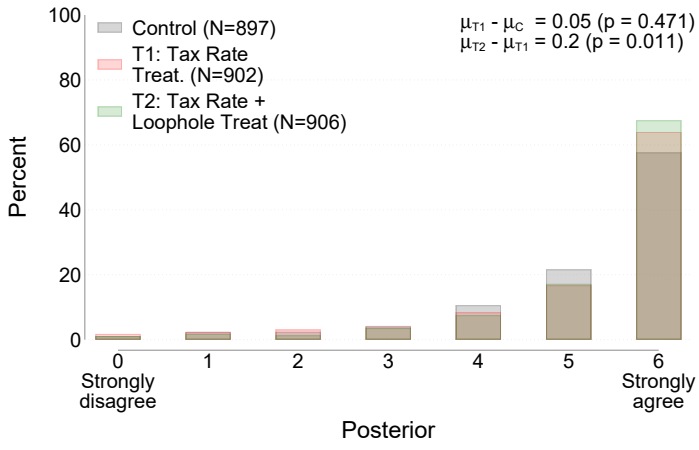
(d) Perceived Annual Earnings



(e) Perceived Billionaire Tax Rate

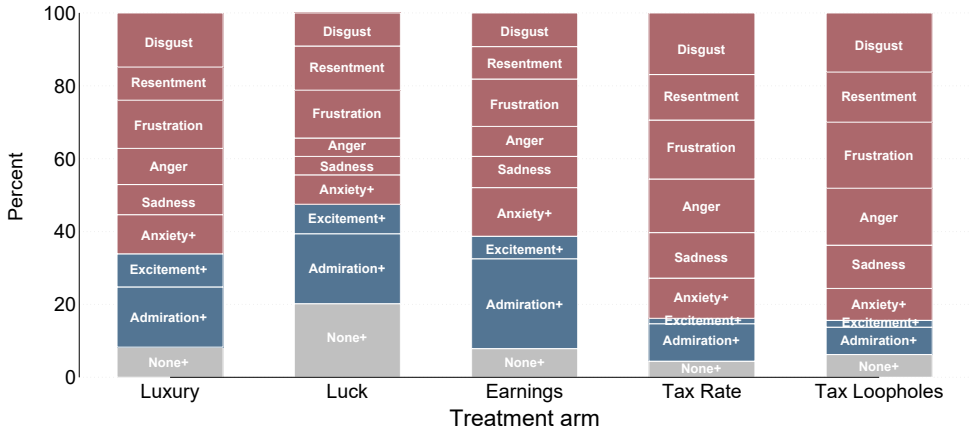


(f) Perceived Abuse of Tax Loopholes



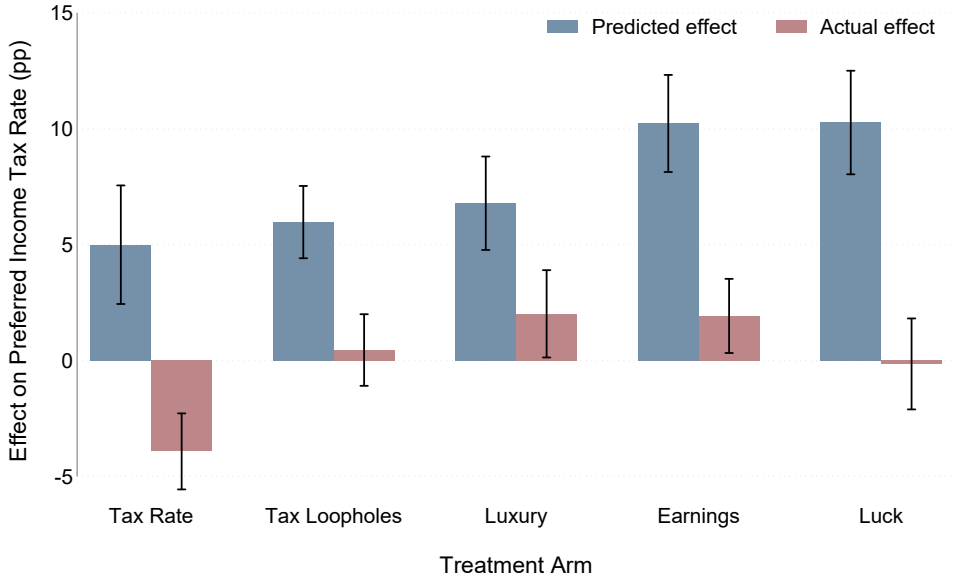
Notes: Histograms of posterior beliefs in the baseline survey. Each panel represents a different treatment arm. All survey questions used to measure these beliefs are listed in Table 1. Gray bins denote subjects in the control group and red bins denote subjects in the treatment group (in panels (e) and (f), green bins correspond to subjects in the tax loophole sub-treatment). In panels (a), (c), (d), and (e), the x-axis corresponds to the difference between the subject's posterior belief and the information provided in the treatment. Average posteriors are denoted by μ and median posteriors by η, with the difference p-values reported in parentheses.

