INFLATION EXPECTATIONS AND HOUSEHOLD SPENDING: DIFFERENT PATTERNS IN LOW AND HIGH-INFLATION SETTINGS

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Abstract: Using multiple randomized control trials (RCTs) implemented through surveys of U.S. households, I show that household spending responses to exogenous changes in inflation expectations depend on the inflation environment. In times of low inflation, higher inflation expectations arising from information treatments lead households to reduce their consumption of durable goods (the negative income/uncertainty effect dominates). In contrast, in times of high inflation, I find a sharp positive effect on durable spending after an exogenous shock to inflation expectations (intertemporal substitution effect dominates).

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I. Introduction

Inflation expectations play an essential role in macroeconomic dynamics affecting households' consumption-saving decisions. Standard models predict that households should increase consumption today in anticipation of higher prices in the future (intertemporal substitution channel). However, consumers associate higher inflation with a worsening economy which can lead households to reduce current consumption (negative income/uncertainty channel). Therefore, how inflation expectations affect spending decisions can be time varying and depend on economic condition. Which of these forces dominates is a key empirical question that is the focus of this paper.

To characterize how the association between inflation expectations and spending decisions evolves with the economic environment, I rely on a series of randomized control trials (RCTs) implemented through surveys of US households from 2018 to 2023, a period with both low and high inflation. In these RCTs, random subsets of individuals receive information about recent inflation, Fed's inflation target, and the FOMC's inflation forecast. I document that these treatments can serve as a powerful tool to generate variation in inflation expectations of the treated households relative to those in the control group.

Exploiting the exogenously generated variation in inflation expectations, I study their causal effect on the spending decisions of households. I find striking differences in how consumption spending reacts to inflation expectations changes under low and high inflation settings. In times of low inflation, exogenously higher inflation expectations lead households to reduce their consumption of durable goods. In contrast, in times of high inflation, I find a sharp positive effect on durable spending after an exogenous increase in inflation expectations. The economic magnitude of the differences is large. For example, in 2018Q2, when inflation was around 2%, a one percentage point increase in inflation expectations *lowered* the probability of a household purchasing a durable goods by 1.2 percentage points. In contrast, in 2022Q3, when inflation reached its peak of 8.2%, a one percentage point exogenous increase in inflation expectations *increased* the probability of a household purchasing a large durable good by about 2.7 percentage points.

What underlies the differential response of spending on durable goods to inflation expectations depending on the level of inflation? Exogenously raised inflation expectations can induce several channels that can make the consumption of durable goods move in different directions. Conventional macroeconomic models emphasize the intertemporal substitution channel, in which households raise current consumption in anticipation of higher future prices. This effect should be stronger for durable expenditures because they are easier to substitute over time. However, households understand that inflation is an endogenous variable, and they can adjust their broader economic expectations when they receive news about inflation. If households interpret inflation as having supply-side origins, raising inflation expectations could lead to negative income/uncertainty effects, and they would lower their spending induced by a precautionary motive. My instrumental variable approach yields an estimate of the *total* effect of how exogenous changes in inflation expectations ultimately affect households' spending decisions. That is, it recovers the combined effect of the different channels. As a result, the total effect can change as the relative strength of these channels changes with the environment, such as the level of inflation. To investigate this hypothesis, I use a variety of additional sources and evidence.

I start with analyzing the negative income/uncertainty channel. Using microdata from the Michigan Survey of Consumers (MSC) from 1978 to 2024, I show that the perceived correlation between inflation and unemployment expectations is *positive* and remains stable over time. In other words, households associate high inflation with a bad state of the economy where incomes can be low due to job loss, decreases in the purchasing power of fixed nominal wages, or increased uncertainty. Then, I take advantage of the fact that different RCTs were implemented in different inflation environments. I use information treatments to study how exogenous variation in inflation expectations affects unemployment expectations. Consistent with the correlational evidence, when households predict exogenously higher inflation, they also expect higher unemployment, and the magnitude of these effects is stable over time: a one percentage point increase in inflation expectations leads to a rise in unemployment expectations of around 0.1-0.2 percentage points. These results suggest that the strength of the cross-learning does not

vary with the level of inflation, which could be consistent with a stable income/uncertainty channel.

Then, I turn to evaluate the intertemporal substitution channel. Using the historical time series for spending attitudes from the Michigan Survey of Consumers, I show that in times of high inflation, like the late seventies and early eighties, around 70 percent of households provide "prices will increase" as a reason to have a positive durable spending attitude. In contrast, in times of low inflation, households believe it is a good time to buy a car or a big item, mainly when they perceive low prices. Next, I consider whether cross-section differences in households' inflation expectations are related to durable readiness. I show that households that predict higher inflation also tend to believe that now is a good time to buy a durable because prices will increase. This correlation is stronger during high inflation and remains statistically significant even after controlling for household fixed effects. Although this exercise relies on correlations, this *narrative* evidence helps to understand the causal mechanism that households ascribe to inflation.

Also relevant is the association between inflation and interest rate expectations. If households anticipate that the central bank will raise nominal interest rates more than inflation, the implied change in the perceived real interest rate will lead households to save more and spend less. Using the Michigan Survey of Consumers, I show that households perceived a positive correlation between inflation and interest rates that is remarkably stable over time. These results suggest that the implied change in the perceived real interest rates induced by inflation news does not vary with the inflation environment. Moreover, I provide causal evidence that households don't revise their interest rate expectations in response to exogenous changes in their inflation expectations. Avoiding paying higher prices for durable goods seems to be the most promising explanation for the positive link between inflation expectations and durable spending in times of high inflation.

Finally, I show that in times of high inflation, an exogenous rise in inflation expectations raises the consumption of durables only for households with enough resources to purchase durable goods. In contrast, under a low inflation environment, an exogenous rise in inflation expectations reduces the spending on durable goods for households with both low and high

financial wealth. This result is consistent with the notion that households' financial wealth does not restrict the negative income/uncertainty effect.

Motivated by the empirical evidence, I propose a simple model to rationalize the differential response in durable expenditures to inflation expectations depending on the inflation level. The model has the essential ingredients to understand the negative income/uncertainty and intertemporal substitution effects through which inflation expectations affect consumption decisions. To illustrate analytically how inflation expectations affect individuals' consumption decisions, I use a simple money-in-the-utility type model with no uncertainty where the precautionary motive is played by a preference for liquidity function that leads households to accumulate liquid assets in response to higher inflation. Then, I developed a quantitative model with uncertainty and adjustment costs for durable goods. I find a U-shaped relationship between the durable goods over liquid assets ratio and the level of inflation.

These results have important implications. In times of low inflation and interest rates, policies that operate through expectations channels, such as quantitative easing and forward guidance,[1] may be less effective if households interpret news about inflation as being bad for the economy. Monetary policy communications should provide a broader message about the aggregate economy to avoid households erroneously interpreting inflation as having supply-side origins (Candia, Coibion, and Gorodnichenko 2020). On the other hand, in times of high inflation, higher expectations induce households to purchase more durable goods, which could increase aggregate demand and raise prices further, thus potentially triggering an inflation spiral. This means that policy prescriptions based on raising inflation expectations of households are likely counterproductive and thus central banks should emphasize objectives (low and stable inflation in the medium run) rather than tools (e.g., allow inflation to be temporarily high to address a recession).

This paper closely relates to the literature examining the association between household inflation expectations and consumption-savings decisions. In an early contribution, Bachmann,

[1] With nominal rates stuck at the "zero lower bound," the perceived real interest rate is directly determined by the inflation expectations. A rise in inflation expectations implies lower real interest rates, which would encourage consumption and investment through traditional mechanisms: households would spend more while firms raise their capital and employment level induced by reducing the user cost of capital and labor.

Berg, and Sims (2015) found little systematic relationship between households' inflation expectations and readiness to spend on durable goods in the Michigan Survey of Consumers. Later research has favored a positive link between spending and inflation expectations (Crump et al. 2015, Dräger and Nghiem 2018, Duca, Kenny, and Reuter 2020). Vellekop and Wiederholt (2020) document that households with higher inflation expectations are more likely to purchase a car. Burke and Ozdagli (2021) find that higher inflation expectations stimulate consumption spending on durable goods for more educated households. In this line, D'Acunto et al. (2023) also present evidence that controlling for heterogeneous characteristics of households is essential to establish a positive relationship between higher inflation and durable spending.

More recent studies have used randomized control trials to deal with the potential endogeneity between inflation expectations and spending. Using a survey of Dutch households, Coibion et al. (2023) show a negative causal effect of inflation expectations on durable spending, mainly driven by households becoming less optimistic about their real income when they revise their inflation expectations upward. Consistent with this study and using a similar identification strategy, Coibion, Gorodnichenko and Weber (2022) find that households with exogenously higher inflation expectations are less likely to have purchased a large household durable.[2] In contrast, D'Acunto, Hoang and Weber (2016) exploiting an anticipated change in the VAT in Germany, also a country of low inflation, show a causally positive effect of inflation expectations on German households' readiness to buy durables. As discussed in Weber et al (2020), available evidence suggests that inflation expectations affect economic decisions, but the lack of consistency across studies indicates that the mechanisms relating inflation expectations to household decisions still need to be better understood. Relative to these studies, my main contribution is to consider several RCTs with a fixed design over time and to show that the inflation environment affects the sign of the association between inflation expectations and household spending.

[2] However, some discrepancies arise from non-durable spending. Using both self-reported survey questions and Nielsen Homescan Panel, Coibion, Gorodnichenko and Weber (2022) find that households with higher inflation expectations increase their non-durable spending, while Coibion et al. (2023) find that non-durable goods consumption seems to decline when Dutch households lower their inflation expectations, but the coefficients are imprecisely estimated.

Finally, this paper contributes to the budding literature in macroeconomics that combines surveys with randomized information to provide causal evidence on how news about policy or the economy affects expectations and how these expectations translate into economic decisions (e.g., Armona, Fuster and Zafar 2019, D'Acunto et al. 2020, Roth and Wohlfart 2020, Fuster, Kaplan, and Zafar 2021, Beutel and Weber 2022, Kumar et al. 2023). Much of this work has focused on how changes in inflation expectations coming from information treatments affect the actual decisions of individuals (see Candia, Coibion, and Gorodnichenko for a survey). Closely related to this paper is Weber et al. (2023), who also use RCTs coming from the surveys of U.S. households participating in the Nielsen Homescan Panel to study how a changing inflation environment affects the learning process of individuals. Relative to this study, I go one step further and use the exogenous variation in belief from those RCTs to study how the inflation expectations of U.S. households affect their spending decisions in low-and high inflation times. Using multiple RCTs within the same country allows me to identify the role of the level of inflation on the differential response of household consumption to inflation expectations.

The paper is organized as follows. Section II describes the randomized provision of information and its effects on inflation expectations. Section III compares inflation expectations' causal effects on spending decisions in low- and high-inflation environments. Section IV describes different channels through which changes in inflation expectations can affect consumption. Section V evaluates intertemporal substitution and negative income channels under different inflation environments. Section VI develops a simple partial equilibrium model to rationalize the empirical results, while Section VIII concludes.

II. Effects of Information Treatments on Inflation Expectations

Fundamental to my empirical strategy are the information treatments that generate exogenous variation in the inflation expectations of individuals. I rely on six RCTs applied to U.S. households participating in the Nielsen Homescan Panel from 2018Q2 to 2023Q4. Random sub-groups of participants are assigned to either a control group or one of several treatment groups which receive information about inflation. The control group is not provided with any additional information. Specifically, I focus on three types of information treatments: i) past inflation over the last twelve

month (π_t); *ii*) the inflation target of the Federal Reserve (π^*); *iii*) Federal Open Market Committee short-term inflation forecast ($F_t^{FR}\pi_{t+h}$).

To understand the effects of information treatments on the inflation expectations of individuals over time, one can start with the standard approach to learning. If households were to respond as Bayesians, their beliefs should be a weighted average of their initial beliefs and the signal they receive. Intuitively, posterior beliefs should be related to initial belief and the treatment as $Posterior_i = (1 - G) \times Prior_i + G \times Signal_i$, where G is the Kalman Gain, which captures how (relatively) informative the signal is perceived. So, we should observe convergence in belief captured by a reduction in the cross-sectional posterior inflation expectations (Coibion et al. 2023, and Coibion, Gorodnichenko and Weber 2022).

The effect of the treatment on beliefs can be evaluated by regressing households' posterior beliefs ($E_i^{post}\pi$) on their priors ($E_i^{pre}\pi$) according to the following specification:

$$E_i^{post}\pi = \alpha + \beta \times E_i^{pre}\pi + \sum_j \delta_j \times Treat_{i,j} + \sum_j \gamma_j \times \left(Treat_{i,j} \times E_i^{pre}\pi\right) + error_i \quad (1)$$

where $Treat_{i,j}$ is an indicator variable equal to 1 if household *i* is in treatment group *j* where $j \in \{\pi_t, \pi^*, F_t^{FR}\pi_{t+h}\}$ identifies the different treatment groups, and 0 otherwise. Posterior beliefs are measured with a point forecast, while prior beliefs are measured using the implied mean from a distributional question in which individuals report probabilities to pre-specified bins of possible inflation rates over the next twelve months.[3] β represents the relationship between prior and posterior of the control group. $\gamma_j \in [-\beta, 0]$ captures the change of the relationship between priors and posteriors for households in treatment group *j.* A negative γ_j indicates that individuals in treatment group *j* are placing weight on the signal that they received.[4] This coefficient should be more negative for more informative signals. Finally, δ_j captures the level effect of the information treatment. It may be positive or negative depending on how the prior beliefs compares to the signal. From this regression, one would expect $\alpha = 0$ and $\beta = 1$ since the control group is not

[3] I use mid-points of the bins to compute the implied mean. For the top bin (inflation will be greater than 12%) I use 14% as the mid-point. For the bottom bin (deflation will be greater than 12%), I use -14% as the mid-point.
[4] If $\beta + \gamma_j = 0$, households are placing all the weight on the provided information in treatment *j*.

receiving any information. However, inflation expectations before and after the treatment are measured using different questions, leading to an estimated coefficient of β that may be different from one.[5] Notice that $|\gamma_j|/\beta$ represents the weight that household place to the signal, that is, the Kalman gain G. I use Huber regressions to systematically deal with outliers and influential observations.

I report estimates of this regression across waves in Panel A of Table 1. Across all waves and information treatments, I find a negative and statistically significant coefficient γ, meaning that households consistently revise their belief toward the provided inflation information. However, in times of high inflation, individuals respond less to the provided information. For example, in 2018Q2, when inflation was 2.5%, the average weight across treatment groups placed to the signal was 0.72. In contrast, in 2022Q3, when inflation was 8.2%, the average weight placed on the signal was 0.33. This finding was first documented by Weber et al. (2023), which attributes the decrease in the power of information treatments to better awareness of publicly available news about inflation in high-inflation environments. Although the revisions get smaller, information treatment continue to serve as a source of exogenous variation in inflation expectations to study their causal effect on spending decisions of households under different inflation environments.

The results above provide a simple benchmark for assessing the effect of information treatments on individuals' beliefs. It is also instructive to assess the average effects of information treatments on individuals' inflation expectations under different inflation environments. To do so, for each RCT, I regress the change in the inflation expectations of households (relative to their pre-treatment belief) on a dummy variable for their treatment group, that is,

$$E_i^{post}\pi - E_i^{pre}\pi = a + \sum_j b_j \times Treat_{i,j} + error_i, \qquad (2)$$

where b_j, the coefficient on the treatment indicator variable $Treat_{i,j}$, should be interpreted as the average effect of receiving the corresponding information treatment j on individual inflation expectations relative to the control group. Note that as shown in the estimates of equation (1),

[5] Haaland et al. (2023) argue that in designs with a pure control group, like the RCTs used in this paper, asking the same question twice might confuse respondents in the control group. Therefore, we use two question formulations to elicit priors and posteriors.

information treatments can push inflation expectations up or down depending on where the signal is relative to the prior. The average effect estimated in equation (2) is therefore a net effect.

Panel B of Table 1 reports the results of b_j across survey waves. For all three treatment groups, households adjust their belief toward the treatment they receive (Panel D contains information on treatments). Generally, prior beliefs about inflation are greater than the information provided in the treatment, so households, on average, revise their inflation expectations downward. An exception is past inflation treatment in 2022Q3. Households in this group were told that the most recent 12-month inflation rate was 8.5% while their average prior expected inflation was 6.9% (see Panel C). The average respondent in this group increases their forecast by approximately 0.5 percentage points. Also, the magnitude of the revision depends on how far initial beliefs are relative to the treatment. For example, average revisions are larger in 2018Q2 and 2023Q3.

Finally, the effects across treatment groups are very similar when treatments convey broadly similar inflation number to households, as in 2018Q2, 2021Q2, or 2023Q4, suggesting that households do not differentiate between these conceptually different metrics (Coibion, Gorodnichenko, and Weber 2022). For example, in 2021Q2, the information provided for past inflation, Federal Reserve's inflation target, and FOMC's inflation forecasts were 2.6, 2.0, and 2.3%, respectively, and all three information groups reduce their average inflation forecasts by 0.8-0.9% relative to the control group.

