# The effect of information and presentation on the politics of government budget deficits

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ABSTRACT

What interventions increase the possibility of approval from voters for consolidation of government budget deficits? To examine the effects of information and presentation on the politics of government budget deficits, we conducted an online survey experiment in Japan, where government deficit finance is the most prevalent among democracies. Participants were required to create an ideal plan for a government budget by modifying a real budget plan. The experiment randomly assigned: (i) an information treatment that informed the respondents about national debt service costs, and (ii) a presentation treatment that induced them to simulate spending items before revenue items to direct their attention to public spending (gains) before tax payments (losses). Information about deficit costs decreased their willingness to improve the financial balance, but showing spending before revenue items increased it. These treatment effects on the financial balance are significant on the expenditure but not the revenue side.

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## INTRODUCTION

The COVID-19-related, global recession and unprecedented economic policies for fiscal stimulus triggered an increase in the debt levels of most governments in the world. To find a way to get back on the fiscal reconstruction track will no doubt be one of the most important issues of the coming decade. The fiscal deterioration accelerated by the COVID-19 pandemic is already common knowledge, but it leaves a critical question unsolved, i.e., who will pay how much of the bill for spending cuts and/or tax increases. The government does not necessarily gain public support for fiscal consolidation, even in a situation in which severe government deficits are well known among citizens. What conditions facilitate or thwart the public's approval for the financial reform of government deficits?

A government budget deficit without effective solutions has prevailed for the last decades in many countries. The existing literature attributes the reason to public opposition to fiscal solutions. In classic, political economic literature, opportunistic policymakers are said to accommodate the public's demand and decide on tax reductions to indulge in fiscal expansion, and people judge their representatives based on "pork" (Buchanan and Wagner, 1977; Nordhaus, 1975). The political business cycle predicts that, for reelection, incumbent politicians indulge in increasing expenditures through deficit finance (Persson and Svensson, 1989; Alesina and Tabellini, 1990; Rogoff, 1990; Pettersson-Lidbom, 2001; Sutter, 2003). Much evidence in recent years shows that politicians perceive austerity measures as political risks (Klitgaard and Elmelund-Præstekær 2014; König and Wenzelburger 2017; Pierson 1996; Vis 2009; Weaver 1986; Wenzelburger 2014; Wenzelburger and Hörisch 2016; Strobl et al. 2021). Incumbent governments, especially electorally vulnerable governments (Hübshcer and Sattler 2017), try to avoid consolidation as elections approach. Indeed, governments are likely to lose approval after implementing austerity measures (Jacques and Haffert 2021). In OECD countries and more frequently in Latin American countries (Ardanaz, Hallerberg, and Scartascini 2020) governments are frequently replaced after the implementation of fiscal consolidation policies.[1] The deterioration of fiscal balances before elections has been observed in developing countries (Schuknecht, 1994; Shi and Svensson, 2006), new democracies (Brender and Drazen, 2005), and even in developed countries (Harrinvirta and Mattila, 2001)

In addition to the electoral punishment by voters, the existing analyses illuminate

[1] Meanwhile, Alesina et al. (2013) and Arias and Stasavage (2018) oppose the association between engaging in fiscal consolidation and the probability of the reelection of the incumbent government.

a variety of aspects of public opposition to the fiscal reconstruction of governments. For example, it is often taken for granted that the public is ignorant about the costs of the government's debt, but its real effect on opposition to fiscal construction has not yet to be examined directly. Recent literature shows that public opposition is weakened by how austerity policies are positively presented to the public (Barnes and Hicks 2018). The public response differs when policies are proposed for fiscal reconstruction. A cross-national, observational study (Jacques and Haffert 2021) and survey experiments (Ardanaz, Hallerberg, and Scartascini 2020, Hübshcer, Sattler, and Wagner 2020) find that the public responds more sensitively to tax increases than to cutting expenditures. This implies that directing citizens' attention to the revenue side or the expenditure side of the budget may have a different impact on their attitudes toward fiscal restoration. However, an existing prediction about how voters react to government deficit finance and support fiscal reconstruction has yet to be fully examined.

The present survey experiment builds on the existing views and explores under what conditions citizens commit to or oppose fiscal consolidations in a real setting. To observe their responses to the government budget and financial balance, the survey required respondents to construct their own ideal budget plan by modifying the government's budget plan in the current fiscal year.[2] To further examine their responses to budget making, our experimental control randomly assigned two treatments: an information treatment about whether to be informed about the national debt, and a presentation treatment about whether to direct their attention to public spending (gains) before tax payments (losses).

Japan was chosen as a critical case for this online survey experiment for two reasons. First, deficit finance is the most prevalent in Japan among mature democracies. The politics of budget deficits have long dominated the public mind and, thus, many of respondents are considered to be aware of severe government deficits. Second, the government budget deficit has worsened, although many have been aware of the severity of the government deficits for more than four decades. This clearly shows that public awareness is not sufficient for fiscal restoration.

Our main results indicate that the public response may not be deterministic but can be changed by conditions under which they are required to simulate the government budget and its deficits. Contrary to conventional wisdom, the provision of information about national debt service costs discourages rather than encourages respondents to balance the budget. Second, budget making, especially its financial balancing, is

[2] Our survey is based on the format of interactive budget-making in D'Attoma et al. (2018a, b).

significantly influenced by whether respondents are encouraged to start working on expenditures or revenues first. When respondents were presented expenditure items before revenue items in the simulation, they more actively cut expenditures and increased taxes than when first presented with revenues.

Overall, the results imply that the public response to fiscal consolidation is sensitively changed by the (non)provision of information and the presentation of the problem. Results show policy implications that may be counter to the existing view of the electoral punishment of voters. Governments are more likely to win public acceptance of financial reform if the benefits gained from the government, rather than the losses, are emphasized to gain citizens' support for fiscal consolidations.

## THEORETICAL FRAMEWORK

What intervention increases citizen approval of fiscal consolidation?