Figure 5: Emotions Selected in the Multiple-Choice Question from Emotions Survey



Notes: The figure shows the share of each emotion among all reported emotions within a treatment. Subjects were asked to select the emotions they experienced after reading information about the billionaire from a list of 14 emotions. Multiple emotions could be reported. Some emotions are presented as combined categories in this figure: *None+* includes the options "None" and "Indifference", *Admiration+* includes "Admiration", "Motivation", and "Inspiration", *Excitement+* includes "Excitement" and "Happiness", and *Anxiety+* includes "Anxiety" and "Envy".

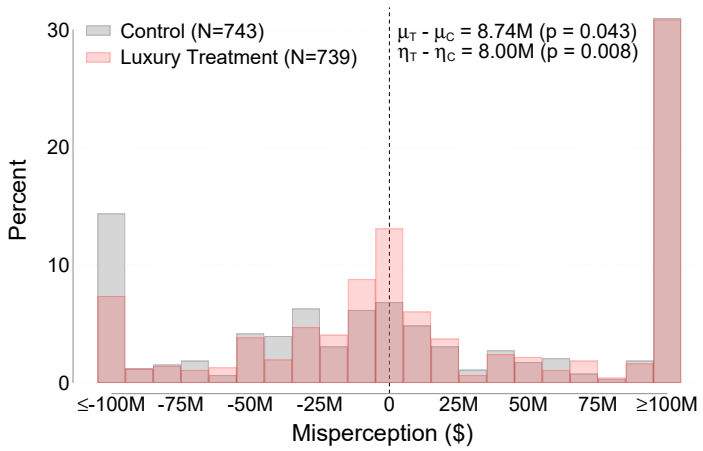
Figure 6: Comparison between Expert Forecasts and Experimental Estimates



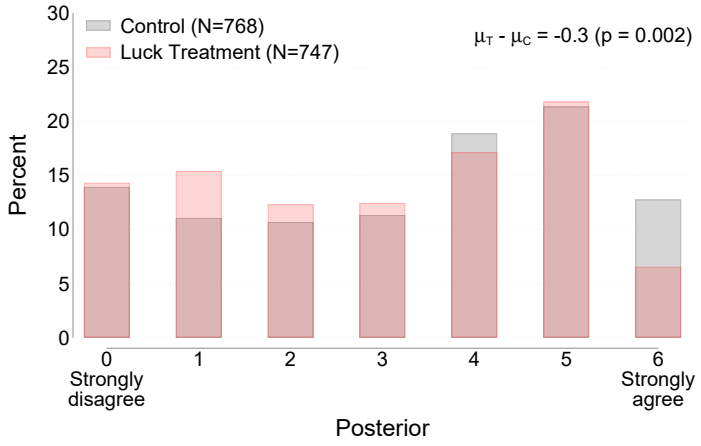
Notes: Blue bars show the experts' average predictions of treatment effects, while the red bars represent the corresponding experimental estimates (shown in Table 5). The prediction for the Tax Loopholes treatment represents the difference between the predicted effect on the top income tax rate in the Loophole treatment and the Tax Rate treatment. The prediction for the Earnings treatment is a weighted average of the predicted effects of the hourly and annual earnings treatments (according to sample sizes in the actual study). Error bars indicate the 95% confidence interval.