In short, I find that information treatments are effective in changing individuals' inflation expectations. In the next section, I use the resulting exogenously generated variation in beliefs to study how consumption spending responds to inflation expectations.

III. Time-Varying Inflation and the Changing Effects of Inflation Expectations on Spending Decisions

In this section, I study how spending decisions react to changes in inflation expectations depending on the inflation environment. To assess how and whether the effect of inflation expectations on spending decisions has changed over time, I rely on the fact that a sequence of

RCTs and follow-up surveys were applied in different inflation regimes. I compare the effects of exogenous variation in inflation expectations stemming from information treatments on spending decisions in low- and high-inflation environments. Using multiple RCTs within the same country allows me to identify the role of the inflation environment on the differential response of household consumption to inflation expectations.

Importantly, this instrumental variable approach yields an estimate of the *total* effect of how exogenous inflation expectations changes ultimately affect households' spending decisions. This effect combines several channels through which inflation expectations may affect household consumption (Coibion et al. 2023, and Coibion, Gorodnichenko and Weber 2022). For example, a rise in inflation expectations may induce an intertemporal substitution effect captured by the Euler equation, which raises current consumption, but also an income effect, which lowers current consumption due to a weaker economic outlook (Candia, Coibion, and Gorodnichenko 2020).

To assess how exogenous changes in inflation expectations affect the spending decisions of households, I rely on measures of spending coming from the follow-up wave run one quarter after the information provision. Households were asked to report whether they had purchased a durable good in the previous months (house or apartment, car, large home appliance or electronics), the amount of spending on those durables goods, and average monthly spending on food (including groceries, dining out, take-out food, and beverages), debt and rent payments (mortgages, rent, auto loans, student loans, etc.) and other goods and services.

I begin by characterizing how changes in inflation expectations affect the extensive margin of durable goods purchases. Following Coibion, Gorodnichenko and Weber (2022), I estimate the following regression:

$$\mathbf{1}(Dur\ purchas)_{i,t+1} \times 100 = \beta E_{it}^{post}\pi + \gamma E_{it}^{prior}\pi + \psi \mathbf{1}(PurchasePlan)_{it} + \theta \boldsymbol{X}_{it} + error_{i,t+1} \quad (3)$$

where $\mathbf{1}(Durable\ purchas)_{i,t+h}$ is an indicator variable indicating whether household *i* reported having purchased any large durable good (house, car, or other big-ticket item) over the previous six months in the next quarter after the treatment, $E_{it}^{post}\pi$ is the posterior inflation expectation of household *i* after the treatment (if any), $E_{it}^{prior}\pi$ is the prior inflation expectation

of household *i* before the treatment, $\mathbf{1}(PurchasePlan)_{it}$, an indicator variable indicating whether the household reported that they planned to purchase any large durable good over the following six months measured prior to the information treatment, and $\boldsymbol{X}_{it}$ is a vector of household controls.[6] I instrument for the posterior inflation expectations using equation (1) augmented with $\mathbf{1}(PurchasePlan)_{it}$ and $\boldsymbol{X}_{it}$. Following Coibion et al. (2023), I use Huber regression in the first stage, then a jackknife procedure is used to remove outliers and influential observations in second stage.

Panel A of Table 2 reports results across survey waves. There is significant variation over time in the estimates of how inflation expectations affect durable goods purchases. In 2018Q2, when inflation was 2.5%, a one percentage point increase in inflation expectations *reduces* the probability of a household purchasing a durable goods by 1.2 percentage points. As inflation rises, we observe a completely different pattern. In 2021Q2, when inflation was 4.9%, a one percentage point increase in inflation expectations *increased* the probability of a household purchasing a durable good by 1.8 percentage points. For 2022Q3, when inflation reached its peak of 8.2%, I find an even stronger positive relationship between inflation expectations and household spending on durables: one percentage point exogenous increase in inflation expectations *increases* the probability of a household purchasing a large durable good by about 2.7 percentage points.[7] As the inflation rate started to decline (see waves 2022Q4 and 2023Q2), the relationship between inflation expectations and durable consumption became weaker but is still positive. Finally, another RCT was implemented in 2023Q3, where inflation was again under 4%.[8] I find that households with inflation expectations higher by one percentage point reduces the probability of purchasing durable goods by 3.2 percentage points. Notice that the F-statistic

[6] The list of controls includes gender of the respondent, age and age squared of the respondent, presence and number of children, education of household head (a set of indicator variables), household income, and household size.

[7] Durable inflation was exceptionally high reaching 18% in 2022Q1 (see Appendix Figure 1).

[8] Using Google searches for "inflation" across 37 countries, Korenok, Munro, and Chen (2023) show that attention doubles when the inflation rate exceeds a threshold of 4%.

for the first stage is high, which indicates that the treatments generate substantial exogenous variation in inflation expectations, and the estimated coefficients are precise.[9]

I then turn to focus on how changes in inflation expectations affect the amount of spending on durables. To do so, I estimate the following regression:

$$\log(1+S^{dur})_{i,t+1} \times 100 = \beta E_{it}^{post}\pi + \gamma E_{it}^{prior}\pi + \kappa \log\,(1+S^{dur})_{it}^{plan} + \theta \boldsymbol{X}_{it} + error_{i,t+1} \qquad (4)$$

where $\log(1+S^{dur})_{i,t+1}$ is the log of one plus the spending in durable goods over the previous six months of household *i* reported in the next quarter after the treatment and $\log\,(1+S^{dur})_{it}^{plan}$ is the log of one plus planned spending in durable goods of household *i* measured prior to the information treatment. I use the same instrumenting strategy for inflation expectations.

Panel B of Table 2 reports results from IV Tobit regressions across survey waves.[10] Consistent with the results obtained for durable goods spending, I find a remarkable variation in the estimates of how inflation expectations affect durable goods spending depending on the inflation environment. In times of relatively low inflation (2018Q2 and 2023Q3), I find a strong negative relation between inflation expectations and total durable spending. These negative effects are economically large. For example, in 2023Q3, a one percentage point exogenous increase in inflation expectations *reduces* total durable expenditures by 4.5 percent. In contrast, in times of high inflation, like 2022Q3, households with exogenous inflation expectations higher by one percentage point *increase* spending in durable goods by 6.4.[11]

Finally, I focus on total non-durable spending. To do so, I use the same empirical specification for total expenditure on durable goods (equation 3) but replace the dependent variable with the log of total non-durable goods spending. I also replace log of one plus planned

[9] Appendix Table 2 reports equivalent estimates for different types of durable goods: houses, cars, and other big-ticket items. I find qualitatively similar effects across time of inflation expectations for cars and big-ticket items spending. Reliable inference for houses is not possible due to infrequent purchases.

[10] This procedure is necessary because only 20% of households have purchased large, durable goods.

[11] The effect of higher inflation expectations on durable consumption is persistent. Appendix Table 2 shows results equivalent to Table 2, using the durable spending reported in two survey waves after the information provision (generally after two quarters).

spending in durable goods with the log of average monthly expenditures in goods and services in the previous three months. Panel C of Table 2 reports results across survey waves. Unlike the estimated effects on durable goods and the extensive margin of durable goods purchases, I find a weak response of spending on non-durable goods to changes in inflation expectations, which does not vary depending on the inflation environment.[12] According to Coibion et al. (2023), a weak response of spending on non-durable goods is consistent with a small variation of non-durable spending over the business cycle.[13]

In summary, my results suggest that the effect of inflation expectations on durable goods purchases depends on the inflation environment. In times of low inflation, households reduce their spending on durable goods in response to higher inflation expectations. In contrast, in times of high inflation, I find a sharp positive effect on durable spending after an exogenous shock to inflation expectations.

IV. Inflation Expectations and Consumption: Rationalizing the RCT Evidence.

What underlies the differential response of spending to inflation expectations depending on the level of inflation? Exogenously raising inflation expectations can induce several channels that can make consumption move in different directions. To fix ideas, it is helpful to recall the relationship between household spending and the various factors determining it. Consider the following general consumption function:[14]

$$C_{it} = C\left(\{pref_{i,t+h};\ E_{it}i_{t+h} - E_{it}\pi_{t+1+h}; E_{it}Y_{i,t+h}\}_{h=0}^{h=T};\ W_{it}\ \right)$$

[12] Appendix Table 3 provides results for food spending (including groceries, dining out, take-out food, and beverages), showing a negative and statistically significant relationship between inflation expectations and food spending.

[13] Since households participated in the survey repeatedly and several RCTs were applied, one potential concern is that information treatments provided in previous waves could affect the estimates. Weber et al. (2023) observe that the RCT set-up should be robust to this concern, as households assigned to different treatment groups in previous waves should be equally present in the control and treatment groups of the current RCT. Moreover, some panel refreshment takes place in Nielsen Survey. To address this concern, Appendix Table 4 shows results when I restrict the sample to households who had not received any information treatment in the previous quarter. The coefficients are qualitative and quantitatively similar to those obtained in Table 2.

[14] Samuelson (1969) and Merton (1969) provide a general framework to study the Income Fluctuation Problem. The main simplifying assumption is that income is exogenous, allowing for more realistic assumptions for consumer behavior.

$pref_{i,t+h}$ captures the preferences of household *i* in time *t+h*, and it covers, for example, patience, attitude toward risk, willingness to substitute over time, etc. All those factors captured by the lifetime utility functional form. $E_{it}i_{t+h} - E_{it}\pi_{t+1+h}$ is the expected real interest rate (or expected rate of return) in time *t+h,* $E_{it}Y_{i,t+h}$ is the expected real income, and W_{it} is the initial financial wealth. Inflation expectations can affect many elements at the same time. As suggested by theory, inflation expectations can affect consumption through their impact real interest rates, which captures the relative price of consumption across time. Changes in short-term inflation expectations can also affect long-term inflation expectations.[15] A decrease in current real interest rates or the expected path of real interest rates, should increase current consumption and reduce savings, since the relative price of current consumption lowers. The increase in consumption should be higher for durable goods because households can easily substitute durable purchases over time (D'Acunto, Hoang, and Weber 2016). This is the intertemporal substitution channel highlighted in standard macroeconomic models.

Changes in inflation expectations may also impact nominal interest rate expectations $E_{it}i_{t+h}$. Suppose households anticipate that the central bank will raise nominal interest rates more than point-for-point when inflation rises (i.e., the Taylor principle). In that case, the implied change in the perceived real interest rate can lead households to save more and spend less.[16] Therefore, how inflation expectations affect nominal interest rate expectations is another channel through which inflation expectations affect consumption decisions.

Empirical evidence suggests that there are many ways in which inflation expectations affect household economic decisions. Providing information about inflation can lead households to change their expectations about other macroeconomic variables. Extensive literature has shown that higher inflation expectations are associated with a worse economic outlook (see Candia, Coibion, and Gorodnichenko 2020 for a review). If households believe inflation is driven

[15] Households' short-term and long-term inflation expectations are highly correlated (Kumar, Afrouzi, Coibion and Gorodnichenko 2015), so exogenously higher short-term inflation expectations should raise long-term inflation expectations, affecting the expected path of real interest rates.

[16]This mechanism relies on the "ambitious" assumption that households understand the Fisher equation and the Taylor principle. In 2019Q1, households were asked, "Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?" Only 50.7% of households respond less than today (7.7% more than today, 25.9% same as today, and 15.8% don't know).

by supply-side factors, higher inflation expectations may trigger unemployment fears and reduce real income expectations, leading households to reduce their spending consistent with a precautionary motive. Similarly, more uncertainty about the economic outlook may be perceived as a negative future income shock. Changes in the expected income $E_{it}Y_{i,t+h}$ (and its variance) capture the more pessimistic economic outlook. I call this mechanism the negative income/uncertainty channel.

My instrumental variable approach yields an estimate of the *total* effect of how exogenous inflation expectations changes ultimately affect households' spending decisions. That is, it recovers the combined effect of the different channels. As a result, the total effect can change as the relative strength of these channels changes with the inflation environment. In the next section, I use the Michigan Survey of Consumers to provide narrative and cross-sectional evidence that the intertemporal substitution channel becomes stronger in times of high inflation. I complement this survey with Nielsen RCTs and the New York Fed of Consumer Expectations to show that the income/uncertainty channel is stable over time; that is, it does not depend on the inflation environment, and households do not associate changes in inflation expectations to changes in nominal interest rate expectations.

V. Inspecting the Channels

In this next section, I evaluate these channels under different inflation environments. First, I consider the negative income effect, where higher inflation expectations are associated with a worse economic outlook. Second, I consider the intertemporal substitution effects where households want to move their spending on durable goods forward in anticipation of higher prices. Third, I consider the effect of inflation expectations on nominal interest rates. Finally, I explore the heterogeneity from the survey of U.S. households participating in the Nielsen Homescan Panel to test predictions.

5.1. Negative Income/Uncertainty Channel

What can explain why households reduce their durable goods spending when they have higher inflation expectations in times of low inflation? Extensive literature has documented that

households hold a supply-side view of unemployment and inflation, in which high inflation is associated with worse economic outcomes. Andre, Pizzinelli, Roth, and Wohlfart (2019) argue that U.S. households use simple "good-bad" heuristics to relate different macroeconomic variables, which leads them to associate inflation with a bad state of the economy. Using U.S. survey data, Kamdar (2018) documents that households have a stagflationary view of inflation in which high inflation is associated with a bad economy, which contrasts with recent developments. Another interpretation comes from Coibion et al. (2023). They show that Dutch households don't change their net nominal income in response to exogenous changes in inflation expectations, which implies that higher inflation expectations are associated with lower perceived real income. Hence, households perceived low inflation periods as periods where the economy is expanding. A rise in inflation expectations is perceived as bad for the economy, leading to negative income effects.

How does the perceived correlation between inflation and economic outlook vary over the inflation environment? One way to answer this question is to use the Michigan Survey of Consumers (MSC). This survey has a quantitative question about inflation expectations and a qualitative question about unemployment expectations over the next 12 months for a long period. Households participating in this survey are asked whether they expect unemployment to be more than now (coded as +1), the same (coded as 0), or less than now (coded as -1). In Table 3, after taking out time-fixed effects, I regress unemployment forecasts on inflation forecasts, both in levels (Panel A) and using revisions in both unemployment and inflation expectations (Panel B). I do it for the full sample, and I also split the sample into different time periods. I find that regardless of the time period being analyzed (or level of inflation), households who predict higher inflation also tend to expect higher unemployment. This correlation is stable over time and remains statistically significant even after controlling for respondent fixed effects. For comparison, professional forecasters hold a demand-driven view of inflation where higher inflation is associated with a lower unemployment rate (see panels C and D).[17]

[17] Appendix Table 5 presents equivalent results for the correlation between inflation expectations and aggregate economic conditions. In the MSC, households are asked whether they expect business conditions in the whole country to be better (1), about the same (0), or worse (-1) a year from now. Households that predict higher inflation also tend to expect worse business conditions (see Panels A and B). Panels C and D shows results for the perceive

Next, I go beyond this correlational approach and use the information treatments to study how exogenous variation in inflation expectations affects unemployment expectations. To do so, I rely on the fact that several survey waves in the Niesen Homescan Panel elicit individuals' unemployment expectations before and after providing inflation news. Prior to the information treatments, half of the households in the sample were asked to provide a point forecast about their unemployment rate expectations in 12 months which represents the prior belief of the household. Following the information treatments, all households (including in the control group) were asked to provide a point forecast for the unemployment rate expectations at the end of the next year, which represents the posterior belief of the household. From these questions I can identify the causal effect of inflation expectations on unemployment expectations. I estimate the following regression:

$$E_i^{post} unem = \beta E_i^{post} \pi + \gamma E_i^{prior} \pi + \kappa E_i^{prior} unem + \theta \boldsymbol{X}_i + error_i \quad (5)$$

where $E_i^{post} unem$ is the posterior unemployment expectation of household *i* after the Treatment (if any) and $E_i^{prior} unem$ is the prior unemployment expectation of household *i* before the treatment.

Table 4 reports results across survey waves. Consistent with a supply-side view of inflation, when households raise their inflation expectations, they also expect a worse economic outcome. However, the economic magnitude is relatively small: a one percentage point increase in inflation expectations leads to a rise in unemployment expectations of around 0.1-0.2 percentage points. Notice that regardless of the level of inflation, the effect of exogenously higher inflation expectations on unemployment expectations is relatively stable over time.

