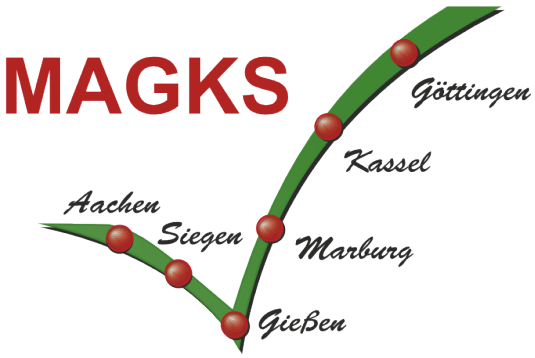

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Inflation Expectations of the General Public under Supply Constraints: Evidence from a Survey Experiment

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1 August 2025

Abstract

This paper examines the causal effect of supply constraints on inflation expectations, using a survey experiment conducted with a representative sample of German adults. Respondents first reported their prior beliefs about both official and personal inflation. They were then presented with information about Germany's 2022 supply bottlenecks and randomly assigned to one of three hypothetical scenarios for 2025: a temporary shortage, a prolonged shortage, or no shortage. Following the treatment, we recorded their updated inflation expectations. Exposure to either shortage scenario significantly increased the likelihood of revising both official and personal inflation expectations by almost 10%. However, the average effects and belief-updating mechanisms differed markedly between the two. Personal exposure to supply shortages in daily life and financial literacy also influenced how respondents revised their personal expectations. Finally, a topic analysis of open-ended responses offers further insights into how people interpret and react to perceived product scarcity.

Keywords: Inflation Expectation; Supply Shortages; Survey Experiment; Germany.

JEL classification: D12; D83; D84; E31; E71

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> 'Inflation was mainly triggered by price shocks of two types: large increases in the relative prices of energy and food, reflecting a combination of strong global demand and adverse supply shocks; and price spikes reflecting shortages, due to the combination of strong global demand and supply chain disruptions'. (Bernanke and Blanchard, 2024, p.293)

1 Introduction

After a long period of very low inflation rates, which began in the mid-1990s, inflation surged in many countries between 2021 and 2023. This increase has primarily been attributed to supply-side factors (Bai et al., 2024; Bernanke and Blanchard, 2024; Diaz et al., 2024; Forbes et al., 2024; Ha et al., 2024; Kabaca and Tuzcuoglu, 2024; Caldara et al., 2025). In the extant literature, two channels are highlighted: (i) supply disruption leading to delivery delays and surging transportation costs during the COVID-19 pandemic (Carrière-Swallow et al., 2022); and (ii) the adverse effects of the Russian–Ukrainian war on supply and energy prices. These effects have been especially pronounced in Europe due to its proximity to the war (Finck and Tillmann, 2022; Acharya et al., 2023; Ascari et al., 2024; Bańbura et al., 2024; Bernanke and Blanchard, 2024). According to an analysis by the European Central Bank (Largarde, 2024), at the peak of inflation, supply shocks were about three times more important than demand shocks in explaining deviations from the inflation target. It is also argued that the world economic environment is becoming more uncertain, with frequent supply shocks (Largarde, 2025).

In this context, inflation became a mounting concern for central banks due to the post-pandemic trade-off between controlling inflation and stabilising output (Tenreyro, 2022; Largarde, 2024). This presents a significant challenge for monetary policymakers: (i) whether inflation expectations can de-anchor actual inflation (Largarde, 2024) given their historically strong link, as found in Binder and Kamdar (2022); and (ii) whether the former affects economic decisions such as household savings and consumption or firms' choices (see e.g. Weber et al. (2022) for a literature review). Hence, there is a strong case for studying how households form inflation expectations under supply shortages, as these may differ markedly from those formed in normal times or under demand shocks.

In this paper, we concentrate on individuals' inflation expectations and analyse whether, and if so, to what extent, they are affected by the emergence of a supply constraint shock. We examine this research question using a survey experiment integrated into a specially designed representative household survey for Germany. Our survey was conducted in early 2025 with 2,032 German adults. We use survey experiments based on hypothetical supply-shortage scenarios to test the influence of a negative supply shock on laypersons' inflation expectations. All participants receive a short text and a graph informing them about the supply shortages in the German retail sector in mid-2022. They are subsequently randomly assigned to one of three groups. Two treatment groups receive an additional text

describing a hypothetical situation of supply shortages: the first group with a temporary (two-month) delivery delay, and the second group with a prolonged (twelve-month) problem. Participants in the third group receive a text about a hypothetical situation with no supply delay.

In contrast to previous studies, we explicitly distinguish between respondents' expectations of the official inflation rate and their personal inflation expectations. In the existing literature, this distinction is typically not made, and the reference point for survey respondents is often unclear. For individuals, the personal inflation rate can be very different from the official inflation rate in the form of the growth rate of the consumer price index.

Using our survey framework, we provide the following answers to our specific research questions:

First, do laypersons adjust their inflation expectations when confronted with a situation of supply shortages? Our findings show that a brief statement about supply shortages increases the likelihood of updating inflation expectations by about 8 percentage points (pp). Overall, people increase their expected official and personal inflation rates by 0.3 and 0.4 pp, respectively, following the treatments. The treatment effects are partially mediated by subjective assessments of the importance of the supply-shock scenario to the economy.

Second, is the impact on inflation expectations different in the case of medium-term supply constraints compared to short-term ones? Our analysis shows that the duration of the shortage in our hypothetical scenarios does not significantly affect the averages of either expectation. However, it plays a significant role in the process by which households update their official inflation expectations, depending on their prior beliefs. In contrast, updating behaviour for personal inflation expectations is independent of their prior values.

Third, do individuals with limited experience of supply shortages react more strongly than those with greater experience? We find a strong positive treatment effect in personal inflation expectations for the group with a lower level of experience with supply shortages. However, they do not respond to the treatments in ways that reduce divergence across their updates. Those with a moderate to high level of experience interact with the prolonged-shortage treatment when updating official inflation expectations, narrowing the gap in post-treatment beliefs among respondents.

Fourth, is the effect of the treatment conditional on individual awareness of the supply situation and relative financial literacy? We find that the main result of a positive average effect on personal inflation expectations is driven by the subgroup of those who were already informed about Germany's 2022 supply disruptions before our survey. Participants with higher financial literacy also raise their expectations markedly for both inflation measures following the treatment. However, high financial literacy can place greater weight on their prior beliefs when updating official inflation expectations following the temporary shortage treatment.

As consumers perceive inflation through their regular shopping baskets, which can differ from the standard representative basket, the effects on personal and official inflation expectations can vary (D'Acunto et al., 2021). Our work enhances this understanding by clarifying the blurred line between the collected official and personalised inflation perceptions and expectations in surveys. de Bruin et al. (2012) conducted a survey experiment on different wordings used in the questions eliciting inflation expectations and perceptions. They found a significant gap between the median answers for 'inflation' and those for 'prices you pay'. For our data on pre-treatment official and personal inflation expectations, we can reject the hypothesis of equal distributions at the 0.1% significance level. Moreover, when respondents answer survey questions on inflation, it is usually unclear whether they are referring to their personally experienced rate of inflation or the official rate of inflation as reported by the media. We ask how respondents react to survey questions that do not clearly distinguish between the two concepts. About half of respondents refer to the official rate, while about 21% refer to the personalised rate, and 17% take the simple average of the two rates. Additionally, close to 10% become confused and refuse to answer the question. Our findings show that both variables are highly correlated (correlation coefficient = 0.7), which is in line with de Bruin et al. (2012)'s conclusion.

The rest of this paper is organised as follows. In the next section, we discuss the extant literature and our contribution. We describe our survey and experiment in Section 3. In Section 4, we present the treatment effects of supply shortages on inflation expectations. Section 5 contains the conditional treatment effects on individuals' supply-shortage experience and awareness, as well as their relative financial literacy. Findings from open-ended questions are presented in Section 6. Section 7 concludes.

2 Related literature and our contribution

Our paper makes a distinct contribution to the small literature on the causal effect of receiving news about a supply shock on inflation expectations.

Examining the effects of supply shocks from a macroeconomic perspective, Känzig (2021) employs VARs based on high-frequency data and finds that US household inflation expectations increase in response to a negative future oil-supply news shock. Acharya et al. (2023) use instrumental-variable estimation to study the impact of supply factors on average household inflation expectations in six European countries. They find that these shocks raise laypersons' expectations.

A microeconometric perspective is employed by Coibion et al. (2022), who use a survey experiment based on providing information on gasoline price inflation in the US and An et al. (2023) present a similar analysis for China. Both studies find that providing information on gasoline price inflation has a positive effect on households' inflation expectations in the US and on future gasoline price expectations in China, respectively. Afunts et al. (2024) and Dräger et al. (2025) use the start of the Russian invasion of Ukraine as

a natural experiment to estimate the effect of a supply shock on inflation expectations in Germany, employing a survey of economics professors and the Bundesbank's household panel survey. Again, an increase in inflation expectations following the invasion of Ukraine by Russia is reported.

These studies, however, are neither representative of the general population (Afunts et al., 2024; Dräger et al., 2025), nor do they provide direct information about quantity constraints (Coibion et al., 2022; An et al., 2023). Our paper falls into the microeconometric strand of literature and aims to fill these gaps by employing a survey experiment on a representative sample of the German population. Our treatments explicitly mention supply shortages of various durations.

Our heterogeneity analysis provides additional evidence to the literature on personal experience and financial literacy in shaping inflation expectations. In many studies, consumers state that shopping experience is their main source of information about inflation and form their inflation expectations by observing price developments (see Weber et al. (2022) for a review). Moreover, Malmendier and Nagel (2016) and Malmendier (2021) argue that lifetime inflation experience influences inflation expectations in the long term, especially when these experiences are associated with strong emotions such as living through a hyperinflation period. In addition, economic and financial literacy are important determinants of inflation expectations (de Bruin et al., 2010; Burke and Manz, 2014; Rumler and Valderrama, 2020; Dräger and Nghiem, 2025). Our study examines how personal experiences of encountering empty shelves while shopping and individuals' relative levels of financial literacy influence the effects of supply-shortage treatments on both measures of inflation expectations.

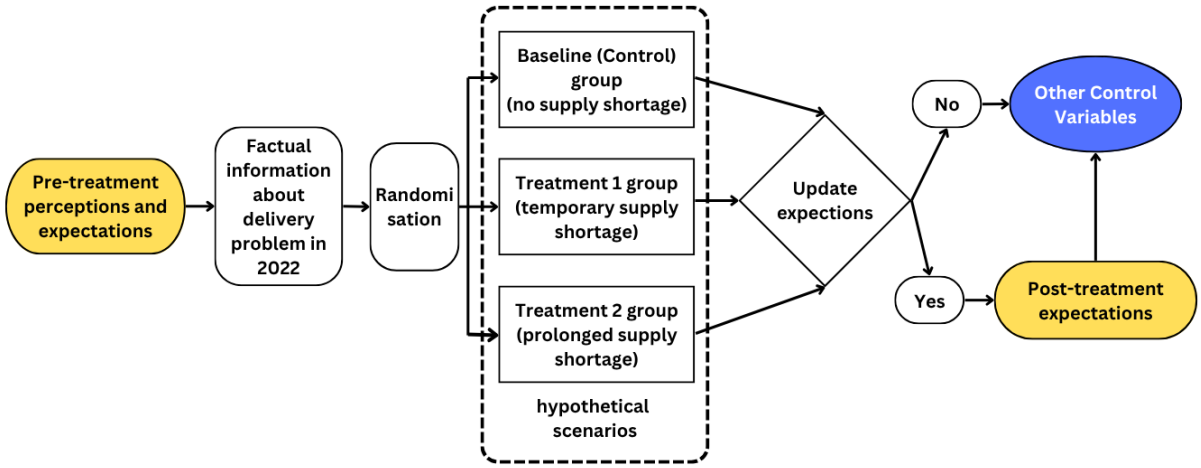
Our paper also relates to the strand of literature in behavioural economics that investigates the link between product scarcity and consumer attention and choices at the aggregate level. For example, Parker and Lehmann (2011) and Robinson et al. (2016) find that shelf-based scarcity increases consumers' willingness to pay and influences their preference for desirable goods. Product scarcity not only attracts consumers' attention but also increases the perceived value of a product (Hamilton et al., 2019). In the worst case of production capacity constraints or interruptions, it can lead to consumer competition for limited supply, such as hoarding or panic buying (Sterman and Dogan, 2015).

Finally, our paper contributes to the growing literature on using open-ended questions to extract individuals' first-order opinions and reveal mechanisms behind economic behaviour (Andre et al., 2021; Ferrario and Stantcheva, 2022; An et al., 2023; Haaland et al., 2024; Schnorpfeil et al., 2024; Dräger et al., 2025). In our survey, we allow open-ended answers to elicit individuals' feelings and actions when facing product scarcity. The majority of respondents associate such situations with negative feelings such as 'annoyed', 'disappointed', 'frustrated' or 'bad' and would either turn to alternative providers, buy substitute products, or wait patiently.

3 Survey design and sample

Figure 1 illustrates the design of our survey and experiment. At the outset, all respondents are asked to report their inflation perceptions for the year 2024 and their expectations for the year 2025 in terms of the official rate (i.e. the percentage change in the consumer price index) and their personal rate (i.e. the rate at which they themselves perceive prices to be changing). In the next step, to draw attention to the issue of supply shortages, we present respondents with factual information about delivery problems in Germany in 2022 – before randomly assigning participants to different treatment groups. During the intervention stage, each group receives a hypothetical scenario concerning the supply situation in the near future. We then gather updated household inflation expectations on the assumption that the scenario occurs. The remainder of the survey gathers control variables related to demographic characteristics and economic knowledge. The survey and embedded experiment were preregistered, and the underlying hypotheses were documented in the AEA RCT Registry on 12 February 2025 (Bui and Hayo, 2025c). Bui and Hayo (2025a) describe the survey in detail.

