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Lena Dräger, Michael J. Lamla, Damjan Pfajfar

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How to Limit the Spillover from an Inflation Surge to Inflation Expectations?

Abstract

Using a randomized control trial on German consumers we show that information about rising inflation increases inflation expectations. This initial increase in expectations can be mitigated by providing forecasts of inflation. Information about (future) inflation affects the whole term structure of inflation expectations, where the effects are smaller for longer-run expectations. This information also causes changes in consumption and savings decisions. In subsequent months−when consumers realize that inflation is much higher than the provided forecasts−they reverse the reliance on information about inflation forecasts and rely again more on their initial priors.

JEL-Codes: E310, E520, E580, D840.

Keywords: short-run and long-run inflation expectations, inflation surge, randomized control trial, survey experiment, persistent or transitory inflation shock.

Lena Dräger
Leibniz University Hannover / Germany
draeger@gif.uni-hannover.de

Michael J. Lamla
University of Duisburg-Essen / Germany
michael.lamla@vwl.uni-due.de

Damjan Pfajfar
Board of Governors of the Federal Reserve System, Washington DC / USA
damjan.pfajfar@frb.gov

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1 Introduction

After a decade of inflation rates mostly below 2 percent, many developed countries experienced an inflation surge starting in 2021. Inflation started to climb at the beginning of 2021. At the time, supply bottlenecks and capacity constraints severely limited the supply of goods, while demand was strong, as the economies recovered from the COVID-19 recession. At the onset of the inflation surge, many central banks, including the European Central Bank (ECB), characterized increasing inflation as temporary (Lagarde, 2021). Concerns over more persistent inflation grew in the last months of 2021, when price increases started to spill over to sectors that had not been impacted by supply-chain disruptions and worries increased that this might lead to higher wage demands. Consequently, at the time, there was considerable uncertainty and disagreement about the persistence of the inflation surge, and to what degree supply and demand factors were feeding into it. Given this high level of uncertainty, one of the main fears of central banks was that the surge in inflation would spill over to inflation expectations, resulting in a de-anchoring of (long-run) expectations.[1]

In this environment of increasing inflation, we test the influence of different information treatments about future inflation developments on consumers' inflation expectations using a randomized control trial (RCT). The RCT was incorporated in the September 2021 wave of the Survey on Consumer Expectations in the Bundesbank Online Panel of Households (BOP-HH), which is representative of the German population. We randomly allocate respondents to five different information treatments. All five groups, including the control group, are informed that the most recent inflation rate in August 2021 was considerably higher than inflation in August 2020. The common information is supplemented with different types of treatment-specific information about future inflation in the three treatment groups.[2] This allows us to investigate whether this *additional* information may reduce or offset the initial increase in expectations. In our setting, this effect can work either through a lower reliance on prior expectations and/or through a lower effect of the common information relative to treatment-specific information. We evaluate the impact of common and treatment-specific information on the whole term structure of expectations, from forecasts 12-months ahead to forecasts 10-years ahead. Besides investigating the immediate impact of information treatments, we also follow the participants in the months after the RCT when inflation accelerated further and, finally, study whether variation in inflation expectations due to our treatments changes spending and savings decisions in the following months.

The specific information provided in the treatments is from credible sources and represent the debate (or disagreement) in the policy circles and media in Germany at the onset of the inflation surge. The *persistent* treatment cites Prof. Dr. Volker Wieland from the German Council of Economic Advisers ('Sachverständigenrat') who states that in his view inflation was likely to remain

[1] Increases in long-run inflation expectations can be particularly costly for the policymakers.

[2] A fourth treatment serves as placebo group. In line with Coibion et al. (2022), the *placebo* treatment provides expected population growth as an additional information. The population growth should be viewed as irrelevant—at least to the first order—for forecasting inflation.

elevated between 2-3 percent in the next years.[3] The *temporary* treatment cites ECB president Christine Lagarde's view at the time that the inflation increase would be temporary. The *SPF* treatment provides the average forecasts of Euro area inflation in 2022-2025 from the Survey of Professional Forecasters (SPF), conducted by the ECB, that were the most recent at the time of our RCT. SPF projections expected Euro area inflation to be between 1.5-1.8 percent over the next years.

The design of our RCT allows us to study both the extensive margin and the intensive margin. In a recent paper, Andrade et al. (2023) demonstrate the importance of the extensive margin for forming expectations. For the extensive margin, we observe that on average 25 percent of all consumers adjust their expectations after receiving the information treatment. The probability of updating is lower for short-run inflation expectations in the *persistent* treatment, and for long-run expectations in the *temporary* treatment. Information about current inflation dynamics only (*baseline* treatment) raises inflation expectations, both for the next 12 months as well as 5-10 years ahead, showing first evidence that communication can affect the whole term structure of inflation expectations. Only the *SPF* treatment systematically lowers inflation expectations below their initial priors at different horizons. Results for the intensive margin—that are conditional on an update of inflation expectations—show that the reliance on prior expectations, compared to the *baseline* treatment, is significantly lower for consumers in the *SPF*, *persistent*, and *temporary* treatments when forming short-run expectations and for consumers in the *persistent* treatment when forming long-run expectations. However, the only treatment where respondents systematically assign a large weight on the treatment-specific information is the *SPF* treatment. Respondents in all other treatments rely on the common information, that inflation is currently high. Hence, our results highlight the relevance of different types of forward-looking communication in times of rising inflation to stabilize inflation expectations and demonstrate that the information treatments can affect the whole term structure of expectations.

The difference between short-run and long-run inflation expectations is mainly that the reliance on priors is higher for long-run expectations, implying lower total information effects. When studying 5-year-ahead and 10-year-ahead expectations separately, we find that the effect of information treatments is larger on 5-year-ahead than on 10-year-ahead expectations. Thus, our information effects decrease with the longer horizon of the forecast.

In the months after we conducted this survey experiment, it became evident that the inflation forecasts that we provided in our treatment arms will likely not materialize as inflation accelerated further. The rotating panel structure of BOP-HH allows us to track respondents over the subsequent waves and to study the persistence of the treatment effects on consumer expectations in later waves. In particular, we can analyze how consumers react when they realize that the inflation forecasts, which we gave them, are too low. While in the months directly following our experiment the initial effects quickly fade, we find that starting in January 2022 the results display an "information reversal" effect. This effect is demonstrated by respondents putting negative weight on

[3] Note that Prof. Dr. Wieland is a prominent figure in Germany with respect to monetary policy and the ECB in particular. He is often ranked as one of the most influential economists in Germany. Since 2012, he is advisor to the Federal Ministry of Finance and is a longstanding member of the German Council of Economic Advisers.

the treatment-specific information and instead showing an increased reliance on prior expectations, measured before the information treatments, as well as on the most recent inflation rate. This result stresses the importance of inflation forecast errors for communication and may be interpreted as a note of caution to anyone attempting to (temporarily) influence expectations with biased forecasts. In our environment, such actions may ultimately lead to exacerbating, and not limiting, the spillover from an inflation surge to inflation expectations.

Finally, we study the causal effects of our information treatments on spending and savings decisions of participants in the BOP-HH panel. While actual spending in the previous month and planned spending was measured before our information treatments in the September 2021 wave, respondents were again asked about these measures six months after our RCT. Thus, the exogenous variation in both short- and long-run inflation expectations induced by our information treatments can identify the causal effect of this exogenous change in expectations on both current and planned consumption and savings. The results show that an exogenous increase in either short- or long-run inflation expectations in September 2021 leads to a higher spending on transport and to lower savings five months later and also to plans to spend more on essential goods in the next 12 months.

Ideally, when assessing the performance of different *types* of communication, all treatments would come from the same policy institution (in our case the ECB), so that information treatments would be equally credible and reputable to avoid any reaction to the source of information. However, in a survey experiment like ours, it may be difficult to obtain a divergent view about inflation projections within the same policy institution. Therefore, in our information treatments we resort also to projections from other reputable sources. This choice—as the nature of information conveyed in our treatments is inherently different—does not allow us to identify the exact reason why we get different results in the *SPF*, *temporary*, and *persistent* treatments. For example, ECB (Christine Lagarde) and Council of Economic Advisers (Volker Wieland) may have different levels of credibility or relatability among individuals, although we believe they have similar levels of credibility among the German public on average. Our conjecture, which is informed by the difference in response to the information between *SPF* and *temporary* treatments and between *persistent* and *temporary* treatments, is that numerical information has the potential to tame increases in inflation expectations better, although it could be that professional forecasters have a higher level of credibility than institutions (ECB or German Council of Economic Advisers) or individuals associated with these institutions.

Our paper is closely related to RCT studies on inflation expectations and central bank communication. While there is broad consensus that central bank communication is effective in steering expectations of financial market participants, the influence central bank communication has on the general public is much less clear (Lamla and Vinogradov, 2019; Coibion et al., 2020a, 2022). Nevertheless, previous studies show that information about current or forecast inflation can affect short-run inflation expectations: Coibion et al. (2022) show that information about the current level of inflation decreases inflation expectations, and thus makes them more accurate. We test how information about current inflation affects expectations in an environment with rising inflation, and focus specifically on how communication can reduce spillover effects from inflation spells on the whole term structure of inflation expectations. Similarly, Coibion et al. (2020b) use an information treatment showing current inflation, which leads to an increase in inflation expectations for firms in Italy, that consequently feed into firm decisions. In addition, Coibion et al. (2023c) also utilize a RCT design to study the effect of different forms of forward guidance on several macroeconomic forecasts. Haldane and McMahon (2018) use randomized information treatments to test the relevance of layered communication adopted at the Bank of England. Using the BOP-HH by the Bundesbank, Hoffmann et al. (2022b) run a RCT with information treatments to analyze the effects of a hypothetical move to flexible average inflation targeting on inflation expectations in Germany.

The formation of inflation expectations also depends on the environment (see, e.g., Pfajfar and Žakelj, 2014, Cavallo et al., 2017, and Weber et al., 2023). Cavallo et al. (2017) show that in a high inflation environment consumers are more attentive to inflation developments and Weber et al. (2023) demonstrate that in this environment, the information effects of providing current inflation levels are smaller than in an environment with low inflation. Moreover, Andre et al. (2021) study the inflation narratives that experts, households, and managers have in mind to explain the recent inflation surge.

Our paper is further related to a growing literature evaluating the link between survey inflation expectations and household spending decisions. In an experiment with induced inflation expectations, Armantier et al. (2015) present evidence that participants act on their beliefs regarding future inflation. We adapt the same approach as recent RCT studies by Coibion et al. (2020b, 2023a,b,c) as well as Kumar et al. (2023), using the exogenous variation induced by the information treatments in the context of the RCT to instrument for the effect of respondents' inflation expectation on their economic choices. Coibion et al. (2023c) show that changes in perceived real rates due to different forward-guidance statements on U.S. consumers' inflation and interest rate expectations affect durable goods spending choices. Similarly, within in a Dutch consumer survey, Coibion et al. (2023b) demonstrate that exogenous variation in inflation expectations due to information treatments about inflation causes adjustments in durable spending. Coibion et al. (2020b) use exogenous variation in firms' inflation expectations in an Italian survey and demonstrate effects on firms' pricing, demand for credit, employment decisions, and capital accumulation. Finally, Kumar et al. (2023) and Coibion et al. (2023a) evaluate the impact of exogenous variation in macroeconomic uncertainty on economic choices by firms and households, respectively.

The remainder of the paper is organized as follows: Section 2 explains the data we use and the survey experiment, while Section 3 discusses the treatment effects on inflation expectations. Section 4 describes the effects of our treatments on consumption and savings and Section 5 concludes.

2 Data and RCT Experiment

The randomized control trial in this study was conducted on respondents in the September 2021 wave of the Bundesbank Online Panel of Households (BOP-HH). The BOP-HH core questionnaire elicits a large range of macroeconomic expectations.[4] For our study, we focus on point estimates of expected inflation 12 months ahead (short-run expectations) and expectations either 5- or 10-years-ahead (long-run expectations).[5]

Figure 1 shows the evolution of the inflation rate in Germany together with short- and long-run inflation expectations from the BOP-HH. In addition, we complement the mean and median values with the corresponding measures of dispersion in individual expectations based on our dataset. As already indicated in the introduction, we can observe from the figure that Germany faced a rise in inflation starting in 2021, after supply bottlenecks and capacity constraints severely limited the supply of goods and both monetary and fiscal policies were accommodative in the post-pandemic period. At the time of our RCT, inflation had already climbed to 3.9 percent. Afterwards it continued to increase, reaching 7 percent by the middle of 2022. Short-run inflation expectations had started to move up on average by September 2021, while long-run expectations still remained relatively stable. At the beginning of 2022, however, a few months after our experiment, when evidence accumulated that inflation was likely to be much higher and more persistent than anticipated, we observe that short-run inflation expectation relatively abruptly adjusted upwards and long-run expectations also started to increase. At the same time, the dispersion of inflation expectations, as seen in the right panel, also increased.

In our RCT, we elicit expectations before and after the information treatment. Before the RCT questions, prior inflation expectations are measured by the following questions measuring inflation point forecasts:[6]

> What do you think the rate of inflation will roughly be over the next twelve months?
>
> What value do you think the rate of inflation or deflation will take on average over the next [insert five or ten] years?

The September 2021 wave consisted of 3,724 participants who were randomly selected into our five treatment arms, each consisting of about 650 respondents. Conditional on providing a point forecast of short- and long-run expectations, we provided the following information treatments. In the *baseline* treatment, participants were given the following information about current inflation:

> "We now show you some information on the inflation rate. The inflation rate in Germany was measured by the Federal Statistical Office at 3.9% in August 2021, one year ago in August 2020 the inflation rate was 0%." [current inflation]

[4] The full questionnaire is available at https://www.bundesbank.de/en/bundesbank/research/survey-on-consumer-expectations. The survey and core questionnaire were designed and developed by Deutsche Bundesbank's Research Center in cooperation with the survey institute Forsa.

[5] Respondents are randomly selected to give long-run estimates with either a 5- or 10-year horizon in the core questionnaire. For the main analysis, we regard both 5- or 10-year forecasts as long-run expectations. Section 3.6 studies the differences between 5-year-ahead and 10-year-ahead expectations.

[6] Another RCT was run in the same wave to infer how households interpret short-, medium-, long-, and longer-run, when faced with statements from policymakers that include these terms. See online B.1 for more information about this RCT and other RCTs in the preceding wave.

This treatment serves as our control group. In all other treatments, respondents were provided with further information *in addition* to the information that was given in the *baseline* treatment labelled as "current inflation." The *persistent* treatment cites a member of the German Council of Economic Advisers ('Sachverständigenrat') who thinks that inflation will be elevated beyond 2022:

> "[current inflation] Volker Wieland, member of the German Council of Economic Experts, was quoted in "Wirtschaftswoche" [*a weekly German newspaper focusing on economics and business topics*] on 12 March 2021 as saying: "I, too, expect that inflation rates may reach an average annual level of two percent, and may even reach three per cent in some individual months by the end of the year. [...] I also anticipate that 2022 and the following years may see similar rates of inflation – that is, annual rates of between two and three percent."

The *temporary* treatment cites a different view by ECB president Christine Lagarde, stressing that the inflation increase will be temporary:

> "[current inflation] On 31 May 2021, "Handelsblatt" [*a daily German newspaper focusing on economics and business topics*] wrote: "The ECB president has always made it clear that she sees this year's higher inflation rate as a temporary phenomenon. In her view, the increased inflation is down to one-off factors arising from the pandemic, which are now also making themselves known in the German figures for May."

Next, the *SPF* treatment gives the adjustment in the most recent short- and long-run inflation forecasts for the Euro area by professional forecasters surveyed in the ECB Survey of Professional Forecasters (SPF):

> "[current inflation] According to a survey by the European Central Bank (ECB) among experts in the euro area, these increased their inflation expectations for the euro area as a whole (including Germany) for 2021 to 1.9% from their previous forecast of 1.6%. They adjusted their inflation expectations for both 2022 and 2023 to 1.5% and their expectations for 2025 to 1.8%.

Finally, our last treatment provides a *placebo* test by adding information that is not relevant for forecasting neither short-, nor long-run inflation:

> "[current inflation] The Federal Statistical Office also predicts that Germany's population, which was measured at 83 million in 2018, will continue to grow until at least 2024 and will have started to decline by 2040 at the latest."

After each treatment, we ask respondents whether they would like to adjust their short- and/or their long-run inflation forecasts. To make sure that individual updates are not due to inaccurate recall of previously given forecasts, we remind all respondents about their prior estimates. The post-treatment questions and answer categories are phrased as follows:

Q1: On the basis of this information, would you adjust the inflation expectations for the next twelve months you gave in the earlier part of the questionnaire? If so, to what extent?

- Yes, from X [*inserted prior expectation*] percent to ... percent
- No

Q2: On the basis of this information, would you adjust the inflation expectations for the next for the next 5/10 years[7] you gave in the earlier part of the questionnaire? If so, to what extent?

- Yes, from X [*inserted prior expectation*] percent to ... percent
- No

To design this survey experiment, we made several choices we would like to rationalize in this section. First, we opted to explicitly ask respondents whether they want to change their previously voiced expectations after the information treatment, and reminded them about their previous forecast. We chose this approach to identify conscious updates of expectations and avoid situations where respondents could not exactly recall their expectations before the treatment and state a different number than before by accident. If respondents say that they want to change expectations, we ask them for their new point forecast.

Since the core questionnaire of the BOP-HH asks for both point forecasts and probabilistic forecasts on inflation before our RCT, we could not elicit posterior expectations after the treatment with either of those forecast questions as previously practiced in Coibion et al. (2022). Moreover, there is evidence that asking a probabilistic questions leads to lower reported inflation expectations due to the more narrow range of the provided bins and that, furthermore, some individuals allocate 100% to a specific bin, which might require data cleaning or at least additional consideration (D'Acunto et al., 2022). We thus chose to ask respondents whether they would like to update their expectations in a transparent manner.

In addition, our design is also different from previous RCT experiments, as we provided respondents in the *baseline* treatment with both the inflation rate in the previous year and the current (last observed) inflation rate. This is a feature of the design, because the goal of this paper is to see whether the "induced" change in expectations from observing the current change in inflation can be limited by providing additional information about future inflation developments in the treatment groups.

Finally, there is a time delay between the news we used for the information treatment and the day where the survey was conducted. This is due to the application procedures to submit proposals for the BOP-HH. However, the attitude regarding future developments of inflation in Germany started to change only in the fall, thus the information that we provided in the quotes was still

[7] The horizon for posterior long-run expectations matches the horizon in which respondents were allocated randomly in the core part of the questionnaire (either 5- or 10-years-ahead).

timely and we think it accurately describes the disagreement between forecasters, policy advisers, and policy makers at that time, although it was ex-post proven that all forecasts that we provided were too optimistic.[8] Furthermore, the advantage of having a real world quote is that its impact on survey respondents, to our understanding, might be superior to hypothetically framed information treatments.

3 Treatment Effects on Inflation Expectations

This section first explores the effects of our treatments graphically. We then employ regression analysis to measure the causal effects of our treatments. After exploring the effects of our information treatments on the overall sample, we consider subsamples and implications for subsequent waves.

3.1 Distributions of Information Treatment Effects

In this subsection, we compare for each information treatment the distribution of changes in short- and long-run inflation expectations. Sample means for short- and long-run expectations, and moments of pre- and post-treatment distributions of expectations for all treatment arms are provided in Table 1.[9] Across all treatments, 25% or 26% of respondents opted to update their short- and long-run inflation expectations, where we observe the highest share of updates in the *baseline* and *SPF* treatments and the lowest in the *temporary* and *placebo* treatments (see Table 1).

In the upper two panels of Figure 2, we plot the densities of changes in short-run (a) and long-run expectations (b) for each treatment. The information about the surge in current inflation (i.e., the *baseline* treatment) results in a density distribution where most of the mass is at positive changes, implying that observing the hike in current inflation alone leads to an upwards adjustment of both short- and long-run expectations. Comparing this distribution to the distributions in the treatment arms, where we add forward-looking information, we can see that, except for the *placebo* treatment, the distributions have less mass in the positive territory. This indicates that providing additional forward-looking information mitigates the upward movement in expectations. Particularly, the *SPF* treatment has the strongest shift to the left on both short- and long-run expectations in comparison to the distribution under the *baseline* treatment.

To confirm the visual impression, we test whether the densities are significantly different across treatments with Kolmogorov-Smirnov tests: For changes in short- and long-run expectations, the Kolmogorov-Smirnov test shows that all treatment densities—except the density of the *placebo* treatment group—are statistically different from the density of the *baseline* treatment.[10]

[8] In fact, Bundesbank (2021a) describes that they project the inflation in Germany to fall under 2 percent around the middle of 2022. Market-based expectations and survey-based expectations in the euro area were similar to the Bundesbank forecast for Germany. Even in December 2021, the Bundesbank projected that inflation would be 2.25 percent in 2023 and 2024 (Bundesbank, 2021b).

