LIFETIME MEMORIES OF INFLATION: EVIDENCE FROM SURVEYS AND THE LAB

Isabelle Salle
University of Ottawa, University of Amsterdam and Tinbergen Institute

Yuriy Gorodnichenko
UC Berkeley and NBER

Olivier Coibion
UT Austin and NBER

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Abstract: We study how individuals' memories of inflation shape their expectations about future inflation using both surveys and laboratory experiments. Recalling having lived through prior disinflations has pronounced effects on how long-lived people expect the current inflation episode to be. Information treatments through games in which people make forecasts during prior disinflationary episodes similarly strongly reduce inflation expectations of individuals on average and are often recalled as inflation memories months later. We also show that when people forecast inflation in the lab, the inflation dynamics in the game can affect their beliefs much like the inflation memories from their life. Methodologically, we contrast surveys and lab experiments and discuss the pros and cons of each method, emphasizing the general consistency across the two methodologies.

JEL: E3, E4, E5
Keywords: Inflation experience, experiments, surveys, randomized control trial

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I Introduction

With inflation breaching 10% in many advanced economies for the first time in decades, an entire generation is living through its first bout of significant and sustained price increases. How will this experience shape their beliefs in the future? Earlier evidence has shown that cataclysmic macroeconomic events can significantly shape the views and decisions of a generation, from those Americans going through the Great Depression (Malmendier and Nagel 2016) to Germans who lived through the 1920s hyperinflation (Braggion et al. 2023). The recent inflation spike, however, is of an order of magnitude smaller than these catastrophes. Will its effects therefore rapidly fade, or will it be sufficient to have scarring effects on how people perceive inflation and monetary policy in the future? This is a pivotal question for central banks, considering the imperative to maintain inflation expectations of the public well anchored to their low inflation targets to forestall the entrenchment of higher inflation.

In this paper, we study whether and how subjective inflation memories shape the beliefs of households. Using both surveys and laboratory experiments, we build novel data of detailed personal lifetime memories of inflation and disinflation among more than 10,000 individuals. We document that households' inflation expectations differ systematically along with their memories of prior inflation experiences. For example, those who recall having lived through disinflations in the past have significantly lower inflation expectations today than those who do not have such a memory. They are also more uncertain about the inflation outlook, as they recognize that inflation may move up or down in the future. While we cannot literally make people live through the past, we can emulate these experiences by having survey respondents and lab subjects play an inflation forecasting game through historical episodes of either rising inflation or disinflation. This approach creates pseudo-lifetime experiences, and we show that they generate similar effects on inflation expectations as subjective memories: those who play through a disinflation period or even a period of stable inflation tend to revise their expectations strongly compared to a control group, both immediately as well as even *months* later. Jointly, these results suggest that the recent rise of inflation may have causal long-lived effects on the inflation expectations of individuals, potentially shaping the tradeoff between inflation and output faced by central banks for many years to come.

Identifying the effects of macroeconomic experiences is challenging: since these events are experienced by everyone, one cannot easily disentangle time and cohort effects. We break this identification challenge by compiling a large dataset on people's *memories* of their experiences,

which can differ significantly from their actual experiences. We show for example that while on average individuals of a given age correctly remember the periods in their lives during which inflation was rising or falling, there is tremendous heterogeneity in these beliefs. Some individuals misremember the decade in which inflationary and disinflationary periods occurred or have different memories of the amount by which inflation fell during a disinflationary episode. Individuals also differ in how many episodes they remember, both for inflationary episodes and disinflationary ones. Disagreement extends to how confident they are in their memories of these events as well as to what caused each inflation or disinflation episode. While individuals most commonly blame supply-side factors like energy prices for rising inflation, others emphasize taxes, monetary policy or exchange rate changes as the sources of inflation. Individuals also differ in whether they perceive the change in inflation during an episode as having been beneficial or harmful. Given this wide variation in memories even within age groups, we can characterize whether these subjective experiences of inflation are related to individuals' current expectations about future inflation. Even after controlling for age and other potentially confounding factors, we identify a clear effect of recalled (dis)inflation memories on individual inflation expectations.

The effect of subjective memories is not fully summarized by average inflation forecasts, however. Individuals who recall a prior disinflation, for example, tend to be more uncertain about their outlook for future inflation. This means they are not simply shifting down their distribution of expected inflation outcomes relative to those who do not recall a previous disinflation. Instead, they allow for a broader range of possible outcomes for inflation, particularly on the downside. This is especially true for those who can recall multiple previous disinflationary episodes or those who remember inflation having fallen by larger amounts. Memories of rising inflation, on the other hand, seem to make individuals more confident in their forecast, as if the fact that they recall living through such an episode before gives them the knowledge to better predict what will happen in this one.

The consequences of subjective lifetime experiences with inflation extend even beyond the inflation outlook. We study whether trust in the central bank is related to individuals' inflation memories. We find strong effects of recalled experiences with inflation on trust in the central bank. Those who recall more past inflationary periods are systematically less trusting of the central bank, whereas those who recall more disinflationary episodes are more trusting of the central bank. This suggests that living through periods in which inflation changes significantly can affect not just one's beliefs about inflation but also the confidence one has in the ability of the central bank to

control inflation in the long run. We also document that those who recall either prior inflation surges or disinflations are more likely to know the objectives of the central bank. However, we find little connection between memories of inflation and an individual's ability to distinguish between nominal and real outcomes.

Methodologically, the finding that subjective memories play such an important role for beliefs presents a challenge to laboratory experiments, which rely almost exclusively on young college students, a group that is by no means representative of the general population in terms of experience, income, education and other observable characteristics. Given this difference, we study whether having individuals play forecasting games in which they are exposed to different inflation episodes can simulate living through and recalling such an experience in terms of shaping expectations. More generally, we aim to compare surveys and laboratory experiments and the extent to which as well as the conditions under which the two approaches are consistent with one another.

We do so by first asking an equivalent set of questions to both survey participants in the Netherlands and laboratory participants from the University of Amsterdam. We can then compare reported answers across the two groups. We find that, when we restrict our attention to survey participants who are comparable in age to those in the lab, inflation expectations and other beliefs are broadly comparable across surveys and labs, although answers tend to be of higher quality in the lab, perhaps due to their higher average education and incentivized performance. Second, we have randomly selected participants in both the survey and the lab play an inflation forecasting game in which the period is either during the 1970s (when inflation was rising), during the 1980s (when inflation was falling) or during the 2000s (when inflation was flat). Playing through the disinflationary period of the 1980s or the stable period of the 2000s leads most individuals to revise their inflation expectations strongly, whereas playing through a period of rising inflation like the 1970s has little effect on inflation expectations. This is consistent with our earlier evidence that remembering a disinflation can have powerful effects on the way in which people form their beliefs. Strikingly, the effects of the forecasting game are long-lived: respondents in a follow-up survey wave *months later* were more likely to recall having experienced a disinflationary period if they had been assigned to play the forecasting game of the early 1980s, indicating that the short forecasting game is largely sufficient to create a pseudo-experience that has long-lived effects on individuals' memories. Furthermore, we find very similar responses to these experiential treatments across survey participants and those in the lab, conditional on their prior expectations.

These similarities are remarkable since they arise while we insisted on maintaining the inherent methodological differences across the two settings. Hence, this result suggests that even though the experimental setting differs in the lab and in the survey and lab participants are not generally representative of the broader population, even a short and simple forecasting game that mimics a historical experience can go some way in allowing us to make them more representative by expanding the set of experiences that they draw on in making their inflation forecasts. Because laboratory experiments allow for many applications that are infeasible in a survey, our results therefore provide new guidance on how one can improve the external validity of laboratory experiments by expanding the experience set of the participants.

However, there are some limits in our ability to make lab participants mimic the beliefs of survey respondents through these inflation forecasting games. For example, while we find that the forecasting games have powerful effects on the first moment of participants' inflation expectations, we do not find any clear effect on second moments. Playing through a disinflationary episode does not make participants more uncertain about future inflation, whereas remembering such an episode over their lifetimes does. Second, while one might expect that extending the duration of the forecasting games would help generate stronger effects on beliefs (which could provide some additional flexibility in laboratory experiments for which lifetime experience might be important), this does not seem to be the case in practice. We had some laboratory participants play much longer inflation forecasting games but found no additional effect on beliefs relative to those who played much shorter games. Jointly, these findings point toward some important limits in terms of how much lifetime experience can be replicated in a laboratory setting.

Our paper builds upon and connects three literatures. The first literature is on lifetime experiences and how they shape both beliefs and decisions of individuals and firms. This literature, surveyed in Malmendier and Wachter (2023), has uncovered the profound and long-lasting effects of both experienced macroeconomic outcomes and personal economic contexts on a wide range of behaviors. These include the impact of adverse stock-return experiences during the Great Depression (Malmendier and Nagel 2011) or the effect of having lived through communist rule on stock-market participation (Laudenbach et al. 2018) and inflation perceptions (D'Acunto and Weber 2023), the negative effect of graduating during a recession on future wages (Oreopoulos et al. 2012), cohort-specific inflation expectation formation and the resulting mortgage choices (Malmendier and Nagel 2016), or the negative effect of personal exposure to unemployment on

consumer spending habits (Malmendier and Shen 2018). Relative to this literature, we study how *subjective memories* (rather than objective experiences) of inflation shape expectations and provide new causal evidence on how historical experiences can affect forward-looking beliefs. This is important because the scope for experience effects to explain the vast heterogeneity in beliefs is limited to cohort effects. Allowing for different memories of the same experienced events can help explain the heterogeneity in beliefs even within cohorts. Our focus on memories is similar to Jiang et al. (2022), who show how professional investors extrapolate from their personal memories of past similar contexts to form expectations about future returns, D'Acunto and Weber (2022), who study how memories of recent price-changes of specific goods affect individuals' forecasts of future inflation, and Link et al. (2023), who consider how inflation experiences relate to household inflation expectations during the recent inflation surge. While closely related, we differ from them in several important respects. First, we emphasize memories of previous aggregate inflation episodes rather than recent price changes of specific products. Second, we construct detailed histories of subjective inflation memories at the individual level. Third, we also utilize simulated experiences to assess the causal effect of experience on beliefs.

The second literature relies on information treatments in population surveys to generate exogenous variations in macroeconomic expectations. For example, Armantier et al. (2016), Cavallo et al. (2017) and Coibion et al. (2022) study how information about recent inflation causally changes inflation expectations of households. Weber et al. (2023) use repeated randomized controlled trials (RCTs) across countries and time to assess how treatment effects from information about recent inflation vary depend on the economic environment. Kostyshyna and Petersen (2023) assess the effect of central bank communication about inflation uncertainty through an RCT. Haaland et al. (2023) provide a methodological overview of this approach while Draeger and Lamla (2023) review the efficacy of policy communications on expectations. We contribute to this literature by providing new causal evidence on how exposure to different historical episodes of inflation can affect the beliefs of households about the future evolution of inflation.

The third literature applies laboratory experiments to the study of macroeconomic questions; see Duffy (2016) and Cornand and Heinemann (2019) for broad surveys and Hommes (2021) for a focus on the study of expectations dynamics in group experiments. This literature has documented how human subjects may deviate from the full-information rational expectations benchmark when forming macroeconomic expectations, and how these affect the transmission

channel of macroeconomic policies; see, e.g., Assenza et al. (2021), Kryvstov and Peterson (2021). Afrouzi et al. (2023) study how agents form expectations under different underlying stochastic processes and document that forecasts tend to over-react to recent observations. Kostyshyna et al. (2022) assess how different monetary frameworks shape expectations and economic outcomes. The external validity of lab experiments, especially in terms of the representativeness of subject pools (usually college students) compared to the general population, has been widely discussed (Salle 2022). This paper contributes methodologically to this research by highlighting the strengths and weaknesses of the survey and lab approaches.

II Data Description

In this section we describe our two main sources of the data: a survey of Dutch households and a laboratory experiment on students at the University of Amsterdam.

2.1 Dutch Survey of Households

The survey consists of a main wave implementing the RCT and a recontact follow-up wave. For the main wave, a pilot of 1,000 respondents was first launched with an initial batch of 94 respondents on November 24-25, 2022, followed by the remaining 906 between November 29 and December 5, 2022. The full sample was then collected between December 30, 2022, and February 15, 2023, with a total of 10,143 respondents of which 8,710 agreed to be recontacted and 4,271 took part in the second wave. To assess the effect of time on the persistence of treatment effects, the data collection of the recontact wave was spread over two rounds, one between March 1st and 28, 2023 involving 2,871 respondents, and one a month later, between April 28 and May 30, with 1,400 additional respondents.

In the main wave, respondents were first asked to provide some demographic information (e.g., age, education) before being asked some qualitative questions about their expected income and uncertainty about their future living standards. Figure 1 provides a summary of the ordering of the different parts of the survey. They were then asked about their lifetime inflation memories:

"*Over your entire life experience, can you recall an episode of substantial increase in inflation?*" with possible answers of: Yes, one episode; Yes, at least two episodes; No, I've never experienced one; No, I can't remember one. For those who recalled at least one episode, there was a sequence of follow-up questions involving the country in which this occurred, the level of inflation before it started rising as well as at what level it peaked, the year of the episode (which had to fall within their lifetime), their confidence in their recollection, and the volatility of inflation during the period (the

exact wording of questions is in the supplementary material, Section I in the lab and II in the survey). Respondents were also asked about the source of the rise in inflation, among the following possible explanations: increase in cost of materials and energy, increase in wages, increase in taxes, policy action (fiscal and/or monetary), spike in demand, currency devaluation, another reason they could type in, or "I don't know/remember." Finally, they were asked about how the increase in inflation affected their financial situation, with answers ranging from "very negative consequences" to "very positive consequences." These questions were asked for both inflation episodes remembered (when there were two) and equivalent questions were asked for memories of disinflations. Importantly, the framing of these questions was voluntarily unspecific to avoid contriving memories and priming respondents towards particular historical episodes. Our resulting data on subjective memories instead contain free recalls of what first came to one's mind when asked about rising or decreasing inflation. Jointly, these questions therefore provide us with an exceptional view of which inflation episodes are remembered by different individuals, as well as their opinions as to the sources and the consequences of those episodes. We discuss these in detail in section 3.1.

Following the questions on lifetime inflation memories, respondents were then asked about their perceived levels of inflation and their expected levels of future inflation, both as a point forecast (for 2023 inflation) as well as through a distribution question with seven pre-determined bins of inflation ranges to which participants assigned probabilities (for 2024 and 2025 inflation separately). We also asked several questions to assess trust in the European Central Bank (ECB) and economic experts, as well as to gauge economic understanding, attention to news, and political and financial preferences.

The next part of the survey consisted of respondents playing an inflation forecasting game. All respondents were randomly assigned to one of four groups, with the largest (40%) being a control group that skipped the forecasting game.[1] The other three groups were each presented with a time series of four years of inflation in the Netherlands ending in either 1966 (inflation "up" group), 1979 (inflation "down" group) or 2005 (inflation "flat" group); see Figure 2. They were then asked to predict what inflation was in the next year, prior to being told what it was, which was then repeated for each of the next six years. Hence, those in the inflation "up" group predicted inflation from 1967-1975, those in the inflation "down" group from 1980-1988, and those in the inflation "flat" group from 2006-2014. When predicting inflation in the next period, participants were asked to pick from one of several

[1] Appendix Table 4 verifies that observable characteristics do not predict group assignment.

bins, not provide a point forecast. At the end of the game, the respondents were presented with a summary of the inflation dynamics used in their game in the form of an animated graphic and textual information that explained the consequence of inflation on the purchasing power of people earning and saving money back then (see supplementary material for screen shots). To avoid "speeding" through the message, the page was displayed for 20 seconds, including the ten-second-long animation but respondents could remain longer on the page if desired before proceeding to the last questions where we elicited again their expectations and asked about their financial behaviors.

Following the inflation prediction game, respondents were asked several questions to assess whether the game altered their expectations. They were first asked for inflation forecasts (both point and distributional questions). They were also asked questions about their planned decisions, such as whether they were going to buy a house or car, as well as whether they thought now was a good time in general to purchase a large ticket item. In the follow-up survey wave, they were again asked to report forecasts of inflation as well as report their perceived levels of inflation, both recently and over longer periods. They were also asked to report what they thought the unemployment rate was in the Netherlands and whether they remembered any disinflations or inflations in the Netherlands since 1960.

The device-agnostic survey was conducted online and anonymously by Kantar, a large international marketing research company, using the Kantar Profiles proprietary panels, and we stressed its academic nature.[2] In line with standard practices in the industry, participants received a fixed reward for completing the survey. The questionnaires were translated from English to Dutch by a native senior Dutch economist. Less than 20% of respondents found it hard to complete. It took on average 16 minutes (with a 13-minute median) for the participants to complete the survey of the main wave.[3] They spent on average 2:30 to 3 minutes on the forecasting game. Our survey sample is representative of the Dutch population in terms of gender and region of residence and, to a lesser extent, housing tenure, income and education (Appendix Table 1).[4] As for age quotas, we surveyed 4,025 Dutch people between 18 and 30 year old to compare them with the lab subjects, while the rest

[2]Several features of our survey should alleviate concerns about potential experimenter demand effects (see Haaland et al. 2023). First, the survey is online and anonymous which eliminates interactions with an interviewer. Second, we provide factual information about a non-partisan topic (i.e., historical inflation). Third, respondents remembered our games months later in a second survey and treated them as experiences.

[3] The recontact wave was shorter, with an average completion time of 7 minutes (and a median completion time of 6).

[4] Low-education and high-income quotas are a typical challenge of online panels and given our large sample size, only age, gender and region could be strictly targeted by the survey company.

of the respondents is representative of the Dutch population aged 30 and older (which represents 65% of the total Dutch population). Appendix Table 1 further indicates that the subsample of participants to the second wave do not substantially differ from the initial respondents in the main wave.

2.2 Laboratory Experiment

In parallel to the survey, we ran an individual-decision making experiment with a between-subject design to closely match the structure of the household survey experiment and specific questions used. The left panel of Figure 1 reports the structure of the lab experiment, while the supplementary material reports the exact questions posed and examples of screenshots. The survey and the lab experiment only have a few variations that reflect standard practices in experimental economics. First, the experimental tasks in the lab were incentivized. Participants earned €0.5 for each right answer to the five numeracy and economic literacy questions and collected points as a function of their forecasting accuracy in the game. These predictions were elicited using an open-ended textbox and a perfect prediction yielded up to 100 points. The lab and the survey forecasting game used the same historical inflation time series but the lab game was only slightly longer (12 periods against 9 in the survey). Together with substantial stakes, this helped imprint memories in a short time on college students whose life experience is short given their age. Additionally, lab participants could only start the game after correctly answering a series of understanding questions about the instructions, for which they could require the help of the experimenter. This step is common in a lab experiment to ensure that participants understand their tasks. As usual in the lab, socio-demographic questions were asked after the incentivized part of the experiment. Furthermore, we asked about their family background rather than their current household situation.

The experiment was programmed in oTree (Chen et al. 2016) and run in person at the CREED lab of the University of Amsterdam in May and June 2023 (a pilot with 10 subjects was run in December 2022). A total of 25 sessions took place involving 518 subjects. Subjects were recruited for 1:15 hour and the sessions took between 35 minutes and 1:05 hour to complete, depending on the treatment. Participants could answer the questions at their own pace and had to remain seated until all of them had completed the experiment. They were not allowed to participate in more than one session. Subjects received a flat compensation fee of €15 for their participation and a variable

part stemming from their performances in the quiz and the forecasting game,[5] which amounted to €9.40 on average (with a standard deviation of €6.20). Payments were anonymized and received by bank transfers from the financial administration of the University of Amsterdam.

All subjects were students, the vast majority of which were in Economics, Business, Political Science, Law, or Social sciences, including almost half of them in Economics. 54% of them were female, in line with the student gender composition in Dutch post-secondary institutions. About 80% of our subjects were enrolled in an undergraduate program, 85% were below 25 years old and only nine of them were older than 30. Less than 20% of the subjects had spent most of their life in the Netherlands; a quarter came from other Euro-area countries, another two quarters from the rest of Europe and Asia respectively, and the remaining 10% from the rest of the globe. Close to 75% of the lab participants declared coming from a wealthy background.

One important difference between the lab experiment and the survey is that we included two additional longer experiential treatments in the lab that were infeasible in the survey due to their length. In the first one (treatment "life"), we implemented the same forecasting game as the other experiential treatments but using the *entire* history of inflation data from 1963 until 2021 in the Netherlands, which consisted of 51 predictions. In the second one (treatment "neutral"), we used a simulated time series based on a white noise process with mean 2% of the same length as the one used in "life" and implemented a neutral language rather than the actual historical context (for instance, instructions talked about periods rather than actual years).