Figure 1: Our experiment design



Measuring inflation expectations prior to the treatments We measure respondents' quantitative expectations for the official inflation rate in 2025 using a point forecast format. If respondents feel unable to provide a numerical estimate at the time of the survey, they may choose the options 'I don't know the value' or 'I do not form any expectations about the development of the official inflation rate'. These response options help reduce noise in the data and allow for a more accurate measurement of inattention, as discussed in Bui and Hayo (2025b). An analogous question is used to elicit personal inflation expectations. The exact wording of the question is provided below:

> ***Official inflation expectation:*** *What specific value do you expect in 2025 for the official inflation rate, which is calculated using the consumer price*

index? If you believe that the consumer price index will fall, please enter a negative percentage.

Please enter the value for the official inflation rate that you expect in 2025 (a): ___ %

- *I don't know the value.*
- *I do not form any expectations about the development of the official inflation rate.*

Personal inflation expectation: *What specific value do you expect in 2025 for your personal inflation rate, i.e. the rate of price change that you personally experience? If you believe that the prices you are typically confronted with will fall on average, you can enter a negative percentage.*

Please enter the value for the inflation rate that you expect in 2025 (a): ___ %

- *I don't know the value.*
- *I do not form any expectations about the development of my personal inflation rate.*

Unless respondents state that they 'do not form any expectations', we ask for the minimum and/or maximum values in the next question to elicit the uncertainty dimension of their expectations. The idea behind this is that it might be difficult for laypersons to provide the most likely point forecast value (i.e. the mode of the distribution) of future inflation, but they might find it easier to provide a range forecast or only the lowest or highest value. Ranyard et al. (2008) report a positive link between participants' numeracy and the accuracy of elicited beliefs using online surveys. Moreover, as Comerford (2019) criticise the use of the density format in eliciting inflation uncertainty due to its complexity for laypersons, our design for expectation uncertainty is deliberately simple to answer. Pavlova (2024) examine two ways of questioning the uncertainty: (i) a probabilistic format with bins and (ii) a min-max format and find evidence supporting the argument by Hayo and Méon (2023) that the former method 'guides' respondents to give numerical answers and hence causes more noise in the data rather than eliciting informative opinions. However, while Pavlova (2024) require respondents to provide both minimum and maximum values, our design allows respondents to provide only one of the two, or neither. Hence, the flexibility and simplicity of our question design allow respondents to reflect their opinions about future inflation rates in a way that is both accessible, feasible and meaningful.

The lowest value you expect (b): ___ %

- *I don't know the value.*

The highest value you expect (c): ___ %

- ∘ *I don't know the value.*

Factual Information and Hypothetical Scenario Treatments In the second stage, we provide all respondents with factual information about supply problems in the German retail sector in May 2022, based on a press release from the ifo Institute — one of Germany's leading economic research think tanks — (Wohlrabe, 2022). The information includes a descriptive paragraph detailing that 80% of firms were unable to deliver orders as well as a graphic showing the distribution of affected sub-sectors in greater detail. The full content is provided in Appendix A.1.

After presenting the information, we ask respondents to assess: (i) whether the information is new to them; (ii) whether they have personally experienced empty shelves in stores; and (iii) how serious the situation was for them. This step serves both as an introduction to the subsequent hypothetical scenarios concerning supply shortages and as a means of controlling for prior personal experiences with supply constraints.

We then randomly assign participants to three groups: two treatment groups and one control (baseline) group. Based on the hypotheses outlined above and an a priori power analysis, we allocate 750 respondents to each treatment group and 500 to the control group. Each group receives only one of the following three texts.

> **Treatment 1 group (N=762) is presented with a hypothetical scenario of a two-month supply problem** *(temporary supply shortage)*:
> INTERRUPTION TO THE SUPPLY CHAIN IN THE GERMAN RETAIL SECTOR — PROBABLY FOR TWO MONTHS
> Delivery delays and supply bottlenecks are expected to occur again in Germany. Experts estimate that these supply problems will be resolved within the next two months.

> **Treatment 2 group (N=768) receives a hypothetical scenario of a twelve-month supply problem** *(prolonged supply shortage)*:
> INTERRUPTION TO THE SUPPLY CHAIN IN THE GERMAN RETAIL SECTOR — PROBABLY FOR A YEAR
> Delivery delays and supply bottlenecks are expected to occur again in Germany. Experts estimate that these supply problems will be resolved within the next twelve months.

> **Baseline or Control group (N=502) receives a hypothetical scenario of no supply problem** *(no supply shortage)*:
> NO PROBLEMS WITH THE SUPPLY CHAIN IN THE GERMAN RETAIL SECTOR
> It is expected that there will be no problems with the delivery and supply of goods in Germany.

> Experts estimate that the supply situation in Germany will be stable and normal over the next twelve months.

Measuring inflation expectations after the treatments To collect the distributions of posterior inflation expectations, we first ask whether respondents would like to update their expectations based on the assumption that the scenario they have just read will occur. Respondents can choose among three options: 'I want to update', 'I don't want to update', or 'I don't know'. If they choose to update, they may revise their previous answers by modifying the mode, the minimum, the maximum, or any combination of these values. Unchanged values are retained. Additionally, respondents can select the option 'I would like to adjust my answer, but I am not sure how'.

At this step, we again offer high flexibility in updating numerical opinions. This flexible design allows respondents to revise their expectations in a manner that reflects their uncertainty and level of confidence. It offers three key advantages: (i) the decision to update is made deliberately; (ii) the updated values are provided intentionally; and (iii) we can disentangle non-updating behaviour by identifying whether it stems from a lack of willingness ('don't want'), a lack of knowledge ('don't know'), or uncertainty about how to revise expectations ('want to, but don't know how').

Sample In this paper, we employ data from a cross-sectional survey that covers 2,032 representative German adults, aged 18 and older. Our survey was carried out from 14 to 21 February (collecting 1,025 responses) and during 26 February to 4 March 2025 (surveying 1,007 respondents) by Dynata. Respondents were drawn via random sampling using quotas based on age, gender, household size, region, community size, and net household income.

Table B1 in the Appendix B.1 summarises the distributions of these demographic characteristics in our sample, which closely resemble those of the population. Table B2 shows that the main socio-demographic characteristics are largely the same across the three groups. In most cases, we do not observe any statistically significant differences in the means of the variables at the 5% level. Nevertheless, our data reveal that respondents in the control group are, on average, older than those in both treatment groups. They also have a lower level of education than the participants in the treatment 2 group. As is well documented in the literature (see, for example, de Bruin et al.; 2010; Malmendier and Nagel; 2016; D'Acunto et al.; 2023), both age and education are important determinants of inflation expectations, and so we also control for these factors in our regressions.

Two measures of inflation expectations matter Our data are unique in that we elicit quantitative inflation expectations along two dimensions: the general price index of the economy and personal expenditure experiences. Although the two measures are positively correlated (correlation coefficient = 0.7), we analyse them separately for two reasons. First, if not clarified, respondents might easily stick to one or mix the definitions of inflation expectations. When respondents are asked to provide expected inflation rates

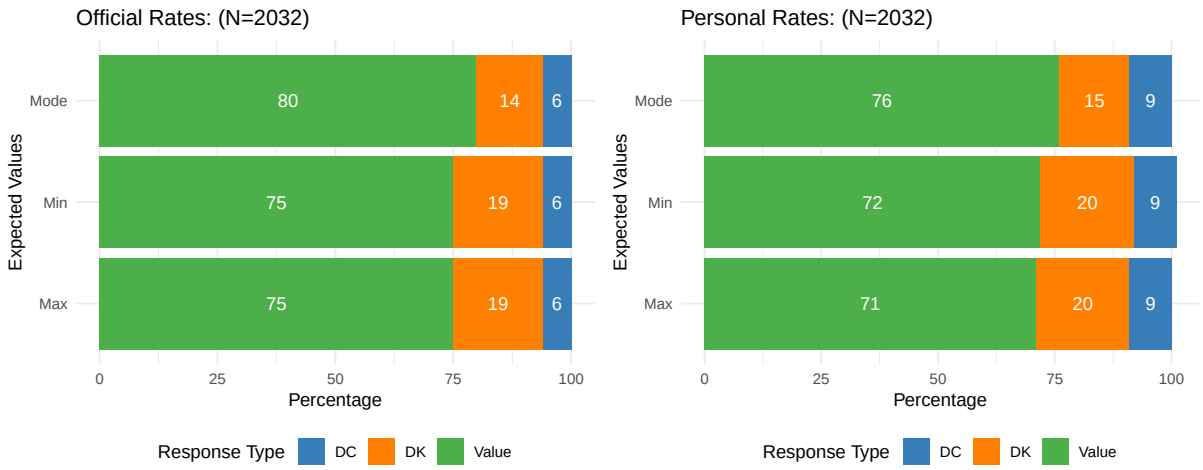
without detailed definitions, Table 1 shows that half of participants refer to the official rates announced in the media, whereas just over a fifth refer to changes in their own cost of living. A notable share of participants (17%) report a value that averages the two measures. In addition, 10% of participants express confusion and do not provide an answer.

Table 1: Respondents' reference points when answering general surveys

	Per cent
I refer to my personal inflation rate	21.5
I refer to the official inflation rate	51.1
I choose some kind of average between the two	17.0
I am confused and choose don't know	10.4
Total	100.0

Second, consumers exhibit different levels of attention to and engagement with these measures. Figure 2 shows that a majority of respondents were able to provide numerical values for their expectations of official inflation (80%) and personal inflation (76%). These shares fall by 5 pp when it comes to providing the lowest and highest forecasted values. Interestingly, a substantial share of respondents do not form expectations on this topic: 6% for official and 9% for personal inflation rates. This suggests that fewer people are concerned about their personal inflation rate than about the overall inflation rate in the economy.

Figure 2: Share of respondents providing numerical inflation expectations before treatments (in %)

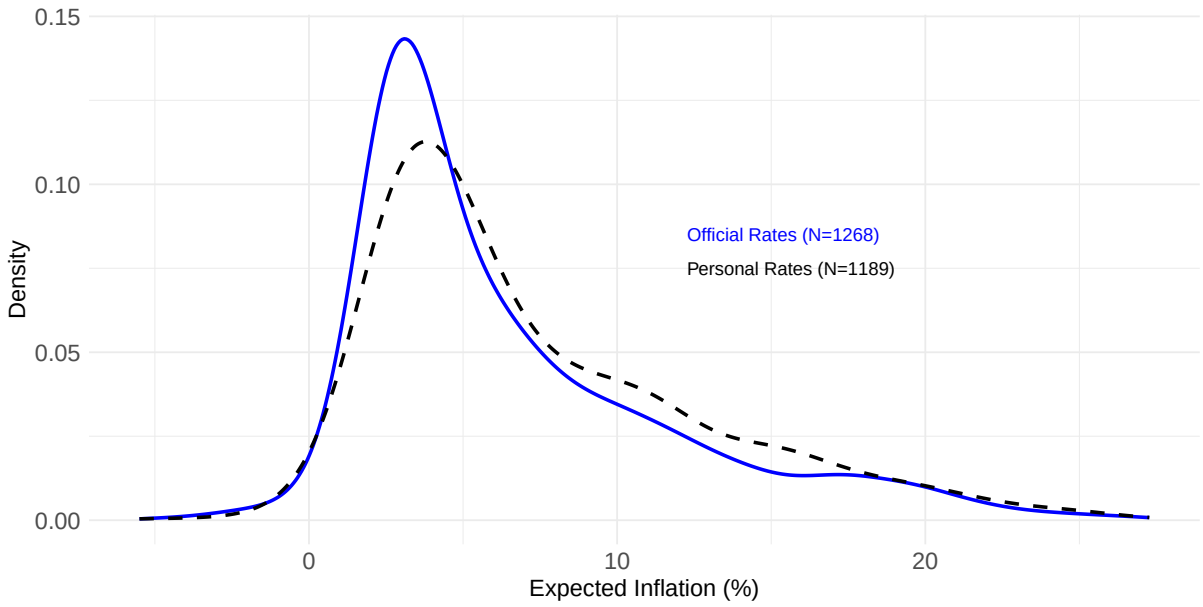


Note: DK = 'Don't know'; DC = 'Don't form expectations'.

After collecting data on expected values, we truncate the top and bottom 5% of responses to remove outliers in consumers' inflation expectations in line with Mankiw et al. (2003).[1]

We then compute the mean of both inflation expectations based on a simple triangular distribution, following Pavlova (2024).[2] Accordingly, our samples for analysing quantitative official and personal inflation expectations comprise 1,268 and 1,189 respondents, respectively. As shown in Figure 3, the distribution of official inflation expectations differs significantly from that of personal expectations. In particular, the former shows lower values and less dispersion than the latter. As emphasised by de Bruin et al. (2012), the two measures may diverge considerably.

Figure 3: Density plots of pre-treatment inflation expectations



Note: The Kolmogorov-Smirnov test rejects the null hypothesis that two inflation expectations are drawn from the same distribution ($p<0.001$).