[9] In the core questionnaire, about 3% of respondents chose not to answer or gave don't know answers to the short- and long-run inflation point forecast questions.

[10] The Kolmogorov-Smirnov test reports p-values of 0.000, 0.032, and 0.000 for the *persistent*, *temporary* and *SPF* treatment when comparing the densities to the *baseline* treatment, respectively, and 0.348 for the comparison of the *placebo* treatment and *baseline* treatment for short-run expectations and 0.002, 0.000, 0.000 and 0.991 analogously for long-run expectations.

In the lower panels of Figure 2 we study how consumers update their expectations by plotting posterior short-run (c) and long-run expectations (d) for those who updated their expectations. In panel (c) we can see that the mode of the posterior expectations in the *baseline* treatment is right around the provided current inflation of 3.9 percent. In the *persistent* treatment, the mode is around 3 percent, which corresponds to the upper bound of the information that we provided in this treatment arm. In the *temporary* treatment, the variance of the posterior distribution is larger than for the other treatments, implying more disagreement among consumers' posterior inflation expectations. Conversely, the posterior expectations in the *SPF* treatment are more centered around 2.5 percent, where the variance of the distribution is notably smaller than in the other treatments. Interestingly, the mode of this distribution is not quite at the provided projection of 1.9 percent, but still significantly lower than in the other treatments. The posterior distributions of long-run inflation expectations, as can be seen in panel (d), have a higher variance and more weight in the right tail, compared to short-run expectations in panel (c). Nevertheless, the modes of long-run expectations are similar to those of short-run expectations across the treatment groups, where only the mode in the *SPF* treatment is somewhat higher at 3 percent.

3.2 Empirical Approach

We next evaluate the treatment effects on individual short- and long-run inflation expectations in a regression framework. In the literature on survey experiments, it is common to assume that agents behave in a Bayesian way (see Coibion et al., 2018 or Armantier et al., 2016), where agents form beliefs as a weighted average of the prior, $\pi^{e,h}_{i,prior}$, and the signal, $\pi^{h}_{i,info}$:

$$\pi^{e,h}_{j,post} = \alpha \cdot \pi^{e,h}_{j,prior} + (1-\alpha) \cdot \pi^{h}_{i,info}, \tag{1}$$

where $\pi^{e,h}_{i,post}$ denotes the consumer j's posterior inflation expectations after the treatment at horizon h (short- or long-run expectations). Following Coibion et al. (2022) and Coibion et al. (2023b), we evaluate the overall effect and the intensive margin for short- and long-run inflation expectations using a framework that is consistent with Bayesian updating, as in eq. (1), with the following regression:

$$\pi^{e,h}_{j,post} = a_0 + a_1 \cdot \pi^{e,h}_{j,prior} + b' \cdot T_i + c' \cdot \left[\pi^{e,h}_{j,prior} \cdot T_i\right] + d' \cdot X^{controls}_{j} + u_j. \tag{2}$$

At horizon h, we condition posterior inflation expectations, $\pi^{e,h}_{j,post}$, on consumer j's prior expectations, $\pi^{e,h}_{i,prior}$. The coefficients in the vector b measure the treatment effects in relation to the control group, the *baseline* information treatment, where T_i denotes the vector of treatment dummies excluding the *baseline* treatment. The coefficients in vector c measure the "slope" effect of treatments relative to the control group: If the information in treatment i is informative for posterior expectations, respondents will put a lower relative weight on their prior expectation. Estimations additionally control for demographic characteristics $X^{controls}_{i}$, namely gender, age, and income groups. u_j represents the i.i.d. error term. All estimations use population weights and robust standard errors and truncate expectations in the range from -5 to $+25$ percent to avoid an effect of large outliers.

We further use Huber (1964) robust estimations to endogenously control for outliers in the survey expectations.

The extensive margin is estimated as the likelihood of updating short- or long-run expectations after an information treatment using probit and linear probability models, with the same explanatory variables as in eq. (2):

$$P(d\_\pi_j^{e,h} = 1|X) = \Phi\left(a_0 + a_1 \cdot \pi_{j,prior}^{e,h} + b' \cdot T_i + c' \cdot \left[\pi_{j,prior}^{e,h} \cdot T_i\right] + (d' \cdot X_j^{controls}) + v_j\right), \quad (3)$$

where $d\_\pi_i^{e,h}$ are dummy variables taking the value of 1 if consumer j updates their inflation expectations at horizon h after the information treatment.

In the literature, the results from the specification in eq. (2) are often interpreted under the assumption that the restriction on coefficients holds ($a_1 = \alpha$), as in eq. (1). However, in our experiment, we can distinguish between two different types of information signal: We give the information about current inflation to all participants and in addition—in all treatment arms except for the *baseline* treatment—supplement this information with treatment-specific information. Thus, assuming that agents behave in a Bayesian way, we are able to further distinguish between the effects of common, π_{Com}^h, and treatment-specific information, $\pi_{i,spec}^h$:

$$\pi_{j,post}^{e,h} = \alpha \cdot \pi_{j,prior}^{e,h} + \beta \cdot \pi_{i,spec}^h + (1 - \alpha - \beta) \cdot \pi_{Com}^h. \quad (4)$$

Note that this equation can be estimated to determine the information content of common information relative to specific information as follows:

$$(\pi_{j,post}^{e,h} - \pi_{Com}^h) = \alpha' \cdot \left[(\pi_{j,prior}^{e,h} - \pi_{Com}^h) \cdot T_i\right] + \beta' \cdot \left[(\pi_{i,spec}^h - \pi_{Com}^h) \cdot T_i\right] + v_j \quad (5)$$

Further note that $\pi_{Com}^h = 3.9$ percent and that not all treatments have additional specific information. For the *baseline* and *placebo* treatments we set $\pi_{i,spec}^h = \pi_{Com}^h$, as either no information or irrelevant information, at least to first order, was provided. In the *persistent* treatment, the specific information is equal to 2.5 percent for both short-run and long-run expectations and in the *SPF* treatment it is equal to 1.7 percent for short-run expectations and 1.8 percent for long-run expectations. There is more ambiguity about how to set $\pi_{Temp,spec}^h$ for the *temporary* treatment. We explored several options between 0 and 5 percent for the overall sample, and in none of these find a significantly positive value of the specific information in the *temporary* treatment for posterior expectations.[11] Results in the tables reported here assume $\pi_{Temp,spec}^h = 2$ percent.

3.3 Treatment Effects on Short- and Long-Run Inflation Expectations

Table 2 shows the estimated average treatment effect on posterior inflation expectations, as well as the extensive and intensive margins for both short- and long-run inflation expectations. The table

[11] For example, we set $\pi_{Temp,spec}^h$ to equal the average inflation in the last 15 years, to $\pi_{Temp,spec}^h = \pi_{Com}^h$, or to any integer between 0 and 5 percent and in all cases we get insignificant results for the weight put by respondents on this specific information using both short- and long-run expectations for the overall sample.

reports both OLS and Huber (1964) robust regressions. Note that the omitted treatment is the *baseline* treatment and that we are interested in effects relative to the *baseline* treatment. Thus, coefficients of prior beliefs for treated households $(a_1, a_1 + c_2, a_1 + c_3, a_1 + c_4, a_1 + c_5)$ should be between 0 and 1, if agents behave in a Bayesian way. When this value is equal to 0, participants in the survey adjust their expectations only based on the information that we provided and not based on their priors. When this value is equal to 1, participants in the survey rely only on their prior beliefs.

The sample mean of both short- and long-run expectations is adjusted upward in the *baseline* treatment that informs respondents about the rise in current inflation. Results for the overall margin (columns (1)-(2) and (7)-(8) of Table 2) imply that the strongest treatment effect is in the *SPF* treatment, which causes posterior short- and long-run expectations to be lower by 0.4 and 0.5 percentage point compared to the *baseline* treatment (see Table 1), respectively. The other treatments do not systematically lower expectations compared to the *baseline* treatment. This reduction comes despite the reliance on priors not being significantly different across the treatment arms (with the exception of the *placebo* treatment) in the case of the overall margin. The reliance on priors in the *baseline* treatment is about 0.64 (a_1) for short-run expectations and 0.92 for long-run expectations. When inflation expectations are firmly anchored, long-run expectations should not react (or react less) to any information provided and rely more on the medium-run inflation objective set by the ECB, because any temporary shocks hitting the economy should dissipate in the medium to long run. In an increasing inflation environment, we would also expect that there are less informational frictions and that more respondents are already informed about the current level of inflation (Weber et al., 2023 and Cavallo et al., 2017). Thus, the reliance on priors is generally higher than in other RCT experiments conducted in a low inflation environment.

To reconcile these results, we resort to the specification in eq. (5), which distinguishes between common (last observed inflation) and specific information about the inflation outlook that we provided in other treatment arms. We report these results in Table 3. Note that for specific information, the omitted treatment is the *temporary* treatment, as there is no treatment-specific information in the *baseline* and *placebo* treatments. Thus, the coefficients of interest for specific information are β_3 for the *temporary* treatment, $\beta_3 + \beta_2$ for the *persistent* treatment, and $\beta_3 + \beta_4$ for the *SPF* treatment. Only in the *SPF* treatment we find specific information to have a meaningful weight—0.14 for short-run and a positive, but not significant, 0.03 for long-run expectations—, while in the other treatments all the remaining weight after accounting for the weight on priors is placed on common information.[12] This different reliance on specific and common information explains why—despite the same reliance on priors—the *SPF* treatment is more effective in taming inflation expectations than

[12] Given that most information treatments—with the exception of the *baseline* treatment—provide average yearly inflation and not forecasts for inflation in the next 12 months, it is likely that our results in the current environment may be subject to a small downward bias. All information treatments suggest that inflation will decrease from the level observed in August 2021. Taking into account that the survey was conducted in the second half of the year 2021 and that the process for inflation is persistent, it is likely that the forecasts for 12-months ahead inflation in September 2021 would be somewhat lower than the yearly averages reported for 2022. Thus, the effect may be larger (and potentially more significant) if in our treatments such inflation projections were reported. The availability of relevant quotes guided our decisions on various information treatments.

other treatments. Results also point in the direction that in the increasing-inflation environment long-run expectations can be at least to some degree vulnerable to current inflation developments. In this paper, we thus find that communication about the current level of inflation and/or future inflation developments can affect the whole term structure of inflation expectations, and not just short-run expectations, as previous evidence showed.

After evaluating the overall treatment effect, we distinguish between the extensive and the intensive margin of treatment effects. Recently, Andrade et al. (2023) show the importance of the extensive margin for the formation of inflation expectations. Columns (3)-(4) and (9)-(10) of Table 2 report the results for the extensive margin evaluated using a linear probability model and a probit regression that reports marginal effects evaluated at the mean. 25 and 26 percent of consumers on average update their short- and long-run inflation expectations, respectively (see Table 1). The results in Table 2 show that none of the additional information provided leads consumers to update their inflation expectations with a higher probability compared to the *baseline* treatment. In fact, except for the *SPF* treatment, all the other treatments lead to a *lower* likelihood of adjusting short-run inflation expectations compared to the *baseline* treatment. Interestingly, the *persistent* treatment reduces the likelihood of an update in short-run expectations, while the *temporary* treatment leads to a lower updating probability for long-run expectations. Overall, it seems that providing additional information about the expected future path of inflation can help to anchor expectations by mitigating the tendency to adjust and raise inflation expectations as compared to the *baseline* treatment.

The intensive margin is estimated on the sample of respondents that did update their short- and/or long-run expectations after the treatment. Tables 2 and 3 report these results, where we show that all treatments cause a significant reduction in reliance on prior expectations in short-run expectations compared to the *baseline* treatment. Households that update their inflation expectations rely heavily on the information that we provided to them as can be seen by the relatively low weights on priors (α_1) in columns (5)-(8), Table 3. However, in all treatments the reliance on prior information is higher for long-run expectations than for short-run expectations. Respondents within the *persistent*, *temporary*, and *SPF* treatments have the lowest reliance on priors when forming short-run expectations (between $\alpha_1+\alpha_3 = 0.07$ and $\alpha_1+\alpha_2 = 0.14$). In the case of long-run inflation expectations (columns (11)-(12)), the reliance on prior expectations is significantly lower only for the *persistent* treatment. As reported in Table 1, the *SPF* treatment has the strongest effect on lowering expectations relative to the *baseline* treatment: Presented with additional evidence from experts' forecasts, respondents who update their expectations lower their short-run expectations by 1.5 percentage points and their long-run expectations by 0.5 percentage point. Moreover, both the *persistent* and *temporary* treatments significantly reduce short- and long-run expectations relative to the *baseline* treatment, but those treatments seem to affect mostly those with higher prior expectations, as their mean values remain at or above 3.9 percent (see also Table 1).

To reconcile these results, we again resort to the decomposition of common and specific information in Table 3.[13] When forming short-run expectations, respondents in the *temporary* treatment rely mostly on the common information about the last observed inflation rate, respondents in the *persistent* treatment have a positive, but insignificant, weight on specific information ($\beta_3+\beta_2 = 0.11$) and still mostly rely on common information, while households in the *SPF* treatment rely mostly on the specific information given to them in the form of inflation projections by professional forecasters ($\beta_3+\beta_4 = 0.56$). As mentioned above, no "quantification" of the information in the *temporary* treatment would result in significantly positive weight on this specific information for the overall sample. When forming long-run expectations, households who update expectations in the *persistent* treatment have the lowest reliance on priors and the largest reliance on the common information. In the *baseline* and *temporary* treatments, the reliance on priors and on common information about current inflation is about the same (0.5), while in the *SPF* treatment, the reliance on common information is 0.21 ($1 - (\beta_3 + \beta_4) - (\alpha_1 + \alpha_4)$), on specific information 0.32 ($\beta_3+\beta_4$), and on priors 0.47 ($\alpha_1+\alpha_4$).

Figure 3 reports binscatter plots, which is a graphical representation of the results reported in Table 2 for the overall and intensive margins. The binscatter plots show that the results are not driven by respondents in a particular part of the distribution or any other outliers. They also show that for most treatments the relationship between priors and posteriors is approximately linear for the whole span of priors.[14]

To study the relevance of extensive and intensive margins in our environment, we adapt the Klenow and Kryvtsov (2008) decomposition in Andrade et al. (2023) for a cross-sectional comparison in our RCT environment (see online B.2). Results in Table 1 in the online appendix show that most variation in the level of average posterior inflation expectations across treatments can be explained by the contributions of the intensive margin. Both margins explain the variance of posterior inflation expectations across treatments, where contributions of the extensive margin vary from 30 to 42 percent for short-run expectations and between 36 and 45 percent for long-run expectations. In line with the results for the extensive margin in Table 2, the contribution of the extensive margin is relatively smaller in the case of the *temporary* treatment compared to the *persistent* and *SPF* treatments.

Overall, consumers in the *baseline* and *SPF* treatments update their expectations more often than in other treatments. Those who update their expectations in the *baseline* treatment most often adjust upwards, in line with the information provided. Numerical information about inflation projections mitigates this effect. Specifically, there is considerably less disagreement (see Figure 2), higher frequency of updating (extensive margin), and larger updates (intensive margin) among those who update inflation expectations in the *SPF* treatment. In fact, the *SPF* treatment is the only treatment where posterior expectations are on average lower than prior expectations.

[13] By comparing the results in Tables 2 and 3, or by looking at the Table 2 in the online appendix, we can observe that the restriction on coefficients imposed in our specification in eq. (5) works very well for all treatments, except for the *placebo* treatment in the case of long-run expectations, where the information in the *placebo* treatment seems to induce extrapolation of their inflation expectations based on their priors. This gives us some indication that Bayesian updating seems to represent well the behavior of most households.

[14] We study this question in detail in online G.

3.4 Discussion of the Results and Limitations of our Approach

As can be seen in Table 3, only the specific information in the *SPF* treatment has a significantly positive weight when households form their inflation expectations in our survey experiment. When comparing the role of specific information in the *persistent* and *SPF* treatments, we can claim that the different levels of inflation forecasts communicated in these treatments have little impact on the overall effect, as only the *SPF* treatment systematically reacted to this information. Our preferred explanation is that the quantitative nature of information provided may be the reason behind this result. However, there are several caveats/alternative explanations for the observed results that may cause a downward bias for the role of specific information in some treatments: credibility of sources and the relatability, context, and the totality of information provided.

It could be that German households trust more the forecasts by professional forecasters than those by policy economists. If professional forecasters have a higher level of credibility than institutions (ECB or German Council of Economic Advisers) or individuals associated with these institutions (Christine Lagarde and Volker Wieland), then the estimates associated with the weight on the specific information in the *temporary* and *persistent* treatments could exhibit downward bias compared to the weight on specific information in the *SPF* treatment. In our survey experiment, we see that the totality of information—the combination of common and specific information—is what matters, and even if this bias exists, it does not mean that some of our information treatments are not effective. We find that households discount common information about the level of inflation when it is combined with the SPF forecasts about future inflation. However, in other cases—most notably in the *persistent* treatment and in the *temporary* treatment with short-run expectations—it can lead to a higher reliance on common information than in the *baseline* treatment.[15] In these cases, specific information may act as a reinforcement of the common information.

For long-run expectations, the formation of expectations in the *temporary* and *baseline* treatments are virtually the same, which gives us some indication that the impact of different pieces of information is context-dependant. In this case, households interpret the specific information in the *temporary* treatment as not relevant for inflation 5- or 10-years ahead. This interpretation is plausible given that the time horizon discussed in the *temporary* treatment stresses that the inflation shock is viewed as temporary and caused by one-off factors. This further indicates that it is less likely that credibility is behind the different reaction of households to, for example, information in the *temporary* and *persistent* treatments, although it could be that some projections that we provided have higher relatability to participants in our RCT.[16]

The nature of the information conveyed to households can also be an important factor when households decide how to react to the provided information. In our case, the *SPF* treatment provides quantitative forecasts, the *persistent* treatment conveys a quantitative forecast, but more descrip-

[15] This argument can also, in part, explain the results in the *placebo* treatment with short-run expectations, where the reliance on common information is also slightly higher than in the *baseline* treatment.

[16] Another indication that it is unlikely that credibility explains our results—but that relatability may be a factor—can be found in online G. We observe that respondents with priors below 3.9 percent do rely on specific information in the *temporary* treatment for short- and long-run expectations. While the *SPF* treatment has similar effects across all respondents for short-run expectations, only respondents with priors below 3.9 percent take the specific information in this treatment into account for long-run expectations.

tively than the *SPF* treatment, and the *temporary* treatment provides qualitative information only. One explanation of our results is that the quantitative nature of information is an important factor for why households react more to quantitative treatments, although there are other possible explanations as outlined above. The estimated specific and common information effects point in the direction that specific quantitative information most effectively tame the increase in inflation expectations induced by common information. However, the results from the *temporary* treatment suggest that content of information indeed matters and less informative treatments, like the *temporary* treatment, lead to smaller adjustments in expectations. This can be observed in results from both, the intensive and extensive margins, as the probability of updating expectations is lower for the long-run expectations in this treatment compared to other treatments.

Another indication that context matters is that the reliance on specific and common information is smaller for long-run expectations compared to short-run expectations in all treatments, as the information provided is less relevant for the longer run in terms of the horizon of provided forecasts. Therefore, we can conclude that communication can affect the whole term structure of expectations, but it is difficult to argue that long-run expectations are less sensitive to information treatments in general.

3.5 Treatment Effects in Subsequent Waves

The panel structure in the BOP-HH dataset allows us to investigate the persistence of information treatment effects in subsequent waves. Respondents who participated in our RCT experiment were part of BOP-HH in seven of the subsequent eight waves.[17]

Table 4 shows the estimation output of the specification in eq. (5)—distinguishing between common and treatment-specific information—for the overall treatment effect in later waves by taking actual inflation in the previous month as the common information in each wave.[18] This table shows that in October 2021, one month after the information treatments, most of the treatment effects disappeared. There are also no significant differences between treatment groups in the November 2021 wave, two months after the treatment. In this wave, the reliance on prior expectations (from the treatment wave in September 2021) declines further and turns insignificant. Thus, the effects of information treatments decay, in line with the results reported, for instance, in Coibion et al. (2023c), Coibion et al. (2022), and Cavallo et al. (2017). This result holds for the whole term structure of expectations.

