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The Effects of Fiscal News on Household Expectations and Spending: New Causal Evidence

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Abstract

We provide experimental evidence on how fiscal news shapes households' expectations and spending behavior. Using a new survey of ~11,000 Korean individuals linked to automatically collected high-frequency spending data, we elicit respondents' fiscal and macroeconomic beliefs and randomly provide them with one of five pieces of information about current public debt levels, fiscal deficits, and the government's plans for deficit reduction. Exogenous increases in expected future public debt raise expected inflation and increase consumer spending. On the other hand, exogenous increases in expected fiscal balance raise expected output growth and have no significant effect on consumer spending.

JEL classification

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Keywords

RCT, government debt, fiscal policy, expectations, transaction-level data, consumption

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I. Introduction

Public debt rose sharply during the COVID-19 crisis, raising concerns about its macroeconomic consequences. A recurrent question in both policy and academic discussions is whether—and how quickly—these elevated debt levels might generate inflation and whether the large fiscal deficits of the pandemic period contributed to the global surge in inflation between 2021 and 2023 (see, e.g., Barro and Bianchi 2026). A related question is how public finances—specifically the level of government debt and fiscal deficits—affect private consumption and the broader real economy. Economic theory offers sharply different predictions about these effects and the mechanisms through which they operate (see Elmendorf and Mankiw (1999), Auerbach et al. (2010), and Kaplan (2025) for surveys). For example, fiscal policy could affect inflation through conventional demand-driven overheating, through the monetization of public debt, or through the fiscal theory of the price level.

In a classic debate, Barro (1974) posited Ricardian equivalence: today's debt is simply tomorrow's taxes, so rational households save the income they receive from a deficit-financed tax cut rather than spend it. By contrast, Modigliani (1961) developed an overlapping generation model in which an increase in government debt is perceived as additional wealth by the current generation, thereby stimulating current consumption at the expense of capital accumulation for future generations. More recent work using heterogeneous agent New Keynesian (HANK) models paints a more subtle picture (e.g., Angeletos et al. 2025) but generally predicts that a debt-financed fiscal stimulus raises consumption and inflation and higher public debt leads to higher inflation.

Despite the importance of establishing which of these frameworks is most relevant for positive and normative analyses, Elmendorf and Mankiw (1999) note that decisive empirical tests have been lacking for several reasons. First, such tests must incorporate expectations because the decisions of forward-looking economic agents depend on both current and future fiscal policy. Second, the tests must address endogeneity of expectations and actions. Third, the tests must have sufficient statistical power, which is a particular concern in time-series analyses or cross-sectional studies using small samples.

This paper aims to address these challenges by using a randomized controlled trial (RCT) in Korea in which we survey ~11,000 consumers and link their responses to credit-card spending data collected by a marketing company. Specifically, random subsamples of Korean consumers are provided with publicly available information about the level of Korean public debt, fiscal balances, or government plans to address the current fiscal deficit. We then measure changes in beliefs and

consumer spending. We document that these interventions alter respondents' expectations about fiscal and macroeconomic variables and affect consumer spending. On average, agents' beliefs respond in a manner that is consistent with the government's intertemporal budget constraint. Exogenous increases in expected debt are accompanied by higher expected inflation and interest rates, with virtually no effect on expected output growth, government spending or revenues. In contrast, larger expected fiscal deficits are associated with lower expected output and government spending but no change in expected inflation, interest rates or government revenue.

We also find that an exogenous one percentage point increase in expected public debt raises consumer spending by about 0.4 percentage points for roughly five months. At the same time, an exogenous increase in the expected fiscal balance (i.e., a larger fiscal surplus or a smaller fiscal deficit) does not have a statistically significant impact on consumer spending. Although our subsample analyses have weaker statistical power, our results suggest potentially heterogenous responses for various subgroups (e.g., older households raise consumer spending more in response to exogenous increases in expected public debt and fiscal balance). None of the mainstream models can fully account for these results, pointing to the need for further theoretical and empirical work.

We contribute to the nascent work using RCTs to shed new light on the effects of fiscal variables on the economy. In closely related papers, Coibion et al. (2021), Roth et al. (2022), Grigoli and Sandri (2024), Andrade et al. (2025), Bianchi et al. (2025), and Eichenbaum et al. (2025) study how information treatments about fiscal variables influence inflation and fiscal policy expectations. Building on these studies, we add a new country (thereby further supporting the external validity of this line of work), expand the set of expectations examined and, most importantly, use high-frequency, administrative-style consumer spending data to study how spending responds to exogenous changes in beliefs. In other words, we move from studying causal effects on expectations to studying causal effects on actions.

II. Data and Survey Design

A. Embrain Panel Big Data

Embrain Panel Big Data (henceforth EPBD) is a panel of approximately 200,000 households maintained by Embrain (a marketing company) that collects the dynamic characteristics of their purchases. The consumers participating in the panel are asked to download a smartphone app that tracks consumer spending paid with their credit or debit cards. When either a credit or debit card is

used for purchases, text messages that include information on the transaction, such as date, time, outlet, amount of the transaction, and category (food/online shopping, etc.), are sent to their cell phone. The app forwards text messages to Embrain for recording. As a result, any transaction participants make with the card that sends messages to the consumer is recorded in our data. The data generated by the app mimics the structure of transaction-level data from credit card companies, banks and financial aggregators (Baker and Kueng 2022, Gelman et al. 2023).

For our analysis, we include all transactions recorded in the raw dataset in 2023 for the randomly selected sample of 11,262 EPBD participants who participated in our online survey.[1] Focusing on the 30 days preceding each respondent's survey date, the average daily spending amounts to approximately 36,600 Korean Won (KRW), including days with zero recorded spending—which account for roughly 50% of all observations. Each transaction record includes detailed information on location, amount, and transaction time, enabling us to infer broad consumption categories.[1] Although transaction-level details are always available, not all purchases can be clearly assigned to a specific category; approximately 80% of transactions are successfully categorized based on merchant type and industry classification. We use transaction categories assigned by Embrain based on vendor information (Appendix Table 6). We construct two classifications of spending: (i) committed versus non-committed consumption and (ii) durable versus non-durable spending.[2]

We find (Table 1) that the (Huber weighted) average monthly expenditure of the control group during the sample period (January to December 2023) was approximately 1.15 million KRW (~US$885).[3] This amount is close to the national average per capita monthly consumption expenditure (1.28 million KRW) and corresponds to about 70% of the average per capita credit card expenditure in Korea, estimated at 1.68 million KRW (~ US$1,290).[4] Because Korea is one

[1] Non-consumption entries were removed during the data cleaning process. Specifically, we excluded tax-related payments, public administrative fees (e.g., government service fees, passport issuance, and court fees), financial transactions (e.g., short-term card loans), and erroneous or canceled records (e.g., negative values).

[2] Committed consumption includes transactions categorized as *insurance*, *phone*, *medical/health*, *education*, and *living* (e.g., utility bills). These expenditures are typically recurring or contract-based and therefore difficult to adjust in the short run. Separately, we define durable spending as high-value purchases (exceeding 1,000,000 KRW, approximately 770 USD) within the categories *shopping*, *supermarket*, *car/transportation*, and *fashion/beauty*. Because detailed product-level information is not available, we focus on the extensive margin rather than the spending amount.

[3] Throughout the paper, we use the exchange rate from July 2023, when the first survey wave was conducted, under which 1 USD was approximately 1,300 KRW.

[4] The discrepancy between the two averages is expected because credit card users are a selected group with higher spending on average. The national average per capita monthly consumption expenditure is approximated by dividing the average monthly household consumption expenditure (2.94 million KRW) by the average household size (2.3) in

of the countries with the highest credit card ownership (68% according to the World Bank's Global Findex Database for year 2021) in the world, credit/debit card purchases should cover the bulk of household spending. Consistent with this fact, when we restrict categories of spending to those with high shares of credit/debit card payments[5], self-reported typical monthly spending in the survey was 1.69 million KRW (~ US$1,300). Although the magnitudes are close on average and there is a clear co-movement between administrative and self-reported measures of spending (Appendix Figure 3), the correlation between the two is not perfect.

A key advantage of the transaction-level data is that we can measure spending responses at high frequencies. However, as we move from low frequencies (e.g., annual) to high frequencies (e.g., daily), the divergence between spending and consumption grows (e.g., Coibion et al. 2021a). Our baseline uses the monthly frequency, which strikes a balance between measuring the precise timing of spending responses and averaging out the large idiosyncratic variation observed at high frequencies.[6] Moreover, paychecks in Korea are typically paid monthly, generating payday effects at higher frequencies, which monthly aggregation helps smooth out.

B. Survey Design

We fielded two waves of online surveys on the randomly selected sample of 11,262 EPBD participants in July and November of 2023. The response rate was 41.8% with a median response time of 44 minutes. Participants were at least 19 years old and received points for answering surveys that can be converted into cash. Embrain attempts to ensure the national representativeness of the sample based on age, gender, and region, so the sample is self-weighted. While our sample is quite representative in various dimensions compared to the national averages, survey participants are on average somewhat more educated, more likely to have a job, and have more children (see Appendix Table 1).

In the first wave of the survey, we gathered information on participants' demographic characteristics, perceptions and expectations, and introduced five different information treatments

2023. Data on average credit card expenditure are from the Ministry of Economy and Finance; see https://tinyurl.com/bderpfr4.

[5] We exclude debt payments (mortgages, auto loans, student loans, etc.), housing (including rent, maintenance and homeowner/renter insurance, housekeeping and cleaning service, but not including mortgage payments), gifts, child support/alimony, charitable giving, and other miscellaneous spending from the survey response categories.

[6] The coefficient of variation (st.dev./mean) for credit/debit card spending is 1.7 at the annual frequency, 2.2 at the monthly frequency, and 3.6 at the weekly frequency.

(in addition to one control group). Before and after the treatment, we asked questions that measure various perceptions and expectations of fiscal and macroeconomic variables. In the second wave of the survey, we again elicited their expectations that we asked in the first wave after the treatment intervention. The main purpose of this wave is to track individuals' expectations over time. The retention rate for the follow-up wave was high at 64%. The survey questionnaires are in the Appendix.

The key survey questions for our analysis are those measuring the perceptions and expectations of participants. Questions about their perception of the *current* public debt and fiscal balance of the Korean economy are important because our information treatments include numerical information on the current level of the public debt and fiscal deficits. Because the general public is unlikely to be well informed about public finances (Stantcheva 2020, Bianchi et al. 2025), we give survey participants background information that explains what they are being asked about. To measure their pre-treatment expectations about *future* fiscal variables, we follow Manski (2004) and ask them to provide the lowest and highest values they can think of for a given variable, along with their subjective probability that the actual value exceeds the midpoint of these two estimates. Using a split triangular distribution, we compute the implied moments for expectations.

For our analysis, we exclude responses reporting a perceived current fiscal balance above 30% or below -30% of GDP, as such values lie far outside the historical range of fiscal balances and likely reflect a misunderstanding of basic fiscal magnitudes.[7] The resulting sample contains 10,489 observations (93.2% of the original sample). Descriptive statistics about the respondents' perceptions are summarized in Panel A, Table 1. Relative to the actual figure (49.6%), Korean households, on average, *overestimate* the level of public debt. This contrasts with findings by Bianchi et al. (2025), Grigoli and Sandri (2024), Coibion et al. (2021b), and Roth et al. (2022) for households in advanced and emerging economies, which may be due to Korea having the lowest public debt-to-GDP ratio among these countries and Koreans being more pessimistic about the state of the Korean economy. However, perceptions of the fiscal balance-to-GDP ratio are, on average, close to the actual figure (-5.4%).[8] That said, there is significant cross-sectional variation in perceptions for both variables: the interquartile ranges for the debt-to-GDP ratio and fiscal deficit are 80% and 10% respectively. Descriptive statistics about the respondents' fiscal and

[7] Historically, Korea's fiscal balance has remained within a narrow range, typically between roughly −6% and +3% of GDP, even during major economic shocks.
[8] If we include observations outside the −30% to 30% of GDP cutoffs, the average is −5.6%.

macroeconomic expectations are summarized in Panel B in Table 1. Consistent with the seminal Jonung (1981) study and subsequent work, we observe a strong correlation between perceptions and expectations (Appendix Figure 2), and therefore one may use perceptions as a proxy for pre-treatment beliefs. Because pre-treatment expectations for the fiscal balance are particularly noisy, we use perceptions (which are elicited as a point prediction) as priors. Higher public debt is associated with higher fiscal deficits, but the correlation is fairly weak (Appendix Figure 2).

Following the information treatments, respondents, including those in the control group who did not receive any information, were asked follow-up questions to measure the immediate effect of the treatments on their expectations. To minimize survey fatigue and avoid reusing the exact same questions, we collect only point estimates for their expectations in the year 2030, instead of ten years ahead.

C. Information Treatments

After the pre-intervention phase of the survey, participants are randomly assigned into six different groups, with each group consisting of approximately 1,700 participants.[9] Each group receives different information about the current fiscal status and the future trajectory of fiscal policy in Korea. The first group is the control group, which is not treated with any information. Treatment groups 1 and 2 receive information on the current public debt-to-GDP ratio and fiscal balance, respectively:

> Treatment 1 (T1): "*The level of public debt in Korea was 49.6% of GDP in 2022. This debt was 20.68 million won ($16,000) per capita, the largest by historical standards. According to the IMF, between 2017 and 2022, Korea's national debt-to-GDP ratio grew more than 2.5 times faster than the average ratio of the world's 35 advanced economies.*"
>
> Treatment 2 (T2): "*The managed fiscal balance of the Korean government was -5.4% of GDP in 2022. That is, the government had a fiscal deficit. This deficit was 2.27 million won ($1,700) per person, the largest by historical standards."*[10]

[9] Appendix Tables 2 and 3 document that the sample is well-balanced across different treatment groups.

[10] Since the participants might not understand the meaning of the managed fiscal balance, we further provide the following information in the same screen: "Managed fiscal balance is calculated by subtracting government expenditure and the Social Security Fund balance from the government income. The Social Security Fund balance is the income minus expenditure of the national pension, private school pension, employment insurance, and industrial accident insurance. Therefore, the managed fiscal balance can be used to clearly evaluate fiscal soundness of the government." The dollar amounts in parentheses were not displayed to survey participants but included here for the reader's reference.

To help households interpret the provided information and have a better sense of magnitudes, we give a historical perspective by illustrating trends over time, comparing them to peer countries, and offering qualitative assessments (e.g., "the largest by historical standards"). Because the provided information is publicly available, zero response to the treatments should occur if households form expectations in a full-information rational expectations (FIRE) manner.

For treatment groups 3, 4, and 5, participants receive the same information as those in treatment group 2, along with additional details about the government's planned efforts to reduce fiscal deficits (the plans were also publicly available). Treatment group 3 is informed that the government has a plan to reduce the deficit to 3% of GDP but is not provided with a specific policy instrument. In addition to this information, treatment group 4 further learns that the government plans to cut discretionary spending, while treatment group 5 is told that the government intends to increase taxes.

> Treatment 3 (T3): "*The government plans to reduce the deficit to 3% of GDP, approximately 1.14 million won ($850) per person, in 2024.*"
>
> Treatment 4 (T4): "*The government plans to reduce the deficit to 3% of GDP, approximately 1.14 million won ($850) per person, in 2024. To this end, along with other measures, the government plans to reduce more than 10 percent of its discretionary spending, including plans to cut cash transfers and voucher programs. This spending measure takes about 50% of total government budget.*"
>
> Treatment 5 (T5): "*The government plans to reduce the deficit to 3% of GDP, approximately 1.14 million won ($850) per person, in 2024. To this end, along with other measures, the government plans to scrap gas tax cuts. The government is also considering scrapping auto purchase tax cuts and restoring the fair market rate, which is used when calculating the comprehensive real estate tax, from 60% to 80%.*"

These treatments are meant to measure the marginal effects of informing households about policy responses to fiscal imbalances.