One potential concern could be that households do not extrapolate aggregate conditions to their personal situations. To explore this issue, Figure 1 plots a binscatter of the relationship between the expected probability of losing a job during the next 12 months reported in the Nielsen survey against inflation expectations. There is a clear positive relationship, indicating that

correlation between GDP growth and inflation for professional forecasters from the SPF, confirming that they hold a demand-driven view of inflation.

households anticipating higher inflation levels also tend to believe that the probability of losing their job is higher: a one percentage point increase in inflation expectations is associated with an increase in the likelihood of losing the job of 0.46 percentage points.[18] Another way to address this concern is to rely on quantitative questions about income growth and inflation expectations from the New York Fed's Survey of Consumer Expectations (SCE). Figure 2 shows a binscatter plot of the relationship between households' belief about real income growth expectations against their belief about inflation over the next 12 months for the period 2014-2024. I do so both in levels (Panel A) and using revisions in income growth and inflation expectations at the individual level (Panel B). Consistent with Coibion et al. (2023), a one percentage point increase in inflation expectations can be associated with a reduction in the same proportion of real income growth expectations. This result remains strong after controlling for household fixed effects. Furthermore, it is remarkable stable over time (Appendix Figure A3 shows equivalent binscatters by year).[19]

In summary, households interpret news about inflation as bad for the economy, which leads to negative income effects. This effect does not depend on the inflation environment. So, to explain the positive relation of inflation expectations and durable consumption in times of high inflation, the intertemporal substitution channel through which households move their spending on durable goods forward in anticipation of higher prices in the future must become stronger in times of high inflation. This is what I examine next.

5.2. Intertemporal Substitution Channel

A positive response of consumption spending to higher inflation expectations could be explained by the standard intertemporal substitution channel arising in the Euler equation. If households

[18] Appendix Figure A2 presents binscatters by wave.

[19] Additionally, I use the following question from the MSC: "During the next year or two, do you expect that your income will go up more than prices will go up (coded as 1), about the same (coded as 0), or less than prices will go up (coded as -1)?". Then I regress real income forecasts on inflation forecast, both in levels and revisions (see Panels A and B in Appendix Table 6). The estimated correlations are strikingly similar as those obtained for aggregate business conditions. Panels C and D in Appendix Table 6 perform the same analysis for personal finances expectations. These results confirm that households associate higher inflation with worse personal economic outlook.

anticipate higher prices in the future, the relative price of present consumption decreases, stimulating current consumption. The intertemporal substitution channel should be stronger for durable goods because, in contrast to nondurable goods, households can more easily substitute purchases of durable goods over time.

D'Acunto, Hoang and Weber (2016) link households' inflation expectations and their willingness to purchase durable goods. Using a difference-in-differences identification strategy, which exploits an anticipated change in the VAT in Germany, they show a causally positive effect of inflation expectations on German households' readiness to buy durables. To the extent people fail to recognize that VAT changes can have general equilibrium effects, this natural experiment can identify the intertemporal substitution effect since the unexpected increase in VAT is linked to higher future prices rather than adverse income effects. Could the intertemporal substitution channel be stronger in times of high inflation?

In a first pass at the data, I rely on the historical time series for spending attitudes from the Michigan Survey of Consumers to address this question. Since 1978, this survey has collected opinions about whether it is a good or bad time to buy a variety of goods, including large households' durables, cars, and houses. Moreover, households report the *reasons* supporting their opinions about buying conditions. For example, a household can report that now is a good time to buy a car because prices are low, or interest rates will rise. In other words, households provide a narrative for the causal mechanism. Among households reporting that it is a good time to buy a durable, I plot the time series of the share of people providing a specific reason to support their attitude spending in Figure 3, along with the time series of U.S. inflation. Generally, households think it is a good time to buy a house when interest rates are low (Panel A). In contrast, households believe it is a good time to buy a car or a big item mainly when they perceive low prices (panels B and C); however, interest rates also play an important role for cars. Regardless of the variety of goods, a small share of households report that "prices will increase" as a reason for having a positive spending attitude. However, in times of high inflation, a large share of households report that it is a good time to buy a durable in anticipation of higher prices. For example, in the late seventies and early eighties, a period of double-digit inflation, the share of households reporting that it is a good time to buy a house, car, or large item because prices

will increase is around 70 percent. We observed a similar pattern for the post-COVID-19 period, where inflation peaked at approximately 8%.

Using MSC micro-data, we can also consider whether cross-section differences in households' inflation expectations are related to durable readiness. Moreover, taking advantage of the panel dimension of the MSC survey, we can exploit within-household variation in inflation forecasts to control for time-invariant unobserved characteristics at the household level. In order to isolate the intertemporal substitution channel, I create a dummy variable indicating whether the households report it is a good time to buy a durable (house, car, or large item) because prices will increase. The dummy equals 0 if the household provides a different reason than "prices will increase" to support that now it is a good time to buy a durable or if the households believes that now it is a bad time for a durable good purchase. In Table 5, I regress this dummy variable on inflation forecasts, both in levels (Panel A) and using revisions (Panel B), again, for the full sample, and splitting the sample into different time periods. In all specification, I control for time -fixed effects. Households that predict higher inflation also tend to believe that now is a good time to buy a durable good because prices will increase. This correlation remains statistically significant even after controlling for respondent fixed effects.[20] Furthermore, the correlation is stronger in times of high inflation, both in levels and revisions. The explanatory power of expected inflation is relatively high in times of high inflation, with an R^2 of 0.27 when inflation exceeds 5 percent, while R^2 is only 0.036 in times of low inflation (<3%).

To be clear, these results are correlations. However, one may give more weight to these results because I focus on *reasons* for purchases of durable goods. That is, households explain how they would react in a given setting. This resembles hypothetical scenario questions (also known as viniettes) in Andre et al. (2019) and other studies aiming to understand causal relationships in the economy.

An additional potential concern could be that households do not associate aggregate inflation with the inflation of goods and services that they typically purchase. Figure 4 plots a binscatter of the relationship between households' expected inflation and expected inflation rate

[20] Appendix Table 7 reports equivalent estimates for different types of durable goods: houses, cars, and other big-ticket items. I find qualitatively similar effects.

in their typical spending. There is a clear positive relationship, the slope coefficient is close to one, and the explanatory power of their expected spending inflation is exceptionally high, with an R2 of 0.98. So, households associate aggregate inflation with the inflation for goods and services they consume.

5.3. Nominal Interest Rate Expectations Channel

Exogenous changes in inflation expectations could also affect interest rate expectations. To address this concern, I rely again on the Michigan Survey of Consumers to analyze the perceived correlation between inflation and interest rate expectations over different inflation environments. In this survey, households are asked whether they expect interest rates for borrowing during the next 12 months to go up, stay the same, or go down. I coded the responses as (1) they will go up, (0) stay the same, and (-1) they will go down. For different time periods and controlling for time fixed effects, I regress interest rate expectations on inflation expectations (see Table 6), both in levels (Panel A), and using revisions in both interest rates and inflation expectations (Panel B). Households perceived a positive correlation between inflation and interest rates, which is remarkably stable over time.[21] Hence, a differential reaction of interest rate expectations to inflation expectations changes depending on the inflation environment is unlikely to explain my results of consumption decisions under low and high inflation settings.

Next, I use the exogenously generated variation inflation expectations to provide causal evidence of how these expectations affect interest rate expectations. I focus on RCTs implemented in 2021Q3, 2022Q3, 2023Q2, and 2023Q4, all of which included US saving accounts return expectations before and after providing information treatments. I use the same empirical specification for unemployment expectations (Equation 5) but replace prior and posterior unemployment expectations with saving account return expectations. Table 7 reports results across survey waves. The estimated effects on inflation expectations are small and generally not statistically different from zero. Therefore, household don't revise their saving interest rate

[21] In comparison, the perceived correlation between inflation and interest rate expectations for professional forecasters from the SPF (which includes quantitative forecasts for three-month Treasury bill interest rates) fluctuates over time (see panels C and D).

expectations in response to exogenous changes in their inflation expectations.[22] Considering the exceptionally high inflation rate of durable goods in the post-COVID19 period (Appendix Figure 1), moving forward purchases of durable goods to avoid higher prices in the future seems to be the most promising rationalization for the positive link between inflation expectations and durable spending in times of high inflation.

5.4. Additional Testable Implications

In times of high inflation, an exogenous rise in inflation expectations should increase the consumption of durable goods more for those who have sufficient financial resources to move forward with their purchases of durable goods. To test this prediction, I explore the heterogeneity in terms of liquidity constraints across U.S. households participating in the Nielsen Homescan Panel. I split the sample into two sub-samples based on whether the household has a total financial investment (excluding housing) worth more than one month of combined household income. Table 8 reports equivalent estimates of Table 2 by households' financial wealth. The differences are remarkable. For example, in 2022Q3, when inflation reached its peak of 8.2%, a one percentage point exogenous increase in the inflation expectations of households with high financial wealth *increases* the probability of a household purchasing a durable good by more than 4 percentage points. It also *increases* the spending on durable goods by 10.2% (see Panel A). In contrast, the estimated effects of inflation expectations on spending decisions are small and insignificant for households with low financial wealth (see Panel B). A different pattern arises in times of low inflation. In 2023Q3, when inflation was 3.7%, an exogenous rise in inflation expectations *reduces* the spending on durable goods (intensive and extensive margin) for both

[22] Households participating in the New York Fed's Survey of Consumer Expectations (SCE) are asked to provide a quantitative forecast about the percent chance that 12 months from now, the average interest rate on saving accounts will be higher than it is now. After controlling for household fixed effects, a one percentage point increase in inflation expectations is associated with only a 0.14 percentage point increase in the probability of higher interest rates on savings accounts over the next year (see Panel B in Appendix Figure 4). I find similar results for mortgage rate expectations. RCTs 2019Q1 and 2023Q3 elicit mortgage interest rate expectations before and after providing inflation news. The estimated coefficient on inflation expectation was statistically different from zero only for the 2023Q3 wave, albeit a small one: a one percentage point exogenous increase in inflation expectations increased mortgage interest rate expectations by 0.13 percentage points. This finding is consistent with Coibion, Georgarakos, Gorodnichenko, and Weber (2023), who find that providing information about inflation (past inflation and FOMC forecasts about future inflation) has a small effect on perceived nominal rates.

types of households.[23] This result is consistent with the notion that households' financial wealth does not restrict the negative income effect.

VI. Inflation Expectations and Households Decisions: Theoretical Exercise

The results in the previous section show that household spending responses to exogenous changes in inflation expectations depend on the inflation environment. In times of low inflation, exogenously higher inflation expectations lead households to reduce their consumption of durable goods. In contrast, in times of high inflation, households raise durable spending in anticipation of higher future prices. In this section, I propose a simple model to rationalize the differential response in durable expenditures to inflation expectations depending on the inflation level. The model has the essential ingredients to understand the negative income and intertemporal substitution effects through which inflation expectations affect consumption decisions. To guide the analysis through analytical expressions, I start with a simple money-in-the-utility type model with no uncertainty where the precautionary motive is played by a preference for liquidity function that leads households to accumulate liquid assets in response to higher inflation. This model is meant to build intuition. Then, I develop a quantitative model with adjustment costs for durable goods, where liquidity preference comes naturally from uncertainty about future income, where the probability of being employed depends on the inflation level.

6.1. Simple Model

The representative household gets utility from nondurable consumption, C_t, the stock of durable consumption, D_t, and real money holdings, M_t/P_t, according to a CRRA additively separable utility function with the same coefficients of relative risk aversion γ for nondurable and durable consumption, and real money holdings.[24] P_t denotes the price index. The stock of durable goods depreciates at a constant rate $\theta \in (0,1)$. In each period, households have an endowment of nominal income Y_t and enter the period with a bond holding B_{t-1} and money holding M_{t-1}.

[23] Appendix Table 8 reports equivalent estimates for different types of durable goods: houses, cars, and other big-ticket items. I find qualitatively similar effects across time of inflation expectations for cars and big-ticket items spending.

[24] Sidrauski (1967) and Michaillat and Saez (2015), among many others, introduce real balances in households' utility functions as a useful shortcut for capturing the fact that money reduces transaction costs.

Bonds earn a nominal gross return of R_t. The inflation rate is set exogenously at level $\pi \equiv (P_{t+1} - P_t)/P_t \; \forall t$, but I will vary π to study comparative statics. Notice that in this model without uncertainty, actual inflation is equivalent to expected inflation. Households seek to maximize their lifetime utility given by:

$$\max \; \beta^s \sum_{s=0}^{\infty} \left(\frac{C_{t+s}^{1-\gamma}}{1-\gamma} + \frac{D_{t+s}^{1-\gamma}}{1-\gamma} + \phi(\pi) \frac{(M_{t+s}/P_{t+s})^{1-\gamma}}{1-\gamma} \right)$$

$$s.t. \qquad P_t C_t + P_t[D_t - (1-\theta)D_{t-1}] + B_t + M_t = Y_t + R_t B_{t-1} + M_{t-1}$$

where $\phi(\pi)$ is a preference for liquidity function, such that $\phi'(\pi) > 0$. Since households associate inflation with more income uncertainty, in this simple model without uncertainty, ϕ captures precautionary saving through the accumulation of liquid assets that reflect that households want to be financially prepared to face emergencies.[25] Intuitively, households want to maintain a smooth path of consumption, so they want to avoid having no resources and thus to insure against a bad economy in the future. Precautionary savings are made through the accumulation of liquid assets since they can be traded without incurring transaction costs, in contrast to real assets. The nominal budget constraint states that consumption of nondurable goods, purchases of new durables goods, and bond and money purchases must equal total resources available in period *t*: nominal income, money holdings, and the payoff from previous-period bond purchases.

Let λ_t be the Lagrange multiplier associated to the nominal budget constraint. The optimality conditions are then given by:

[25] In this simple model, money holdings play the role of liquid assets since bond holdings don't appear in first-order conditions.

$$\left(\frac{C_{t+1}}{C_t}\right)^{\gamma} = \beta \frac{R_{t+1}}{1+\pi} \tag{6}$$

$$\left(\frac{C_t}{D_t}\right)^{\gamma} = 1 - \frac{(1+\pi)(1-\theta)}{R_{t+1}} \tag{7}$$

$$\left(\frac{C_t}{M_t/P_t}\right)^{\gamma} = \frac{1}{\phi(\pi)} \times \left[1 - \frac{1}{R_{t+1}}\right] \tag{8}$$

$$\left(\frac{D_t}{M_t/P_t}\right)^{\gamma} = \frac{1}{\phi(\pi)} \times \frac{R_{t+1}-1}{R_{t+1}-(1+\pi)(1-\theta)} \tag{9}$$

Under the assumption that higher inflation expectations do not affect nominal interest rate expectations (this assumption is consistent with the data), the intertemporal Euler equation for nondurable goods (equation 6) states that current consumption would increase relative to future consumption in response to higher inflation expectations.[26] From the intratemporal substitution equation between nondurable and durable goods (equation 7), we observe that durables increase relative to nondurable consumption when inflation increases. Intuitively, since durable goods depreciate slowly over time, one additional unit of durable goods purchased today would be more valuable if the price level increases in the future, since a fraction $(1-\theta)$ would still be available in the next period. From the intratemporal substitution equation between nondurable goods and money balances (equation 8), an increase in inflation expectations increases money holdings relative to nondurable spending. Notice that without imposing a preference for liquidity function, the ratio between nondurable consumption and money balances would not depend on inflation expectations.

Particularly interesting for us is the intratemporal substitution equation between durable goods and money balances (equation 9). There are two forces related to inflation acting in opposite directions. The term $1/\phi(\pi)$ comes from the precautionary motive, and higher inflation leads to a drop in durable goods relative to money holdings. In contrast, the term $(R_{t+1}-1)/(R_{t+1}-(1+\pi)(1-\theta))$ reflects the substitution effect between durable goods and money balances linked to their relative cost. Inflation erodes the real value of money, so higher inflation

[26] Additionally, I assume that changes in inflation do not affect future endowments of nominal income, so higher inflation leads to lower present-discounted value of real income. This is consistent with the evidence provided in section 4.1, showing that households associate higher inflation expectations with a reduction in the same proportion of real income. The negative income effect would imply a reduction in consumption of all the available goods.

increases the cost of holding money, generating a substitution effect toward durable goods (that is, real assets). The coefficient of relative risk aversion γ controls the curvature of both the precautionary motive, and substitution effect. Notice that the logarithm of the ratio between durable goods and money balances becomes additive between precautionary motive and substitution effect.

To illustrate these two opposite forces, I calibrate the model as follows. The coefficient of relative risk aversion to $\gamma = 2$, and the gross nominal bond return to R_t=1.00841 (average three-month treasury bonds quarterly rate). Based on Vestman et al. (2023), I set $\theta = 0.0359$. I assume the following functional form to the preference for liquidity function: $\phi(\pi) = a + b \times \pi$. To calibrate b, I use the Nielsen survey of U.S. households in the 2020Q1 wave to run a regression of the share of financial wealth allocated to liquid assets (cash and saving accounts) on expected inflation over the next three months. The slope coefficient is $b = 0.72$.

Figure 5 plots the logarithm of the ratio between durable goods and money holdings. There is a U-shaped relationship between durables goods over money holdings and inflation. In response to higher inflation, the precautionary motive dominates at initially low inflation levels. Households prefer to accumulate liquid assets to be prepared for emergencies. However, starting from high inflation levels, the loss of purchasing power of money is so high that households prefer to protect their wealth through the accumulation of durable goods.