However, starting in January 2022, we observe that the reliance on prior expectations (from September 2021) increases again and remains elevated, especially in the temporary treatment ($\alpha_1 + \alpha_3$). To study what is happening, it is important to disentangle the effect of rising inflation at the time (considered as common information) and the reliance on the specific information provided

[17]In BOP-HH, survey participants stay in the panel for up to three consecutive months, then take a break of three months, come back for another three months and so on, up to a total of 12 months' participation in the panel. Table 1 in the online appendix shows the share of respondents from our initial RCT wave 21 in September 2021 in later waves.

[18]Results for the baseline specification in eq. (2) are reported in Table 2 in the online C. Estimations for the intensive margin for eqs. (2) and (5) are shown in Tables 3 and 4, respectively.

in our information treatments. The results suggest that starting in January 2022, we observe an "information reversal" effect. By that time, inflation had increased from 3.9 percent (August 2021) to 4.9 percent (December 2022) and it had become apparent that the surge in inflation would be much more severe than even the most pessimistic professional forecasters predicted in 2021. Thus, respondents in the survey realized that the information that was given to them in the *temporary*, *persistent*, and *SPF* treatments would likely entail large forecast errors. Hence, they "reversed" the reliance on treatment-specific information and instead increased their reliance on priors and on last observed inflation. The information reversal can be seen in Table 4 where the coefficients β_3, $\beta_3 + \beta_2$, and $\beta_3 + \beta_4$ are all significantly negative, ranging between -0.26 and -1.33, depending on the wave and specific treatment. This reversal is present in all treatments with specific information about inflation expectations starting in February 2022, but most evident in the *persistent* treatment (with a peak effect in March and April). Respondents in these treatments started to extrapolate their inflation expectations based on the last observed level of inflation.[19]

Overall, these results present a clear warning of what could happen if one tries to "manage" expectations of others with forecasts that turn out to be (persistently) incorrect. The forecasts used in this RCT were not necessarily biased, as one cannot assess that based on one data point, but they failed to predict the continued surge in inflation in 2021. Thus, we can document the "information reversal" effect, where households start to put negative weight on this information and increase their reliance on priors and on last observed inflation. Another potential interpretation is that households do not act as Bayesians anymore, but that they use some other expectation formation mechanism when inflation has a clear trend. However, this alternative explanation pertains only to the identification of the specific information effect and not to the identification of the reliance on priors. The latter also increased in regressions that do not necessarily postulate Bayesian updating.[20]

3.6 5-Year-Ahead and 10-Year-Ahead Inflation Expectations

So far, we focused on the joint behavior of 10-year and 5-year-ahead inflation expectations, as participants are randomly assigned to answer only one of these questions. This section evaluates whether there are significant differences in information treatment effects across these two groups. Figure 4(a)-(d) and Tables 1–2 in the online D present the results. Most differences between 10-year and 5-year-ahead inflation expectations can be observed for the intensive margin, see Figure 4(c)-(d). In these panels, we see that the reliance on priors is lower for 5-year-ahead expectations than for 10-year-ahead expectations in the *temporary*, *persistent*, and *SPF* treatments. This lower reliance on priors is especially notable for the *SPF* treatment. Consumers' 5-year-ahead expectations in this treatment display also a higher reliance on the specific information than their 10-year-

[19] An alternative way to perform this exercise is by looking at the treatment effect when the "control" group consists of all respondents in a given wave that did not participated in our RCT. These results are shown in Table 5 in the online C, where we observe that the *temporary* treatment is persistently associated with higher inflation expectations in later waves, while the *SPF* treatment is associated with lower inflation expectations, though not always significantly different from the "control" group. These results are consistent with the information reversal effect described in the main text, although they point to some treatment effects also in the first months after the RCT wave, unlike our main results.

[20] See also Weber et al. (2023) for an analysis of many RCTs in a high and low inflation environment.

ahead expectations (see Table 2). Information in the *temporary*, *persistent*, and *SPF* treatments is more informative for the 5-year-ahead inflation expectations compared to 10-year-ahead inflation expectations.[21]

3.7 Differential Effect between New and "Veteran" Participants in the BOP-HH

As Kim and Binder (2023) emphasize, there are significant learning effects for participants that are repeatedly asked about inflation expectation within a survey panel. In specific, Kim and Binder (2023) find that "veteran" participants have more accurate inflation expectations. Note that the panel structure in BOP-HH differs from the FRBNY Survey of Consumer Expectations (SCE) studied by Kim and Binder (2023): In BOP-HH, survey participants stay in the panel for up to three consecutive months, then take a break of three months, come back for another three months and so on up to a total of 12 months' participation in the panel (see also Table 1 in the online E). In this section, we study whether the effects of information treatments are different for "veteran" or new participants in the panel. The panel of respondents in September 2021 consisted of 20 percent of new survey participants and 80 percent of "veteran" participants.

We again focus on the intensive margin and plot the results in Figure 4(e)-(h). Tables 1 and 2 in the online E report results for all margins.[22] The information provided in the *persistent*, *temporary*, and *SPF* treatments are relatively more effective in taming inflation expectations for new compared to "veteran" respondents, as either their reliance on priors is lower (*SPF* treatment for long-run expectations or the *temporary* treatment for short-run expectations as can be seen in Figure 4(e)-(h)) or they have higher specific information effects (*SPF* and *persistent* treatments for short-run expectations; see Table 2).[23] Thus, our results that the informational effects are more successful in taming expectations for the new participants compared to the "veteran" participants are in line with those of Kim and Binder (2023).[24]

4 Treatment Effects on Consumption and Savings

In this section, we evaluate the causal effect of variation in both short- and long-run inflation expectations, induced by our information treatments, on individuals' spending and savings decisions

[21]The results for the overall effect suggest that the reliance on priors is slightly higher for the 10-year expectations in the *baseline* and *SPF* treatments compared to those in the same treatments that were asked to forecast 5-year-ahead inflation (see Figure 4(a)-(b) and Table 1). The unconditional probability of updating expectations is very similar between 5-year and 10-year-ahead inflation expectations (24.3 percent vs. 25.0 percent).

[22]At any horizon, the results for the overall margin suggest that the reliance on prior expectations is somewhat larger for the "veteran" participants compared to new participants. While there are some differences across treatments, the overall share of those who decide to update their expectations is very similar across new and "veteran" participants for short- and long-run expectations.

[23]In the case of long-run expectations, the effect of specific information in the *SPF* treatment is also higher for the new participants than for "veterans" in the survey. Regarding long-run expectations in the *temporary* treatment, the lower reliance on priors for "veterans" suggests that "veterans" respond more to the common information in that treatment (as can be seen in Table 2).

[24]We further test for potential heterogeneity effects across demographic characteristics, shown in Table 3 in the online G. We generally find little evidence for this type of heterogeneity, except that male respondents rely more on their priors when forecasting long-run expectations.

five months after the treatment.[25] The implementation follows Coibion et al. (2023c). Since the information treatments are distributed randomly across survey participants, they can serve as instruments to identify exogenous variation in inflation expectations across treatment groups. The first-stage estimation uses the specification in eq. (2).

In the second stage, we estimate the causal effect of exogenous variation in posterior inflation expectations, identified in the first stage, on spending decisions for different spending and savings categories. Specifically, we estimate the following regressions:

$$spending^{post}_{j,t,t-1} = \rho spending^{plan,prior}_{j,t-6,t+6} + \delta\pi^{e,h}_{j,post,t-6} + \gamma\pi^{e,h}_{j,prior,t-6} + \omega_j X'_j + e_j \tag{6}$$

where $spending^{post}_{j,t}$ measures spending in Euros in the previous month (in logs) across different categories, specifically durable spending, total consumption, essential goods, services, transport, housing and savings, all measured in March 2022, six months after the treatment, for expenditures in February 2022. Total spending on consumption is calculated as the sum of spending across all consumption categories except durable spending. We control for planned spending prior to treatment in September 2021, $spending^{plan,prior}_{j,t-6,t+6}$, measured as qualitative plans for spending in the corresponding category in the next 12 months compared to the previous 12 months. The variable is measured with three qualitative categories: Plan to spend more, about the same, or less. Both prior and posterior inflation expectations are measured in the September 2021 wave, i.e., directly before and after the information treatments. Expectations are formed for horizon h, which can be either short- or long-run. Finally, the vector X'_j includes the same set of demographic control variables used in the previous regressions.

Note that we specifically do not aim to estimate an Euler equation relationship. Rather, the estimations focus on identifying the impact of causal variation in expected inflation on actual and planned spending, while controlling for prior beliefs and spending plans. We are thus interested in the coefficient δ. Given a certain level of the nominal interest rate prevalent at time t, an exogenous increase in inflation would be expected to increase spending and to decrease savings.[26] To rule out unrealistically high or low values for current spending and savings, we trim actual spending measures at the 1^{st} and 99^{th} percentile.[27]

Tables 5 and 6 show estimates from 2SLS estimations of eq. (6) for short- and long-run expectations, respectively. As our first-stage F-statistics is not always above the Olea and Pflueger (2013) threshold for strong instruments, we report p-values of a test that is robust to weak IV for the estimated δ coefficients. Moreover, the Hansen J statistic does not reject the null of valid overidentifying restrictions in any model, with the only exception being the model on spending for housing in Table 5.

[25] BOP-HH collect respondents' past spending in the previous month and spending plans for the next 12 months in the same wave as our RCT, but these questions were asked before our information treatments. However, our RCT participants were again asked for spending and spending plans six months after our RCT took place (in March 2022). The actual spending measured in March 2022 refers to February 2022, five months after our RCT.

[26] Including expectations about nominal interest rates would get us somewhat closer to the theoretical Euler equation, but does not qualitatively change any of the results—see online F.

[27] We further account for potential outlier effects or influential observations by running a jackknife procedure as in Coibion et al. (2023c,b).

An exogenous increase in posterior inflation expectations in September 2021 causes a significant increase in spending on transport and a significant decrease in savings in February 2022. This is true for variation in both short- and long-run inflation expectations. Although we do not claim to estimate Euler equations, the sign of the estimated effects is consistent with this theoretical framework. Given the volatility in gas and fuel prices during the time period under investigation, it seems plausible that inflation expectations affected spending in this particular category. Similarly, the impact of rising inflation rates on households' purchasing power at the time may have strengthened the link between expected inflation and savings decisions. The size of the estimated effects on spending are economically significant: For both short- and long-run inflation expectations, the results suggest that an exogenous increase in expected inflation of 1 percentage point leads to higher monthly spending on transport by about 10 percent and to a decrease in monthly savings by about 10 percent for the estimation with short-run expectations and 20 percent with long-run expectations.

Tables 3 and 4 in the online appendix show similar estimations with qualitative spending plans in March 2022 as the dependent variable. The estimations yield a significant rise in planned spending on essential goods following an exogenous increase in either short- or long-run expectations. The effect on total planned spending, excluding durable spending, is also estimated to be positive and just misses significance at the 10 percent level.

5 Conclusion

News about rising inflation feeds into short- and long-run inflation expectations of German consumers, but additional information about the expected path of future inflation can tame the spillover from observed inflation on inflation expectations. Forward-looking communication about the economic outlook can affect the whole term structure of inflation expectations. Using different information treatments, we show that particularly the inflation projections shown in our *SPF* treatment are able to limit the spillover effects from rising inflation to inflation expectations. While both extensive and intensive margins shape posterior inflation expectations, our results suggest that the intensive margin explains a larger fraction of the variance of posterior inflation expectations.

We find that the information about current and future inflation induces the strongest adjustment of 1-year-ahead inflation expectations, followed by 5-year-ahead expectations, and with the lowest effect on 10-year-ahead expectations. New participants in the survey are also more amendable to the information provided, displaying larger effects of information treatments than "veteran" participants, who already participated in previous waves and, thus, have more formed opinions already. Moreover, the exogenous increase in inflation expectations due to our interventions has implications beyond the adjustment in expectations, as it leads to lower savings and higher consumption in certain categories, like transportation.

In an environment with rising inflation rates, forward-looking information on inflation has the ability to tame the spillovers to short- and long-run inflation expectations. At the same time, our results show that when consumers realize that inflation will likely be much higher than the outlook provided earlier, they reverse the effect of the treatment-specific information and start to rely more on their priors. This result serves as a warning to anyone attempting to influence expectations with "strategic" forecasts, which are later not realized.

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Online Appendix

A Additional Summary Statistics Tables

Table 1: Adjusted Short- and Long-run Inflation Expectations

Treatment	Stats	$\Delta\pi^{e,short}$	$\Delta\pi^{e,long}$	$\Delta\pi^{e,short}_{huber}$	$\Delta\pi^{e,long}_{huber}$
Baseline	mean	0.15	0.95	0.50	0.26
	obs	174	179	161	167
Persistent	mean	-0.61	-0.08	-1.42	-1.06
	obs	147	156	138	144
Temporary	mean	-0.07	0.31	-2.14	-0.61
	obs	132	130	121	114
SPF	mean	-1.00	-0.46	-1.42	-0.53
	obs	189	181	179	165
Placebo	mean	0.85	1.00	0.58	1.29
	obs	133	163	116	143
Total	mean	-0.19	0.34	-0.74	-0.18
	obs	775	809	715	733

Note: Intensive margin weights for Huber robust mean estimates.

B Additional Information for the Main Results

B.1 Other RCTs in the same wave and in previous waves

Sometimes BOP-HH runs more than one experiment in the same wave. In our wave 21 in September 2021, another experiment was run to infer how households perceive/interpret the following terminology regarding the duration/timing of events: short-, medium-, long-, and longer-run, when faced with statements from policymakers that include these terms. This RCT used a different randomization and we checked that different treatment arms from that RCT were randomly distributed across our information treatments.

In addition, in the preceding wave, there was an experiment about the new monetary policy strategy of the ECB, testing the understanding of a hypothetical average inflation targeting and the potential implications for inflation expectations (Hoffmann et al., 2022a). All participants in this RCT were informed about the "old" and new ECB's inflation target. In different treatment arms, they were asked about inflation expectations over the next two to three years under (i) different definitions of the ECB's inflation target (old, new, and new with extra explanation about the symmetry of the target) and (ii) either under expected inflation conditions or under a hypothetical scenario, where inflation in the next twelve months deviates by 1 percentage point from the ECB's target. Regarding the interference with our RCT, the ECB inflation target was provided in this experiment to all participants in this wave, otherwise no additional "relevant" information was conveyed as part of this RCT. We also checked that their randomization was independent of the randomization in our RCT. Note that as the panel is rotating, only a sub-sample of participants in the preceding wave continued to participate in our wave.

B.2 Decomposing the Overall Treatment Effect into Extensive and Intensive Margin

Following the logic of the Klenow and Kryvtsov (2008) decomposition the paper by Andrade et al. (2023), we adapted that decomposition to our RCT environment. In specific, we adapted the decomposition such that we can decompose the treatment effects using the cross-sectional data.

We compute the cross-sectional decomposition in the following way:

$$\pi_{i,post}^{e,h} = fr_i \cdot \pi_{i,post}^{e,ch} + (1 - fr_i) \cdot \pi_{i,post}^{e,nch}, \tag{7}$$

where $\pi_{i,post}^{e,h}$ is the average expectation in treatment i for horizon h and fr_i is the fraction of households who update expectations in treatment i. $\pi_{i,post}^{e,ch}$ represents the average expectation of those who decide to update their expectations in treatment i and $\pi_{i,post}^{e,nch}$ is the average inflation expectation of those who do not update their expectations in treatment i. It is possible to further decompose the cross-sectional differences in the average inflation expectations to changes in the intensive and extensive margins by taking a first-order approximation around the average inflation expectations in this survey experiment ($\overline{\pi^e}$):

$$\pi_{i,post}^{e,h} - \overline{\pi^e} = \underbrace{\left(fr_i - \overline{fr}\right)\left(\overline{\pi_{post}^{e,ch}} - \overline{\pi_{post}^{e,nch}}\right)}_{\text{extensive}} + \underbrace{\left(\pi_{i,post}^{e,ch} - \overline{\pi_{post}^{e,ch}}\right)\overline{fr} + \left(\pi_{i,post}^{e,nch} - \overline{\pi_{post}^{e,nch}}\right)\left(1 - \overline{fr}\right)}_{\text{intensive}} + O_i. \tag{8}$$

O_i is the residual; variables with the upper bar represent averages across all treatments. We can also decompose the cross-sectional variance of inflation expectations, $V\left(\pi_{i,post}^{e,h}\right)$, into the contributions of the extensive margin and the intensive margin, respectively. The contribution of the intensive margin is equal to:

$$V\left(\pi_{i,post}^{e,ch}\right)\overline{fr}^2 + V\left(\pi_{i,post}^{e,nch}\right)\left(1 - \overline{fr}\right)^2 + 2cov\left(\pi_{i,post}^{e,ch}, \pi_{i,post}^{e,nch}\right)\overline{fr}\left(1 - \overline{fr}\right) \tag{9}$$

and the contribution of the extensive margin is

$$\begin{aligned} V\left(fr_i\right)\left(\overline{\pi_{post}^{e,ch}} - \overline{\pi_{post}^{e,nch}}\right)^2 + 2cov\left(\pi_{i,post}^{e,ch}, fr_i\right)\left(\overline{\pi_{post}^{e,ch}} - \overline{\pi_{post}^{e,nch}}\right)\overline{fr} \\ + 2cov\left(\pi_{i,post}^{e,nch}, fr_i\right)\left(\overline{\pi_{post}^{e,ch}} - \overline{\pi_{post}^{e,nch}}\right)\left(1 - \overline{fr}\right) \end{aligned} \tag{10}$$

The results in Table 1 suggest that most variation in the level of average posterior inflation expectations across treatments can be explained by the contributions of the intensive margin. The variance of posterior inflation expectations across treatments is explained by both margins, where contributions of the extensive margin vary from 30.1 to 41.7 percent for short-run expectations and between 36.0 and 45.3 percent for long-run expectations. As expected—given the results for the extensive margin in Table 2—the contribution of the extensive margin is relatively smaller in the case of the "temporary" treatment compared to the "persistent" and "SPF" treatments.

B.3 Additional Tables for the Main Results

Table 2 calculates the weights on prior expectations and treatments as in eq. (1), when we do not distinguish between common and treatment-specific information, as well as the weights on prior expectations, common information in all treatments (the current inflation rate in comparison to inflation one year ago) and specific information across the treatments as in eq. (4). All weights are calculated from the estimations of the intensive margin in Tables 2-3. Comparing the results

Table 1: Cross-Sectional Variation of Average Inflation Expectations: The Role of Intensive and Extensive Margins

	$\pi^{e,short}_{post}$					$\pi^{e,long}_{post}$				
	Base	Per.	Temp.	SPF	Pl.	Base	Per.	Temp.	SPF	Pl.
$\pi^{e,h}_{j,post}$	4.38	4.63	4.25	4.01	4.60	4.94	5.08	4.97	4.43	4.82
$\pi^{e,h}_{i,post} - \overline{\pi^e}$	0.00	0.25	-0.13	-0.36	0.22	0.09	0.23	0.12	-0.42	-0.03
IM contr.	-0.03	0.26	-0.13	-0.27	0.24	0.04	0.23	0.21	-0.37	-0.01
EM contr.	0.00	0.00	0.00	0.01	0.00	0.02	-0.01	-0.04	0.02	0.00
$V\left(\pi^{e,h}_{i,post}\right)$	10.5	12.7	5.9	11.9	12.0	18.8	17.4	16.3	14.1	12.9
IM contr. (in %)	58.3	59.4	67.0	62.6	69.9	61.2	62.5	64.0	58.8	54.7
EM contr. (in %)	41.7	40.6	33.0	37.4	30.1	38.8	37.5	36.0	41.2	45.3

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. All statistics are calculated using Huber (1964) robust and population weights from the overall margin estimation in Table 2. IM stands for intensive margin and EM for extensive margin. Base, Per., Temp., Pl. stand for Baseline, Persistent, Temporary, and Placebo treatments. $\pi^{e,h}_{i,post} - \overline{\pi^e}$ is the difference in average expectations in treatment i and the average expectations in this RCT.

shows that only respondents in the *SPF* treatment put significant weight on the treatment-specific information when forming either short- or long-run posterior inflation expectations. In all other treatment groups, the weight on the treatment information for posterior expectations is driven by the common information across all treatments. However, we observe that respondents in the *persistent* treatment (for all horizons) and in the *temporary* treatment (only for short-run expectations) put larger weight on this common information—and consequently lower weight on their priors—compared to respondents in the *baseline* treatment.