III. Treatment Effects on Beliefs and Consumer Spending

A. Beliefs about fiscal variables

To estimate treatment effects on beliefs, we use the specification suggested in Coibion and Gorodnichenko (2026):

$$Posterior_i = b_0 + b_1 Prior_i + \sum_{j=1}^{5} \delta_j \times \mathbb{I}(i \in Treatment\ j) + \sum_{j=1}^{5} \psi_j \times Prior_i \times \mathbb{I}(i \in Treatment\ j) + error \quad (1)$$

where i and j index survey respondents and treatment group, $Prior$ measures pre-treatment beliefs and $Posterior$ measures post-treatment beliefs. To minimize the influence of outliers, we use Huber (1964) robust regressions here and in subsequent regressions. Given how noisy and uncertain pre-treatment 10-year-head expectations for the fiscal balance are, we use (point) perceptions of the current fiscal balance as priors. We visualize the relationship between priors and posteriors nonparametrically in Figure 1.

We find that information treatments have economically large effects on beliefs which shift in the direction of the provided signals. For example, households who initially thought that public debt was low tended to revise their expectations up, whereas households who initially thought public debt was high tended to revise their expectations down. We also observe cross-variable learning in the sense that informing households about public debt can change their beliefs about future fiscal deficits and vice versa. While there are clear differences in the effects of the debt information treatment and the fiscal deficit treatments, we find little economic difference between variations of fiscal deficit treatments that also inform households about policy responses (T3, T4, and T5). This result is consistent with earlier findings for monetary policy (e.g., Binder 2020, Coibion et al. 2022, 2023) that households struggle with understanding mappings from policies to macroeconomic outcomes and with utilizing information in more sophisticated policy communications. In any case, the strong responses to publicly available information are inconsistent with FIRE. When we focus on expectations measured four months after the treatment, we generally observe no material difference between the control and treatment groups, thus suggesting that households forget information (or information depreciates) after four months. This pattern is consistent with earlier studies (e.g., Coibion et al. 2022b) documenting a similar horizon for memory in the context of treating U.S. households with information about inflation.

B. *Average effects on beliefs about fiscal and macroeconomic variables*

To make the interpretation of changes in 10-year-ahead expectations more transparent, we also estimate the average treatment effects (ATE) using the following specification

$$E_i^{posterior} y = b_0 + \sum_{j=1}^{5} b_j \times \mathbb{I}(i \in Treatment\ j) + error \quad (2)$$

where y denotes an outcome variable and coefficients b_j measure the ATEs.[11]

We find (Table 2) that, on average, treatment T1 raises the expected future debt-to-GDP ratio and lowers expected fiscal balances (i.e., respondents expect a higher fiscal deficit). This adjustment is accompanied by higher expected inflation (which is consistent with earlier findings for other advanced economies; see Coibion et al. 2021b, Grigoli and Sandri 2024, Andrade et al. 2025), a higher expected interest rate on public debt and no significant changes in expected economic growth, government spending, and tax revenues. This pattern is consistent with the view that the government is expected to inflate away some debt, but otherwise there is no expected change in policy or long-term outlook for economic growth.

This information treatment offers us a chance to check whether households understand the budget constraint of the government. Recall that the government must observe the following intertemporal budget constraint between year t and year $t + 10$:

$$d_{t+10} = \gamma^{10} d_t - \sum_{j=1}^{10} \gamma^{10-j} b_{t+j} \quad (3)$$

where $\gamma \equiv \frac{1+i}{(1+g)(1+\pi)}$, d_t is the debt-to-GDP ratio in year t, b_t is the primary fiscal balance in year t (as a % of GDP), i is the average nominal interest rate on government debt between t and $t + 10$, g is the average growth rate of real GDP, π is the average inflation rate.

As a first-order approximation of the debt dynamics, the change in the debt-to-GDP ratio can be decomposed as follows:

$$\begin{aligned} \Delta d_{t+10} \approx & \underbrace{\gamma^{10} \Delta d_t}_{(1)} + \underbrace{10\gamma^{10} d_t \left(\frac{\Delta i}{1+i} - \frac{\Delta g}{1+g} - \frac{\Delta \pi}{1+\pi} \right)}_{(2)} \\ & - \underbrace{\sum_{j=1}^{10} \gamma^{10-j} \Delta b_{t+j}}_{(3)} - \underbrace{\sum_{j=1}^{10} (10-j) \gamma^{9-j} b_{t+j} \left(\frac{\Delta i}{1+i} - \frac{\Delta g}{1+g} - \frac{\Delta \pi}{1+\pi} \right)}_{(4)}. \end{aligned} \quad (4)$$

This expression indicates that changes in the 10-year-ahead debt-to-GDP ratio can be decomposed into four components: (1) changes in the initial debt level, (2) changes in the interest-growth-

[11] The estimation sample does not include responses that fall into the top and bottom 5%. Because group assignment is randomized, we do not need to control for prior beliefs or demographics. We report the results using a version of specification (1) in Appendix Table 5.

inflation differential acting on the initial debt stock, (3) changes in the path of future primary balances, and (4) changes in the interest-growth-inflation differential acting on the existing primary balance path. Ricardian equivalence, the fiscal theory of the price level (FTPL), self-financing debt, etc., differ in the margins that they emphasize (future tax burdens, inflation, output growth, etc.), but the above accounting identity should hold in any coherent model.

From Table 1, we know that the average difference between actual and perceived public debt is $\Delta d_{t+10} = 8.3\%$. For the right-hand side of equation (4), we use the following calculation. Using $i = 0.231$, $g = 0.234$, and $\pi = 0.287$ (Panel B, Table 1), we obtain $\gamma \approx 0.775$. Using the pre-treatment perception and assuming that the information treatment is fully credible about the current level of public debt, $\Delta d_t = 49.6\% - 57.8\% = -8.2\%$, so that $\gamma^{10}\Delta d_t = -0.64\%$. Columns (3), (6), and (7) imply revisions of 0.400, 0.049, and 0.564 percentage points in expected interest rates, real GDP growth, and inflation, which yields a contribution of -0.07% for the second term. Assuming a constant revision in the fiscal balance, $\Delta b_{t+j} = -1.6\%$ for all j (Column (2), Table 2), the third term equals 6.56%. Finally, assuming the fiscal balance remains constant at $b = 14.1\%$ (Panel B, Table 1), the fourth term contributes 0.18%. Summing up all components, the right-hand side of equation (4) equals $-0.64 - 0.07 + 6.56 + 0.18 = 6.03\%$, which is fairly close to the left-hand side. The result suggests that, on average, households form expectations in a manner that is consistent with the government's intertemporal budget constraint.[12] This is important because most standard models impose this consistency but differ in the implications they draw from it. To be clear, the fact that average beliefs satisfy the constraint does not imply that individual respondents do so.

Treatment T2 on average lowers expected fiscal balances and, surprisingly, the expected future debt-to-GDP ratio. At the same time, respondents expect lower government spending and some decrease in tax revenues. There are no changes in the long-term expectations for inflation and interest rates on average. On the other hand, this treatment reduces the long-term expectation for economic growth by approximately 0.5 percentage point. In other words, Korean consumers appear to think that (expected) fiscal consolidations (smaller fiscal deficits) are expansionary, which is inconsistent with international evidence (e.g., IMF 2010). Thus, while respondents view

[12] Under an alternative assumption, we set the debt accumulation factor to $\gamma = 0.955$, based on Korean macroeconomic data over the 1994–2024 period. This yields a right-hand side of 8.1 percentage points, which is even closer to the left-hand side estimate of 8.3 percentage points.

public debt as inflationary but neutral for economic growth, fiscal deficits are perceived as bad for economic growth but neutral in terms of inflation.

When we provide respondents with information about government plans to reduce fiscal deficit (treatments T3-T5), the ATE for the long-term expectation about fiscal balances becomes close to zero (i.e. expect smaller deficits). Households expect larger cuts in government spending, a somewhat weaker slowdown in economic growth (but information about tax hikes tends to make people more bearish in their economic growth outlook), and little change in long-term expectations for inflation and interest rates. These results suggest that the adjustment to fiscal deficits is expected to happen via government spending cuts rather than other margins.

C. Consumer spending

The next question is whether changes in beliefs translate into changes in consumer spending. We next examine how automatically recorded spending responds to exogenous variation in fiscal beliefs induced by the information treatments. Specifically, we estimate a two-stage least squares (2SLS) regression in which we instrument posterior beliefs about the future debt-to-GDP ratio and fiscal balance with their respective priors, treatment dummies, and interaction terms, applying Huber weights. The first stage is given by a modified version of equation (1):

$$E_i^{\text{post}} debt = a_0^{(d)} + a_1^{(d)} \times E_i^{\text{prior}} debt + a_2^{(d)} \times E_i^{\text{prior}} balance + \sum_{j=1}^{5} \delta_j^{(d)} \times \mathbb{I}(i \in Treatment\ j) + \sum_{j=1}^{5} b_j^{(d)} \times \mathbb{I}(i \in Treatment\ j) \times E_i^{\text{prior}}\ debt + \sum_{j=1}^{5} c_j^{(d)} \times \mathbb{I}(i \in Treatment\ j) \times E_i^{\text{prior}}\ balance + Controls + error \quad (5')$$

$$E_i^{\text{post}} balance = a_0^{(b)} + a_1^{(b)} \times E_i^{\text{prior}} debt + a_2^{(b)} \times E_i^{\text{prior}} balance + \sum_{j=1}^{5} \delta_j^{(b)} \times \mathbb{I}(i \in Treatment\ j) + \sum_{j=1}^{5} b_j^{(b)} \times \mathbb{I}(i \in Treatment\ j) \times E_i^{\text{prior}}\ debt + \sum_{j=1}^{5} c_j^{(b)} \times \mathbb{I}(i \in Treatment\ j) \times E_i^{\text{prior}}\ balance + Controls + error \quad (5'')$$

We report regression results for specification (5') and (5'') in Appendix Table 4.

The second-stage regression is a local projection where the dependent variable is the log of total spending expenditure (multiplied by 100) over successive 30-day horizons: 0–30 days, 30–60 days, 60–90 days, 90–120 days, and 120–150 days following each individual's survey date.

$$\log(Spending_{i,t+h}) = \gamma_0^{(h)} + \gamma_1^{(h)} \times E_i^{\text{post}} debt + \gamma_2^{(h)} \times E_i^{\text{post}} balance + \gamma_3^{(h)} \times E_i^{\text{prior}} debt + \gamma_4^{(h)} \times E_i^{\text{prior}} balance + Controls + error \quad (6)$$

where $\log(Spending_{i,t+h})$ is the log of total spending for individual i, at horizon $h \in \{30, 60, 90, 120, 150\}$ after the survey date t for the first wave. The vector of control variables includes gender, age, age squared, number of children, household size, education, employment status, log household income, a Seoul metropolitan area indicator variable, and total spending during the 30 days preceding the survey.[13] The coefficients of interest are $\gamma_1^{(h)}$ and $\gamma_2^{(h)}$ that give us the causal dynamic effect (impulse response) of changes in beliefs about public debt and the fiscal balance on consumer spending.[14]

We find (Panel A, Figure 2) that an exogenous increase in expectations about future public debt or future fiscal deficits *raises* consumer spending. Specifically, holding expected fiscal balances constant, a one percentage point increase in long-term expectations for public debt raises consumer spending in the first month by approximately 0.4 percentage points and persists for a few months. This finding runs counter to the neoclassical intuition in macroeconomics: when individuals learn that public debt is likely to rise, they would typically expect, given the government's budget constraint, that fiscal policy will eventually adjust through higher taxes and/or lower government spending; this anticipated adjustment should reduce their current consumption due to a negative income effect. We find a response in the opposite direction. One possible interpretation draws on the view in the literature that consumers perceive government debt as part of their wealth (see Modigliani (1961) and Barro (1974) for discussions). According to this view, when consumers learn that public debt is higher than they expected, they interpret it as a positive wealth shock, leading them to increase consumption. A related interpretation is that households may hold somewhat optimistic beliefs about future fiscal adjustment. While higher public debt would typically imply future fiscal tightening, our evidence in Section III.C is consistent with households not fully internalizing this implication, which would attenuate the

[13] For the consumer spending analysis, we restrict the sample to respondents whose total spending during the 30 days preceding the survey exceeds 50,000 KRW (≈ USD 38). The results are similar when higher cutoffs are applied.
[14] As a robustness check, we estimate specifications (5)-(6) using limited information maximum likelihood (LIML) which is more robust to potentially weak instruments. The results (Appendix Figure 7) are quantitatively similar to 2SLS estimation.

negative income effect and allow consumption to increase. Another possible explanation for the increase in consumption is that households expect the government to generate more inflation to pay off the public debt, leading them to increase their spending immediately via intertemporal substitution. Results in Table 2 are consistent with this hypothesis: Treatment 1 raises expectations of future debt levels and inflation expectations.

To put the estimated elasticity into perspective, we can utilize previous research focused on the marginal propensity to consume (MPC) from financial wealth. These estimates vary considerably across studies and population groups. For example, Chodorow-Reich et al. (2021) estimate an MPC (at the quarterly frequency) of 3.2% for stock market wealth in the U.S., while the estimates in Poterba (2000) range from 1% to 2%. Using detailed Swedish tax data, Di Maggio et al. (2020) document that the MPC from stock market wealth is as low as 1% for the top third of the wealth distribution and as high as 6% for the bottom half of the wealth distribution. The average ratio of stock market valuation to quarterly personal expenditures in Sweden and the U.S. for 2000-2020 is approximately 8. The implied elasticity of consumer spending with respect to financial wealth is likely between $0.01\times8=0.08$ and $0.06\times8=0.48$. Thus, our estimated elasticity is in the upper end of the Swedish/American range. This suggests that Korean consumers appear to treat public debt as a typical financial asset.[15]

In terms of fiscal balances, neoclassical models generally predict that a lower fiscal deficit should stimulate consumption by releasing more resources for the private sector. This logic contrasts with the Keynesian effects of fiscal deficits as well as Ramey and Shapiro (1998), Galí et al. (2007) and others documenting that fiscal stimulus crowds in—rather than crowds out—private consumption.[16] HANK models predict that unfunded fiscal stimulus should increase private consumption.[17] While we find (Panel B, Figure 2) that exogenous changes in the long-term outlook

[15] For Korea, the literature finds wealth effects on consumption that are broadly consistent with evidence from other advanced economies. For example, Kim (2010) reports a marginal propensity to consume out of aggregate asset wealth of roughly 0.02. Together with evidence from Cho (2006, 2011), these findings suggest that wealth effects in Korea are comparable in magnitude to estimates reported for the U.S.

[16] Estimates of the fiscal multiplier for Korea are broadly consistent with findings for other advanced economies, with differences largely reflecting trade openness and identification strategy. Hur and Rhee (2020) find that anticipated ("news") government spending shocks generate multipliers below one, consistent with standard small open economy theory and comparable to estimates for other open economies. In contrast, using a news-based external instrument constructed from defense-contractor stock returns, Lee and Park (2021) report a five-year cumulative multiplier of approximately 1.3. Finally, Lee (2026) shows that fiscal effects in Korea are state-dependent, with larger multipliers during slack periods, mirroring the state-dependent patterns found in other countries.