6.2. Model with Uncertainty and Adjustment Costs

The previous model was a simple way to illustrate analytically how inflation expectations affect individuals' consumption decisions, particularly how they allocate their resources between durable goods and liquid assets, represented by money holdings. Next, I show that the U-shaped relationship between durable goods over liquid assets and inflation arises “naturally” in a quantitative model with uncertainty and adjustment cost of the durable goods. I continue treating inflation π as a parameter and focus on comparative statics to visualize the intuition. The setup is the same as the simple model, but now there is no preference for liquidity function:

$$\max \beta^s \sum_{s=0}^{\infty} \left(\frac{C_{t+s}^{1-\gamma}}{1-\gamma} + \frac{D_{t+s}^{1-\gamma}}{1-\gamma} + \frac{(M_{t+s}/P_{t+s})^{1-\gamma}}{1-\gamma} \right)$$

$$s.t. \quad P_t C_t + P_t D_t[1 + \eta \times \mathbb{I}(\Delta D_t \neq 0)] + B_t + M_t = Y_t + P_t(1-\theta)D_{t-1} + R_t B_{t-1} + M_{t-1},$$
$$(Y_t - 1)|\pi \sim Ber(c - d \times \pi),$$
$$P_t = (1+\pi)^{t-1}.$$

where $\mathbb{I}(\Delta D_t \neq 0)$ is an indicator variable that is one if households adjust their stock of durable goods. I assume that the adjustment cost is a fraction η of the nominal value of the stock of durable goods. The source of uncertainty comes uniquely from the possibility of losing the job; that is, with some probability the individual stop receiving the endowment of nominal income Y_t. Consistent with the evidence provided in Section 4.1, households associate higher inflation with a higher probability of losing their job. I assume that the probability of being employed relates to inflation according to the equation

$$probability = c - d \times \pi$$

To simulate the model, I follow Vestman et al. (2023) and set the adjustment cost for durable goods to $\eta = 0.15$. From the probability of losing a job versus inflation expectations regression (Figure 1), I set $c = 0.942$ and $d = 0.46$. Figure 6 plots the ratio between the stock of durable goods and liquid assets for different inflation levels. Similar to the previous model, this model predicts a U-shaped relationship between durable goods over liquid assets ratio and inflation. For annualized inflation rate values lower than approximately 4%, a rise in inflation reduces the desired stock of durable goods over liquid assets. The higher pessimism about the economic outlook induced by higher inflation leads households to increase their savings to be prepared for potential unemployment. Note that, for low levels of inflation, households choose to save in liquid assets rather than durables because the latter depreciate at a rate that it is faster than inflation and liquidating holdings of durables carries a high transaction cost. However, for higher inflation levels, the decrease in the purchasing power of money is so substantial that

households prefer to hedge against inflation through the accumulation of durable good assets. This pattern is consistent with the empirical RCT evidence I document in Section 2.

VII. Conclusion

Using a series of RCTs implemented through surveys of US households from 2018 to 2023, I show how consumption spending reacts to changes in inflation expectations depending on the inflation environment. In times of low inflation, exogenously higher inflation expectations arising from information treatments lead households to *reduce* their consumption of durable goods. In contrast, in times of high inflation, households *increase* durable spending in anticipation of higher future prices.

To rationalize this variation in the sensitivity of consumer spending to inflation expectations, I use additional information to document that the variation likely comes from the changes in the relative strength of substitution and income/uncertainty effects. When inflation is low, the income effect (households become more bearish on job prospects and thus accumulate larger precautionary savings) is stronger than the substitution effect. When the level of inflation is high, liquid nominal assets become less attractive as the store of value and households try to protect their purchasing power by buying real assets such as durable goods. These patterns are consistent with theoretical predictions of basic models with multiple assets and consumption goods.

My findings have important implications. Raising inflation expectations in low inflation environments can depress economic activity, implying that policies that operate through expectation channels, such as quantitative easing and forward guidance, may be less effective. On the other hand, raising inflation expectations in high inflation environments can be dangerous: people spend more and push prices up, thus launching an inflation spiral. In short, inflation expectations impact the economic decisions of households, and managing inflation expectations can provide a new channel to influence actual inflation. However, the management of expectations by policymakers should consider how the economic environment shapes the behavior of households to achieve their goals successfully. Moreover, policies aimed to move inflation expectations should emphasize the desired outcomes (e.g., low and stable inflation, full

employment) rather than specific transmission mechanisms. A holistic approach would help the public to correctly interpret the policy actions (Candia, Coibion, and Gorodnichenko 2020).

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Table 1. Household Responses to Treatments.

	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
Panel A. Posterior Beliefs by Treatments						
Treatment effect: Intercept						
Control (α)	1.640***	2.320***	3.802***	3.870***	3.733***	2.671***
	(0.108)	(0.066)	(0.140)	(0.158)	(0.149)	(0.121)
Relative to control group(δ)						
Past inflation	0.977***	0.348**	1.729***	1.568***	0.873***	0.384**
	(0.143)	(0.161)	(0.350)	(0.238)	(0.205)	(0.164)
Inflation target	0.746***	0.426***	-0.325	-0.120	-0.213	-0.154
	(0.144)	(0.152)	(0.263)	(0.222)	(0.192)	(0.163)
Inflation forecast	0.709***	0.215	-0.102	-0.182	-	0.277*
	(0.142)	(0.160)	(0.300)	(0.222)	-	(0.161)
Treatment effect: Slope						
Control (β)	0.828***	0.734***	0.543***	0.480***	0.484***	0.600***
	(0.024)	(0.012)	(0.017)	(0.021)	(0.023)	(0.020)
Relative to control group(γ)						
Past inflation	-0.642***	-0.384***	-0.132***	-0.167***	-0.112***	-0.295***
	(0.031)	(0.034)	(0.040)	(0.031)	(0.030)	(0.027)
Inflation target	-0.564***	-0.376***	-0.119***	-0.242***	-0.285***	-0.259***
	(0.033)	(0.034)	(0.036)	(0.031)	(0.030)	(0.028)
Inflation forecast	-0.592***	-0.379***	-0.281***	-0.253***	-	-0.388***
	(0.033)	(0.035)	(0.040)	(0.032)	-	(0.027)
Panel B. Average Household Responses to Treatments						
Past inflation	-1.239***	-1.023***	0.519***	0.163	-0.089	-1.143***
	(0.110)	(0.108)	(0.174)	(0.132)	(0.121)	(0.114)
Inflation target	-1.201***	-0.882***	-0.667***	-1.639***	-1.868***	-1.493***
	(0.108)	(0.106)	(0.169)	(0.138)	(0.123)	(0.111)
Inflation forecast	-1.197***	-0.965***	-1.643***	-1.338***	-	-1.679***
	(0.109)	(0.118)	(0.183)	(0.139)	-	(0.113)
Panel C. Actual, Expected and Perceived Inflation						
Actual inflation	2.5	4.9	8.2	6.4	4.9	3.7
Expected inflation	4.8	5.1	6.9	6.6	6.2	6.0
Perceived inflation	3.5	5.2	8.0	7.9	7.1	6.7
Panel D. Treatment Information						
Past inflation	2.3	2.6	8.5	7.8	6.0	3.0
Inflation target	2.0	2.0	2.0	2.0	2.0	2.0
Inflation forecast	1.9	2.3	2.6	2.8	-	2.5

Notes: The table reports household responses to inflation treatments. Panel A reports the slope and intercept in the following regression: $E_i^{post}\pi = \alpha + \delta * Treat_i + \gamma * Treat_i * E_i^{pre}\pi + \beta * E_i^{pre}\pi$. Panel B reports the immediate change in inflation expectations after the treatment of individuals in each treatment group relative to those in the control group (regression 1). Differences in beliefs are measured relative to initial beliefs measured before all treatments. Treatments are described in detail in the text. We control for respondent-specific controls. Results are from Huber robust regressions to control for outliers and influential observations. Robust standard errors are reported in parentheses. Panel C reports actual, expected, and perceived inflation. Panel D report statistics that were reported in information treatments.

Table 2. Effect of Inflation Expectations on Spending Decisions.

	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
	(1)	(2)	(3)	(4)	(5)	(6)
Actual Inflation	2.5	4.9	8.2	6.4	4.9	3.7
Panel A. Extensive margin, linear probability model, spending on durable goods.						
Posterior inflation expectations	-1.18***	1.82***	2.71***	0.62	2.55***	-3.17***
	(0.27)	(0.36)	(0.50)	(0.47)	(0.63)	(0.54)
Observations	4,787	4,804	2,596	2,433	1,925	2,905
1st stage F-stat	67.47	63.67	25.31	45.90	53.40	54.06
Panel B. Spending on durable goods, IV Tobit, log(spending)*100.						
Posterior inflation expectations	-1.14***	3.40***	6.43***	1.77*	2.10***	-4.45***
	(0.36)	(0.53)	(1.73)	(1.01)	(0.72)	(0.85)
Observations	4,703	4,756	2,558	2,433	1,897	2,887
1st stage F-stat	443.8	390.9	188.9	280.1	217.8	307.7
Panel C. Spending on non-durable goods, log(spending))*100.						
Posterior inflation expectations	-0.30	-0.07	-0.95	1.52	-0.92	-1.53
	(0.66)	(0.72)	(0.83)	(0.95)	(1.03)	(0.93)
Observations	3,189	4,717	2,571	2,460	1,897	2,904
1st stage F-stat	29.51	50.70	22.75	44.29	51.86	50.43

Notes: The table reports estimates from regressing spending measures (indicated by each panel) on household inflation expectations and household controls as described in section III. Inflation expectations are instrumented using information treatments, as described in section II. Dependent variables are as follows: Panel A is an indicator variable for whether individuals reported purchasing any durable goods (home, car, and big item) in the follow up survey wave, Panel B is (log) one plus total spending on any durable goods reported by households in the follow-up wave of the survey, while Panel C is (log) total monthly spending reported by households in the follow-up wave of the survey. Panel A includes a control for any intended purchase of any durable good, Panels B includes control for intended spending, and Panel C controls for past spending levels of non-durable goods. Households' controls include gender of the respondent, age and age squared of the respondent, presence and number of children, education of household head (a set of indicator variables), household income, and household size. Outliers and influential observations are identified and removed according to the procedure described in Coibion et al. (2023). Robust standard errors clustered by household are reported in parentheses. ***, **, * denote statistical significance at 1, 5 and 10 percent levels.

Table 3. Correlation between unemployment and inflation forecasts, USA.

	Sample					
	Full	1980-1989	1990-1999	2000-2009	2010-2019	2020-2024
	(1)	(2)	(3)	(4)	(5)	(6)
Average Inflation	3.3	5.6	3.0	2.6	1.8	4.4
Panel A. MSC, 1-y ahead unemployment forecast (1 more, 0 same, -1 less), level						
1-y ahead inflation forecast	0.030***	0.021***	0.023***	0.030***	0.048***	0.041***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N. obs.	254,082	58,562	49,504	48,434	56,897	24,607
R2	0.085	0.079	0.042	0.071	0.058	0.111
Panel B. MSC, 1-y ahead unemployment forecast (1 more, 0 same, -1 less), 6-month revision						
1-y ahead inflation forecast	0.013***	0.010***	0.011***	0.012***	0.016***	0.017***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
N. obs.	87,787	21,222	19,160	17,855	19,107	10,443
R2	0.034	0.032	0.028	0.039	0.029	0.048
Panel C. SPF, 1-y ahead unemployment forecast, level						
1-y ahead inflation forecast	-0.074***	-0.024	-0.137***	-0.138***	-0.155***	0.007
	(0.013)	(0.018)	(0.023)	(0.025)	(0.022)	(0.048)
N. obs.	5,703	823	1,282	1,510	1,508	580
R2	0.926	0.886	0.863	0.937	0.974	0.720
Panel D. SPF, 1-y ahead unemployment forecast, 6-month revision						
1-y ahead inflation forecast	-0.004	0.038*	-0.034	-0.020	-0.133***	0.023
	(0.018)	(0.022)	(0.024)	(0.022)	(0.029)	(0.067)
N. obs.	4,300	470	913	1,172	1,253	492
R2	0.741	0.710	0.365	0.827	0.519	0.738

Notes: The table reports results of regressing short-term unemployment forecasts (or forecast revisions) on short-term inflation forecasts (or forecast revisions) by different time-periods. Forecasts in panels A and B are from the Michigan Survey of Consumers (MSC). The survey question is "How about people out of work during the coming 12 months -- do you think that there will be more unemployment than now, about the same, or less?" more unemployment (coded as 1), about the same (coded as 0) and less unemployment (coded as -1). Forecasts in panels C and D are from the Survey of Professional Forecasters (SPF). SPF forecasts corresponds to 1-year ahead unemployment forecasts. In Panels A and B, we exclude responses of consumers that are greater than 15 percent or less than -2 percent. Robust standard errors are reported in all panels. Regression controls for time fixed effect (year-quarter) ***, **, * indicate statistical significance at 1, 5 and 10 percent.

Table 4: Effect of Inflation Expectations on Unemployment Expectations

	Wave							
	2018Q2	2019Q1	2021Q3	2022Q3	2022Q4	2023Q2	2023Q3	2023Q4
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Actual Inflation	2.5	1.9	5.2	8.2	6.4	4.9	3.7	3.3
Posterior inflation expectations	0.18***	0.17***	0.15***	0.12***	0.03	0.18***	0.08**	0.14**
	(0.03)	(0.07)	(0.04)	(0.03)	(0.05)	(0.04)	(0.04)	(0.07)
Observations	6,651	1,511	1,284	1,893	2,103	2,131	2,365	1,645
R-squared	0.40	0.69	0.70	0.72	0.69	0.69	0.65	0.75
1st stage F-stat	98.49	138.7	54.19	32.33	34.52	86.96	58.26	61.26

Notes: The table reports estimate from regressing expected unemployment rate at the end of the next year (elicited after treatments) on household inflation expectations and household controls as described in section V (regression 4). Inflation expectations are instrumented using information treatments, as described in section III. It includes a control for expected unemployment rate over the next 12 months elicited before treatments. Households' controls include gender of the respondent, age and age squared of the respondent, presence and number of children, education of household head (a set of indicator variables), household income, and household size. Outliers and influential observations are identified and removed according to the procedure described in Coibion et al. (2023). Robust standard errors clustered by household are reported in parentheses. ***, **, * denote statistical significance at 1, 5 and 10 percent levels.

Table 5. Correlation between good time to buy a durable (price will increase) and inflation forecasts.

Dependent variable:	Sample					
Dummy good time to buy/ prices will increase (*100)	Full	1980-1989	1990-1999	2000-2009	2010-2019	2020-2024
	(1)	(2)	(3)	(4)	(5)	(6)
Average Inflation	3.3	5.6	3.0	2.6	1.8	4.4
Panel A. Any durable, level						
1-y ahead inflation forecast	0.612***	0.903***	0.764***	0.552***	0.275***	0.424***
	(0.028)	(0.061)	(0.076)	(0.056)	(0.056)	(0.066)
N. obs.	223,196	52,043	42,615	41,871	51,691	23,327
R2	0.137	0.041	0.019	0.038	0.030	0.016
Panel B. Any durable, 6-month revision						
1-y ahead inflation forecast	0.394***	0.452***	0.464***	0.328***	0.265**	0.431***
	(0.053)	(0.110)	(0.136)	(0.109)	(0.106)	(0.120)
N. obs.	72,453	17,583	14,983	13,953	16,450	9,484
R2	0.014	0.015	0.013	0.014	0.010	0.022

Notes: The table reports results of regressing a dummy variable for good time to buy a durable because prices will increase (or dummy change) on short-term inflation forecasts (or forecast revisions) by different time-periods. Robust standard errors are reported in all panels. Regression controls for time fixed effect (year-quarter). ***, **, * indicate statistical significance at 1, 5 and 10 percent.

Table 6. Correlation between interest rates and inflation forecasts, USA.

	Sample					
	Full	1980-1989	1990-1999	2000-2009	2010-2019	2020-2024
	(1)	(2)	(3)	(4)	(5)	(6)
Average Inflation	3.3	5.6	3.0	2.6	1.8	4.4
Panel A. MSC, interest rates for borrowing 1-y ahead (1 go up, 0 same, -1 go down), level						
1-y ahead inflation forecast	0.025***	0.029***	0.030***	0.022***	0.019***	0.026***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N. obs.	252,541	58,030	49,170	48,172	56,740	24,572
R2	0.133	0.125	0.091	0.145	0.076	0.152
Panel B. MSC, interest rates for borrowing 1-y ahead (1 go up, 0 same, -1 go down), 6-month revision						
1-y ahead inflation forecast	0.018***	0.021***	0.021***	0.015***	0.016***	0.015***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
N. obs.	87,093	20,918	18,919	17,742	19,039	10,405
R2	0.070	0.071	0.063	0.092	0.047	0.069
Panel C. SPF, 1-y ahead interest rates (three-month Treasury bills) forecast, level						
1-y ahead inflation forecast	0.088***	0.068**	0.203***	0.157***	0.115***	-0.052**
	(0.016)	(0.022)	(0.023)	(0.026)	(0.020)	(0.048)
N. obs.	5,395	767	1,263	1,417	1,389	559
R2	0.979	0.874	0.896	0.953	0.920	0.971
Panel D. SPF, 1-y ahead interest rates (three-month Treasury bills), 6-month revision						
1-y ahead inflation forecast	0.034**	0.059	0.094***	0057**.	0.022	-0.053**
	(0.017)	(0.046)	(0.029)	(0.022)	(0.021)	(0.024)
N. obs.	4,041	440	883	1,087	1,157	474
R2	0.806	0.706	0.772	0.861	0.638	0.890

Notes: The table reports results of regressing short-term interest rates forecasts (or forecast revisions) on short-term inflation forecasts (or forecast revisions) by different time-periods. Forecasts in panels A and B are from the Michigan Survey of Consumers (MSC). The survey question is "No one can say for sure, but what do you think will happen to interest rates for borrowing money during the next 12 months?" they will go up (coded as 1), stay the same (coded as 0) or go down (coded as -1). Forecasts in panels C and D are from the Survey of Professional Forecasters (SPF). SPF forecasts corresponds to average three-month Treasury bill interest rate over the next year. In Panels A and B, we exclude responses of consumers that are greater than 15 percent or less than -2 percent. Robust standard errors are reported in all panels. Regression controls for time fixed effect (year-quarter).***, **, * indicate statistical significance at 1, 5 and 10 percent.