[1] Although it is common practice in the existing literature to truncate the sample, in many instances it is unclear whether an extreme observation should be excluded because it reflects an error or retained because it reflects an extreme opinion. Therefore, we repeat our analysis using the untruncated sample and find our results to be generally robust (see Tables C1 and C2 in Appendix C).

[2] If respondents do not provide the mode (a) but only the min-max range ($b; c$), we relax the distributional assumption by taking the midpoint of the range as the mode ($a = \frac{b+c}{2}$).

$$E[\pi_{2025}] = (a + b + c)/3$$

4 Treatment effects on inflation expectations

4.1 Pre- and post-treatment inflation expectations

This section describes inflation expectations before and after receiving various treatments. Table 2 shows that, across all treatments, the majority of participants chose not to update their inflation expectations after reading the information about supply-chain disruptions in Germany. Approximately 16% and 17% of respondents expressed uncertainty ('I don't know') when asked whether they wanted to revise their expectations for official and personal inflation, respectively. Additionally, around 4% and 5% of respondents indicated a willingness to change their expectations but were unable to enter new numerical values immediately ('Yes, I want to change but I don't know how').

Table 2: Treatment effects on the intention to change inflation expectations

	Baseline	Temporary	Prolonged	Total
Official Inflation Expectations				
1. Yes, I want to change	12	20	20	18
(a) value(s)	8	14	15	13
but I don't know how	4	5	5	5
2. No, I don't want to change	69	63	64	65
3. I don't know	19	18	16	17
Sum	100	100	100	100
Personal Inflation Expectations				
1. Yes, I want to change	12	17	18	16
(a) value(s)	8	12	13	12
but I don't know how	4	5	4	4
2. No, I don't want to change	72	67	66	68
3. I don't know	16	16	16	16
Sum	100	100	100	100

Only a modest proportion of respondents provided new values for inflation expectations post-treatment. In the baseline group, 8% of participants revised at least one value of their expectations after receiving the hypothetical scenario of normal supply conditions. In the temporary shock treatment group, which received a scenario describing a two-month supply disruption, 14% and 12% of participants updated their expectations for official and personal inflation, respectively. Similarly, in the prolonged constraint group, which featured a twelve-month supply-shortage scenario, 15% and 13% of respondents revised their expected official and personal inflation rates. Although the actual revision rates are below 15%, they exclude ambiguous and non-attitudinal responses and are representative of the population. We believe these rates are plausible, given that the treatments are hypothetical scenarios. Hence, we aim to study not only the overall effects, but also the impact on participants who actually changed their beliefs.

Table 3: Prior and posterior expectations

Stats	Overall margins				Intensive margins				Share updating	
	Official rates		Personal rates		Official rates		Personal rates		Official rates	Personal rates
	pre	post	pre	post	pre	post	pre	post		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Temporary										
mean	6.52	6.70	7.58	8.06	7.37	8.27	8.52	10.68	0.14	0.12
sd	4.84	4.84	5.37	5.74	5.87	5.64	5.59	6.65		
N	477	469	438	435	82	86	65	71		
Test: mean(post)-mean(pre)										
difference		0.18		0.48		0.90		2.16		
p-value		0.568		0.202		0.312		0.043		
2. Prolonged										
mean	6.55	6.99	7.45	7.78	6.66	8.40	7.14	8.48	0.15	0.13
sd	5.34	5.47	5.38	5.64	6.13	5.98	5.40	6.04		
N	477	465	463	453	93	93	85	81		
Test: mean(post)-mean(pre)										
difference		0.44		0.33		1.74		1.34		
p-value		0.212		0.365		0.052		0.133		
3. Baseline										
mean	6.51	6.35	6.98	6.95	11.55	10.52	10.51	9.46	0.08	0.08
sd	5.42	5.26	5.30	5.23	7.42	7.01	7.10	6.57		
N	314	305	288	284	31	29	27	26		
Test: mean(post)-mean(pre)										
difference		-0.16		-0.03		-1.03		-1.05		
p-value		0.71		0.946		0.583		0.579		
4. Total										
mean	6.53	6.72	7.38	7.68	7.68	8.64	8.16	9.50	0.13	0.12
sd	5.17	5.19	5.36	5.59	6.42	6.01	5.84	6.41		
N	1268	1239	1189	1172	206	208	177	178		
Test: mean(post)-mean(pre)										
difference		0.19		0.30		0.96		1.34		
p-value		0.359		0.183		0.117		0.04		
5. Test: mean(Temporary)-mean(Baseline)										
difference	0.01	0.35	0.6	1.11	-4.18	-2.25	-1.99	1.22		
p-value	0.978	0.343	0.139	0.009	0.002	0.084	0.155	0.424		
6. Test: mean(Prolonged)-mean(Baseline)										
difference	0.04	0.64	0.47	0.83	-4.89	-2.12	-3.37	-0.98		
p-value	0.918	0.107	0.242	0.046	0.000	0.113	0.010	0.483		
7. Test: mean(Temporary)-mean(Prolonged)										
difference	0.03	0.29	-0.13	-0.28	-0.71	0.13	1.38	2.20		
p-value	0.928	0.391	0.717	0.464	0.437	0.881	0.129	0.034		

Note: Because there are significant shares of respondents who do not know or form expectations about both inflation measures, the numbers of observations are smaller than the numbers of participants. Columns 5-8 report statistics from subsamples of respondents who actually provided post-treatment new value(s) for official and personal inflation expectations. Column 9 and 10 are the shares of respondents who actually provided new value(s) for official and personal inflation expectations out of the overall sample.

Table 3 presents the weighted means of both measures of expected inflation rates across treatment groups, while Figure B2 in the Appendix B visualises these results. On average, respondents expect the CPI and their personal living costs to increase by 6.5% and 7.4%, respectively, in 2025 (Columns 1-4 in panel '4. Total'), with no significant differences across treatment groups. When presented with the corresponding hypothetical scenario, post-treatment official inflation expectations increase on average to 6.4% in the baseline group, 6.7% in the temporary shortage group, and 7% in the prolonged shortage group. However, these changes are not statistically significant at the 5% level. In contrast, post-treatment personal inflation expectations are significantly higher in both treatment groups – 8.1% in the temporary shortage group and 7.8% in the prolonged shortage group – compared with 7% in the baseline group.

Among respondents who revised their expectations, Columns 5-8 of Table 3 present the distributions of pre- and post-treatment official and personal inflation expectations. For the baseline group, average expectations remain stable between the pre- and post-treatment questions. In contrast, within the temporary shortage group, we observe a statistically significant increase in personal inflation expectations – from 8.52% to 10.68%. Overall, the average personal inflation expectation among those who updated their beliefs rose significantly from 8.16% to 9.5%.

4.2 The average treatment effects

In this section, we use multinomial probit analysis to examine the effects of the scenarios on both types of inflation expectations. Our first specification (Equation 1) estimates the likelihood that respondents are willing to revise their inflation expectations, as well as actually doing so. This corresponds to the extensive margins of the treatment effects. Our second specification (Equation 2) models the weighted average of posterior official and personal inflation expectations as a function of covariates. The intensive margins reflect the treatment effects among respondents who actually updated one or more values of their expectations. The overall effect measures the treatment impact across the entire sample.

$$Prob(update|X) = \phi(a_0 + a_1\pi^e_{j,prior} + b'T_i + d'X_j^{controls} + \epsilon_j) \tag{1}$$

$$\pi^e_{j,posterior} = a_0 + a_1\pi^e_{j,prior} + b'T_i + d'X_j^{controls} + \epsilon_j \tag{2}$$

where $Prob(update|X)$ is either the probability of stating that 'Yes, I want to change' or the probability of providing new values for official and personal inflation expectations post-treatment. $\pi^e_{j,posterior}$ is the post-treatment inflation expectation, and $\pi^e_{j,prior}$ is the pre-treatment inflation expectation, which helps to adjust for pre-treatment heterogeneity, thus improving the statistical power and precision of the estimates. T_i is a categorical variable, indicating the treatment group to which an individual is assigned. $X_j^{controls}$ is a vector of control variables for respondent j, including age and education level. Our co-

efficients of interest are those on the treatment dummies (b'), which capture the average effect of receiving one of the supply constraint scenarios relative to the control scenario. Results for extensive margins, intensive margins, and overall effects are presented in Tables 4 and 5.

Hypothesis 1: *A situation of supply shortages increases people's inflation expectations.* This is equivalent to testing whether b' is positive.

Hypothesis 2: *A prolonged supply shortage has a larger effect on inflation expectations than a temporary one.* The null hypothesis for Hypothesis 2 states that the effects of treatment 1 (two-month disruption) and treatment 2 (twelve-month disruption) are equal.

(i) Extensive margin Receiving additional information about potential future supply constraints significantly increases the probability of updating both inflation expectations. At the 1% significance level, the probability of updating official inflation expectations is 8 pp and 10 pp higher in the temporary and prolonged shortage treatment groups, respectively, compared to the control group (Table 4, Column 1). For personal inflation expectations (Table 4, Column 4), the corresponding effects are 5 pp and 9 pp, respectively, significant at the 5% level. However, the difference between the two treatment effects is not statistically significant. Consequently, we combine the treatments and find that the probability of updating numerical beliefs is, on average, 9 pp and 7 pp higher, respectively. The effects on the probability of being willing to update the beliefs of both inflation expectations are 8 pp (see Columns 3 and 6).

(ii) Intensive margin The results differ between official and personal inflation expectations (Table 5B). There is no statistically significant treatment effect on official inflation expectations among respondents who updated their answers (Table 5B, Column 1), whereas personal inflation expectations increase by nearly 2 pp and 1.8 pp in the temporary and prolonged treatment groups, respectively – both significant at the 5% level (Table 5B, Column 3). However, the difference between the two treatment effects is not statistically significant. On average, among those who updated their responses, personal inflation expectations rise by about 1.9 pp in response to the supply-shortage scenario (Table 5B, Column 4).

(iii) Overall effect As seen in Table 5C, the treatments produce positive overall effects on both types of expectations. The temporary and prolonged scenarios raise expectations by approximately 0.3-0.4 pp, respectively. Thus, both the temporary and prolonged supply constraint scenarios have similar overall impacts on official and personal inflation expectations.

(iv) Transmission channel of treatment We investigate how the supply disruption scenario (the treatment) leads to higher inflation expectations (the outcome variables). In particular, we ask: Do consumers increase their inflation expectations because they con-

Table 4: Average treatment effects on the probability of revising official and personal inflation expectations

	A. Extensive margins					
	Official rates			Personal rates		
	Actual updates		Revise=Yes	Actual updates		Revise=Yes
	(1)	(2)	(3)	(4)	(5)	(6)
Prior expectations	0.004*	0.004*	0.004*	0.003	0.003	0.004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Temporary (AME1)	0.08**			0.05*		
	(0.02)			(0.02)		
Prolonged (AME2)	0.10***			0.09***		
	(0.02)			(0.02)		
Treatment (AME)		0.09***	0.08***		0.07**	0.08**
		(0.02)	(0.02)		(0.02)	(0.02)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.36	0.36	0.50	0.37	0.37	0.54
N	1230	1230	1230	1148	1148	1148
Test:AME1-AME2=0	0.02			0.04		
	(0.02)			(0.02)		

Note: Extensive margin refers to the average marginal effect on the probability of providing posterior expectations (Columns 1, 2, 4, and 5 – panel A). Columns 3 and 6 (panel A) present the average marginal effect on the probability of willingness to revise expectations after exposure to scenarios. Demographic control variables include age and education level.

All regressions show robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5: Average treatment effects on the probability of revising official and personal inflation expectations

	B. Intensive margins				**C. Overall effects**			
	Official rates		Personal rates		Official rates		Personal rates	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Prior expectations	0.81***	0.81***	0.86***	0.86***	0.96***	0.96***	0.98***	0.98***
	(0.05)	(0.05)	(0.11)	(0.10)	(0.01)	(0.01)	(0.01)	(0.01)
Temporary (AME1)	1.43		1.96**		0.34***		0.32***	
	(0.81)		(0.68)		(0.09)		(0.08)	
Prolonged (AME2)	1.33		1.84*		0.40*		0.40***	
	(0.78)		(0.86)		(0.11)		(0.11)	
Treatment (AME)		1.37		1.89**		0.37***		0.36***
		(0.72)		(0.68)		(0.08)		(0.07)
R^2	0.60	0.60	0.56	0.56	0.89	0.89	0.91	0.91
N	180	180	154	154	1182	1182	1108	1108
Test: AME1-AME2=0	0.10		0.11		-0.06		-0.08	
	(0.65)		(0.77)		(0.13)		(0.13)	

Note: Intensive margin (Column 1-4, panel B) refers to the average marginal effect among respondents who actually providing new values for inflation expectations after being exposed to the scenarios. Column 1-4 (panel C) present the overall effects of the treatments. Demographic control variables include age and education level.

All regressions show robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

sider the scenario important for the economy? Following Imai et al. (2010), we conduct a mediation analysis to assess how respondents' subjective assessments of the scenario's importance for the German economy (*subjective importance* – the mediator) in the impact of the negative supply shock on inflation expectations.[5] Table 6 reports the direct and indirect effects of the treatment (through the mediator) across the extensive (Table 4), intensive (Table 5B), and overall margins (Table 5C). At the 5% significance level, we find that *subjective importance* partially mediates the treatment in most cases, contributing around 30% to 40% of the total treatment effects. Moreover, for personal inflation expectations, the direct effect is statistically insignificant in both the extensive and intensive margins, meaning that the indirect effect through the perceived importance of the scenario fully accounts for the treatment effect. There is no evidence of either a mediated or a direct effect of the treatment on official inflation expectations in the intensive margin. Our results suggest that consumers perceive the information about the supply constraint as serious for the economy and consequently revise their inflation expectations upwards.