[17] The magnitude of the response in HANK models depends on the funding structure of the fiscal stimulus. We asked households to consider how the government would finance a hypothetical spending program equal to 5% of GDP. The

for fiscal balances tend to raise consumer spending, the effects are not statistically significant. One conjecture is that Keynesian effects are offset by the respondents' view (Table 2) that a lower expected fiscal deficit accelerates economic growth (i.e., expansionary fiscal consolidations).

Because macroeconomic theories make additional predictions about which subgroups of the population should be more responsive to changes in fiscal variables, Figure 3 plots the estimated impulse responses for various sample splits.[18] Because the sample sizes are smaller, we have less statistical power and therefore our inferences are tentative. With this caveat in mind, we observed that older households—who have higher financial wealth and who are less likely to live until that time when the government may be forced to pay for its public debt—tend to have stronger responses to both expected public debt and fiscal balance. Hand-to-mouth (HTM) status (i.e., a respondent does not have financial resources to cover an unexpected expense equal to their one-month income) generates little variation in the estimated responses. Estimated impulse responses for males—who tend to be less risk averse—are similar to those of females. We also consider a split between "balanced-budget conservatives" (those who think that a hypothetical government spending program is mostly financed via taxes or cuts in existing government programs) and "fiscal profligates" (those who do not). Although the estimated responses to changes in expected public debt are comparable for these two groups, the estimated responses to expected fiscal balance diverge: an increase in expected fiscal balances results in reduced consumer spending for "balanced-budget conservatives" and increased spending for "fiscal profligates". Qualitatively, this pattern is inconsistent with HANK predictions.

In a series of robustness checks, we explore the sensitivity of these results to using alternatives frequencies or categories of consumer spending. We find that using weekly or fortnightly frequencies yields similar results, but the estimated impulse responses tend to be more volatile and imprecise (Appendix Figure 5). When we examine responses for specific types of consumption, we find that nondurable spending—either discretionary, non-committed (in the sense of Chetty and Szeidl 2007)—is responding to changes in expected public debt (Appendix Figure 6). In contrast, the extensive margin for spending on durable goods responds relatively weakly.

largest share of financing was assigned to taxes (31%) but they also assigned 14% share to seigniorage, 21% to more government debt, 18% to cuts in other government spending programs, and 16% to other sources (Appendix Figure 1). Given this composition, HANK models predict crowding in for private consumption.

[18] Results for additional sample splits are reported in Appendix Figure 4.

IV. Concluding Remarks

Fiscal policy is an area that remains full of controversy (Leeper 2010), particularly in the context of the causal effects of public debt and fiscal deficits on consumer spending specifically and private-sector activity more generally. Our objective is to bring new causal evidence into these debates. To this end, we run a randomized control trial to study how changes in expected public debt and fiscal balances (which are induced by information treatments about fiscal policy) affect not only beliefs about macroeconomic variables but also consumer spending for a representative sample of Koreans. We find that higher expected future public debt raises inflation expectations and stimulates consumer spending, which is consistent with households viewing public debt as net wealth. At the same time, a decline in expected future fiscal deficits raises expected economic growth (i.e., households expect expansionary effects from fiscal consolidations) but does not have a significant effect on consumer spending. Because debt and deficits are tightly related, popular macroeconomic models would struggle to explain these empirical patterns.

We see a number of avenues for future research. For example, it would be valuable to replicate our experiment in other countries or times to establish the external validity of our findings. Given the nature of our data, we focus on consumer spending but obviously other margins (e.g., labor supply, portfolio allocations, career choices) could be affected by the stance of public finances. In a similar spirit, data constraints forced us to concentrate on short-term responses while longer-term responses are important too. We also envision that future work should use this and similar evidence to discipline theoretical models at both the micro and macro levels.

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Table 1. Perceptions and (before-treatment) expectations for fiscal variables.

	Mean	Median	Interquartile range	St.Dev.
	(1)	(2)	(3)	(4)
Panel A. Perceptions				
Public debt to GDP ratio, %	57.8	50.0	80.0	48.7
Fiscal balance, % of GDP	-3.8	0.0	10.0	10.3
Government spending, % of GDP	36.1	30.0	40.0	31.3
Government revenues, % of GDP	32.3	20.0	40.0	29.8
Inflation, % per year	18.2	10.0	14.0	18.9
Panel B. 10-year-ahead expectations				
Public debt to GDP ratio, %	58.0	50.0	78.5	46.8
Fiscal balance, % of GDP	14.1	7.5	29.5	26.7
Government spending growth rate, % per year	37.6	25.0	55.0	41.2
Government revenues growth rate, % per year	27.6	15.2	45.7	38.9
Inflation, % per year	28.7	15.0	37.2	34.6
Growth rate of real GDP, % per year	23.4	10.0	33.1	34.8
Interest rate on government debt, % per year	23.1	10.0	30.2	29.1
Panel C. Demographics				
Age	44.1	44.0	14.0	10.0
Household income, KRW '000	10,863.4	5,000.0	5,000.0	18,765.9
Education, years	15.2	16.0	2.0	2.0
Household size	2.6	3.0	1.0	0.8
Number of co-resident children (≥1)	1.7	2.0	1.0	0.6
Panel D. Consumer spending (KRW '000)				
Credit/debit card spending (control group)				
Annual	12,813.5	8,645.4	11,745.2	22,234.7
Monthly	1,152.2	702.1	1,100.5	2,594.9
Weekly	306.1	158.6	282.2	1,121.7
Self-reported typical spending (survey)				
Monthly	1,686.6	1,076.0	1,455.0	2,347.0

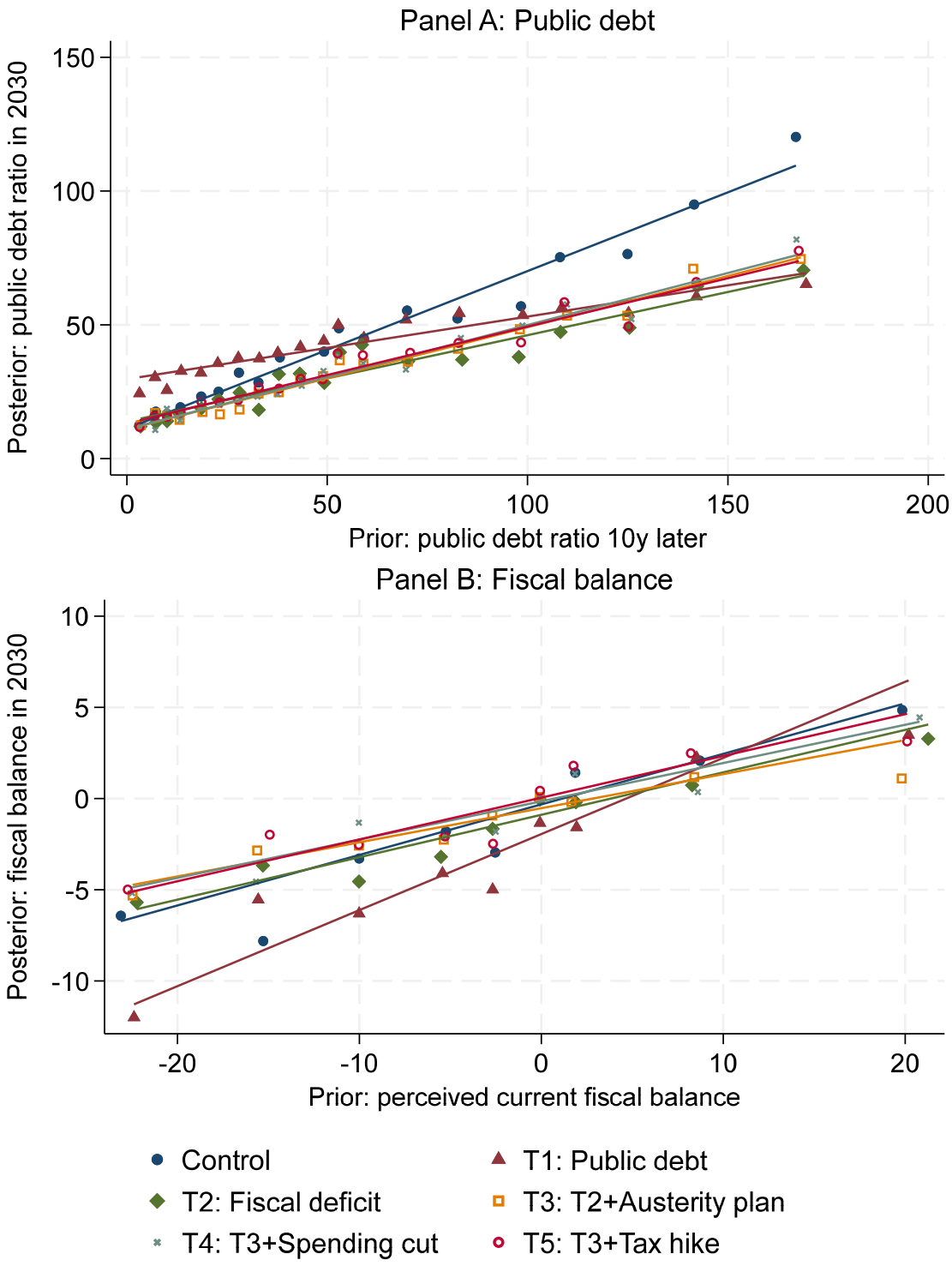
Notes: Means and standard deviations are computed using Huber weights from the first-stage regressions (5). Medians and IQRs are unweighted. The sample excludes responses reporting a current fiscal balance perception above 30% or below −30% of GDP. Household income refers to after-tax monthly income, winsorized at the 2.5% tails. Number of co-resident children (≥1) is the number of children living in the household, conditional on at least one co-resident child. Self-reported typical spending is calculated as the household's reported typical spending divided by the number of adults in the household (household size minus the number of children). Self-reported typical spending includes: utilities, food, clothing, footwear, personal care, gasoline, other regular transportation costs, medical care, travel, recreation, entertainment, education, childcare, furniture, jewelry, small appliances, and other small durable goods.

Table 2. Response of 10-year-ahead forecasts for fiscal and macroeconomic variables.

	Public debt, % of GDP	Fiscal balance, % of GDP	Interest rate on government debt, % per year	Government spending, % of GDP	Tax revenue, % of GDP	Growth rate of real GDP, % per year	Inflation, % per year
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
T1 (public debt)	8.962***	-1.592***	0.400***	-0.081	-0.233	0.049	0.564**
	(0.811)	(0.246)	(0.114)	(0.312)	(0.253)	(0.158)	(0.227)
T2 (fiscal balance [FB])	-7.269***	-0.593***	-0.035	-0.560*	-0.321	-0.515***	0.038
	(0.831)	(0.218)	(0.108)	(0.304)	(0.247)	(0.156)	(0.216)
T3 (FB & plan to reduce FB)	-7.770***	-0.016	-0.016	-0.583*	-0.396	-0.239	0.144
	(0.830)	(0.214)	(0.108)	(0.304)	(0.247)	(0.152)	(0.219)
T4 (FB & plan to reduce FB w/ gov. spending cuts)	-7.414***	0.190	0.089	-1.589***	-0.342	-0.199	-0.133
	(0.838)	(0.216)	(0.109)	(0.308)	(0.243)	(0.153)	(0.219)
T5 (FB & plan to reduce FB w/ tax hikes)	-7.112***	0.207	0.024	-0.944***	-0.021	-0.419***	-0.116
	(0.837)	(0.217)	(0.110)	(0.312)	(0.244)	(0.154)	(0.219)
Observations	9,858	9,383	8,500	9,168	8,888	8,875	9,636
R-squared	0.058	0.008	0.002	0.003	0.000	0.002	0.001

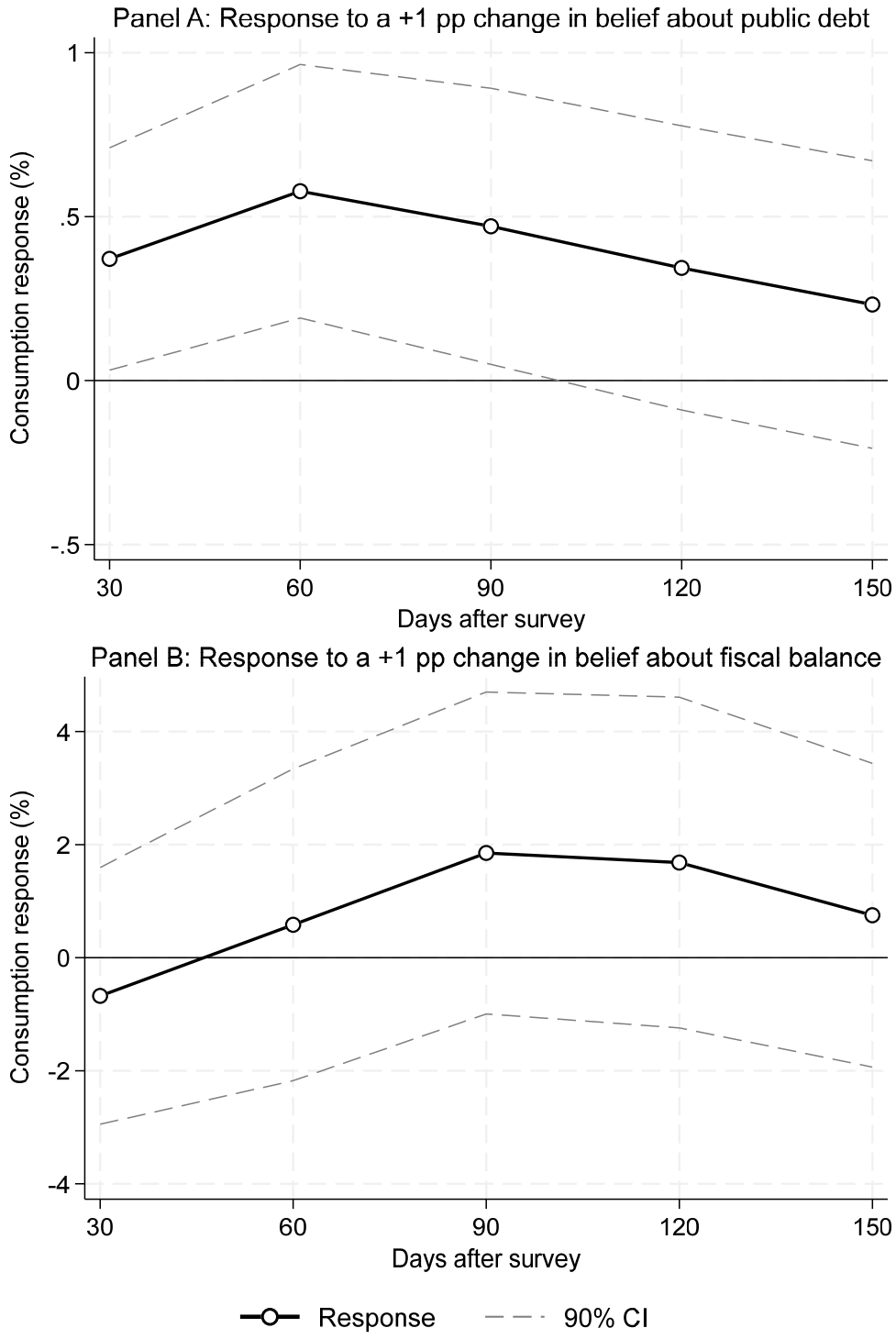
Notes: This table reports Huber-robust estimates of specification (4). The estimation sample does not include responses that fall into the top and bottom 5%. Robust standard errors are in parentheses. ***,**,* denote statistical significance at 1, 5 and 10 percent.