Table 7: Effect of Inflation Expectations on Savings Accounts Interest Rate Expectations

	2021Q3	2022Q3	2023Q2	2023Q4
	(1)	(2)	(3)	(4)
Actual Inflation	5.2	8.2	4.9	3.3
Posterior inflation expectations	0.01	0.02	0.02	-0.02
	(0.02)	(0.03)	(0.02)	(0.02)
Observations	1,027	1,303	4,790	4,144
R-squared	0.46	0.51	0.24	0.49
1st stage F-stat	34.49	10.32	193.8	324.4

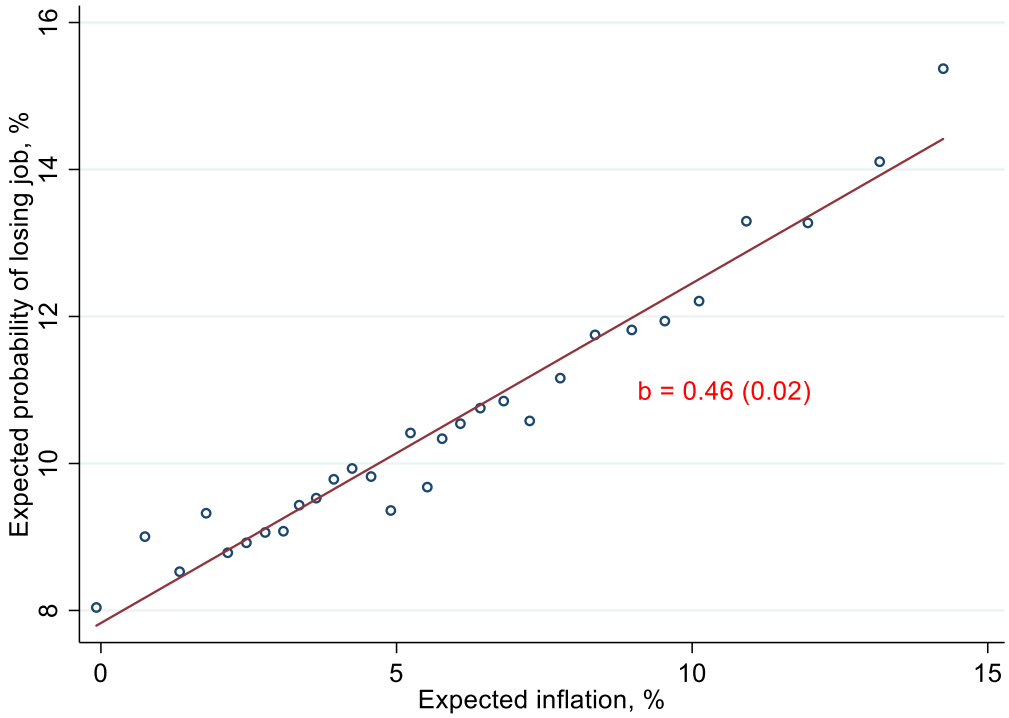
Notes: The table reports estimate from regressing expected interest rate on savings account at the end of the next year (elicited after treatments) on household inflation expectations and household controls as described in section V. Inflation expectations are instrumented using information treatments, as described in section III. It includes a control for expected interest rate on savings account over the next 12 months elicited before treatments. Households' controls include gender of the respondent, age and age squared of the respondent, presence and number of children, education of household head (a set of indicator variables), household income, and household size. Outliers and influential observations are identified and removed according to the procedure described in Coibion et al. (2023). Robust standard errors clustered by household are reported in parentheses. ***, **, * denote statistical significance at 1, 5 and 10 percent levels.

Table 8: Effect of Inflation Expectations on Spending Decisions, by Financial Wealth

	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
	(1)	(2)	(3)	(4)	(5)	(6)
Actual Inflation	2.5	4.9	8.2	6.4	4.9	3.7
Panel A. High Financial Wealth						
Extensive margin, linear probability model, spending on durable goods.						
Posterior inflation expectations	-1.64***	2.48***	4.36***	1.05	2.95***	-2.89***
	(0.45)	(0.60)	(0.85)	(0.65)	(0.84)	(0.76)
Observations	3,450	3,208	1,630	1,530	1,278	1,805
1st stage F-stat	38.57	32.30	12.10	30.61	41.20	37.12
Spending on durable goods, IV Tobit, log(spending)*100.						
Posterior inflation expectations	-1.16**	3.84***	10.24***	2.55*	2.98***	-3.66***
	(0.49)	(0.79)	(2.73)	(1.35)	(1.05)	(1.07)
Observations	3,367	3,164	1,607	1,532	1,254	1,785
1st stage F-stat	244.4	189.2	94.19	182.9	168.6	198.6
Spending on non-durable goods, log(spending)						
Posterior inflation expectations	-0.52	-0.46	-2.68*	1.99	-2.62*	-1.31
	(0.77)	(1.16)	(1.51)	(1.22)	(1.41)	(1.34)
Observations	2,591	3,157	1,623	1,574	1,268	1,827
1st stage F-stat	22.40	23.05	9.712	30.06	37.74	32.71
Panel B. Low Financial Wealth						
Extensive margin, linear probability model, spending on durable goods.						
Posterior inflation expectations	-0.82***	0.83**	1.09*	-0.33	2.19**	-3.55***
	(0.26)	(0.39)	(0.58)	(0.60)	(0.99)	(0.78)
Observations	1,676	1,596	966	903	647	1,100
1st stage F-stat	39.45	36.77	15.38	15.74	14.45	19.22
Spending on durable goods, IV Tobit, log(spending)*100.						
Posterior inflation expectations	-1.47**	2.86***	2.79	0.23	0.97	-4.82***
	(0.60)	(0.79)	(1.78)	(1.86)	(0.89)	(1.16)
Observations	1,680	1,592	951	901	643	1,102
1st stage F-stat	278.2	230.8	109.9	99.19	57.44	120.3
Spending on non-durable goods, log(spending)						
Posterior inflation expectations	-0.02	0.25	0.72	1.42	1.95	-1.04
	(0.96)	(0.89)	(0.97)	(1.51)	(1.65)	(1.29)
Observations	873	1,560	949	886	629	1,077
1st stage F-stat	12.60	31.59	16.33	14.53	16.63	19.13

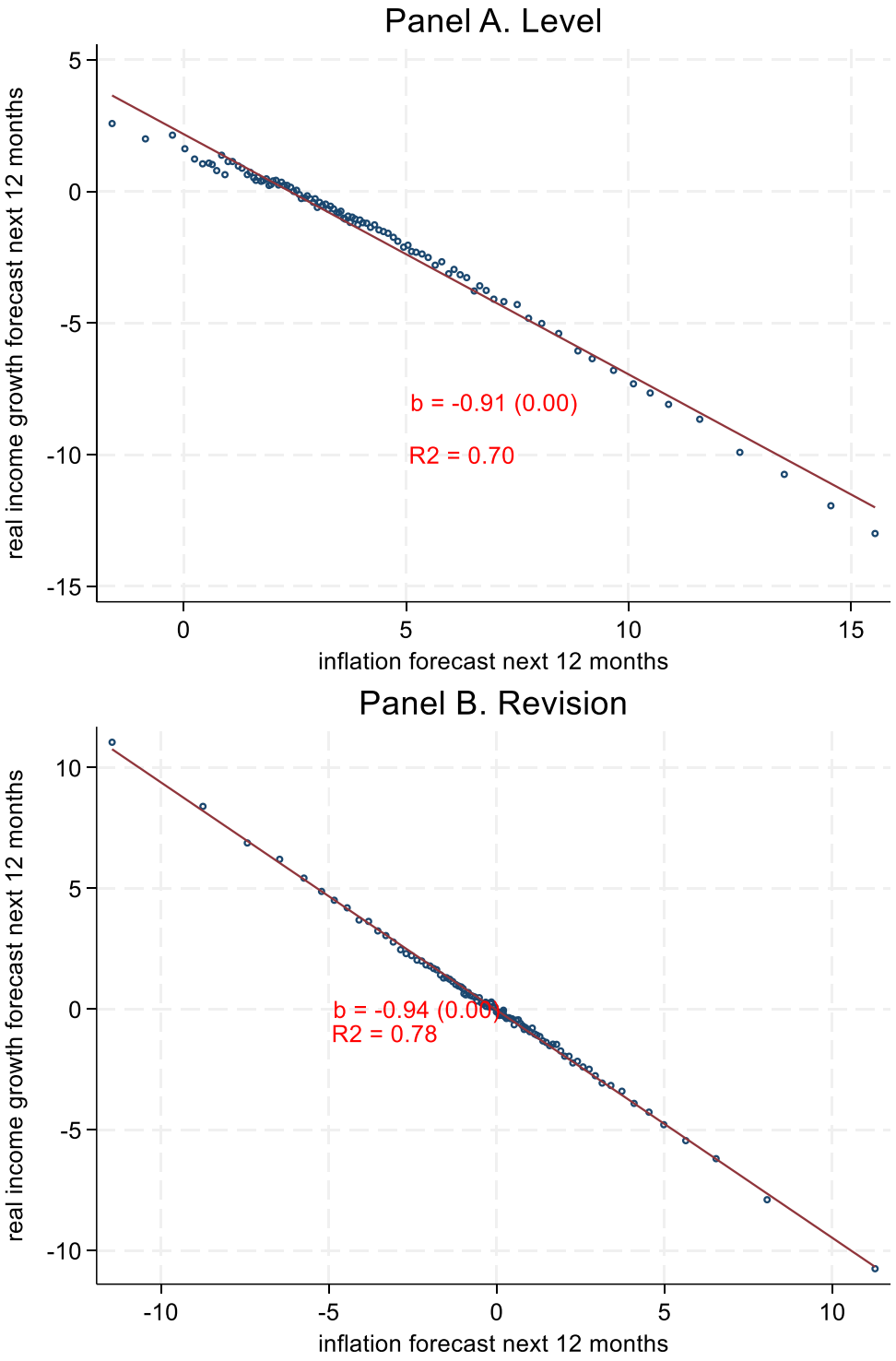
Notes: The table reports estimates from regressing spending measures on household inflation expectations and household controls as described in section III, splitting the sample according to their level of financial wealth. A household is classified as "high financial wealth" if its total financial investment (excluding housing) is worth more than one month of combined household income. Inflation expectations are instrumented using information treatments, as described in section II. Panel A shows results for the subsample with high financial wealth while Panel B shows results for the subsample with low financial wealth. See notes to Table 2.

Figure 1. Expected probability of losing job vs expected inflation.



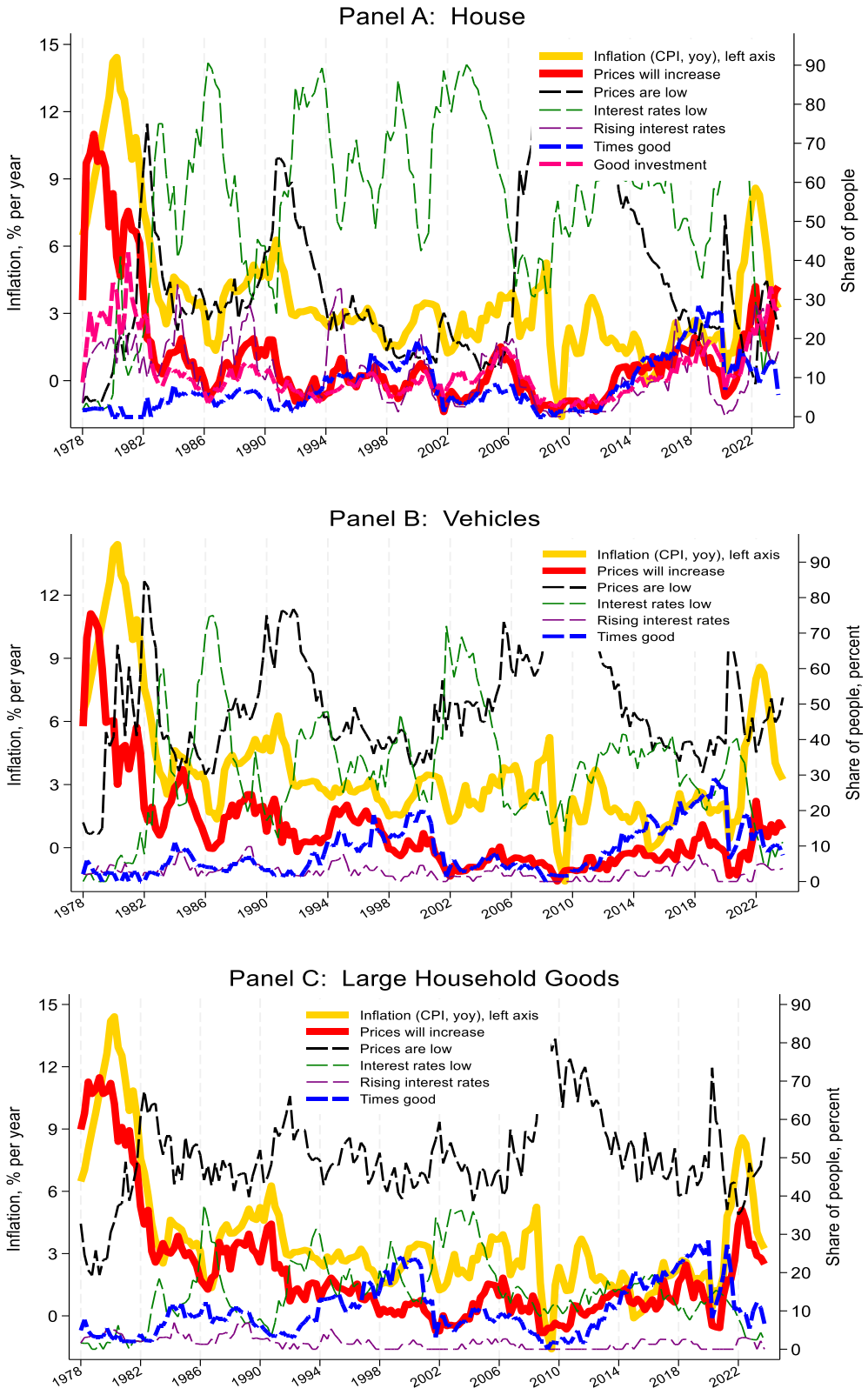
Notes: The figure plots the bin scatter between the expected probability of losing a job in the next twelve months and expected inflation in the next twelve months, as reported in the Nielsen survey of U.S. households for the period 2021Q1-2024Q2. Uses Huber robust regression to downweight the importance of outliers and influential observations. Regression uses sampling weights and controls for time fixed effect. Robust standard error is in parentheses.

Figure 2. Expected real income growth vs. expected inflation.