2.3 Inflation Expectations in the Lab and the Survey

We present some simple statistics on the inflation expectations of respondents in the survey and the laboratory experiment in Table 1. For the survey, we consider responses from the entire cross-section of respondents from the main wave, as well as for the subset of respondents who are similar in age and education to those participating in the laboratory experiment (less than 24 years old and with at least some college education). Overall, we find broadly similar inflation beliefs across groups. For example, the average perceived level of inflation in the overall survey is 10.0 percent, while it is 9.9% for those in the laboratory experiment and 9.5% for younger respondents in the survey, very close to the actual inflation rate of 9.6% that was realized in November 2022 at the

[5] In accordance with the CREED regulations, adjustments were made to ensure reasonable payments in Trs. LIFE and NEUTRAL, which involve longer forecasting games than the other three treatments. In these two treatments, points were converted to euros at a rate of 50 cents per 100 points, and the participation fee was set at €12.

time of the survey. This is consistent with Bracha and Tang (2022) and Korenok, Munro and Chen (2023) who document that attention to and knowledge of inflation has increased as inflation has risen since 2021. Inflation expectations are also quite close overall, with some variation across the forecasting horizon or the specific inflation expectations question used. For example, the average inflation forecast for 2025 from the distribution question is 5.5% for the overall survey versus 6.3% for the laboratory experiment. Panels A and B of Figure 3 plot distributions of reported nowcasts and forecasts from the survey and the lab and shows that the distributions are broadly similar. We interpret these results as indicating that, at least when it comes to first moments of expectations, the survey and the laboratory experiment yield fairly similar inflation beliefs.

Along other dimensions, more differences start to arise. One such case is with inflation uncertainty, for which uncertainty among lab participants is about 20% larger than it is for the entire cross-section of survey respondents. However, since younger participants in the survey display the same order of magnitude of inflation uncertainty as those in the lab, this could reflect age effects rather than differences arising from the setup. Panels C and D of Figure 3 plot distributions of reported inflation uncertainty and show that the differences are not driven by outliers. More striking differences are visible when it comes to trust in the ECB, also reported in Table 1. First, whereas over 15% of survey respondents say they have not heard of the ECB, less than 5% of those in the lab declare so. This likely reflects a combination of the higher average education of those in the lab and their significantly greater numeracy. Second, laboratory respondents report that they trust the ECB much more (over 60% report trusting the ECB) than do survey participants (only 25% of all survey respondents report trusting the ECB and 35% of younger respondents do so).

The effects of better numeracy among lab participants can also be seen in Panels E and F of Figure 3 which are binscatters of inflation forecasts using implied means (x-axis) versus point forecasts (y-axis) in the survey and lab. For participants in the laboratory experiment, the slope of the line relating the two is very close to forty-five degrees, indicating that point forecasts and those from a distributional question are consistent with one another. In the survey, however, the relationship between the two is weaker. This is especially true at lower levels of inflation forecasts from the distribution question. We conjecture that this is driven by respondents who confuse the positive and negative bins in the distribution question, thereby reporting deflationary forecasts in the distribution question while indicating positive inflation forecasts with point forecasts. With the more educated and numerate laboratory participants, this issue is reduced, and the reported

forecasts are therefore more reliable and higher quality measures of what respondents actually believe. Hence, one advantage of laboratory experiments seems to be the higher quality of the reported data compared to surveys, likely reflecting the higher numeracy of respondents as well as higher monetary compensation for participation than in the survey.

To validate our survey and lab results, we compare our data (Appendix Figures 6-8) with inflation expectations for, respectively, 2022, 2023 and 2025, elicited in the Consumer Expectations Survey (CES) run by the ECB and the Dutch Household Survey. For all years, beliefs are consistent across surveys once broken down by age and education and are also consistent with the lab data, especially when isolating Dutch subjects.

III The Effects of Lifetime Inflation Memories on Beliefs

What do individuals remember about the inflation that they experienced in their lives? How do those memories shape their beliefs about current and future inflation? In this section, we first document the nature of individuals' remembered lifetime inflation experiences then assess how these memories relate to their ongoing beliefs and expectations.

3.1 Lifetime Inflation Memories

We first present basic statistics about lifetime inflation memories in Table 2. Fifty-five percent of survey respondents recall at least one episode of inflation, with almost half of those recalling two or more. Memories of disinflations are less common: only about a third of survey respondents can recall any disinflation episode. On average, individuals recall large changes in inflation during these episodes. For those reporting increasing inflation periods, the average change in inflation that they recall is 8 p.p. while it is 7 p.p. for those recalling disinflation episodes. Overall, 25% of respondents do not recall having lived through any inflation or disinflation episode.

Younger survey respondents are no less likely to recall inflation increases or decreases than older respondents, but they tend to remember different episodes. Across all respondents, the older respondents recall inflation in the 1970s, whereas younger respondents tend to recall episodes starting in the mid-2010s. Table 2 also reports memories from lab participants. These younger respondents are much more likely to recall having lived through at least one episode of rising inflation, with only 6 percent reporting not having such an experience. In contrast, they are much less likely to recall any disinflation experience, with only about 10 percent of them doing so,

compared to 42 percent among younger respondents in the survey. Lab participants also report recalling somewhat larger changes in inflation during these episodes than do survey participants.

Panel A of Figure 4 plots the distribution of inflation surges and disinflations recalled by survey respondents over time. Not surprisingly, there is a large spike of memories of rising inflation around 2021 and 2022, with around forty percent of survey participants recalling an inflation surge in 2022. A second spike in both inflation and disinflation memories occurs around 2008-2010. While aggregate inflation in the Netherlands changed little during this period, there were significant changes in food and other global commodity prices. A smaller spike in recollections happens around 1980, when inflation in the Netherlands was high and volatile, leading households to recall both the inflation surge and the subsequent disinflation. Panels B and C of Figure 4 then separate inflation and disinflation recollections by age group. Memories of younger respondents are concentrated in the last two decades by construction, whereas older respondents are the ones who also report memories predating the 2000s. However, within the overlapping periods, the distributions of recalled experiences look very similar.

These results indicate that there is significant variation in lifetime inflation memories, even within respondents of similar age groups. The variation is even larger when it comes to perceived drivers of inflation and disinflation episodes. Panel A of Figure 5 plots the distribution of assigned causes of both inflation and disinflation recalled episodes from survey participants. The most commonly perceived source of inflation is by far rising costs of materials and energy, with nearly forty percent of respondents who remember experiencing an inflation surge assigning that as the primary driver. Our finding is consistent with recent survey evidence that shows how households often perceive inflation through a partial-equilibrium, supply-side lens (Andre et al., 2022). With disinflations, respondents split their answers across different categories almost evenly: costs of materials and energy are perceived as the source of disinflation by just under 20 percent of respondents, while tax changes, wage changes, fiscal and monetary policy, changing demand and currency variation are each chosen by around 10 percent of respondents. Panels B and C then provide these decompositions for inflations and disinflations by decade. Episodes in the 1970s and 2010s and later were much more likely to be attributed to input and energy cost changes than during the 80s-00s. Disinflation in the 1990s is attributed by many to currency changes, consistent with the large appreciation of the Dutch guilder that took place from the mid-1980s through the early-1990s. For the 1980s, many do not remember the reason for the disinflation but among those

who do, about thirty-five percent attribute the disinflation to fiscal/monetary policy or lower demand for goods, with another fifteen percent emphasizing energy and input price changes.

Despite these different beliefs about the origins of inflation and disinflation, survey respondents are more likely to agree about the consequences of inflation surges. As shown in Panel A of Figure 6, around 60 percent of survey participants who recall living through an inflation surge report that it had negative consequences for them, with almost none reporting positive consequences from inflation. This is almost invariant to age. As shown in Table 2, the distribution of perceived consequences of inflation is almost the same for younger survey respondents: only 13 percent of them report positive consequences from the inflation surge compared to 5 percent of survey participants overall. Among those in the lab, only 1 percent report a positive consequence of an inflation surge. Respondents are therefore nearly unanimous in their view that inflation surges made them at least weakly worse off. Disinflations, on the other hand, engender more divergence in their perceived effects. The share of survey participants reporting that they were made worse off by the disinflation (33%) is almost the same as the share saying they were made better off (27%). There is therefore a clear asymmetry in the perceived effects of inflation changes: most respondents agree that inflation surges made them worse off, but there is little agreement about whether disinflations made them better off. In contrast, there is more agreement about the dynamics of inflation during these kinds of episodes. Most respondents perceived inflation as having been quite volatile during both inflation surges and disinflations, albeit more so during inflation surges (Panel B of Figure 6).

In short, we find a range of recalled inflation experiences by Dutch households. The variation exceeds what can be explained just by age, consistent with selected recall of memories. Even within the same age groups, individuals remember different episodes, attribute different explanations to the same episodes, and often disagree about the effects that these episodes had on them.

3.2 The Effect of Lifetime Inflation Memories on Inflation Expectations

Does recalling living through a previous inflation surge or a disinflation shape the way that an individual believes inflation is likely to evolve in the future? To answer this question, we regress respondents' inflation expectations for 2025 from the distribution question on their lifetime inflation memories, using indicator variables for whether they recall periods of rising inflation and separately disinflationary periods. We also control for the maximum recalled change in inflation, allowing for separate effects for inflation increases and inflation decreases. Another control we

include is the weighted experienced inflation of an individual following Malmendier and Nagel (2016). We use Huber (1964) regressions to automatically take care of outliers.

We report estimates of this regression in column (1) of Table 3 while in column (2) we report equivalent results with additional controls added, including individuals' perceived levels of inflation for 2022. Overall, the results indicate that an individual's memories of inflation and disinflation matter for their forecasts of future inflation. For example, focusing on results with additional controls in column (2), we find that those who recalled one previous disinflation expect inflation in 2025 to be lower by 0.29 p.p. on average compared to someone who does not recall any inflation experience while those who recall even more prior disinflations have inflation expectations that are lower still. Those who recall prior inflations, in contrast, tend to have higher inflation expectations. Remembering at least two inflation experiences is associated with higher inflation expectations of 0.26 p.p. The size of the recalled episodes also seems to matter. Those who recall larger disinflations tend to have lower inflation expectations.[6]

These effects go above and beyond those coming from the actual experienced inflation of individuals, as summarized by the Malmendier and Nagel (2016) weighted experienced measure. Once we condition on household observables, we find that each additional percentage point of experienced inflation as measured by Malmendier and Nagel (2016) is associated with around one percentage point higher inflation expectations. Table 3 documents the additional explanatory power coming from the extent to which individuals do or not remember the inflation episodes through which they lived: recalling such experiences seems to have important additional predictive content for individuals' beliefs about future inflation.

Table 3 also presents results from estimating the same regressions only on younger adults with some college experience within the survey (columns (3) and (4)) as well as on participants in the lab experiment (columns (5) and (6)). Among younger survey participants, the results are broadly similar to those obtained with all survey participants: both positive and negative recalled inflation experiences appear to shape inflation expectations, with coefficient estimates being if anything larger than for the whole sample. Among laboratory participants on the other hand, we cannot identify any statistically significant effects of recalled inflation experiences on inflation forecasts.

One way to understand why subjective memories may have additional explanatory power relative to experienced historical inflation is if memories decay at a different rate than experiences.

[6] These results hold for alternative horizons and measures of inflation expectations as well as other estimation methods.

To assess this hypothesis, we estimate the decay rate for memories as follows. First, for each age group, we define the $s_{age,t}^{inflation} = \frac{\#inflation\_t}{\#inflation\_any\_year}$ as the fraction of all inflation memories across years assigned to year *t*. We posit that the probability to recall inflation in year t is a function of "recency" and the level of inflation in each year following Malmendier and Nagel (2016). We then estimate the rate of decay in memories as $b_1$using the following regression:

$$s_{age,t-k}^{inflation} = b_0 + b_{2,age} \times (age + 1 - k)^{b_1} \times \pi_{2023-k} + error$$

where we allow the slope on $(age + 1 - k)^{b_1} \times \pi_{2023-k}$ to vary with age but the intercept and the curvature of the memory fading process are constrained to be the same across age groups. Using inflation memories, we find $\hat{b}_1 = 1.9\ (0.1)$, which is significantly higher than the decay rate found in prior work (in our specification these estimates would correspond to $b_1 \approx 1$). Using memories of disinflations, we find a similar estimate of $\hat{b}_1 = 1.8\ (0.2)$. Hence, the decay rate of subjective memories appears to be higher than previous evidence solely based on lifetime experience suggests.

The nature of the inflation memory also matters in shaping inflation expectations. For example, we further separate out inflation and disinflation memories by the perceived source of the change in inflation (Appendix Table 2). In the case of disinflations, we find that policy-driven disinflations seem to have the largest and clearest effect on inflation expectations. We also separate out memories by how confident individuals are in their recollection and find (Appendix Table 3) that those who report that they are reasonably certain about their recollections are also those whose inflation expectations are more highly correlated with their inflation memories.

Because the effects of recalled experiences with inflation need not affect only the first moment of inflation expectations, we report equivalent estimates in Table 4 but now focusing on the uncertainty in individuals' inflation forecasts for 2025 as the dependent variable. We find that when individuals recall one or more inflation surges, they tend to be more confident in their 2025 inflation forecasts. In contrast, those who recall disinflations tend to be more uncertain in their 2025 inflation forecasts. These results are consistent with the idea that those individuals with disinflation memories are more likely to place positive weight on the possibility of a rapid disinflation than those who do not have such memories, leading them to expect lower inflation on average but with more uncertainty. The reverse seems to be at work with those who remember high inflation surges: they place much more weight on continued high inflation than do others, leading to higher inflation forecasts and more confidence in those forecasts relative to others.

Effects on uncertainty for younger individuals are significantly noisier, and we cannot identify clear effects of experienced or recalled inflation among the subset of younger individuals. As they have all encountered a single recent episode of surging inflation, the variation in their recollections may be too limited to discern any significant effect. Overall, the estimated effects of recalled inflation experiences on uncertainty are quite different from what is found when using the experienced inflation measure of Malmendier and Nagel (2016). When we condition on controls, we find that higher experienced inflation is associated with more uncertain inflation forecasts, the opposite sign of what we find for memories of inflation.

In short, our results indicate that subjective memories of inflation or disinflation episodes are correlated with inflation forecasts: those who recall having lived through prior inflation surges tend to have higher inflation forecasts and be more confident in those forecasts than others, whereas those who recall having lived through prior disinflations tend to expect lower future inflation but with more uncertainty around those forecasts. This suggests that the latter envision a broader set of possible inflation outcomes than those whose memories of prior inflation are more limited.

3.3 The Effect of Lifetime Inflation Memories on Other Beliefs

Subjective inflation memories can shape individuals' views along many dimensions above and beyond their short-run inflation forecasts. In this section, we consider three such dimensions: trust in the central bank, knowledge about monetary policy and understanding the difference between nominal and real variables.

Survey and lab participants were asked to evaluate how much they trusted the European Central Bank, on a scale of one (do not trust at all) to five (completely trust). As discussed in section 2, Dutch survey participants on average report moderate levels of trust in the ECB, with 23% expressing negative views about the ECB, 25% expressing positive views, and just over 50% expressing no opinion. Is this variation in trust related to the different inflation experiences and memories of individuals? To assess this, we apply the same empirical specifications as in section 3.2 for inflation expectations but now using our measure of individuals' trust in the ECB as the dependent variable. We report results from these regressions in Table 5. In the survey (column 1), there is systematic evidence that inflation memories are closely tied to how much trust individuals have in the ECB. Those who recall two or more inflation surges, for example, display lower levels of trust. In contrast, those who remember one or more disinflations display higher levels of trust in the ECB. The weighted experienced inflation measure of Malmendier and Nagel (2016) is also

correlated with trust in the ECB but with the opposite sign: those who have experienced higher inflation tend to display more trust in the ECB. This suggests that our measure of inflation recollections provides an alternative metric of how subjective memories affect individual beliefs beyond historical experiences. Estimated effects for lab participants are comparable but not estimated with as much precision (column 2 of Table 5).

Trust in the central bank has been shown to correlate with knowledge about the conduct of monetary policy (see, e.g., Brouwer and de Haan 2022). Relatedly, our survey included two multiple-choice questions where we elicited participants' knowledge of the main instrument (namely, the interest rate) and the primary objective (namely, a 2% medium-run inflation target) of the ECB. Columns (3) and (4) of Table 5 report the effects of inflation memories and experienced inflation on knowledge about monetary policy, measured on a scale of zero to two that correspond to the number of questions about monetary policy that respondents answered correctly. We find a strong positive correlation between memories of both inflation surges and disinflations with knowledge about monetary policy among survey participants. We do not find such a positive correlation among lab participants, perhaps reflecting the smaller sample size and more homogeneous set of experiences, combined with higher overall knowledge than for survey participants.

A third outcome we can consider is how well individuals understand the distinction between nominal and real variables. Survey and lab participants were asked the following multiple-choice question: "Suppose you invest €1000 in an interest-bearing saving account and the balance after a year is €1050. If, over the same year, prices in the economy have increased by 3%, would you say that over your savings, you have...?", with possible choices "Earned €50," "Earned some purchasing power but less than €50," "neither earned nor lost," "lost some purchasing power" or "I don't know." We create an indicator variable equal to one for those individuals who correctly selected the second answer key and zero otherwise, capturing their understanding of nominal versus real variables. We then run the same empirical specifications as before but with this new outcome as the dependent variable. Results are reported in columns (5) and (6) of Table 5. There is some evidence that recalling increasing inflation and the size of these inflation memories are associated with better understanding the distinction between real and nominal variables, but it is difficult to reject the null of zero effect in most cases. Furthermore, the estimates are quite small and do not extend to the lab participants. We interpret the results as indicating that at least in an economic sense, memories of past inflation experiences are not a primary determinant of the extent to which people understand real versus nominal variables.

Jointly, these results indicate that subjective inflation memories of individuals are systematically related to various beliefs of individuals, without necessarily affecting every dimension of their understanding of the inflation process. In particular, those who remember prior disinflations are more open to the possibility of future inflation declining sharply, such that they make lower inflation forecasts on average that display larger confidence bands, consistent with more trust that the ECB will be successful in bringing inflation back to its target. While there is tentative evidence that this recalled experience is also associated with a better understanding of the distinction between nominal and real variables, the latter effect, if present, appears to be quantitatively small.

IV Recreating Lifetime Inflation Experiences

To what extent is the effect of inflation memories on expectations *causal*? How "experienced" does a lifetime experience need to be to persistently shape households' memory and expectations? In this section, we consider the use of forecasting games during different historical time periods that respondents were asked to play to assess whether these can replicate the effects of a "lived" experience.

4.1 The Inflation Forecasting Games in the Survey and the Lab

As described in section 2, households in the survey were assigned to one of four groups, with one being the control group. Individuals in the other three groups, the treatment groups, were each asked to play a game in which they had to forecast inflation during a historical period from the Netherlands. Figure 2 summarizes these experiential treatments. In the lab, respondents were assigned to control and treatment groups in a similar manner, but with two additional treatments and small differences in the common treatments. One entailed playing a longer forecasting game in which they predicted inflation through the entire sample from 1963-2021: "lifetime" treatment. The other also entailed playing a long forecasting game of the same duration as the lifetime treatment but using artificial data in which inflation remained close to 2% through the whole period (panel B of Figure 2). Because these two treatments take much longer, they are only feasible in the lab.

Figure 7 reports properties of forecasts and errors made by participants in both the survey and the lab. The first column of each panel presents the distribution of the fraction of correct forecasts. For example, in Panel A, we can observe that around 20% of survey participants in the "flat" treatment were correct over 90% of the time, whereas the corresponding proportion for lab participants was nearly 35%. This pattern is visible for all three common treatments, possibly reflecting the fact that lab participants were incentivized whereas survey participants were not. In

general, the share of correct forecasts is much higher in the "flat" treatment than during either episode of rising or falling inflation. The second column reports the mean absolute deviation of forecast errors (MAD), which speaks to the size of the forecast errors. Again, we can observe that lab participants made significantly smaller errors on average, and that errors were much larger for the inflation and disinflation episodes than when inflation was flat.

The third column of Figure 7 plots the distribution of serial correlations in forecast errors for each treatment group. With the "flat" treatments, serial correlations are centered around zero on average, although there is wide dispersion across individuals. This is particularly true for the survey sample, with lab participants displaying serial correlations that are much closer to zero on average. With the disinflation ("down") treatment (Panel B), serial correlations are similarly centered around zero, but there is much more dispersion across individuals, especially again for the survey participants. With the rising inflation ("up") treatment (Panel C) on the other hand, we observe negatively serially correlated forecast errors on average. This implies that individuals tended to over-react to their forecast errors over the course of the game. Interestingly, this appears to be even more pronounced for the lab participants than for those in the survey but only appears in the case of the rising inflation treatment. When we focus on educated survey participants of age less than thirty, we find similar results (Appendix Figure 9), indicating that the differences between the lab and the survey are not driven by age differences in this case but more likely by the incentivized nature of the lab setting as well as the fact that lab participants may have more experience with numbers and answering questions.