Table 2: Common and Specific Information: Intensive Margin

	$\pi^{e,short}_{post}$					$\pi^{e,long}_{post}$				
	Baseline	Persistent	Temporary	SPF	Placebo	Baseline	Persistent	Temporary	SPF	Placebo
$\pi^{e,h}_{j,prior}$	0.43	0.13	0.08	0.11	0.33	0.52	0.28	0.56	0.45	1.20
$\pi^{h}_{i,info}$	0.57	0.87	0.92	0.89	0.67	0.48	0.72	0.44	0.55	-0.20
$\pi^{e,h}_{j,prior}$	0.43	0.14	0.07	0.10	0.33	0.54	0.27	0.56	0.47	1.20
$\pi^{h}_{i,spec}$	-	0.12	0.03	0.56	-	-	0.06	0	0.32	-
π^{h}_{Com}	0.57	0.74	0.90	0.34	0.67	0.46	0.64	0.44	0.21	-0.20

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. Coefficients in the top part of the table (rows 1-2) are calculated based on Table 2, while coefficients in the bottom part of the table (rows 3-5) are calculated based on Table 3.

C Additional Tables for Treatment Effects in Subsequent Waves

Further results for treatment effects across later waves are shown in this section. Table 1 summarizes how many of the respondents in our RCT wave 21 in September 2021 participated in the eight months after the treatment. The shares vary across waves due to the rotating panel construction of BOP-HH. In BOP-HH, survey participants stay in the panel for up to three consecutive months, then take a break of three months, come back for another three months and so on up to a total of 12 months' participation in the panel. Wave 27 in March 2022, exactly six months after the treatment contains the largest share of respondents who also participated in our RCT wave (47 percent). The remaining shares vary between 15-38 percent. Table 2 presents estimations of the overall treatment effect in eq. (2) across subsequent waves. In line with the results discussed in the main text, estimates in Table 2 demonstrate the renewed stronger reliance on prior estimations before the treatment starting in January 2022 in the case of short-run expectations and in November 2021 in the case of long-run expectations. Moreover, from February 2022 onwards, we observe that respondents in the *temporary* treatment further increase their reliance on their prior, thus putting *negative* weight on the signal.

Tables 3-4 show estimates of the intensive margin according to eq. (2) and distinguishing between common and treatment-specific information as in (5), respectively. The number of observations is significantly smaller in these tables compared to those for the overall margin, as we track only those that have adjusted the expectations after the information treatments in September 2021. The results are qualitatively similar to those for the overall margin.

Finally, Table 5 presents average treatment effects across all five treatment arms, treating all respondents in a wave who did not participate in our RCT earlier as the "control" group. Here, we observe that the *temporary* treatment is persistently associated with higher inflation expectations in later waves, while the *SPF* treatment is associated with lower inflation expectations, though not always significantly different from the "control" group. These results are consistent with the information reversal effect described in the main text, although they point to some treatment effects also in the first months after the RCT wave, unlike our main results.

Table 1: Share of Respondents in Later Waves who Participated in Wave 21

Month	Wave	Mean	N
September 2021	wave 21	1.00	3,274
October 2021	wave 22	0.38	5,297
November 2021	wave 23	0.17	6,023
December 2021	wave 24	0.00	3,365
January 2022	wave 25	0.17	3,694
February 2022	wave 26	0.31	5,099
March 2022	wave 27	0.47	5,403
April 2022	wave 28	0.34	5,542
May 2022	wave 29	0.15	5,865
June 2022	wave 30	0.00	4,460

Note: Bundesbank Online Panel of Households (BOP-HH).

Table 2: Overall Treatment Effects on Posterior Inflation Expectations—Treatment Effects in Further Waves

	Short-run Inflation exp. $\pi^{e,short}_{j,post}$								Long-run Inflation exp. $\pi^{e,long}_{j,post}$			
	W21	W22	W23	W25	W26	W27	W28	W29	W21	W23	W27	W28
	Sept '21	Oct '21	Nov '21	Jan '22	Feb '22	Mar '22	Apr '22	May '22	Sept '21	Nov '21	Mar '22	Apr '22
$\pi^{e,h}_{j,prior}$ (a_1)	0.64***	0.23*	0.14	0.36***	0.19***	0.19**	0.13*	0.18***	0.92***	0.23***	0.21**	0.30***
	(0.11)	(0.12)	(0.14)	(0.10)	(0.05)	(0.08)	(0.07)	(0.05)	(0.04)	(0.08)	(0.09)	(0.09)
Persistent (b_2)	-0.57	0.31	-0.82	1.01	0.25	0.72	0.95*	0.45	0.00	0.13	0.26	0.47
	(0.50)	(0.59)	(0.92)	(1.60)	(0.60)	(0.50)	(0.56)	(0.82)	(0.30)	(0.58)	(0.84)	(0.49)
Temporary (b_3)	-0.72	-0.80	-1.50	-0.05	-1.46*	-0.62	-0.85	-0.89	-0.05	-0.07	-0.18	-0.52
	(0.45)	(0.80)	(0.95)	(0.75)	(0.79)	(0.81)	(0.56)	(0.84)	(0.27)	(0.48)	(0.76)	(0.60)
SPF (b_4)	-1.37***	-0.04	0.42	-1.61**	-0.20	0.45	0.29	0.33	-0.42*	-0.29	-0.64	0.22
	(0.49)	(0.58)	(0.82)	(0.81)	(0.46)	(0.67)	(0.71)	(0.67)	(0.26)	(0.65)	(0.77)	(0.91)
Placebo (b_4)	-0.85**	-0.05	-0.68	-0.24	0.26	-0.22	-0.34	0.38	0.18	-0.09	-0.67	0.37
	(0.43)	(0.65)	(0.71)	(0.57)	(0.56)	(0.54)	(0.64)	(0.76)	(0.38)	(0.58)	(0.57)	(0.58)
$\pi^{e,h}_{j,prior}\cdot$ Persistent (c_2)	0.12	-0.01	0.22	-0.10	-0.07	-0.12	-0.05	-0.03	-0.05	0.08	0.01	0.09
	(0.14)	(0.16)	(0.25)	(0.31)	(0.15)	(0.11)	(0.11)	(0.19)	(0.08)	(0.17)	(0.19)	(0.12)
$\pi^{e,h}_{j,prior}\cdot$ Temporary (c_3)	0.16	0.26	0.34	0.09	0.55***	0.23	0.26**	0.41**	-0.05	0.01	0.05	0.09
	(0.12)	(0.21)	(0.27)	(0.18)	(0.18)	(0.17)	(0.12)	(0.21)	(0.06)	(0.10)	(0.13)	(0.12)
$\pi^{e,h}_{j,prior}\cdot$ SPF (c_4)	0.23	0.09	-0.06	0.31*	0.11	-0.04	-0.06	-0.07	-0.02	0.16	0.23	0.19
	(0.14)	(0.17)	(0.18)	(0.17)	(0.12)	(0.15)	(0.17)	(0.12)	(0.06)	(0.13)	(0.19)	(0.19)
$\pi^{e,h}_{j,prior}\cdot$ Placebo (c_5)	0.25**	0.14	0.18	-0.14	0.12	0.22*	0.31**	0.04	-0.06	0.22	0.20	0.04
	(0.12)	(0.16)	(0.16)	(0.11)	(0.12)	(0.12)	(0.13)	(0.13)	(0.09)	(0.15)	(0.13)	(0.15)
cons (a_0)	1.76***	3.67***	3.12***	4.57***	4.71***	5.64***	5.27***	6.02***	0.87***	1.85**	4.29***	5.05***
	(0.45)	(0.71)	(0.90)	(1.23)	(0.77)	(0.97)	(0.97)	(1.17)	(0.30)	(0.85)	(0.82)	(1.32)
N	3029	1818	939	564	1431	2319	1723	823	2979	929	2259	1674
Adj. R^2	0.731	0.159	0.124	0.181	0.190	0.092	0.129	0.117	0.813	0.221	0.098	0.200
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber
Actual π_{t-1}	3.9%	4.1%	4.4%	4.9%	4.2%	4.3%	5.9%	6.3%	3.9%	4.4%	4.3%	5.9%

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and subsequent waves. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) in wave 21. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. We use population weights and Huber weights from the treatment wave 21 also in later waves. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Intensive Margin of Treatment Effects on Posterior Inflation Expectations—Treatment Effects in Further Waves

	Short-run Inflation exp. $\pi^{e,short}_{j,post}$								Long-run Inflation exp. $\pi^{e,long}_{j,post}$			
	W21 Sept '21	W22 Oct '21	W23 Nov '21	W25 Jan '22	W26 Feb '22	W27 Mar '22	W28 Apr '22	W29 May '22	W21 Sept '21	W23 Nov '21	W27 Mar '22	W28 Apr '22
$\pi^{e,h}_{j,prior}$	0.43***	0.05	0.08	0.97***	0.15	0.25***	0.00	0.18**	0.52***	0.15***	0.28**	0.01
	(0.02)	(0.07)	(0.06)	(0.15)	(0.09)	(0.09)	(0.09)	(0.08)	(0.03)	(0.05)	(0.14)	(0.07)
Persistent	0.57***	-0.50	-0.01	-1.61	-0.93	0.00	-0.15	-0.19	0.45**	-0.59	-0.38	1.33
	(0.18)	(0.49)	(0.62)	(2.45)	(0.68)	(0.66)	(0.69)	(1.06)	(0.20)	(0.73)	(1.40)	(0.89)
Temporary	0.96***	-0.17	0.97	2.36***	-1.03	-0.75	-0.21	0.53	-0.58**	-1.16	0.26	-0.06
	(0.18)	(0.59)	(0.91)	(0.85)	(0.64)	(1.35)	(1.06)	(1.27)	(0.26)	(0.98)	(0.87)	(0.88)
SPF	-0.40**	-0.24	1.63	2.68	-0.07	0.22	-1.06	0.70	-0.81***	0.90	0.44	-0.26
	(0.19)	(0.45)	(1.43)	(2.11)	(0.63)	(0.60)	(0.72)	(1.69)	(0.23)	(1.31)	(0.99)	(0.88)
Placebo	0.47***	-0.74	-0.46	2.16**	-0.39	-0.09	0.29	1.50	-1.75***	-6.56***	0.21	-0.87
	(0.16)	(0.55)	(0.44)	(1.03)	(0.97)	(0.64)	(0.61)	(0.95)	(0.23)	(0.96)	(0.89)	(0.79)
$\pi^{e,h}_{j,prior}\cdot$ Persistent	-0.30***	0.09	-0.05	0.67	0.19	-0.02	0.14	0.09	-0.24***	0.13	0.34	-0.09
	(0.03)	(0.08)	(0.09)	(0.42)	(0.14)	(0.13)	(0.11)	(0.13)	(0.04)	(0.10)	(0.34)	(0.11)
$\pi^{e,h}_{j,prior}\cdot$ Temporary	-0.35***	0.06	-0.11	-0.94***	0.19**	0.35	0.10	0.28	0.04	0.07	-0.15	0.12
	(0.02)	(0.14)	(0.15)	(0.14)	(0.10)	(0.35)	(0.28)	(0.36)	(0.04)	(0.21)	(0.14)	(0.09)
$\pi^{e,h}_{j,prior}\cdot$ SPF	-0.32***	0.07	-0.12	-0.97**	-0.04	-0.08	0.15	-0.11	-0.06	-0.28	0.01	0.03
	(0.04)	(0.08)	(0.16)	(0.40)	(0.14)	(0.11)	(0.13)	(0.18)	(0.05)	(0.22)	(0.18)	(0.12)
$\pi^{e,h}_{j,prior}\cdot$ Placebo	-0.10***	0.17	0.09	-1.01***	0.12	-0.08	0.07	-0.29**	0.68***	2.14***	0.09	0.32***
	(0.03)	(0.14)	(0.09)	(0.22)	(0.21)	(0.11)	(0.10)	(0.14)	(0.05)	(0.15)	(0.23)	(0.10)
cons	2.27***	4.11***	0.72	2.11	2.74***	4.73***	5.88***	9.33***	2.02***	3.60***	2.98***	3.25**
	(0.33)	(1.31)	(1.93)	(1.90)	(0.83)	(0.78)	(1.13)	(3.15)	(0.22)	(1.13)	(1.03)	(1.55)
N	715	454	232	126	340	558	419	191	733	118	318	234
Adj. R^2	0.611	0.045	0.079	0.463	0.260	0.347	0.065	0.185	0.768	0.760	0.246	0.161
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber
Actual π_{t-1}	3.9%	4.1%	4.4%	4.9%	4.2%	4.3%	5.9%	6.3%	3.9%	4.4%	4.3%	5.9%

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and subsequent waves. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) in wave 21. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. We use population weights and Huber weights from the treatment wave 21 also in later waves. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Intensive Margin of Treatment Effects on Posterior Inflation Expectations in Further Waves: Common vs. Treatment-specific Information

	Short-run Inflation exp. $\left(\pi^{e,short}_{j,post} - \pi_{t-1}\right)$								Long-run Inflation exp. $\left(\pi^{e,long}_{j,post} - \pi_{t-1}\right)$			
	W21 Sept '21	W22 Oct '21	W23 Nov '21	W25 Jan '22	W26 Feb '22	W27 Mar '22	W28 Apr '22	W29 May '22	W21 Sept '21	W23 Nov '21	W27 Mar '22	W28 Apr '22
$\pi^{e,h}_{j,prior} - \pi_{t-1}$	0.43***	0.06	0.08	1.03***	0.12	0.26*	-0.04	0.18**	0.54***	0.09***	0.27**	0.00
	(0.03)	(0.07)	(0.05)	(0.18)	(0.13)	(0.14)	(0.07)	(0.09)	(0.02)	(0.04)	(0.13)	(0.09)
$\pi^{h}_{i,spec} - \pi_{t-1}$	-0.02	-0.19	-0.27	0.30*	-0.19	-1.18***	-0.55**	-1.41***	-0.01	0.76***	0.09	0.26
	(0.06)	(0.31)	(0.54)	(0.15)	(0.23)	(0.23)	(0.25)	(0.49)	(0.08)	(0.10)	(0.22)	(0.32)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Persistent	-0.29***	0.07	-0.07	0.69	0.22	-0.06	0.17*	0.16	-0.27***	0.21**	0.37	-0.03
	(0.04)	(0.08)	(0.08)	(0.44)	(0.18)	(0.17)	(0.10)	(0.12)	(0.03)	(0.09)	(0.34)	(0.13)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Temporary	-0.36***	0.03	-0.16	-0.99***	0.24*	0.32	0.18	0.40	0.02	0.09	-0.12	0.16
	(0.03)	(0.15)	(0.16)	(0.18)	(0.13)	(0.38)	(0.30)	(0.38)	(0.04)	(0.18)	(0.14)	(0.11)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ SPF	-0.32***	0.07	-0.11	-1.05**	0.01	-0.12	0.19	-0.01	-0.07	-0.28	0.11	0.23
	(0.05)	(0.09)	(0.16)	(0.45)	(0.16)	(0.17)	(0.13)	(0.19)	(0.05)	(0.21)	(0.21)	(0.19)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Placebo	-0.09**	0.15	0.08	-0.96***	0.05	-0.09	0.15*	-0.15	0.66***	2.29***	0.20	0.37***
	(0.04)	(0.15)	(0.10)	(0.37)	(0.24)	(0.16)	(0.08)	(0.14)	(0.08)	(0.18)	(0.23)	(0.11)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ Persistent	0.13	0.10	0.33	-1.44	-0.11	0.10	-0.34	0.50	0.07	-0.22	-0.72**	-0.05
	(0.09)	(0.36)	(0.59)	(0.88)	(0.29)	(0.31)	(0.37)	(0.61)	(0.10)	(0.27)	(0.33)	(0.48)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ SPF	0.58***	0.08	-0.13	-0.16	-0.00	0.50*	0.45	0.81	0.32***	-0.43	-0.22	0.44
	(0.07)	(0.32)	(0.74)	(0.30)	(0.25)	(0.26)	(0.31)	(0.77)	(0.09)	(0.26)	(0.32)	(0.41)
N	715	454	232	126	340	558	419	191	733	118	318	234
Adj. R^2	0.568	0.045	0.010	0.447	0.267	0.444	0.100	0.256	0.714	0.751	0.255	0.138
Demographic Controls	No	No	No	No	No	No	No	No	No	No	No	No
Model	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber
Actual π_{t-1}	3.9%	4.1%	4.4%	4.9%	4.2%	4.3%	5.9%	6.3%	3.9%	4.4%	4.3%	5.9%

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and subsequent waves. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) in wave 21. In subsequent waves, we assume the last available inflation rate (π_{t-1}) to be the common information. Treatment-specific information was assumed to be 2.5% for the short- and long-horizon in the *permanent* treatment, 2% for the short- and long-horizon in the *temporary* treatment and 1.7% in the short and 1.8% in the long horizon for the *SPF* treatment. The *baseline* and *placebo* treatment contained no treatment-specific information about inflation forecasts. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. We use population and Huber weights from wave 21 also in later waves. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Overall Treatment Effects on Posterior Inflation Expectations in Further Waves—Control group: Those Who Were Not Treated in Wave 21

	Short-run Inflation exp. $\pi^{e,short}_{j,post}$							Long-run Inflation exp. $\pi^{e,long}_{j,post}$		
	W22	W23	W25	W26	W27	W28	W29	W23	W27	W28
	Oct '21	Nov '21	Jan '22	Feb '22	Mar '22	Apr '22	May '22	Nov '21	Mar '22	Apr '22
Baseline	0.02	0.05	0.18	-0.02	0.10	-0.28***	-0.07	-0.18*	-0.02	-0.27***
	(0.07)	(0.09)	(0.14)	(0.08)	(0.07)	(0.10)	(0.15)	(0.09)	(0.08)	(0.09)
Persistent	0.06	0.21**	0.11	-0.18**	-0.06	0.47***	0.10	0.08	0.09	0.38***
	(0.07)	(0.10)	(0.12)	(0.08)	(0.07)	(0.10)	(0.17)	(0.09)	(0.08)	(0.09)
Temporary	0.15**	0.29***	0.33**	0.16**	0.13*	0.19*	0.16	-0.20**	0.14	-0.08
	(0.07)	(0.09)	(0.13)	(0.08)	(0.08)	(0.10)	(0.16)	(0.10)	(0.09)	(0.09)
SPF	0.07	-0.18*	-0.15	-0.17**	-0.07	-0.15	-0.37**	-0.16*	0.04	-0.00
	(0.07)	(0.09)	(0.16)	(0.07)	(0.07)	(0.11)	(0.16)	(0.09)	(0.09)	(0.10)
Placebo	0.09	0.20*	-0.09	0.02	0.01	0.37***	0.10	-0.32***	0.07	0.11
	(0.07)	(0.10)	(0.10)	(0.07)	(0.07)	(0.10)	(0.17)	(0.09)	(0.08)	(0.09)
cons	4.31***	4.37***	4.37***	4.47***	5.22***	6.87***	7.83***	3.13***	3.35***	3.93***
	(0.12)	(0.13)	(0.18)	(0.12)	(0.16)	(0.19)	(0.22)	(0.13)	(0.16)	(0.19)
N	4664	5268	3293	4482	4786	5028	5324	5067	4623	4812
Adj. R^2	0.036	0.041	0.045	0.039	0.046	0.049	0.047	0.066	0.078	0.087
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber
Actual π_{t-1}	4.1%	4.4%	4.9%	4.2%	4.3%	5.9%	6.3%	4.4%	4.3%	5.9%

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and subsequent waves. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) in wave 21. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

D Tables for 5-year Ahead and 10-year Ahead Inflation Expectations

We study whether there are any differences across information treatments on 5-year and 10-year ahead inflation expectation. Please see Figure 4(a)-(d) in the main text and Tables 1-2 below for the results. Note that the description of the results is relative to the "other group" considered and not relative to the *baseline* treatment, as for the main results in the paper. Generally, our *temporary*, *persistent*, and *SPF* treatments are more effective in taming the increase in inflation expectations for the 5-year ahead inflation expectations compared to 10-year ahead inflation expectations.