The conventional wisdom is that citizens allow increases in government deficits because they are ignorant or are unaware of the costs (Buchanan and Wagner, 1977; Nordhaus, 1975). Because of their ignorance, citizens punish the governments that have pursued fiscal consolidation in elections. If the hypothesis holds true, electoral punishment of a government in pursuance of fiscal reconstruction would be attributed to citizens' insufficient awareness. The remedy for this problem is simple: provide more information about the costs incurred by government deficits. Informing the citizens about the costs of government deficits would lead to their deeper understanding of the government's deficit problem, and hence would increase their support for fiscal consolidation. This yields the following hypothesis:

**Hypothesis 1.** *If people are exposed to information about the costs incurred by government deficits, they are more likely to improve the government budget balance than otherwise.*

Another intervention to be considered is how to present a problem. For example, Barnes and Hicks (2018) find that people's approval of fiscal restoration changes by framing, i.e., whether newspapers present the austerity plan positively or negatively. Recent literature details the distinct effect on the public approval of two measures for fiscal consolidation: cutting expenditures and increasing tax revenues. The negative impact on government approval of tax increases is minimal, although the impact of spending cuts is significant in a cross-national analysis of observational data (Jacques and Haffert 2021) and also in survey experiments (Ardanaz, Hallerberg, and Scartascini 2020, Hübshcer, Sattler, and

Wagner 2020). Empirical studies report that voters tend to react more sensitively to losses than gains incurred by the governments in the welfare states (Weaver 1986; Pacek and Radcliff 1995). The same pattern has been observed in individual behaviors in experimental studies based on prospect theory (Kahneman and Tversky 1986). These findings imply that voters are more likely to accept fiscal restoration, if emphasis is placed on the fact that their benefits from government expenditures have been secured. Extending this finding, we obtain the following hypothesis:

**Hypothesis 2.** *If people's attention is directed to expenditure that incurs benefits, they are more likely to improve the government budget balance than otherwise.*

## BACKGROUND: JAPAN

Japan is a desirable country to test our hypotheses for the two reasons. First, Japan's severe government deficits have been a long-term problem and have increased in salience during the last two decades. Therefore, we expect to obtain a well-controlled group of respondents, most of whom are familiar with the problem of the government's budget deficits. Second, despite the significance of the problem, the Japanese government has been far from winning public support for fiscal consolidation. The awareness of many people does not necessarily lead to fiscal consolidation, which in turn suggests the importance of studying the interventions that increase the rate of approval for fiscal consolidation. We will elaborate on the government deficit situation in Japan below.

There is a cross-national variation in the level of government budget deficits among democracies (Alesina et al. 1993; Alesina et al. 1998; Arvate et al. 2009; Brender 2003; Brender and Drazen 2005, 2008; Drazen and Eslava 2010; Peltzman 1992). For the past two decades, however, the public debt in Japan has been the highest (240% of GDP as of 2018) among developed democracies (see Figure 1[a]).[3]

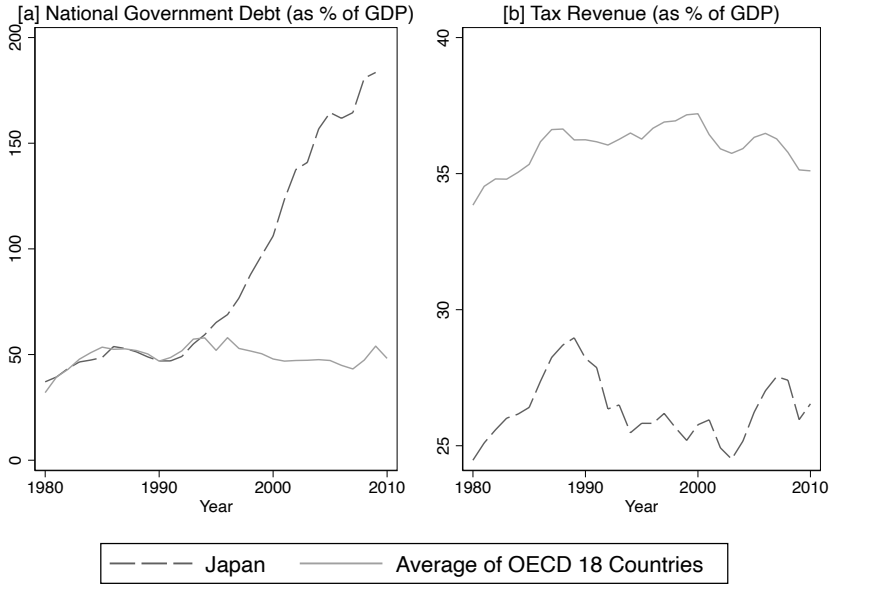
In Japan, a majority has been aware of the severity of the government deficits since the mid 1980s. In December 1982, and 1983, a major opinion poll in Japan, the JIJI Press opinion poll, asked the people's perception of government deficits. According to the polls, in December 1982, 49.0% of the respondents had the perception of the chronicity of the deficit; in December 1983, 52.6% of the respondents had a perception of the chronicity of the deficit. Because of the current more severe government deficit

[3] Because they are cases comparable to Japan, we focus in this paper on eighteen OECD countries, which had already been industrial democracies in the 1960s and experienced budget deficits after the end of high growth in the 1970s. However, Figure 1[a] excludes the New Zealand case, which does not have comparable data.

situation, more than a majority of the people are expected to be aware of the situation, which is desirable for our study.

Although a majority of the people had already noticed the severity in the mid-1980s, government deficits have continued to expand in Japan. The Japanese debt has increased above the average of other OECD original members since the late 1980s (Figure 1[a]).[4] Japan's total tax burden has remained well below the average throughout the period (Figure 1[b]). Still, in this severe situation, executive elections are associated with the political budget cycle in Japan, especially for total and capital expenditures (Fukumoto, Horiuchi, and Tanaka 2020).

Figure 1: Time series change of government debt and tax revenue (1980-2010)




*Source:* OECD

## EXPERIMENTAL DESIGN

We implemented our online survey experiment between January 1 and 18, 2018. The survey had the following structure. At the beginning of the survey, respondents were asked to answer questions about demographics and a question about their existing perception about the current government deficit. Then, the experiment used two sets of

[4] For a more detailed explanation of Japan during the 1980s and 1990s, see, for example, Hagen 2006; Kato (2003, chapter4).

the information treatment and the presentation treatment. Afterwards, they were asked to respond with their views on a government budget plan: specifically, they were required to make an ideal plan for a government budget by modifying the real budget plan.

Socio-demographic properties and political attitudes may affect the public's attitude about the (un)balance of the government's budget.[5] To examine this concept, we conducted a pilot survey to focus on the effect of partisanship on budget making and found that effect is insignificant (see Table A.1). Taking this result into consideration, therefore, the survey focused on the two treatment effects.