Finally, panels D and E present equivalent results for the two additional treatments in the lab experiment, in which participants played much longer games than were either based on simulated stationary inflation data (Panel D, "neutral") or followed the entire inflation time series in the Netherlands (Panel E, "life"). In the "neutral" treatment, lab participants were very successful in correctly predicting inflation dynamics. The vast majority of participants made the correct forecast more than 90% of the time and had very small forecast errors on average. Most participants also displayed close to zero serial correlation in their forecast errors. During the "lifetime" treatment, however, participants struggled more to predict future inflation. The fraction of correct forecasts was much lower on average, close to what other lab participants displayed during the disinflation treatment. While often wrong, their forecast errors were not very large in absolute value, with most being around 50 basis points on average. Perhaps most striking is the distribution of serial correlation in forecast errors. Whereas these were centered on zero in the

"flat" and disinflation treatments and centered on negative values in the rising inflation treatment, the "lifetime" treatment led to more positively serially correlated forecast errors.

Figure 8 presents the average forecasts of lab participants from each group over the time sample. Forecasts for the "lifetime" group members are available from 1971 to 2021 whereas those of the three shorter groups are available over shorter periods. A number of features stand out in this figure which help make sense of the distributions of forecast characteristics in Figure 7. For example, for lab participants in the "up" group over 1964-1975, inflation was initially quite volatile but relatively stationary so that when inflation started persistently rising in the early 1970s, participants kept their forecasts of inflation low (consistent with the pattern in the 1960s), yielding a period of persistently positive forecast errors. In contrast, those playing the "lifetime" treatment only began forecasting in 1971, when inflation was already rising, so their forecasts were unaffected by the 1960s experienced and kept up with the rising inflation. In Appendix Figure 10, we show that the forecast errors of "lifetime" participants were serially uncorrelated on average during this time sample, whereas those playing the "up" experience had much more serially correlated errors. During the disinflation starting in 1975, those playing in the "down" treatment were quite successful on average at having forecasts that followed inflation downward, as did those playing the "lifetime" treatment.

Focusing now on the 2003-2012 period, we see that, as in the "up" period, the forecasts of those playing the "lifetime" treatment look quite different from the forecasts of those playing the "flat" treatment. For those playing the "flat" treatment, their experience was limited to inflation being quite stable and close to 2%, so their forecasts varied little and had very high success rates (Figure 7). For those in the "lifetime" treatment who had played through the 1970s and 1980s though, their experience included much wider swings in inflation and their forecasts during the 2003-2012 period were therefore much more volatile than those of the "flat" treatment. As Appendix Figure 10 shows, those in the "lifetime" treatment made much larger errors during 2003-2012 than those in the "flat" treatment who only experienced stable inflation.

4.2 The Immediate Effect of Forecasting Experiences on Expectations

How did playing a forecasting game affect people's inflation expectations and other beliefs, if at all? We assess this by regressing posterior beliefs of individuals on their priors and their priors interacted with indicator variables for each treatment as follows:

$$post_i = c + \alpha \times prior_i + \sum_j \delta_j \times \mathbb{I}(i \in j) + \sum_j \beta_j \times \mathbb{I}(i \in j) \times prior_i + error_i$$

where $\mathbb{I}(i \in j)$ is an indicator variable equal to one if individual i belonged to treatment group j and zero otherwise. By interacting treatment indicator variables with individuals' priors, we measure both the magnitude and direction of the beliefs' revisions, beyond the overall treatment effects which could cancel out when averaged over individuals with vastly different priors.[7] The coefficients β_j tell us how much more/less weight treated individuals place on their priors relative to individuals in the control group. This setup is consistent with Bayesian learning and is commonly used to assess how new information affects beliefs in randomized control trials (e.g., Coibion et al. 2022).

We report regression results focusing on inflation expectations of individuals in Table 6, with column 1 presenting results for all survey participants, column 2 showing results for young survey participants with some college experience, and column 3 reporting results for lab participants. For these results, posterior expectations come from the end of the first survey wave, immediately after the forecasting games. Figure 9 presents these results visually (Panel A for all survey participants and Panel B for lab participants). Across all survey participants, we find strong effects on inflation expectations for the forecasting games, especially the "down" and "flat" treatments. As can be seen in Panel A of Figure 9, the "up" treatment increases the inflation expectations of all treated respondents in this group by about 1 percentage point, with only a small difference across those with high and low priors: those with low priors raise their expectations whereas those with high priors have expectations that are little changed. A similar result obtains for lab participants: the "up" treatment raises inflation expectations relatively uniformly across prior beliefs. The "down" and "flat" treatments, on the other hand, generate both a level effect and a slope effect: those with high priors about inflation revise their beliefs downward whereas those with very low priors raise their inflation expectations. These effects are even more pronounced for lab participants than those in the survey.

With lab participants, we can also assess the effects of the longer forecasting games in which inflation was either consistently stable or followed the time series of historical inflation. As can be seen in Panel B of Figure 9, the effects of these treatments are similar to the shorter "down" treatment, leading those with high priors about inflation to significantly lower their expectations while raising the expectations of those with very low priors.

[7] For example, suppose we have respondents A and B with priors of 0 and 10 percent inflation. The treatment signal is 5 percent inflation. Post treatment beliefs change to 3 and 7 percent. The averages of the priors and posteriors are equal to 5 percent and hence the average treatment effect (captured by δ in the econometric specification) is zero. This is despite the fact that beliefs are affected by the treatment. Thus, it is crucial to include interactions of treatment indicator variables with priors.

Jointly, these results indicate that playing the forecasting games can have powerful effects on expectations, and these effects largely mirror those found unconditionally for inflation memories. Playing through a period of rising inflation raises inflation expectations, much like what was found for those who recalled a prior episode of rising inflation. In contrast, playing through an episode of flat or falling inflation tends to reduce inflation expectations, especially for those with high prior beliefs about inflation, much like the effect of recalling a prior experience of disinflation tended to reduce inflation expectations. The fact that the effects are not larger for lab participants playing a much longer forecasting game suggests that even a short game experience may have pronounced effects on beliefs, at least in terms of the first moment of expectations.

Columns (4)-(6) in Table 6 and Figure 10 present equivalent empirical results for inflation uncertainty. In this case, the effects of the forecasting games are small. This is best seen visually in Figure 10. In Panel A, we can observe that the relationship between posterior inflation uncertainty and prior uncertainty is indistinguishable between control and the different treatment groups in the survey. In the lab (Panel B), we can observe small level effects from the forecasting games, such that the "up" treatment raises average uncertainty while the "flat" treatment reduces average uncertainty, but the quantitative effects are not large. The absence of any strong effect on inflation uncertainty is surprising given that inflation memories were strongly correlated with inflation uncertainty (Table 4). This suggests that while playing a forecasting game may recreate the effect of recalling an experience along some dimensions (such as first moments), it may not carry through to all dimensions.

In general, one would expect experiential treatment effects to be larger for individuals who are least informed about the provided information in the first place. In this context, one might expect "up" treatments to have larger effects on individuals who do not recall prior inflationary episodes, while "down" treatments should have larger effects on individuals who do not remember any disinflations. Table 7 considers whether treatment effects differ based on the prior recollections of inflation experiences of individuals. We find robust evidence that they do in terms of first moments. Treatment effects on inflation expectations are overall consistently larger for those who do not recall prior episodes of inflation or disinflation than for those who recall such episodes. This result is in line with the notion that simulated experiences can have larger effects on individuals with diffuse priors.

4.3 The Longer-Lived Effects of Forecasting Games

Another way to compare the effect of playing a forecasting game on inflation expectations to an actual inflation memory is to assess whether participants are more likely to later refer to the specific

period over which they played the forecasting game as one of their inflation memories. For example, does playing the forecasting game during the early 1980s make individuals more likely to recall such a disinflation or the prior inflation surge when asked about their inflation memories months later? We assess this hypothesis in Table 8 by regressing indicator variables for whether an individual recalls inflation surges (columns 5-8) or disinflations (columns 1-4) occurring prior to 2020 in the follow-up wave on indicator variables for each of the treatment groups and indicator variables for whether that individual recalled any inflation surges or disinflations in the first survey wave. We report results of these specifications for all survey participants (columns 1 and 5), different age groups (columns 3-4 and 7-8) as well as conditioning on prior experiences (columns 2 and 6).

Remarkably, participants recall the *simulated* experiences from the games and treat them as memories months later. In the case of the "flat" treatment in which individuals observed the relatively stable inflation of the 2003-2012 period, we find that respondents in that treatment are less likely to subsequently report recalling any inflation surge or disinflation prior to 2020, although the effects are not generally statistically significant. The most powerful treatment in terms of shaping perceived experiences is the "down" treatment which covered the period from 1977-88 in which inflation was initially quite high but then fell rapidly. We find that playing the forecasting game during this period made individuals more likely in subsequent months to recall both inflation surges and disinflations, with the effect for disinflations being particularly strong for young survey participants whereas the effect on recalled inflation surges is similar across age groups. Playing the "up" treatment had effects somewhere in between these two treatments. That treatment covered a period of rising inflation but did not include any meaningful disinflation during that sample. As a result, we find that having played through the "up" treatment makes individuals more likely to recall prior inflation surge experiences but no more likely to recall prior disinflations.

Do these new memories shape economic expectations over time? To answer this question, we consider how inflation expectations of survey participants in the second wave are affected by prior inflation memories and forecasting games. Column 1 of Table 9 first shows how inflation expectations for 2025 from the first wave are correlated with inflation memories. As shown earlier in Table 3, memories of past inflation surges were associated with higher inflation expectations while memories of prior disinflations were associated with lower inflation expectations. Column 2 then presents the same regression but now using the inflation expectations of participants in the second wave: consistent with memories being persistent, we continue to find the same pattern of inflation

memories from the first wave being strong predictors of inflation expectations in the follow-up wave (i.e., three to six months after the treatment). In column 3, we then augment this specification with indicator variables for each of the three treatment groups in the survey. Consistent with the idea that forecasting games create new memories as shown in Table 8, we find that these new memories affect individuals' economic expectations above and beyond their prior memories. Those who played the "down" or "flat" treatments display lower economic expectations on average than the control group, after conditioning for their initial memories. Hence, this provides additional evidence that short forecasting games can have persistent effects on individuals' memories and expectations.

Despite the brevity of the experiential treatments, they hence seem to have had a pronounced effect not just on the immediate inflation expectations of participants but furthermore on their subsequent memories of inflation months later. Playing a forecasting game through a historical episode seems to be sufficient in many cases to anchor that historical period in the memory of individuals and shape their expectations in a corresponding manner. This is a promising result from the point of view of laboratory experiments. To the extent that lab subjects are very young and do not share the much longer life experiences of the broader population, our results suggest that playing simple forecasting games through different periods can partially recreate that life experience and help make them more representative of the broader population. Because laboratory experiments have many advantages in other respects, the ability to make their participants more representative could help expand the scope of questions that can be fruitfully addressed in the lab.

V Conclusion

As inflation in advanced economies gradually recovers from the post-COVID-19 spike, one question that will matter for future policymaking is the extent to which household expectations are persistently affected by the recent experience (see e.g. Pfauti 2023). We provide new evidence showing that individuals' inflation memories are closely related to their forward-looking beliefs about inflation. Exogenous variation in memories coming from an RCT-based approach to generating such pseudo-experiences suggests that this effect is at least partially causal. Thus, one might expect the recent inflation surge to persistently affect household inflation expectations. How it does so, however, will depend on whether individuals' memories focus more on the inflation increase or the ongoing disinflation, as the two affect expectations quite differently. Policy communication could play a role in shaping the future narrative that individuals will recall about the current inflation dynamics.

Methodologically, our paper helps bridge the current gap between the experimental macroeconomics literature, which focuses on sophisticated economic games played by a small number of (typically) college students, and the survey literature, which focuses on how a representative sample of individuals responds to a limited set of questions about their situation and expectations. While we identify some important differences between the two due to their different sample populations and incentive structures, our results highlight ways to bring the two approaches closer together in ways that expands the scope of research questions that can be addressed. For example, we find that although the sample population in lab experiments is not generally representative in age and therefore life experiences, one can reproduce certain features of life experiences (and hence memories) through having some respondents play short forecasting games. As a result, one can make samples in lab experiments more diverse and more representative. Similarly, while surveys traditionally include only questions on respondents' beliefs and experiences, we show that it is feasible to have them play simple games of the type that are more commonly used in the lab.

An inherent limitation of survey studies is that their results cannot be cleanly separated from the broader real-world context in which they are conducted, but this is also what reinforces their external validity. By contrast, lab studies offer an abstract environment that allows for this separation, which reinforces their internal validity, but may question their real-world applicability. By its innovative design, our study combines the two RCT methods, which allows us to speak to the robustness of our insights into inflation expectation formation. We find that the level effect of memories on inflation beliefs is robust across the two environments, but their effects on uncertainty do not materialize in either of the two RCTs. It remains an open question whether the effect of memories on uncertainty is specific to the first sizable inflation surge in decades or if other aspects of our experiential games (e.g. length) prevented this effect from materializing in our RCTs. Our study is the first to study the role of subjective memories, preventing a comparison of our results with what could have been observed in the previous decade of stable and low inflation, or as disinflation unfolds. Our study calls for further research within distinct economic contexts and controlled environments to shed further light on expectation formation.

Future work could go further in combining the best elements of these two approaches. For example, while information treatments in surveys are useful to assess the extent to which changes in beliefs affect individual actions in partial equilibrium, implementing a similar treatment in the context of a laboratory simulation can help assess how partial equilibrium effects translate into

general equilibrium effects. Combining the two methodologies could therefore go far in breaking through the limitations of each approach done in isolation.

Our results open the gate to new directions for expectation modeling – a central ingredient of macroeconomic models and fills a critical gap in the literature by providing strong empirical evidence on the role of memories on expectation formation, an area largely unexplored in the existing literature that has largely focused on belief formation about present and future outcomes. While there has been very little work on memory and belief formation, our results make a strong case for the relevance and development of models of memories to account for expectations. Bordalo et al. (2022), for example, propose a model of selective memory while Azeredo de Silveira et al. (2020) and Sung (2022) consider the implications of costly processing of knowledge stored in memory. Wachter and Kahana (2024) study the role of memory in shaping financial decisions. Understanding the nature of how memories are formed, and how they persist, would allow for a better understanding of how a specific episode like the recent inflation surge is likely to affect economic expectations and policy tradeoffs in subsequent years.

Our paper also has potential implications for policy communications. We find that memories are not only subjective but also *malleable*. The ability to influence recall of inflationary episodes, their interpretation and, in turn, expectations opens a new channel to manage expectation anchoring. Amid an inflation surge, central banks could strategically emphasize past records of price stability, and conversely, at the effective lower bound, invoke episodes of higher inflation to raise expectations. in times of elevated uncertainty. More generally, given the large disconnect between the historical experience and individuals' memories of that experience, there is widespread scope for improved education and sharing of information about past policy successes to strengthen public trust in policy-making institutions.

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Table 1: Descriptive Statistics for the Survey and Laboratory Experiment

	Survey: All	Survey: Young & some college+	Lab
	(1)	(2)	(3)
Perceptions (2022), point estimate (Huber)	10.02	9.52	9.86
	(5.09)	(6.24)	(6.07)
Expectations (2023), point prediction (Huber)	7.85	7.44	6.68
	(5.06)	(6.54)	(4.56)
Expectations (2024), implied mean	6.05	5.65	7.33
	(4.33)	(4.15)	(3.93)
Expectations (2025), implied mean	5.50	5.50	6.29
	(4.24)	(4.09)	(3.81)
Expectations (2024), implied uncertainty	3.35	3.91	3.81
	(2.22)	(2.01)	(1.58)
Expectations (2025), implied uncertainty	3.18	3.79	3.62
	(2.30)	(2.12)	(1.59)
Trust ECB, shares			
Do not trust them at all	0.09	0.04	0.02
I rather distrust them	0.14	0.14	0.10
Neither trust nor distrust them	0.36	0.30	0.24
I rather trust them	0.23	0.31	0.51
I completely trust them	0.02	0.04	0.10
I don’t know the ECB	0.16	0.17	0.04
Demographics			
Female, share	0.50	0.45	0.54
Age	42.78	22.06	22.06
	(18.92)	(1.82)	(3.55)
Saving preference, 0-5 scale	2.65	2.68	2.67
	(0.98)	(0.99)	(0.98)
Political orientation, 1 (very left) to 5 (very right) scale	3.06	2.98	2.62
	(0.87)	(0.92)	(0.85)
Numeracy	1.45	1.47	2.53
	(1.11)	(1.13)	(0.71)

Notes: The table reports descriptive statistics for various expectations and perceptions as well as demographic characteristics. The values in parentheses are standard deviations. Huber indicates that estimates are based on Huber (1964) robust estimation.

Table 2: Lifetime Memories of Inflation and Disinflation in the Survey and the Lab

	Experience increasing inflation			Experience decreasing inflation		
	Survey: All	Survey: Young & some college+	Lab	Survey: All	Survey: Young & some college+	Lab
	(1)	(2)	(3)	(4)	(5)	(6)
Episodes, shares						
One episode, share	0.39	0.39	0.47	0.20	0.24	0.10
2+ episodes, share	0.26	0.33	0.48	0.13	0.18	0.01
No experience, share	0.17	0.14	0.02	0.29	0.25	0.47
Do not remember, share	0.18	0.14	0.04	0.38	0.33	0.42
Experienced change in inflation	8.13	8.78	10.92	-7.18	-8.59	-9.15
	(4.99)	(5.50)	(5.48)	(5.73)	(7.18)	(6.35)
Earliest year of experience	2007.63	2016.73	2017.92	2004.87	2013.92	2014.77
	(17.13)	(6.37)	(6.08)	(15.10)	(6.35)	(6.10)
Financial impact, shares						
Very negative consequences	0.11	0.07	0.09	0.07	0.08	0.02
Somewhat negative consequences	0.51	0.47	0.65	0.26	0.21	0.15
No consequence	0.27	0.28	0.21	0.32	0.36	0.32
Somewhat positive consequences	0.04	0.11	0.01	0.22	0.24	0.36
Very positive consequences	0.01	0.02	0.00	0.05	0.06	0.10
I don’t remember or I don’t know	0.05	0.05	0.02	0.06	0.03	0.05

Notes: The table reports inflation memories for survey respondents and lab subjects. The values in parentheses are standard deviations.

Table 3: The Effect of Lifetime Inflation Memories on Inflation Expectations.

Dep.var.: expected inflation in 2025, implied mean.	Survey: All		Survey: Young & some college+		Lab	
	(1)	(2)	(3)	(4)	(5)	(6)
Recalled increasing inflation [omitted: no recollections]						
One episode	0.031	0.078	0.292	0.624*	-0.902	-1.173
	(0.089)	(0.089)	(0.343)	(0.333)	(0.863)	(0.879)
Two or more episodes	0.262***	0.263***	0.252	0.051	0.079	-0.681
	(0.095)	(0.095)	(0.360)	(0.342)	(0.866)	(0.888)
Do not remember	-0.071	-0.015	-0.471	-0.377	-1.216	-1.193
	(0.103)	(0.103)	(0.376)	(0.361)	(1.016)	(1.024)
Recalled decreasing inflation [omitted: no recollections]						
One episode	-0.368***	-0.287***	-0.859***	-1.017***	-0.725	-0.054
	(0.087)	(0.087)	(0.324)	(0.318)	(0.556)	(0.468)
Two or more episodes	-0.369***	-0.428***	-0.628*	-0.740*	-1.241	-1.199
	(0.102)	(0.104)	(0.358)	(0.395)	(1.764)	(1.546)
Do not remember	-0.092	-0.011	-0.370	-0.150	-0.229	-0.082
	(0.075)	(0.075)	(0.287)	(0.286)	(0.238)	(0.231)
Max recalled increase in inflation	-0.009	-0.001	-0.009	-0.014	0.019	0.016
	(0.008)	(0.008)	(0.024)	(0.025)	(0.020)	(0.021)
Max recalled decrease in inflation	-0.025*	-0.023*	-0.056	0.008	-0.054	-0.093
	(0.013)	(0.013)	(0.042)	(0.038)	(0.070)	(0.058)
Weighted experienced inflation (Malmendier-Nagel)	-0.467***	0.885***	1.514	20.500	7.453***	3.011
	(0.123)	(0.266)	(3.128)	(12.672)	(2.641)	(2.604)
Perceived inflation in 2022		0.079***		0.092***		0.263***
		(0.006)		(0.019)		(0.023)
Controls	No	Yes	No	Yes	No	Yes
Observations	9,133	9,178	648	647	503	493
R-squared	0.005	0.068	0.020	0.263	0.050	0.453

Notes: The table reports results for the regression of inflation expectations (implied mean forecast for 2025) on recalled inflation/disinflation and demographic characteristics (age, gender, educational attainment, number of children, income, home status, household size, financial literacy, political preferences, knowledge of economic issues, trust in the ECB, perceived goals of the ECB, geographical location). All regressions are Huber (1964) robust. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Table 4: The Effect of Lifetime Inflation Memories on Uncertainty about Future Inflation.