The results for the overall effect in the first two columns of Table 1 suggest that the reliance on priors is slightly higher for the 10-year expectations in the *baseline* and *SPF* treatments compared to those in the same treatments that were asked to forecast 5-year ahead inflation. Moreover, the informational effect of the *SPF* treatment is more precisely estimated for the 10-year expectations. The unconditional probability of updating expectations is very similar between 5-year and 10-year ahead inflation expectations (24.3 vs. 25.0 percent). Regarding the extensive margin (columns 3-4 in Table 1), we do not find much difference across treatments for the 5-year ahead expectations. There are significant differences in the extensive margin in the case of 10-year ahead expectations, where in the *persistent* and the *temporary* treatments household that have relatively low prior expectations are less likely to update on average, but households with relatively high expectations are more likely to update. This can be seen by a negative effect on the level and a positive effect on the slope. However, most differences between 5-year ahead and 10-year ahead posterior inflation expectations can be seen on the intensive margin (columns 5-6 of Table 1). In particular, the most notable difference is in how households process information in the baseline treatment, where there is higher reliance on the prior in the case of 10-year expectations compared to 5-year ahead expectations—10-year expectations exhibit an extrapolation effect in this treatment (reliance on priors is higher than one). While the *temporary*, *persistent*, and *SPF* treatments all tame inflation expectations for a large set of prior expectations, the effects tend to be somewhat larger for 5-year ahead expectations than for 10-year ahead expectations. This is most evident for the *SPF* treatment that is notably more effective for the 5-year ahead expectations than for 10-year ahead expectations. For households in the *SPF* treatment 5-year ahead expectations display both a smaller reliance on priors and a higher reliance on the specific information provided. Table 2 present results for 5-year and 10-year ahead expectations for the specification with common and treatment-specific information in eq. (4). The results show that the *SPF* treatment is notably more effective for the 5-year ahead expectations than for 10-year ahead expectations. Consumers' 5-year ahead expectations in this treatment display both a smaller reliance on priors and a higher reliance on the specific information.

Table 1: Robustness: Treatment Effects—Expectations 5-Years Ahead vs. Expectations 10-Years Ahead

	Overall Effect		Extensive margin		Intensive margin	
	5yrs exp	10yrs exp	5yrs exp	10yrs exp	5yrs exp	10yrs exp
$\pi^{e,long}_{j,prior}$	0.855***	0.955***	-0.003	-0.000	0.517***	1.165***
	(0.063)	(0.046)	(0.012)	(0.008)	(0.030)	(0.052)
Persistent	-0.350	0.353	0.075	-0.199**	0.215	2.649***
	(0.433)	(0.333)	(0.105)	(0.091)	(0.311)	(0.306)
Temporary	-0.481	0.303	-0.067	-0.329***	-0.951**	1.346***
	(0.415)	(0.280)	(0.088)	(0.085)	(0.469)	(0.362)
SPF	-0.511	-0.414**	-0.053	0.055	-0.120	0.321
	(0.426)	(0.210)	(0.092)	(0.085)	(0.332)	(0.320)
Placebo	-0.537	0.252	-0.068	-0.054	0.045	0.085
	(0.377)	(0.445)	(0.094)	(0.082)	(0.340)	(0.371)
$\pi^{e,long}_{j,prior} \cdot$ Persistent	0.049	-0.171*	-0.006	0.027*	-0.209***	-0.950***
	(0.100)	(0.094)	(0.016)	(0.015)	(0.057)	(0.057)
$\pi^{e,long}_{j,prior} \cdot$ Temporary	0.061	-0.133*	-0.001	0.036***	0.125*	-0.617***
	(0.075)	(0.072)	(0.016)	(0.013)	(0.076)	(0.061)
$\pi^{e,long}_{j,prior} \cdot$ SPF	-0.021	0.008	0.016	-0.012	-0.233***	-0.441***
	(0.099)	(0.057)	(0.016)	(0.012)	(0.063)	(0.071)
$\pi^{e,long}_{j,prior} \cdot$ Placebo	0.100	-0.041	0.005	0.002	-0.058	0.136
	(0.074)	(0.114)	(0.017)	(0.013)	(0.064)	(0.084)
cons	1.287***	0.408			2.304***	0.934***
	(0.466)	(0.345)			(0.762)	(0.246)
N	1495	1484	1496	1486	363	372
Adj. R^2	0.803	0.868			0.590	0.859
Pseudo R^2			0.037	0.047		
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
Model	Huber	Huber	Probit	Probit	Huber	Huber

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The extensive margin measures the likelihood of an update in posterior expectations. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Columns 1, 3, 5 show estimates for inflation expectations 5 years ahead, columns 2, 4, 6 show estimates for inflation expectations 10 years ahead. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment). All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. Results from probit estimation show marginal effects evaluated at the mean. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 2: Robustness: Differentiating between Common and Treatment-Specific Information—Expectations 5-Years Ahead vs. Expectations 10-Years Ahead

	Long-run $\pi^{e,long}_{j,post} - \pi_{t-1}$	
	5yrs exp	10yrs exp
$\pi^{e,long}_{j,prior} - \pi_{t-1}$	0.549***	1.188***
	(0.021)	(0.095)
$\pi^{long}_{i,spec} - \pi_{t-1}$	-0.004	0.021
	(0.131)	(0.104)
$\left(\pi^{e,long}_{j,prior} - \pi_{t-1}\right) \cdot$ Persistent	-0.246***	-0.932***
	(0.053)	(0.098)
$\left(\pi^{e,long}_{j,prior} - \pi_{t-1}\right) \cdot$ Temporary	0.101	-0.627***
	(0.069)	(0.100)
$\left(\pi^{e,long}_{j,prior} - \pi_{t-1}\right) \cdot$ SPF	-0.229***	-0.467***
	(0.064)	(0.110)
$\left(\pi^{e,long}_{j,prior} - \pi_{t-1}\right) \cdot$ Placebo	-0.089	0.097
	(0.059)	(0.150)
$\left(\pi^{long}_{i,spec} - \pi_{t-1}\right) \cdot$ Persistent	0.083	-0.003
	(0.155)	(0.140)
$\left(\pi^{long}_{i,spec} - \pi_{t-1}\right) \cdot$ SPF	0.303**	0.159
	(0.152)	(0.124)
N	363	372
Adj. R^2	0.555	0.780
Demographic Controls	No	No
Model	Huber	Huber

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) and is the common information. Treatment-specific information was assumed to be 2.5% for the short- and long-horizon in the *permanent* treatment, 2% for the short- and long-horizon in the *temporary* treatment and 1.7% in the short and 1.8% in the long horizon for the *SPF* treatment. The *baseline* and *placebo* treatment contained no treatment-specific information about inflation forecasts. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. *** p<0.01, ** p<0.05, * p<0.1

E Treatment Effects of "Veteran" versus New Participants in BOH panel

The rotating panel structure of BOP-HH allows to analyze potential differences in the treatment effects across new and "veteran" survey participants. The panel of respondents in our RCT wave in September 2021 consists of 20 percent of new survey participants and 80% of "veteran" participants. Thus, the results for the new survey participants can be less precisely estimated compared to those for the "veteran" participants. The results are presented in Figure 4 in the main text and Tables 1-2 below. Note that the description of the results is relative to the "other group" considered in this exercise (veteran vs new) and not relative to the *baseline* treatment as for the main results in the paper. Note also that the panel structure in the BOP-HH dataset differs from the panel structure in the SEC studied by Kim and Binder (2023). In BOP-HH, survey participants stay in the panel for up to three consecutive months, then take a break of three months, come back for another three months and so on up to a total of 12 months' participation in the panel.

We first focus on the results for the short-run inflation expectations (see columns (1)-(6) of Table 1). Results for the overall margin suggest that the reliance on prior expectations is somewhat larger for the "veteran" participants than for new participants. The share of those who decide to update their expectations is very similar across new and "veteran" participants. The analysis suggests that, however, the new respondents have a lower likelihood to update expectations (extensive margin) when exposed to the *persistent* and *temporary* treatments. Those that have relatively low expectations also updated less frequently in the *SPF* treatment, but the effect is reversed for those that have high prior expectations. Regarding the intensive margin, the reliance on priors across different treatment arms is similar for both "veteran" and new participants, with the exception of the *temporary* treatment where the reliance is higher for the "veteran" participants. However, as shown in columns (1)-(2) of Table 2, the new respondents rely more on the specific information in the *SPF* and *persistent* treatments than "veteran" participants. In particular, in the *persistent* treatment new respondents react to the specific information with a weight of 0.37, compared to a weight of 0.06 for the "veteran" participants. These results seems to indicate that the informational effects are more successful in taming expectations for the new participants compared to the "veteran" participants.

Regarding their long-run inflation expectations, results for the overall margin suggest that "veteran" participants rely slightly more on their prior expectations (see columns (7)-(12) of Table 1). The updating frequency is similar across new and "veteran" participants. We see that "veteran" participants update less frequently when exposed to the *temporary* treatment, as in our main results. As was the case for the short-run expectations, those that have relatively low expectations update less frequently their long-run expectations in the *SPF* treatment, but it can reverse for those that have high prior expectations in this treatment. There are some signs of a similar effect in the *temporary* treatment, although the effect is less significant than for the *SPF* treatment. The intensive margin displays the most pronounced differences across treatments. The behavior of "veteran" and new participants in the *baseline* treatment is very different, as the "veterans" tend to extrapolate their prior expectations based on the information provided to them, while the reliance on prior expectations is much lower for the new participants. Regarding the treatment effects of the *temporary*, *persistent*, and *SPF* treatments, we can conclude that the information provided in the *persistent* and *SPF* treatments are relatively more effective in taming inflation expectations for the new participants compared to "veteran" participants, as either their reliance on their priors is lower (*SPF* treatment) or have higher—though not significantly—specific information effect (*persistent* treatment), see Figure 4(g)-(h) and Table 2. The effect of specific information in the *SPF* treatment is also higher for the new participants in the survey. Regarding the *temporary* treatment, the lower reliance on priors for "veterans" suggests that "veterans" responded more to the common information in that treatment (as can be seen in Table 2). In fact, the reliance on priors for the new participants in the *temporary* treatment is larger than in the *baseline* treatment for the new participants.

Table 1: Treatment Effects: Veteran Panel Participants vs. New Panel Members

	Short-run inflation expectations $\pi^{e,short}_{j,post}$						Long-run inflation expectations $\pi^{e,long}_{j,post}$					
	Overall Effect		Extensive margin		Intensive margin		Overall Effect		Extensive margin		Intensive margin	
	Veteran	New	Veteran	New	Veteran	New	Veteran	New	Veteran	New	Veteran	New
$\pi^{e,h}_{j,prior}$	0.823***	0.671***	0.010	-0.001	0.429***	0.411***	0.967***	0.911***	-0.004	0.004	1.147***	0.524***
	(0.114)	(0.114)	(0.009)	(0.014)	(0.029)	(0.021)	(0.032)	(0.067)	(0.008)	(0.014)	(0.043)	(0.025)
Persistent	0.216	0.027	-0.098	-0.313**	0.601***	0.020	0.541	-0.554	-0.056	-0.089	2.275***	0.611
	(0.550)	(0.618)	(0.073)	(0.140)	(0.209)	(0.319)	(0.332)	(0.598)	(0.079)	(0.139)	(0.239)	(0.405)
Temporary	-0.204	-0.073	-0.040	-0.334**	-0.796***	-0.125	0.180	-0.361	-0.170**	-0.221	1.246***	-1.164***
	(0.465)	(0.736)	(0.085)	(0.148)	(0.189)	(0.334)	(0.269)	(0.514)	(0.066)	(0.139)	(0.290)	(0.380)
SPF	-0.784	-0.379	0.075	-0.336**	-0.475**	-0.411	-0.222	-0.018	0.063	-0.416***	0.786***	0.423
	(0.509)	(0.809)	(0.076)	(0.146)	(0.227)	(0.334)	(0.220)	(0.749)	(0.069)	(0.146)	(0.277)	(0.475)
Placebo	-0.356	-0.111	-0.010	-0.189	0.467**	0.226	0.062	-0.171	-0.098	0.097	-0.020	0.286
	(0.445)	(0.585)	(0.075)	(0.146)	(0.199)	(0.266)	(0.335)	(0.632)	(0.066)	(0.143)	(0.282)	(0.494)
$\pi^{e,h}_{j,prior}\cdot$ Persistent	-0.077	-0.159	0.009	0.017	-0.291***	-0.256***	-0.175**	-0.122	0.010	0.015	-0.860***	-0.260***
	(0.152)	(0.173)	(0.012)	(0.023)	(0.038)	(0.036)	(0.085)	(0.135)	(0.013)	(0.020)	(0.049)	(0.058)
$\pi^{e,h}_{j,prior}\cdot$ Temporary	0.005	0.038	-0.005	0.035	0.076**	-0.050	-0.088	-0.067	0.009	0.040*	-0.622***	0.306***
	(0.127)	(0.186)	(0.016)	(0.021)	(0.038)	(0.034)	(0.059)	(0.079)	(0.011)	(0.021)	(0.048)	(0.035)
$\pi^{e,h}_{j,prior}\cdot$ SPF	0.071	-0.086	-0.013	0.050*	-0.302***	-0.389***	-0.042	-0.299	-0.006	0.070**	-0.622***	-0.352***
	(0.146)	(0.233)	(0.013)	(0.025)	(0.053)	(0.062)	(0.056)	(0.193)	(0.011)	(0.028)	(0.065)	(0.055)
$\pi^{e,h}_{j,prior}\cdot$ Placebo	0.114	0.044	-0.015	0.004	-0.073**	-0.088**	-0.009	-0.052	0.012	-0.033	0.069	-0.005
	(0.121)	(0.150)	(0.013)	(0.020)	(0.036)	(0.038)	(0.089)	(0.094)	(0.011)	(0.023)	(0.061)	(0.104)
cons	1.253**	1.112			2.379***	1.780*	0.486*	0.958			0.639***	0.830
	(0.508)	(0.675)			(0.342)	(0.987)	(0.265)	(0.774)			(0.232)	(0.769)
N	2421	605	2425	608	570	142	2378	597	2383	599	586	149
Adj. R^2	0.759	0.744			0.630	0.824	0.830	0.804			0.815	0.875
Pseudo R^2			0.024	0.065					0.027	0.077		
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	Huber	Huber	Probit	Probit	Huber	Huber	Huber	Huber	Probit	Probit	Huber	Huber

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The extensive margin measures the likelihood of an update in posterior expectations. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Columns 1, 3, 5, 7, 9, 11 show estimates for the sample of "veteran" participants from previous waves, columns 2, 4, 6, 8, 10, 12 show estimates for the sample of new panel members. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment). All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. Results from probit estimation show marginal effects evaluated at the mean. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 2: Common and Treatment-Specific Information: Veteran Panel Participants vs. New Panel Members

	Short-run $\pi^{e,short}_{j,post} - \pi_{t-1}$		Long-run $\pi^{e,long}_{j,post} - \pi_{t-1}$	
	Veteran	New	Veteran	New
$\pi^{e,h}_{j,prior} - \pi_{t-1}$	0.423***	0.422***	1.151***	0.542***
	(0.036)	(0.038)	(0.082)	(0.024)
$\pi^{h}_{i,spec} - \pi_{t-1}$	0.052	-0.107	0.064	-0.062
	(0.060)	(0.115)	(0.087)	(0.189)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Persistent	-0.286***	-0.286***	-0.872***	-0.293***
	(0.045)	(0.052)	(0.084)	(0.046)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Temporary	0.095**	-0.081*	-0.626***	0.234***
	(0.045)	(0.047)	(0.085)	(0.036)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ SPF	-0.305***	-0.426***	-0.621***	-0.396***
	(0.062)	(0.068)	(0.095)	(0.053)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Placebo	-0.083	-0.099	0.077	-0.039
	(0.052)	(0.063)	(0.114)	(0.067)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ Persistent	0.010	0.472***	-0.043	0.311
	(0.091)	(0.173)	(0.111)	(0.242)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ SPF	0.499***	0.697***	0.218**	0.450**
	(0.072)	(0.128)	(0.100)	(0.228)
N	570	142	586	149
Adj. R^2	0.586	0.792	0.749	0.875
Demographic Controls	No	No	No	No
Model	Huber	Huber	Huber	Huber

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) and is the common information. Treatment-specific information was assumed to be 2.5% for the short- and long-horizon in the *permanent* treatment, 2% for the short- and long-horizon in the *temporary* treatment and 1.7% in the short and 1.8% in the long horizon for the *SPF* treatment. The *baseline* and *placebo* treatment contained no treatment-specific information about inflation forecasts. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. *** p<0.01, ** p<0.05, * p<0.1

F Robustness for Treatment Effects on Consumption and Savings

We perform two checks regarding the treatment effects on consumption and savings in this section. First, we check the robustness of our estimates when additionally controlling for nominal interest rate expectations. Results are shown in Tables 1 and 2. All results regarding the causal impact of posterior inflation expectations on spending for transport and savings five months after the treatment remain robust when controlling for nominal interest expectations. Nominal interest expectations in wave 21 are either insignificant or negatively (positively) correlated with spending (savings) choices five months later, in line with the theoretical Euler equation relationship.

In addition to eq. (6) in the main paper, we further estimate a specification for planned spending measured six months after the treatments:

$$spending^{e,post}_{j,t,t+12} = \beta spending^{e,prior}_{j,t-6,t+6} + \alpha\pi^{e,h}_{j,post,t-6} + \gamma\pi^{e,h}_{j,prior,t-6} + \omega_j X'_j + error_j \tag{11}$$

Results when estimating the specification in eq. (11), and robustness checks controlling for nominal interest rate expectations, are reported in Tables 3–6. We find that an exogenous increase in posterior inflation expectations significantly raises planned spending on essential goods six months later. This result is again robust to controlling for nominal interest rate expectations.

Table 1: Effect on Consumption Spending after Six Months: Posterior Short-Run Inflation Expectations, Controlling for Interest rate Expectations

	log spending in the previous month						
	durable	total consumption	essential goods	services	transport	housing	savings
$\pi^{e,short}_{j,post,t-6}$	0.157	-0.010	-0.038	0.023	0.155***	-0.056	-0.119*
	(0.105)	(0.029)	(0.031)	(0.049)	(0.049)	(0.036)	(0.066)
	[0.420]	[0.704]	[0.226]	[0.441]	[0.006]	[0.227]	[0.084]
$spending^{plan,short}_{j,t-6}$	0.225	0.006	0.156	0.148	0.143*	-0.193	0.095
	(0.142)	(0.013)	(0.099)	(0.108)	(0.080)	(0.129)	(0.130)
$\pi^{e,short}_{j,prior,t-6}$	-0.015	0.002	0.018**	-0.020	-0.066***	0.016	-0.045***
	(0.062)	(0.014)	(0.007)	(0.028)	(0.019)	(0.012)	(0.017)
$i^{short,prior}_{j,t-6}$	-0.050	0.004	0.002	-0.128**	-0.009	-0.035	-0.147**
	(0.130)	(0.026)	(0.027)	(0.057)	(0.035)	(0.026)	(0.075)
cons	5.429***	7.033***	4.761***	2.745***	4.352***	6.862***	4.127***
	(0.563)	(0.301)	(0.255)	(0.283)	(0.266)	(0.381)	(0.549)
N	152	514	505	399	471	482	326
adj. R^2	0.160	0.125	0.160	0.101	0.074	0.108	0.179
Kleibergen-Paap F-stat first stage	8.923	28.513	20.804	19.096	17.302	21.273	15.274
Kleibergen-Paap rk LM statistic	32.326	67.369	68.900	56.697	66.764	73.179	39.101
p-value LM statistic	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen J statistic	5.111	7.244	2.385	10.410	9.998	11.675	4.206
p-value J statistic	0.646	0.404	0.936	0.167	0.189	0.112	0.756
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and March 2022 wave (W27). Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. Exogenous variation in posterior expectations due to the information treatments in wave 21 is used as instruments in the first stage. Log spending in Euros is winsorized at the 1^{st} and 99^{th} percentile and a jackknife procedure is applied to account for outliers. All regressions use weights from Huber (1964) robust regressions as well as population weights. Heteroscedasticity-robust standard errors are reported in parentheses. Squared parentheses report p-values for the weak instruments robust test (conditional likelihood ratio test). Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 2: Effect on Consumption Spending after Six Months: Posterior Long-Run Inflation Expectations, Controlling for Interest rate Expectations