**Data Collection**

We conducted a survey experiment through a Japanese Internet survey firm, NTT Com Online Marketing Solutions Corporations. Respondents were recruited from a sampling pool of roughly two million Internet users throughout Japan who agreed to receive occasional electronic mail asking them to participate in online surveys. Those who filled out a survey questionnaire won a gift certificate, the value of which was randomly assigned between $1.50 and $3.00. When compared with the Japanese government's 2015 National Census data, the survey sample was unbiased in terms of geography, gender, age (20 to 69 years old), and educational background.[6]

**Distinguishing respondents with perceptions about the current government deficit**

We expected that a majority of the respondents were aware of the severity of the Japanese government deficits and thus tried to examine the effects of an experimental control among a group of respondents with such a perception. For this purpose, we first quantified and distinguished the existing perception of the respondents. At the very beginning of the survey, before they had been informed that they were to work on budget making, all the

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[5] Because leftists (rightists) are considered more likely to support a big (small) government (Wilensky, 2002; Benoit and Laver 2006), they are thus deficit-prone (-averse) (Kontopoulos and Perotti 1999). However, this prediction is refuted by some empirical studies (Tujula and Wolswijk 2007). For example, left-wing governments are more prone to increase both expenditures and taxes, leaving the level of deficit relatively unaffected (Alesina et al., 1993). A recent analysis indicates that both left and right parties may succeed in fiscal adjustments, but with distinct, political commitments that appeal to their supporters. A leftist government tends to reduce a deficit by raising tax revenues, and a right government relies more on spending cuts, so that spending cuts by the left and tax increases by the right lead to more persistent adjustments, respectively (Tavares, 2004).

[6] Statistics Bureau of Japan, Ministry of Internal Affairs and Communications. https://www.stat.go.jp/ data/kokusei/2015/kekka.html

respondents were required to answer a questionnaire. In addition to questions requesting demographic information, the questionnaire included the following question: "Do you expect the Japanese government to have prospects for fiscal consolidation in the near future?"[7] A negative answer, i.e., no expectation of an immediate solution, meant that respondents regarded the budget deficit as chronic, i.e., they were aware of the severity of the government's budget deficit problem. Other responses ("yes" and "don't know") about the government's solvency meant that they did not perceive the deficit as chronic.

**Controlling respondents' prior knowledge about government budget deficits**

We then controlled differences in respondents' knowledge about the budget of the Japanese government, especially its deficit finance. Immediately after the questionnaire and before they were told they would be working on a budget simulation, all respondents were provided the same information about the amount of the Japanese government's budget deficit in the current fiscal year (2017-2018) and the balance of the government's debt (2017). The provision of that information ensured that their prior knowledge about the government's financial situation would not interfere with their budget-making.

**Independent variables: Information treatment and presentation treatment**

The budget-making survey had two sets of treatments that were assigned randomly to respondents when they worked on the budget-simulation screen. The first treatment aims to examine the effect of information about the costs incurred by government deficits. We prepared two different kinds of simulation screens on which they worked on real budget plans that included (the treatment condition) and excluded (the control condition) the national debt service costs (in the current fiscal year) of government expenditure items. Respondents were randomly assigned to either the treatment or the control condition.

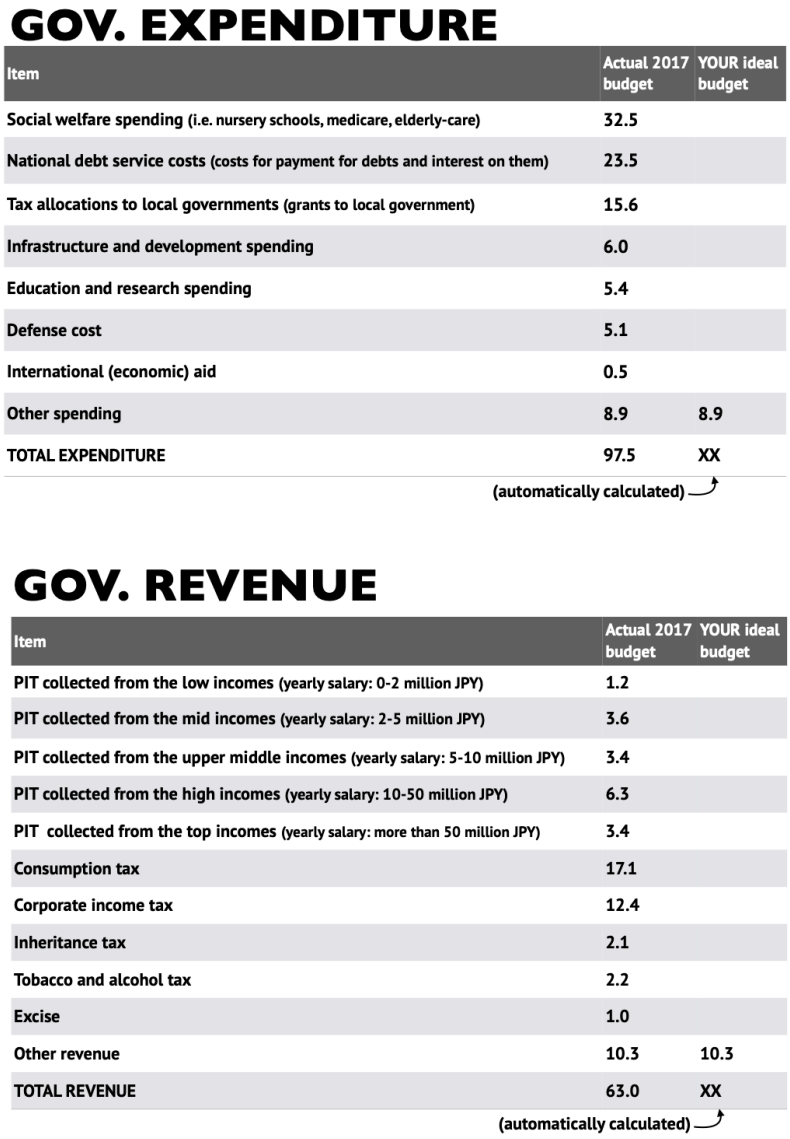
The second treatment examined the effect of presentation. We framed the budget-making by presenting the screen in different ways. To this end, we randomly changed the order of presentation of the budget plan to emphasize either spending or taxation. The treatment (control) condition presented the composition of expenditure (revenue) items before revenue (expenditure) items. This control aimed to direct the attention of respondents first to public services and benefits, which incur gains (and payments, which incur a loss) for people.