Figure 7: Distribution of Posterior Beliefs in Follow-up Survey

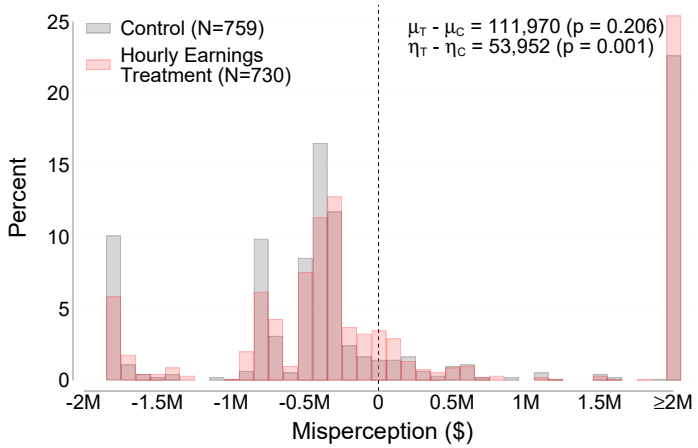
(a) Perceived Value of Billionaire's Home



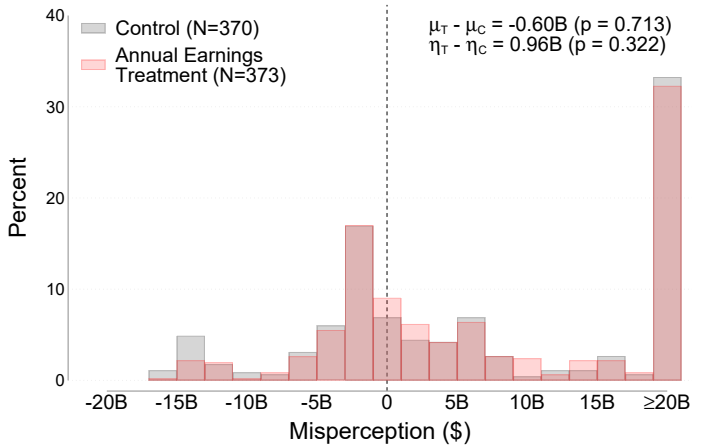
(b) Perceived Role Of Hard Work



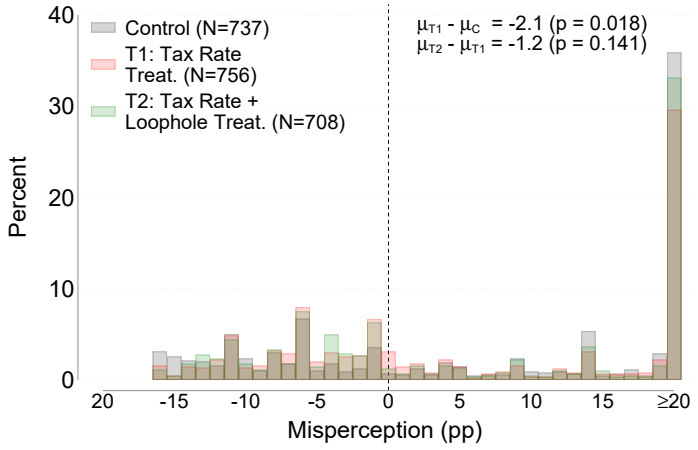
(c) Perceived Hourly Earnings



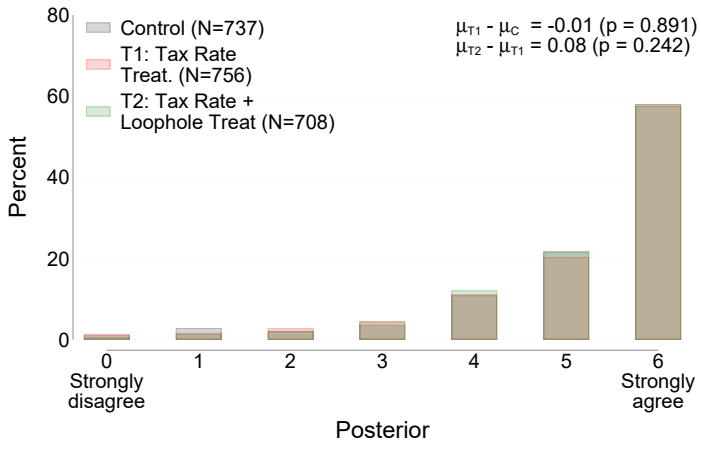
(d) Perceived Annual Earnings



(e) Perceived Billionaire Tax Rate

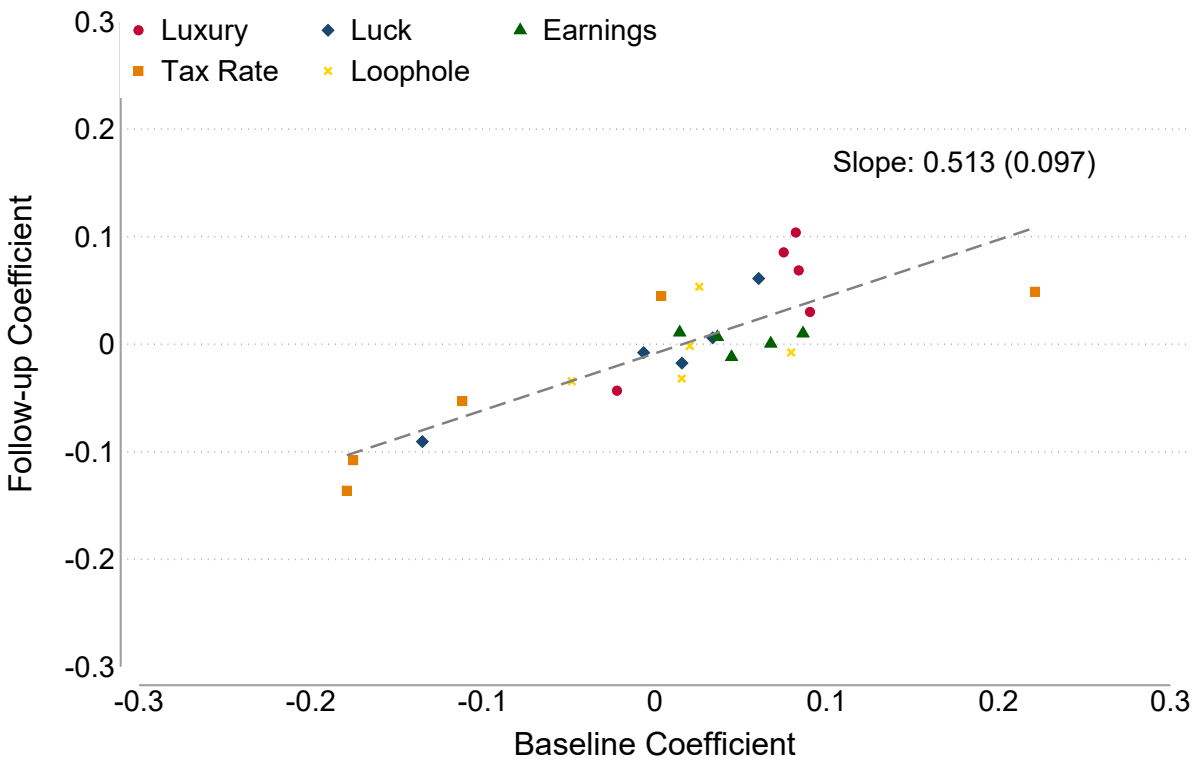


(f) Perceived Abuse of Tax Loopholes



Notes: Histograms of posterior beliefs in the follow-up survey. Each panel represents a different treatment arm. All survey questions used to measure these beliefs are listed in Table 1. Gray bins denote subjects in the control group and red bins denote subjects in the treatment group (in panels (e) and (f), green bins correspond to subjects in the tax loophole sub-treatment). In panels (a), (c), (d), and (e), the x-axis corresponds to the difference between the subject's posterior belief and the information provided in the treatment. Average posteriors are denoted by μ and median posteriors by η, with the difference p-values reported in parentheses.