Table 6: Mediation effect of the importance of supply disruption scenario to the economy on official and personal inflation expectations

	Official rates			Personal rates		
	point estimate	95% CI lower	upper	point estimate	95% CI lower	upper
Extensive margins						
Indirect effect	0.03	0.01	0.04	0.03	0.02	0.05
Direct effect	0.06	0.02	0.11	0.04	-0.01	0.08
Total effect	0.09	0.05	0.13	0.07	0.03	0.11
Intensive margins						
Indirect effect	0.13	-0.13	0.48	0.74	0.17	1.55
Direct effect	1.23	-0.38	2.75	1.17	-0.45	2.69
Total effect	1.36	-0.36	2.81	1.91	0.25	3.35
Overall margins						
Indirect effect	0.11	0.05	0.18	0.13	0.07	0.20
Direct effect	0.26	0.04	0.49	0.23	0.00	0.46
Total effect	0.37	0.15	0.59	0.36	0.14	0.59

Note: The models for the extensive margins of the official and personal inflation expectations are consistent with models in Columns 2 and 5 in Table 4, respectively. The models for intensive margins of the official and personal inflation expectations are consistent with models in Columns 2 and 4 in Table 5B, respectively. The models for the overall margins of the official and personal inflation expectations are consistent with models in Columns 2 and 4 in Table 5C, respectively.

In summary, all results suggest that we cannot reject Hypothesis 1: the supply-shortage scenario has a notable positive impact on both official and personal inflation

[5] After the treatment, we ask respondents to rate how important the provided scenario is for the German economy. Answer options range from 1 (Very unimportant) to 5 (Very important), with an additional 'Don't know' option.

expectations. On the one hand, the supply shortage is considered an important determinant of economic performance and mediates the impact on inflation expectations. Supply constraints may trigger fears of unfulfilled demand, thus increasing prices or causing extreme behaviours such as hoarding. This effect is likely to be intensified by an uncertain future, as suggested in the literature on how product scarcity influences consumer behaviour (Parker and Lehmann, 2011; Sterman and Dogan, 2015; Robinson et al., 2016; Hamilton et al., 2019). On the other hand, over time, people can adapt to the situation by either holding back their demand or finding substitute solutions such as changing products or adjusting their habits. These actions help keep the general price level stable, or may even lower it if the production of the replacements also responds accordingly and promptly (discussed further in Section 6). Although the twelve-month disruption seems to have larger effects than the two-month disruption, these differences are statistically insignificant. This finding suggests that the assumed duration of the supply shortage does not materially affect the average treatment effects, leading us to reject Hypothesis 2. Survey respondents may respond more to the existence of negative shocks than their duration. In this sense, given the same shock, its duration plays a relatively small role in the average of updated expectations. Nevertheless, the treatments may affect belief dispersion in other ways, which we explore in the next section.

4.3 Inflation expectations' belief updating

As mentioned in Section 4.2, a modest share of participants updates their inflation expectations after receiving the scenarios, while a large proportion of respondents does not.

In this section, we explore how treatments affect the process of belief updating – in particular, how treatments influence the dispersion of beliefs. We allow the treatment effects to vary depending on pre-treatment expectations. According to Armantier et al. (2016), if respondents update their beliefs about inflation expectations in a Bayesian manner, we would expect them to weigh both their prior beliefs and the new information (signal) using the following equation: $posterior = w.prior + (1-w).signal$. Therefore, the greater the weight placed on prior beliefs (w), the smaller the influence of the treatment ($1-w$). If $0 < w < 1$, individuals revise their beliefs according to Bayes' rule by incorporating the new signal – thus reducing belief dispersion.[6] If $w = 1$, the dispersion in beliefs is unchanged because individuals disregard the signal. In contrast, receiving a signal could make participants expand their belief variation ($w > 1$), which would not be compatible

[6] In the Bayesian view, the degree of confidence in something is the probability, a number from 0 (impossible) to 1 (certain). Thus, an 'idealised' person – defined as one who always adheres to the rules of probability, where probabilities are positive numbers less than one and the sum of probabilities for two mutually exclusive events equals one – should revise his/her belief upon receiving new information (Edwards, 1982). However, this interpretation is subject to at least two important caveats. First, the above condition is only a necessary but not a sufficient condition for Bayesian updating to take place. Second, there is substantial empirical evidence that laypersons do not fully understand or apply Bayes' rule (e.g. Kahneman and Tversky, 1973; Benjamin et al., 2016.)

with a Bayesian updating process.

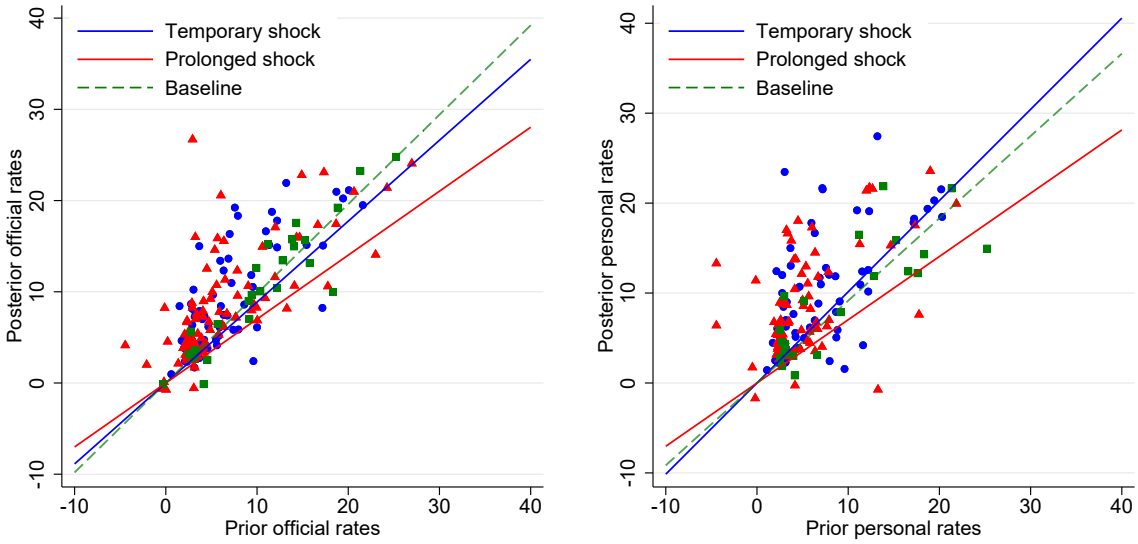
Hypothesis 3: *A prolonged supply shortage lowers the dispersion of inflation expectations more effectively than a temporary one.*

Following the Bayesian updating framework used by Coibion et al. (2023) and Dräger et al. (2024), we include an interaction term between prior expectations and the treatment dummy in our regressions (Equation 3).

$$\pi^{e}_{j,posterior} = a_0 + a_1\pi^{e}_{j,prior} + b'T_i + c'[\pi^{e}_{j,prior}T_i] + d'X^{controls}_{j} + \epsilon_j \tag{3}$$

In the main text, we focus on the intensive margin of prior inflation expectations, as depicted in Figure 4.[8] The slopes of the lines are the average marginal effects of prior expectations on posterior expectations, indicating the degree to which the prior beliefs influence posterior beliefs, reflecting the weight placed on prior beliefs (w). If the slopes are similar, the influence of prior beliefs is consistent across all treatment groups.

Figure 4: The weights of prior on posterior official and personal inflation expectations



(a) Official Rates, intensive margins

(b) Personal Rates, intensive margins

Note: The slopes are the average marginal effects of prior expectations on posterior expectations. Detailed results for the official and personal rates are in Table B4 and Table B5 in the Appendix B, respectively.

Official inflation expectations: The results for official inflation expectations are shown in Figure 4a (intensive margins). We find the smallest weight placed on prior official inflation expectations in the prolonged treatment group, suggesting that this group places the greatest weight on the signal (i.e., the largest treatment effect). In contrast, the weight in the temporary group and the baseline group is equal to one. Thus, only the

[8] Results of the overall effects are presented in the Appendix B

assumption of a prolonged shortage leads to a smaller variation in the updated official inflation expectations.

Personal inflation expectations: Figures 4b shows that all three lines have similar slopes, which are statistically indistinguishable from 1. Regardless of the scenario, we observe a consistent pattern in how respondents anchor their prior beliefs and disregard the new signal. Across different levels of prior personal inflation expectations, the treatments shift posterior personal inflation expectations upward by the same amount, as mentioned in Section 4.2.

Summarising the results from Section 4.2 and Section 4.3, we find that despite the similar impacts of the duration of supply shortage on the average of posterior expectations, the role of duration differs in the belief updating process. When the problem is prolonged, agents incorporate the disruption's duration in updating expected official inflation rates, bridging differences in post-treatment expectations. With this finding, we do not reject Hypothesis 3.

5 Conditional treatment effects

The impact of supply-shortage treatments on opinions about inflation may depend on personal experience as well as on the ability to collect, relate, and interpret information about the economic situation. In this section, we examine the heterogeneity in personal experience of empty shelves in supermarkets, awareness of the factual information about supply in Germany in 2022, and personal relative financial literacy. We report both the average conditional effects and the weights placed on prior expectations, focusing on the subgroup of respondents who actually updated their opinions (intensive margins). Results for the overall margins are presented in Appendix D.

5.1 Personal experience of empty shelves

Hypothesis 4: *People with more experience of a supply shortage will react less strongly than those with less experience.*

In examining how often individuals experience empty shelves in supermarkets and how seriously they perceive this situation for themselves, we condition treatment effects on this experience for both inflation-expectation measures. We create a new variable to separately estimate the conditional impacts on official inflation expectations and personal inflation expectations. The variable 'Personal experience of empty shelves' is constructed by multiplying two components: (i) the frequency with which a respondent experienced empty shelves (ranging from 1 = 'Never' to 5 = 'Always'), and (ii) the perceived seriousness of this situation for them (1 = 'Not very important' to 5 = 'Very important').

This index is then dichotomised (1 = Low, 2 = Moderate/high), capturing respondents' assessments of the impact of the empty-shelves experience on their personal lives.

Table 7: Summarised tables: intensive margins of the conditional effects on personal experience of empty shelves

	Official rates		Personal rates	
	ATE	weight	ATE	weight
1=Low	1.98	$w_1 = 1, w_2 = 1, w_3 = 1$	2.48**	$w_1 = 1, w_2 = 1, w_3 = 1$
2=Moderate/high	1.13	$w_1 = 1, w_2 < 1, w_3 = 1$	1.73	$w_1 = 1, w_2 = 1, w_3 = 1$

Note: ATE=average treatment effect; weight=marginal effect of prior on posterior inflation expectation. w_1, w_2, w_3 are the weights corresponding to the temporary, prolonged, and baseline shortage treatments, respectively. Details results are in Table D1 and D2 in the Appendix D for official and personal expected inflation rates.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 7 summarises the results for post-treatment inflation expectations. In particular, while the expected official inflation rate remains unaffected, the personal measure increases by about 2.5 pp – driven by low-experience respondents – supporting Hypothesis 4.

However, the two experience groups show different updating patterns. Low-experience respondents disregard their received supply-shortage scenario, irrespective of shock duration, when updating their beliefs about both inflation expectations ($w^{official}_{1,low} = 1, w^{official}_{2,low} = 1, w^{official}_{3,low} = 1, w^{personal}_{1,low} = 1, w^{personal}_{2,low} = 1, w^{personal}_{3,low} = 1$).

In contrast, high-experience respondents incorporate the prolonged supply disruption scenario in updating official inflation expectations in a Bayesian manner ($w^{official}_{2,moderate/high} < 1$), reflecting that the prolonged shortage treatment reduces post-treatment belief variation about official inflation in this group.

5.2 Awareness of the factual information about supply in Germany in 2022

Table 8 summarises the results for the awareness of the supply situation in Germany in 2022. On average, a supply-shortage scenario increases the official and personal inflation expectations of participants who regard the provided factual information as outdated by 2.3 pp and 3 pp, respectively.

When it comes to updating behaviour, despite differing in the awareness of the German supply problem in 2022 – with some respondents knowing it and others not – both subgroups exhibit similar patterns in updating official and personal inflation expectations. In particular, for official inflation expectations, the updating process depends on the type of information received. Only the prolonged treatment triggers a Bayesian updating style, reflecting that the one-year scenario reduces the dispersion in post-treatment official inflation expectations. In contrast, when updating personal inflation expectations, there is no

evidence of a clear dependence on the information received. All post-treatment dispersion stems entirely from prior beliefs (weights on prior beliefs equal 1).

Table 8: Summarised tables: intensive margins of the conditional effects on the awareness of the factual information about supply in Germany in 2022

	Official rates		Personal rates	
	ATE	weight	ATE	weight
1=new information	0.69	$w1 = 1, w2 < 1, w3 = 1$	0.76	$w1 = 1, w2 = 1, w3 = 1$
2=old information	2.33*	$w1 = 1, w2 < 1, w3 = 1$	3.04***	$w1 = 1, w2 = 1, w3 = 1$

Note: ATE=average treatment effect; weight=marginal effect of prior on posterior inflation expectation. w_1, w_2, w_3 are the weights corresponding to the temporary, prolonged, and baseline shortage treatments, respectively. Detailed results are in Table D3 and D4 in the Appendix D for official and personal expected inflation rates. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5.3 Relative financial literacy

A summary of results for relative financial literacy is set out in Table 9. Respondents with relatively low financial literacy show no significant treatment effect on official inflation expectations, but a negative effect of -2.3 pp on personal expectations. Under the prolonged-shock scenario, the weights on prior beliefs are below unity ($w_{2,low}^{official} < 1, w_{2,low}^{personal} < 1$), implying greater reliance on the treatment signal.