Dep.var.: expected inflation in 2025, implied standard deviation	Survey: All		Survey: Young & some college+		Lab	
	(1)	(2)	(3)	(4)	(5)	(6)
Recalled increasing inflation [omitted: no recollections]						
One episode	-0.193***	-0.132**	0.008	0.178	-0.082	0.215
	(0.065)	(0.063)	(0.249)	(0.234)	(0.477)	(0.404)
Two or more episodes	0.084	0.084	0.121	0.167	0.133	0.337
	(0.070)	(0.068)	(0.255)	(0.240)	(0.477)	(0.407)
Do not remember	-0.163**	-0.086	-0.430	-0.342	-0.497	-0.079
	(0.076)	(0.073)	(0.286)	(0.274)	(0.562)	(0.503)
Recalled decreasing inflation [omitted: no recollections]						
One episode	0.246***	0.184***	0.358	-0.103	-0.361	-0.187
	(0.063)	(0.061)	(0.224)	(0.218)	(0.300)	(0.272)
Two or more episodes	0.862***	0.555***	0.720***	0.032	-0.276	-0.106
	(0.077)	(0.075)	(0.263)	(0.278)	(1.101)	(1.250)
Do not remember	-0.068	0.015	0.160	0.382**	0.297**	0.286**
	(0.053)	(0.052)	(0.196)	(0.188)	(0.137)	(0.126)
Max recalled increase in inflation	-0.016***	-0.008	-0.006	-0.017	0.022**	0.017
	(0.006)	(0.006)	(0.017)	(0.018)	(0.010)	(0.010)
Max recalled decrease in inflation	-0.021**	-0.019**	-0.074***	-0.048**	-0.004	-0.031
	(0.010)	(0.009)	(0.025)	(0.023)	(0.039)	(0.033)
Weighted experienced inflation (Malmendier-Nagel)	-1.815***	0.898***	-0.544	6.401	5.000***	2.972**
	(0.087)	(0.184)	(2.097)	(8.862)	(1.458)	(1.326)
Perceived inflation in 2022		0.027***		0.040***		0.099***
		(0.004)		(0.012)		(0.012)
Controls	No	Yes	No	Yes	No	Yes
Observations	9,242	9,242	653	653	504	496
R-squared	0.068	0.144	0.049	0.239	0.048	0.289

Notes: The table reports results for the regression of uncertainty in inflation expectations (implied standard deviation in forecast for 2025) on memories of inflation/disinflation and demographic characteristics (age, gender, educational attainment, number of children, income, home status, household size, financial literacy, political preferences, knowledge of economic issues, trust in the ECB, perceived goals of the ECB, geographical location). All regressions are Huber (1964) robust. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Table 5: The Effect of Lifetime Inflation Memories on Other Beliefs

Dependent variables:	Trust in the ECB (1=do not trust at all, 5=completely trust)		Monetary policy knowledge (Number of right answers: 0, 1 or 2)		Money illusion (1=understand real vs. nom., 0 otherwise)	
	Survey	Lab	Survey	Lab	Survey	Lab
	(1)	(2)	(3)	(4)	(5)	(6)
Recalled increasing inflation [omitted: no recollections]						
One episode	-0.029	-0.162	-0.008	-0.339	0.028**	-0.118**
	(0.029)	(0.199)	(0.017)	(0.226)	(0.014)	(0.057)
Two or more episodes	-0.096***	-0.334*	0.025	-0.444**	0.032**	-0.131**
	(0.032)	(0.202)	(0.018)	(0.224)	(0.015)	(0.055)
Do not remember	0.028	0.347	-0.006	-0.563**	0.026	-0.055
	(0.034)	(0.232)	(0.019)	(0.256)	(0.016)	(0.059)
Recalled decreasing inflation [omitted: no recollections]						
One episode	0.096***	-0.131	0.045***	-0.195*	-0.019	0.076
	(0.029)	(0.117)	(0.016)	(0.118)	(0.014)	(0.048)
Two or more episodes	0.107***	0.232*	0.079***	0.498	-0.049***	0.061
	(0.036)	(0.131)	(0.021)	(0.362)	(0.017)	(0.095)
Do not remember	0.095***	0.086	0.023	0.007	0.010	-0.000
	(0.025)	(0.058)	(0.014)	(0.063)	(0.012)	(0.025)
Max recalled increase in inflation	0.002	0.002	0.009***	-0.006	0.004***	-0.000
	(0.003)	(0.005)	(0.002)	(0.005)	(0.001)	(0.002)
Max recalled decrease in inflation	-0.003	-0.024*	0.001	-0.014	-0.001	-0.005
	(0.004)	(0.014)	(0.002)	(0.015)	(0.002)	(0.005)
Weighted experienced inflation (Malmendier-Nagel)	0.782***	-0.872	0.190***	-1.737***	0.090**	-0.165
	(0.090)	(0.602)	(0.050)	(0.618)	(0.042)	(0.257)
Perceived inflation in 2022	-0.009***	-0.006	0.002**	0.001	-0.001	-0.002
	(0.002)	(0.005)	(0.001)	(0.006)	(0.001)	(0.002)
Observations	7,620	480	9,032	498	9,032	498
R-squared	0.097	0.282	0.236	0.184	0.247	0.378

Notes: The table reports results for the regression of trust in the ECB, monetary policy knowledge and money illusion on memories of inflation/disinflation and demographic characteristics (age, gender, educational attainment, number of children, income, home status, household size, financial literacy, political preferences, knowledge of economic issues, geographical location). Regressions in columns (1)-(5) are Huber (1964) robust. The regression in column (6) is estimated with OLS. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Table 6: Treatment Effects of Inflation Expectations and Uncertainty for year 2025.

Dep.var.: Posterior	Implied mean			Implied uncertainty			Point prediction, follow-up survey wave
	Survey: All	Survey: Young & some college+	Lab	Survey: All	Survey: Young & some college+	Lab	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\mathbb{I}\{Treat = Flat\}$	1.048***	0.771*	1.892***	-0.187***	-0.521**	-0.347	0.006
	(0.094)	(0.393)	(0.326)	(0.040)	(0.224)	(0.265)	(0.256)
$\mathbb{I}\{Treat = Down\}$	0.878***	1.725***	1.730***	0.177***	0.355	0.281	0.282
	(0.096)	(0.411)	(0.395)	(0.042)	(0.242)	(0.345)	(0.249)
$\mathbb{I}\{Treat = Up\}$	1.045***	1.813***	1.058**	0.285***	0.047	0.194	0.555**
	(0.099)	(0.433)	(0.420)	(0.045)	(0.245)	(0.317)	(0.279)
$\mathbb{I}\{Treat = Neutral\}$			1.210***			-0.348	
			(0.453)			(0.276)	
$\mathbb{I}\{Treat = Lifetime\}$			1.846***			0.458	
			(0.451)			(0.302)	
$Prior$	0.622***	0.623***	0.651***	0.725***	0.671***	0.703***	0.430***
	(0.012)	(0.065)	(0.048)	(0.009)	(0.053)	(0.055)	(0.031)
$Prior \times \mathbb{I}\{Treat = Flat\}$	-0.333***	-0.331***	-0.589***	-0.028*	0.055	-0.068	-0.168***
	(0.019)	(0.082)	(0.056)	(0.015)	(0.070)	(0.075)	(0.048)
$Prior \times \mathbb{I}\{Treat = Down\}$	-0.259***	-0.347***	-0.410***	-0.085***	-0.023	-0.126	-0.156***
	(0.019)	(0.090)	(0.072)	(0.015)	(0.068)	(0.099)	(0.047)
$Prior \times \mathbb{I}\{Treat = Up\}$	-0.120***	-0.299***	-0.050	-0.057***	0.043	0.069	-0.173***
	(0.019)	(0.086)	(0.072)	(0.015)	(0.069)	(0.084)	(0.054)
$Prior \times \mathbb{I}\{Treat = Neutral\}$			-0.337***			0.064	
			(0.080)			(0.078)	
$Prior \times \mathbb{I}\{Treat = Lifetime\}$			-0.439***			-0.192**	
			(0.084)			(0.092)	
Observations	9,148	650	491	9,124	648	504	3,248
R-squared	0.433	0.314	0.555	0.646	0.548	0.555	0.141

Notes: The table reports results for the regression of posterior inflation expectations or uncertainty on prior expectations or uncertainty. Only age brackets are included as controls. Columns (1)-(6) use posteriors measured immediately after the treatments. Column (7) uses posteriors measured in the follow up wave. The set of regressors in column (7) is the same as in column (1). Column (7) is run on the full sample (i.e., old and young survey respondents All regressions are Huber (1964) robust. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Table 7: Survey Treatment Effects based on Lifetime Inflation Memories.

Dep.var.: Posterior	All	Memories of increasing inflation	No memories of increasing inflation	Memories of decreasing inflation	No memories of decreasing inflation	Memories of increasing and decreasing inflation	No memories of increasing or decreasing inflation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Implied mean							
$\mathbb{I}\{Treat = Flat\}$	1.048***	0.848***	1.410***	0.548***	1.168***	0.461**	1.542***
	(0.094)	(0.115)	(0.163)	(0.183)	(0.110)	(0.208)	(0.179)
$\mathbb{I}\{Treat = Down\}$	0.878***	0.676***	1.164***	0.591***	0.979***	0.327	1.124***
	(0.096)	(0.121)	(0.157)	(0.174)	(0.116)	(0.201)	(0.175)
$\mathbb{I}\{Treat = Up\}$	1.045***	0.979***	1.081***	0.558***	1.253***	0.485**	1.225***
	(0.099)	(0.122)	(0.172)	(0.184)	(0.118)	(0.212)	(0.194)
$Prior$	0.622***	0.575***	0.701***	0.501***	0.658***	0.466***	0.716***
	(0.012)	(0.014)	(0.020)	(0.022)	(0.014)	(0.025)	(0.022)
$Prior \times \mathbb{I}\{Treat = Flat\}$	-0.333***	-0.277***	-0.437***	-0.153***	-0.382***	-0.129***	-0.482***
	(0.019)	(0.023)	(0.034)	(0.039)	(0.022)	(0.045)	(0.037)
$Prior \times \mathbb{I}\{Treat = Down\}$	-0.259***	-0.172***	-0.408***	-0.215***	-0.265***	-0.136***	-0.390***
	(0.019)	(0.024)	(0.032)	(0.035)	(0.023)	(0.040)	(0.036)
$Prior \times \mathbb{I}\{Treat = Up\}$	-0.120***	-0.074***	-0.192***	-0.025	-0.154***	0.031	-0.193***
	(0.019)	(0.023)	(0.032)	(0.036)	(0.022)	(0.042)	(0.035)
Observations	9,148	5,985	3,167	2,981	6,169	2,149	2,334
R-squared	0.433	0.416	0.473	0.315	0.480	0.322	0.516
Panel B. Implied uncertainty							
$\mathbb{I}\{Treat = Flat\}$	-0.187***	-0.213***	-0.152**	-0.244***	-0.150***	-0.216**	-0.098
	(0.040)	(0.052)	(0.064)	(0.085)	(0.046)	(0.102)	(0.070)
$\mathbb{I}\{Treat = Down\}$	0.177***	0.146***	0.224***	0.107	0.200***	0.069	0.224***
	(0.042)	(0.051)	(0.072)	(0.084)	(0.048)	(0.094)	(0.077)
$\mathbb{I}\{Treat = Up\}$	0.285***	0.328***	0.185**	0.262***	0.304***	0.290***	0.164**
	(0.045)	(0.056)	(0.076)	(0.094)	(0.052)	(0.108)	(0.082)
$Prior$	0.725***	0.711***	0.749***	0.711***	0.722***	0.716***	0.762***
	(0.009)	(0.011)	(0.014)	(0.016)	(0.011)	(0.019)	(0.017)
$Prior \times \mathbb{I}\{Treat = Flat\}$	-0.028*	-0.036*	-0.009	-0.011	-0.043**	-0.024	-0.030
	(0.015)	(0.019)	(0.024)	(0.027)	(0.018)	(0.032)	(0.028)
$Prior \times \mathbb{I}\{Treat = Down\}$	-0.085***	-0.064***	-0.124***	-0.090***	-0.078***	-0.067**	-0.108***
	(0.015)	(0.019)	(0.026)	(0.028)	(0.018)	(0.032)	(0.030)
$Prior \times \mathbb{I}\{Treat = Up\}$	-0.057***	-0.082***	0.004	-0.084***	-0.047**	-0.089***	0.033
	(0.015)	(0.019)	(0.025)	(0.029)	(0.018)	(0.034)	(0.029)
Observations	9,124	5,961	3,165	2,980	6,159	2,151	2,339
R-squared	0.646	0.634	0.674	0.586	0.659	0.590	0.698

Notes: The table reports subsample results for the regression of posterior inflation expectations or uncertainty on prior expectations or uncertainty. Panel A shows results for implied mean of inflation expectations; Panel B shows the results for the implied standard deviation of inflation expectations. The specification is given by column (1) in Table 7 which is also reproduced for convenience in column (1) of Table 8. Only age brackets are included as controls. All regressions are Huber (1964) robust. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Table 8: Are Forecasting Games Subsequently Recalled as Memories?

	Recall a Disinflation				Recall an Inflation Surge			
	All	No disinfl. experience	18-29 yo	30+ yo	All	With infl. experience	18-29 yo	30+ yo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FLAT	-0.216	-0.388*	-0.190	-0.192	-0.109	-0.092	0.378	-0.167
	(0.182)	(0.222)	(0.459)	(0.199)	(0.125)	(0.153)	(0.397)	(0.134)
DOWN	0.153	0.144	0.754**	-0.040	0.284**	0.391***	0.232	0.325***
	(0.161)	(0.182)	(0.383)	(0.188)	(0.117)	(0.138)	(0.398)	(0.125)
UP	-0.014	0.068	-0.126	0.045	0.124	0.282*	0.657*	0.047
	(0.176)	(0.192)	(0.448)	(0.190)	(0.122)	(0.145)	(0.379)	(0.130)
At least one disinflation memory	0.339***		0.534*	0.306**	0.233**	0.256**	0.383	0.210**
	(0.127)		(0.297)	(0.140)	(0.092)	(0.108)	(0.271)	(0.098)
At least one inflation memory	0.402***	0.339**	0.453	0.390**	0.154		-0.197	0.199**
	(0.144)	(0.160)	(0.370)	(0.157)	(0.096)		(0.288)	(0.101)
Observations	2,772	1,889	470	2,302	2,772	1,909	470	2,302

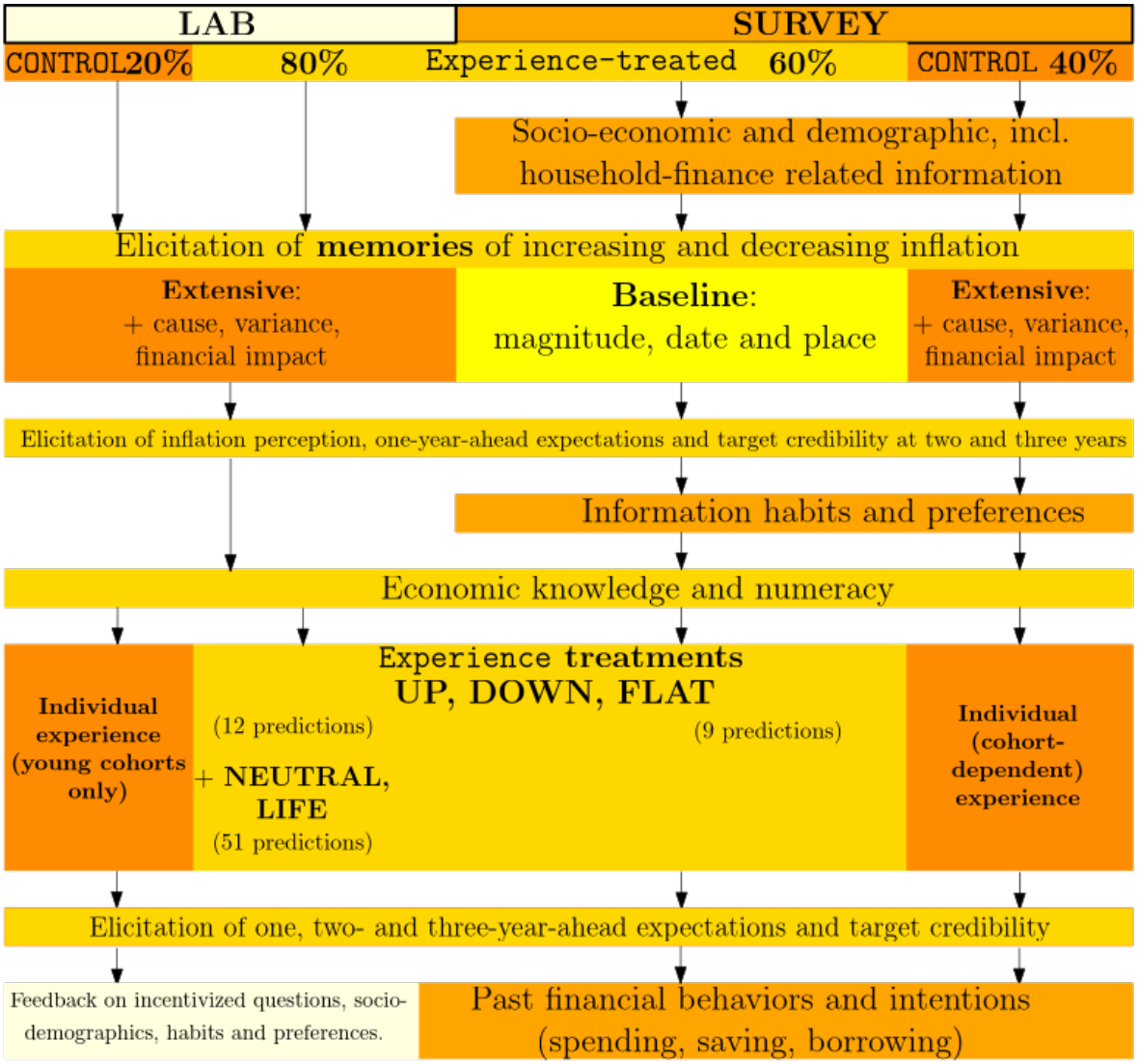
Notes: The table reports results for an indicator variable for recalling inflation surges or disinflations in the second wave on participation in treatments. Only age brackets are included as controls. All regressions are Huber (1964) robust. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Table 9: Do Forecasting Games Affect Economic Expectations beyond Prior Memories?