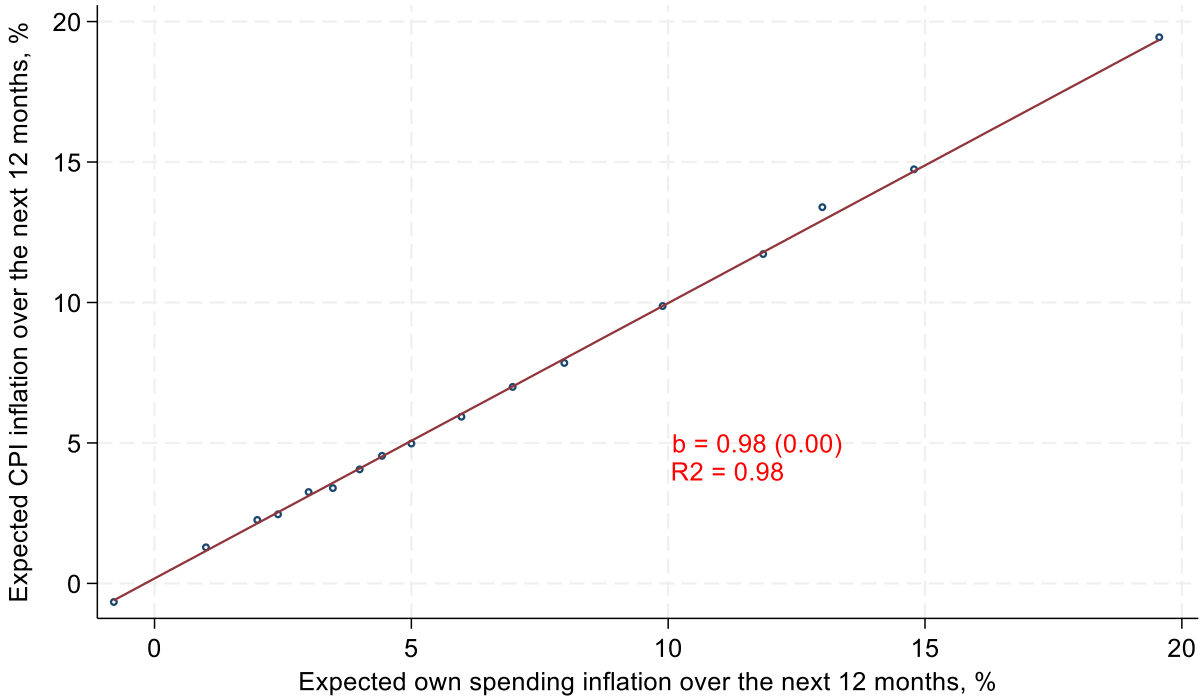
Notes: The figure plots the bin scatter between 1-year-ahead real income growth forecasts (or forecast revisions) and 1-year-ahead inflation forecasts (or forecast revisions). Uses Huber robust regression to downweight the importance of outliers and influential observations. Regression uses sampling weights and controls for time fixed effect. Robust standard error is in parentheses.

Figure 3. Reasons now it is a good time to buy a durable



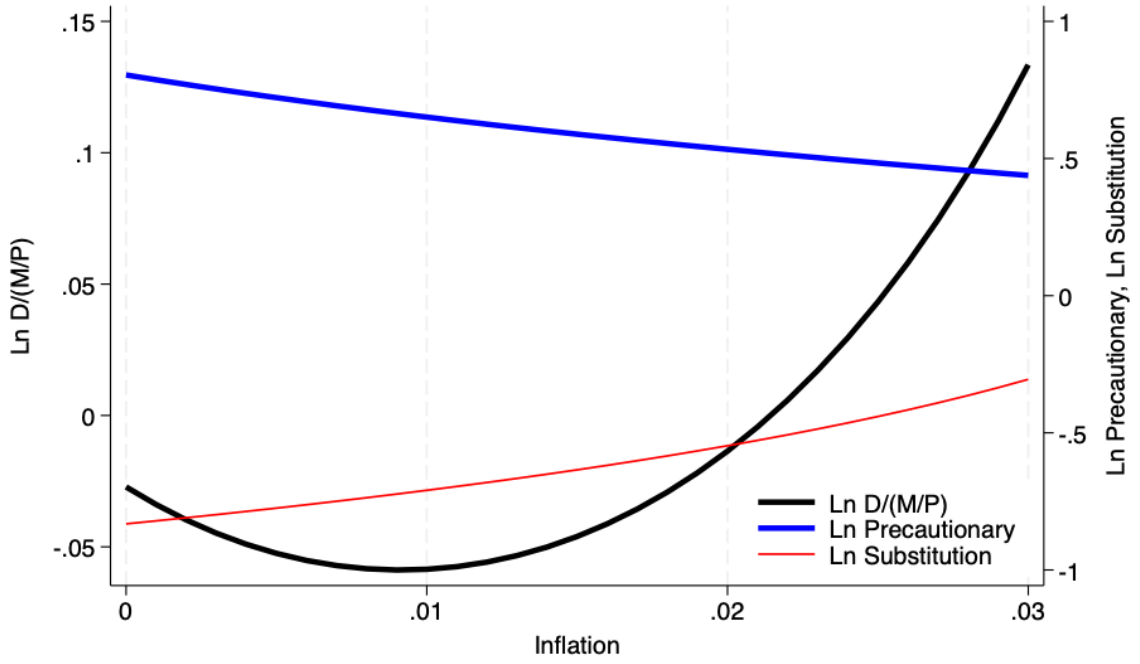
Notes: The figure plots the time series of the share of people providing a specific reason to support that now it is a good time to buy a durable (indicated by each panel), along with the time series of U.S. inflation (yellow line). Panel A: shows results for houses. Panel B: shows results for vehicles. Panel C: shows results for large household goods. The sample period covers 1978Q1-2024Q1.

Figure 4. Expected CPI inflation vs Expected own spending inflation.



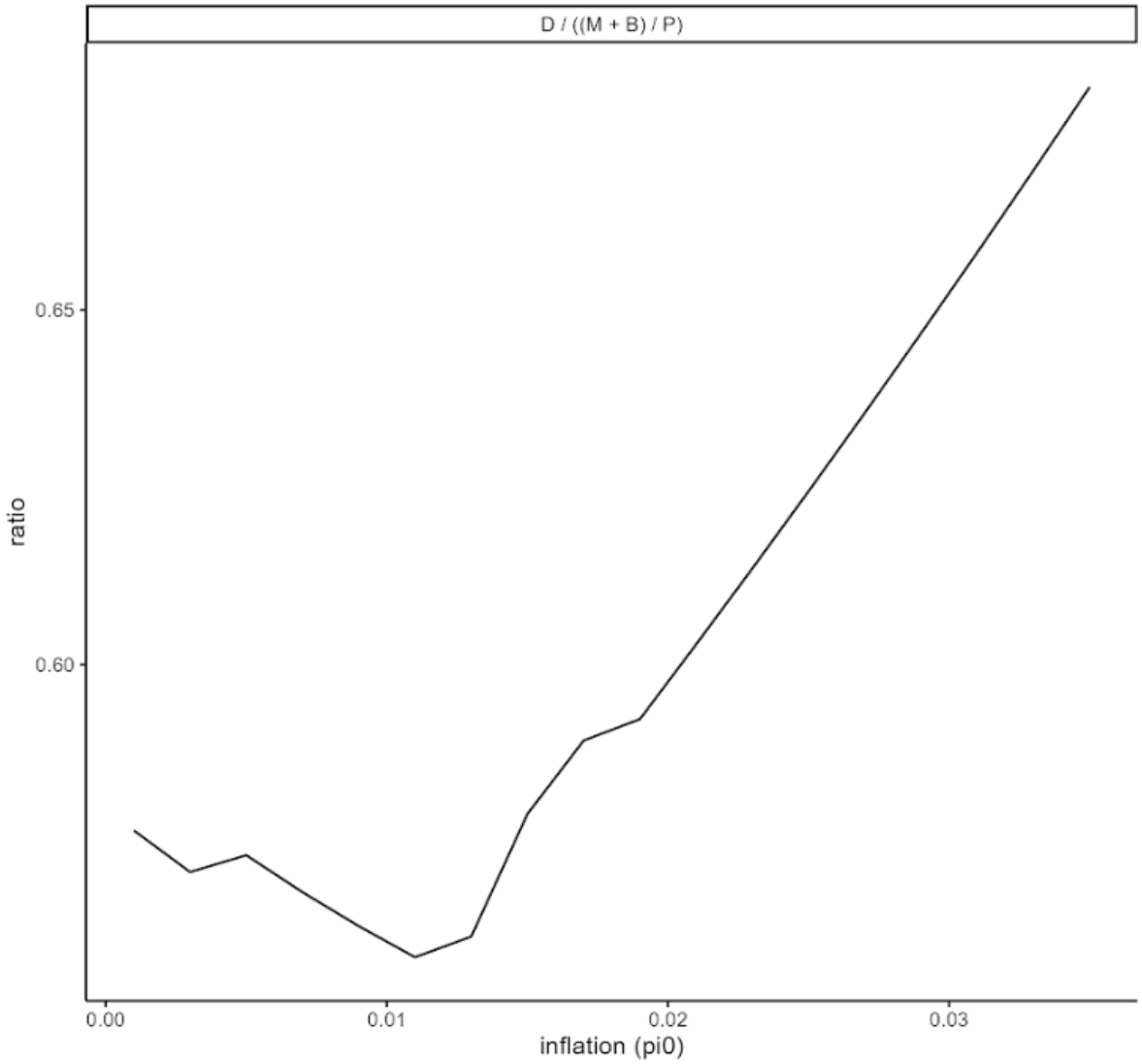
Notes: The figure plots the bin scatter between expected CPI inflation over the next 12 months and expected own inflation over the next 12 months reported in wave 2023Q3. The survey question is: "What do you think the inflation rate for your typical spending is going to be over the next 12 months?" Uses Huber robust regression to downweight the importance of outliers and influential observations. Robust standard error is in parentheses. The data is restricted to the control group because point forecast inflation expectations were elicited only post-treatment.

Figure 5. Durable goods over money balances vs. inflation.



Notes: The figure plots the logarithm of the ratio between durable goods and money holdings (black line) for different inflation levels, decomposing among precautionary motive (blue line) and substitution effect (red line).

Figure 6. Durable goods over liquid assets vs. inflation.



Notes: The figure plots the plots the ratio between durable goods and liquid assets for different inflation levels.

Online Appendix

Appendix Table 1: Effect of Inflation Expectations on Spending Decisions.

	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
	(1)	(2)	(3)	(4)	(5)	(6)
Actual Inflation	2.5	4.9	8.2	6.4	4.9	3.7
Panel A. Extensive margin, linear probability model, spending on						
Home						
Posterior inflation expectations	-0.04	0.15*	0.05	0.09	0.06	0.01
	(0.03)	(0.08)	(0.08)	(0.07)	(0.06)	(0.04)
Observations	4,787	4,804	2,596	2,433	1,925	2,905
1st stage F-stat	67.08	63.33	25.08	46.30	53.18	54.39
Car						
Posterior inflation expectations	-0.21*	1.32***	0.68***	0.28	0.68**	-1.52***
	(0.11)	(0.24)	(0.25)	(0.28)	(0.33)	(0.29)
Observations	4,787	4,804	2,596	2,433	1,925	2,905
1st stage F-stat	67.15	63.31	25.13	46.20	53.42	54.13
Big item						
Posterior inflation expectations	-1.01***	0.51*	2.01***	0.54	1.75***	-2.03***
	(0.25)	(0.26)	(0.41)	(0.38)	(0.53)	(0.44)
Observations	4,787	4,804	2,596	2,433	1,925	2,905
1st stage F-stat	67.26	63.76	25.14	46.27	53.28	54.28
Panel B. Spending on durable goods, IV Tobit, log(spending)*100.						
Home						
Posterior inflation expectations	-5.13	-	0.92	4.36*	-6.35*	-5.26
	(5.14)	-	(2.48)	(2.37)	(3.77)	(3.50)
Observations	4,703	-	2,558	2,433	1,897	2,859
1st stage F-stat	441.9	-	196.9	280	211.6	51.06
Car						
Posterior inflation expectations	-2.65***	6.01***	6.92***	2.63*	0.86	-
	(0.95)	(1.00)	(1.95)	(1.19)	(1.15)	-
Observations	4,703	4,756	2,558	2,433	1,897	-
1st stage F-stat	441.9	384.7	197.1	280.4	212.9	-
Big Item						
Posterior inflation expectations	-0.81**	1.75***	3.94***	0.96	2.20***	-3.35***
	(0.35)	(0.52)	(1.40)	(0.72)	(0.67)	(0.75)
Observations	4,703	4,756	2,558	2,433	1,879	2,887
1st stage F-stat	443.5	392	195.5	282	217.3	318.7

Notes: The table reports estimates from regressing spending measures (indicated by each panel) on household inflation expectations and household controls as described in section III. Inflation expectations are instrumented using information treatments, as described in section II. Dependent variables are as follows: Panel A is an indicator variable for whether individuals reported purchasing any durable goods (home, car, and big item) in the follow up survey wave, Panel B is (log) one plus total spending on any durable goods reported by households in the follow-up wave of the survey. Panel A includes a control for intended purchase, Panels B includes control for intended spending. Households' controls include gender of the respondent, age and age squared of the respondent, presence and number of children, education of household head (a set of indicator variables), household income, and household size. Outliers and influential observations are identified and removed according to the procedure described in Coibion et al. (2023). Robust standard errors clustered by household are reported in parentheses. ***, **, * denote statistical significance at 1, 5 and 10 percent levels.

Appendix Table 2. Effect of Inflation Expectations on Spending Decisions, after Two Quarters.

	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
	(1)	(2)	(3)	(4)	(5)	(6)
Actual Inflation	2.5	4.9	8.2	6.4	4.9	3.7
Panel A. Extensive margin, linear probability model, spending on durable goods.						
Posterior inflation expectations	-0.68	1.18***	2.28***	0.09	2.28***	-1.69***
	(0.48)	(0.34)	(0.61)	(0.42)	(0.70)	(0.59)
Observations	4,089	3,843	1,984	1,900	1,743	1,950
1st stage F-stat	34.95	53.49	14.65	30.89	41.75	34.32
Panel B. Spending on durable goods, IV Tobit, log(spending)*100.						
Posterior inflation expectations	-0.79**	3.10***	8.40	-0.57		
	(0.38)	(0.58)	(5.75)	(0.86)		
Observations	3,988	3,804	1,953	1,907		
1st stage F-stat	236.7	316.6	111.4	199.5		

Notes: The table reports estimates from regressing durable spending measures (indicated by each panel) on household inflation expectations and household controls as described in section III, restricting the sample to households who had not received any information treatment in the previous quarter. Inflation expectations are instrumented using information treatments, as described in section II. Dependent variables are as follows: Panel A is an indicator variable for whether individuals reported purchasing any durable goods (home, car, and big item) two waves after the RCT, while Panel B is (log) one plus total spending on any durable goods reported by households two waves after the RCT. Panel A includes a control for intended purchase while Panels B includes control for intended spending. Households' controls include gender of the respondent, age and age squared of the respondent, presence and number of children, education of household head (a set of indicator variables), household income, and household size. Outliers and influential observations are identified and removed according to the procedure described in Coibion et al. (2023). Robust standard errors clustered by household are reported in parentheses. ***, **, * denote statistical significance at 1, 5 and 10 percent levels.

Appendix Table 3. Effect of Inflation Expectations on Food Spending.

	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
	(1)	(2)	(3)	(4)	(5)	(6)
Actual Inflation	2.5	4.9	8.2	6.4	4.9	3.7
Panel A. Log Spending on Food						
Posterior inflation expectations	-3.09***	-1.61*	-2.69***	-1.75*	3.81***	-0.13
	(0.76)	(0.90)	(1.01)	(0.93)	(1.13)	(1.06)
Observations	3,117	3,187	1,861	1,762	1,455	2,189
1st stage F-stat	22.29	28.05	15.06	33.98	43.42	28.80

Notes: The table reports estimates from regressing food spending on household inflation expectations and household controls as described in section III. Inflation expectations are instrumented using information treatments, as described in section II. The dependent variable is total monthly food spending (including groceries, dining out, take-out food, and beverages), reported by households in the follow-up wave of the survey. It controls for past spending levels of food. Households' controls include gender of the respondent, age and age squared of the respondent, presence and number of children, education of household head (a set of indicator variables), household income, and household size. Outliers and influential observations are identified and removed according to the procedure described in Coibion et al. (2023). Robust standard errors clustered by household are reported in parentheses. ***, **, * denote statistical significance at 1, 5 and 10 percent levels.

Appendix Table 4. Effect of Inflation Expectations on Spending Decisions, Panel Conditioning.

	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
	(1)	(2)	(3)	(4)	(5)	(6)
Actual Inflation	2.5	4.9	8.2	6.4	4.9	3.7
Panel A. Extensive margin, linear probability model, spending on durable goods.						
Posterior inflation expectations	-1.18***	1.82***	3.00***	0.81	1.54**	-3.54***
	(0.27)	(0.36)	(0.75)	(0.51)	(0.75)	(0.69)
Observations	4,787	4,804	1,103	802	1,062	1,374
1st stage F-stat	67.47	63.67	9.802	9.523	24.88	26.66
Panel B. Spending on durable goods, IV Tobit, log(spending)*100.						
Posterior inflation expectations	-1.14***	3.40***	5.25***	3.79	1.69	-8.48***
	(0.36)	(0.53)	(1.83)	(2.97)	(1.03)	(2.31)
Observations	4,703	4,756	1,082	811	1,046	1,381
1st stage F-stat	443.8	390.9	83.71	70.41	99.98	174.9
Panel C. Spending on non-durable goods, log(spending)*100						
Posterior inflation expectations	-0.30	-0.07	-1.45	4.11**	-0.50	0.26
	(0.66)	(0.72)	(1.13)	(1.76)	(1.27)	(1.08)
Observations	3,189	4,717	1,118	835	1,062	1,387
1st stage F-stat	29.51	50.70	9.894	6.663	25.21	26.66

Notes: The table reports estimates from regressing spending measures (indicated by each panel) on household inflation expectations and household controls as described in section III, restricting the sample to households who had not received any information treatment in the previous quarter. Inflation expectations are instrumented using information treatments, as described in section II. Dependent variables are as follows: Panel A is an indicator variable for whether individuals reported purchasing any durable goods (home, car, and big item) in the follow up survey wave, Panel B is (log) one plus total spending on any durable goods reported by households in the follow-up wave of the survey, while Panel C is (log) total monthly spending reported by households in the follow-up wave of the survey. Panel A includes a control for any intended purchase of any durable good, Panels B includes control for intended spending, and Panel C controls for past spending levels of non-durable goods.. Households' controls include gender of the respondent, age and age squared of the respondent, presence and number of children, education of household head (a set of indicator variables), household income, and household size. Outliers and influential observations are identified and removed according to the procedure described in Coibion et al. (2023). Robust standard errors clustered by household are reported in parentheses. ***, **, * denote statistical significance at 1, 5 and 10 percent levels.