The survey experiment had a 2x2 design with four conditions in budget making. Respondents were randomly assigned to one of four budget-simulation screens:(a) a

[7] This question is the same as the one presented in JIJI Press opinion polls in Japan in December 1982 and 1983

screen that shows revenue; then, by scrolling down, expenditures with debt cost; (b) a screen that shows expenditures with debt-costs; then, by scrolling down, revenue; (c) a screen that shows revenue; then, by scrolling down, expenditures without debt cost; (d) a screen that shows expenditures without debt-cost; then, by scrolling down, revenue. Figure 2 is the screen shot for version (c) as an example. In each column, next to the item name, the survey listed an original value from the real government budget in the first row, and then required ones to fill out a value for their ideal budget in the second row.

Figure 2: Screenshot of the budget simulation



**GOV. EXPENDITURE**

| Item | Actual 2017 budget | YOUR ideal budget |
|---|---|---|
| Social welfare spending (i.e. nursery schools, medicare, elderly-care) | 32.5 | |
| National debt service costs (costs for payment for debts and interest on them) | 23.5 | |
| Tax allocations to local governments (grants to local government) | 15.6 | |
| Infrastructure and development spending | 6.0 | |
| Education and research spending | 5.4 | |
| Defense cost | 5.1 | |
| International (economic) aid | 0.5 | |
| Other spending | 8.9 | 8.9 |
| TOTAL EXPENDITURE | 97.5 | XX |
| | | (automatically calculated) |

**GOV. REVENUE**

| Item | Actual 2017 budget | YOUR ideal budget |
|---|---|---|
| PIT collected from the low incomes (yearly salary: 0-2 million JPY) | 1.2 | |
| PIT collected from the mid incomes (yearly salary: 2-5 million JPY) | 3.6 | |
| PIT collected from the upper middle incomes (yearly salary: 5-10 million JPY) | 3.4 | |
| PIT collected from the high incomes (yearly salary: 10-50 million JPY) | 6.3 | |
| PIT collected from the top incomes (yearly salary: more than 50 million JPY) | 3.4 | |
| Consumption tax | 17.1 | |
| Corporate income tax | 12.4 | |
| Inheritance tax | 2.1 | |
| Tobacco and alcohol tax | 2.2 | |
| Excise | 1.0 | |
| Other revenue | 10.3 | 10.3 |
| TOTAL REVENUE | 63.0 | XX |
| | | (automatically calculated) |

**Dependent variables in budget simulation**

To explore the effects of the two treatments (see below) on views of a government budget

balance, we asked respondents to design their own, ideal, government budget plan.[8] As in Figure 2, respondents were presented the real plan of the government for the following financial year (April 2018 to March 2019) and asked to modify the value of each revenue and expenditure item.[9] The analysis was focused on three dependent variables based on their simulation.

*Primary balance (ratio)*

Primary balance is the overall fiscal balance excluding debt service costs and revenue from bond sales, which illustrates to what extent a government can manage its obligations without incurring additional debt. The *primary balance ratio* was calculated from respondents' simulated values of total revenue and total expenditures. We denote respondent *i*'s *primary balance ratio* as the value of total revenue divided by total expenditure (excluding the national debt service costs).

*Primary balance (dummy)*

If *i's primary balance ratio* is equal to or larger than 1, respondent *i* balanced her ideal budget. The *primary balance dummy* distinguishes respondents by assigning a *primary balance dummy* (= 1) when respondent *i* balanced her ideal budget (*primary balance ratio* >= 1) and the one (= 0) otherwise (*primary balance ratio* < 1).

This budget simulation required respondents to modify the real government budget, and thus we constructed another dependent variable.

*Improving the real government budget balance (dummy)*

Because the real government budget on which the budget simulation was based was deficit ridden, we constructed another dependent variable, *improving the real government budget balance dummy.* This dummy denotes 1 when respondents improved the real government budget plan and 0 otherwise.[10]

**BASIC STATISTICS**

Among 19,795 individuals who received an electronic mail request, 4,942 accessed the

[8] This design was the same as the one for online, interactive, budget tools, which D'Attoma et al. (2018a) used for a cross-national survey in the United States and European countries.

[9] The unit of each item answer is 0.1 million JPY. Respondents were allowed to change all the values except those of "other spending" and "other revenue."

[10] The primary balance of the 2018 real Japanese government budget plan was 0.85.

on-screen survey, and 3,794 individuals completed it. From this sample, we excluded samples who completed the survey too quickly or too slowly by dropping samples with a completion time below the 1st percentile or above the 99th percentile of the distribution of the completion time.[11] We excluded samples that skipped one or more demographic questions. The remaining sample contained 2,837 respondents.

**The existing perception**

Of all respondents, 54.2 percent or 1,539 considered the current Japanese government deficit as chronic. This result indicates that a majority of the respondents were aware of the severe, government deficit situation. The result also indicates that the government budget deficits had been common knowledge in Japan for four decades. The question we asked about the existing perception is the same as the one presented in the JIJI Press opinion polls in Japan in December 1982 and 1983, when the Japanese government began to suffer from chronic budget deficits. At that time, 49.0% and 52.6% of the respondents, respectively, answered that they had the perception of a chronicity of deficits. The distribution of people's responses did not change over nearly forty years. The constancy in the distribution of people's awareness about the severe government deficits from 1980s to 2017 suggests that the Japanese government indulged in government deficits even though a majority of the voters were aware of the severe financial situation. This suggests that solving the problem of people's ignorance is not enough to gain support for fiscal consolidation. The constant tendency also suggests the difficulty in making more than a certain percentage of the voters aware of the severity of the budget deficit, even in the long run.

The following analysis was thus based on respondents who were aware of the severe deficits of the government as a representative sample of Japan. This enabled one to examine the effects of treatments on a group whose awareness of the government deficits was controlled to be high enough to consider the problem. We summarized the characteristics of this sample of respondents in Table 1 for an analysis to compare with the rest of respondents.[12] We found that males rather than females and older rather than younger respondents are more likely to be aware of government budget deficits, whereas marital status and higher income do not have large differences. However, two treatments were successfully randomly assigned across different social groups to obtain results that

[11] The percentiles are 124 seconds and 3,054 seconds, respectively. The average completion time for the remaining sample was 445 seconds.