Dep. Var.: inflation expectations for 2025	Wave 1	Wave 2	
	(1)	(2)	(3)
Inflation memories reported in Wave 1			
Recalled increasing inflation [omitted: no recollections]			
One episode	0.032	-0.128	-0.123
	(0.089)	(0.174)	(0.172)
Two or more episodes	0.295***	0.482**	0.496***
	(0.095)	(0.189)	(0.188)
Do not remember	-0.044	-0.195	-0.175
	(0.102)	(0.202)	(0.201)
Recalled decreasing inflation [omitted: no recollections]			
One episode	-0.339***	-0.522***	-0.506***
	(0.087)	(0.173)	(0.173)
Two or more episodes	-0.372***	-0.621***	-0.609***
	(0.102)	(0.207)	(0.206)
Do not remember	-0.079	-0.475***	-0.454***
	(0.075)	(0.145)	(0.144)
Max recalled increase in inflation	-0.018**	-0.021	-0.020
	(0.008)	(0.015)	(0.015)
Max recalled decrease in inflation	-0.013	0.095***	0.095***
	(0.013)	(0.023)	(0.023)
Perceived inflation in 2022	0.082***	0.074***	0.072***
	(0.006)	(0.012)	(0.012)
Treatment in Wave 1 [omitted: control group]			
$\mathbb{I}\{Treat = Flat\}$			-0.592***
			(0.149)
$\mathbb{I}\{Treat = Down\}$			-0.345**
			(0.154)
$\mathbb{I}\{Treat = Up\}$			-0.202
			(0.152)
Observations	9,157	3,249	3,249
R-squared	0.028	0.033	0.036

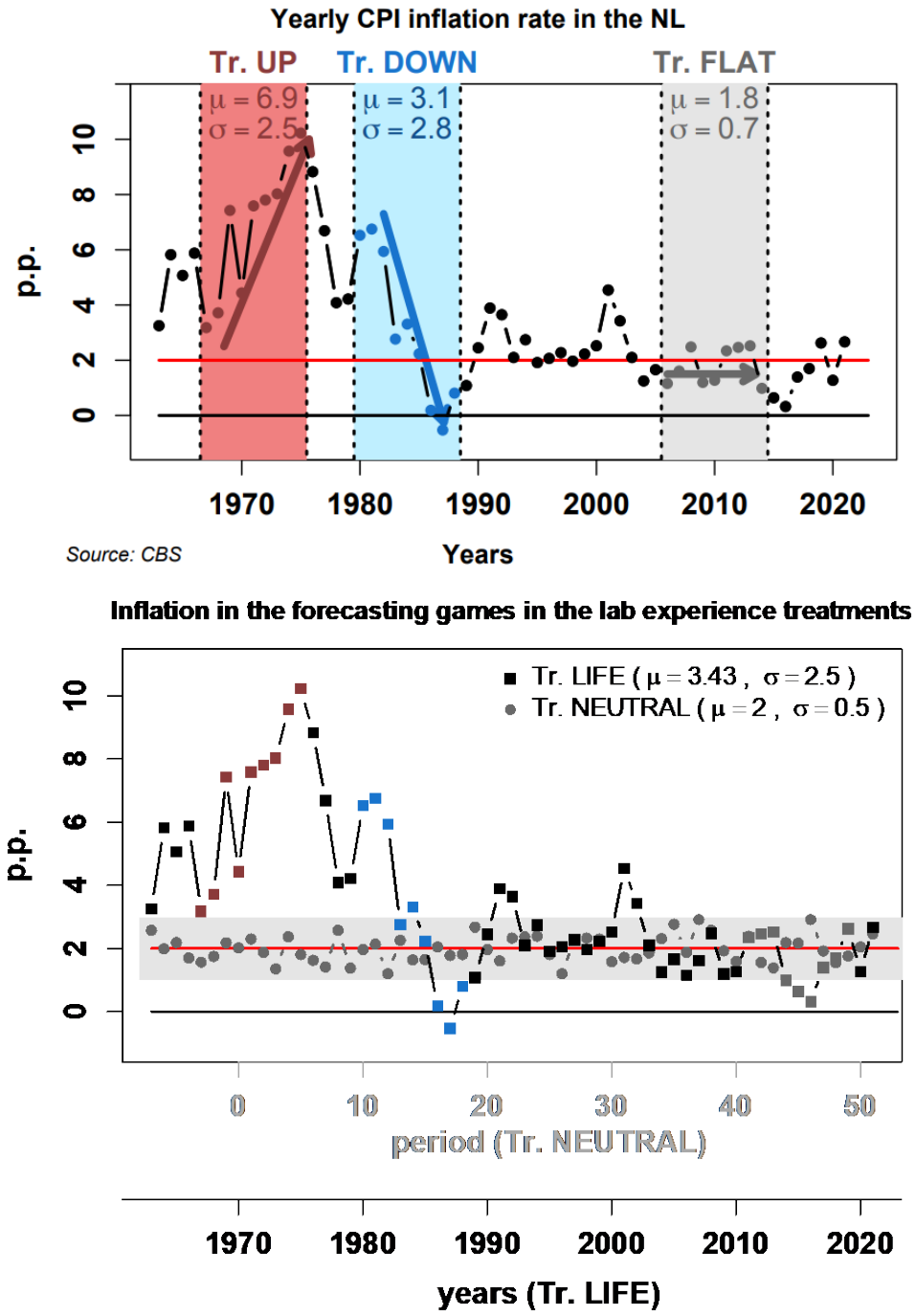
Notes: The table reports results for the regression of posterior inflation expectations on memories of inflation/disinflation as well as participation in treatment groups. Only age brackets are included as controls. All regressions are Huber (1964) robust. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Figure 1: Structure of Survey and Lab Experiment



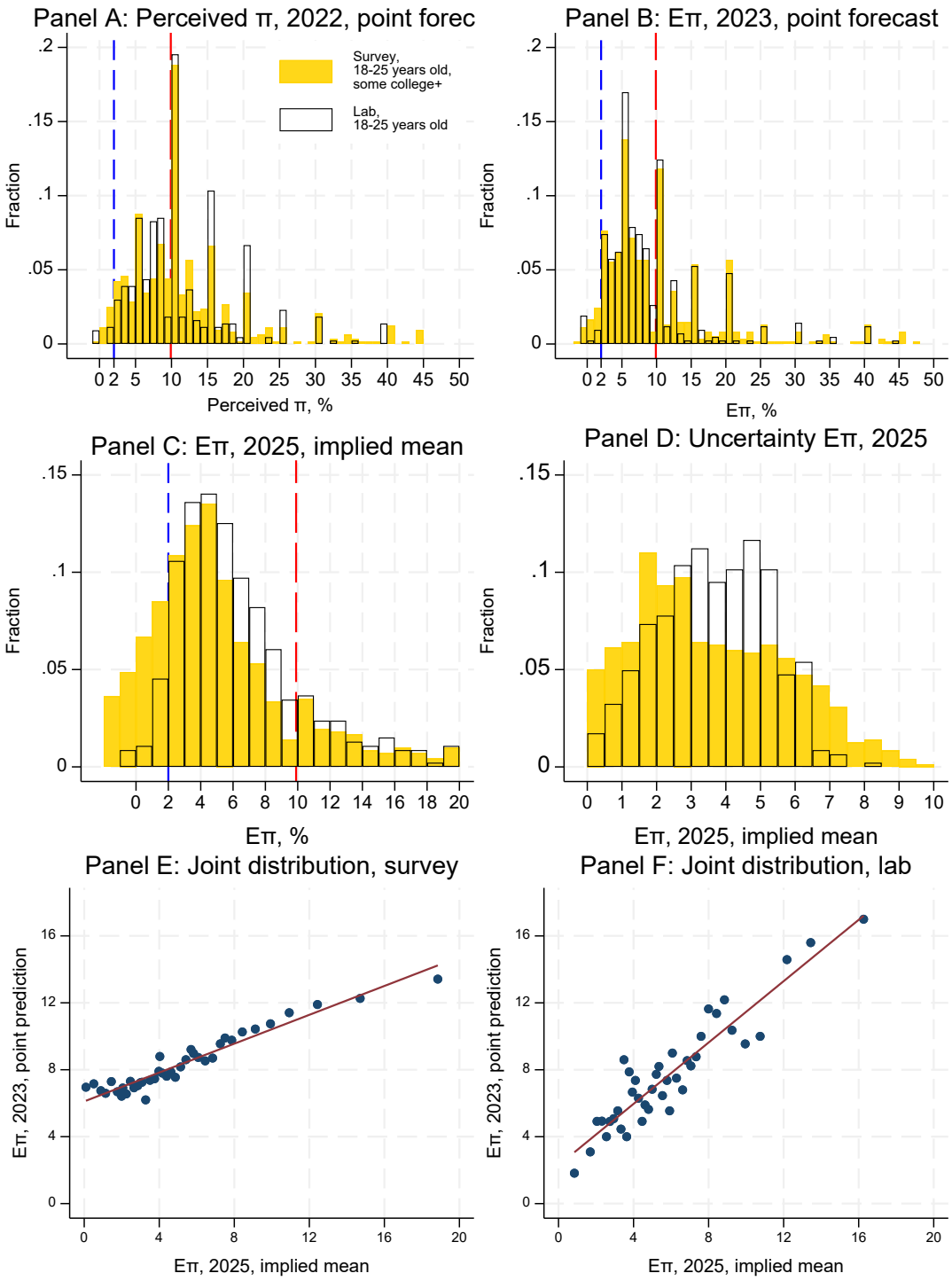
Notes: The figure shows the flow of the survey/lab experiment.

Figure 2: Inflation Dynamics used in Forecasting Games in the Survey and Lab



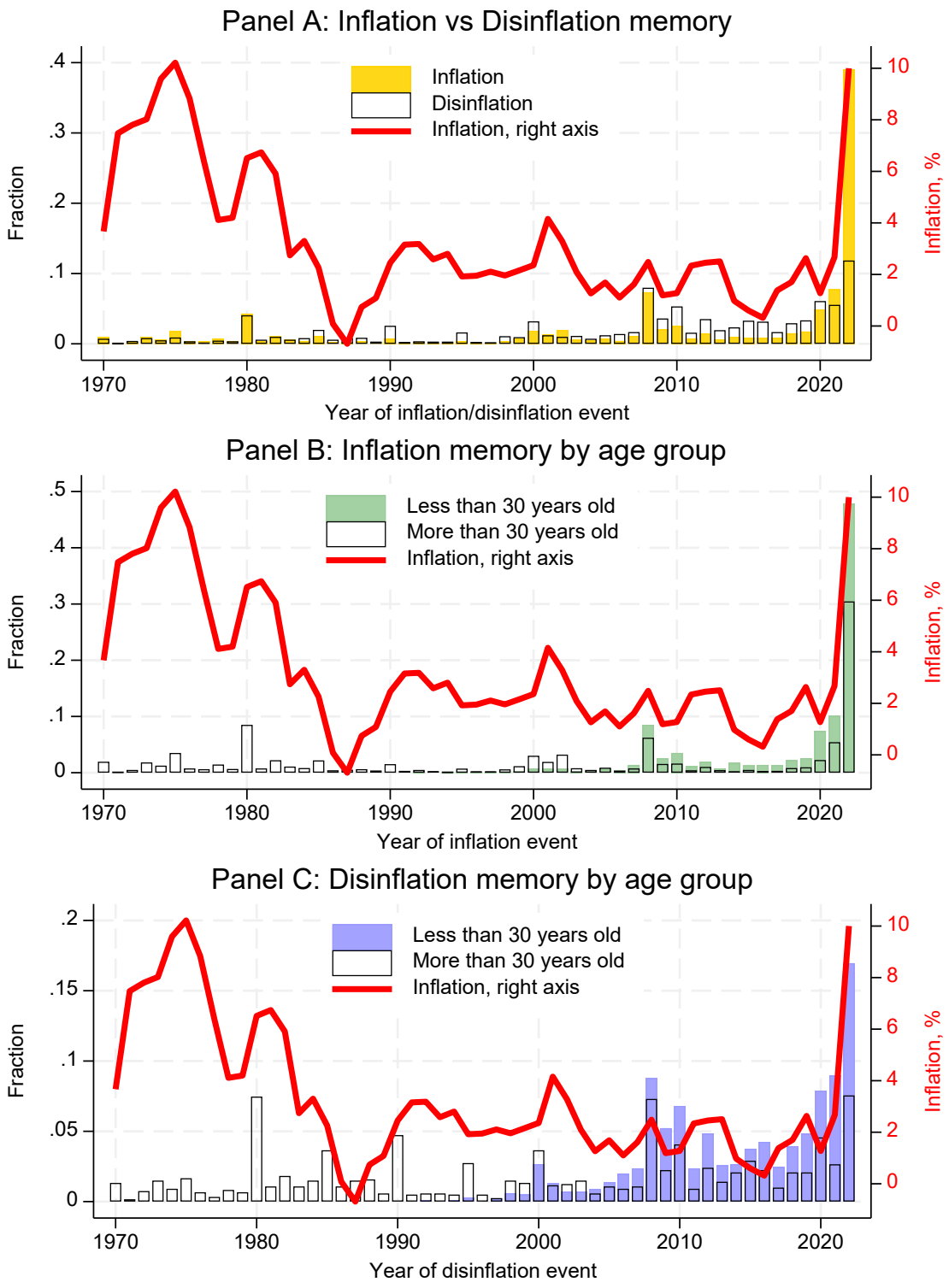
Notes: The top panel shows inflation in the Netherlands as well episodes that are used in the forecasting game. μ and σ show mean and standard deviation for inflation in a given episode. The bottom panel shows the path shown to lab subjects in additional treatment. The "life" treatment is the forecasting game for the full history of inflation in the Netherlands. The "neutral" treatment is randomly generated inflation with mean of 2 (the ECB inflation target) and standard deviation of 0.5 (so as inflation remains in the stable 1-3% bracket used in the questions).

Figure 3: Inflation Expectations in the Survey and the Lab



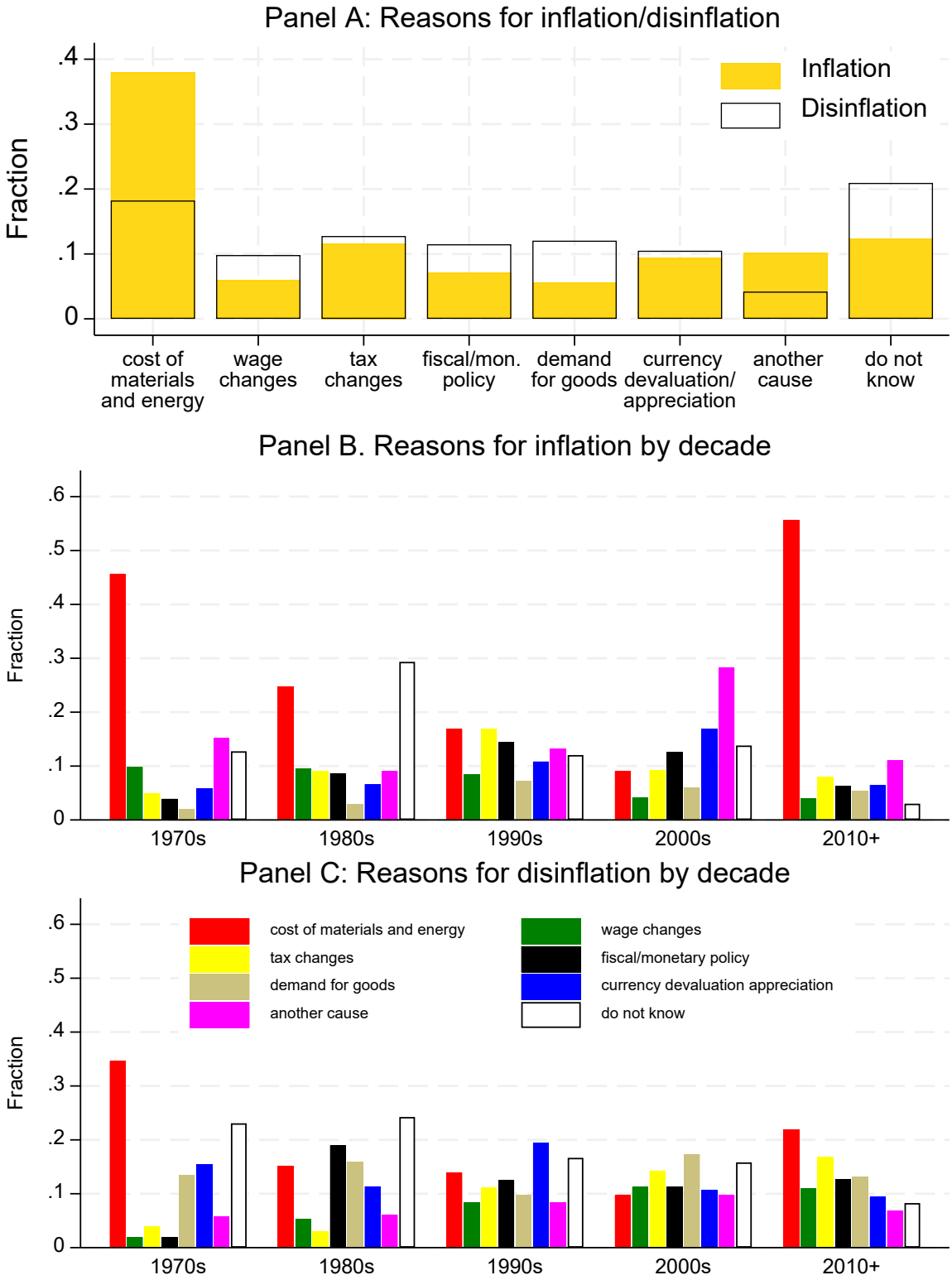
Notes: Panels A-D show histograms for inflation expectations and uncertainty for lab subjects and survey participants that mimic lab subjects. The blue vertical line shows the ECB inflation target. The red vertical line shows the actual rate of inflation (π) at the time of the survey/lab experiment. Panels E and F are binscatter plots showing the joint distribution of short-term and long-term inflation forecasts.

Figure 4: Lifetime Memories of Inflation and Disinflation Episodes



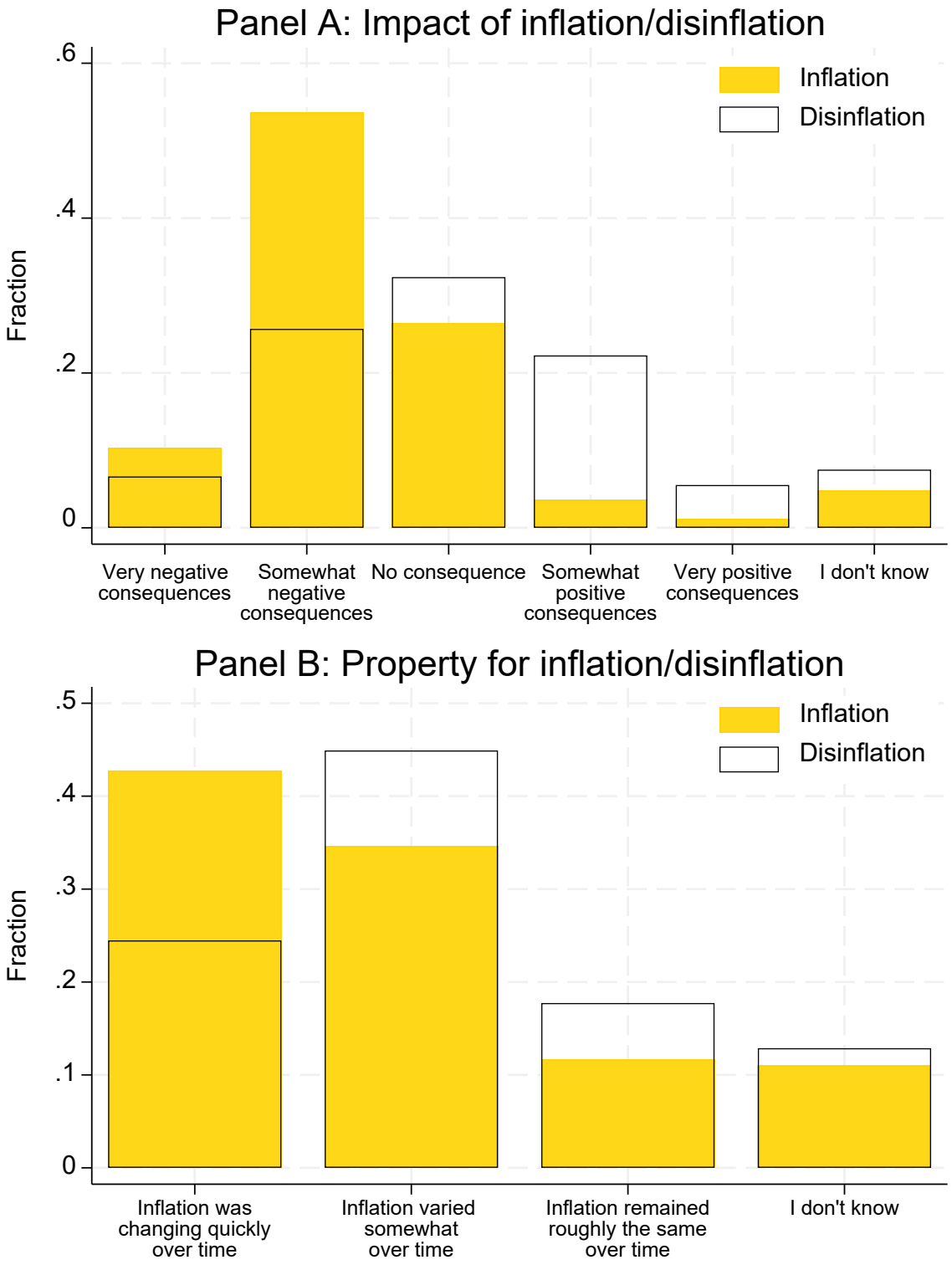
Notes: The figures show the distribution of recalled inflation/disinflation episodes by year and respondent age.

Figure 5: Perceived Causes of Inflation and Disinflation Episodes



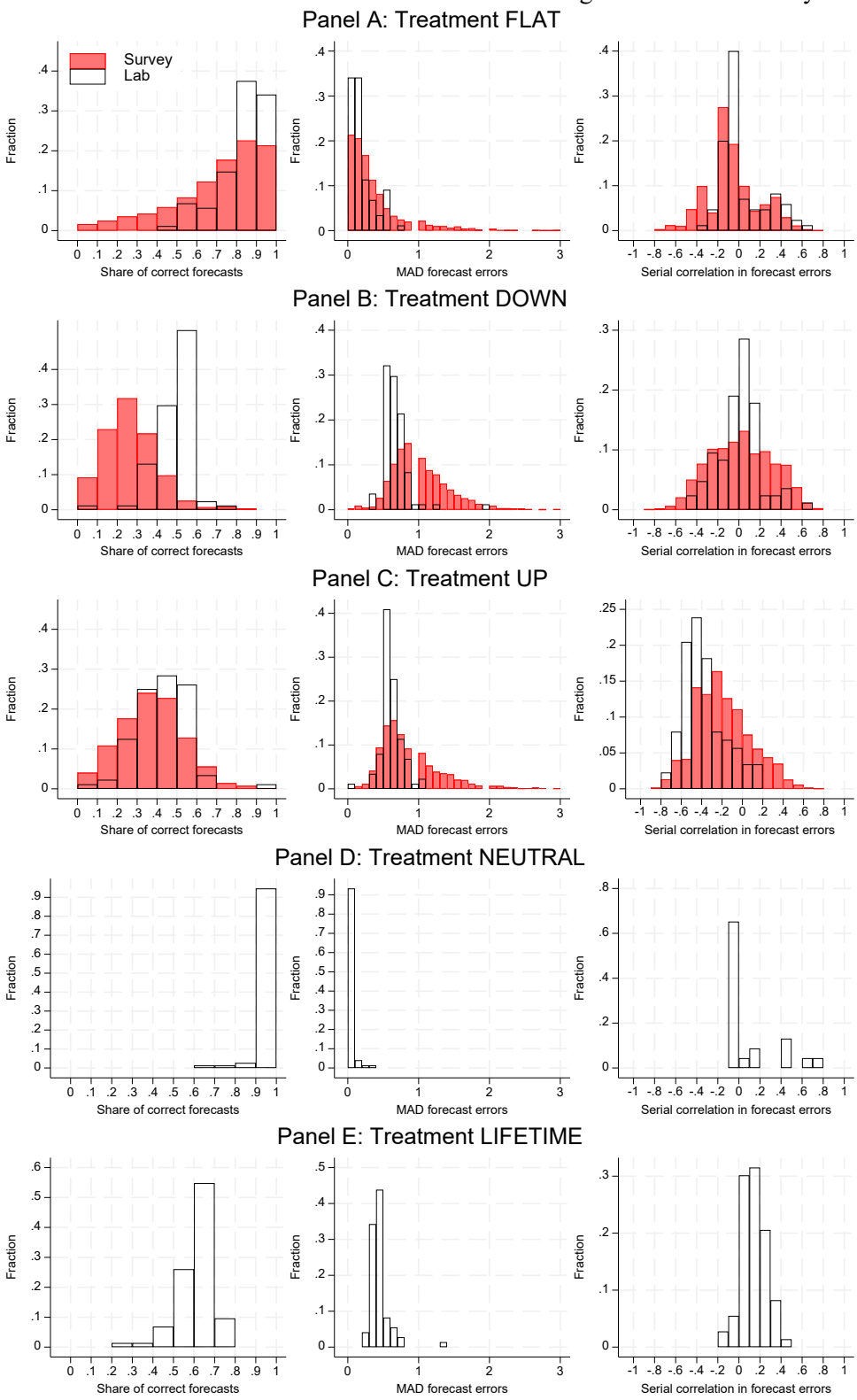
Notes: The figure shows the distribution of reasons for inflation/disinflation by the episode type and period.