Figure 8: Persistence of the Average Treatment Effects



Notes: The figure shows the relationship between the baseline and follow-up ATEs. Each observation corresponds to a pair of coefficients from Table 6: the x-axis shows the average effect of a given treatment on the baseline outcome, while the y-axis shows the corresponding effect on the follow-up outcome. All coefficients are standardized using to the standard deviation of the relevant outcome in the control group. Red circles represent coefficients from the Luxury treatment, blue diamonds represent coefficients from the Luck treatment, red triangles represent coefficients from the Earnings treatment, orange squares represent coefficients from the Tax Rate treatment, and yellow crosses represent coefficients from the Loophole treatment.

Table 1: Summary of Questions used as Prior and Posterior Beliefs

Treatment Arm	Prior/Posterior Question(s)
Luxury Arm	[Billionaire] owns a residence in [Location]. How much do you think this property is worth?
Luck Arm	Please indicate to what extent you disagree or agree with the following statement: "[Billionaire] earned his wealth through honest and hard work."
Earnings Arm	How much do you think [Billionaire] earns per [hour/year]?
Tax Arm	What do you think is the total tax rate paid by [Billionaire]?
	Please indicate to what extent you disagree or agree with the following statement: "Billionaires abuse loopholes in the tax code to avoid paying taxes."

Notes: Screenshots of the survey instrument are attached as Appendices C and D.

Table 2: Definition of Outcome Variables

Outcome	Question
Income tax rate	Imagine that the US government is considering introducing a new personal income tax rate specifically targeting incomes exceeding $10 million. This tax rate would apply to all billionaires, including individuals like [Billionaire]. If you were given the authority (...), what rate would you choose?
Corporate tax rate	The corporate tax rate is the percentage of profits that US companies pay in taxes to the government. Imagine that the US government is considering introducing a new corporate tax rate specifically for companies that make profits exceeding $10 million. This new corporate tax rate would apply to large businesses such as [Company]. If you were given the authority (...), what rate would you choose?
Taxes unfair	From a perspective of fairness, do you think the taxes paid by [Billionaire] are too high, appropriate, or too low?
Policy Index	Standardized index based on six metrics: (i) Support for President Biden's minimum tax proposal. (ii) Support for a new tax on extreme wealth. (iii) Support for a new international tax targeting large businesses. (iv) Support for funding to the IRS to enhance tax enforcement. (v) Amount from the $300 donation budget allocated to Americans for Tax Fairness. (vi) Intention to sign the Oxam petition to increase taxes on the ultra-rich.
Sentiment Index	Standardized index based on five metrics: (i) Agreement with the statement "[Billionaire] deserves the wealth he has." (ii) To what extent do you believe [Billionaire] is trustworthy? (iii) How would you rate your feelings towards [Billionaire] on a scale of 0 to 10 (...)? (iv) How would you rate your overall perception of [Company] on a scale of 0 to 10 (...)? (v) Willingness to pay for a backpack with [Company]'s logo.

Notes: Screenshots of the survey instrument are attached as Appendices C and D.