Figure 1. Priors vs Posteriors for Beliefs about Fiscal Variables.



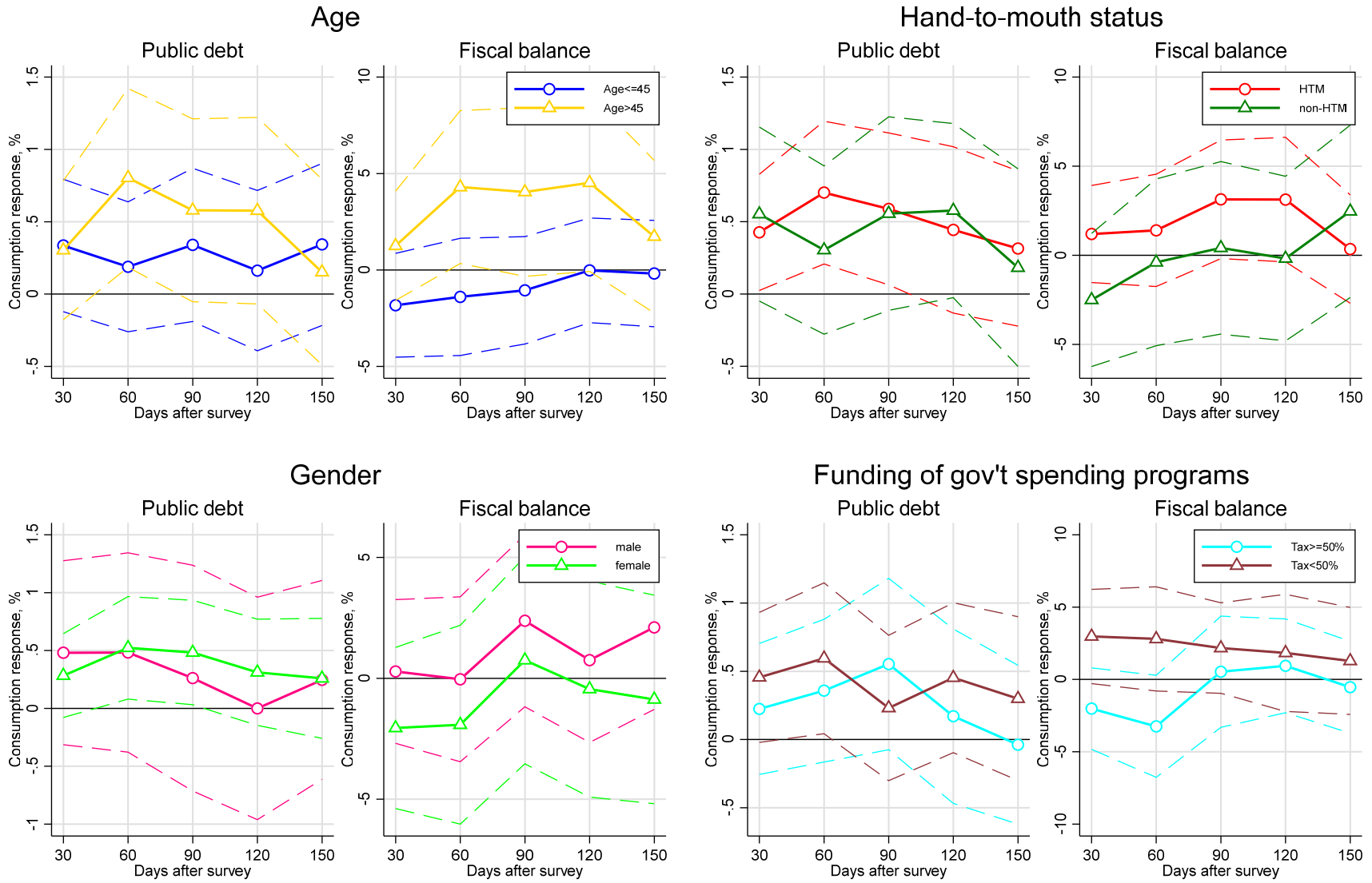
Note: Each panel plots a binscatter between respondents' prior beliefs and posterior beliefs about fiscal outcomes, by treatment group. The binscatters use Huber-robust weights to identify and downweigh outliers. Fitted lines are estimated separately by treatment group. Regression results are reported in Appendix Table 4.

Figure 2. Response of consumer spending to changes in beliefs about fiscal variables.



Notes: The figures plot estimated impulse response functions (IRFs) of consumption to exogenous changes in long-term expectations for public debt and fiscal balance. IRFs are estimated using instrumental-variable local projections. The first stage regressions are given by equation (5) and reported in columns (1) and (2) of Appendix Table 4. The second stage regressions are given by specification (6).

Figure 3. Response of consumer spending to changes in beliefs about fiscal variables for selected subsamples.



Notes: The figure reports estimated impulse responses for selected subsamples. Hand-to-mouth (HTM) status is based on the survey question about whether a respondent has financial resources to cover an unexpected payment equal to one month of his/her after-tax income. Funding of government spending programs is based on the survey question about how the government would finance a hypothetical spending program (5% of GDP). A respondent falls into "Tax>=50%" category if he/she says that the funding shares of taxes plus cuts in other government spending programs account for more than 50% of the hypothetical program. Dashed lines show 90% confidence intervals. See notes to Figure 2 for more details.

ONLINE APPENDIX

Appendix Table 1. Descriptive statistics: Demographics.

	By treatment group						Full sample	National average
	Control (T1)	T2	T3	T4	T5	T6		
Female	0.53	0.55	0.51	0.52	0.54	0.52	0.53	0.50
Hand-to-mouth status	0.35	0.37	0.35	0.34	0.35	0.33	0.35	-
Age	43.86	43.65	44.13	43.91	43.81	44.02	43.90	43.85
	(9.91)	(9.89)	(10.18)	(10.23)	(10.19)	(10.05)	(10.07)	
Education (years)	15.15	15.15	15.15	15.13	15.17	15.18	15.15	12.5
	(2.01)	(2.05)	(1.95)	(1.90)	(1.96)	(1.97)	(1.97)	
Household income (KRW '000), median	5000	5000	5000	5000	5000	5000	5000	3414
Employed (age 15-64)	0.76	0.76	0.76	0.74	0.73	0.75	0.75	0.69
Household size	2.52	2.53	2.60	2.55	2.61	2.56	2.56	2.3
	(0.85)	(0.84)	(0.83)	(0.88)	(0.81)	(0.84)	(0.84)	
Number of co-resident children (≥1)	1.67	1.70	1.66	1.70	1.71	1.71	1.69	1.50
	(0.63)	(0.60)	(0.62)	(0.63)	(0.64)	(0.63)	(0.62)	
Obs. (participants)	1,785	1,779	1,756	1,776	1,724	1,669	10,489	-

Note: All moments (including the number of observations) are computed using Huber weights from the first-stage regression (standard deviations in parentheses). Hand-to-mouth status is a dummy variable equal to 1 if the respondent answered "No" or "Prefer not to answer" to the question, "Do you have enough resources to cover an unexpected expenditure equal to one month of your income?" Household income refers to after-tax monthly income, winsorized at the 2.5% tails and reports the medians instead of means (the national average is also based on the median). Number of co-resident children (≥1) reports the average number of children living in the household, conditional on at least one co-resident child, and the national average is calculated using the same conditioning. The moments are based on the first (July 2023) wave of the survey.

Appendix Table 2. Balance Tests Using Demographic Characteristics.

	T1 vs T2 (1)	T1 vs T3 (2)	T1 vs T4 (3)	T1 vs T5 (4)	T1 vs T6 (5)
Female	0.015	-0.029*	-0.014	-0.005	-0.013
	(0.017)	(0.017)	(0.017)	(0.018)	(0.018)
Age	-0.001	0.000	-0.000	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Number of children	0.012	0.007	0.003	0.013	0.019*
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Household size	-0.002	0.025**	0.009	0.028**	0.002
	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)
Education	-0.001	-0.001	-0.002	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Employed	0.006	-0.002	-0.025	-0.031	-0.027
	(0.021)	(0.021)	(0.020)	(0.020)	(0.021)
Log income	0.003	-0.006	0.006	-0.004	0.007
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Seoul metropolitan area	0.000	-0.010	-0.016	0.003	0.006
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Observations	3,564	3,541	3,561	3,509	3,454
R-squared	0.001	0.003	0.001	0.005	0.002
Joint F-test	0.365	1.487	0.610	2.022	1.034
P-value	0.939	0.156	0.770	0.0402	0.407

Notes: Each column compares the control group (T1) with one other treatment group using a separate linear probability regression. The dependent variable equals one if in treatment group $T_k$and zero if in T1. All covariates are baseline demographic characteristics. Robust standard errors are shown in parentheses. The reported joint F-test is for the null that all demographic coefficients are jointly zero. ∗, ∗∗, and ∗∗∗indicate significance at the 10%, 5%, and 1% levels. Robust standard errors are in parentheses. **,* denote statistical significance at 5 and 10 percent.

Appendix Table 3. Prediction of group assignment.

	T1	T2	T3	T4	T5
	(1)	(2)	(3)	(4)	(5)
Female	0.057	-0.118*	-0.058	-0.018	-0.049
	(0.070)	(0.070)	(0.069)	(0.070)	(0.071)
Age	-0.003	0.001	-0.001	-0.003	-0.001
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Number of children	0.045	0.030	0.011	0.055	0.075*
	(0.043)	(0.043)	(0.044)	(0.044)	(0.044)
Household size	-0.007	0.099**	0.037	0.107**	0.006
	(0.047)	(0.048)	(0.049)	(0.047)	(0.049)
Education	-0.003	-0.004	-0.008	0.006	0.004
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)
Employed	0.027	-0.006	-0.097	-0.130	-0.107
	(0.083)	(0.083)	(0.082)	(0.082)	(0.083)
Log income	0.014	-0.027	0.024	-0.016	0.031
	(0.030)	(0.030)	(0.030)	(0.031)	(0.032)
Seoul metropolitan area	0.003	-0.038	-0.066	0.017	0.023
	(0.069)	(0.069)	(0.068)	(0.069)	(0.070)
Observations			10,489		
Pseudo R^2			0.00118		
Wald χ^2			44.26		
p-value			0.297		

Notes: The table reports coefficients from a multinomial logit regression of treatment assignment on baseline demographic characteristics. The dependent variable is the treatment group indicator, with the control group (T1) as the base outcome. Reported coefficients represent log-odds relative to T1. Robust standard errors are shown in parentheses. McFadden's pseudo-R^2 is reported as a measure of overall model fit. The Wald χ^2test evaluates the joint null hypothesis that all demographic characteristics are jointly unrelated to treatment assignment. Robust standard errors are in parentheses. **,* denote statistical significance at 5 and 10 percent.

Appendix Table 4. Treatment effects on posterior beliefs.

	Posterior beliefs			
	Immediately after treatments		Follow-up wave	
	Public debt	Fiscal balance	Public debt	Fiscal balance
	(1)	(2)	(3)	(4)
$Treatment\ T1$	18.295***	-2.149***	4.582	0.063
	(1.284)	(0.445)	(3.644)	(1.336)
$Treatment\ T2$	2.620**	-1.064***	5.223	-1.599
	(1.322)	(0.395)	(3.555)	(1.287)
$Treatment\ T3$	-0.160	-0.559	6.514*	0.366
	(1.329)	(0.384)	(3.615)	(1.298)
$Treatment\ T4$	0.214	-0.059	6.353*	-0.097
	(1.322)	(0.394)	(3.677)	(1.275)
$Treatment\ T5$	2.246*	-0.140	5.543	0.294
	(1.351)	(0.391)	(3.637)	(1.286)
$Prior\ Public\ Debt$	0.573***	-0.013***	0.402***	-0.024**
	(0.019)	(0.004)	(0.035)	(0.012)
$Prior\ Debt \times T1$	-0.363***	0.010	-0.019	-0.015
	(0.023)	(0.006)	(0.051)	(0.017)
$Prior\ Debt \times T2$	-0.261***	0.008	-0.053	0.009
	(0.027)	(0.006)	(0.052)	(0.016)
$Prior\ Debt \times T3$	-0.206***	0.006	-0.061	0.004
	(0.027)	(0.005)	(0.050)	(0.016)
$Prior\ Debt \times T4$	-0.196***	0.004	-0.101**	0.002
	(0.027)	(0.005)	(0.050)	(0.016)
$Prior\ Debt \times T5$	-0.229***	0.009	-0.049	-0.006
	(0.028)	(0.005)	(0.052)	(0.017)
$Prior\ Fiscal\ Balance$	-0.155**	0.267***	-0.245	0.151**
	(0.075)	(0.022)	(0.167)	(0.068)
$Prior\ Balance \times T1$	-0.169*	0.148***	0.039	0.023
	(0.095)	(0.035)	(0.249)	(0.095)
$Prior\ Balance \times T2$	0.125	-0.040	-0.235	-0.067
	(0.102)	(0.031)	(0.236)	(0.084)
$Prior\ Balance \times T3$	0.065	-0.087***	0.444*	0.056
	(0.103)	(0.030)	(0.229)	(0.086)
$Prior\ Balance \times T4$	0.136	-0.062**	-0.254	0.115
	(0.101)	(0.030)	(0.232)	(0.088)
$Prior\ Balance \times T5$	0.089	-0.041	0.209	0.078
	(0.103)	(0.030)	(0.240)	(0.096)
Observations	9,418	9,418	6,054	6,054
R-squared	0.313	0.117	0.122	0.035
F-stat (treatments & interaction)	42.51	10.92	1.448	0.834
p-value (treatments & interaction)	<0.001	<0.001	0.116	0.640

Notes: demographic controls are included but not reported. Estimates are based on Huber robust regression. Robust standard errors are in parentheses. **,**,* denote statistical significance at 1, 5 and 10 percent.

Appendix Table 5. Revision of beliefs about fiscal and macroeconomic variables with an extended list of information treatments.