Figure 6: Perceived Impact and Persistence of Inflation and Disinflation Episodes



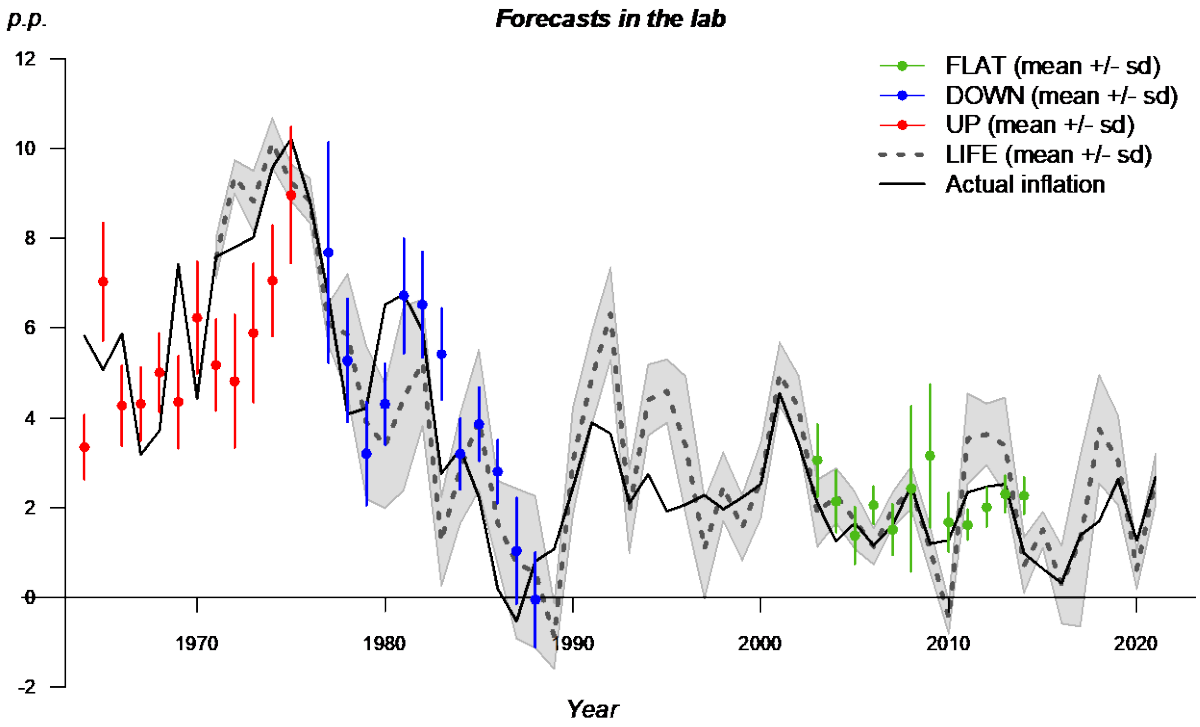
Notes: The figure shows the distribution of effects and nature for inflation/disinflation episodes.

Figure 7: Distributions of Forecasts and Errors in Forecasting Games in the Survey and Lab



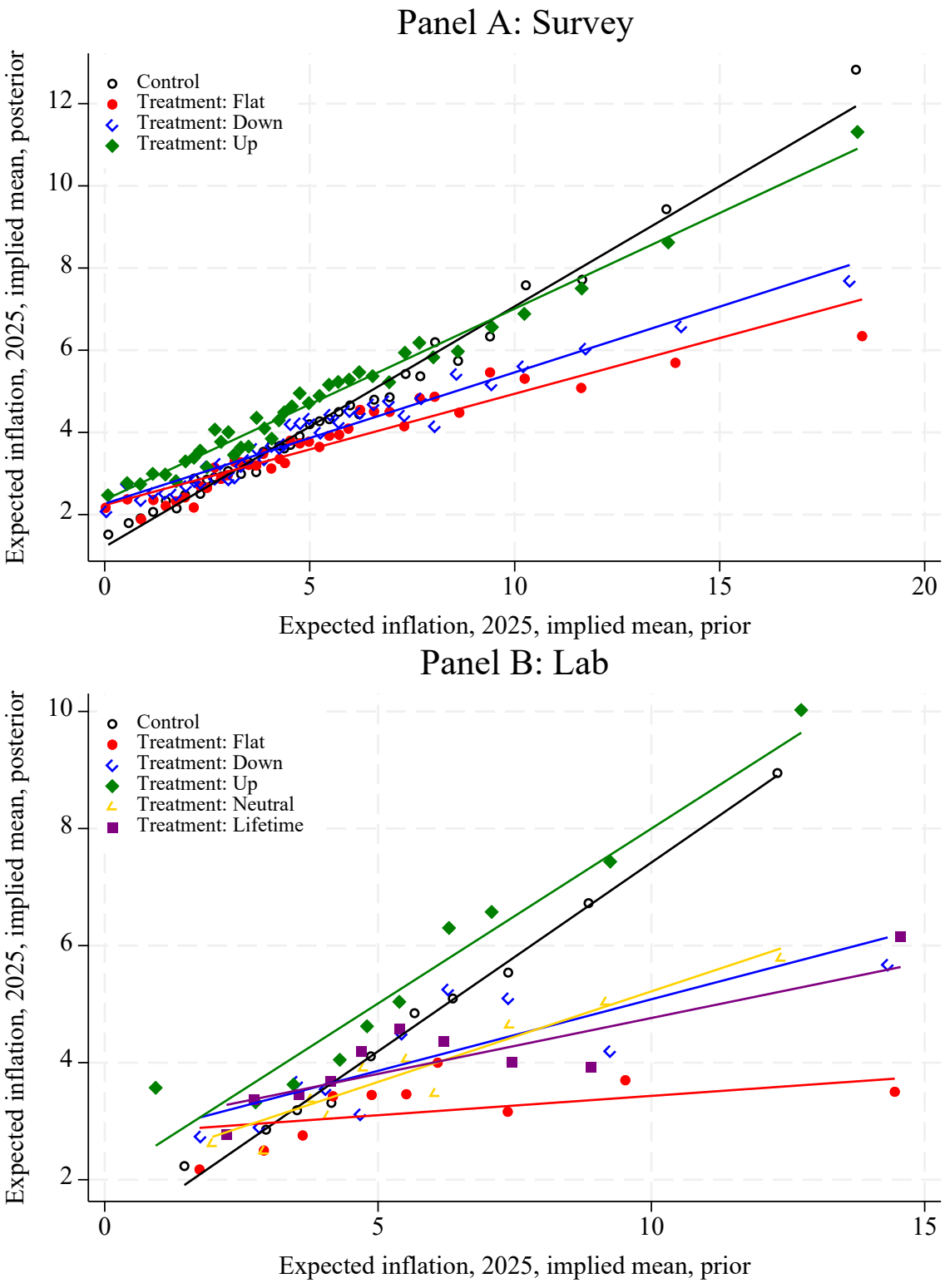
Notes: The figure shows the distribution of correct answers and errors by forecasting game in a given treatment.

Figure 8: Inflation Forecasts in the Lab during Historical Episodes



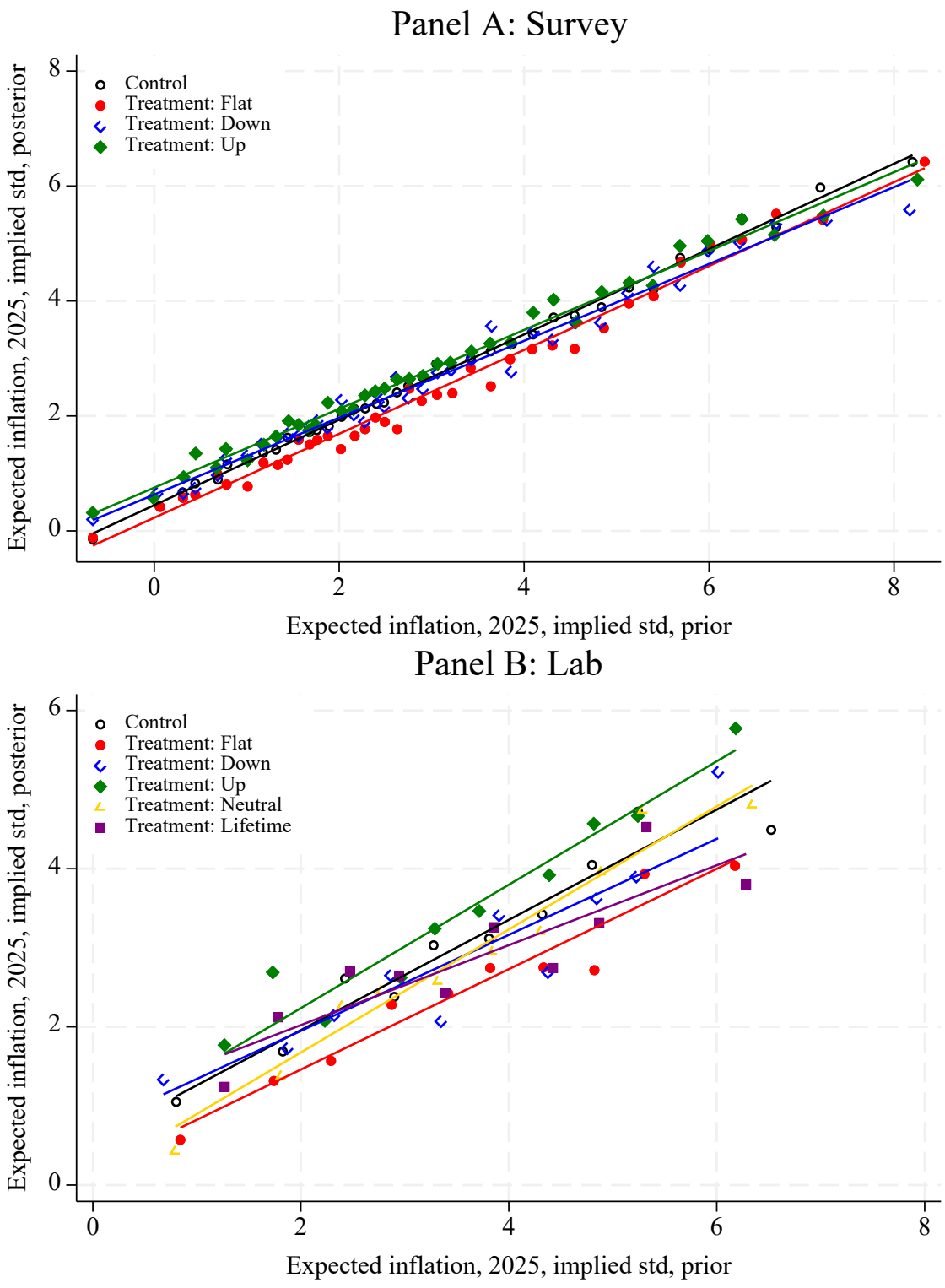
Notes: Each historical episode is represented by a different color. For treatments UP (red), DOWN (blue) and FLAT (green), the colors correspond to those used in the lab and in the survey. The dots represent the average forecasts across all lab subjects in a given period while the bars display +/- one cross-subject standard deviation. For treatment LIFE, the average forecasts are represented by the dotted line the +/-1% dispersion across subjects by the shaded area. The black line reports actual Dutch inflation as used in the games.

Figure 9: Treatment Effects on Inflation Expectations in the Survey and Lab



Notes: The figure shows binscatters for posteriors and priors of inflation expectations by treatment group in the survey (Panel A) and the lab (Panel B). Huber robust weights are applied to deal with outliers.

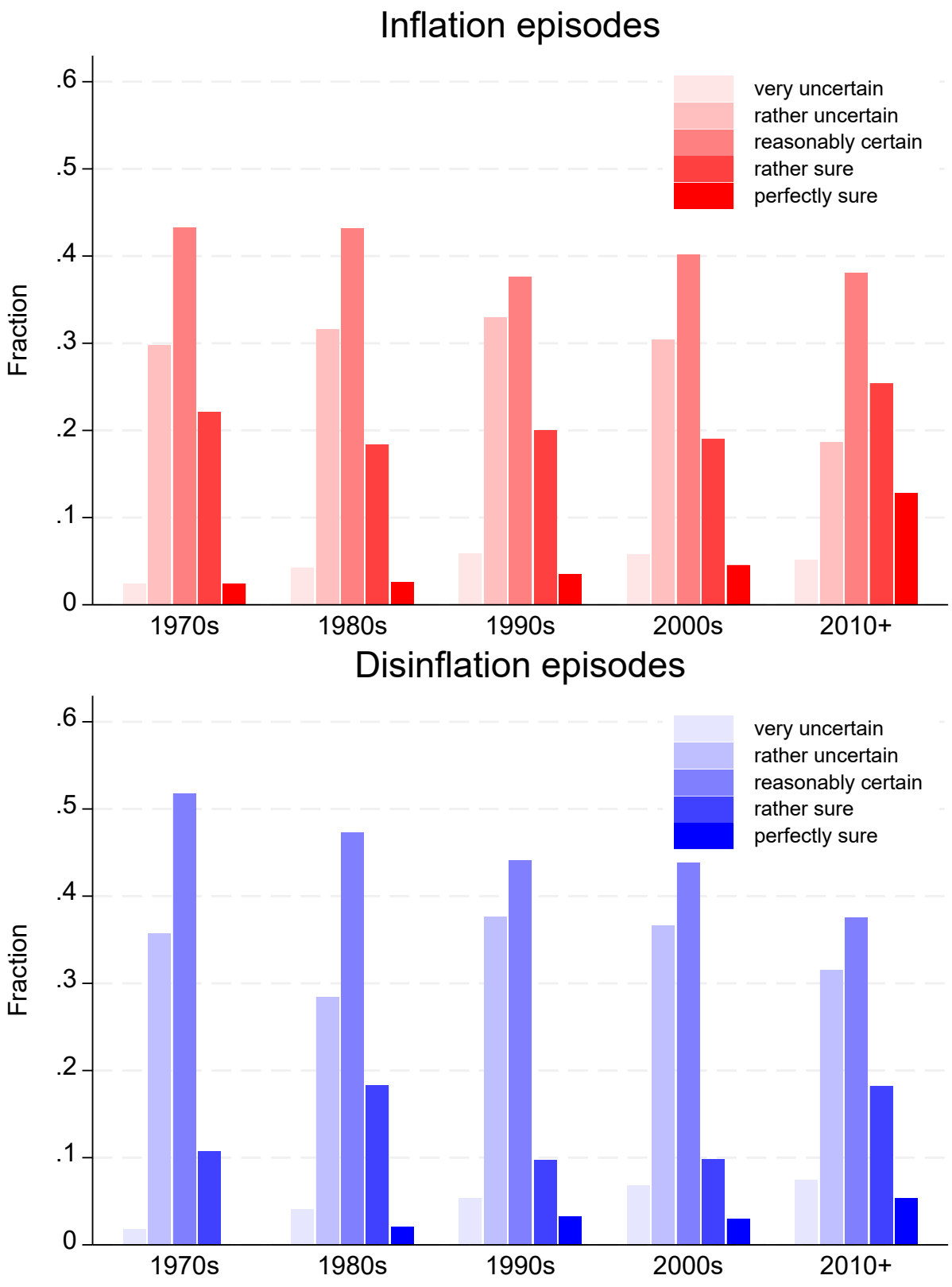
Figure 10: Treatment Effects on Inflation Expectations (Uncertainty) in the Survey and Lab



Notes: The figure shows binscatters for posteriors and priors of inflation uncertainty by treatment group in the survey (Panel A) and the lab (Panel B). Huber robust weights are applied to deal with outliers.

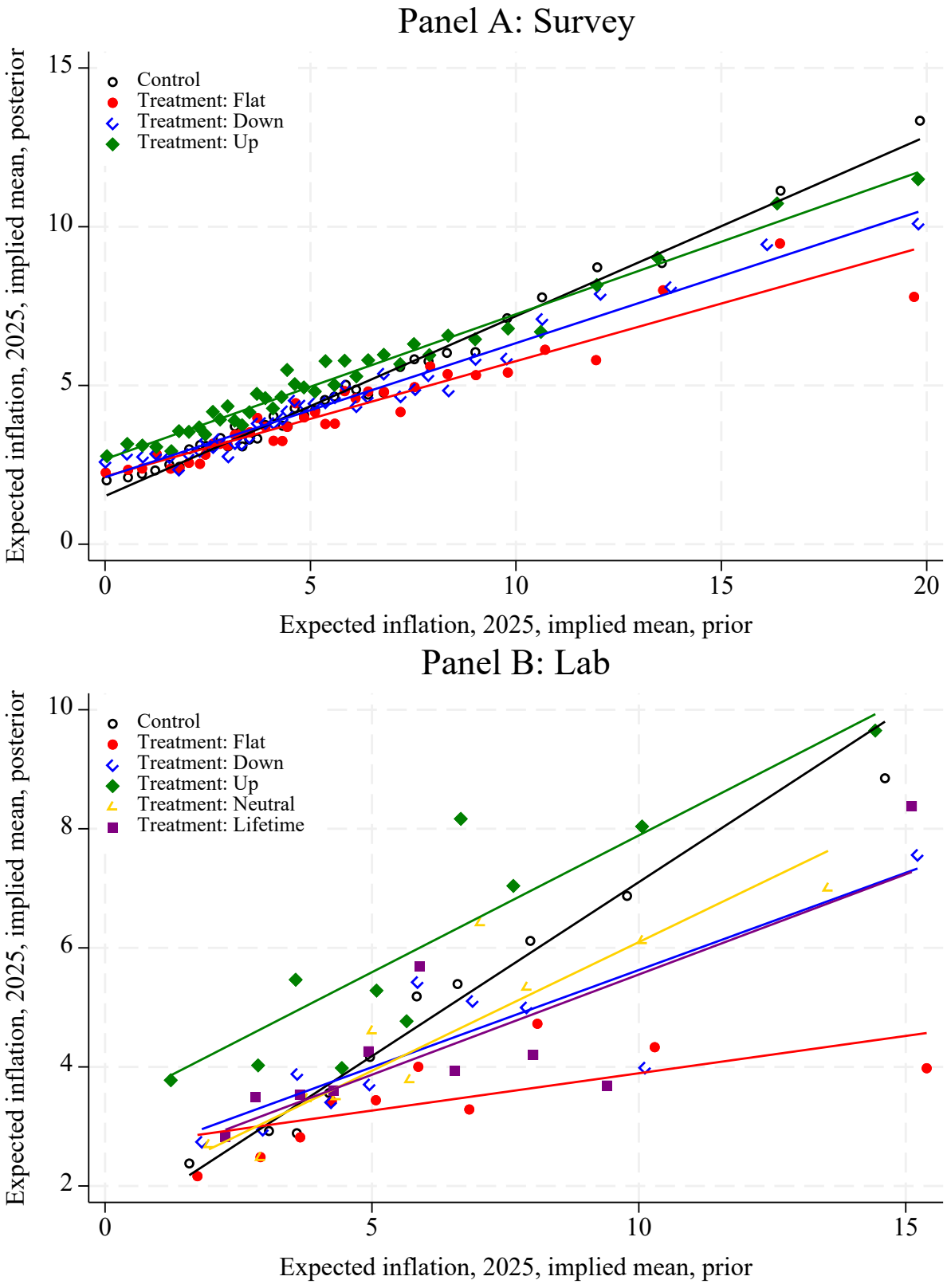
ONLINE APPENDIX

Appendix Figure 1: Confidence in Reported Lifetime Memories.