Table 3: Descriptive Statistics and Balance Tests

		Luxury Arm			Luck Arm			Earnings Arms			Tax Arm			
	(1) Full	(2) Control	(3) Treat.	(4) p-value	(5) Control	(6) Treat.	(7) p-value	(8) Control	(9) Treat.	(10) p-value	(11) Control	(12) Treat. I	(13) Treat. II	(14) p-value
Panel (a): Characteristics														
Female	48.7	48.9	48.0	0.709	48.0	47.8	0.953	50.3	49.1	0.537	47.7	49.1	48.3	0.838
	(0.53)	(1.66)	(1.66)		(1.66)	(1.67)		(1.36)	(1.37)		(1.67)	(1.67)	(1.66)	
Age $\leq$ 35	46.5	46.8	45.3	0.514	46.3	46.8	0.829	45.7	49.0	0.084	47.3	45.5	45.6	0.691
	(0.53)	(1.66)	(1.65)		(1.65)	(1.67)		(1.36)	(1.37)		(1.67)	(1.66)	(1.66)	
White	63.4	62.6	64.1	0.512	63.0	61.4	0.481	63.6	64.1	0.775	62.4	63.6	64.7	0.611
	(0.51)	(1.61)	(1.59)		(1.60)	(1.63)		(1.31)	(1.31)		(1.62)	(1.60)	(1.59)	
Black	15.3	15.7	14.1	0.336	15.4	15.9	0.752	15.1	16.0	0.550	14.8	15.4	15.5	0.918
	(0.38)	(1.21)	(1.16)		(1.20)	(1.22)		(0.98)	(1.00)		(1.19)	(1.20)	(1.20)	
Asian	10.2	10.3	11.0	0.617	9.2	11.5	0.118	10.4	10.1	0.840	9.7	10.3	9.2	0.712
	(0.32)	(1.01)	(1.04)		(0.96)	(1.07)		(0.83)	(0.82)		(0.99)	(1.01)	(0.96)	
Hispanic	7.5	7.1	7.0	0.979	8.1	8.0	0.929	7.3	7.3	0.976	8.6	7.6	6.2	0.137
	(0.28)	(0.85)	(0.85)		(0.91)	(0.91)		(0.71)	(0.71)		(0.94)	(0.89)	(0.80)	
Income > 50k	65.2	64.2	65.1	0.679	65.2	61.6	0.114	65.4	64.6	0.663	65.3	68.2	67.4	0.414
	(0.50)	(1.60)	(1.58)		(1.58)	(1.62)		(1.30)	(1.31)		(1.59)	(1.55)	(1.56)	
College degree	68.9	69.9	68.3	0.453	68.5	68.8	0.910	68.8	68.2	0.755	68.0	71.4	68.9	0.263
	(0.49)	(1.53)	(1.55)		(1.54)	(1.55)		(1.26)	(1.27)		(1.56)	(1.51)	(1.54)	
Democrat	49.7	50.9	47.6	0.159	45.7	50.8	0.028	51.5	50.9	0.731	48.3	52.1	48.3	0.177
	(0.53)	(1.66)	(1.66)		(1.65)	(1.67)		(1.36)	(1.37)		(1.67)	(1.66)	(1.66)	
Republican	18.5	17.8	18.1	0.889	20.7	19.3	0.459	17.0	17.3	0.863	18.7	18.2	20.3	0.496
	(0.41)	(1.27)	(1.28)		(1.34)	(1.32)		(1.02)	(1.03)		(1.30)	(1.28)	(1.34)	
Independent	31.8	31.3	34.4	0.166	33.7	29.9	0.084	31.4	31.8	0.819	33.0	29.7	31.3	0.324
	(0.49)	(1.54)	(1.58)		(1.57)	(1.53)		(1.26)	(1.27)		(1.57)	(1.52)	(1.54)	
Redistribution Attitudes	5.6	5.5	5.6	0.609	5.7	5.7	0.607	5.8	5.7	0.961	5.6	5.5	5.7	0.584
	(0.03)	(0.09)	(0.09)		(0.09)	(0.09)		(0.07)	(0.08)		(0.09)	(0.09)	(0.09)	
Trust in Federal Government	1.1	1.1	1.1	0.349	1.1	1.1	0.550	1.1	1.1	0.415	1.0	1.1	1.1	0.239
	(0.01)	(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)	(0.02)	
Panel (b): Attrition														
Follow-up participation	82.4	82.2	81.4	0.658	84.5	83.3	0.484	83.7	82.3	0.321	82.2	83.8	78.1	0.008
	(0.40)	(1.27)	(1.29)		(1.20)	(1.25)		(1.01)	(1.04)		(1.28)	(1.23)	(1.37)	
Observations	9,013	904	908		909	897		1,349	1,341		897	902	906	

Notes: This table reports information on the characteristics of the subjects and participation in the follow-up study in the different treatment arms. Column (1) corresponds to the full sample, columns (2)–(4) correspond to the Luxury treatment arm, columns (5)–(7) correspond to the Luck treatment arm, columns (8)–(10) correspond to the Earnings treatment arm, and columns (11)–(14) correspond to the Tax Rate treatment arm. Treatment I corresponds to the Tax Rate treatment and Treatment II to the Tax Rate + Loophole treatment. Columns (4), (7), and (10) report the p-values of tests for equal means between the treatment and control groups. Column (14) reports the p-value of an F-test for equal means across the two treatments and the control group. Standard errors are reported in parentheses.