	Revision of beliefs about:						
	Public debt	Fiscal balance	Interest rate on government bond	Growth rate of government spending	Growth rate of tax revenues	Growth rate of real GDP	Inflation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treatment\ T1\ (Debt)$	0.232	-2.180***	1.284***	-0.591	1.096	0.057	0.848**
	(0.885)	(0.252)	(0.232)	(0.916)	(0.792)	(0.532)	(0.402)
$Treatment\ T2\ (Fiscal\ balance)$	-7.923***	-0.378*	-0.487**	-1.430	-1.194	-1.196**	-0.171
	(0.908)	(0.224)	(0.226)	(0.915)	(0.803)	(0.529)	(0.413)
$Treatment\ T3\ (Fiscal\ balance\ \&\ Gov't\ plan)$	-9.604***	0.225	-0.983***	-2.830***	-1.869**	-1.537***	-0.003
	(0.894)	(0.222)	(0.228)	(0.903)	(0.802)	(0.532)	(0.405)
$Treatment\ T4\ (Fiscal\ balance\ \&\ Gov't\ cut\ spending)$	-7.996***	0.419*	-0.349	-3.606***	-0.532	-1.246**	-0.475
	(0.902)	(0.226)	(0.231)	(0.926)	(0.811)	(0.540)	(0.421)
$Treatment\ T5\ (Fiscal\ balance\ \&\ Gov't\ raise\ taxes)$	-7.918***	0.428*	-0.244	-1.921**	0.258	-1.162**	-0.908**
	(0.907)	(0.223)	(0.225)	(0.926)	(0.804)	(0.534)	(0.406)
$\Delta_D\ (Actual\ debt - Prior\ for\ debt)$	0.198***	0.014***	0.001	0.214***	0.091***	0.007	0.015**
	(0.015)	(0.003)	(0.003)	(0.015)	(0.012)	(0.007)	(0.006)
$T1 \times \Delta_D$	0.394***	-0.007	0.013***	-0.029	-0.010	0.007	0.001
	(0.022)	(0.005)	(0.004)	(0.021)	(0.017)	(0.010)	(0.008)
$T2 \times \Delta_D$	0.132***	-0.003	-0.004	-0.025	0.007	0.023**	0.000
	(0.024)	(0.004)	(0.004)	(0.021)	(0.018)	(0.011)	(0.008)
$T3 \times \Delta_D$	0.131***	-0.008*	0.001	0.055**	0.007	-0.008	-0.007
	(0.023)	(0.004)	(0.004)	(0.022)	(0.018)	(0.010)	(0.008)
$T4 \times \Delta_D$	0.090***	-0.006	-0.002	0.034	0.007	-0.002	-0.002
	(0.023)	(0.004)	(0.004)	(0.022)	(0.018)	(0.011)	(0.008)
$T5 \times \Delta_D$	0.140***	-0.013***	-0.001	-0.031	-0.034*	0.003	-0.006
	(0.024)	(0.004)	(0.004)	(0.022)	(0.018)	(0.010)	(0.008)
$\Delta_B\ (Actual\ fiscal\ balance - Prior\ for\ fiscal\ balance)$	0.066	0.722***	0.036**	-0.221***	0.066	0.009	0.081***
	(0.066)	(0.019)	(0.016)	(0.066)	(0.060)	(0.036)	(0.028)
$T1 \times \Delta_B$	0.174*	-0.135***	-0.033	0.078	0.050	0.031	0.026
	(0.091)	(0.030)	(0.023)	(0.098)	(0.085)	(0.055)	(0.042)
$T2 \times \Delta_B$	-0.149	0.058**	-0.060***	0.404***	0.224***	0.073	-0.038
	(0.099)	(0.026)	(0.023)	(0.095)	(0.086)	(0.054)	(0.041)
$T3 \times \Delta_B$	0.021	0.102***	-0.016	0.405***	-0.074	0.049	-0.053
	(0.096)	(0.025)	(0.023)	(0.093)	(0.085)	(0.053)	(0.041)
$T4 \times \Delta_B$	0.007	0.082***	-0.023	0.150	0.147*	0.061	-0.021
	(0.095)	(0.026)	(0.022)	(0.097)	(0.085)	(0.054)	(0.042)
$T5 \times \Delta_B$	-0.011	0.050*	-0.017	0.290***	0.123	0.097*	-0.035
	(0.097)	(0.026)	(0.022)	(0.095)	(0.085)	(0.054)	(0.041)
Observations	9,901	10,030	8,389	10,123	10,045	9,399	8,964
R-squared	0.250	0.533	0.017	0.114	0.042	0.026	0.014

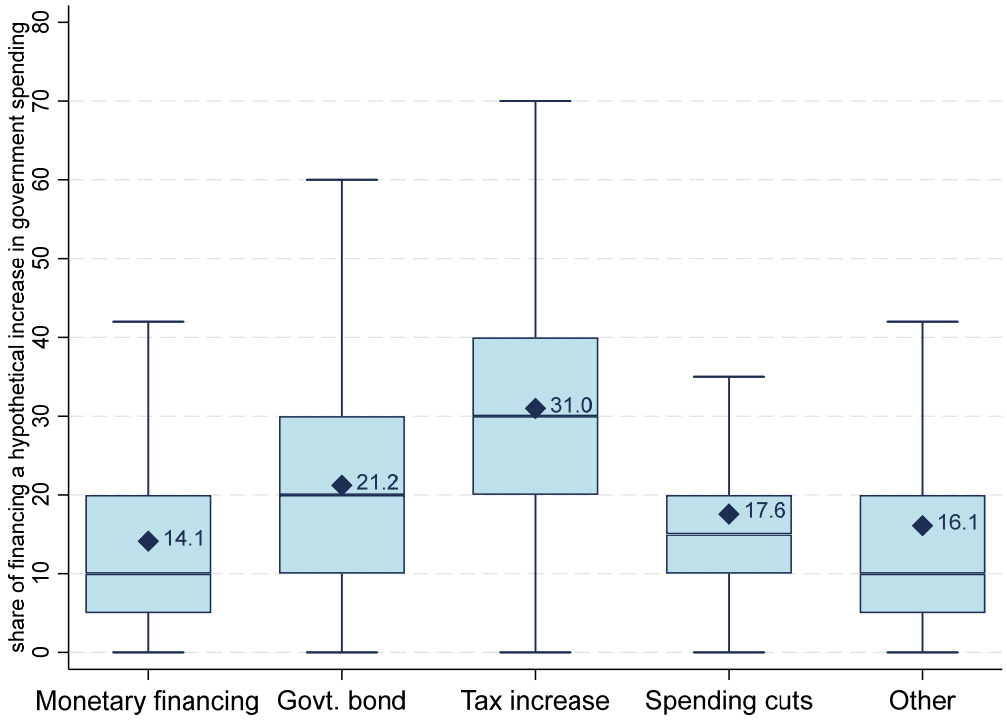
Notes: to complement results reported in Table 2, this tables estimates the following specification $E_i^{posterior} y - E_i^{prior} y = b_0 + b_1(x - x_i^{prior}) + \sum_j \mathbb{I}(i \in Treatment\ j) \times [\psi_j(x - x_i^{prior}) + \xi_j] + error$ where y denotes macroeconomic variables, x denotes actual values for a given fiscal variable, and x^{prior} is the prior belief about this fiscal variable. This specification effectively relates revisions in beliefs for a macroeconomic variable to the surprise in terms of the fiscal variable.

Appendix Table 6. Monthly Per-Person Spending by Category.

Category	Monthly Average (KRW)	Share (%)
Groceries	106,165	9.75
Dining	82,054	7.53
Coffee & desserts	22,785	2.09
Convenient store	25,952	2.38
Living	28,551	2.62
Shopping	213,444	19.59
Fashion & beauty	25,592	2.35
Car & transportation	103,868	9.54
Phone	30,703	2.82
Medical & health	81,699	7.50
Education	47,232	4.34
Insurance	54,213	4.98
Culture & hobbies	15,229	1.40
Leisure & sports	10,059	0.92
Travel	32,953	3.03
Pets	4,914	0.45
Others	212	0.02
Uncategorized	203,672	18.70
Total	1,089,297	100.00

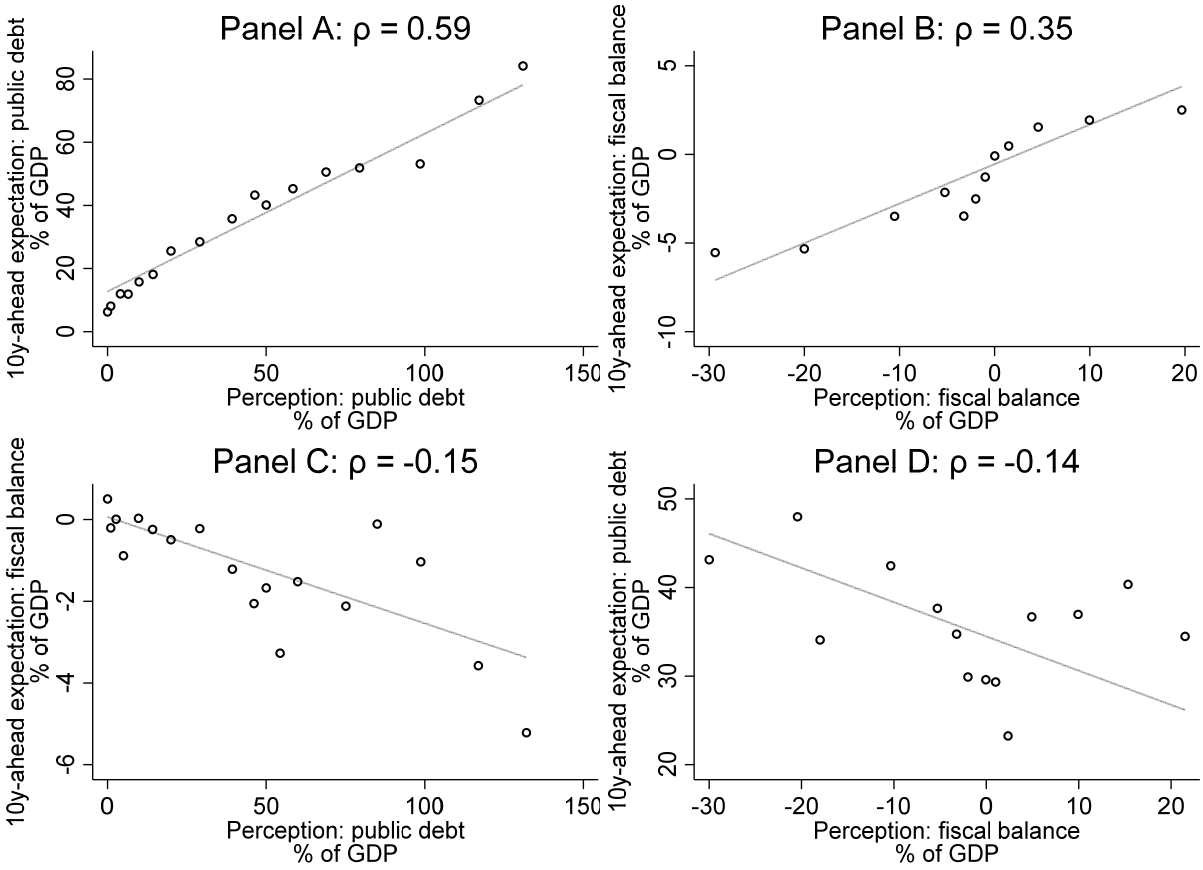
Note: This table reports average monthly per-person spending by category based on transaction-level data. The sample consists of 11,262 individuals who participated in our online survey. Spending categories are constructed from merchant-level classifications in the raw data. “Uncategorized” includes transactions that could not be reliably mapped to predefined categories. Shares are calculated as the percentage of total monthly spending.

Appendix Figure 1. Distribution of Financing Sources of a Hypothetical Government Spending Program.



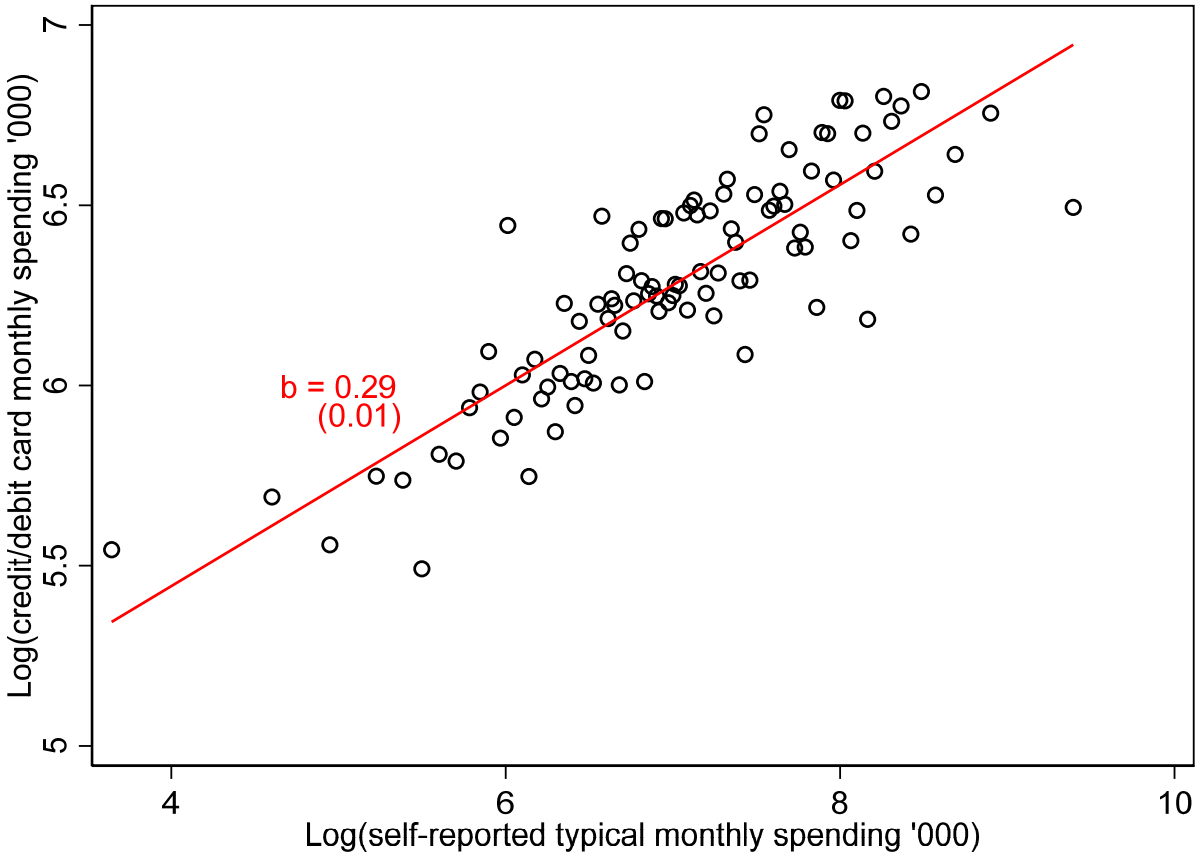
Note: The box plot displays the distribution of individual responses to "*Suppose the government increases spending by 100 trillion KRW (approximately 5% of GDP). What combination of financing measures do you think the government will use over time to cover the additional cost?"* Respondents entered percentage values (summing to 100%) for each of the five financing sources: (i) monetary financing, (ii) new government bond issuance, (iii) tax increases, (iv) other spending cuts, and (v) other measures (e.g., privatization of state assets, administrative actions, or compulsory collections).

Appendix Figure 2. Perceptions and expectations of public debt and fiscal balance.