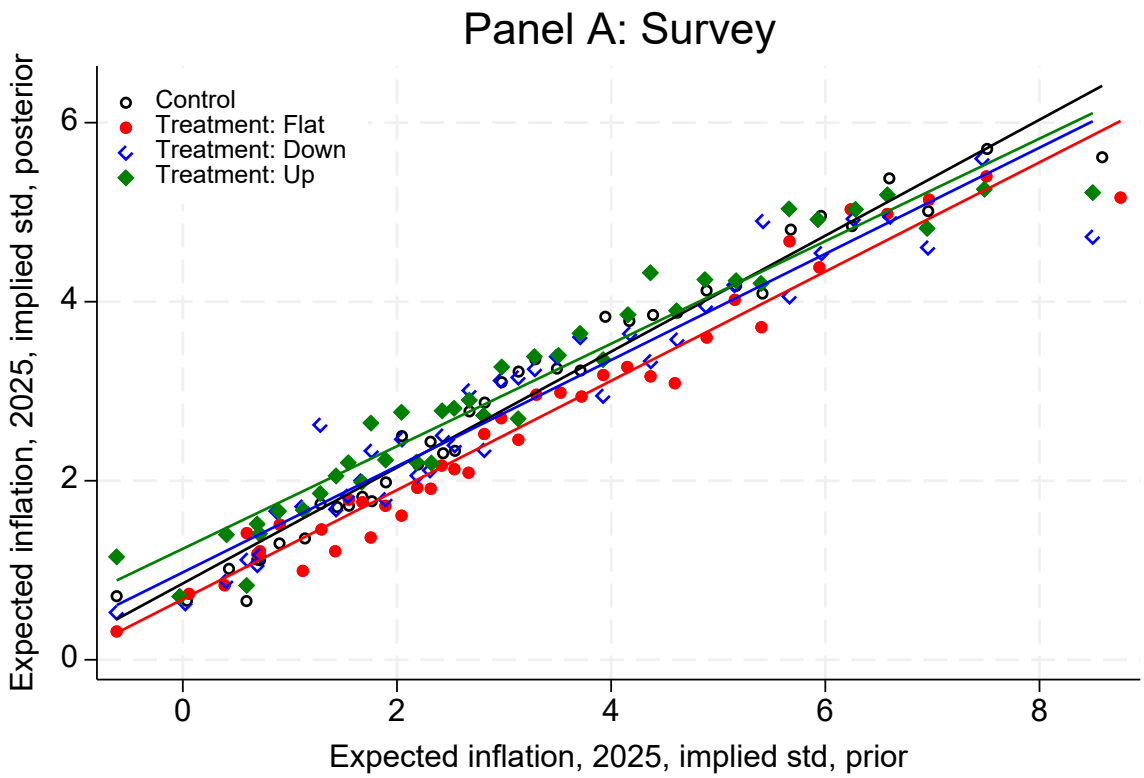
Notes: the figure shows the distribution of certainty in respondents' recollections of inflation/disinflation episodes.

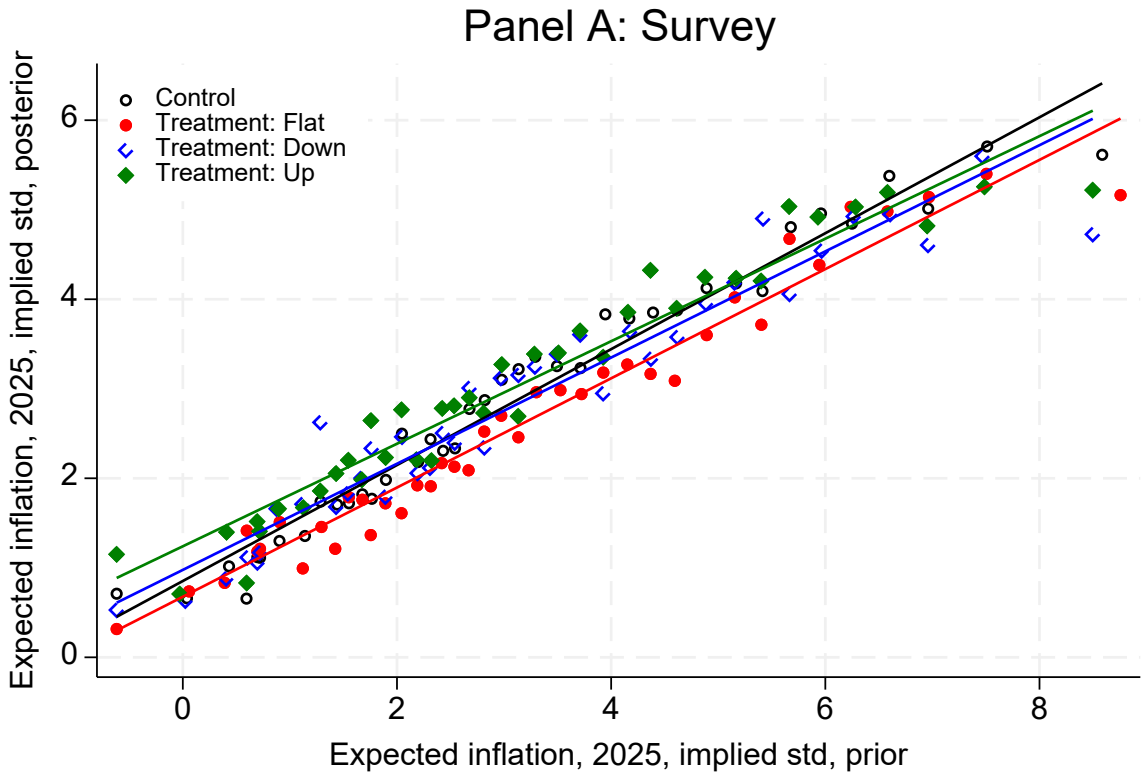
Appendix Figure 2: Treatment Effects on Inflation Expectations (measured using bins questions).



Notes: the figure shows binscatters for posteriors and priors of inflation expectations by treatment group in the survey (Panel A) and the lab (Panel B).

Appendix Figure 3: Treatment Effects on Inflation Uncertainty (measured using bins questions).



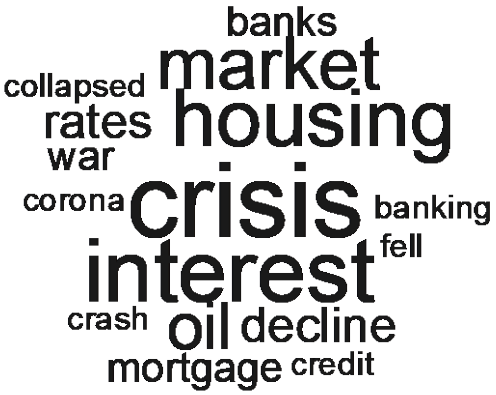


Notes: the figure shows binscatters for posteriors and priors of inflation expectations by treatment group in the survey (Panel A) and the lab (Panel B).

Appendix Figure 4: "Other" reasons for inflation/disinflation: Word clouds

Panel A. Rising inflation

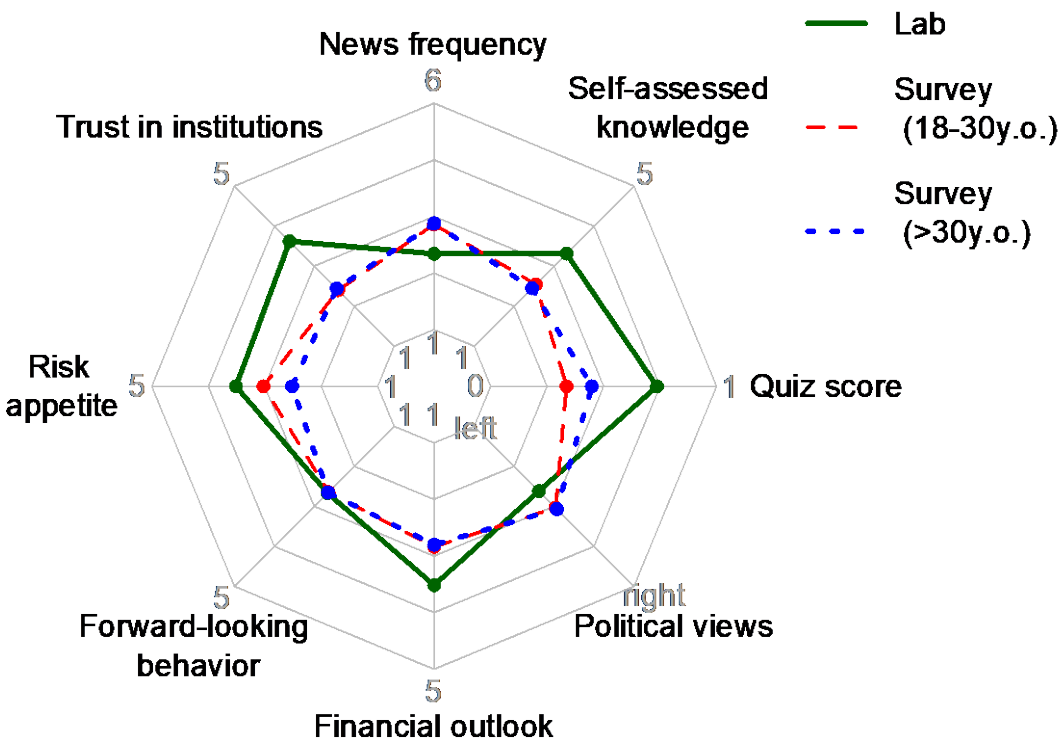
Panel B. Disinflation



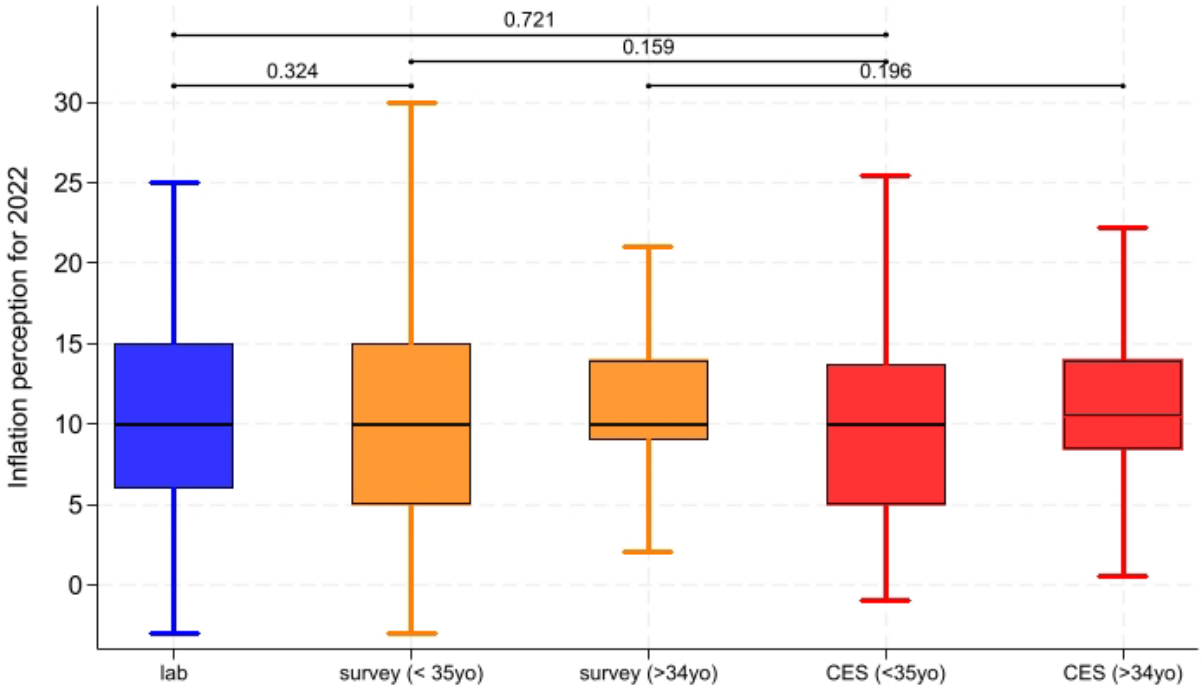
Panel C. Forecasting strategies in the survey

Notes: larger characters correspond to a relative larger frequency of occurrences in the open-ended answers. Words mentioned fewer than three times are omitted.

Appendix Figure 5: Comparing Survey and Lab Participants along Observables Variables

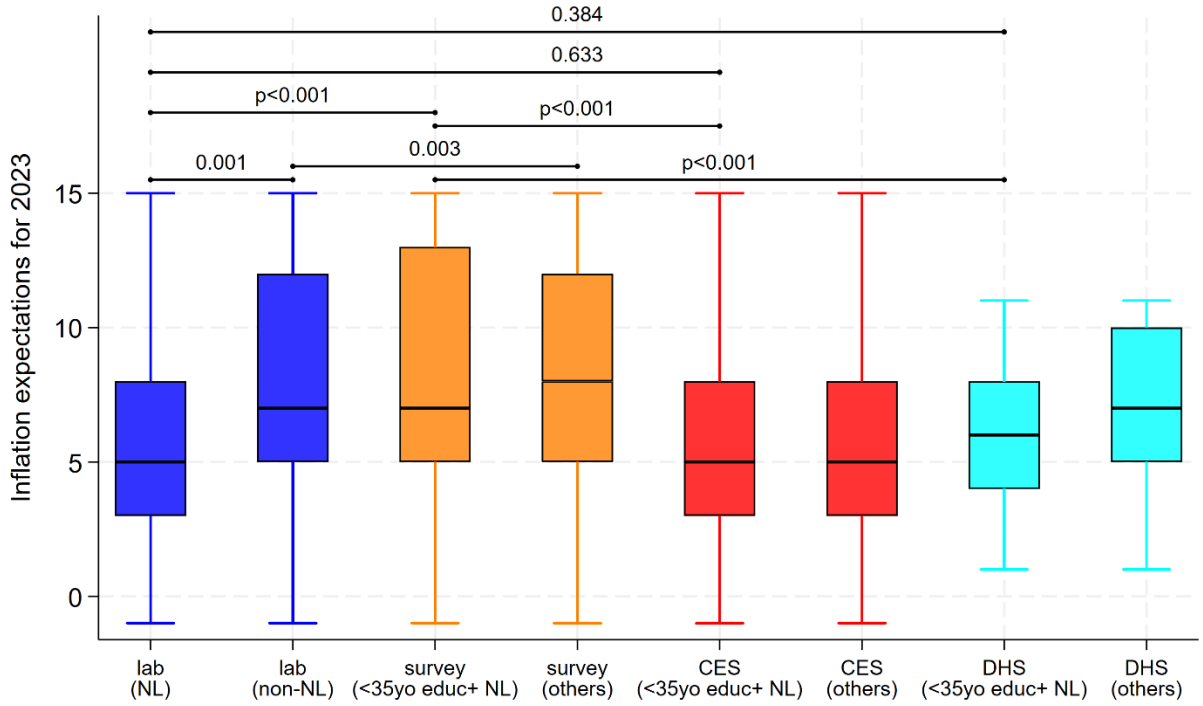


Appendix Figure 6: Comparing 2022 inflation perception in our data with the CES



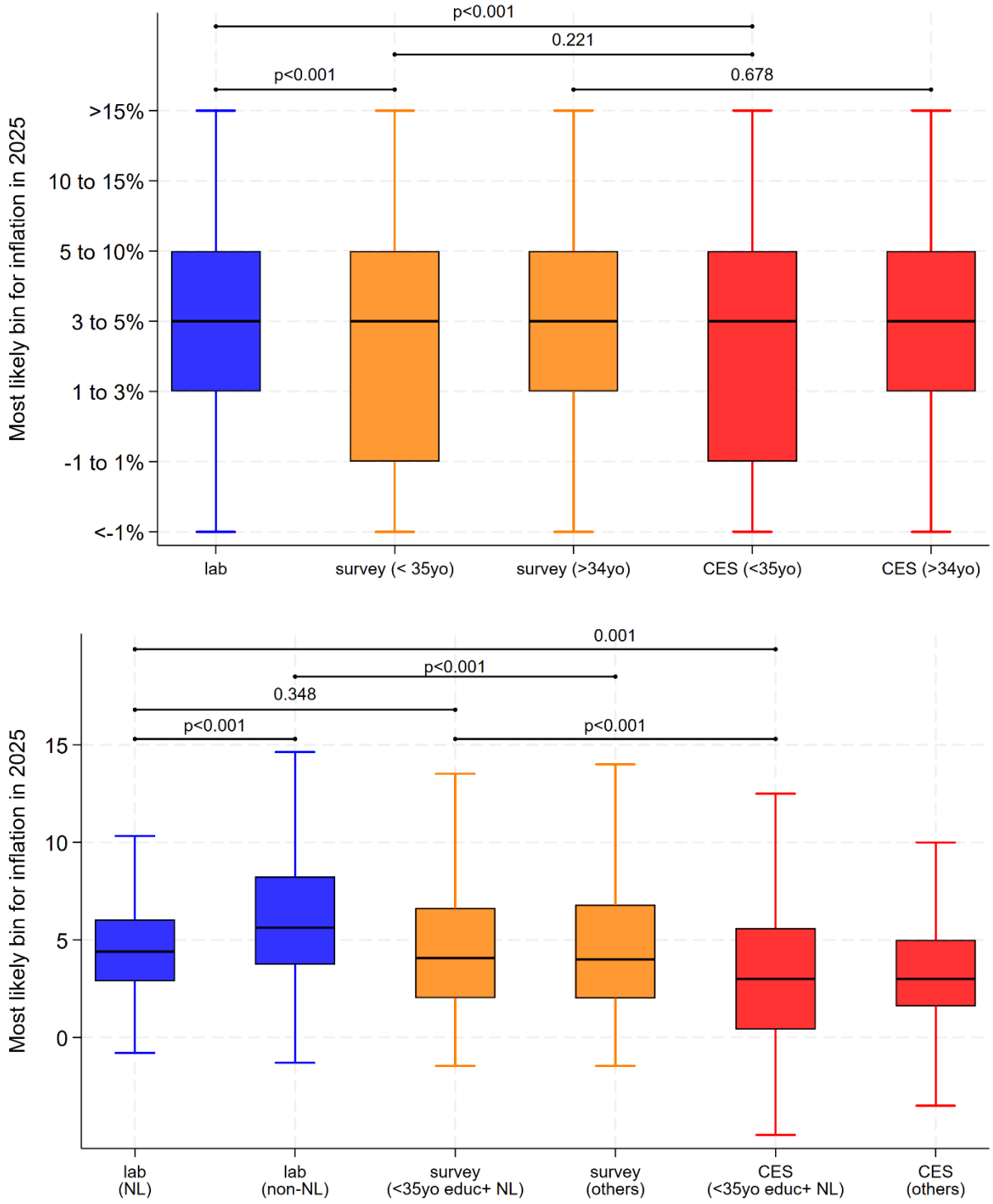
Notes: P-values correspond to the rank-sum test of equality of medians. All expectations measures are formatted so as to use the same scale. The CES inflation perception for 2022 corresponds to question c1020 in rounds 35 to 39 (namely November 2022 to March 2023) for Dutch respondents only. The DHS does not elicit inflation perception.