Table 4: Analysis of Responses to Open-Ended Question from the Supplemental Emotions Survey

Treatment	Emotional Responses
Luxury	▪ **Frustration/Anger (46.8%)**: Frustration over the wealthy's excessive spending, perceived inequality, and wastefulness, with views that money could be better used to help others. ▪ **Indifference/Acceptance (36.2%)**: Neutral or indifferent attitudes, recognizing the wealthy's right to spend without personal concern or feeling affected. ▪ **Other (17.0%)**
Luck	▪ **Distrust/Skepticism (42.9%)**: Concerns about unethical actions, idea theft, and misrepresentation among the wealthy, reflecting a lack of trust. ▪ **Privilege/Unfair Advantage (16.3%)**: Beliefs that success is often due to privilege or financial support rather than hard work alone. ▪ **Other (40.8%)**
Earnings	▪ **Disgust/Frustration (36.6%)**: Disgust and frustration over extreme wealth inequality and its impact on societal fairness. ▪ **Admiration/Concern (23.8%)**: Mixed feelings that combine admiration for success with concerns about fairness and calls for more equitable wealth distribution or philanthropy. ▪ **Other (39.6%)**
Taxrate	▪ **Unfairness/Injustice (41.2%)**: Descriptions of unfairness and injustice, criticizing the tax system for favoring the wealthy through loopholes and lower rates. ▪ **Anger/Frustration (33.3%)**: Anger and frustration over the perception that the wealthy do not pay a fair share in taxes, contributing to social and economic inequalities. ▪ **Other (25.5%)**
Taxrate + Loophole	▪ **Anger/Frustration (38.5%)**: Expressions of anger and frustration about the wealthy not paying a fair share in taxes, seen as contributing to inequalities. ▪ **Unfairness/Injustice (36.5%)**: Criticisms of the tax system for favoring the wealthy through loopholes and lower rates, perceived as morally wrong. ▪ **Other (25.0%)**

Notes: Responses were categorized with an LLM and human coders – see Section 2.9 for details.

Table 5: Average Treatment Effects

	(1) Income tax rate	(2) Corporate tax rate	(3) Taxes unfair	(4) Policy Index	(5) Sentiment Index	(6) N
Luxury	2.018**	1.812*	0.121**	0.075**	-0.022	1,812
	(0.961)	(0.934)	(0.061)	(0.035)	(0.040)	
	[0.083]	[0.095]	[0.094]	[0.083]	[0.476]	
Luck	-0.144	0.730	0.089	0.016	-0.135***	1,806
	(1.001)	(0.967)	(0.058)	(0.035)	(0.040)	
	[0.585]	[0.467]	[0.154]	[0.476]	[0.004]	
Earnings	1.927**	1.460*	0.054	0.015	0.045	2,690
	(0.816)	(0.787)	(0.049)	(0.028)	(0.033)	
	[0.065]	[0.106]	[0.278]	[0.476]	[0.202]	
Tax rate	-3.918***	-3.875***	0.327***	-0.112***	0.004	2,705
	(0.837)	(0.833)	(0.057)	(0.035)	(0.039)	
	[0.001]	[0.001]	[0.001]	[0.006]	[0.585]	
Tax loophole	0.456	0.340	0.038	0.079**	-0.048	
	(0.788)	(0.777)	(0.054)	(0.035)	(0.039)	
	[0.476]	[0.476]	[0.474]	[0.068]	[0.235]	
Baseline Mean	42.52	39.80	4.62	0.00	0.00	
Baseline SD	22.34	21.63	1.48	1.00	1.00	