Table 9: Summarised tables: intensive margins of the conditional effects on relative financial literacy

	Official rates		Personal rates	
	ATE	weight	ATE	weight
1=low literacy	-0.16	$w1 = 1, w2 < 1, w3 = 1$	-2.31*	$w1 = 1, w2 < 1, w3 = 1$
2=high literacy	3.17*	$w1 > 1, w2 = 1, w3 = 1$	3.77***	$w1 = 1, w2 = 1, w3 = 1$

Note: ATE=average treatment effect; weight=marginal effect of prior on posterior inflation expectation. w_1, w_2, w_3 are the weights corresponding to the temporary, prolonged, and baseline shortage treatments, respectively. Detailed results are in Table D5 and D6 in the Appenidx D for official and personal expected inflation rates. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

It is plausible that high-literacy participants recognise that low stocks could lead to higher prices in the future. Reflecting this, they raise their expectations for official and personal rates post-treatment by approximately 3 pp and 4 pp, respectively. However, in the temporary-shock treatment for official inflation, we find a weight greater than one on the prior belief, which suggests that respondents were sceptical about the reoccurrence of the 2022 shortage within two months.[9] The result is an increase in the dispersion of posterior expectations ($w_{1,high}^{official} > 1$) among these participants.

[9]Note that this argument is different from Edwards (1982)'s conservatism bias, which describes an underreact relative to Bayes' Rule predictions due to cognitive limitations in aggregating multiple pieces of evidence.

6 Consumers' feelings and action strategies to deal with supply shortages

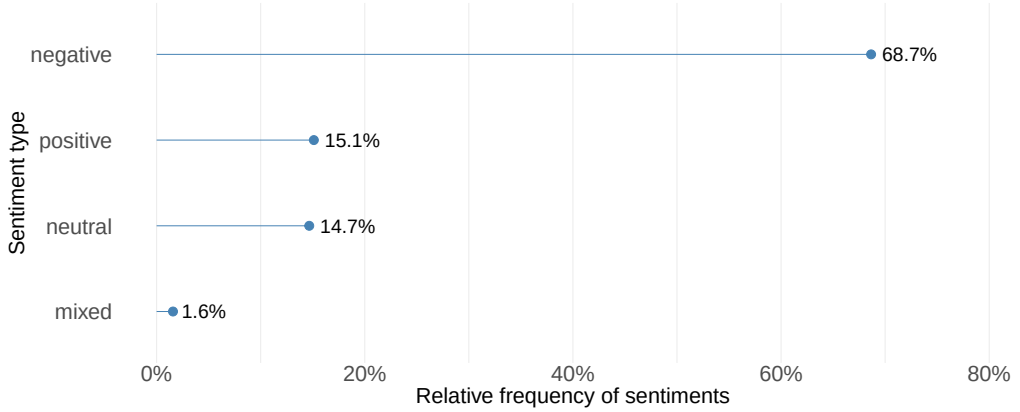
Using open-ended questions that ask how respondents feel when they cannot find their desired goods while shopping, and what actions they take in such situations, we connect these themes to the main results on personal inflation expectations.

Figure 5: Participants' feelings when encountering missing desired products in stores

Note: The original answers are translated into English and manually mapped to the third tier of the 'feeling wheel' (Robert, 2015). The size of each word is proportional to its frequency.

Responses are translated into English and manually grouped into the core emotions according to the 'feeling wheel' compiled by Robert (2015). When a respondent expressed opposing emotions such as 'disappointed – but not hopeless' or 'frustrated – but don't give up', we classify these as 'mixed' feelings. We find that most people (close to 70%) associate this experience with negative emotions such as 'annoyed' and 'disappointed' (Figure 5). A significant portion (30%) reports neutral and/or positive sentiments, while only a small minority (less than 2%) express mixed feelings (Figure 6).

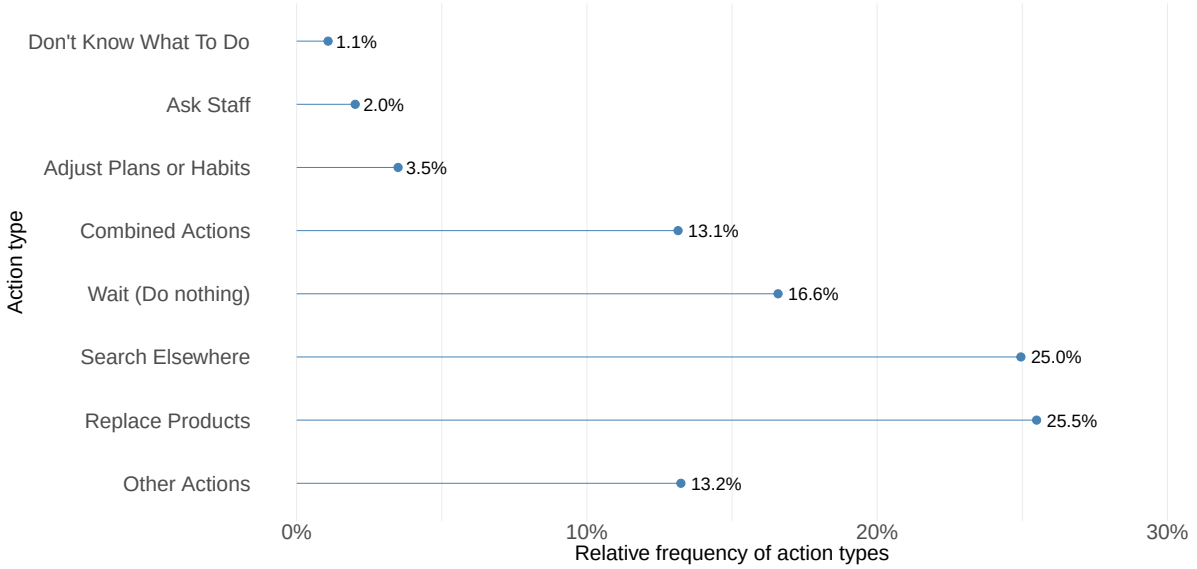
Figure 6: Participants' sentiments when encountering missing desired products in stores



Note: Based on the second tier of the 'feeling wheel', we categorise responses into three sentiment types – positive, negative and neutral. Additionally, a 'mixed' category is used when a respondent expressed opposing emotions.

When faced with the situation of missing desired goods, the most common response is to find a replacement, either by purchasing substitute products or searching in other (online) stores. Figure 7 shows that another common solution is to simply wait for restocking (17%). Many participants adopt a problem-solving approach and remain flexible, often taking multiple actions to navigate the situation, even if it means adjusting their plans or habits. Interestingly, some respondents report uncertainty or engage in behaviours that differ from these common strategies.

Figure 7: Participants' actions when encountering missing desired products in stores



Using a model of rationally inattentive consumers under uncertainty, Kamdar and Ray (2024) explains that sentiments drive consumers' economic beliefs. Negative emotions can trigger anxiety and thus raise expectations of future prices, especially for frequently purchased goods. However, the predominant replacement and substitution strategies help

explain why adverse assumptions about the supply of goods do not significantly affect the process of updating personal inflation beliefs.

7 Conclusion

Using a representative survey of the German population conducted in 2025, we study the causal effect of supply constraints on expected inflation. By presenting hypothetical two-month and twelve-month supply-disruption scenarios, we show that such constraints raise both official and personal inflation expectations. These effects are mediated by the perceived importance of the supply-disruption scenario for the economy. The extensive margin indicates that individuals exposed to supply shortages have an almost 10% higher likelihood of revising their inflation expectations.

However, the intensive margins differ substantially between the two types of expectations. For official inflation expectations, the average intensive margins of the two-month and twelve-month supply-shortage scenarios do not differ significantly from the no-shortage condition. Yet, the twelve-month scenario leads to stronger belief updating, suggesting greater sensitivity to the duration of disruptions. In contrast, both shortage treatments increase personal inflation expectations, regardless of individuals' prior beliefs.

In our questionnaire, we included a follow-up item to determine which rate respondents reference when the question does not specify official' or personal rate of inflation. We found that over half opted for the official rate, one in five for the personal rate, 17% chose an average of both, and the remainder were unsure. How important, then, is it to distinguish between expected rates of official and personal inflation? Our analysis suggests that in some instances, the distinction was practically unnecessary; in others, it proved useful. In other words, if researchers wish to proceed carefully, they should differentiate between the two concepts – or at least clearly focus on one.

Our analysis of open-ended questions provides insights into how people feel and react when they cannot find desired products. This, in turn, may affect how they value those products and form inflation expectations. Typical emotions associated with supply shortages are 'disappointment' or 'frustration', and the most common reactions are to purchase substitute goods or search for them in other (online) stores.

In addition, we explore heterogeneous effects by subgroups, focusing on individuals' personal experience with empty shelves in supermarkets, awareness of the factual supply situation in Germany in 2022, and individuals' relative financial literacy. Our findings show that the supply-shortage scenarios increase official inflation expectations among respondents with relatively high financial literacy and those already aware of the supply conditions in 2022. They also raise personal inflation expectations among (i) respondents with either low or moderate/high experience of empty shelves, (ii) those who were aware of the factual supply situation in Germany in 2022 and (iii) those with relatively high financial literacy.

Overall, our results deepen understanding of how supply factors can affect inflation expectations, which could then indirectly influence private spending, as argued in the strand of literature on intertemporal economic behaviour (e.g. Bachmann et al., 2015; Ichiue and Nishiguchi, 2015; D'Acunto et al., 2018; Dräger and Nghiem, 2021; Lieb and Schuffels, 2022; Andrade et al., 2023; Burke and Ozdagli, 2023; Coibion et al., 2023).

Our analysis has several limitations: First, we rely on hypothetical scenarios to elicit adjustments in respondents' inflation expectations – a fairly weak treatment, so real-world reactions may be even stronger. Second, we allow respondents to opt out of giving an answer to the expected inflation question if they do not monitor the inflation rate or are unable to provide a numerical value. While this approach reduces the extent of measuring non-attitudes and, therefore, the degree of noise in responses, its drawback is that our sample of numerical responses is relatively small because of low response rates. Third, future surveys could explore alternative measures of experience and awareness of supply shortages, such as the frequency with which a household encounters empty shelves and the extent to which respondents understand and trust the information provided.

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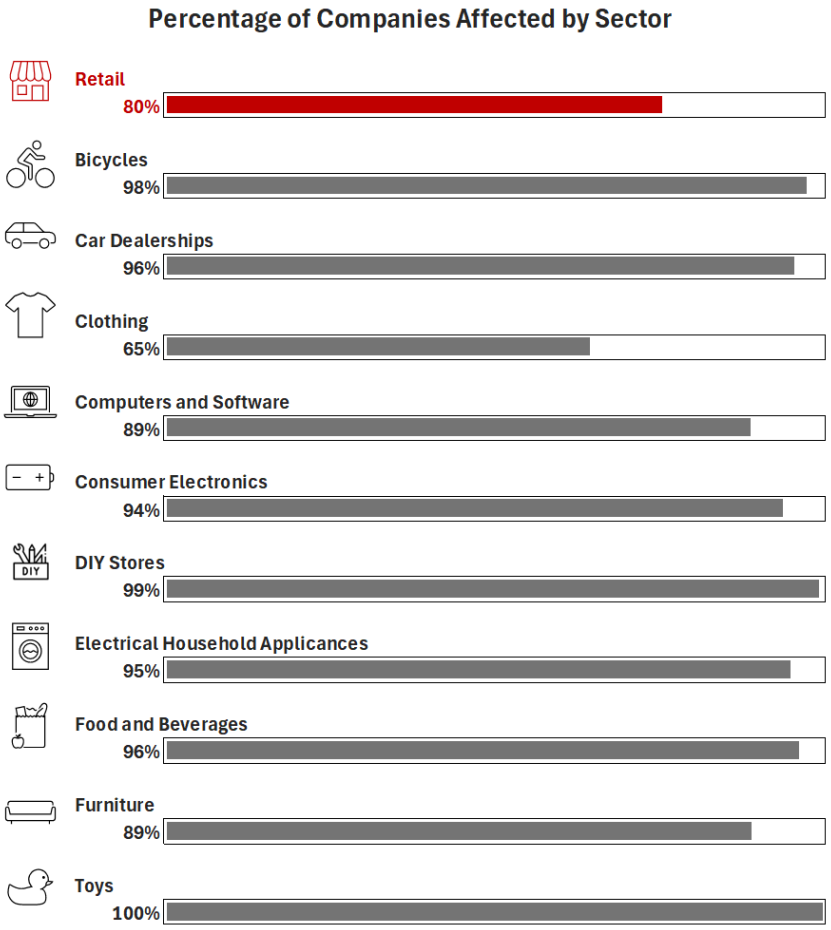
Appendices

A Appendix A: Information and treatments

A.1 Factual Information

We will now give you some information about the supply chain disruption in Germany in 2022. Please read the following information carefully before proceeding with the survey.