[12] The descriptive statistics are reported in Table A.2.

were based on experimental controls.[13] Additional results on the rest of respondents will be listed in appendix.

Table 1: People with severe perception

| | (1) | |
|---|---|---|
| | with_perception | |
| Female | -0.122*** | (0.0188) |
| BA or more | 0.0370+ | (0.0198) |
| High income | 0.0264 | (0.0197) |
| Age | 0.00446*** | (0.000751) |
| Married | -0.0249 | (0.0213) |
| Constant | 0.381*** | (0.0381) |
| Observations | 2837 | |

Standard errors in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Primary budget balance**

Figure 3 summarizes the distribution of responses to the primary balance, the total revenue amount, and total expenditure amount of an ideal budget plan, respectively.[14] The dotted line shows the value of the real government budget plan. Of 1,539 individuals, 1,191 (77.4%) improved the primary balance of the real government budget; however, only 641 individuals (41.7%) made their primary balance positive. This suggests a majority of them believed that the government should improve the primary budget balance. However, their ideal plan is far removed from fiscal consolidation. Moreover, 348 respondents (22.6%) decreased the primary balance compared with the real government budget plan, although they were aware of this severe situation.

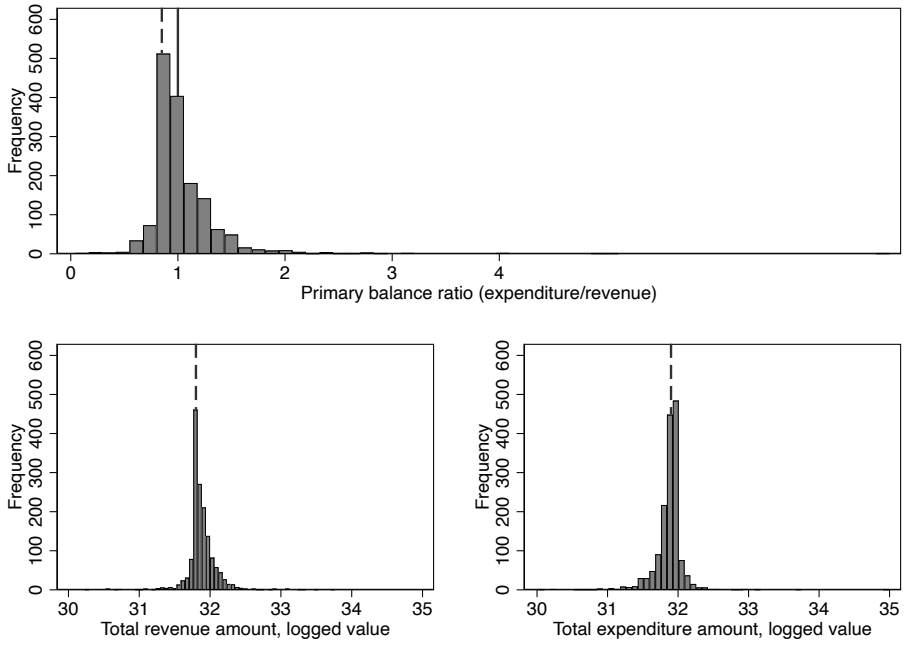
We also **decompose**?? fiscal balance (see the descriptive statistics of both the revenue and expenditure sides). Compared with the real government budget plan, 1,112 individuals (72.3%) increased the tax revenue; 977 respondents (63.5%) decreased expenditures; and 781 respondents (50.7%) both decreased the expenditures and

[13] Additionally, we tested the presence of unbalancing control variables in Table A.3 in the sample of respondents focused upon for the analysis. Consistent with the successful randomization of the two treatments, no control variable exhibits a statistically significant difference between the control group and the three treatment groups.

[14] Hereinafter, total expenditure means an expenditure that excludes national debt service costs.

increased the tax revenue. This suggests that individuals are more willing to improve the primary balance by increasing the tax revenue than by decreasing the expenditures, which is consistent with the findings in the European countries (Hübshcer, Sattler, and Wagner 2020; Jacques and Haffert 2021) and the Latin American countries (Ardanaz, Hallerberg, and Scartascini 2020).

Figure 3: Simulation result




*Note:* The solid reference line shows that a respondent i's primary balance ratio is equal to 1; and the dotted reference line shows that a respondent i's primary balance ratio is equal to the real government budget plan's.

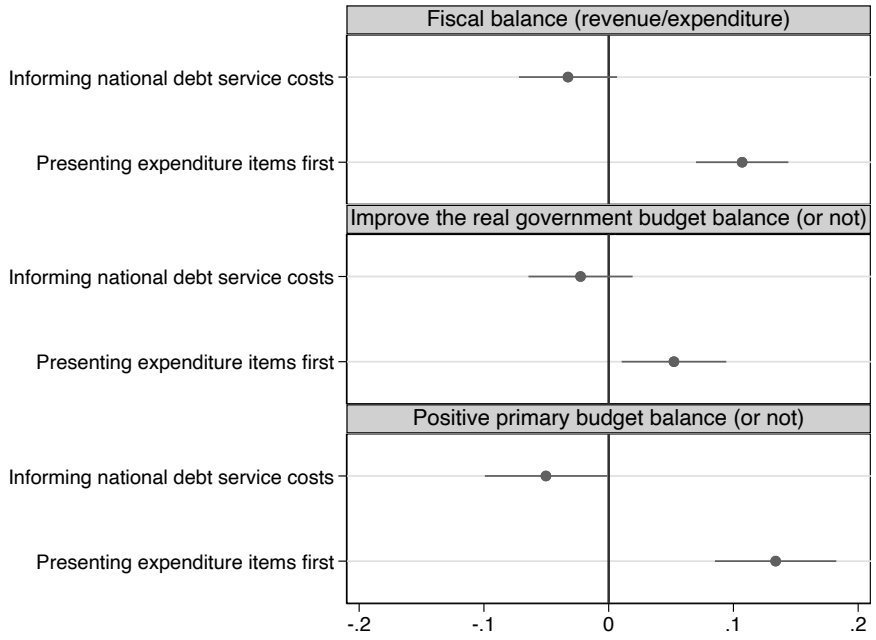
## EXPERIMENTAL RESULTS

### Information about the costs incurred by government deficits

Under what conditions are people more willing to approve fiscal consolidation? We report the results in Figure 4. Hypothesis 1 predicts that more information increases a respondent's approval of fiscal consolidation. Counter to this hypothesis, we confirm that more information about the costs incurred by government deficits lowered respondents' willingness to improve the primary balance. Specifically, information about the national service costs decreased the probability by 5 percent that they would make their primary balance positive. The effect is statistically significant at the 0.05 level.