	log spending in the previous month						
	durable	total consumption	essential goods	services	transport	housing	savings
$\pi^{e,long}_{j,post,t-6}$	-0.196	0.027	-0.008	0.047	0.083**	-0.012	-0.217***
	(0.120)	(0.034)	(0.043)	(0.054)	(0.042)	(0.032)	(0.049)
	[0.241]	[0.838]	[0.761]	[0.565]	[0.040]	[0.589]	[0.129]
$spending^{plan,short}_{j,t-6}$	0.137	0.021	0.121	0.355***	0.016	-0.015	0.202
	(0.149)	(0.013)	(0.100)	(0.123)	(0.084)	(0.090)	(0.131)
$\pi^{e,long}_{j,prior,t-6}$	0.194**	-0.010	-0.001	-0.055*	-0.051*	-0.001	0.119***
	(0.089)	(0.025)	(0.024)	(0.033)	(0.029)	(0.020)	(0.043)
$i^{short,prior}_{j,t-6}$	-0.152***	-0.067***	-0.026*	0.039	-0.030	-0.023	0.042**
	(0.027)	(0.015)	(0.015)	(0.042)	(0.021)	(0.025)	(0.017)
$cons$	2.836***	5.996***	4.931***	2.386***	4.312***	6.365***	4.145***
	(0.707)	(0.254)	(0.209)	(0.264)	(0.275)	(0.226)	(0.491)
N	164	509	533	417	513	484	346
adj. R^2	0.160	0.282	0.094	0.188	0.084	0.155	0.141
Kleibergen-Paap F-stat first stage	8.820	10.729	10.329	7.009	12.920	13.800	13.171
Kleibergen-Paap rk LM statistic	27.206	46.926	50.480	27.058	41.940	49.381	25.630
p-value LM statistic	0.001	0.000	0.000	0.001	0.000	0.000	0.001
Hansen J statistic	12.225	8.159	5.405	1.495	5.002	10.463	8.251
p-value J statistic	0.093	0.319	0.611	0.982	0.660	0.164	0.311
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and March 2022 wave (W27). Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. Exogenous variation in posterior expectations due to the information treatments in wave 21 is used as instruments in the first stage. Log spending in Euros is winsorized at the 1^{st} and 99^{th} percentile and a jackknife procedure is applied to account for outliers. All regressions use weights from Huber (1964) robust regressions as well as population weights. Heteroscedasticity-robust standard errors are reported in parentheses. Squared parentheses report p-values for the weak instruments robust test (conditional likelihood ratio test). Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Effect on Planned Consumption Spending after Six Months: Posterior Short-Run Inflation Expectations

	planned consumption next 12 months (qualitative)						
	durable	total consumption	essential goods	services	transport	housing	savings
$\pi^{e,short}_{j,post,t-6}$	-0.019	0.267	0.067**	0.048	0.044	0.013	-0.015
	(0.048)	(0.166)	(0.031)	(0.030)	(0.053)	(0.026)	(0.044)
$spending^{plan,short}_{j,t-6}$	0.209***	0.397***	0.222**	0.120*	0.270***	0.247***	0.210***
	(0.052)	(0.073)	(0.103)	(0.065)	(0.071)	(0.087)	(0.075)
$\pi^{e,short}_{j,prior,t-6}$	-0.006	-0.182**	-0.025**	-0.023**	-0.040***	-0.005	0.020
	(0.014)	(0.071)	(0.011)	(0.011)	(0.011)	(0.005)	(0.014)
$cons$	1.225***	8.144***	1.375***	1.323***	0.750***	1.553***	2.010***
	(0.272)	(1.703)	(0.282)	(0.314)	(0.287)	(0.199)	(0.288)
N	566	568	568	567	567	568	566
adj. R^2	0.074	0.209	0.056	0.050	0.119	0.062	0.132
Kleibergen-Paap F-stat first stage	117.008	96.368	113.528	103.630	110.266	114.442	110.349
Kleibergen-Paap rk LM statistic	72.267	68.601	73.051	68.636	71.321	75.320	72.885
p-value LM statistic	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen J statistic	5.623	7.392	8.106	8.507	6.092	9.194	6.641
p-value J statistic	0.584	0.389	0.323	0.290	0.529	0.239	0.467
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and March 2022 wave (W27). Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. Exogenous variation in posterior expectations due to the information treatments in wave 21 is used as instruments in the first stage. All regressions use weights from Huber (1964) robust regressions as well as population weights. Heteroscedasticity-robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Effect on Planned Consumption Spending after Six Months: Posterior Long-Run Inflation Expectations

	planned consumption next 12 months (qualitative)						
	durable	total consumption	essential goods	services	transport	housing	savings
$\pi^{e,long}_{j,post,t-6}$	-0.046	0.067	0.045*	0.006	0.001	-0.002	0.016
	(0.029)	(0.136)	(0.024)	(0.024)	(0.033)	(0.028)	(0.021)
$spending^{plan,short}_{j,t-6}$	0.264***	0.447***	0.336**	0.109*	0.343***	0.108	0.289***
	(0.053)	(0.093)	(0.132)	(0.060)	(0.066)	(0.077)	(0.080)
$\pi^{e,long}_{j,prior,t-6}$	0.007	-0.152*	-0.030**	-0.024	-0.019	0.001	-0.016
	(0.023)	(0.089)	(0.015)	(0.017)	(0.026)	(0.015)	(0.017)
cons	1.710***	9.011***	1.395***	1.627***	1.319***	1.893***	1.679***
	(0.151)	(1.688)	(0.421)	(0.207)	(0.164)	(0.171)	(0.207)
N	582	583	583	582	583	583	582
adj. R^2	0.115	0.231	0.042	0.062	0.095	0.038	0.140
Kleibergen-Paap F-stat first stage	53.418	56.010	52.787	53.597	54.420	54.812	54.699
Kleibergen-Paap rk LM statistic	47.077	47.107	48.744	49.774	49.289	47.038	49.903
p-value LM statistic	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen J statistic	5.890	5.331	2.004	12.381	5.867	3.707	7.024
p-value J statistic	0.553	0.620	0.960	0.089	0.555	0.813	0.426
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and March 2022 wave (W27). Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. Exogenous variation in posterior expectations due to the information treatments in wave 21 is used as instruments in the first stage. All regressions use weights from Huber (1964) robust regressions as well as population weights. Heteroscedasticity-robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Effect on Planned Consumption Spending after Six Months: Posterior Short-Run Inflation Expectations, Controlling for Interest rate Expectations

	planned consumption next 12 months (qualitative)						
	durable	total consumption	essential goods	services	transport	housing	savings
$\pi^{e,short}_{j,post,t-6}$	-0.025	0.265	0.068**	0.050*	0.046	0.017	-0.014
	(0.048)	(0.168)	(0.032)	(0.030)	(0.053)	(0.027)	(0.043)
$spending^{plan,short}_{j,t-6}$	0.200***	0.386***	0.220**	0.117*	0.268***	0.241***	0.202***
	(0.052)	(0.071)	(0.105)	(0.060)	(0.071)	(0.087)	(0.075)
$\pi^{e,short}_{j,prior,t-6}$	-0.005	-0.185***	-0.025**	-0.024**	-0.041***	-0.005	0.019
	(0.015)	(0.070)	(0.011)	(0.011)	(0.010)	(0.005)	(0.013)
$i^{short,prior}_{j,t-6}$	-0.036	0.164	0.012	0.036	0.042	0.020	0.035
	(0.045)	(0.137)	(0.020)	(0.031)	(0.029)	(0.019)	(0.040)
$cons$	1.288***	8.265***	1.379***	1.307***	0.728**	1.537***	2.001***
	(0.268)	(1.681)	(0.285)	(0.318)	(0.292)	(0.199)	(0.281)
N	556	557	557	556	556	557	555
adj. R^2	0.072	0.211	0.056	0.054	0.122	0.057	0.132
Kleibergen-Paap F-stat first stage	111.701	95.069	108.200	100.131	110.107	109.963	106.961
Kleibergen-Paap rk LM statistic	71.428	67.855	72.265	68.044	70.535	74.531	72.144
p-value LM statistic	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen J statistic	6.130	7.433	8.000	8.369	5.786	8.716	6.903
p-value J statistic	0.525	0.385	0.333	0.301	0.565	0.274	0.439
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and March 2022 wave (W27). Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. Exogenous variation in posterior expectations due to the information treatments in wave 21 is used as instruments in the first stage. All regressions use weights from Huber (1964) robust regressions as well as population weights. Heteroscedasticity-robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Effect on Planned Consumption Spending after Six Months: Posterior Long-Run Inflation Expectations, Controlling for Interest rate Expectations

	planned consumption next 12 months (qualitative)						
	durable	total consumption	essential goods	services	transport	housing	savings
$\pi^{e,long}_{j,post,t-6}$	-0.047	0.068	0.045*	0.007	0.000	-0.001	0.016
	(0.029)	(0.136)	(0.024)	(0.024)	(0.033)	(0.028)	(0.021)
$spending^{plan,short}_{j,t-6}$	0.260***	0.447***	0.336**	0.111*	0.343***	0.106	0.282***
	(0.053)	(0.093)	(0.133)	(0.060)	(0.066)	(0.078)	(0.080)
$\pi^{e,long}_{j,prior,t-6}$	0.006	-0.153*	-0.030**	-0.025	-0.019	0.002	-0.016
	(0.023)	(0.089)	(0.015)	(0.018)	(0.026)	(0.015)	(0.017)
$i^{short,prior}_{j,t-6}$	0.026	0.002	-0.008	-0.000	0.001	-0.009	0.013
	(0.028)	(0.096)	(0.011)	(0.019)	(0.015)	(0.012)	(0.019)
$cons$	1.699***	9.018***	1.401***	1.622***	1.322***	1.898***	1.687***
	(0.155)	(1.706)	(0.424)	(0.210)	(0.165)	(0.170)	(0.206)
N	575	576	576	575	576	576	575
adj. R^2	0.115	0.230	0.040	0.060	0.094	0.034	0.136
Kleibergen-Paap F-stat first stage	53.722	56.168	52.998	53.883	54.700	55.055	54.965
Kleibergen-Paap rk LM statistic	47.912	47.901	49.604	50.756	50.306	47.939	50.823
p-value LM statistic	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen J statistic	6.290	5.460	2.059	12.988	5.865	3.455	7.123
p-value J statistic	0.506	0.604	0.956	0.072	0.556	0.840	0.416
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and March 2022 wave (W27). Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. Exogenous variation in posterior expectations due to the information treatments in wave 21 is used as instruments in the first stage. All regressions use weights from Huber (1964) robust regressions as well as population weights. Heteroscedasticity-robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

G Other Robustness Checks

In this section, we explore further possible sources of heterogeneity in the survey experiment. Table 1 shows estimates of the overall treatment effect as well as extensive and intensive margins for respondents with prior expectations below and above the common information of 3.9 percent. Table 2 reports estimations distinguishing between common and treatment-specific information across respondents with prior expectations below and above the common information of 3.9 percent. Figure 1 shows the different slope effects of treatments relative for short- and long-run prior expectations below/above 3.9 percent for the overall treatment effect and the intensive margin, respectively.

The results in Table 2 and Figure 1 show that the *persistent* and *SPF* treatments are more informative for respondents with prior expectations higher than the common information in the intensive margin due to virtually no reliance on priors. By contrast, we observe a stronger reliance on specific information for respondents with prior expectations below 3.9 percent in the *temporary* treatment, while those above 3.9 percent extrapolate based on common information. In that sense, the qualitative statement that the inflation surge would be temporary reassured respondents in their low prior forecasts compared to respondents in the *baseline*, who only received information about inflation currently being higher than one year ago. Only respondents with long-run prior expectations below than the common information put significant weight on the projections provided in the *SPF* treatment. Those with priors above 3.9 percent in this treatment rely mostly on the common information. Long-run expectations in the *persistent* treatment rely on specific information only when prior expectations are below 3.9 percent, but the reliance on priors is slightly lower for those with priors above than those with priors below 3.9 percent. Long-run expectations in the *temporary* treatment behave in exactly the same way as in the *baseline* treatment those with priors above 3.9 percent, while those with priors below 3.9 percent "reverse" their reliance on prior forecasts, i.e., those that have higher priors in this subgroup will produce low forecasts (by relying more on specific information) and those with lower priors will increase their forecast (by relying more on common information).

We further test for potential heterogeneity in the intensive margin of the treatment effects across gender, age, and household income, shown in Table 3. We find no heterogeneity in the updating of posterior expectations with respect to age or household income. However, it seems that female respondents adjusted their posterior long-run expectations significantly more towards the information provided in the *SPF* treatment and put larger weights on their priors in the *placebo* treatment compared to male respondents. At the same time, male respondents put larger weight on their priors in the *temporary* treatment.

Table 1: Robustness: Treatment Effects—Prior Expectations Below and Above 3.9% (common information in all treatments)

	Short-run inflation expectations $\pi^{e,short}_{j,post}$						Long-run inflation expectations $\pi^{e,long}_{j,post}$					
	Overall Effect		Extensive margin		Intensive margin		Overall Effect		Extensive margin		Intensive margin	
	$\pi^{e,short}_{j,prior} < 3.9$	$\pi^{e,short}_{j,prior} > 3.9$	$\pi^{e,short}_{j,prior} < 3.9$	$\pi^{e,short}_{j,prior} > 3.9$	$\pi^{e,short}_{j,prior} < 3.9$	$\pi^{e,short}_{j,prior} > 3.9$	$\pi^{e,long}_{j,prior} < 3.9$	$\pi^{e,long}_{j,prior} > 3.9$	$\pi^{e,long}_{j,prior} < 3.9$	$\pi^{e,long}_{j,prior} > 3.9$	$\pi^{e,long}_{j,prior} < 3.9$	$\pi^{e,long}_{j,prior} > 3.9$
$\pi^{e,h}_{j,prior}$	0.912***	0.582***	-0.047*	0.025***	0.336***	0.404***	0.699***	0.916***	-0.023	-0.005	0.841***	0.523***
	(0.058)	(0.152)	(0.027)	(0.010)	(0.024)	(0.029)	(0.210)	(0.046)	(0.040)	(0.008)	(0.121)	(0.050)
Persistent	-0.263	-0.217	-0.229*	0.074	-0.981***	0.788**	-0.230	0.267	0.030	-0.073	1.206***	0.337
	(0.244)	(1.105)	(0.117)	(0.102)	(0.285)	(0.365)	(0.727)	(0.568)	(0.182)	(0.115)	(0.454)	(0.523)
Temporary	0.104	-1.210	-0.036	-0.097	1.292***	1.261***	0.025	0.043	-0.105	-0.163	4.167***	-1.731***
	(0.315)	(0.914)	(0.135)	(0.098)	(0.237)	(0.356)	(0.803)	(0.506)	(0.166)	(0.108)	(0.514)	(0.611)
SPF	-0.547***	-2.478**	-0.274*	0.268***	-1.570***	-0.055	0.043	-0.787	0.198	0.031	0.740*	0.045
	(0.200)	(0.992)	(0.145)	(0.101)	(0.281)	(0.364)	(0.704)	(0.550)	(0.175)	(0.104)	(0.399)	(0.578)
Placebo	0.554	-1.543*	-0.186	0.043	0.424	0.550	-0.470	0.905	-0.044	-0.162	0.367	0.631
	(0.430)	(0.858)	(0.135)	(0.090)	(0.301)	(0.379)	(0.628)	(0.888)	(0.154)	(0.107)	(0.473)	(0.651)
$\pi^{e,h}_{j,prior}\cdot$ Persistent	0.019	0.035	0.018	-0.007	0.388***	-0.342***	0.041	-0.080	-0.028	0.011	-0.555***	-0.246***
	(0.082)	(0.203)	(0.039)	(0.013)	(0.110)	(0.042)	(0.278)	(0.094)	(0.067)	(0.015)	(0.180)	(0.068)
$\pi^{e,h}_{j,prior}\cdot$ Temporary	-0.120	0.199	-0.028	0.009	-0.539***	-0.358***	-0.090	-0.061	-0.022	0.015	-1.728***	0.183**
	(0.110)	(0.172)	(0.045)	(0.013)	(0.084)	(0.030)	(0.305)	(0.072)	(0.064)	(0.013)	(0.196)	(0.079)
$\pi^{e,h}_{j,prior}\cdot$ SPF	0.037	0.330*	0.091**	-0.030**	0.108	-0.396***	-0.117	-0.012	-0.076	-0.004	-0.702***	-0.297***
	(0.067)	(0.190)	(0.045)	(0.014)	(0.101)	(0.044)	(0.274)	(0.095)	(0.066)	(0.013)	(0.157)	(0.084)
$\pi^{e,h}_{j,prior}\cdot$ Placebo	-0.224	0.309*	0.044	-0.018	-0.101	-0.094**	0.204	-0.144	0.006	0.012	-0.140	-0.081
	(0.143)	(0.160)	(0.046)	(0.012)	(0.112)	(0.039)	(0.241)	(0.142)	(0.059)	(0.013)	(0.186)	(0.088)
cons	0.518**	2.399***			2.621***	2.380***	1.078*	1.110			1.454***	-0.205
	(0.203)	(0.910)			(0.280)	(0.740)	(0.577)	(0.700)			(0.311)	(1.076)
N	1531	1495	1535	1498	391	330	1690	1285	1693	1286	381	374
Adj. R^2	0.636	0.621			0.532	0.563	0.299	0.757			0.412	0.598
Pseudo R^2			0.041	0.058					0.035	0.017		
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	Huber	Huber	Probit	Probit	Huber	Huber	Huber	Huber	Probit	Probit	Huber	Huber

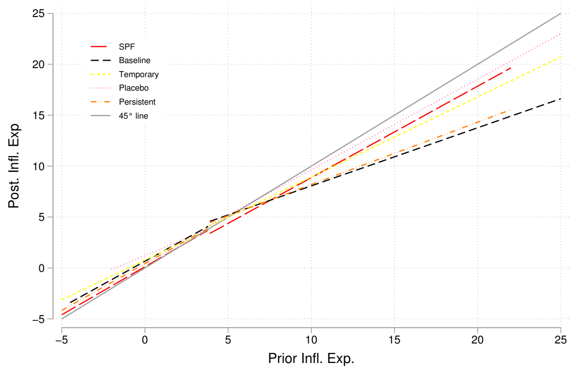
Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The extensive margin measures the likelihood of an update in posterior expectations. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Columns 1, 3, 5, 7, 9, 11 show estimates for the sample of participants with prior expectations below 3.9%, columns 2, 4, 6, 8, 10, 12 show estimates for the sample of participants with prior expectations above 3.9%. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment). All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. Results from probit estimation show marginal effects evaluated at the mean. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 2: Robustness: Common and Treatment-Specific Information—Prior Expectations Below and Above 3.9% (common information in all treatments)

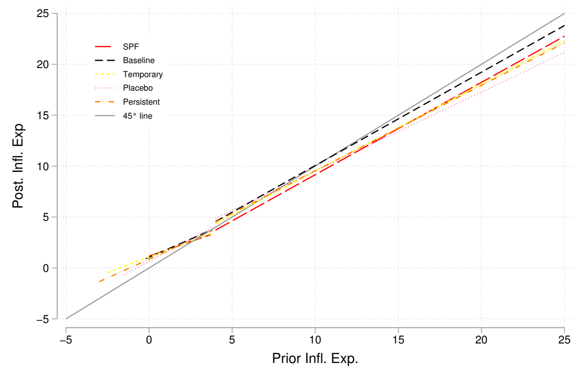
	Short-run $\pi^{e,short}_{j,post} - \pi_{t-1}$		Long-run $\pi^{e,long}_{j,post} - \pi_{t-1}$	
	$\pi^{e,short}_{j,prior}$ < 3.9	$\pi^{e,short}_{j,prior}$ > 3.9	$\pi^{e,long}_{j,prior}$ < 3.9	$\pi^{e,long}_{j,prior}$ > 3.9
$\pi^{e,h}_{j,prior} - \pi_{t-1}$	0.304***	0.485***	0.520***	0.637***
	(0.025)	(0.022)	(0.056)	(0.070)
$\pi^{h}_{i,spec} - \pi_{t-1}$	0.249**	-0.314***	1.022***	-0.058
	(0.096)	(0.110)	(0.139)	(0.166)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Persistent	0.386***	-0.435***	-0.217	-0.399***
	(0.114)	(0.039)	(0.144)	(0.082)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Temporary	-0.451***	-0.449***	-1.400***	0.055
	(0.090)	(0.026)	(0.160)	(0.094)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ SPF	0.135	-0.488***	-0.395***	-0.453***
	(0.116)	(0.040)	(0.117)	(0.109)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Placebo	-0.205***	-0.092***	-0.016	-0.096
	(0.073)	(0.035)	(0.081)	(0.119)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ Persistent	-0.725***	0.153	-0.784***	-0.276
	(0.168)	(0.162)	(0.217)	(0.243)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ SPF	0.186	0.724***	-0.341**	0.025
	(0.117)	(0.132)	(0.168)	(0.201)
N	391	330	381	374
Adj. R^2	0.626	0.562	0.651	0.673
Demographic Controls	No	No	No	No
Model	Huber	Huber	Huber	Huber

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) and is the common information. Treatment-specific information was assumed to be 2.5% for the short- and long-horizon in the *permanent* treatment, 2% for the short- and long-horizon in the *temporary* treatment and 1.7% in the short and 1.8% in the long horizon for the *SPF* treatment. The *baseline* and *placebo* treatment contained no treatment-specific information about inflation forecasts. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. *** p<0.01, ** p<0.05, * p<0.1

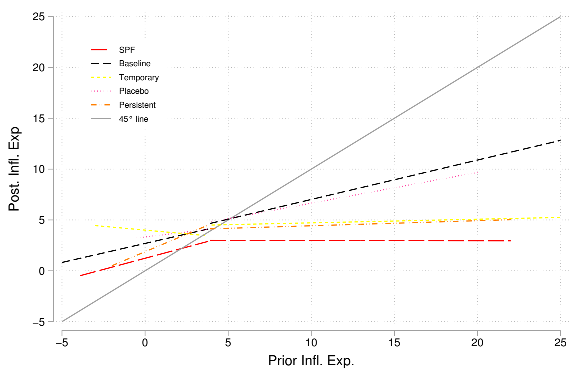
Figure 1: Robustness: Treatment Effects on Posterior Inflation Expectations—Prior Expectations Below and Above 3.9%: Overall Effect and Intensive Margin



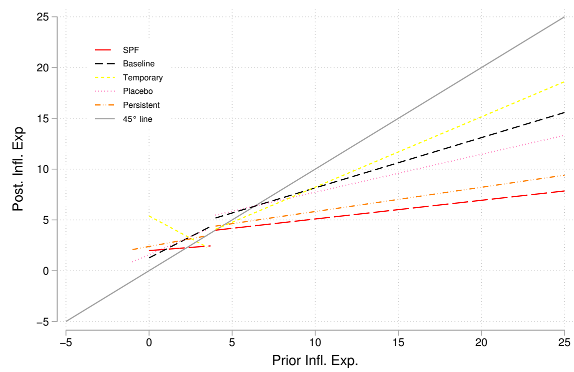
(a) Short Run, OE



(b) Long Run, OE



(c) Short Run, IM



(d) Long Run, IM

Notes: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. We show binscatter plots across treatments with Huber (1964) robust weights from estimations in Table 1, where OE stands for overall effect and IM stands for intensive margin effect.