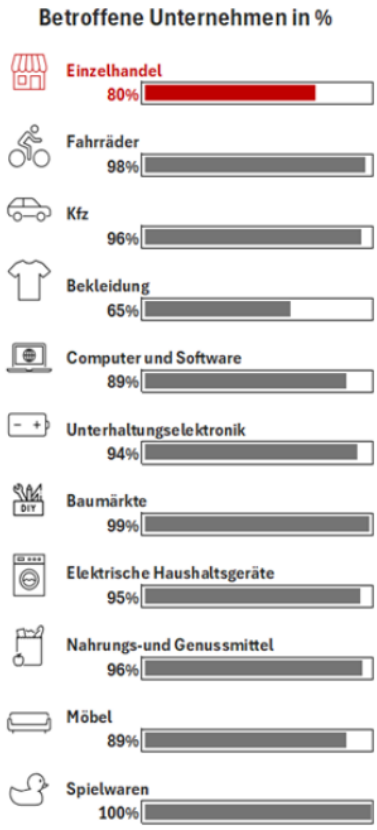
Two years ago, a leading economic research institute, the ifo Institute in Munich, reported problems with the delivery of goods to German stores. In May 2022, most stores (around 80%) reported that they did not receive their orders on time and were unable to restock their shelves as usual. As the chart shows, the situation was similar for many other products, e.g. cars, household appliances or toys.



Did you understand the information you just received? If you are not sure, please read the text again. Thank you for your effort!

Figure A1: Screenshot of the factual information

Ein führendes Wirtschaftsforschungsinstitut, das ifo Institut in München, berichtete vor zwei Jahren über Probleme bei der Lieferung von Waren an deutsche Geschäfte. Im Mai 2022 gaben die meisten Geschäfte (rund 80 %) an, dass sie ihre Bestellungen nicht rechtzeitig erhielten und ihre Regale nicht wie gewohnt auffüllen konnten. Wie das Schaubild zeigt, war die Situation bei vielen anderen Produkten ähnlich, z. B. bei Autos, Haushaltsgeräten oder Spielwaren.



Haben Sie die Informationen, die Sie gerade erhalten haben, gut verstanden? Wenn Sie sich nicht sicher sind, dann lesen Sie den Text bitte noch einmal durch. Vielen Dank für Ihre Mühe!

Zurück | Weiter

A.2 Treatments

Figure A2: Screenshot of the hypothetical scenario for Treatment Group 1 (N=750)

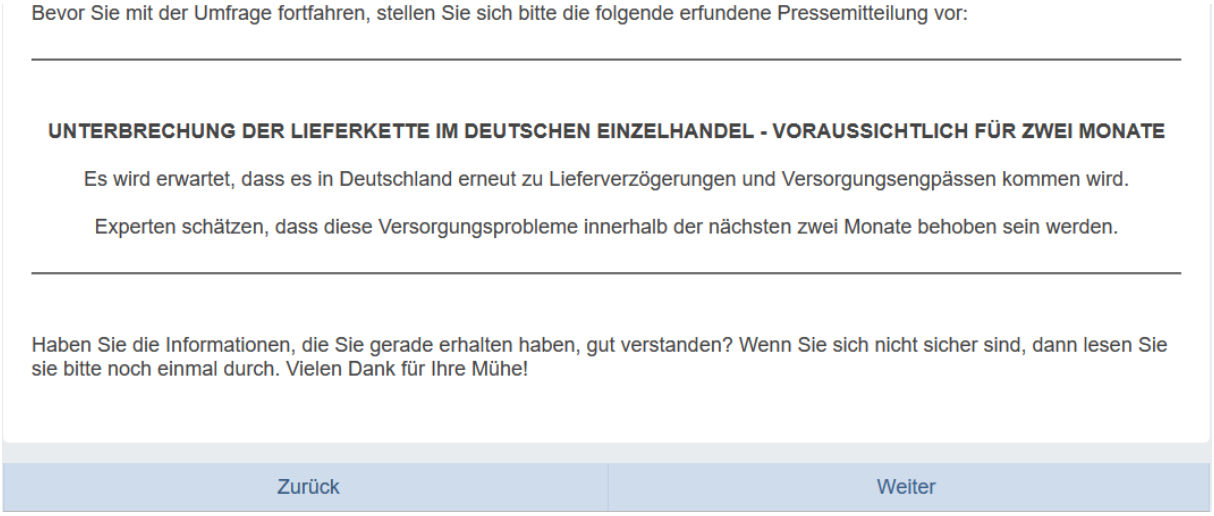


Figure A3: Screenshot of the hypothetical scenario for Treatment Group 2 (N=750)

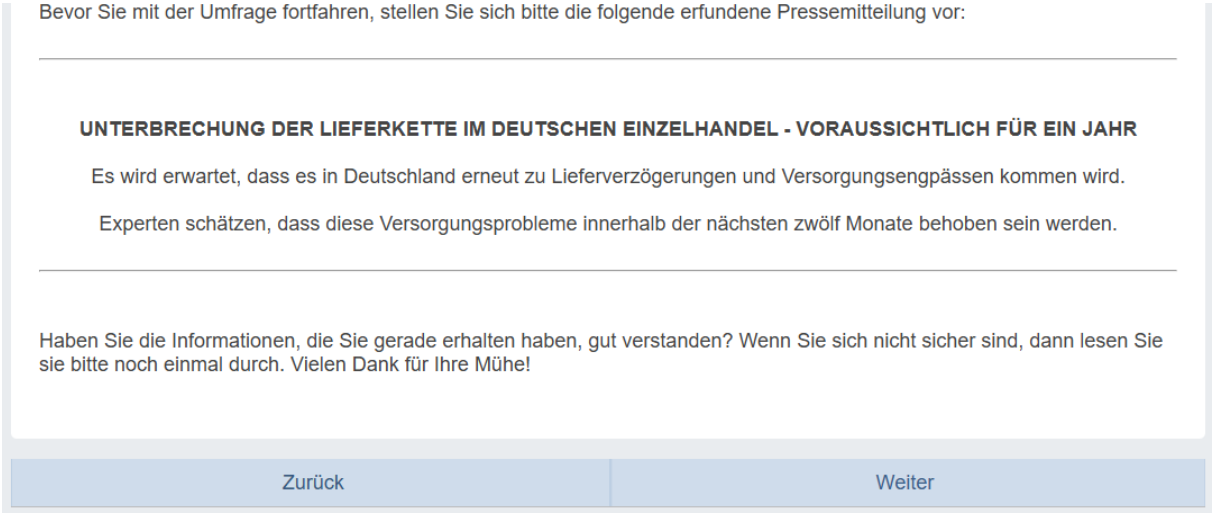
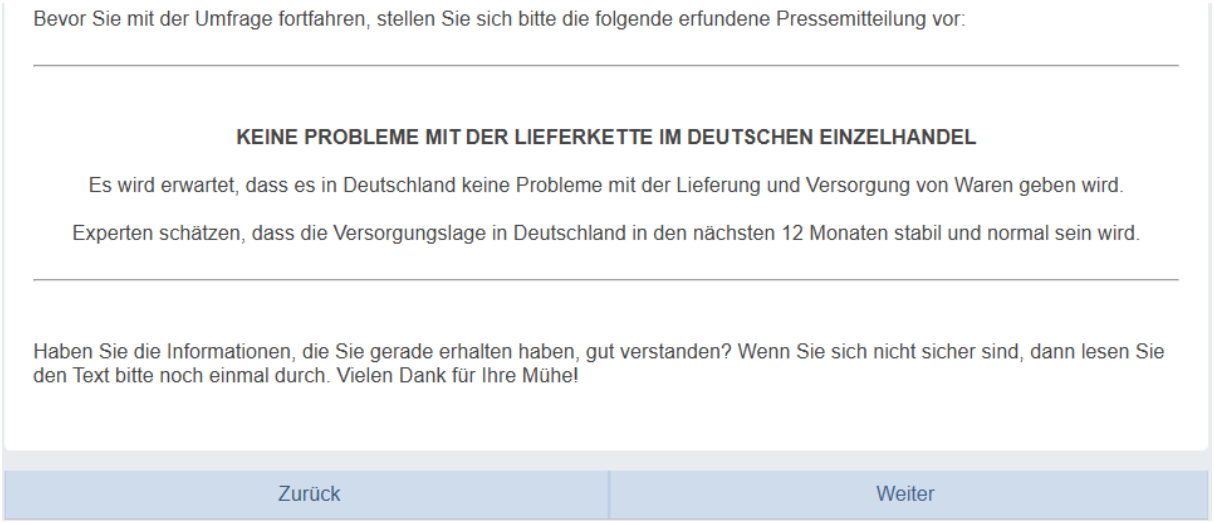


Figure A4: Screenshot of the hypothetical scenario for Control Group (N=500)



B Appendix B: Data descriptions and Main results

B.1 Summary statistics of the sample

Table B1: Comparison between sample and population distributions in %

Variable	Population	Sample	Variable	Population	Sample
Age Group			**Community Size**		
18-29	19	19	1 - 4,999	14	15
30-39	18	19	5,000 - 19,999	26	24
40-49	17	17	20,000 - 99,999	28	29
50-59	23	22	100,000 - 499,999	15	16
60-69	17	17	500,000+	17	17
70-79	6	6	Total	100	100
80-89	0	0			
Total	100	100	**Household size**		
			1	23	25
Gender			2	37	38
Male	50	50	3	19	19
Female	50	50	4	15	14
Non-binary or gender diverse	0	0	More	6	5
Total	100	100	Total	100	100
			Net Household Income		
Federal regions			0 – 1.000 €	8	6
North-west	16	16	1.001 – 1.500 €	11	9
Nordrhein-Westfallen	21	23	1.501 – 2.000 €	13	12
Mid-west	14	14	2.001 – 2.500 €	13	13
Baden-Würtemberg	13	13	2.501 – 3.000 €	10	12
Bayern	16	15	3.001 – 3.500 €	9	10
Berlin & North-east	12	9	3.501 – 4.000 €	8	10
Mid-east	8	9	4.001 –7.000 €	22	22
Total	100	100	More than 7000 €	6	4
			No Response	0	3
			Total	100	100

Table B2: Demographic characteristics: Baseline Group vs Treatment Groups

	Baseline	**Temporary**	**Prolonged**	**Mean Difference: P-Value**		
	Mean (SD)	Mean (SD)	Mean (SD)	Baseline vs Temporary	Baseline vs Prolonged	Temporary vs Prolonged
Age	47.79 (15.44)	45.83 (15.39)	46.01 (15.99)	0.03**	0.05**	0.82
Gender	1.51 (0.50)	1.51 (0.51)	1.5 (0.50)	1.00	0.73	0.70
Region	3.60 (1.94)	3.44 (1.92)	3.50 (1.87)	0.15	0.36	0.54
Community size	2.97 (1.32)	2.99 (1.27)	2.95 (1.29)	0.79	0.79	0.54
Household size	2.33 (1.12)	2.38 (1.14)	2.38 (1.16)	0.44	0.45	1.00
Income level	5.40 (2.55)	5.41 (2.55)	5.38 (2.56)	0.95	0.89	0.82
Education	1.57 (0.50)	1.54 (0.50)	1.52 (0.50)	0.30	0.08*	0.43

Note: All variables show standard deviations in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

- 'Age' is a continuous variable, ranging from from 18 to 81. The rest variables are categorical variables.

- 'Gender' is coded as 1 = Male, 2 = Female, 3 = Other.

– 'Region' is coded as 1 = North-west, 2 = Nordrhein-Westfallen, 3 = Mid-west, 4 = Baden-Würtemberg, 5 = Bayern, 6 = Berlin & North-east, 7 = Mid-east.

– 'Community size" is coded as 1 = Below 5000 inhabitants, 2 = 5000-19,999 inhabitants, 3 = 20,000-99,999 inhabitants, 4 = 100,000-499,999 inhabitants, 5 = Above 500,000 inhabitants.