Notes: This table reports OLS estimates of equation (1) from Section 3.2 for the different treatment arms. The dependent variable in column (1) is the preferred top income tax rate for billionaires. The dependent variable in column (2) is the preferred corporate tax rate. The dependent variable in column (3) indicates whether subjects perceive billionaire taxes as too high (0) or too low (6) from a fairness perspective. The dependent variable in column (4) is an index of policy support. The dependent variable in column (5) is a sentiment index. Column (6) indicates the number of observations in each treatment arm. The baseline mean and standard deviation from the control group are presented at the bottom of the table. Significant at *10%, **5%, ***1%. Robust standard errors in parentheses. Sharpened q-values in square brackets.

Table 6: Comparison of Average Treatment Effects between Baseline and Follow-Up Surveys

	Income tax rate		Corporate tax rate		Taxes unfair		Policy Index		Sentiment Index		
	(1) Baseline	(2) Follow-up	(3) Baseline	(4) Follow-up	(5) Baseline	(6) Follow-up	(7) Baseline	(8) Follow-up	(9) Baseline	(10) Follow-up	(11) N
Luxury	2.018**	0.671	1.812*	1.485	0.121**	0.153**	0.075**	0.085**	-0.022	-0.043	1,812
	(0.961)	(1.086)	(0.934)	(1.036)	(0.061)	(0.068)	(0.035)	(0.039)	(0.040)	(0.046)	[1,482]
Diff. p-value	0.140		0.718		0.546		0.737		0.469		
Luck	-0.144	-0.174	0.730	0.129	0.089	0.090	0.016	-0.018	-0.135***	-0.091**	1,806
	(1.001)	(1.128)	(0.967)	(1.081)	(0.058)	(0.064)	(0.035)	(0.038)	(0.040)	(0.046)	[1,515]
Diff. p-value	0.975		0.521		0.986		0.285		0.153		
Earnings	1.927**	0.225	1.460*	0.013	0.054	0.010	0.015	0.011	0.045	-0.012	2,690
	(0.816)	(0.901)	(0.787)	(0.870)	(0.049)	(0.052)	(0.028)	(0.032)	(0.033)	(0.037)	[2,232]
Diff. p-value	0.029		0.067		0.324		0.891		0.021		
Tax rate	-3.918***	-2.410**	-3.875***	-2.944***	0.327***	0.072	-0.112***	-0.053	0.004	0.045	2,705
	(0.837)	(0.961)	(0.833)	(0.920)	(0.057)	(0.066)	(0.035)	(0.041)	(0.039)	(0.044)	[2,201]
Diff. p-value	0.045		0.233		<0.001		0.078		0.172		
Tax loophole	0.456	-0.036	0.340	-0.691	0.038	0.079	0.079**	-0.008	-0.048	-0.034	
	(0.788)	(0.915)	(0.777)	(0.872)	(0.054)	(0.064)	(0.035)	(0.041)	(0.039)	(0.044)	
Diff. p-value	0.508		0.182		0.445		0.010		0.653		
Baseline Mean	42.52	42.26	42.52	39.50	4.62	4.59	0.00	-0.02	0.00	0.01	
Baseline SD	22.34	22.25	22.34	21.47	1.48	1.49	1.00	1.01	1.00	0.99	

Notes: Results from equation (1) from Section 3.2. We estimate two regressions per treatment arm (one for the baseline survey and another for the follow-up). The dependent variables are: the preferred top income tax rate for billionaires in columns (1)–(2); the preferred corporate tax rate in columns (3)–(4); whether subjects perceive billionaire taxes as too high from a perspective of fairness in columns (5)–(6); the index of policy support in columns (7)–(8); and the sentiment index in columns (9)–(10). Column (11) indicates the number of observations in each treatment arm, with the number of observations in the follow-up study inside square brackets. We report the p-value of the test the coefficient is equal between the baseline and follow-up outcomes. The baseline means and standard deviations are presented at the bottom of the table. Significant at *10%, **5%, ***1%. Robust standard errors in parentheses.