Household Responses to Fiscal News Shocks Experiment 2: Mental Models for different Government Spending Shocks

Pre-analysis plan

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Abstract

We use a factorial vignette experiment to analyze how U.S. households respond to expansionary government spending shocks. A nationally representative sample of 1,600 respondents is presented with two scenarios—a baseline and a shock scenario—in which prospective government spending is randomized along three key dimensions: size, duration, and composition. We then examine how expectations about fiscal policy affect household forecasts for key macroeconomic variables, including inflation, GDP growth, unemployment, and average income tax rates. To explore the mental models underpinning the transmission mechanisms of fiscal policy, we elicit open-ended explanations and allow respondents to state their agreement with established theoretical mechanisms linking fiscal shocks to macroeconomic outcomes. This allows us to determine whether households' mental models align more with Keynesian or Ricardian models of fiscal policy.

Keywords: government spending, fiscal policy, expectation formation, mental models

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1 Introduction and design

This is the pre-analysis plan for a survey experiment that examines the effects of expansionary government spending shocks on the macroeconomic expectations of U.S. households. We are interested in the effects of an expansionary shock to federal government spending on inflation, GDP growth, the unemployment rate, and the average income tax rate. As part of our vignette experiment, we examine the role of the size, persistence, and the composition of the shock to government spending by varying the shock scenario along these dimensions. We also collect qualitative evidence on household narratives regarding the downstream effects of government spending shocks and assess their knowledge of the scope of federal government spending. This experiment is related to our prior information provision epxeriment conducted in December 2024 and preregistered under AEARCTR-0014835.

Research questions (RQs):

- RQ1: Do households expect an increase in government spending to affect key macroeconomic variables? And, if so, in which direction?
- RQ2: Do the size, persistence, and composition of the shock influence expectations, as predicted by theoretical models?
- RQ3: How do people reason about the impact of government spending on the macroeconomy?
- RQ4: Are households informed about the actual level of (federal) government spending and its share of GDP?

All respondents start by giving their expectations regarding the inflation rate, the unemployment rate, the GDP growth rate, and the average income tax rate in the next 12 months under a baseline scenario. The scenario consists of a 1.5% increase in real federal government spending in the next 12 months. Respondents are informed that this is the historical average growth rate of government spending.[1] Afterward, respondents are assigned to a randomized combination of the values for the size, timing, and composition of the fiscal expansion. More detailed, we distinguish between an increase of next year's real government spending growth to 3% as the small shock scenario, to 5% as the medium shock scenario, and to 10% as the large shock scenario. Shocks of both size can be temporary, such that they are reversed thereafter (in this case, respondents are informed that government spending is not higher over the five years ahead) or permanent (in this case, respondents are informed that government spending will be permanently

1. The exact average growth rate for the post-1991 period is 1.4% which we round to 1.5% to have a less crooked value.

higher due to the shock). In addition, we vary the composition along three categories: Either we do not inform people about the composition of the shock, or we tell them that the additional government spending will be used entirely for military spending or entirely for infrastructure investments. Overall, this results in 18 possible combinations.

In the shock scenario, we inform respondents about their predictions from the baseline scenario to make sure that differences do not occur due to false memory about former predictions but due to the perception of the shock. The order of each outcome item is fully randomized in both the baseline and shock scenario. Our survey includes the following blocks: 1) Quota demographics, 2) Baseline scenario, 3) Shock scenario, 4) Political orientation and other demographics.

2 Outcomes

Primary outcomes: Macroeconomic expectations
Our main outcomes are the GDP growth rate, the unemployment rate, the inflation rate, and the average income tax rate. For all four variables, we are interested in the expected rate for the next twelve months. As we elicit them for both the baseline and the shock scenario, we have the intra-individual responses to the shock, fitting a within-design.

Secondary outcomes: Perception of government spending shocks
At the end of the survey, we gain data on how respondents describe their own mental models. First, they are asked to answer an open-ended question regarding their expected effects of a government spending shock. Then, they should indicate their (dis)approval to seven potential effects of higher government spending which are related to economic theories about government spending shocks.

3 Structure & design

Experimental details
Our experimental design is structured as follows: First, we inform the respondents about the usual real growth rate of federal government spending. We then ask them about their expectations regarding our primary outcomes for a twelve months horizon under the baseline scenario. Afterward, they are assigned to one of the shock scenarios, which differ along the dimensions of size, persistence, and composition of the shock, and give their expectations regarding the primary outcomes again. They also have to answer an open-ended question regarding their specific scenario. Finally, we ask them about their political affiliation and whether they would describe themselves as politically interested people and to which extent they follow news on the economy.

Intervention
Each respondent is exposed to only one out of eighteen shock scenarios. The scenarios vary along size, persistence, and composition of the shock with the following options:

- **Size:** We use three shock sizes, a 3% increase in government spending (small scenario), a 5% increase in government spending (medium scenario), and a 10% increase in government spending (large scenario).
- **Persistence:** Shocks are either temporary or permanent. In case of temporary shocks, respondents are informed that the shock is reversed in coming years such that overall government spending over the five years ahead is not higher compared to the baseline scenario. In case of permanent shocks, respondents are informed that the level of government spending will permanently be higher compared to the baseline scenario.
- **Composition:** We use three options for the composition of the shock. Either we do not give specific information about the composition, or we inform respondents that the additional government spending is completely allocated to military expenditures, or that the additional government spending is completely allocated to infrastructure investments.