Result 1. Counter to Hypothesis 1, information about the national debt cost service lowers the respondent's willingness to improve the government budget's primary balance.

Figure 4: Main Result

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*Notes:* The 95 % confidence intervals plotted are the treatment effects for each group based on the following regression equation $Outcome_i = (Information\ Treatment) + (Presentation\ Treatment) + \beta Covariates_i + \epsilon_i$. Table A.4 provides the detailed results.

**Budget Presentation**

Consistent with Hypothesis 2, the treatment that directs the respondent's attention to expenditures that incur gains by inducing them to design revenue items before expense items improved the primary balance index by 10.7 percent, which is statistically at the 0.001 level. Presenting the expenditure items before revenue items increased the probability that their ideal fiscal balance is better than the real government's by 5.2 percent and the probability that their ideal primary balance is positive by 13.4 percent. The effects are statistically significant at the 0.05 level. Emphasizing the benefits gained from the government is crucial for gathering respondents' support for fiscal consolidation.

Result 2. Consistent with Hypothesis 2, directing attention to tax payments that incur losses lowers the respondent's willingness to improve the government's financial balance.

**The difference in the magnitude of the effects between the revenue and expenditure sides**

The above two effects may differ in magnitude between the revenue side and the

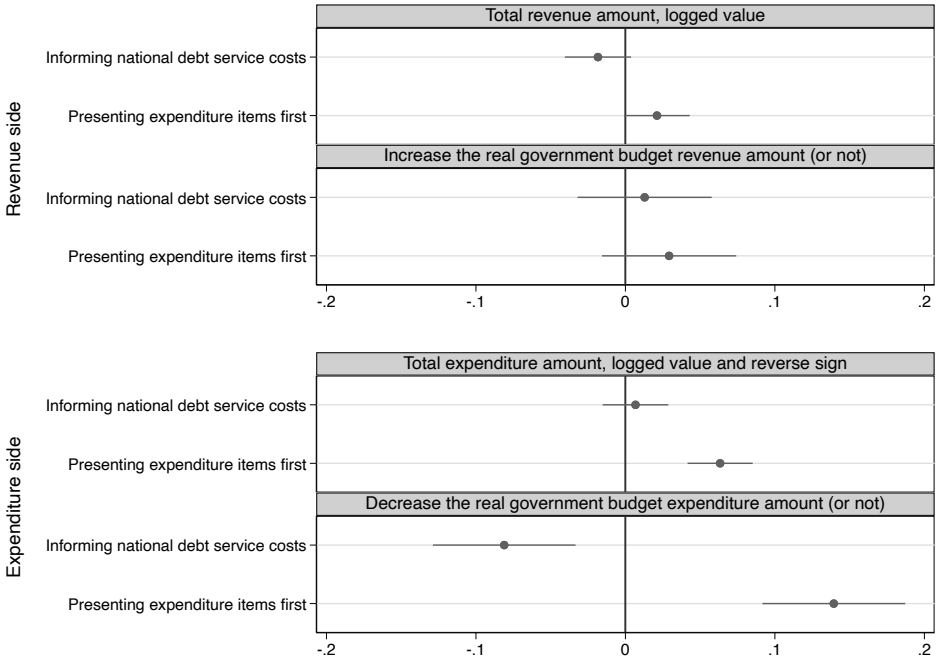
expenditure side. We examined the effects of the two treatments on both the total revenue and total expenditure. The results are reported in Figure 5.

We confirm the same tendency in the results of the overall primary balance but the magnitude of the effects of the two treatments, in particular the presentation treatment, was bigger on the expenditure side than on the revenue side. Information about the national debt service costs increases the probability that people will decrease by 13.9% the expenditure amount of the real government budget plan.

As we discussed in the DATA Section, more respondents agreed to increase tax revenues than to decrease expenditures. Our results suggest that people do not increase tax revenues more than a certain level regardless of any intervention, whereas they still have room for concessions on the expenditure side. Therefore, effective interventions, such as our treatments, may induce their support for decreasing further expenditures and hence promoting further austerity policies.

Result 3. The effects of information and presentation on people's preferences for fiscal balance are derived primarily from the expenditure side.

Figure 5: Additional Results




*Notes:* The 95 % confidence intervals plotted are the treatment effects for each group based on the following regression equation $Outcome_i = (Information\ Treatment) + (Presentation\ Treatment) + \beta Covariates_i + \epsilon_i$. Table A.4 provides the detailed results.

## DISCUSSION

This research explored the conditions under which people become more supportive of fiscal consolidation. We hypothesize that (i) information about the costs incurred by government deficits and (ii) directing attention to expenditures (people's gains) before tax payments (their loss) increases support for fiscal consolidation. Emphasizing the benefits gained from the government indeed increases support for fiscal consolidation, whereas information about the costs incurred by government deficits lowers their support. The results are counter to the existing view that attributes the acceptance of deficit finance to public ignorance of its cost. Results also showed that the rational consideration of revenue constraints does not work to support the financial balancing of the budget. When informed about revenue constraints before building up expenditures, individuals are less likely to make both ends meet.

Overall the results are consistent with the explanation that citizens might be more sensitive to losses than to gains, which has been confirmed by empirical studies (Weaver 1986; Pacek and Radcliff 1995). The implications of the results are also generalized as a pattern of individual behaviors, i.e., prospect theory, which emphasizes the effect of presentation and framing over the rational calculation of expected values (Kahneman and Tversky, 1986; Tversky and Kahneman, 1979). Individuals are more likely to take a risk and gamble on a bet with a low probability of gain, when they perceive to have losses than gains (Tversky and Kahneman, 1981).

In terms of national finance, government expenditures are benefits that people enjoy, whereas tax revenue represents losses to people. The study demonstrates that fiscal consideration is more likely to be supported if financial balance is considered a problem for securing expenditures rather than one for financing deficits by taxes. This implication is enhanced by how the treatments of information and order presentation affected the restoration of financial balance in budget making. Both effects were more significant in the simulation of expenditures than in that of taxes. Individuals may not mind cutting some expenditure to secure others; they have more room for concessions in sorting out expenditure than accepting taxes.