Appendix Table 5. Correlation between aggregate economy and inflation forecasts, USA.

	Sample					
	Full	1980-1989	1990-1999	2000-2009	2010-2019	2020-2024
	(1)	(2)	(3)	(4)	(5)	(6)
Average Inflation	3.3	5.6	3.0	2.6	1.8	4.4
Panel A. MSC, 1-y ahead business conditions forecast (1 better, 0 same, -1 worse), level						
1-y ahead inflation forecast	-0.034***	-0.022***	-0.025***	-0.034***	-0.049***	-0.051***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N. obs.	251,658	58,062	49,011	48,035	56,252	24,301
R2	0.067	0.051	0.032	0.072	0.057	0.131
Panel B. MSC, 1-y ahead business conditions forecast (1 better, 0 same, -1 worse), 6-month revision						
1-y ahead inflation forecast	-0.016***	-0.010***	-0.014***	-0.016***	-0.020***	-0.026***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
N. obs.	86,382	20,972	18,852	17,603	18,753	10,202
R2	0.030	0.022	0.033	0.027	0.029	0.052
Panel C. SPF, 1-y ahead output growth forecast, level						
1-y ahead inflation forecast	0.050*	0.028	0.075	0.075*	0.077**	0.021
	(0.029)	(0.066)	(0.058)	(0.039)	(0.035)	(0.082)
N. obs.	5,670	782	1,288	1,505	1,517	578
R2	0.455	0.211	0.310	0.553	0.283	0.590
Panel D. SPF, 1-y ahead output growth forecast, 6-month revision						
1-y ahead inflation forecast	0.058	-0.031	-0.030	0.097**	0.129***	0.203*
	(0.037)	(0.070)	(0.061)	(0.043)	(0.032)	(0.116)
N. obs.	4,291	450	915	1,169	1,267	490
R2	0.409	0.159	0.312	0.389	0.289	0.532

Notes: The table reports results of regressing short-term aggregate economy condition forecasts (or forecast revisions) on short-term inflation forecasts (or forecast revisions) by different time-periods. Forecasts in panels A and B are from the Michigan Survey of Consumers (MSC). The survey question is "And how about a year from now, do you expect that in the country as a whole business conditions will be better, or worse than they are at present, or just about the same?" (1) better a year from now, (0) about the same and (-1) worse a year from now. Forecasts in panels C and D are from the Survey of Professional Forecasters (SPF). SPF forecasts corresponds to 1-year ahead GDP growth forecasts. In Panels A and B we exclude responses of consumers that are greater than 15 percent or less than -2 percent. Robust standard errors are reported in all panels. Regression controls for time fixed effect (year-quarter). ***, **, * indicate statistical significance at 1, 5 and 10 percent.

Appendix Table 6. Correlation between personal finances and inflation forecasts, USA.

	Sample					
	Full	1980-1989	1990-1999	2000-2009	2010-2019	2020-2024
	(1)	(2)	(3)	(4)	(5)	(6)
Average Inflation	3.3	5.6	3.0	2.6	1.8	4.4
Panel A. MSC, 1-y ahead real income forecasts (1 go up, 0 same, -1 go down), level						
1-y ahead inflation forecast	-0.031*** (0.000)	-0.018*** (0.001)	-0.028*** (0.001)	-0.038*** (0.001)	-0.048*** (0.001)	-0.039*** (0.001)
N. obs.	252,914	58,149	49,333	48,202	56,690	24,565
R2	0.041	0.020	0.021	0.047	0.066	0.053
Panel B. MSC, 1-y ahead real income forecasts (1 go up, 0 same, -1 go down), 6-month revision						
1-y ahead inflation forecast	-0.015*** (0.001)	-0.013*** (0.001)	-0.015*** (0.002)	-0.014*** (0.002)	-0.019*** (0.002)	-0.016*** (0.002)
N. obs.	87,173	20,974	19,080	17,752	18,976	10,391
R2	0.011	0.009	0.010	0.010	0.012	0.012
Panel C. MSC, 1-y ahead personal finance forecast (1 better, 0 same, -1 worse), level						
1-y ahead inflation forecast	-0.017*** (0.000)	-0.008*** (0.001)	-0.011*** (0.001)	-0.019*** (0.001)	-0.029*** (0.001)	-0.032*** (0.001)
N. obs.	250,026	57,645	48,695	47,894	55,833	24,066
R2	0.033	0.017	0.031	0.031	0.043	0.048
Panel D. MSC, 1-y ahead personal finance forecasts (1 better, 0 same, -1 worse), 6-month revision						
1-y ahead inflation forecast	-0.007*** (0.001)	-0.006*** (0.001)	-0.007*** (0.002)	-0.006***. (0.002)	-0.008*** (0.002)	-0.011*** (0.002)
N. obs.	85,515	20,701	18,627	17,561	18,516	10,110
R2	0.008	0.007	0.008	0.008	0.005	0.010

Notes: The table reports results of regressing short-term personal finances forecasts (or forecast revisions) on short-term inflation forecasts (or forecast revisions) by different time-periods. Forecasts are from the Michigan Survey of Consumers (MSC). Dependent variables are as follows: Panels A and B are real income. The survey question is "During the next year or two, do you expect that your income will go up more than prices will go up (coded as 1), about the same (coded as 0), or less than prices will go up (coded as -1)?" Panels C and D are personal finances. The survey question is "Now looking ahead--do you think that a year from now you will be better off financially, or worse off, or just about the same as now?" Coded as (1) better a year from now, (0) about the same, (-1) worse a year from now. We exclude responses of consumers that are greater than 15 percent or less than -2 percent. Robust standard errors are reported in all panels. Regression controls for time fixed effect (year-quarter) .***, **, * indicate statistical significance at 1, 5 and 10 percent.

Appendix Table 7. Correlation between good time to buy a durable (prices will increase) and inflation forecasts.

Dependent variable: Dummy good time to buy/ prices will increase (*100)	Sample					
	Full	1980-1989	1990-1999	2000-2009	2010-2019	2020-2024
	(1)	(2)	(3)	(4)	(5)	(6)
Average Inflation	3.3	5.6	3.0	2.6	1.8	4.4
Panel A. Home, level						
1-y ahead inflation forecast	0.114***	0.274***	0.197***	0.101***	-0.170***	0.004
	(0.018)	(0.037)	(0.043)	(0.034)	(0.036)	(0.043)
N. obs.	238,948	56,696	48,047	46,977	55,932	24,465
R2	0.045	0.014	0.010	0.019	0.020	0.006
Panel B. Home, 6-month revision						
1-y ahead inflation forecast	0.059*	0.122*	0.057	-0.019	-0.014	0.127
	(0.033)	(0.070)	(0.079)	(0.065)	(0.075)	(0.078)
N. obs.	84,731	20,587	18,250	16,973	18,644	10,277
R2	0.007	0.006	0.008	0.008	0.005	0.007
Panel C. Car, level						
1-y ahead inflation forecast	0.280***	0.358***	0.336***	0.196***	0.163***	0.168***
	(0.020)	(0.044)	(0.052)	(0.031)	(0.031)	(0.036)
N. obs.	238,968	55,188	45,761	45,248	54,193	24,070
R2	0.070	0.017	0.010	0.012	0.010	0.006
Panel D. Car, 6-month revision						
1-y ahead inflation forecast	0.149***	0.275***	0.204**	0.037	0.087	0.044
	(0.035)	(0.077)	(0.102)	(0.058)	(0.063)	(0.064)
N. obs.	79,592	19,195	16,840	15,859	17,649	10,049
R2	0.008	0.010	0.006	0.007	0.006	0.010
Panel E. Big item, level						
1-y ahead inflation forecast	0.644***	0.843***	0.629***	0.425***	0.422***	0.441***
	(0.024)	(0.052)	(0.058)	(0.043)	(0.042)	(0.053)
N. obs.	238,850	54,683	45,779	44,967	54,366	24,080
R2	0.090	0.028	0.016	0.021	0.015	0.016
Panel F. Big item, 6-month revision						
1-y ahead Inflation forecast	0.414***	0.495***	0.483***	0.356***	0.329***	0.346***
	(0.043)	(0.095)	(0.109)	(0.082)	(0.081)	(0.095)
N. obs.	78,902	18,780	16,741	15,637	17,739	10,005
R2	0.010	0.010	0.008	0.010	0.009	0.015

Notes: The table reports results of regressing a dummy variable for good time to buy a durable because prices will increase (or dummy change) on short-term inflation forecasts (or forecast revisions) by different time-periods. Robust standard errors are reported in all panels. Regression controls for time fixed effect (year-quarter). ***, **, * indicate statistical significance at 1, 5 and 10 percent.

Appendix Table 8: Effect of Inflation Expectations on Spending Decisions, by Financial Wealth

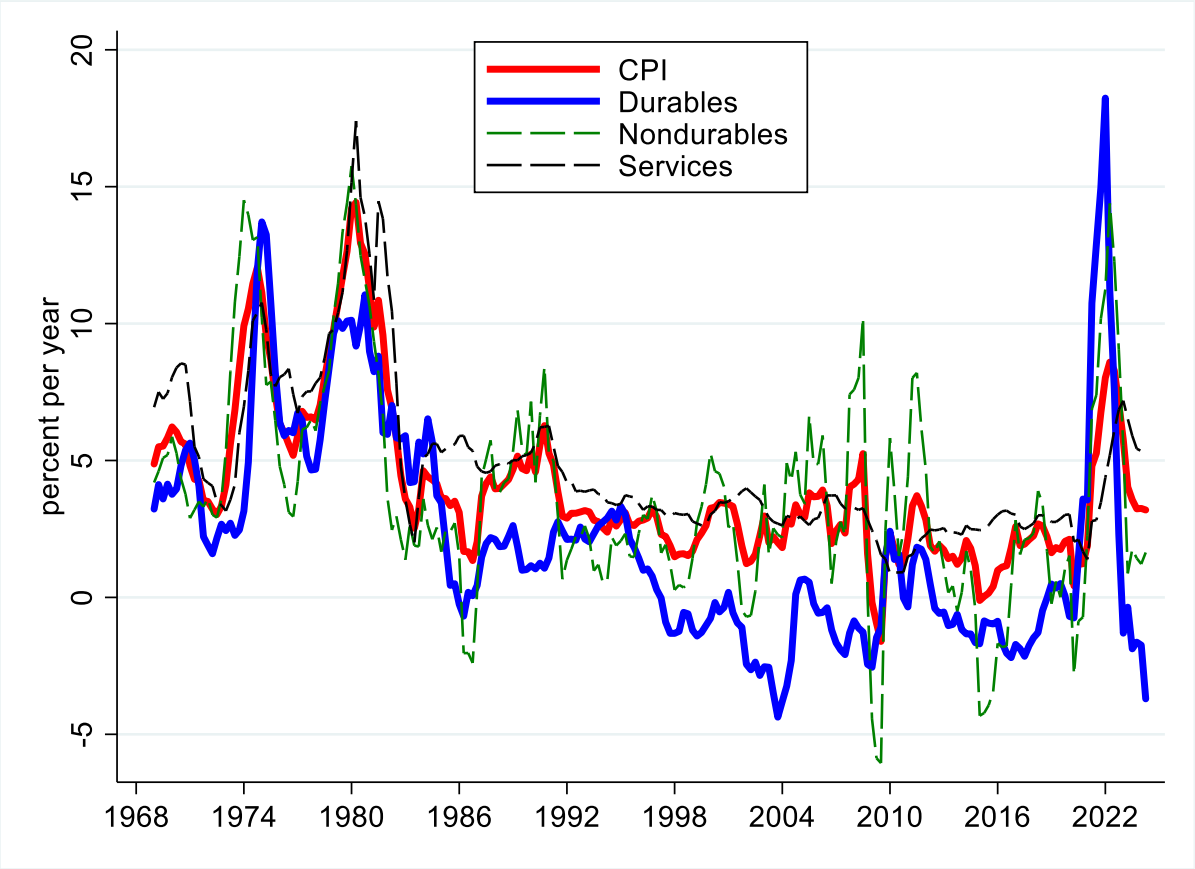
	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
	(1)	(2)	(3)	(4)	(5)	(6)
Actual Inflation	2.5	4.9	8.2	6.4	4.9	3.7
Panel A. High Financial Wealth						
Extensive margin, linear probability model, spending on durable goods.						
Home						
Posterior inflation expectations	-0.07	0.22*	0.02	0.09	0.07	0.01
	(0.05)	(0.12)	(0.14)	(0.10)	(0.09)	(0.06)
Observations	3,450	3,208	1,630	1,530	1,278	1,805
1st stage F-stat	38.36	32.24	11.87	30.83	41.21	37.43
Car						
Posterior inflation expectations	-0.29	1.69***	1.15***	0.59	1.25***	-1.71***
	(0.19)	(0.39)	(0.39)	(0.37)	(0.44)	(0.41)
Observations	3,450	3,208	1,630	1,530	1,278	1,805
1st stage F-stat	38.46	32.25	11.85	30.64	41.16	37.18
Big item						
Posterior inflation expectations	-1.42***	0.82*	3.01***	0.65	1.63**	-1.63***
	(0.41)	(0.45)	(0.70)	(0.52)	(0.70)	(0.62)
Observations	3,450	3,208	1,630	1,530	1,278	1,805
1st stage F-stat	38.39	32.29	11.93	30.83	41.17	37.49
Spending on durable goods, IV Tobit, log(spending)*100.						
Home						
Posterior inflation expectations	-4.33	-	-0.13	4.52	-5.50*	-6.67
	(6.76)	-	(4.45)	(3.36)	(3.02)	(4.84)
Observations	3,367	-	1,532	1,487	1,254	1,785
1st stage F-stat	243.5	-	185.9	27.82	163.2	218.3
Car						
Posterior inflation expectations	-2.26*	7.04***	12.63**	4.15**	4.21*	-
	(1.20)	(1.64)	(5.35)	(1.92)	(2.27)	-
Observations	3,367	3,164	1,532	1,487	1,254	-
1st stage F-stat	242.7	184.9	184.2	27.50	167.9	-
Big Item						
Posterior inflation expectations	-0.90*	1.94***	6.24***	1.23	1.98**	-2.38***
	(0.46)	(0.73)	(2.13)	(0.91)	(0.82)	(0.88)
Observations	3,367	3,164	1,532	1,478	1,254	1,785
1st stage F-stat	243.6	193.8	187.3	27.73	164.9	211.7

(continued on next page)

	Wave					
	2018Q2	2021Q2	2022Q3	2022Q4	2023Q2	2023Q3
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B. Low Financial Wealth						
Extensive margin, linear probability model, spending on durable goods.						
Home						
Posterior inflation expectations	-0.02	0.12	0.05	-0.01	0.10	-0.04
	(0.04)	(0.11)	(0.07)	(0.10)	(0.12)	(0.07)
Observations	1,676	1,596	966	903	647	1,100
1st stage F-stat	39.41	36.35	15.51	15.75	14.27	19.13
Car						
Posterior inflation expectations	-0.10	0.71***	0.12	-0.21	-0.08	-1.35***
	(0.10)	(0.26)	(0.30)	(0.41)	(0.54)	(0.43)
Observations	1,676	1,596	966	903	647	1,100
1st stage F-stat	39.39	36.31	15.43	15.99	14.45	19.12
Big item						
Posterior inflation expectations	-0.73***	0.11	1.04**	0.20	1.75**	-2.66***
	(0.23)	(0.27)	(0.45)	(0.44)	(0.85)	(0.67)
Observations	1,676	1,596	966	903	647	1,078
1st stage F-stat	39.40	37.07	15.39	15.63	14.53	19.04
Spending on durable goods, IV Tobit, log(spending)*100.						
Home						
Posterior inflation expectations	-	-	-	3.59	-	-4.07
	-	-	-	(3.01)	-	(4.91)
Observations	-	-	-	901	-	1,102
1st stage F-stat	-	-	-	100.6	-	120.9
Car						
Posterior inflation expectations	-2.17*	4.45***	3.35*	0.41	-2.03	-
	(1.31)	(1.27)	(2.00)	(2.07)	(1.48)	-
Observations	1,680	1,592	951	901	643	-
1st stage F-stat	277.5	229.1	111	99.84	58.13	-
Big Item						
Posterior inflation expectations	-1.24**	1.62*	1.84	0.53	2.62**	-4.59***
	(0.59)	(0.90)	(1.40)	(1.31)	(1.26)	(1.23)
Observations	1,680	1,592	951	901	643	1,102
1st stage F-stat	279	231.2	112.3	97.20	60.32	118.6