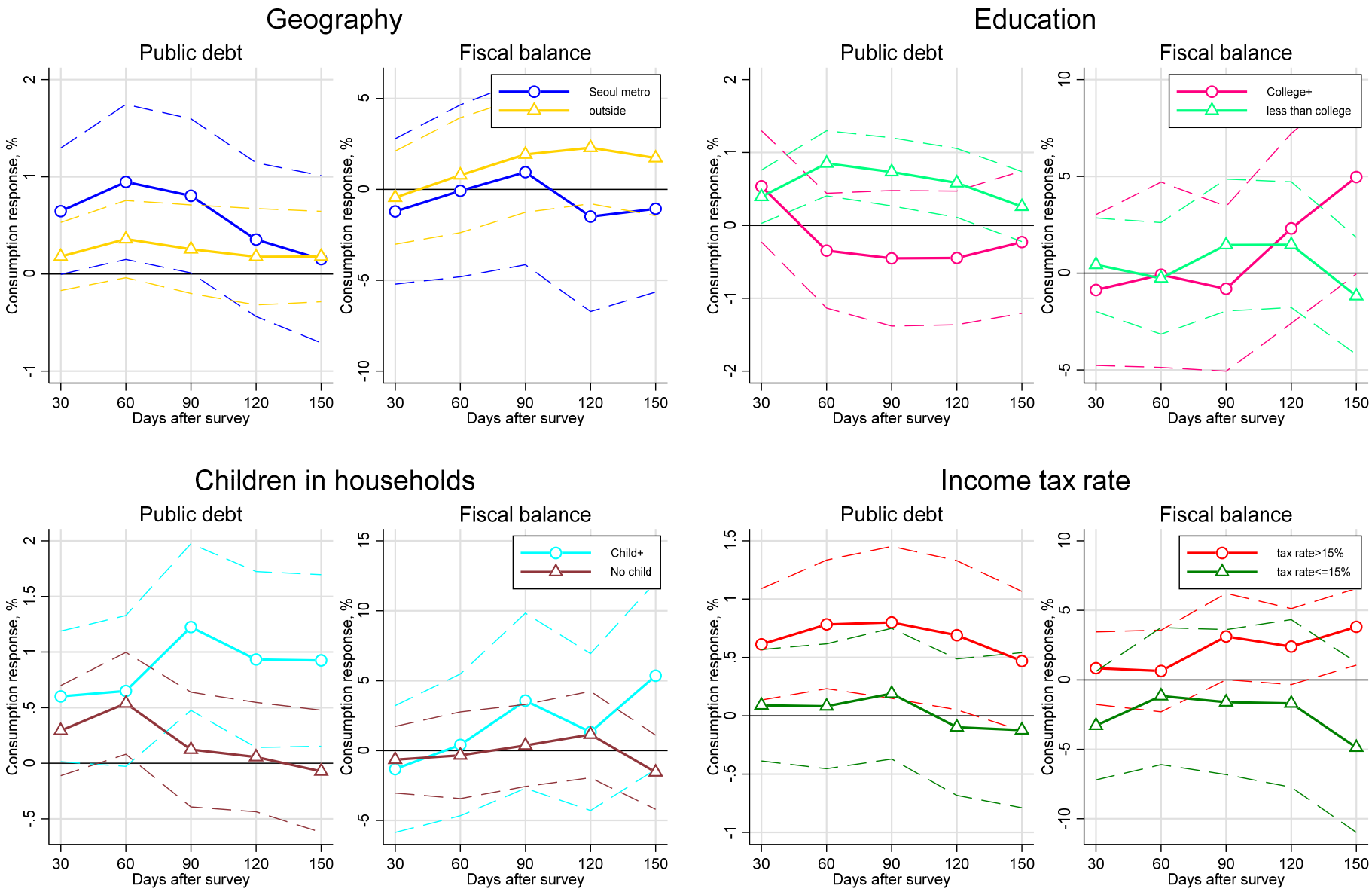
Notes: each panel reports binscatters for perceptions and long-term expectations for fiscal variables.

Appendix Figure 3. Self-reported spending vs. credit/debit card spending.



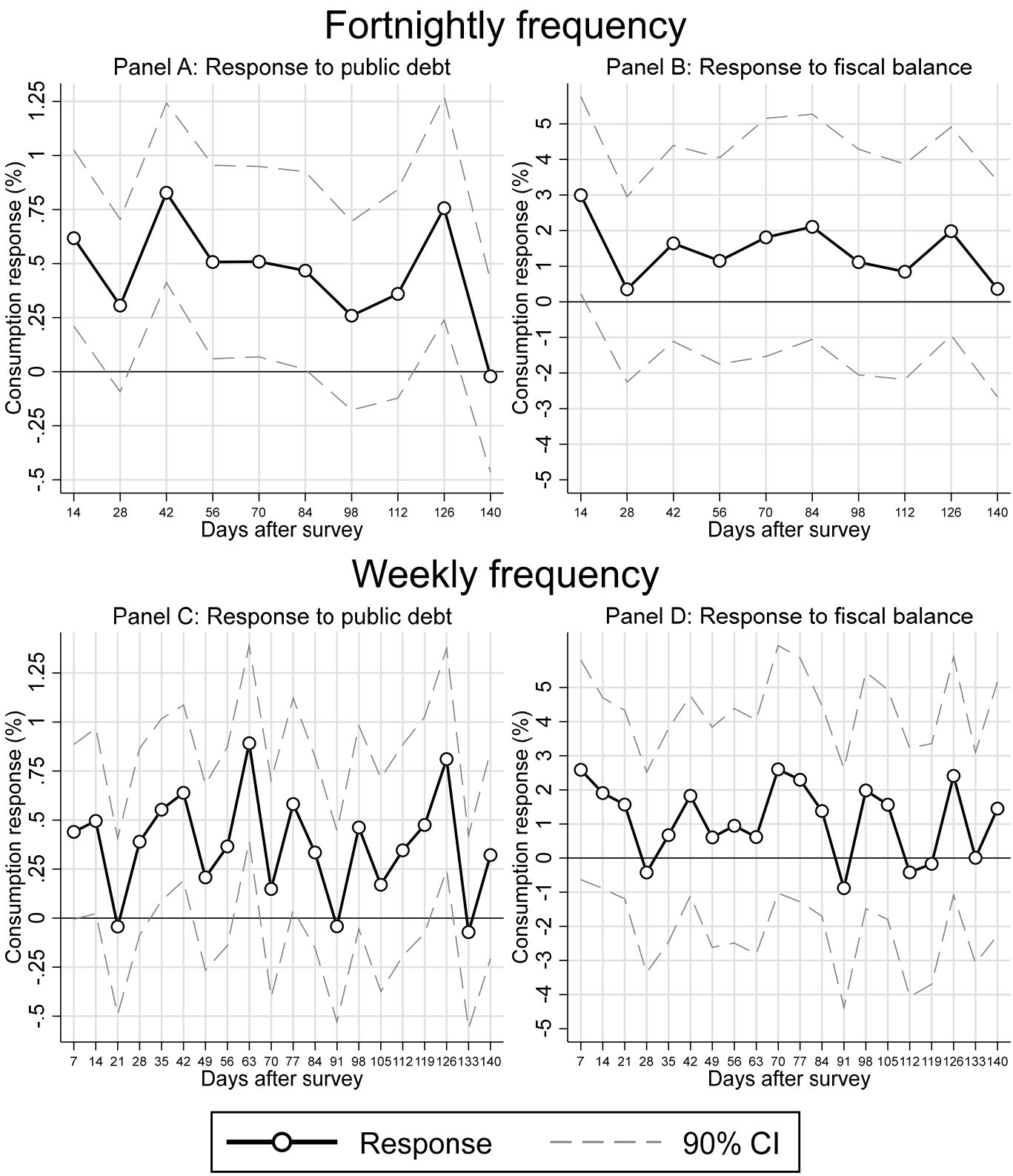
Notes: Self-reported typical spending (survey) includes: utilities, food, clothing, footwear, personal care, gasoline, other regular transportation costs, medical care, travel, recreation, entertainment, education, child care, furniture, jewelry, small appliances, and other small durable goods.

Appendix Figure 4. Response of consumer spending to changes in beliefs about fiscal variables for additional subsamples.



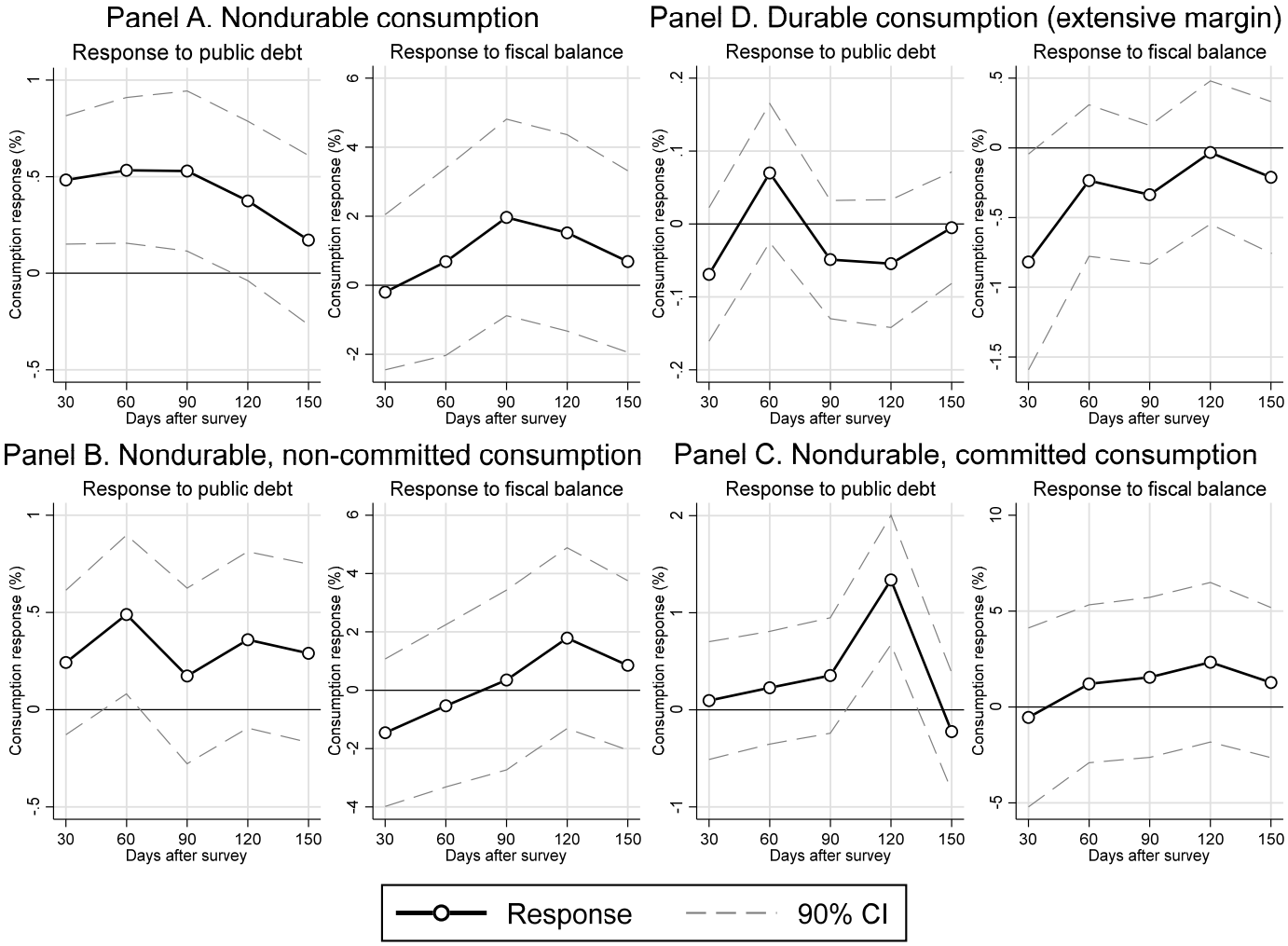
Notes: The figure reports estimated impulse responses for selected subsamples. Dashed lines show 90% confidence intervals. See notes to Figure 2 for more details.

Appendix Figure 5. Response of consumption measured at fortnightly and weekly frequencies.



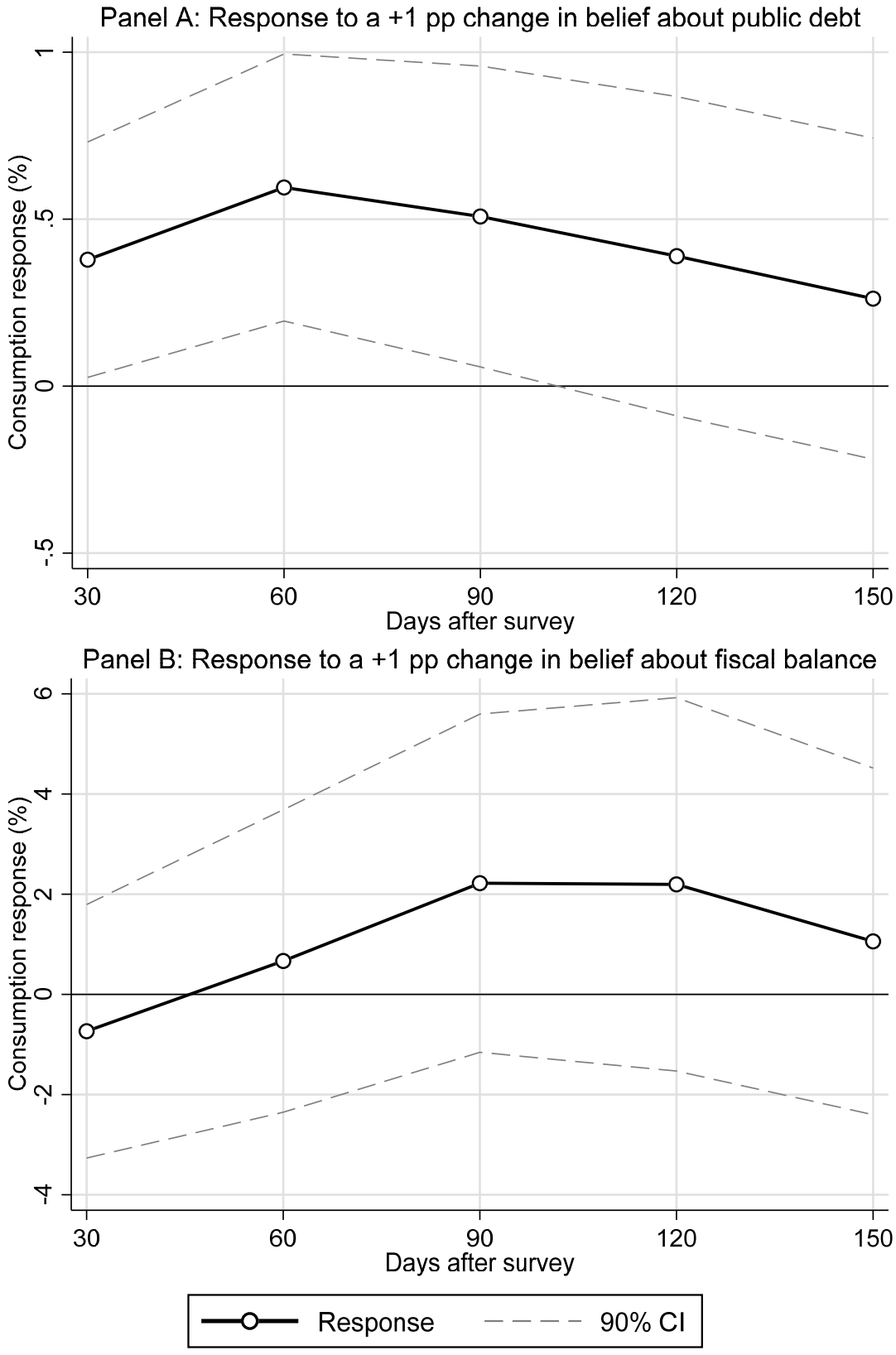
Notes: see notes for Figure 2.

Appendix Figure 6. Response of various consumption to changes in expectations for fiscal variables.



Notes: this figure reproduces Figure 2 for alternative measures of consumer spending. Transaction categories are assigned by Embrain based on vendor information. We construct two classifications of spending: (i) committed versus non-committed consumption, and (ii) durable versus non-durable spending. Committed consumption includes transactions categorized as "insurance", "phone", "medical/health", "education", and "living" (e.g., utility bills). These expenditures are typically recurring or contract-based and difficult to adjust in the short run. Because we do not observe detailed contractual information, this measure should be interpreted as a lower bound on committed spending: additional committed items may appear in other or uncategorized categories. Separately, we define durable spending as high-value purchases (exceeding 1,000,000 KRW, approximately 750 USD) within the categories "shopping", "supermarket", "car/transportation", and "fashion/beauty". Since we do not observe detailed shopping baskets, transaction size serves as a proxy for durable goods acquisition and may include some non-durable items. For this reason, our analysis focuses primarily on the extensive margin (whether any durable purchase occurs within a window) rather than the spending amount, which may reflect mixed baskets.