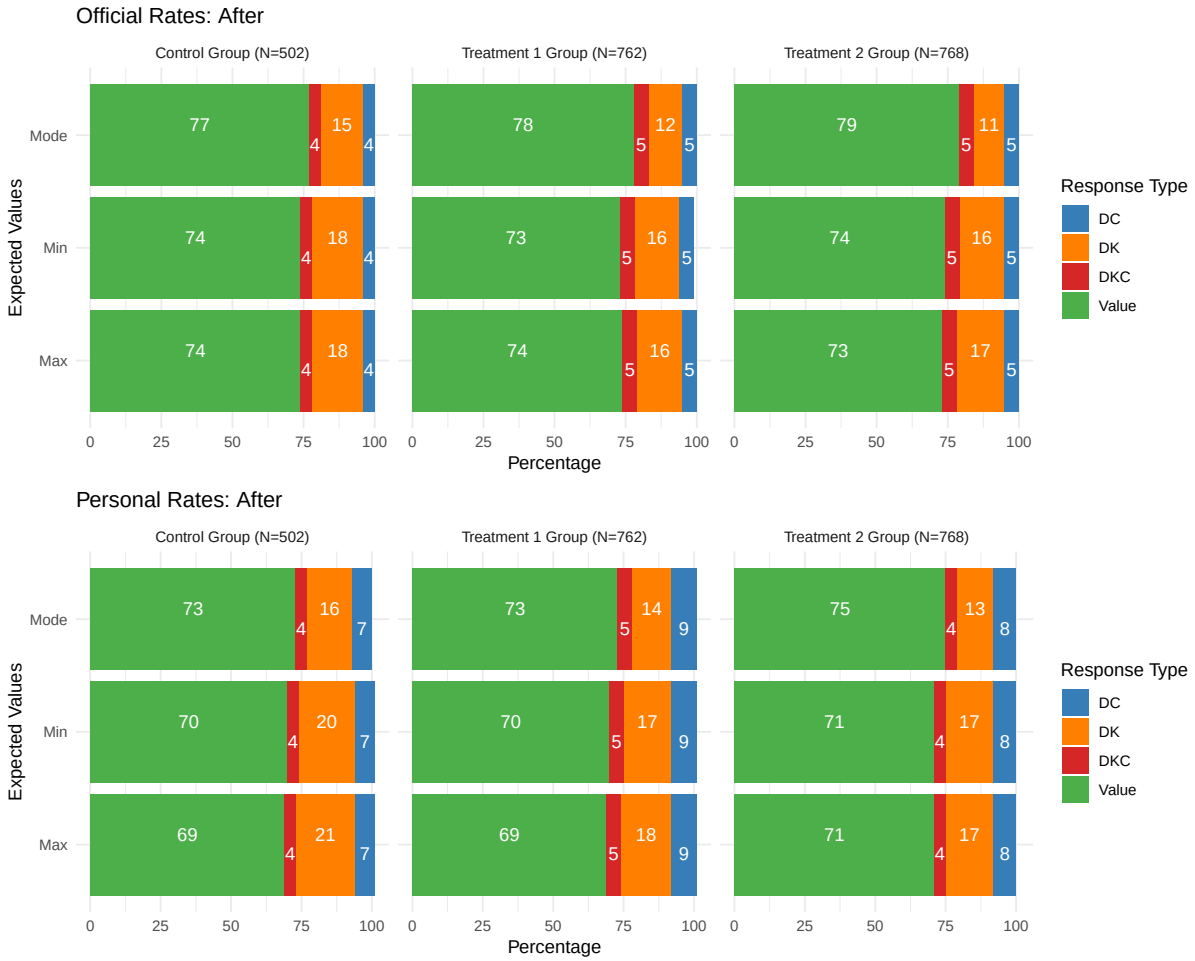
– 'Household size' is coded as 1 = 1 person, 2 = 2 people, 3 = 3 people, 4 = 4 people, 5 = 5 people or more.

– 'Income level' is coded as 1 = Less than 1000€, 2 = 1001-1500€, 3 = 1501-2000€, 4 = 2001-2500€, 5 = 2501-3000€, 6 = 3001-3500€, 7 = 3501-4000€, 8 = 4001-5000€, 9 = 5001-7000€, 10 = More than 7000€.

– 'Education' is coded as 1 = Up to secondary school, 2 = Above high school.

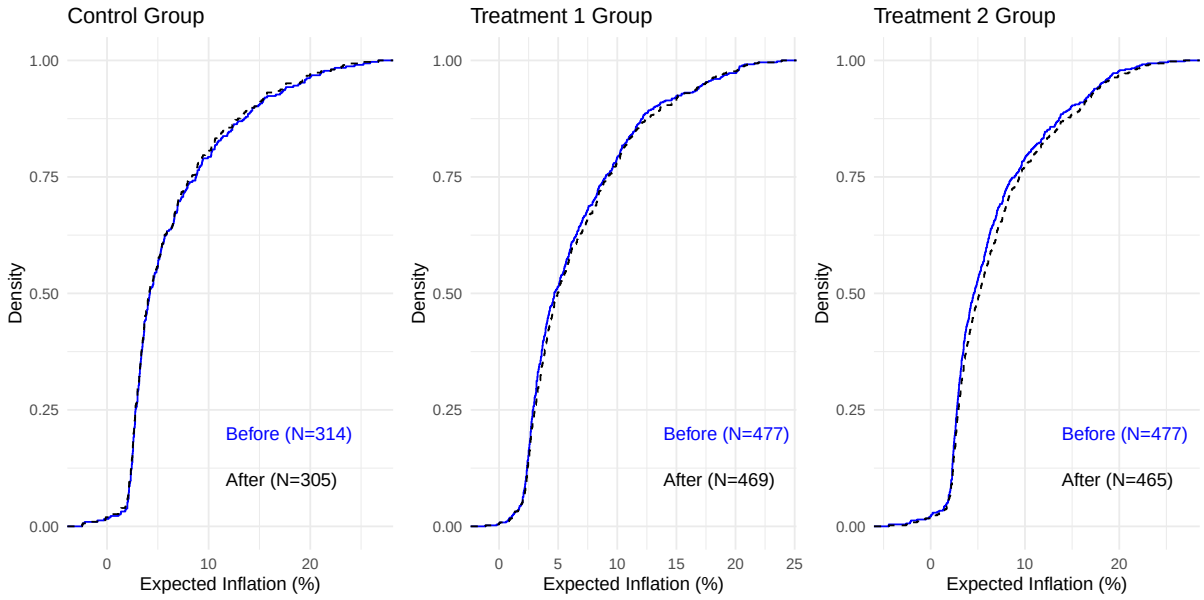
B.2 Averages and standard deviations of inflation expectations

Figure B1: Share of respondents providing numerical inflation expectations after treatments

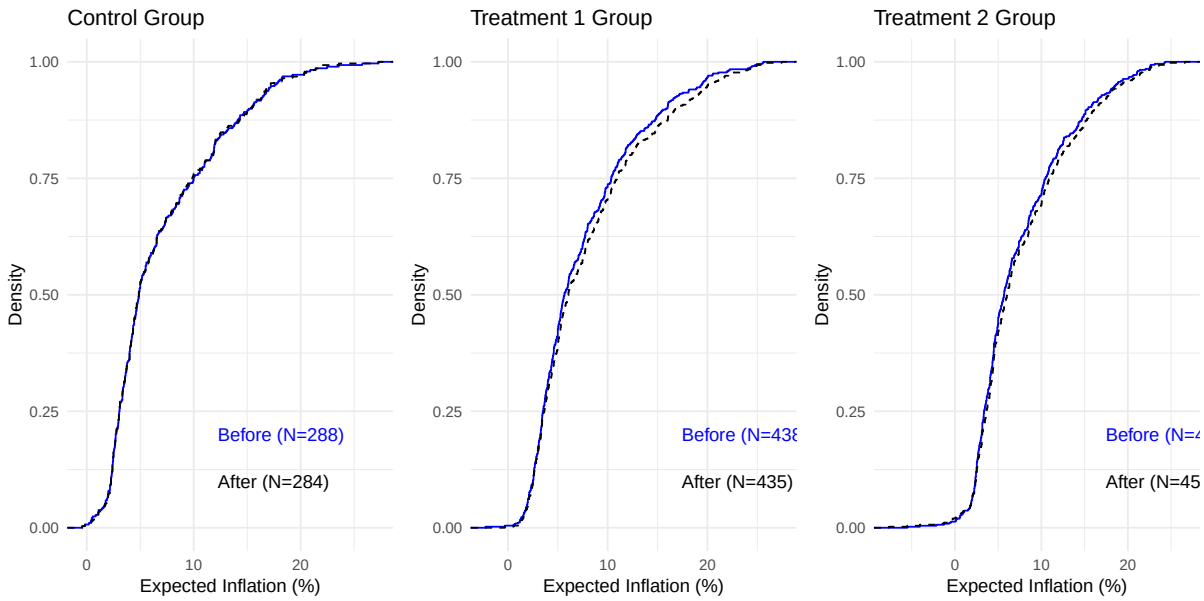


Note: DK='Don't know', DKC='Don't know how to change expectations', DC='Don't form expectations'.

Figure B2: Inflation expectations: weighted average (%)



(a) Official Rates



(b) Personal Rates

Note: Truncated Inflation Expectations Rates.

Table B3: The shares of various ways to update inflation expectations among willing respondents

	Official Rates		**Personal Rates**	
	Count	Freq (%)	Count	Freq (%)
Only change mode	17	4.7	19	5.9
Only change min	8	2.2	4	1.2
Change mode & min	20	5.5	14	4.3
Only change max	10	2.8	18	5.6
Change mode & max	19	5.3	8	2.5
Change min & max	7	1.9	7	2.2
Change mode, min & max	185	51.1	168	52.0
Don't know how to change	96	26.5	85	26.3
Total	362	100.0	323	100.0

Table B4: Treatment effects and the effects of the pre-treatment on the post-treatment inflation expectations: official rates

Panel A. Average treatment effects

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
Temporary (AME1)	1.43	0.81	0.080	0.34***	0.09	<0.001
Prolonged (AME2)	1.33	0.78	0.091	0.40***	0.11	<0.001
Treatment (AME)	1.37	0.72	0.060	0.37***	0.08	<0.001

Panel B. Tests on the effects of pre-treatment on post-treatment expectations

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
N	180			1182		
Temporary shock (w_1)=0	0.89***	0.09	<0.001	0.98***	0.02	<0.001
Prolonged shock (w_2)=0	0.70***	0.07	<0.001	0.93***	0.02	<0.001
Baseline (w_3)=0	0.98***	0.08	<0.001	0.99***	0.02	<0.001
Temporary shock (w_1)=1	-0.11	0.09	0.230	-0.02	0.02	0.189
Prolonged shock (w_2)=1	-0.30***	0.07	<0.001	-0.07***	0.02	<0.001
Baseline (w_3)=1	-0.02	0.08	0.802	-0.01	0.02	0.570
Temporary shock (w_1)= Prolonged shock (w_2)	0.19	0.11	0.101	0.05*	0.03	0.038

Table B5: Treatment effects and the effects of the pre-treatment on the post-treatment inflation expectations: personal rates

Panel A. Average treatment effects

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
Temporary (AME1)	1.96**	0.68	0.005	0.32***	0.08	<0.001
Prolonged (AME2)	1.84*	0.86	0.033	0.40***	0.11	<0.001
Treatment (AME)	1.89**	0.68	0.006	0.36***	0.07	<0.001

Panel B. Tests on the effects of pre-treatment on post-treatment expectations

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
N	154			1108		
Temporary shock (w_1)=0	1.01***	0.09	<0.001	1.01***	0.01	<0.001
Prolonged shock (w_2)=0	0.70***	0.20	0.001	0.95***	0.03	<0.001
Baseline (w_3)=0	0.92***	0.07	<0.001	0.98***	0.01	<0.001
Temporary shock (w_1)=1	0.01	0.09	0.874	0.01	0.01	0.574
Prolonged shock (w_2)=1	-0.30	0.20	0.141	-0.05	0.03	0.052
Baseline (w_3)=1	-0.08	0.07	0.247	-0.02	0.01	0.131
Temporary shock (w_1)= Prolonged shock (w_2)	0.31	0.21	0.146	0.06*	0.03	0.046

C Appendix C: Robustness checks: results without applying truncation

Table C1: Average treatment effects on the probability of revising official and personal inflation expectations

	A. Extensive margins					
	Official rates			Personal rates		
	Actual updates		Revise=Yes	Actual updates		Revise=Yes
	(1)	(2)	(3)	(4)	(5)	(6)
Prior expectations	0.0003	0.0003	0.002	0.001	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Temporary (AME1)	0.08***			0.06*		
	(0.02)			(0.02)		
Prolonged (AME2)	0.08***			0.07***		
	(0.02)			(0.02)		
Treatment (AME)		0.08***	0.08***		0.06**	0.07**
		(0.02)	(0.02)		(0.02)	(0.02)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.23	0.23	0.38	0.22	0.22	0.42
N	1450	1450	1450	1375	1375	1375
Test:AME1-AME2=0	0.02			0.04		
	(0.02)			(0.02)		

Note: Extensive margin refers to the average marginal effect on the probability of providing posterior expectations (Columns 1, 2, 4, and 5 - Panel A). Columns 3 and 6 (Panel A) present the average marginal effect on the probability of willingness to revise expectations after exposure to scenarios. Demographic control variables include age and education level.

All regressions show robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table C2: Average treatment effects on the probability of revising official and personal inflation expectations

	B. Intensive margins				**C. Overall effects**			
	Official rates		Personal rates		Official rates		Personal rates	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Prior expectations	0.90***	0.90***	1.02***	1.02***	0.97***	0.97***	1.00***	1.00***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)
Temporary (AME1)	1.27		1.55*		0.38*		0.22*	
	(0.75)		(0.72)		(0.16)		(0.11)	
Prolonged (AME2)	0.91		1.69*		0.41*		0.49***	
	(0.75)		(0.71)		(0.17)		(0.13)	
Treatment (AME)		1.07		1.62*		0.40**		0.36***
		(0.70)		(0.66)		(0.14)		(0.10)
R^2	0.81	0.81	0.85	0.85	0.91	0.91	0.94	0.94
N	237	237	214	214	1407	1407	1344	1344
Test: AME1-AME2=0	-0.35		0.15		0.03		0.27	
	(0.54)		(0.54)		(0.17)		(0.15)	

Note: Intensive margin (Column 1-4, panel B) refers to the average marginal effect among respondents who actually provided new values for inflation expectations after being exposed to the scenarios. Column 1-4 (panel C) present the overall effects of the treatments. Demographic control variables include age and education level.