## CONCLUDING REMARKS

Political intervention does not automatically produce public acceptance of financial reform. To persuade voters towards fiscal restoration, it is preferable to appeal to the benefits accrued from maintaining the provision of public services rather than pointing to the losses (costs incurred by budget deficits and/or tax payments). These conclusions have

been drawn from a survey conducted in Japan, where the problem of the government's budget deficit has been the most significant among mature democracies. The study focused on individuals who were aware of the presence of chronic deficits for experimental control. Replicating the results in other countries is left to future work, but the present implications will have relevance in situations where the problem of chronic deficits in government budgets increases in intensity in an increasing number of countries.

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**APPENDIX**

We briefly discuss additional results here. Details are found in the Online Appendix.

The present analysis was focused on respondents who were aware of budget deficits, but the additional analysis examined the effect of two treatments on the rest of respondents who considered the current Japanese government deficits not to be chronic. The results are reported in Figure A.1 and Figure A.2. Information about national debt service costs has no significant impact on responses when individuals were unaware of chronic deficits, on the one hand. On the other hand, presenting expenditure items before revenue items improved the fiscal balance among them by 10.3 percent. As a whole, emphasizing the gains from the government's expenditures is confirmed as effective intervention for improving fiscal balance, when individuals were not necessarily aware of the problem of government deficits.

# ONLINE APPENDIX (Not for publication)

Table A.1: Pilot Survey Result

| | (1) Primary balance ratio (expenditure/revenue) | (2) Primary balance (dummy) | (3) Improving the real government budget balance (dummy) |
|---|---|---|---|
| Left | 0.00699 | 0.0666$^{+}$ | 0.00709 |
| | (0.0334) | (0.0347) | (0.0360) |
| Right | -0.0343 | 0.000879 | 0.0120 |
| | (0.0231) | (0.0289) | (0.0312) |
| Female | -0.0449$^{+}$ | -0.108$^{***}$ | -0.0541$^{*}$ |
| | (0.0253) | (0.0240) | (0.0260) |
| BA or more | 0.0440$^{+}$ | 0.0800$^{***}$ | 0.0696$^{**}$ |
| | (0.0242) | (0.0242) | (0.0267) |
| High income | -0.0197 | 0.0234 | 0.00878 |
| | (0.0262) | (0.0245) | (0.0270) |
| Age | 0.00000742 | 0.00274$^{**}$ | 0.00229$^{*}$ |
| | (0.000765) | (0.000899) | (0.00104) |
| Married | -0.0358 | -0.0263 | -0.0147 |
| | (0.0241) | (0.0259) | (0.0285) |
| Constant | 1.012$^{***}$ | 0.144$^{**}$ | 0.525$^{***}$ |
| | (0.0584) | (0.0486) | (0.0559) |
| Observations | 1433 | 1433 | 1433 |

*Notes:* For each row, the coefficient and p-value are from the regressions of the form assigned to $Outcome_i = \alpha + \beta Covariates_i + \epsilon_i$, where *Covariates* are listed to the left in the row. $^{+}$ Significant at the 10% level. $^{*}$ Significant at the 5% level. $^{**}$ Significant at the 1% level. $^{***}$ Significant at the 0.1% level.

Table A.2: Descriptive Statistics

| | mean | sd | min | max | count |
|---|---|---|---|---|---|
| Informing national debt service costs | 0.53 | 0.499 | 0 | 1 | 1539 |
| Presenting expenditure items first | 0.52 | 0.500 | 0 | 1 | 1539 |
| Female | 0.42 | 0.494 | 0 | 1 | 1539 |
| Age | 48.15 | 13.017 | 20 | 69 | 1539 |
| BA or more | 0.36 | 0.479 | 0 | 1 | 1539 |
| High income | 0.51 | 0.500 | 0 | 1 | 1539 |
| Married | 0.59 | 0.491 | 0 | 1 | 1539 |
| Observations | 1539 | | | | |

## Table A.3: Balance table

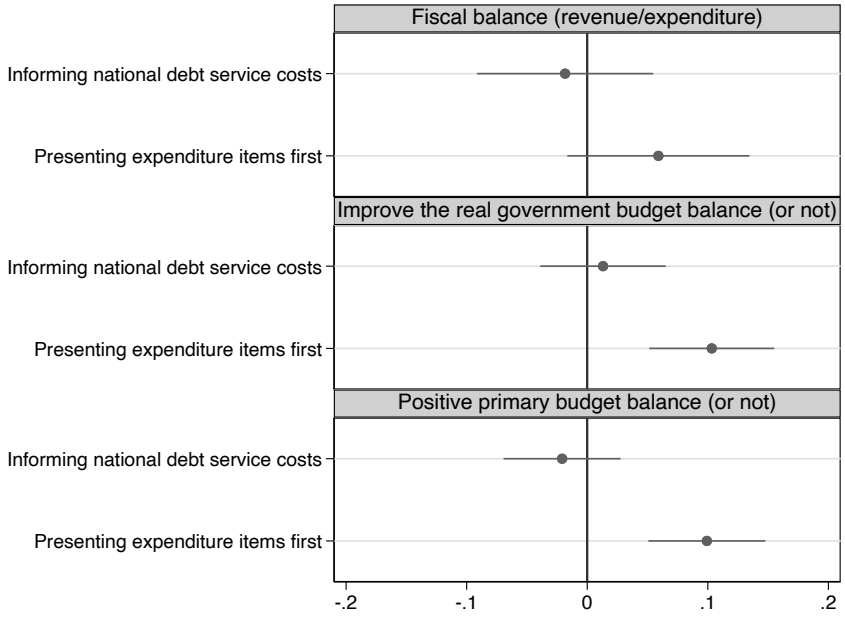
| | (1) mean Not show more info | (2) mean Not show more info | (3) mean Show more info | (4) mean Show more info | (5) difference (1) vs (2) | (6) difference (1) vs (3) | (7) difference (1) vs (4) | (8) difference (2) vs (3) | (9) difference (2) vs (4) | (10) difference (3) vs (4) |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | 0.400 | 0.395 | 0.433 | 0.446 | 0.005 | -0.033 | -0.046 | -0.038 | -0.052 | -0.013 |
| | (0.491) | (0.490) | (0.496) | (0.498) | (0.037) | (0.036) | (0.035) | (0.037) | (0.035) | (0.035) |
| BA or more | 0.376 | 0.326 | 0.340 | 0.379 | 0.050 | 0.036 | -0.004 | -0.014 | -0.054 | -0.040 |
| | (0.485) | (0.469) | (0.474) | (0.486) | (0.036) | (0.035) | (0.034) | (0.035) | (0.034) | (0.034) |
| High income | 0.476 | 0.524 | 0.532 | 0.511 | -0.049 | -0.056 | -0.035 | -0.008 | 0.013 | 0.021 |
| | (0.500) | (0.500) | (0.500) | (0.500) | (0.037) | (0.037) | (0.035) | (0.037) | (0.036) | (0.035) |
| Age | 48.008 | 47.844 | 48.914 | 47.853 | 0.164 | -0.906 | 0.155 | -1.070 | -0.008 | 1.062 |
| | (12.828) | (13.305) | (12.738) | (13.196) | (0.976) | (0.937) | (0.915) | (0.970) | (0.947) | (0.910) |
| Married | 0.570 | 0.605 | 0.599 | 0.600 | -0.035 | -0.029 | -0.030 | 0.006 | 0.005 | -0.002 |
| | (0.496) | (0.490) | (0.491) | (0.490) | (0.037) | (0.036) | (0.035) | (0.037) | (0.035) | (0.034) |
| Observations | 370 | 347 | 374 | 448 | 717 | 744 | 818 | 721 | 795 | 822 |