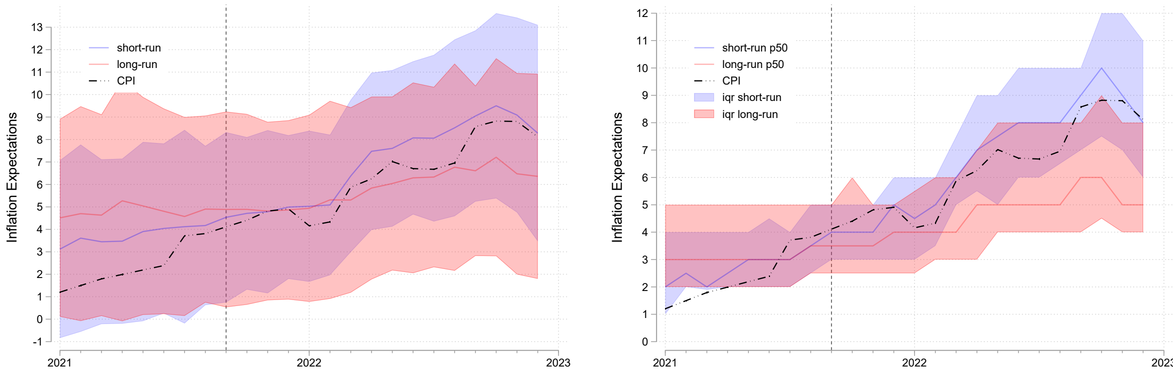
Table 3: Robustness: Heterogeneity of the Intensive Margin of Treatment Effects Across Demographic Groups

	Short-run $\pi^{e,short}_{j,post} - \pi_{t-1}$ male	age	HH inc	Long-run $\pi^{e,long}_{j,post} - \pi_{t-1}$ male	age	HH inc
$\pi^{e,h}_{j,prior}$	0.423***	0.427***	0.430***	0.512***	0.519***	0.520***
	(0.017)	(0.016)	(0.017)	(0.030)	(0.029)	(0.029)
Persistent	0.511**	0.801	0.864*	0.446	0.661	0.610
	(0.240)	(0.531)	(0.452)	(0.305)	(0.453)	(0.504)
Temporary	0.877***	1.400**	1.072*	-0.391	-1.239	-0.548
	(0.229)	(0.558)	(0.589)	(0.315)	(0.925)	(0.616)
SPF	-0.340*	-0.261	0.136	-0.673**	-0.884*	-0.561
	(0.196)	(0.497)	(0.524)	(0.293)	(0.481)	(0.582)
Placebo	0.528**	0.665	0.915*	-1.665***	-0.973	-1.985***
	(0.209)	(0.515)	(0.471)	(0.318)	(0.764)	(0.583)
$\pi^{e,h}_{j,prior} \cdot$ Persistent	-0.302***	-0.289***	-0.335***	-0.269***	-0.215***	-0.273***
	(0.031)	(0.085)	(0.053)	(0.046)	(0.041)	(0.083)
$\pi^{e,h}_{j,prior} \cdot$ Temporary	-0.350***	-0.447***	-0.374***	0.005	0.188*	-0.038
	(0.024)	(0.043)	(0.115)	(0.041)	(0.105)	(0.048)
$\pi^{e,h}_{j,prior} \cdot$ SPF	-0.357***	-0.397***	-0.358***	-0.119**	-0.147	-0.103
	(0.029)	(0.084)	(0.107)	(0.058)	(0.126)	(0.138)
$\pi^{e,h}_{j,prior} \cdot$ Placebo	-0.095***	-0.155*	-0.132*	0.640***	0.642***	0.676***
	(0.024)	(0.087)	(0.078)	(0.053)	(0.136)	(0.120)
male	-0.162	-0.065	-0.053	-0.416**	-0.218**	-0.201**
	(0.139)	(0.076)	(0.076)	(0.198)	(0.090)	(0.092)
age	0.006***	0.007**	0.007***	0.006**	0.008	0.006**
	(0.002)	(0.003)	(0.002)	(0.003)	(0.006)	(0.003)
HH income	-0.002	-0.001	0.025	0.007	0.002	-0.004
	(0.015)	(0.015)	(0.030)	(0.016)	(0.016)	(0.034)
demo $\cdot$ Persistent	-0.424	-0.005	-0.045	0.093	-0.003	-0.024
	(0.341)	(0.010)	(0.058)	(0.339)	(0.009)	(0.071)
demo $\cdot$ Temporary	0.110	-0.013	-0.015	-0.537	0.011	-0.019
	(0.314)	(0.010)	(0.085)	(0.428)	(0.014)	(0.089)
demo $\cdot$ SPF	-0.405	-0.003	-0.070	-0.429	0.004	-0.027
	(0.428)	(0.009)	(0.070)	(0.346)	(0.010)	(0.070)
demo $\cdot$ Placebo	-0.172	-0.004	-0.063	-0.424	-0.015	0.030
	(0.458)	(0.009)	(0.063)	(0.436)	(0.014)	(0.071)
demo $\cdot$ $\pi^{e,h}_{j,prior} \cdot$ Persistent	0.166**	-0.000	0.006	0.062	-0.001	0.006
	(0.065)	(0.002)	(0.007)	(0.038)	(0.001)	(0.014)
demo $\cdot$ $\pi^{e,h}_{j,prior} \cdot$ Temporary	0.007	0.003**	0.003	0.121**	-0.003*	0.013*
	(0.022)	(0.001)	(0.017)	(0.053)	(0.002)	(0.007)
demo $\cdot$ $\pi^{e,h}_{j,prior} \cdot$ SPF	0.154	0.002	0.004	0.175**	0.001	0.004
	(0.110)	(0.002)	(0.016)	(0.074)	(0.002)	(0.017)
demo $\cdot$ $\pi^{e,h}_{j,prior} \cdot$ Placebo	0.013	0.001	0.006	0.170*	0.001	0.001
	(0.123)	(0.001)	(0.013)	(0.094)	(0.003)	(0.016)
cons	2.447***	2.361***	2.147***	2.144***	1.976***	2.081***
	(0.226)	(0.260)	(0.310)	(0.257)	(0.341)	(0.300)
N	715	715	715	733	733	733
Adj. R^2	0.615	0.611	0.609	0.772	0.769	0.768
Model	Huber	Huber	Huber	Huber	Huber	Huber

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment). All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. *** p<0.01, ** p<0.05, * p<0.1

Figures and Tables

Figure 1: Developments in Inflation and Inflation Expectations



Notes: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The left panel reports short- and long-run inflation expectations with 90% confidence intervals together with CPI inflation. The right panel shows median values together with interquartile ranges for short- and long-run inflation expectations and the CPI inflation rate. The vertical dashed line indicates the period when our RCT was fielded.

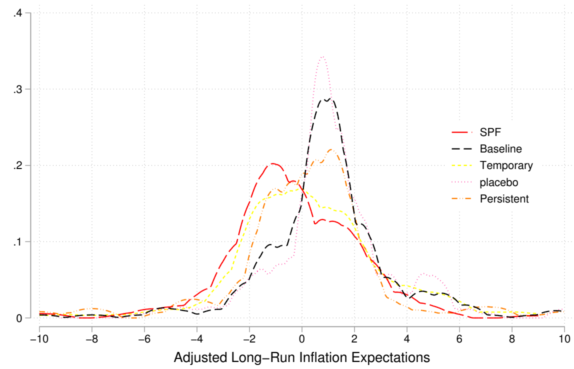
Table 1: Prior and Posterior Expectations

Treatment	Stats	Overall Margin $\pi^{e,short}_{pre}$	Overall Margin $\pi^{e,short}_{post}$	Overall Margin $\pi^{e,long}_{pre}$	Overall Margin $\pi^{e,long}_{post}$	Intensive Margin $\pi^{e,short}_{pre}$	Intensive Margin $\pi^{e,short}_{post}$	Intensive Margin $\pi^{e,long}_{pre}$	Intensive Margin $\pi^{e,long}_{post}$	Share updating $\pi^{e,short}_{post}$	Share updating $\pi^{e,long}_{pre}$
Baseline	mean	4.23	4.27	4.34	4.62	4.50	4.64	4.51	5.46	0.28	0.29
	p25	3.00	3.00	2.50	2.50	2.50	3.50	2.50	3.00		
	p50	3.50	4.00	3.00	3.50	3.45	4.00	3.60	4.50		
	p75	5.00	5.00	5.00	5.00	4.50	5.00	5.00	6.00		
	sd	3.29	2.77	3.75	3.85	4.30	2.66	3.42	3.66		
	N	633	633	622	622	174	174	179	179		
	Huber mean	4.37	4.38	4.56	4.94	3.74	4.24	4.28	4.54		
	Huber sd	3.89	3.24	4.31	4.33	3.55	1.73	3.60	2.25		
Persistent	mean	4.29	4.14	4.46	4.44	5.10	4.49	5.04	4.96	0.24	0.25
	p25	3.00	3.00	2.50	2.50	3.00	3.00	3.00	3.00		
	p50	4.00	4.00	3.50	3.80	4.00	4.00	4.00	4.00		
	p75	5.00	4.80	5.00	5.00	5.00	5.00	5.00	5.75		
	sd	3.09	2.70	3.52	3.31	4.36	3.12	4.26	3.53		
	N	635	635	613	613	147	147	156	156		
	Huber mean	4.77	4.63	4.99	5.08	5.35	3.94	5.25	4.19		
	Huber sd	3.82	3.56	4.22	4.17	4.43	1.09	4.54	1.63		
Temporary	mean	4.06	4.04	4.43	4.50	4.25	4.18	4.68	4.99	0.22	0.21
	p25	3.00	3.00	2.50	2.50	2.50	2.70	3.00	2.50		
	p50	4.00	4.00	3.00	3.35	3.50	4.00	4.00	4.00		
	p75	5.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00		
	sd	2.63	2.20	3.61	3.53	3.79	2.11	3.73	3.29		
	N	617	617	618	618	132	132	130	130		
	Huber mean	4.21	4.25	4.91	4.97	6.23	4.09	5.31	4.70		
	Huber sd	2.68	2.42	4.30	4.04	6.54	1.16	4.58	2.90		
SPF	mean	4.08	3.79	4.34	4.20	4.30	3.31	4.85	4.39	0.30	0.28
	p25	3.00	2.50	2.50	2.30	3.00	2.00	2.80	2.10		
	p50	3.50	3.00	3.00	3.00	3.80	3.00	4.00	3.00		
	p75	5.00	4.50	5.00	5.00	5.00	4.00	5.00	5.00		
	sd	2.85	2.69	3.59	3.44	3.05	2.46	3.96	3.53		
	N	636	636	630	630	189	189	181	181		
	Huber mean	4.39	4.01	4.56	4.43	4.11	2.69	3.66	3.13		
	Huber sd	3.50	3.45	3.81	3.59	2.65	0.97	2.46	1.64		
Placebo	mean	4.32	4.50	4.25	4.51	4.36	5.21	4.40	5.40	0.21	0.26
	p25	3.00	3.00	2.50	2.50	2.50	3.50	2.40	3.00		
	p50	4.00	4.00	3.00	3.05	3.50	4.50	3.00	4.00		
	p75	5.00	5.00	5.00	5.00	4.80	5.00	5.00	7.00		
	sd	3.26	3.14	3.33	3.47	3.80	3.15	3.67	4.00		
	N	634	634	618	618	133	133	163	163		
	Huber mean	4.35	4.60	4.53	4.82	3.84	4.42	3.86	5.15		
	Huber sd	3.60	3.47	3.51	3.59	3.38	1.50	2.68	3.45		
Total	mean	4.20	4.15	4.36	4.45	4.50	4.31	4.69	5.04	0.25	0.26
	p25	3.00	3.00	2.50	2.50	2.80	3.00	2.50	3.00		
	p50	3.80	4.00	3.00	3.00	3.50	4.00	3.90	4.00		
	p75	5.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00		
	sd	3.04	2.73	3.56	3.52	3.87	2.78	3.81	3.63		
	N	3155	3155	3101	3101	775	775	809	809		
	Huber mean	4.42	4.38	4.71	4.85	4.54	3.80	4.40	4.22		
	Huber sd	3.54	3.27	4.05	3.99	4.21	1.48	3.66	2.44		

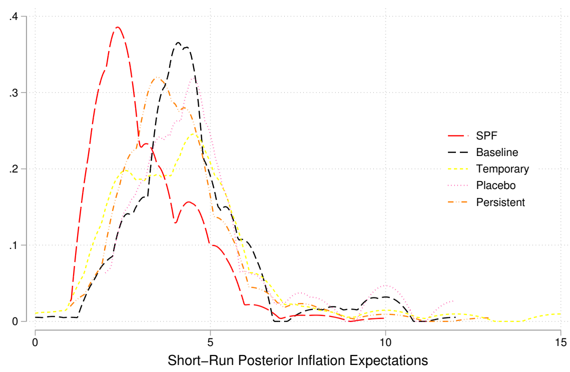
Notes: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. All inflation expectations are truncated to lie in the range between -5% and +25%.

Figure 2: Treatment Effects on the Overall Distribution of Inflation Expectations

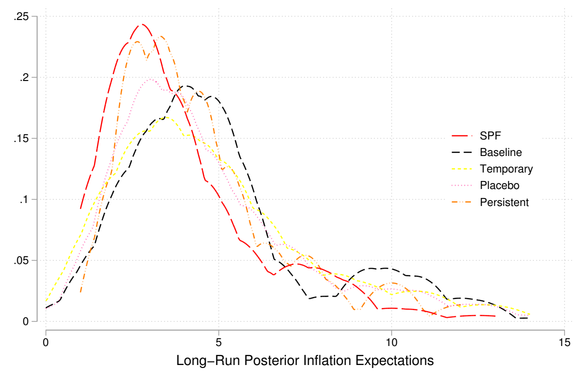
(a) Short Run



(b) Long Run



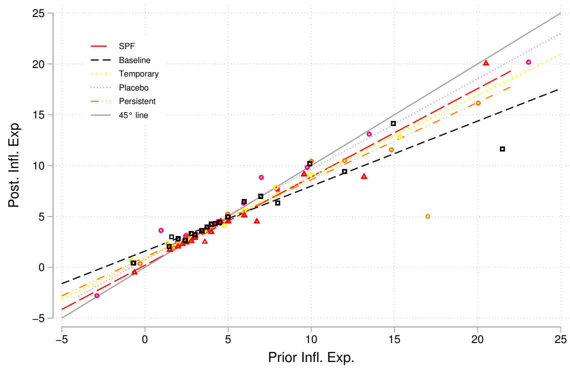
(c) Short Run



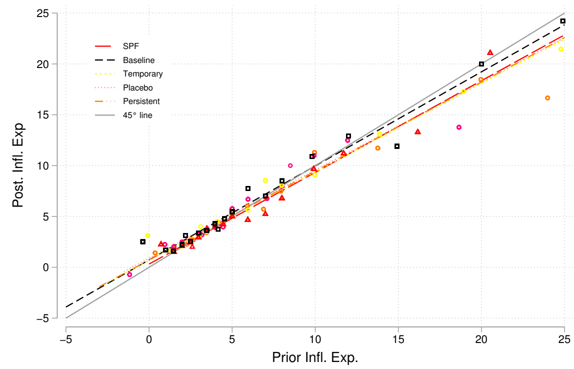
(d) Long Run

Notes: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. Kernel densities plotted. The upper-left panel shows the distribution of changes of short-run expectations for each treatment arm, while the upper-right panel shows changes in long-run expectations for each treatment arm. The lower-left panel shows the distribution of posterior short-run expectations for each treatment arm, while the lower-right panel shows posterior long-run expectations for each treatment arm.

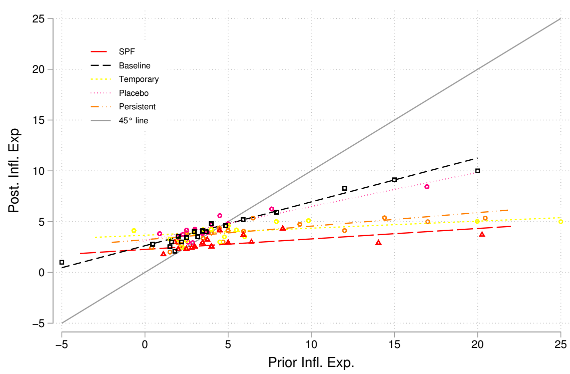
Figure 3: Treatment Effects on Posterior Inflation Expectations: Overall Effect and Intensive Margin



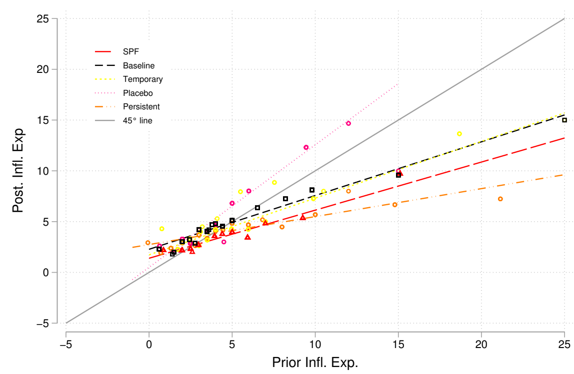
(a) Short Run, OE



(b) Long Run, OE



(c) Short Run, IM



(d) Long Run, IM

Notes: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. We show binscatter plots across treatments with Huber (1964) robust weights from estimations in Table 2, where OE stands for overall effect and IM stands for intensive margin effect.