All regressions show robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

D Appendix D: Conditional treatment effects

D.1 Impact of empty shelves experience

Table D1: Effects of low vs moderate/high impact of empty shelves experience on posterior official inflation expectations

Panel A. Average treatment effects

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. Low impact of empty shelves experience						
Temporary (AME1)	1.71	1.33	0.199	0.36**	0.11	0.002
Prolonged (AME2)	2.25	1.40	0.110	0.46***	0.14	<0.001
Treatment (AME)	1.98	1.26	0.117	0.41***	0.10	<0.001
2. Moderate/high impact of empty shelves experience						
Temporary (AME1)	1.40	0.97	0.150	0.32*	0.15	0.029
Prolonged (AME2)	0.95	0.87	0.280	0.33	0.18	0.065
Treatment (AME)	1.13	0.81	0.165	0.32**	0.12	0.010

Panel B. Tests on the effects of pre-treatment on post-treatment expectations

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. Low impact of empty shelves experience						
N	71			636		
Temporary shock (w_1)=0	1.12***	0.28	<0.001	0.98***	0.02	<0.001
Prolonged shock (w_2)=0	1.08***	0.28	<0.001	0.97***	0.01	<0.001
Baseline (w_3)=0	0.83***	0.19	<0.001	0.97***	0.04	<0.001
Temporary shock (w_1)=1	0.12	0.28	0.667	-0.02	0.02	0.268
Prolonged shock (w_2)=1	0.08	0.28	0.771	-0.03*	0.01	0.019
Baseline (w_3)=1	-0.17	0.19	0.374	-0.03	0.04	0.354
Temporary shock (w_1)= Prolonged shock (w_2)	0.04	0.40	0.927	0.01	0.03	0.729
2. Moderate/high impact of empty shelves experience						
N	109			543		
Temporary shock (w_1)=0	0.89***	0.10	<0.001	0.98***	0.02	<0.001
Prolonged shock (w_2)=0	0.70***	0.07	<0.001	0.90***	0.03	<0.001
Baseline (w_3)=0	1.04***	0.06	<0.001	1.01***	0.01	<0.001
Temporary shock (w_1)=1	-0.11	0.10	0.279	-0.02	0.02	0.382
Prolonged shock (w_2)=1	-0.30***	0.07	<0.001	-0.10***	0.03	<0.001
Baseline (w_3)=1	0.04	0.06	0.534	0.01	0.01	0.283
Temporary shock(w_1)= Prolonged shock (w_2)	0.19	0.13	0.135	0.08*	0.04	0.037

Table D2: Effects of low vs moderate/high impact of empty shelves experience on posterior personal inflation expectations

Panel A. Average treatment effects

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. Low impact of empty shelves experience						
Temporary (AME1)	2.40*	1.09	0.030	0.30*	0.12	0.014
Prolonged (AME2)	2.54*	0.98	0.011	0.47**	0.14	0.001
Treatment (AME)	2.48**	0.86	0.004	0.38***	0.10	<0.001
2. Moderate/high impact of empty shelves experience						
Temporary (AME1)	1.90*	0.83	0.023	0.35**	0.11	0.001
Prolonged (AME2)	1.60	1.15	0.166	0.34*	0.17	0.045
Treatment (AME)	1.73	0.88	0.051	0.34**	0.11	0.001

Panel B. Tests on the effects of pre-treatment on post-treatment expectations

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. Low impact of empty shelves experience						
N	66			563		
Temporary shock (w_1)=0	1.21***	0.13	<0.001	1.04***	0.03	<0.001
Prolonged shock (w_2)=0	1.00***	0.14	<0.001	0.97***	0.02	<0.001
Baseline (w_3)=0	0.87***	0.08	<0.001	0.97***	0.02	<0.001
Temporary shock (w_1)=1	0.21	0.13	0.100	0.04	0.03	0.184
Prolonged shock (w_2)=1	0.00	0.14	0.986	-0.03	0.02	0.095
Baseline (w_3)=1	-0.13	0.08	0.126	-0.03	0.02	0.115
Temporary shock (w_1)= Prolonged shock (w_2)	0.21	0.19	0.292	0.07*	0.03	0.045
2. Moderate/high impact of empty shelves experience						
N	88			540		
Temporary shock (w_1)=0	0.94***	0.08	<0.001	0.99***	0.01	<0.001
Prolonged shock (w_2)=0	0.66**	0.24	0.006	0.93***	0.04	<0.001
Baseline (w_3)=0	1.08***	0.11	<0.001	1.00***	0.01	<0.001
Temporary shock (w_1)=1	-0.06	0.08	0.467	-0.01	0.01	0.282
Prolonged shock (w_2)=1	-0.34	0.24	0.152	-0.07	0.04	0.112
Baseline shock (w_3)=1	0.08	0.11	0.491	0.00	0.01	0.724
Temporary shock (w_1)= Prolonged shock (w_2)	0.28	0.24	0.243	0.06	0.05	0.217

D.2 Factual information

Table D3: Effects of new vs old factual information about Germany's supply situation in 2022 on posterior official inflation expectations

Panel A. Average treatment effects

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. New information						
Temporary (AME1)	0.97	1.03	0.348	0.23	0.13	0.093
Prolonged (AME2)	0.39	0.95	0.684	0.18	0.13	0.175
Treatment (AME)	0.69	0.89	0.443	0.20	0.11	0.057
2. Old information						
Temporary (AME1)	2.38*	1.14	0.038	0.45***	0.12	<0.001
Prolonged (AME2)	2.30*	1.15	0.047	0.58***	0.17	<0.001
Treatment (AME)	2.33*	1.05	0.028	0.52***	0.11	<0.001

Panel B. Tests on the effects of pre-treatment on post-treatment expectations

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. New information						
N	89			561		
Temporary shock (w_1)=0	0.79***	0.12	<0.001	0.97***	0.02	<0.001
Prolonged shock (w_2)=0	0.72***	0.09	<0.001	0.94***	0.02	<0.001
Baseline (w_3)=0	1.04***	0.14	<0.001	0.98***	0.03	<0.001
Temporary shock (w_1)=1	-0.21	0.12	0.080	-0.03	0.02	0.262
Prolonged shock (w_2)=1	-0.28**	0.09	0.003	-0.06*	0.02	0.010
Baseline (w_3)=1	0.04	0.14	0.751	-0.02	0.03	0.620
Temporary shock (w_1)= Prolonged shock (w_2)	0.07	0.15	0.628	0.04	0.03	0.290
2. Old information						
N	91			621		
Temporary shock (w_1)=0	1.16***	0.14	<0.001	0.99***	0.02	<0.001
Prolonged shock (w_2)=0	0.70***	0.10	<0.001	0.92***	0.03	<0.001
Baseline (w_3)=0	0.96***	0.08	<0.001	1.00***	0.01	<0.001
Temporary shock (w_1)=1	0.16	0.14	0.254	-0.01	0.02	0.538
Prolonged shock (w_2)=1	-0.30**	0.10	0.005	-0.08**	0.03	0.010
Baseline (w_3)=1	-0.04	0.08	0.580	0.00	0.01	0.852
Temporary shock (w_1)= Prolonged shock (w_2)	0.46*	0.17	0.010	0.07	0.04	0.073

Table D4: Effects of new vs old factual information about Germany's supply situation in 2022 on posterior personal inflation expectations

Panel A. Average treatment effects

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. New information						
Temporary (AME1)	1.14	0.97	0.242	0.28*	0.13	0.029
Prolonged (AME2)	0.38	1.15	0.743	0.20	0.16	0.225
Treatment (AME)	0.76	0.90	0.400	0.24*	0.11	0.035
2. Old information						
Temporary (AME1)	2.77	0.81	0.001	0.36***	0.10	<0.001
Prolonged (AME2)	3.20**	1.06	0.003	0.56***	0.15	<0.001
Treatment (AME)	3.04***	0.82	<0.001	0.46***	0.10	<0.001

Panel B. Tests on the effects of pre-treatment on post-treatment expectations

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. New information						
N	76			505		
Temporary shock (w_1)=0	1.24***	0.13	<0.001	1.04***	0.02	<0.001
Prolonged shock (w_2)=0	0.82***	0.16	<0.001	0.96***	0.03	<0.001
Baseline (w_3)=0	0.91***	0.10	<0.001	0.98***	0.02	<0.001
Temporary shock (w_1)=1	0.24	0.13	0.065	0.04	0.02	0.118
Prolonged shock (w_2)=1	-0.18	0.16	0.267	-0.04	0.03	0.190
Baseline (w_3)=1	-0.09	0.10	0.370	-0.02	0.02	0.319
Temporary shock (w_1)= Prolonged shock (w_2)	0.42*	0.21	0.049	0.07*	0.04	0.046
2. Old information						
N	78			603		
Temporary shock (w_1)=0	0.77***	0.12	<0.001	0.98***	0.01	<0.001
Prolonged shock (w_2)=0	0.58	0.37	0.119	0.93***	0.04	<0.001
Baseline (w_3)=0	0.95***	0.07	<0.001	0.99***	0.01	<0.001
Temporary shock (w_1)=1	-0.23	0.12	0.052	-0.02	0.01	0.208
Prolonged shock (w_2)=1	-0.42	0.37	0.265	-0.07	0.04	0.130
Baseline (w_3)=1	-0.05	0.07	0.460	-0.01	0.01	0.237
Temporary shock (w_1)= Prolonged shock (w_2)	0.18	0.38	0.633	0.05	0.05	0.299

D.3 Relative financial literacy

Table D5: Effects of financial literacy on posterior official inflation expectations

Panel A. Average treatment effects

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. Relatively low literacy						
Temporary (AME1)	0.15	0.99	0.880	-0.05	0.14	0.719
Prolonged (AME2)	-0.39	0.88	0.654	-0.15	0.13	0.263
Treatment (AME)	-0.16	0.79	0.841	-0.10	0.10	0.325
2. Relatively high literacy						
Temporary (AME1)	2.91**	1.04	0.006	0.50***	0.11	<0.001
Prolonged (AME2)	3.33**	1.03	<0.001	0.65***	0.15	<0.001
Treatment (AME)	3.17***	0.94	<0.001	0.58***	0.10	<0.001

Panel B. Tests on the effects of pre-treatment on post-treatment expectations

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. Relatively low literacy						
N	64			368		
Temporary shock (w_1)=0	0.92***	0.11	<0.001	0.98***	0.02	<0.001
Prolonged shock (w_2)=0	0.72***	0.09	<0.001	0.91***	0.04	<0.001
Baseline (w_3)=0	1.10***	0.07	<0.001	1.01***	0.01	<0.001
Temporary shock (w_1)=1	-0.08	0.11	0.478	-0.02	0.02	0.505
Prolonged shock (w_2)=1	-0.28**	0.09	0.003	-0.09	0.04	0.011
Baseline (w_3)=1	0.10	0.07	0.145	0.01	0.01	0.409
Temporary shock (w_1)= Prolonged shock (w_2)	0.20	0.14	0.154	0.08	0.04	0.076
2. Relatively high literacy						
N	116			809		
Temporary shock (w_1)=0	1.42***	0.13	<0.001	0.99***	0.02	<0.001
Prolonged shock (w_2)=0	0.93***	0.08	<0.001	0.96***	0.02	<0.001
Baseline (w_3)=0	0.92***	0.09	<0.001	0.98***	0.02	<0.001
Temporary shock (w_1)=1	0.42**	0.13	0.002	-0.01	0.02	0.773
Prolonged shock (w_2)=1	-0.07	0.08	0.413	-0.04**	0.02	0.010
Baseline (w_3)=1	-0.08	0.09	0.406	-0.02	0.02	0.310
Temporary shock (w_1)= Prolonged shock (w_2)	0.48**	0.16	0.002	0.04	0.03	0.185

Table D6: Effects of financial literacy on posterior personal inflation expectations

Panel A. Average treatment effects

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. Relatively low literacy						
Temporary (AME1)	-0.83	1.11	0.456	0.00	0.15	0.987
Prolonged (AME2)	-3.50*	1.40	0.014	-0.30	0.20	0.129
Treatment (AME)	-2.31*	1.06	0.031	-0.17	0.14	0.238
2. Relatively high literacy						
Temporary (AME1)	2.96***	0.74	<0.001	0.45***	0.10	<0.001
Prolonged (AME2)	4.22***	0.72	<0.001	0.74***	0.13	<0.001
Treatment (AME)	3.77***	0.61	<0.001	0.59***	0.09	<0.001

Panel B. Tests on the effects of pre-treatment on post-treatment expectations

	Intensive margins			Overall margins		
		SE	P-Value		SE	P-Value
1. Relatively low literacy						
N	47			350		
Temporary shock (w_1)=0	1.04***	0.14	<0.001	1.02***	0.02	<0.001
Prolonged shock (w_2)=0	0.38	0.22	0.089	0.91***	0.06	<0.001
Baseline (w_3)=0	0.80***	0.09	<0.001	0.98***	0.02	<0.001
Temporary shock (w_1)=1	0.04	0.14	0.760	0.02	0.02	0.256
Prolonged shock (w_2)=1	-0.62**	0.22	0.007	-0.09	0.06	0.110
Baseline (w_3)=1	-0.20*	0.09	0.027	-0.02	0.02	0.266
Temporary shock (w_1)= Prolonged shock (w_2)	0.66*	0.26	0.016	0.11	0.06	0.064
2. Relatively high literacy						
N	107			758		
Temporary shock (w_1)=0	1.10***	0.17	<0.001	1.01***	0.02	<0.001
Prolonged shock (w_2)=0	1.05***	0.12	<0.001	0.99***	0.02	<0.001
Baseline (w_3)=0	0.95***	0.07	<0.001	0.99***	0.01	0.000
Temporary shock (w_1)=1	0.10	0.17	0.541	0.01	0.02	0.743
Prolonged shock (w_2)=1	0.05	0.12	0.675	-0.01	0.02	0.516
Baseline (w_3)=1	-0.05	0.07	0.507	-0.01	0.01	0.225
Temporary shock (w_1)= Prolonged shock (w_2)	0.05	0.21	0.802	0.02	0.03	0.498