Appendix Figure 7. Response of consumer spending to changes in beliefs about fiscal variables (LIML).



Note: the figure reports limited-information maximum likelihood (LIML) estimates for consumer spending responses to exogenous changes in expected public debt and fiscal balance. See notes to Figure 2 for more details.

Questionnaire

Main wave

SQ1. Please indicate your biological sex.
1) Male 2) Female

SQ2. Please indicate your year of birth.
age: ___(calculate based on year of birth)

SQ3. Where do you currently live?
[Choose a metropolitan city/province on the map]

SQ3-1. Please indicate the postal code of your residence.
[Choose postal code]

;SHOW THIS TEXT WITH X1:
This survey is about your household's finances and opinions about the economy. As with any of our surveys, the information you provide is confidential and is only shared in an aggregate (not individual) level.
Please tell us about yourself…

Q1. Over the last three months on average, how much did your household spend (**per month**) on goods and services in total and for each of the individual components listed below?

Please enter a number between 0 and 1,000,000 for each category. The sum of the expenditures for the individual categories should add up to the total amount.

[RANGE FOR EACH ITEM BELOW: 0-1,000,000 ONE DECIMAL] **Total monthly spending**
Debt payments (mortgages, auto loans, student loans, etc.) _____ ten thousand Won
Housing (including rent, maintenance and home owner/renter insurance, housekeeping and cleaning service, but *not* including mortgage payments) _____ ten thousand Won
Utilities (including water, sewer, electricity, gas, heating oil, phone, cable, internet) _____ ten thousand Won
Food (including groceries, dining out, take-out food, and beverages) _____ ten thousand Won
Clothing, footwear, and personal care _____ ten thousand Won
Gasoline _____ ten thousand Won
Other regular transportation costs (including public transportation fares and car maintenance) _____ ten thousand Won
Medical care (including health insurance, out-of-pocket medical bills and prescription drugs) _____ ten thousand Won
Travel, recreation, and entertainment _____ ten thousand Won
Education and child care _____ ten thousand Won
Furniture, jewelry, small appliances, and other small durable goods _____ ten thousand Won
Other (including gifts, child support or alimony, charitable giving, and other miscellaneous) _____ ten thousand Won
Total [TOTAL ANSWERS FROM ABOVE] _____

Q2-1. Please tell us about plans for your household's spending over the next 12 months. Please put your response as percent change relative to your current level of spending.

[display if responses from Q1>0]
[display responses from Q1 together]
[RANGE FOR EACH ITEM BELOW: -100-100 ONE DECIMAL]
% Changes in total monthly spending
Debt payments (mortgages, auto loans, student loans, etc.) _____ %
Housing (including rent, maintenance and home owner/renter insurance, housekeeping and cleaning service, but *not* including mortgage payments) _____ %
Utilities (including water, sewer, electricity, gas, heating oil, phone, cable, internet) _____ %
Food (including groceries, dining out, take-out food, and beverages) _____ %
Clothing, footwear, and personal care _____ %
Gasoline _____ %
Other regular transportation costs (including public transportation fares and car maintenance) _____ %
Medical care (including health insurance, out-of-pocket medical bills and prescription drugs) _____ %

Travel, recreation, and entertainment _____ %
Education and child care _____ %
Furniture, jewelry, small appliances and other small durable goods _____ %
Other (including gifts, child support or alimony, charitable giving, and other miscellaneous) _____ %

Q2-2. Please tell us about plans for your household's spending over the next 12 months. If you expect changes in future spending even though you chose 0 won in the previous question, *Please enter a number between 0 and 1,000,000.*

[display if responses from Q1=0]
[RANGE FOR EACH ITEM BELOW: 0-1,000,000 ONE DECIMAL]
Debt payments (mortgages, auto loans, student loans, etc.) _____ ten thousand Won
Housing (including rent, maintenance and home owner/renter insurance, housekeeping and cleaning service, but *not* including mortgage payments) _____ ten thousand Won
Utilities (including water, sewer, electricity, gas, heating oil, phone, cable, internet) _____ ten thousand Won
Food (including groceries, dining out, take-out food, and beverages) _____ ten thousand Won
Clothing, footwear, and personal care _____ ten thousand Won
Gasoline _____ ten thousand Won
Other regular transportation costs (including public transportation fares and car maintenance) _____ ten thousand Won
Medical care (including health insurance, out-of-pocket medical bills and prescription drugs) _____ ten thousand Won
Travel, recreation, and entertainment _____ ten thousand Won
Education and child care _____ ten thousand Won
Furniture, jewelry, small appliances, and other small durable goods _____ ten thousand Won
Other (including gifts, child support or alimony, charitable giving, and other miscellaneous) _____ ten thousand Won

Q3. Could you recall how much you paid for the following items when you bought them last time?

Item	Price		
Rice	_____$/5kg	[] Do not remember	[] Do not buy
Gasoline	_____$/litter	[] Do not remember	[] Do not buy
Pork belly	_____$/600g	[] Do not remember	[] Do not buy

Q4. Suppose that you had to make an unexpected payment equal to one month of your after-tax income, would you have sufficient financial resources (access to credit, savings, loans from relatives or friends, etc.) to pay for the entire amount?
() Yes
() No
() Don't know/prefer not to answer

Q5. Does your household have total financial investments (excluding housing) worth more than one month of combined household income?
() Yes
() No

;ASK IF: Q5=YES
Q5-1. What percent of your financial wealth (excluding housing) do you invest in the following categories? Put "0" if you do not invest in a given category.
;[RANGE FOR EACH ITEM BELOW: 0-100, ONE DECIMAL] **Wealth Investment Allotment**
Checking and Savings Account, Certificate of deposits _____percent
Cash _____percent
Korean Bonds _____percent
Korean Stocks _____percent
Foreign Stocks and Bonds _____percent
Gold and precious metals _____percent
Bitcoin and other cryptocurrencies _____percent
Other _____percent
% Total [TOTAL ANSWERS FROM ABOVE – MUST SUM TO 100%] _____

Q5-2. What share of income do you usually save?
I usually save ____% of my income.
[RANGE: 0-100]

Q6. Over the last 6 months, did you buy a new home, car, or other major big-ticket item (fridge, TV, furniture, etc.)?
() Yes
() No

;ASK IF: Q6=YES
;RANDOMIZE
Q6-1. Which of the following did you purchase in the last 6 months? Please select all that apply.
[] A house/apartment
[] A car or other vehicle
[] A large home appliance or electronics
[] None of the above >EXCLUSIVE >ANCHOR >SKIP TO TEXT BEFORE Q11

;ASK IF: Q6-1=YES
;ONLY SHOW RESPONSES SELECTED IN Q6-1 IN SAME RANDOM ORDER
Q6-2. How much did you spend on the following?
A house/apartment _____ ten thousand won [RANGE: 0-10,000,000 ONE DECIMAL]
A car or other vehicle _____ ten thousand won [RANGE: 0-100,000 ONE DECIMAL]
A large home appliance or electronics _____ ten thousand won [RANGE: 0-10,000 ONE DECIMAL]

Q7. Do you currently plan to buy a new home, car, or other major big-ticket item (fridge, TV, furniture, etc.) in the next 12 months?
() Yes
() No

;ASK IF: Q7=YES
;RANDOMIZE
Q7-1. Which of the following do you plan to purchase in the next 12 months? Please select all that apply.
[] A house/apartment
[] A car or other vehicle
[] A large home appliance or electronics
[] None of the above >EXCLUSIVE >ANCHOR, SKIP TO TEXT BEFORE Q12

;ASK IF: Q7-1=YES
;ONLY SHOW RESPONSES SELECTED IN Q7-1 IN SAME RANDOM ORDER
Q7-2. How much do you plan to spend on the following?
A house/apartment _____ ten thousand Won [RANGE: 0-10,000,000 ONE DECIMAL]
A car or other vehicle _____ ten thousand Won [RANGE: 0-1,000,000 ONE DECIMAL]
A large home appliance or electronics _____ ten thousand Won [RANGE: 0-100,000,000 ONE DECIMAL]

We would like to ask you some questions about the overall economy and in particular about the rate of inflation/deflation (Note: inflation is the percentage rise in overall prices in the economy, most commonly measured by the Consumer Price Index and deflation corresponds to when prices are falling).

Q8. Over the **last** 12 months, what do you think the overall rate of inflation/deflation has been in the economy? (Range: -100~100)
Answer: The rate of inflation/deflation was _____ percent over the last 12 months.

Q8-1. For each category, if you think there was inflation, please enter a positive number. If you think there was deflation, please enter a negative number. If you think there was neither inflation nor deflation, please enter zero.
[RANGE: -100-100 ALLOW FOR UP TO 2 DECIMAL POINTS]
More specifically...
The price of 1 liter of gasoline increased/decreased. Fluctuation ____% [stay the same] [don't know]
The price of food in the restaurant increased/decreased. Fluctuation ____% [stay the same] [don't know]
Medical costs increased/decreased. Fluctuation ____% [stay the same] [don't know]
The Chonsei deposit increased/decreased. Fluctuation ____% [stay the same] [don't know]
The price of gold has increased/decreased. Fluctuation ____% [stay the same] [don't know]

;randomize order
Q9. How important are the following sources for you to get information about inflation? (Please select one for each)

Newspapers	() Extremely important
Television	() Very important

Social media Government reports Personal shopping experience Energy bills Friends, family and co-workers Professional forecasts Your professional activity (coworkers, customers, suppliers, competitors) Other (please specify) >ANCHOR	() Somewhat important () Not very important () Not at all important

;randomize order: If "social media" is chosen in Q9.
Q10. How important are the following social media are for you? (Please select one for each)

Twitter Facebook Instagram Youtube Naver Band Kakao Story Tictoc Other (please specify) >ANCHOR	() Extremely important () Very important () Somewhat important () Not very important () Not at all important

;randomize order
Q11. How important are the following sources for you to get information about government policies? (Please select one for each)

Newspapers Television Social media Government reports Personal shopping experience Energy bills Friends, family and co-workers Professional forecasts Your professional activity (coworkers, customers, suppliers, competitors) Other (please specify) >ANCHOR	() Extremely important () Very important () Somewhat important () Not very important () Not at all important

;randomize order: If "social media >=Somewhat important" in Q11.
Q12. How important are the following social media are for you. (Please select one for each)

Twitter Facebook Instagram Youtube Naver Band Kakao Story Tictoc Other (please specify) >ANCHOR	() Extremely important () Very important () Somewhat important () Not very important () Not at all important

In the next questions, we ask you to give your best guess about the state of the Korean economy.

Q13. What is your best guess about what the current unemployment rate in Korea is, what it will be in 12 months and over the next 3-5 years?
Current unemployment rate: _____% [RANGE: 0-100, ONE DECIMAL]
Unemployment rate in 12 months: _____% [RANGE: 0-100, ONE DECIMAL]
Over the next 3-5 years? _____% [RANGE: 0-100, ONE DECIMAL]

Q14. What do you think is the current interest rate on a fixed-rate 2-year Chonsei deposit loan for someone with excellent credit and what do you think it will be in the future?
Current rate? _____% per year [RANGE: 0-100, ONE DECIMAL]
At the end of 2023? _____% per year [RANGE: 0-100, ONE DECIMAL]
At the end of 2024? _____% per year [RANGE: 0-100, ONE DECIMAL]

At the end of 2025? _____% per year [RANGE: 0-100, ONE DECIMAL]
In the next 5-10 years? _____% per year [RANGE: 0-100, ONE DECIMAL]

Q15. The current base rate (policy tool of the Bank of Korea) is compared to this time last year…
1) Significantly lower (more than 3 percentage points)
2) Lowered (2-3 percentage points)
3) Slightly lower (1-2 percentage points)
4) No significant change (within 1 percentage point)
5) Slightly higher (1-2 percentage points)
6) Increased (2-3 percentage points)
7) Significantly higher (more than 3 percentage points)
8) don't know

Q15-1. What percentage do you think is the current base rate of the Bank of Korea?
_____% [I do not know]

Q15-2. 12 months later, the Bank of Korea's base rate compared to the present...
1) will be significantly lower (more than 3 percentage points)
2) will be lower (2-3 percentage points)
3) will be slightly lower (1-2 percentage points)
4) There will be no significant change (within 1 percentage point)
5) will rise slightly (1-2 percentage points)
6) will increase (2-3 percentage points)
7) will rise significantly (more than 3 percentage points)
8) don't know

Q16. What are your thoughts on the percentage rate at which housing prices in Korea will change over the next 12 months?
If you think housing prices will increase, please enter a positive number. If you think housing prices will decrease, please enter a negative number. If you think housing prices will stay the same, please enter zero.
_____% [RANGE: -100-100, ONE DECIMAL]

Q17. Fiscal balance is equal to the government revenue (taxes, tariffs, etc.) minus government spending. If the balance is positive the government has a fiscal surplus. If the balance is negative, the government has a fiscal deficit. The revenue is equal to the spending, the government budget is balanced.
How large was the government spending and revenue in 2022 as percent of the gross domestic product (GDP)? [enter 0 or positive number]
The level of government spending in 2022 was _____ % of GDP
The level of government revenue in 2022 was _____ % of GDP
Government balance in 2022 was ___XXXX____ % of GDP (compute XXX based on the responses about G and T)

Q18. We would like to know what you think will happen with fiscal balance in 10 years.
Instruction: If you think the government will be running a deficit, please enter a negative number. If you think the government will be running a surplus, please enter a positive number. If you think the government will have a balanced budget, please enter zero.
Q18-1. What do you think the lowest fiscal balance will be in 10 years? _____ % of GDP
Q18-2. What do you think the highest fiscal balance will be in 10 years? _____ % of GDP
;RANGE [-50% to 50%]

Q19. What do you think is the percentage chance that the fiscal balance in 10 years will be greater than (X2-1 + X2-2)/2 %?
_____% ;RANGE [0% to 100%]

Q20. Government debt refers the debt that the government borrowed from the private sector, the central bank, or abroad for reasons such as fiscal deficits and that the government is obligated to pay back later. What was the level of government debt in the end of 2022 as percent of the gross domestic product (GDP)?
Government debt in December 2022 was _____ % of GDP ;RANGE [0-200%]

Q21. We would like to know what you think will happen with government debt as percent of GDP over the next 10 years.

Q21-1. What do you think the lowest government debt will be over the next 10 years? (as % of GDP)
_____%
Q21-2. What do you think the highest government debt will be over the next 10 years? (as % of GDP) _____%

;RANGE [0% to 150%]

Q22. What do you think is the percentage chance that the government debt over the next 10 years will be greater than (X4-1 + X4-2)/2 %?
_____% ;RANGE [0% to 100%]

Q23. The government pays interest to creditors when financing through government bonds*, etc. What average interest rate do you think the government is paying on its debt? If you are not sure, please estimate.
The average interest rate on the government debt is _____ % per year.

* A government bond is a bond issued by a government, that is, a certificate of debt showing that the government borrowed funds and that it will repay after a predetermined period.
;RANGE [0-150%]

Q24. We would like to know what you think will happen with the interest rate on government debt over the next 10 years. We would you to report the average interest rate over the next 10 years.

Q24-1. What do you think the lowest average interest rate will be over the next 10 years? _____%
Q24-2. What do you think the highest average interest rate will be over the next 10 years? _____%
;RANGE [0% to 150%]

Q25. What do you think is the percentage chance that the average interest rate on the government debt over the next 10 years will be greater than (X6-1 + X6-2)/2 %?
_____% ;RANGE [0% to 100%]

Q26. We would like to know what you think about the average annual growth rate of government spending over the next 10 years.