Appendix Figure 7: Comparing 2023 inflation expectations in our data with the DHS and the CES



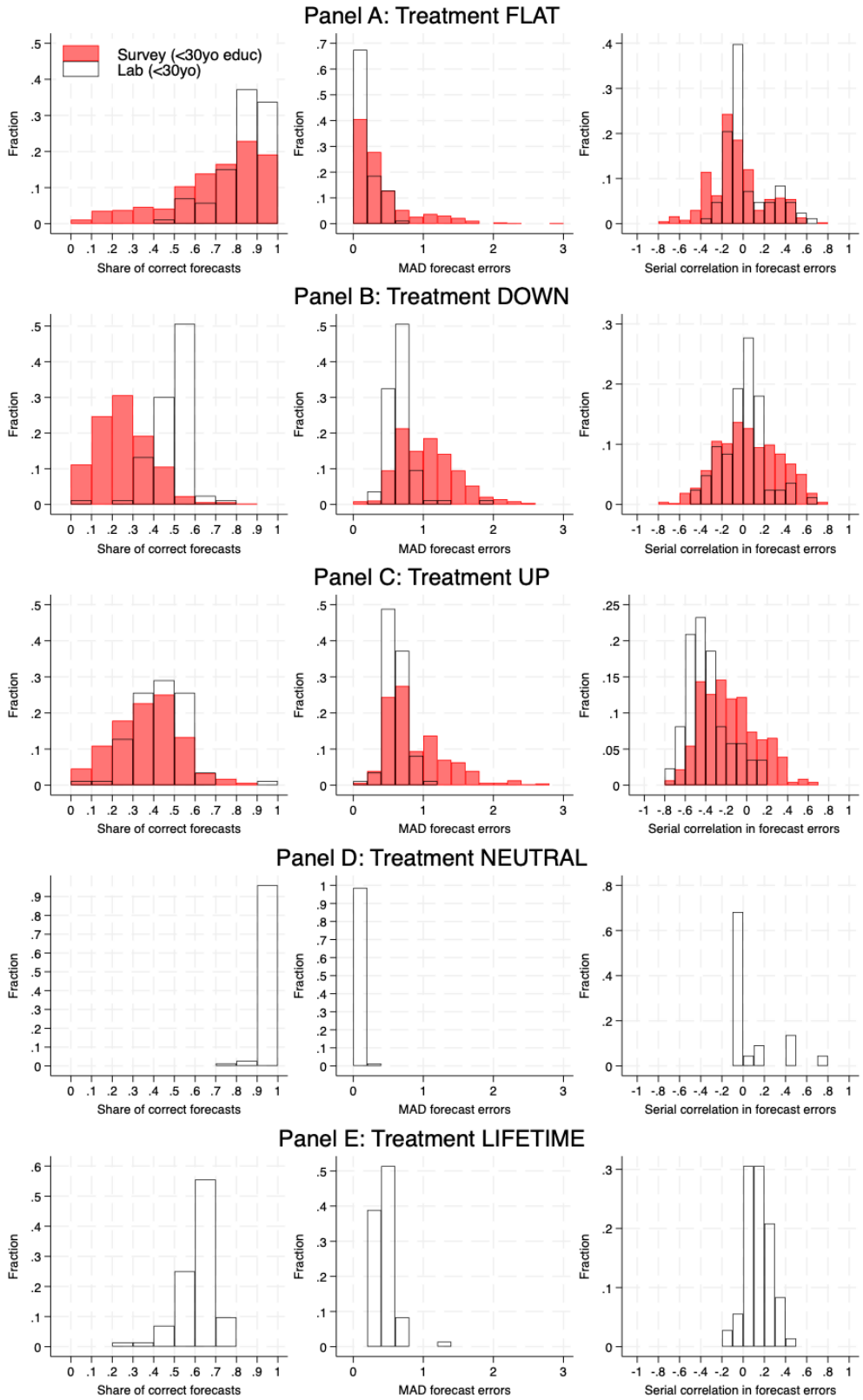
Notes: P-values correspond to the rank-sum test of equality of medians. All expectations measures are formatted so as to use the same scale. The CES inflation expectations for 2023 corresponds to question c1120 in rounds 35 to 39 (namely November 2022 to March 2023) for Dutch respondents only. Inflation expectations in the DHS corresponds to question pr0 of the income and health questionnaire of 2022.

Appendix Figure 8: Comparing 2025 inflation expectations in our data with the CES Survey



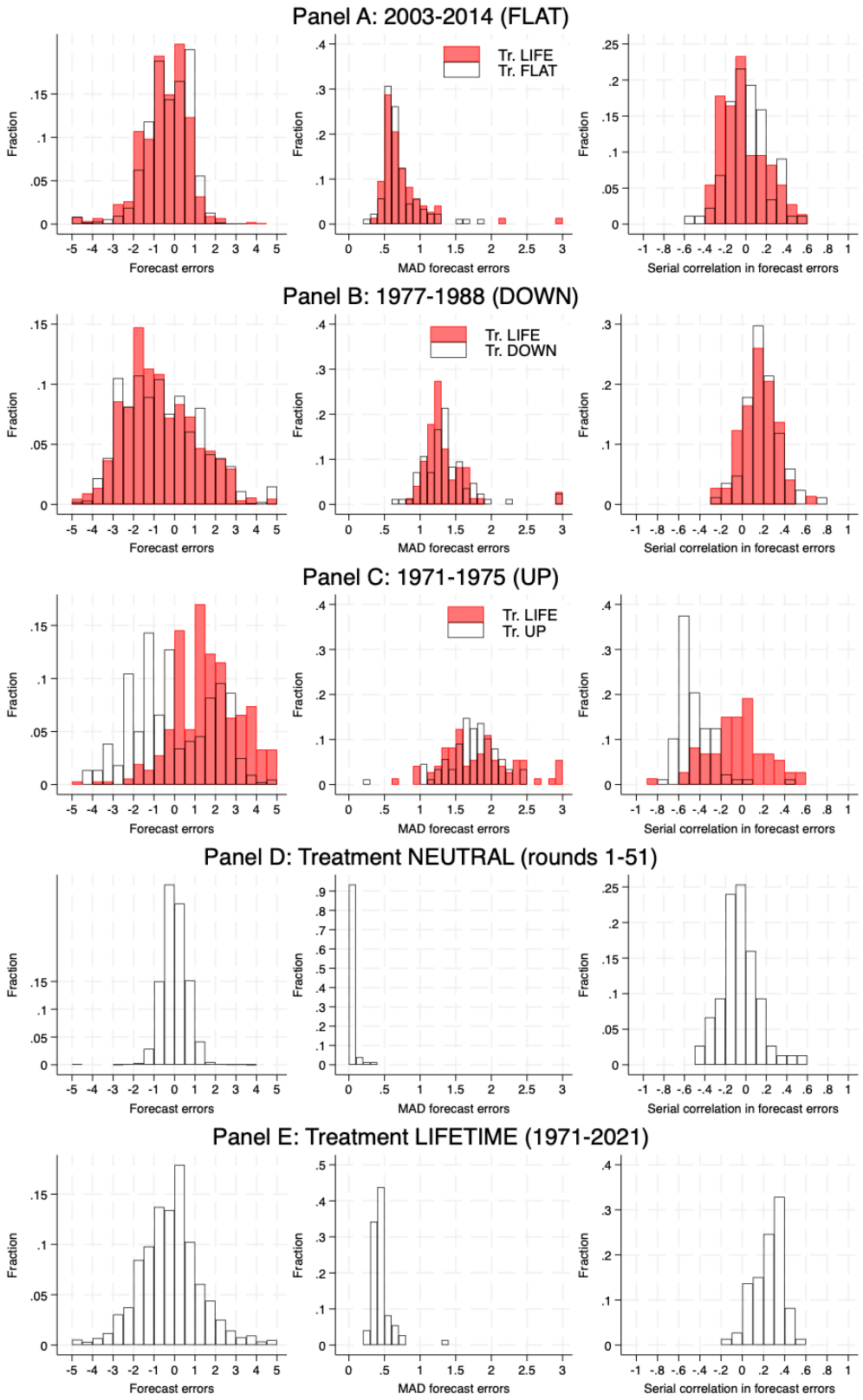
Notes: P-values correspond to the rank-sum test of equality of medians. The CEs question is c1220 in rounds 35 to 39 (namely November 2022 to March 2023) for Dutch respondents only. The DHS does not elicit three-year-ahead inflation expectations.

Appendix Figure 9: Forecast Errors for the Young and Educated in Lab and Survey



Notes: This figure plots same results as Figure 7 in the text but for the subset of survey participants with some college education and who are less than 30 years old.

Appendix Figure 10: Forecast Errors during Common Periods for Different Treatments



Notes: This figure plots same results as Figure 7 in the text for common samples focusing on those who did life treatment versus those doing other treatments.

Appendix Table 1: Comparing Survey and Lab Participants along Demographics.

	Dutch population	Survey wave #1	Survey wave #2	Lab
	(1)	(2)	(3)	(4)
Female	50.3	50.3	51.9	54.6
Income				
Poor	25.7	26.7	26.8	4.5
Middle class	34.2	45.8	49.0	21.3
Rich	25.7	11.3	9.3	74.2
No declared income	-	11.2	9.8	1.4
Age				
30s or less	18	17.5	14.8	.
40s	18	18.1	16.7	.
50s	22	23.3	23.3	.
60s or more	42	41.2	45.1	.
Region				
Noord	10	10.3	10.9	.
Oost	21	21.0	20.7	.
West	48	47.7	45.9	.
Zuid	21	21.0	22.5	.
Housing				
Own outright	9.2	10.1	10.7	.
Own with mortgage	48.8	52.2	52.1	.
Rent	40.8	35.7	35.6	.
Other	1.1	1.9	1.6	.
Education				
Low	24	24.4	24.2	0.0
Middle	29	33.9	34.1	0.0
High	37	41.7	41.7	100.0
NL	84	94.1	95.6	20.3
Household size				
1	35	20.7	22.6	0.6
2-3	46	51.7	56.8	23.6
4 or more	19	27.6	20.6	75.9

Notes: The table reports demographic statistics for the general Dutch population (column 1), the first survey wave (column 2), the follow-up survey wave (column 3), and the lab (column 4). NL refers to a person holding Dutch citizenship and/or having spent most of their life in the Netherlands. Lab questions about household size and income refer to the household in which the subjects grew up.

Appendix Table 2: Effects of Lifetime Inflation Memories on Inflation Expectations by Perceived Source of Inflation.

	Survey			Lab		
	(1)	(2)	(3)	(4)	(5)	(6)
Recalled increasing inflation [omitted: no recollection]						
One episode [inflation was for policy reasons]	0.081	0.008	0.029	1.283	1.150	0.620
	(0.289)	(0.279)	(0.270)	(1.125)	(0.974)	(0.956)
Two or more episodes [inflation was for policy reasons]	0.410	0.170	0.165	0.946	0.586	0.005
	(0.291)	(0.274)	(0.269)	(1.076)	(0.927)	(0.926)
Do not remember	0.070	0.066	0.090	-1.236	-1.164	-0.753
	(0.165)	(0.164)	(0.161)	(1.193)	(1.157)	(1.055)
Inflation was for exogenous reasons						
One episode	-0.416	-0.263	-0.231	-1.997***	-1.634***	-1.297**
	(0.296)	(0.287)	(0.278)	(0.617)	(0.629)	(0.535)
Two or more episodes	-0.382	-0.119	0.043	0.111	0.074	0.162
	(0.339)	(0.321)	(0.314)	(0.615)	(0.599)	(0.560)
Inflation was for other reasons						
One episode	-0.137	-0.182	-0.170	-2.567***	-2.074**	-1.605*
	(0.422)	(0.405)	(0.398)	(0.885)	(0.828)	(0.827)
Two or more episodes	0.597	0.679	0.783	-0.339	-0.231	0.134
	(0.547)	(0.529)	(0.531)	(0.862)	(0.845)	(0.720)
Do not know or missing reason for inflation						
One episode	-0.023	0.058	0.048	-1.789	-1.737	-1.961
	(0.281)	(0.271)	(0.263)	(1.242)	(1.528)	(1.465)
Two or more episodes	-0.170	0.053	0.106	-2.207**	-1.889**	-0.854
	(0.292)	(0.275)	(0.270)	(1.025)	(0.926)	(0.852)
Recalled decreasing inflation [omitted: no recollection]						
One episode [disinflation was for policy reasons]	-0.763***	-0.681**	-0.543*	-0.910	-1.118	-0.288
	(0.292)	(0.296)	(0.292)	(1.034)	(0.990)	(0.862)
Two or more episodes [disinflation was for policy reasons]	-1.074***	-0.860**	-0.806**	1.930**	-1.601	-1.018
	(0.368)	(0.356)	(0.353)	(0.762)	(1.801)	(1.864)
Do not remember	-0.144	-0.069	-0.028	-0.325	-0.212	-0.112
	(0.120)	(0.118)	(0.115)	(0.364)	(0.359)	(0.318)
Disinflation was for exogenous reasons						
One episode	-0.137	-0.013	-0.146	-1.239	-0.326	-0.005
	(0.359)	(0.360)	(0.354)	(1.266)	(1.106)	(1.043)

Two or more episodes	0.026	0.078	0.155	-6.123***	-2.727	-2.617
	(0.461)	(0.447)	(0.447)	(0.701)	(1.907)	(2.177)
Disinflation was for other reasons						
One episode	0.300	-0.024	-0.351	1.403	1.878	0.778
	(0.662)	(0.617)	(0.594)	(1.423)	(1.439)	(1.413)
Two or more episodes	1.197	0.833	0.882			
	(1.174)	(1.160)	(1.146)			
Do not know or missing reason for inflation						
One episode	0.024	0.093	0.050	2.288	2.002	0.774
	(0.309)	(0.312)	(0.307)	(2.264)	(1.957)	(1.799)
Two or more episodes	-0.118	-0.105	-0.096			
	(0.392)	(0.379)	(0.377)			
Max recalled increase in inflation	0.004	0.023*	0.005	0.063**	0.089***	0.043
	(0.013)	(0.013)	(0.013)	(0.031)	(0.033)	(0.032)
Max recalled decrease in inflation	-0.001	-0.021	0.001	-0.202*	-0.112	-0.149*
	(0.019)	(0.018)	(0.019)	(0.113)	(0.089)	(0.082)
Weighted experienced inflation (Malmendier-Nagel)	-0.177	-0.348	-0.097	4.327	6.793*	3.506
	(0.194)	(0.427)	(0.418)	(3.624)	(3.513)	(3.278)
Perceived inflation in 2022			0.151***			0.290***
			(0.010)			(0.031)
Controls	No	Yes	Yes	No	Yes	Yes
Observations	9,032	9,032	9,032	506	498	498
R-squared	0.010	0.061	0.095	0.106	0.286	0.427

Notes: The table reports results for the regression of inflation expectations on memories of inflation/disinflation and demographic characteristics (age, gender, educational attainment, number of children, income, home status, household size, financial literacy, political preferences, knowledge of economic issues, trust in the ECB, perceived goals of the ECB, geographical location). All regressions are OLS. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Appendix Table 3: Effects of Lifetime Inflation Memories on Inflation Expectations by Confidence in Experience.

	Survey			Lab		
	(1)	(2)	(3)	(4)	(5)	(6)
Recalled increasing inflation [omitted: no recollection]						
One episode [reasonably certain]	-0.324	-0.207	-0.118	-0.126	0.133	-0.087
	(0.248)	(0.245)	(0.244)	(1.054)	(0.919)	(0.915)
Two or more episodes [reasonably certain]	0.208	0.177	0.243*	0.628	0.192	-0.400
	(0.153)	(0.150)	(0.147)	(1.070)	(0.948)	(0.932)
Do not remember	0.073	0.065	0.086	-1.270	-0.864	-0.425
	(0.165)	(0.164)	(0.161)	(1.170)	(1.164)	(1.066)
Sure about increasing inflation						
One episode	-0.198	-0.160	-0.181	-0.509	0.056	-0.307
	(0.266)	(0.261)	(0.258)	(0.545)	(0.522)	(0.471)
Two or more episodes				0.758	1.218*	1.340**
				(0.661)	(0.626)	(0.561)
Unsure about increasing inflation						
One episode	-0.016	0.105	0.038	-0.370	-0.806	-0.859*
	(0.312)	(0.300)	(0.301)	(0.628)	(0.583)	(0.489)
Two or more episodes				-0.345	0.286	0.378
				(0.635)	(0.636)	(0.578)
Do not know or missing certainty						
One episode	0.423*	0.262	0.182			
	(0.236)	(0.233)	(0.232)			
Two or more episodes						
Recalled decreasing inflation [omitted: no recollection]						
One episode [reasonably certain]	-0.986***	-0.756***	-0.633**	-0.606	-0.384	0.307
	(0.296)	(0.288)	(0.282)	(1.169)	(0.958)	(0.859)
Two or more episodes [reasonably certain]	-0.899**	-0.464	-0.345	2.120***	-1.428	-0.572
	(0.424)	(0.439)	(0.457)	(0.623)	(1.697)	(1.757)
Do not remember	-0.157	-0.075	-0.032	-0.361	-0.243	-0.158
	(0.120)	(0.118)	(0.115)	(0.368)	(0.353)	(0.313)
Sure about disinflation						
One episode	0.499	0.642	0.767*	-1.937	-1.949*	-0.385
	(0.460)	(0.458)	(0.452)	(1.380)	(1.120)	(1.211)
Two or more episodes	-0.594	-0.729	-0.635	-6.236***	-2.307	-0.840

	(0.539)	(0.528)	(0.566)	(0.960)	(2.063)	(2.017)
Unsure about disinflation						
One episode	0.169	0.256	0.248	0.113	-0.095	-0.887
	(0.397)	(0.396)	(0.389)	(1.398)	(1.254)	(1.079)
Two or more episodes	-0.388	-0.612	-0.581	-7.223***	-3.992**	-5.296***
	(0.534)	(0.546)	(0.571)	(0.787)	(2.023)	(2.021)
Do not know or missing certainty						
One episode	0.240	0.122	0.065			
	(0.305)	(0.296)	(0.290)			
Two or more episodes	-0.249	-0.461	-0.516			
	(0.434)	(0.449)	(0.466)			
Max recalled increase in inflation	0.022	0.031**	0.011	0.070**	0.095***	0.047
	(0.015)	(0.015)	(0.015)	(0.030)	(0.032)	(0.030)
Max recalled decrease in inflation	-0.006	-0.017	0.008	-0.204*	-0.108	-0.136*
	(0.021)	(0.020)	(0.021)	(0.106)	(0.077)	(0.078)
Weighted experienced inflation (Malmendier-Nagel)	-0.166	-0.334	-0.088	4.700	7.974**	2.774
	(0.194)	(0.426)	(0.416)	(3.720)	(3.453)	(3.367)
Perceived inflation in 2022			0.151***			0.303***
			(0.010)			(0.033)
Controls	No	Yes	Yes	No	Yes	Yes
Observations	9,032	9,032	9,032	506	498	498
R-squared	0.010	0.060	0.095	0.080	0.277	0.430

Notes: The table reports results for the regression of inflation expectations on memories of inflation/disinflation and demographic characteristics (age, age^2, gender, educational attainment, number of children, income, home status, household size, financial literacy, political preferences, knowledge of economic issues, trust in the ECB, perceived goals of the ECB, geographical location). All regressions are OLS. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.

Appendix Table 4: Verifying Randomization.

	Treatment groups											
	Control		Flat		Down		Up		Neutral		Lifetime	
	R^2	p-val	R^2	p-val	R^2	p-val	R^2	p-val	R^2	p-val	R^2	p-val
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Survey												
Age: [18, 30)	0.010	0.355	0.007	0.853	0.011	0.266	0.011	0.189				
Age: [30, 39)	0.051	0.012	0.035	0.435	0.029	0.068	0.045	0.000				
Age: [40, 49)	0.029	0.684	0.029	0.204	0.039	0.000	0.025	0.933				
Age: [50, 59)	0.024	0.605	0.030	0.175	0.033	0.171	0.034	0.000				
Age: [60,80)	0.018	0.108	0.012	0.004	0.012	0.703	0.022	0.000				
Lab	0.038	0.149	0.025	0.000	0.016	0.062	0.008	0.761	0.019	0.514	0.029	0.409

Notes: The dependent variable is equal to one if a person is assigned in a treatment group and zero otherwise. Linear probability models are estimates. The table reports R^2 and p-value for F-tests for each regression.

Appendix Table 5: Treatment Effects of Inflation Expectations and Uncertainty for year 2025.

Dep.var.: Posterior	Implied mean			Implied uncertainty			Point prediction, follow-up survey wave
	Survey: All	Survey: Young & some college+	Lab	Survey: All	Survey: Young & some college+	Lab	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\mathbb{I}\{Treat = Flat\}$	-0.341***	-0.537**	-1.210***	-0.250***	-0.348***	-0.587***	-0.743***
	(0.055)	(0.222)	(0.193)	(0.029)	(0.128)	(0.127)	(0.146)
$\mathbb{I}\{Treat = Down\}$	-0.186***	0.386*	-0.371*	-0.026	0.272**	-0.153	-0.408***
	(0.057)	(0.231)	(0.210)	(0.030)	(0.130)	(0.144)	(0.148)
$\mathbb{I}\{Treat = Up\}$	0.579***	0.649***	0.858***	0.146***	0.191	0.461***	-0.215
	(0.059)	(0.240)	(0.234)	(0.030)	(0.123)	(0.130)	(0.149)
$\mathbb{I}\{Treat = Neutral\}$			-0.532**			-0.135	
			(0.212)			(0.134)	
$\mathbb{I}\{Treat = Lifetime\}$			-0.439**			-0.171	
			(0.199)			(0.144)	
$Prior$	0.465***	0.344***	0.301***	0.694***	0.688***	0.672***	0.323***
	(0.007)	(0.030)	(0.024)	(0.006)	(0.024)	(0.025)	(0.018)
Observations	9,168	649	495	9,120	647	504	3,245
R-squared	0.396	0.252	0.380	0.650	0.545	0.553	0.126

Notes: The table reports results for the regression of posterior inflation expectations or uncertainty on prior expectations or uncertainty. Interactions of treatment dummies and priors are not included. Only age brackets are included as controls. Columns (1)-(6) use posteriors measured immediately after the treatments. Column (7) uses posteriors measured in the follow up wave. The set of regressors in column (7) is the same as in column (1). Column (7) is run on the full sample (i.e., old and young survey respondents All regressions are Huber (1964) robust. Heteroskedasticity robust standard errors are reported in parentheses. ***,**,* denote statistical significance at 1, 5, and 10 percent levels.