Every characteristic of every dimension can be combined with every characteristic of every other dimension, resulting in eighteen possible scenarios.

4 Pre-processing data

Representativeness
We compare our demographic data (sex, age, education, region, household income) with the latest available American Community Survey (ACS) from the United States Census Bureau. Note, that we only impose representativeness criteria for sex, age, region, and education while collecting our data. We do not impose a criterion for income as this is supposed to make it difficult to draw a sample in a manageable time frame. As far as age is concerned, we cannot assume that our data fully reflects the proportion of people over 55, as this group is generally more difficult to reach with surveys.

Data quality
Our survey includes two attention checks but only respondents who fail both are excluded during the survey and are thus not in our data. This is the official Dynata policy.

5 Inference

5.1 Research question 1 - general impact of government spending shocks

Our RQ1 consists of

> Do households expect an increase in government spending to affect key macroeconomic variables? And, if so, in which direction?

We start by simply computing the total update in beliefs about each variable between the baseline and the shock scenario for the full sample. A positive sign indicates that people expect an expansionary government spending shock to raise the corresponding variables, a negative sign indicates that people expect an expansionary government spending shock to decrease the corresponding variable. We focus on the sign rather than the quantity of the updates. To ascertain the average effects of an increase in government spending on macroeconomic expectations in our intra-individual design, we compute simple dependent-samples t-tests, comparing individuals' forecasts of unemployment, growth, taxes, and inflation between the baseline and the shock scenario. As temporary shocks with a spending reversal do not raise government spending in the long-run, these might not be considered as expansionary. Therefore, we drop respondents assigned to such a scenario and re-compute the average updates. The interpretation of the signs remains the same for the restricted sample.

5.2 Research question 2 - role of characteristics of the government spending shock

Our RQ2 consists of

> Do the size, persistence, and composition of the shock influence expectations, as predicted by theoretical models?

To assess the role of the dimensions along which our shock scenarios vary, we run the following two regressions as our main evaluation tools:

$$\begin{aligned} Update_{i,j} = \alpha_0 &+ \alpha_1' size_i\{3\%, 5\%, 10\%\} + \alpha_2 reversal_i\{true, false\} \\ &+ \alpha_3' composition_i\{general, military, infrastructure\}, + \Theta' Controls_i + \epsilon_i \end{aligned}$$

where i denotes the respondent and j denotes the variable of interest. $Update$ is the difference between the expected rate of the respective outcome variable between the shock and the baseline scenario. $Size_i$ can either take $small$, $medium$, or $large$. The reference category is $small$. $Reversal_i$ takes 1 if the shock is reversed. $Composition_i$ can either take $no\ composition$, $military$, or $infrastructure$. The reference category is $no\ composition$. The coefficient α_0 is therefore the effect of a small shock that is not later reversed and does

not relate to a specific government spending component.

We also run a second regression with the following specification:

$$\begin{aligned} Update_{i,j} = \beta_0 &+ \beta_1 shock_i \\ &+ \beta_2 shock_i \times military_i \\ &+ \beta_3 shock_i \times infrastructure_i \\ &+ \beta_4 shock_i \times reversal_i \\ &+ \beta_5 shock_i \times military_i \times reversal_i \\ &+ \beta_6 shock_i \times infrastructure_i \times reversal_i \\ &+ \Psi' Controls_i + v_i \end{aligned}$$

where i denotes the individual and j denotes the outcome variable. $shock_i$ is the difference between the growth rate in the shock and the baseline scenario that can either be 1.5, 3.5, or 8.5. If the respective shock is reversed, $reversal$ takes 1. If the respective shock consists of military expenditures, $military$ takes 1, if it consists of infrastructure investments, $infrastructure$ takes 1. In this framework, β_0 has expectation zero, as there should be not update without a shock. The expected update for an increase in the government spending growth rate about one percentage point, which is not reversed and does not consist of a specific component, is then β_1 (ignoring the controls). The respective expectation for a 1 pp. infrastructure shock that is reversed afterwards is $\beta_1+\beta_3+\beta_4+\beta_6$.

5.3 Research question 3 - mental models

Our RQ3 consists of

> How do people reason about the impact of government spending on the macroeconomy?

We examine the mental models governing individuals' beliefs about the macroeconomic effects of government spending in two designs. First, we use an essay-style open-ended question that allows respondents to rationalize how they expect (an increase in) government spending to influence the macroeconomy. We thereby ascertain, without prompting specific concepts other than those that appear in our outcomes, how people reason about the consequences of fiscal policy shocks.

> *We want to understand your views on government spending and its effects on the economy in more depth.*
> *In your own words, what do you think will happen to the economy if the government increases its spending more than usual?*

As our second approach, we provide five pre-defined statements about the prospective impacts of government spending derived from foundational theoretical concepts and the existing empirical literature and allow respondents to rate these statements in terms of predictive agreement. For this purpose, we use a constant sum item, in which respondents distribute 100 points across each statement.

For both designs, we can again use our estimation strategy to identify whether distinctive components of the government spending expansion differentially affect macroeconomic expectations.

5.4 Research question 4 - households' knowledge

Our RQ4 consists of

> Are households informed about the actual level of (federal) government spending and its share of GDP?

We compare the mean value of the amount of government spending estimated by the respondents with the realized value in 2024, both in current prices and as percentage of GDP. In case there is any misunderstanding about the definition of government spending, we also look at the overall budget of the federal government.