## Table A.4: Main and Additional Results

| | (1) Primary balance ratio (expenditure/revenue) | (2) Improving the real government budget balance (dummy) | (3) Primary balance (dummy) | (4) Revenue logged value) | (5) Increase revenue (dummy) | (6) Expenditure (logged value, reversed) | (7) Decrease expenditure (dummy) |
|---|---|---|---|---|---|---|---|
| Informing national debt service costs | -0.0326 | -0.0225 | -0.0503* | -0.0184 | 0.0129 | 0.00675 | -0.0811*** |
| | (0.0201) | (0.0213) | (0.0250) | (0.0113) | (0.0229) | (0.0112) | (0.0243) |
| Presenting expenditure items first | 0.107*** | 0.0523* | 0.134*** | 0.0211+ | 0.0292 | 0.0634*** | 0.139*** |
| | (0.0189) | (0.0214) | (0.0248) | (0.0112) | (0.0229) | (0.0111) | (0.0243) |
| Female | -0.0506** | -0.0245 | -0.0962*** | -0.0308** | -0.0141 | -0.00973 | -0.0203 |
| | (0.0184) | (0.0217) | (0.0254) | (0.0111) | (0.0234) | (0.0116) | (0.0248) |
| BA or more | 0.0367+ | 0.0357 | 0.0177 | 0.0244* | 0.0492* | 0.00690 | 0.0442+ |
| | (0.0198) | (0.0223) | (0.0264) | (0.0115) | (0.0238) | (0.0113) | (0.0256) |
| High income | -0.0153 | 0.00741 | -0.00133 | 0.00539 | 0.0228 | -0.00187 | -0.0369 |
| | (0.0188) | (0.0224) | (0.0263) | (0.0116) | (0.0240) | (0.0119) | (0.0257) |
| Age | 0.00137+ | 0.00318*** | 0.00109 | 0.000938* | 0.00318** | 0.000394 | 0.00155 |
| | (0.000738) | (0.000913) | (0.00102) | (0.000465) | (0.000969) | (0.000481) | (0.00101) |
| Married | 0.00528 | -0.00202 | 0.0231 | 0.00516 | -0.0371 | -0.00363 | 0.0375 |
| | (0.0212) | (0.0242) | (0.0287) | (0.0132) | (0.0262) | (0.0140) | (0.0275) |
| Constant | 0.957*** | 0.601*** | 0.343*** | 31.83*** | 0.546*** | -31.92*** | 0.521*** |
| | (0.0365) | (0.0512) | (0.0550) | (0.0285) | (0.0535) | (0.0245) | (0.0557) |
| Observations | 1539 | 1539 | 1539 | 1539 | 1539 | 1539 | 1539 |

*Notes:* For each row, the coefficient and p-value are from the regressions of the form assigned to $Outcome_i = \alpha + \beta Covariates_i + \epsilon_i$, where *Covariates* are listed to the left in the row. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level.

Figure A.1: Results for ignorant respondents (I)

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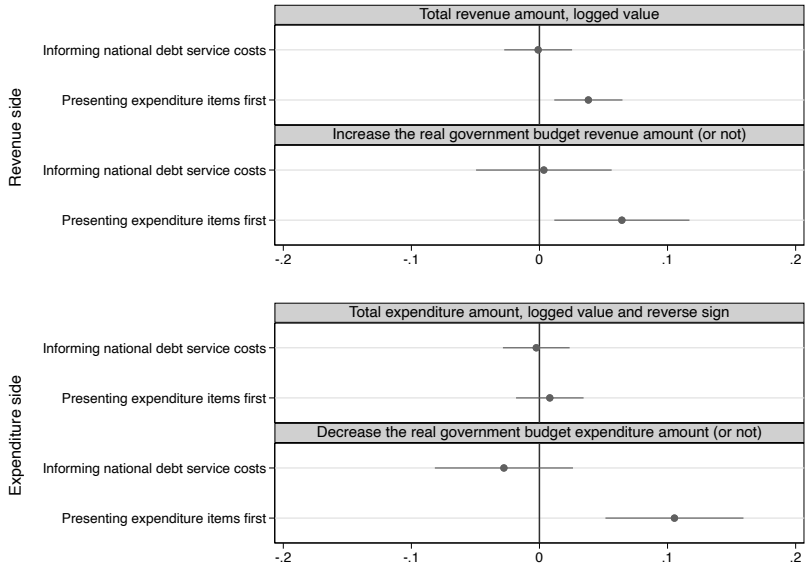
*Notes:* The 95 % confidence intervals plotted are the treatment effects for each group based on the following regression equation $Outcome_i = (Information\ Treatment) + (Presentation\ Treatment) + \beta Covariates_i + \epsilon_i$.

Figure A.2: Results for ignorant respondents (II)

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*Notes:* The 95 % confidence intervals plotted are the treatment effects for each group based on the following regression equation $Outcome_i = (Information\ Treatment) + (Presentation\ Treatment) + \beta Covariates_i + \epsilon_i$.