Table 2: Treatment Effects on Short- and Long-Run Inflation Expectations

	Short-run inflation expectations $\pi^{e,short}_{j,post}$						Long-run inflation expectations $\pi^{e,long}_{j,post}$					
	Overall Effect		Extensive margin		Intensive margin		Overall Effect		Extensive margin		Intensive margin	
$\pi^{e,h}_{j,prior}$ (a_1)	0.638***	0.641***	0.006	0.005	0.346***	0.430***	0.920***	0.921***	-0.001	-0.001	0.695***	0.519***
	(0.111)	(0.111)	(0.009)	(0.008)	(0.134)	(0.016)	(0.041)	(0.040)	(0.007)	(0.007)	(0.123)	(0.028)
Persistent (b_2)	-0.275	-0.570	-0.156**	-0.156**	0.177	0.567***	0.212	0.002	-0.064	-0.059	0.434	0.454**
	(0.554)	(0.496)	(0.071)	(0.068)	(0.725)	(0.176)	(0.356)	(0.295)	(0.074)	(0.072)	(0.662)	(0.200)
Temporary (b_3)	0.687	-0.716	-0.121	-0.121	0.068	0.963***	-0.053	-0.053	-0.169***	-0.182***	0.142	-0.579**
	(0.648)	(0.446)	(0.082)	(0.077)	(0.559)	(0.177)	(0.273)	(0.270)	(0.062)	(0.064)	(0.738)	(0.257)
SPF (b_4)	-1.051*	-1.371***	0.017	0.013	-1.036	-0.401**	-0.393	-0.421*	0.034	0.031	-1.190	-0.813***
	(0.556)	(0.486)	(0.078)	(0.071)	(0.698)	(0.186)	(0.308)	(0.255)	(0.069)	(0.066)	(0.766)	(0.231)
Placebo (b_5)	-0.849**	-0.848**	-0.058	-0.059	-0.136	0.475***	0.170	0.180	-0.064	-0.063	0.382	-1.753***
	(0.427)	(0.428)	(0.071)	(0.069)	(0.563)	(0.162)	(0.377)	(0.377)	(0.063)	(0.063)	(0.830)	(0.231)
$\pi^{e,h}_{j,prior}\cdot$ Persistent (c_2)	0.046	0.120	0.014	0.014	-0.024	-0.298***	-0.119	-0.053	0.011	0.010	-0.247	-0.237***
	(0.153)	(0.141)	(0.013)	(0.011)	(0.181)	(0.028)	(0.096)	(0.076)	(0.013)	(0.012)	(0.168)	(0.038)
$\pi^{e,h}_{j,prior}\cdot$ Temporary (c_3)	-0.211	0.157	0.009	0.009	-0.177	-0.353***	-0.053	-0.053	0.015	0.016	-0.108	0.038
	(0.175)	(0.123)	(0.015)	(0.013)	(0.148)	(0.020)	(0.058)	(0.058)	(0.011)	(0.011)	(0.144)	(0.042)
$\pi^{e,h}_{j,prior}\cdot$ SPF (c_4)	0.141	0.228	-0.006	-0.005	-0.132	-0.324***	-0.038	-0.020	-0.004	-0.004	-0.138	-0.065
	(0.159)	(0.141)	(0.013)	(0.012)	(0.206)	(0.040)	(0.081)	(0.064)	(0.011)	(0.010)	(0.210)	(0.052)
$\pi^{e,h}_{j,prior}\cdot$ Placebo (c_5)	0.249**	0.248**	-0.009	-0.009	0.193	-0.096***	-0.057	-0.058	0.004	0.003	-0.090	0.677***
	(0.117)	(0.117)	(0.012)	(0.011)	(0.159)	(0.026)	(0.095)	(0.095)	(0.011)	(0.010)	(0.219)	(0.048)
cons (a_0)	1.638***	1.760***	0.256***		2.946**	2.267***	0.796**	0.875***	0.341***		3.419***	2.022***
	(0.531)	(0.454)	(0.097)		(1.313)	(0.331)	(0.314)	(0.303)	(0.093)		(1.319)	(0.225)
N	3033	3029	3033	3033	756	715	2982	2979	2982	2982	787	733
Adj. R^2	0.657	0.731	0.024		0.289	0.611	0.806	0.813	0.022		0.445	0.768
Pseudo R^2				0.023						0.022		
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	OLS	Huber	OLS	Probit	OLS	Huber	OLS	Huber	OLS	Probit	OLS	Huber

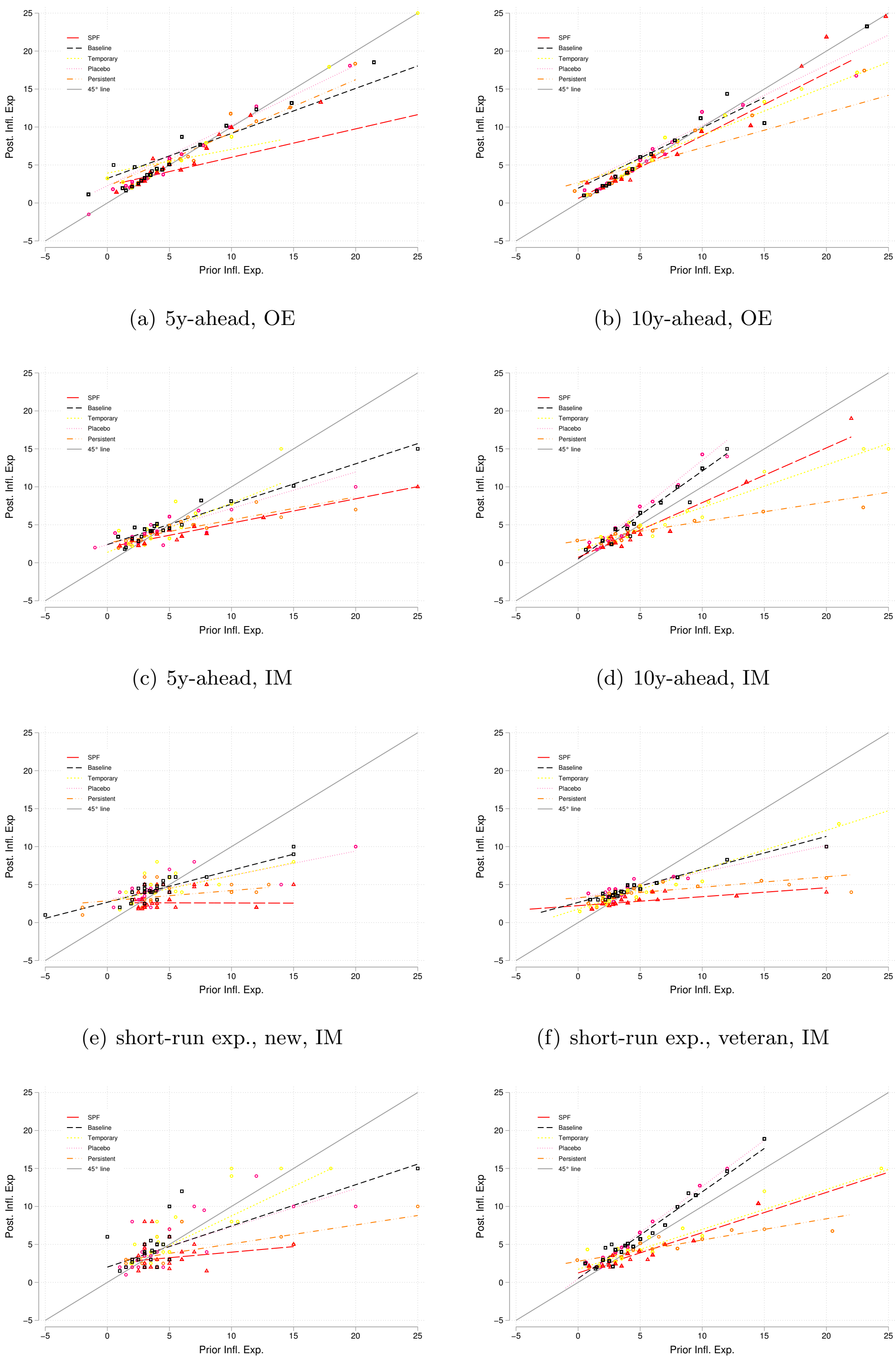
Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The extensive margin measures the likelihood of an update in posterior expectations. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment). All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. Results from probit estimations show marginal effects evaluated at the mean. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Common and Treatment-Specific Information: Overall Effect and Intensive Margin

	Overall Effect				Intensive Margin			
	Short-run $\pi^{e,short}_{j,post} - \pi_{t-1}$		Long-run $\pi^{e,long}_{j,post} - \pi_{t-1}$		Short-run $\pi^{e,short}_{j,post} - \pi_{t-1}$		Long-run $\pi^{e,long}_{j,post} - \pi_{t-1}$	
$\pi^{e,h}_{j,prior} - \pi_{t-1}$ (α_1)	0.645***	0.645***	0.940***	0.940***	0.360***	0.427***	0.761***	0.542***
	(0.112)	(0.112)	(0.041)	(0.041)	(0.137)	(0.026)	(0.123)	(0.025)
$\pi^{h}_{i,spec} - \pi_{t-1}$ (β_3)	-0.034	-0.050	-0.099*	-0.099*	0.025	-0.017	-0.627***	-0.006
	(0.048)	(0.033)	(0.056)	(0.056)	(0.145)	(0.059)	(0.228)	(0.079)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Persistent (α_2)	0.041	0.116	-0.136	-0.065	-0.051	-0.294***	-0.297*	-0.267***
	(0.155)	(0.142)	(0.099)	(0.077)	(0.191)	(0.035)	(0.176)	(0.031)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Temporary (α_3)	-0.219	0.157	-0.070	-0.070	-0.199	-0.358***	-0.178	0.017
	(0.177)	(0.124)	(0.058)	(0.058)	(0.151)	(0.029)	(0.141)	(0.037)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ SPF (α_4)	0.138	0.224	-0.054	-0.039	-0.121	-0.324***	-0.192	-0.068
	(0.160)	(0.143)	(0.082)	(0.064)	(0.228)	(0.049)	(0.214)	(0.051)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Placebo (α_5)	0.256**	0.256**	-0.054	-0.054	0.206	-0.094**	-0.079	0.656***
	(0.119)	(0.119)	(0.096)	(0.095)	(0.168)	(0.040)	(0.227)	(0.078)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ Persistent (β_2)	-0.013	0.006	-0.030	-0.064	-0.527	0.129	0.018	0.067
	(0.090)	(0.079)	(0.104)	(0.098)	(0.330)	(0.086)	(0.356)	(0.101)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ SPF (β_4)	0.184***	0.193***	0.149**	0.130**	0.417**	0.577***	0.778***	0.319***
	(0.061)	(0.049)	(0.066)	(0.064)	(0.162)	(0.069)	(0.244)	(0.092)
N	3033	3029	2982	2979	756	715	787	733
Adj. R^2	0.661	0.733	0.813	0.819	0.267	0.568	0.479	0.714
Demographic Controls	No	No	No	No	No	No	No	No
Model	OLS	Huber	OLS	Huber	OLS	Huber	OLS	Huber

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. The intensive margin measures posterior expectations given that an update in expectations occurred after treatment. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) and is the common information. Treatment-specific information was assumed to be 2.5% for the short- and long horizon in the *permanent* treatment, 2% for the short- and long-horizon in the *temporary* treatment and 1.7% in the short and 1.8% in the long horizon for the *SPF* treatment. The *baseline* and *placebo* treatment contained no treatment-specific information about inflation forecasts. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. *** p<0.01, ** p<0.05, * p<0.1

Figure 4: Treatment Effects on Posterior Inflation Expectations: 5y-ahead vs. 10y-ahead expectations and “veteran” vs. new panel members



(a) 5y-ahead, OE

(b) 10y-ahead, OE

(c) 5y-ahead, IM

(d) 10y-ahead, IM

(e) short-run exp., new, IM

(f) short-run exp., veteran, IM

(g) long-run exp., new, IM

(h) long-run exp., veteran, IM

Notes: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave. We show binscatter plots across treatments with Huber (1964) robust weights from estimations in associated tables in the online appendix, where OE stands for overall effect and IM stands for intensive margin effect. Panels (a)-(d) compare the overall effect and intensive margin of treatment effects on 5y-ahead and 10y-ahead expectations. Panels (e)-(h) compare the overall effect and intensive margin of treatment effects between “veteran” panel members who participated in previous waves and new panel members in the September 2021 wave.

Table 4: Overall Treatment Effects on Posterior Inflation Expectations Across Further Waves: Common vs. Treatment-specific Information

	Short-run Inflation exp. $\left(\pi^{e,short}_{j,post} - \pi_{t-1}\right)$								Long-run Inflation exp. $\left(\pi^{e,long}_{j,post} - \pi_{t-1}\right)$			
	W21 Sept '21	W22 Oct '21	W23 Nov '21	W25 Jan '22	W26 Feb '22	W27 Mar '22	W28 Apr '22	W29 May '22	W21 Sept '21	W23 Nov '21	W27 Mar '22	W28 Apr '22
$\pi^{e,h}_{j,prior} - \pi_{t-1}$ (α_1)	0.65***	0.24*	0.14	0.37***	0.21***	0.26***	0.15**	0.21***	0.94***	0.20**	0.23***	0.30***
	(0.11)	(0.12)	(0.14)	(0.09)	(0.05)	(0.08)	(0.07)	(0.05)	(0.04)	(0.09)	(0.09)	(0.09)
$\pi^{h}_{i,spec} - \pi_{t-1}$ (β_3)	-0.05	-0.22	0.03	-0.17	-0.53***	-1.00***	-0.52***	-0.80***	-0.10*	0.46***	-0.24	0.60***
	(0.03)	(0.15)	(0.16)	(0.25)	(0.15)	(0.16)	(0.11)	(0.21)	(0.06)	(0.13)	(0.21)	(0.15)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Persistent (α_2)	0.12	-0.01	0.23	-0.11	-0.08	-0.19	-0.07	0.00	-0.07	0.12	-0.01	0.12
	(0.14)	(0.16)	(0.26)	(0.31)	(0.16)	(0.12)	(0.10)	(0.20)	(0.08)	(0.18)	(0.20)	(0.13)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Temporary (α_3)	0.16	0.27	0.35	0.14	0.57***	0.19	0.27**	0.44**	-0.07	0.06	0.04	0.10
	(0.12)	(0.21)	(0.28)	(0.22)	(0.19)	(0.18)	(0.12)	(0.21)	(0.06)	(0.11)	(0.13)	(0.13)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ SPF (α_4)	0.22	0.09	-0.05	0.28*	0.10	-0.11	-0.08	-0.07	-0.04	0.18	0.21	0.20
	(0.14)	(0.17)	(0.18)	(0.17)	(0.11)	(0.15)	(0.18)	(0.13)	(0.06)	(0.13)	(0.19)	(0.20)
$\left(\pi^{e,h}_{j,prior} - \pi_{t-1}\right) \cdot$ Placebo (α_5)	0.26**	0.15	0.19	-0.19*	0.13	0.27**	0.40***	0.11	-0.05	0.26	0.21	0.04
	(0.12)	(0.17)	(0.16)	(0.10)	(0.13)	(0.13)	(0.13)	(0.13)	(0.10)	(0.17)	(0.13)	(0.17)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ Persistent (β_2)	0.01	-0.08	-0.17	-0.44	0.33	-0.33	-0.55***	-0.03	-0.06	-0.18	-0.28	-0.45**
	(0.08)	(0.19)	(0.26)	(0.75)	(0.22)	(0.24)	(0.20)	(0.34)	(0.10)	(0.28)	(0.32)	(0.23)
$\left(\pi^{h}_{i,spec} - \pi_{t-1}\right) \cdot$ SPF (β_4)	0.19***	0.01	-0.14	0.33	0.27*	0.14	0.16	0.41	0.13**	-0.19	-0.08	-0.60**
	(0.05)	(0.18)	(0.23)	(0.29)	(0.16)	(0.21)	(0.17)	(0.30)	(0.06)	(0.18)	(0.23)	(0.27)
N	3029	1818	939	564	1431	2319	1723	823	2979	929	2259	1674
Adj. R^2	0.733	0.173	0.119	0.138	0.204	0.247	0.196	0.180	0.819	0.189	0.128	0.167
Demographic Controls	No	No	No	No	No	No	No	No	No	No	No	No
Model	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber
Actual π_{t-1}	3.9%	4.1%	4.4%	4.9%	4.2%	4.3%	5.9%	6.3%	3.9%	4.4%	4.3%	5.9%

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and subsequent waves. Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. The current inflation rate for August 2021 was given as 3.9% in all treatment groups and the control group (*baseline* treatment) in wave 21. In subsequent waves, we assume the last available inflation rate (π_{t-1}) to be the common information. Treatment-specific information was assumed to be 2.5% for the short- and long-horizon in the *permanent* treatment, 2% for the short- and long-horizon in the *temporary* treatment and 1.7% in the short and 1.8% in the long horizon for the *SPF* treatment. The *baseline* and *placebo* treatment contained no treatment-specific information about inflation forecasts. All regressions use population weights and show heteroscedasticity-robust standard errors in parentheses. Huber (1964) robust regressions endogenously account for outliers. We use population and Huber weights from wave 21 also in later waves. Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Effect on Consumption Spending after Six Months: Posterior Short-Run Inflation Expectations

	log spending in the previous month						
	durable	total consumption	essential goods	services	transport	housing	savings
$\pi^{e,short}_{j,post,t-6}$	0.155	-0.005	-0.036	0.010	0.146***	-0.053	-0.117*
	(0.106)	(0.029)	(0.030)	(0.050)	(0.049)	(0.036)	(0.069)
	[0.479]	[0.778]	[0.264]	[0.715]	[0.009]	[0.298]	[0.098]
$spending^{plan,short}_{j,t-6}$	0.250*	0.006	0.152	0.190	0.139*	0.185	0.061
	(0.142)	(0.012)	(0.098)	(0.126)	(0.079)	(0.127)	(0.134)
$\pi^{e,short}_{j,prior,t-6}$	-0.017	0.001	0.017**	-0.022	-0.064***	0.014	-0.046**
	(0.062)	(0.014)	(0.007)	(0.029)	(0.019)	(0.012)	(0.018)
$cons$	5.343***	7.002***	4.762***	2.673***	4.363***	6.814***	4.235***
	(0.538)	(0.300)	(0.253)	(0.285)	(0.262)	(0.386)	(0.588)
N	157	524	514	406	481	491	329
adj. R^2	0.195	0.117	0.160	0.088	0.076	0.105	0.166
Kleibergen-Paap F-stat first stage	9.242	28.987	20.454	19.362	17.723	21.309	15.185
Kleibergen-Paap rk LM statistic	32.932	69.235	68.990	57.446	68.028	75.071	41.604
p-value LM statistic	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen J statistic	5.657	7.106	2.279	9.735	9.807	13.332	4.870
p-value J statistic	0.580	0.418	0.943	0.204	0.200	0.064	0.676
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and March 2022 wave (W27). Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. Exogenous variation in posterior expectations due to the information treatments in wave 21 is used as instruments in the first stage. Log spending in Euros is winsorized at the 1^{st} and 99^{th} percentile and a jackknife procedure is applied to account for outliers. All regressions use weights from Huber (1964) robust regressions as well as population weights. Heteroscedasticity-robust standard errors are reported in parentheses. Squared parentheses report p-values for the weak instruments robust test (conditional likelihood ratio test). Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Effect on Consumption Spending after Six Months: Posterior Long-Run Inflation Expectations

	log spending in the previous month						
	durable	total consumption	essential goods	services	transport	housing	savings
$\pi^{e,long}_{j,post,t-6}$	-0.170	0.025	-0.010	0.040	0.081*	-0.014	-0.219***
	(0.121)	(0.035)	(0.043)	(0.055)	(0.043)	(0.032)	(0.049)
	[0.257]	[0.779]	[0.745]	[0.589]	[0.062]	[0.665]	[0.104]
$spending^{plan,short}_{j,t-6}$	0.219	0.024*	0.122	0.362***	0.018	-0.010	0.204
	(0.159)	(0.013)	(0.100)	(0.120)	(0.084)	(0.088)	(0.129)
$\pi^{e,long}_{j,prior,t-6}$	0.171*	-0.014	-0.001	-0.053	-0.050*	-0.002	0.123***
	(0.089)	(0.025)	(0.024)	(0.034)	(0.029)	(0.020)	(0.043)
$cons$	2.491***	5.912***	4.905***	2.410***	4.285***	6.345***	4.156***
	(0.725)	(0.257)	(0.210)	(0.263)	(0.276)	(0.224)	(0.493)
N	166	514	538	421	519	489	347
adj. R^2	0.127	0.251	0.093	0.192	0.079	0.154	0.137
Kleibergen-Paap F-stat first stage	9.078	10.622	10.312	7.018	12.739	13.462	13.289
Kleibergen-Paap rk LM statistic	27.248	46.278	49.530	27.444	40.368	48.436	25.915
p-value LM statistic	0.001	0.000	0.000	0.001	0.000	0.000	0.001
Hansen J statistic	9.194	8.124	5.590	1.369	5.149	9.869	8.686
p-value J statistic	0.239	0.322	0.588	0.986	0.642	0.196	0.276
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Note: Bundesbank Online Panel of Households (BOP-HH), September 2021 wave (W21) and March 2022 wave (W27). Inflation expectations prior to and post treatment are truncated to lie in the range $-5 \leq \pi^e \leq 25$. Exogenous variation in posterior expectations due to the information treatments in wave 21 is used as instruments in the first stage. Log spending in Euros is winsorized at the 1^{st} and 99^{th} percentile and a jackknife procedure is applied to account for outliers. All regressions use weights from Huber (1964) robust regressions as well as population weights. Heteroscedasticity-robust standard errors are reported in parentheses. Squared parentheses report p-values for the weak instruments robust test (conditional likelihood ratio test). Demographic control variables include gender, age and income groups. *** p<0.01, ** p<0.05, * p<0.1