Q26-1. What do you think the lowest annual growth rate of government spending will be over the next 10 years? _____%
Q26-2. What do you think the highest annual growth rate of government spending will be over the next 10 years? _____%
;RANGE [-50% to 50%]

Q27. What do you think is the percentage chance that the growth rate of government spending over the next 10 years will be greater than (X7-1 + X7-2)/2 %?
_____% ;RANGE [0% to 100%]

Q28. We would like to know what you think about the average annual growth rate of government revenue (taxes, duties, levies and so on) over the next 10 years.

Q28-1. What do you think the lowest annual growth rate of government revenue will be over the next 10 years? _____%
Q28-2. What do you think the highest annual growth rate of government revenue will be over the next 10 years? _____%
;RANGE [-50% to 50%]

Q29. What do you think is the percentage chance that the growth rate of government revenue over the next 10 years will be greater than (X8-1 + X8-2)/2 %?
_____% ;RANGE [0% to 100%]

Q30. We would like to know what you think about the average annual rate of inflation over the next 10 years. If you think prices are going to go up, you can choose positive, if you think they're going to go down, you can choose negative.

Q30-1. What do you think the lowest annual rate of inflation will be over the next 10 years? _____%
Q30-2. What do you think the highest annual rate of inflation will be over the next 10 years? _____%
;RANGE [-50% to 50%]
Q31. What do you think is the percentage chance that the annual rate of inflation revenue over the next 10 years will be greater than (X15-1 + X15-2)/2 %?
_____% ;RANGE [0% to 100%]

Q31. We would like to know what you think about the average annual growth rate of real GDP over the next 10 years.

Q32-1. What do you think the lowest annual growth rate of real GDP will be over the next 10 years? _____%
Q32-2. What do you think the highest annual growth rate of real GDP will be over the next 10 years? _____%

;RANGE [-50% to 50%]

Q33. What do you think is the percentage chance that the growth rate of real GDP over the next 10 years will be greater than (X16-1 + X16-2)/2 %?
_____% ;RANGE [0% to 100%]

Q34. In 2022, what share of your income did you pay in taxes? If you are not sure, please estimate. [*Average* tax rate]
My tax liability was ____% of my income in 2022.

Q35. If you earn an extra 1,000,000 Won in labor income, how much do you need to pay in extra taxes on this income? If you are not sure, please estimate. [*Marginal* tax rate]
I would need to pay _____ Won in taxes.

We would like to know what you think about changes in government revenue over the next 10 years relative to current spending.

Q36. We would like to ask you a few questions about hypothetical situations. Suppose the government decides to reduce the level of government debt (=government revenue-spending and spending is greater than revenue). To this end, the government reduces its annual spending by [1%, 2%, 5%; randomize] of GDP and keeps it at this lower level for the next 10 years. At the same time, the government does not change taxes (=revenue). How would this policy affect your spending, income, and labor supply today? Please report changes (if any) in these two variables relative to current levels.

My spending will change by _____% relative to current spending
My income will change by _____% relative to current income
My work hours will change by _____% relative to current work hours

If you think your spending, income or work hours will decrease, please enter a negative number. If you think your spending, income or work hours will increase, please enter a positive number. If you think your spending or work hours do not change, please enter zero. If you are unsure about percent changes, please estimate.

Q37. Now suppose the government decides to reduce the level of government debt (=government revenue-spending and spending is greater than revenue). But this time, the government raises taxes (=revenue) to collect extra [1%, 2%, 5%; randomize] of GDP and keeps taxes at this higher level for the next 10 years. The government does not change its spending. How would this policy affect your spending and labor supply today? Please report changes (if any) in these two variables relative to current levels.

My spending will change by _____% relative to current spending
My income will change by _____% relative to current income
My work hours will change by _____% relative to current work hours

If you think your spending or work hours will decrease, please enter a negative number. If you think your spending or work hours will increase, please enter a positive number. If you think your spending or work hours do not change, please enter zero. If you are unsure about percent changes, please estimate.

Q38. Suppose that government wants to raise its spending by 100 trillion Won (approximately 5 % of GDP). Through which combination of measures would you expect the government to cover this expense over time.

Printing money ____ percent
Issue new debt ____ percent
Raises taxes ____ percent
Cut other spending ____ percent
Other (privatization of government property, administrative measures, expropriations, etc.) ____ percent
Total _____ percent
(the total should be equal to 100 percent in the question)

<TREATMENT SECTION>
;RANDOMLY SELECT ONE OF THESE SIX OPTIONS (A, B, C, D, E, F, and each group consists of 1,800 respondents).

Group Statement for screen:

[Group A] No additional screen
[Group B]
Screen 1: On the next screen, we describe some facts about public finances in Korea.
Screen 2: The level of government debt in Korea was 49.6% of GDP in 2022. This debt was 20.68 million won ($16,000) per person, the largest by historical standards. According to IMF, the national debt-to GDP ratio has grown more than 2.5 times as much as the combined average of the ratios of the world's 35 advanced economies between 2017 and 2022.
[Group C]
Screen 1: On the next screen, we describe some facts about public finances in Korea.
Screen 2: The managed fiscal balance* of the Korean government was -5.4% of GDP in 2022. That is, the government had a fiscal deficit. This deficit was 2.27million won ($1700) per person, the largest by historical standards.
* Managed fiscal balance is calculated by subtracting government expenditure and the Social Security Fund balance from the government income. The Social Security Fund balance is the income minus expenditure of the national pension, private school pension, employment insurance, and industrial accident insurance. Therefore, the managed fiscal balance can be used to clearly evaluate fiscal soundness of the government.
[Group D]
Screen 1: On the next screen, we describe some facts about public finances in Korea.
Screen 2: The managed fiscal balance* of the Korean government was -5.4% of GDP in 2022. That is, the government had a fiscal deficit. This deficit was 2.27million won ($1700) per person, the largest by historical standards. The government plans to reduce the deficit to 3% of GDP, approximately 1.14million won ($850) per person, in 2024.
* Managed fiscal balance is calculated by subtracting government expenditure and the Social Security Fund balance from the government income. The Social Security Fund balance is the income minus expenditure of the national pension, private school pension, employment insurance, and industrial accident insurance. Therefore, the managed fiscal balance can be used to clearly evaluate the fiscal soundness of the government.
[Group E]
Screen 1: On the next screen, we describe some facts about public finances in Korea.
Screen 2: The managed fiscal balance* of the Korean government was -5.4% of GDP in 2022. That is, the government had a fiscal deficit. This deficit was 2.27million won ($1700) per person, the largest by historical standards. The government plans to reduce the deficit to 3% of GDP, approximately 1.14million won ($850) per person, in 2024.
To this end, along with other measures, the government plans to reduce more than 10 percent of its discretionary spending, including plans to cut cash transfers and voucher programs. This spending measure takes about 50% of total government budget.
* Managed fiscal balance is calculated by subtracting government expenditure and the Social Security Fund balance from the government income. The Social Security Fund balance is the income minus expenditure of the national pension, private school pension, employment insurance, and industrial accident insurance. Therefore, the managed fiscal balance can be used to clearly evaluate fiscal soundness of the government.
[Group F]
Screen 1: On the next screen, we describe some facts about public finances in Korea.
Screen 2: The managed fiscal balance* of the Korean government was -5.4% of GDP in 2022. That is, the government had a fiscal deficit. This deficit was 2.27million won ($1700) per person, the largest by historical standards. The government plans to reduce the deficit to 3% of GDP, approximately 1.14million won ($850) per person, in 2024.
To this end, along with other measures, the government plans to scrap gas tax cuts. The government is also considering scraping auto purchase tax cuts and restoring the fair market rate, which is used when calculating the comprehensive real estate tax, from 60% to 80%.
* Managed fiscal balance is calculated by subtracting government expenditure and the Social Security Fund balance from the government income. The Social Security Fund balance is the income minus expenditure of the national pension, private school pension, employment insurance, and industrial accident insurance. Therefore, the managed fiscal balance can be used to clearly evaluate fiscal soundness of the government.

<POST-TREATMENT QUESTIONS>

Q39. What is your best guess about the government spending and revenue of the Korean government in 2030? If you are not sure, please estimate. Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.
The level of government spending in 2030 will be _____ % of GDP
The level of government revenue in 2030 will be _____ % of GDP

Government balance in 2030 will be_XXXX____ % of GDP (compute XXX based on the responses about G and T)

Q39-1. My confidence is _____. [drop down menu]

Q40. What is your best guess about the level of government debt in Korea in 2030? If you are not sure, please estimate. Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.

Government debt in 2030 will be _____ % of GDP ;RANGE [0-200%]

Q40-1. My confidence is _____. [drop down menu]

Q41. What is the average interest rate do you think the government will be paying on its debt between now and 2030? If you are not sure, please estimate.

Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.

The interest rate on the government debt will be _____ % per year. ;RANGE [0-150%]

Q41-1. My confidence is _____. [drop down menu]

Q42. What is your best guess about the average annual growth rate of government spending over the next 10 years relative to current spending? If you are not sure, please estimate. Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.

The average annual growth rate of government spending over the next 10 years will be _____ % per year. ;RANGE [-150-150%]

Q42-1. My confidence is _____. [drop down menu]

Q43. What is your best guess about the average annual growth rate of government revenue over the next 10 years? If you are not sure, please estimate. Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.

The average annual growth rate of government revenue over the next 10 years will be _____ % per year. ;RANGE [-150-150%]

Q43-1. My confidence is _____. [drop down menu]

Q44. What is your best guess about the average annual growth rate of real GDP over the next 10 years? If you are not sure, please estimate.

The average annual growth rate of real GDP over the next 10 years will be _____ % per year. ;RANGE [-150-150%]

Q44-1. My confidence is _____. [drop down menu]

Q45. What is your best guess about the average annual rate of inflation over the next 10 years relative to current spending? If you are not sure, please estimate.

The average annual rate of inflation over the next 10 years will be _____ % per year. ;RANGE [-150-150%]

Q45-1. My confidence is _____. [drop down menu]

Q46. What is your best guess about the unemployment rate in Korea at the …?

End of 2023: _____% [RANGE: 0-100, ONE DECIMAL]
End of 2024: _____% [RANGE: 0-100, ONE DECIMAL]

Q47. What do you think is the percent chance that you will lose your job during the next 12 months?
_____% [RANGE: 0-100, ONE DECIMAL]

Q48. How do you expect your earned income to change 12 months from now, compared to your current situation?
Will decrease significantly (by 20% or more)
Will decrease slightly (by 5-20%)
Will stay about the same (within 5%)

Will increase slightly (by 5-20%)
Will increase significantly (by 20% or more)

Q49. What do you think is the current interest rate on a floating-rate 20-year mortgage for someone like you and what do you think it will be in the future?

Current rate: _____% per year [RANGE: 0-100, ONE DECIMAL]
At the end of 2020? _____% per year [RANGE: 0-100, ONE DECIMAL]
At the end of 2021? _____% per year [RANGE: 0-100, ONE DECIMAL]
In the next 5-10 years? _____% per year [RANGE: 0-100, ONE DECIMAL]

Q50. After 12 months, the base rate of the Bank of Korea will increase/decrease compared to the present.
Variation ____%p (pp) / Don't know

;RANDOMIZE
Q51. Generally speaking, do you think that now is a good time or a bad time **to buy**…

A house or apartment A car or other vehicle Large appliances, furniture, electronics (incl. gadgets)	() Very good () Good () Neither good nor bad () Bad () Very bad

Follow-up wave

SQ1. Please indicate your biological sex.
1) Male 2) Female

SQ2. Please indicate your year of birth.
age: ___(calculate based on year of birth)

SQ3. Have you moved to a new place since July?
Yes ___
No ___

SQ3-1. (If Answer to SQ3=Yes) Where do you currently live?
[Choose a metropolitan city/province on the map]

SQ3-1. Please indicate the postal code of your residence.
[Choose postal code]

Follow-Up Survey on Fiscal Policy (Corresponding to Q39 – Q51 in the first survey)

Q1. What is your best guess about the government spending and revenue of the Korean government in 2030? If you are not sure, please estimate. Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.
The level of government spending in 2030 will be _____ % of GDP
The level of government revenue in 2030 will be _____ % of GDP
Government balance in 2030 will be_XXXX____ % of GDP (compute XXX based on the responses about G and T)

Q1-1. My confidence is _____. [drop down menu]

Q2. What is your best guess about the level of government debt in Korea in 2030? If you are not sure, please estimate. Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.

Government debt in 2030 will be _____ % of GDP ;RANGE [0-200%]

Q2-1. My confidence is _____. [drop down menu]

Q3. What is the average interest rate do you think the government will be paying on its debt between now and 2030? If you are not sure, please estimate.

Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.

The interest rate on the government debt will be _____ % per year. ;RANGE [0-150%]

Q3-1. My confidence is _____. [drop down menu]

Q4. What is your best guess about the average annual growth rate of government spending over the next 10 years relative to current spending? If you are not sure, please estimate. Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.

The average annual growth rate of government spending over the next 10 years will be _____ % per year. ;RANGE [-150-150%]

Q4-1. My confidence is _____. [drop down menu]

Q5. What is your best guess about the average annual growth rate of government revenue over the next 10 years? If you are not sure, please estimate. Please also indicate how confident you are in your response on the 1 (not confident at all) to 10 (completely confident) scale.

The average annual growth rate of government revenue over the next 10 years will be _____ % per year. ;RANGE [-150-150%]

Q5-1. My confidence is _____. [drop down menu]

Q6. What is your best guess about the average annual growth rate of real GDP over the next 10 years? If you are not sure, please estimate.

The average annual growth rate of real GDP over the next 10 years will be _____ % per year. ;RANGE [-150-150%]

Q6-1. My confidence is _____. [drop down menu]

Q7. What is your best guess about the average annual rate of inflation over the next 10 years relative to current spending? If you are not sure, please estimate.

The average annual rate of inflation over the next 10 years will be _____ % per year. ;RANGE [-150-150%]

Q7-1. My confidence is _____. [drop down menu]

Q8. What is your best guess about the unemployment rate in Korea at the …?

End of 2023: _____% [RANGE: 0-100, ONE DECIMAL]
End of 2024: _____% [RANGE: 0-100, ONE DECIMAL]

Q9. What do you think is the percent chance that you will lose your job during the next 12 months?
_____% [RANGE: 0-100, ONE DECIMAL]

Q10. How do you expect your earned income to change 12 months from now, compared to your current situation?
Will decrease significantly (by 20% or more)
Will decrease slightly (by 5-20%)
Will stay about the same (within 5%)
Will increase slightly (by 5-20%)
Will increase significantly (by 20% or more)

Q11. What do you think is the current interest rate on a floating-rate 20-year mortgage for someone like you and what do you think it will be in the future?
Current rate: _____% per year [RANGE: 0-100, ONE DECIMAL]

At the end of 2020? _____% per year [RANGE: 0-100, ONE DECIMAL]
At the end of 2021? _____% per year [RANGE: 0-100, ONE DECIMAL]
In the next 5-10 years? _____% per year [RANGE: 0-100, ONE DECIMAL]

Q12. After 12 months, the base rate of the Bank of Korea will increase/decrease compared to the present.
Variation ____%p (pp) / Don't know

;RANDOMIZE
Q13. Generally speaking, do you think that now is a good time or a bad time **to buy**…

A house or apartment A car or other vehicle Large appliances, furniture, electronics (incl. gadgets)	() Very good () Good () Neither good nor bad () Bad () Very bad