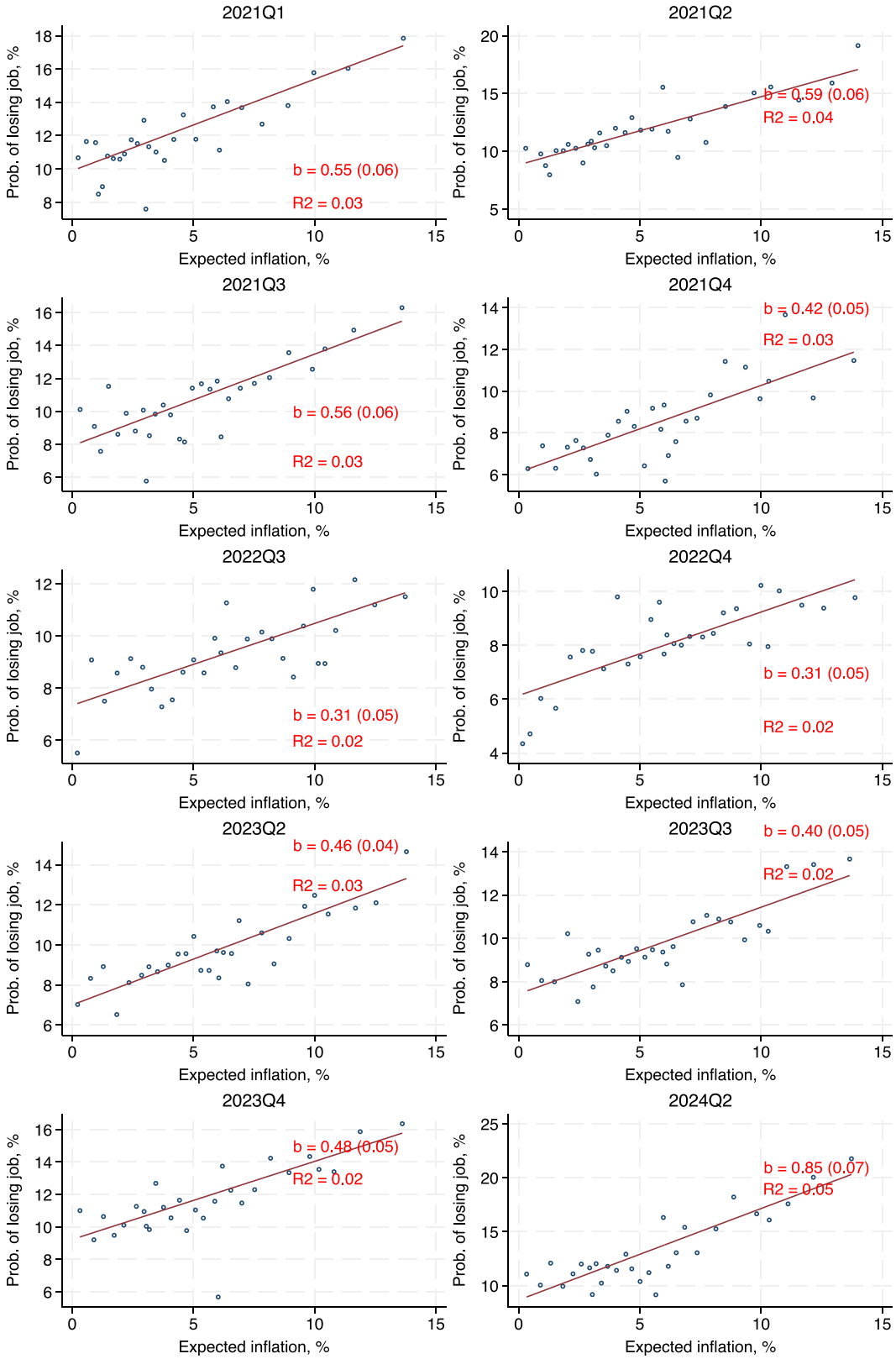
Notes: The table reports estimates from regressing spending measures (intensive and extensive margin) on household inflation expectations and household controls as described in section IV, splitting the sample according to their level of financial wealth. A household is classified as "high financial wealth" if its total financial investment (excluding housing) is worth more than one month of combined household income. Inflation expectations are instrumented using information treatments, as described in section III. Panel A shows results for the subsample with high financial wealth while Panel B shows results for the subsample with low financial wealth. See notes to Appendix Table 1 for more details.

Appendix Figure 1. Year-over-Year inflation by CPI component



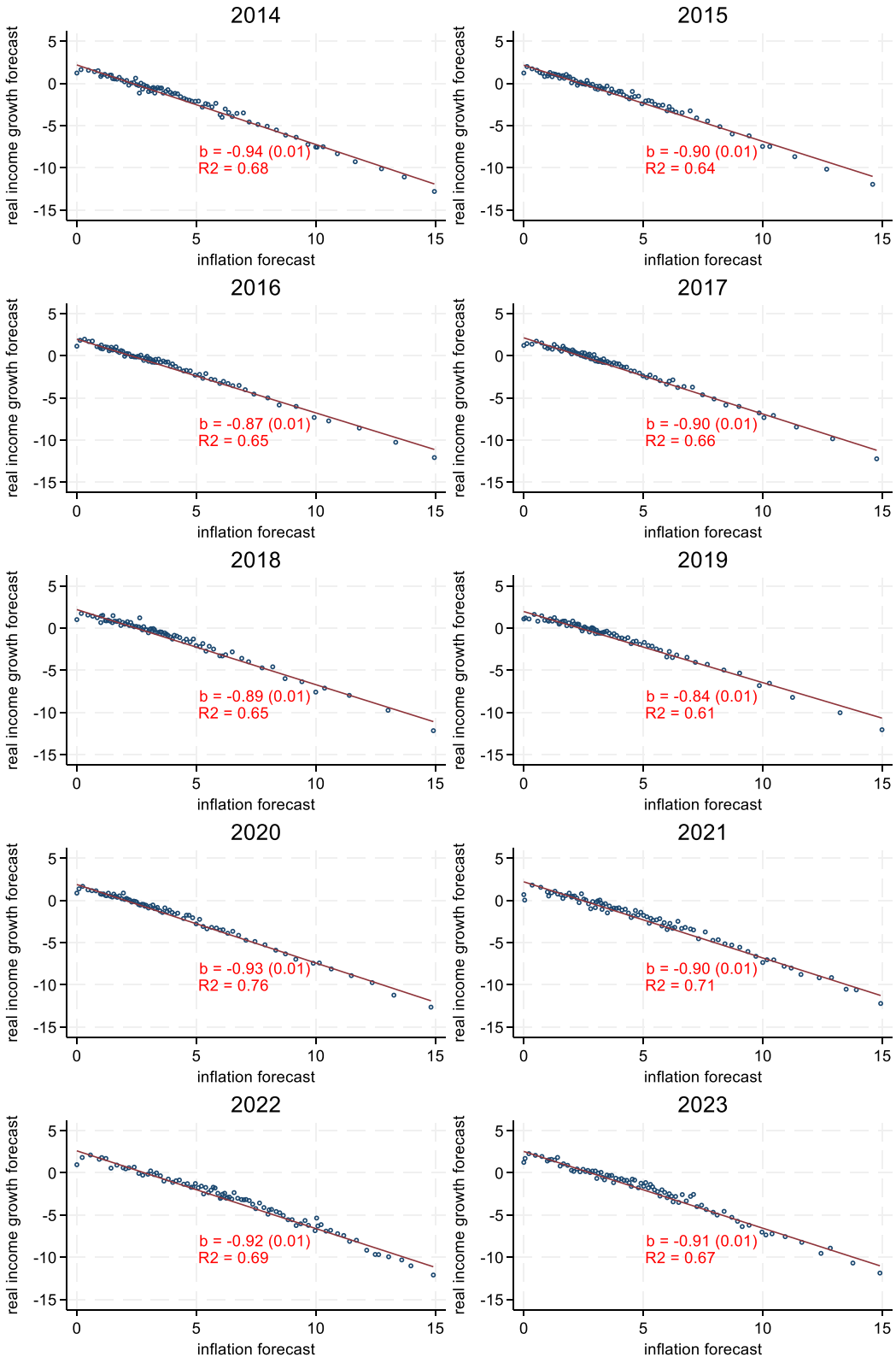
Notes: The figure plot the time series of year-over-year inflation for CPI, durable, non-durables and services.

Appendix Figure 2. Expected probability of losing job vs. expected inflation by survey wave.

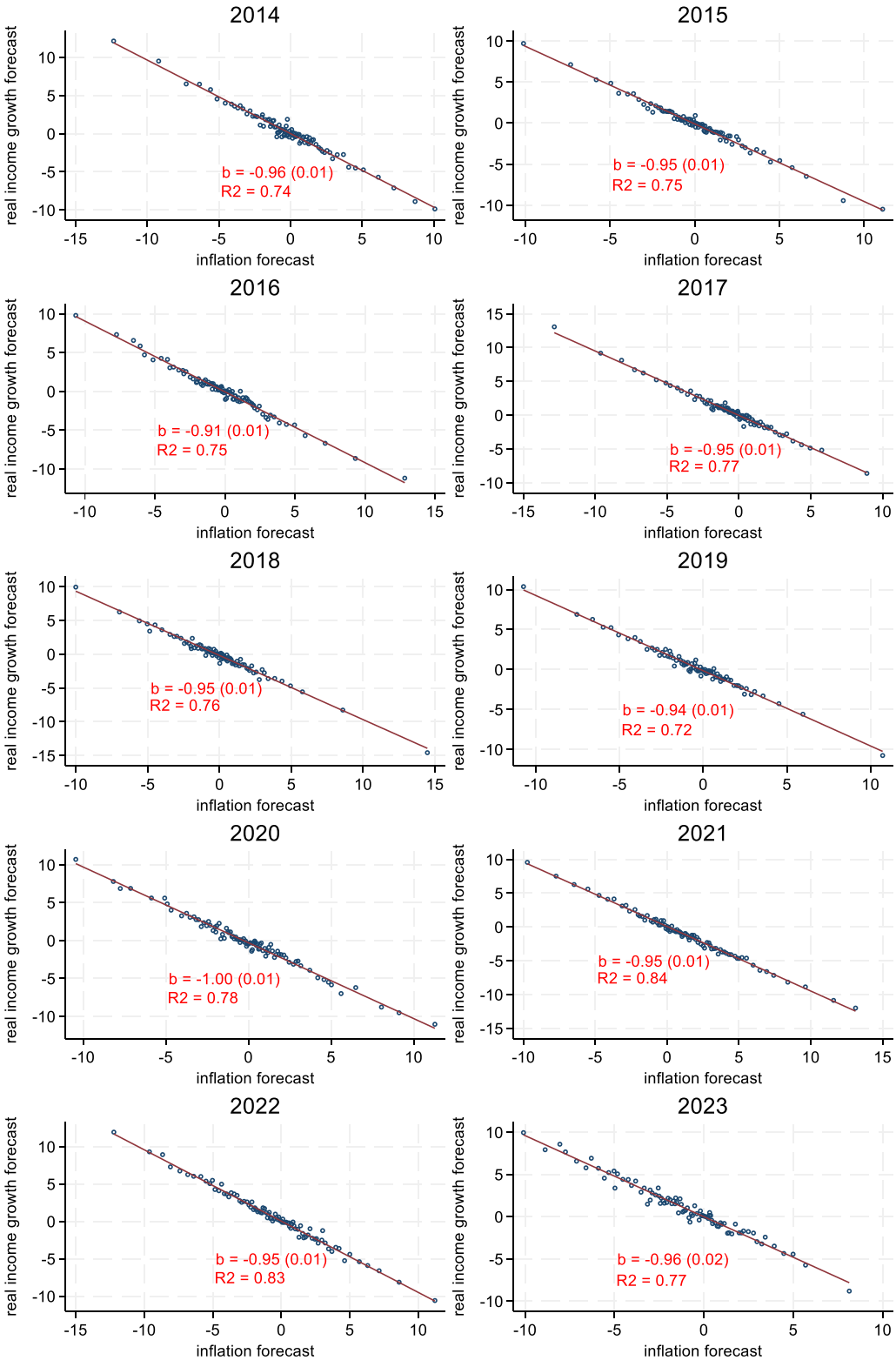


Notes: The figure plots the bin scatter between the expected probability of losing a job in the next twelve months and expected inflation in the next twelve months, as reported in the Nielsen survey of U.S. by survey wave. Uses Huber robust regression to downweight the importance of outliers and influential observations. Regression uses sampling weights. Robust standard error is in parentheses.

Appendix Figure 3 Panel A. Expected real income growth vs. expected inflation, level.

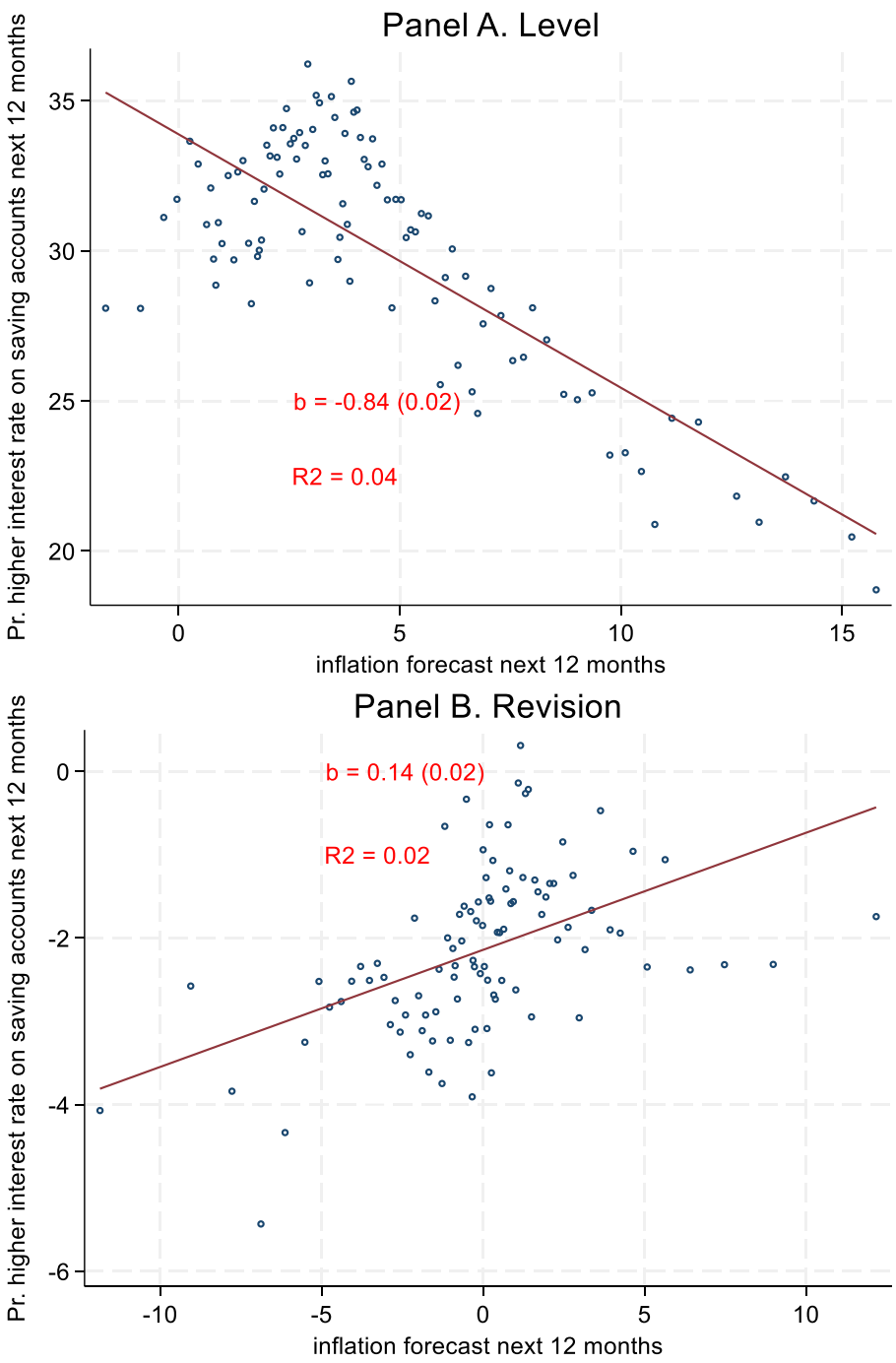


Appendix Figure 3 Panel B. Expected real income growth vs. expected inflation, revisions.



Notes: The figure plots the bin scatter between 1-year-ahead real income growth forecasts (or forecast revisions) and 1-year-ahead inflation forecasts (or forecast revisions) by year. Uses Huber robust regression to downweight the importance of outliers and influential observations. Regression uses sampling weights. Robust standard error is in parentheses.

Appendix Figure 4. Expected probability higher interest rate on saving accounts vs. expected inflation.



Notes: The figure plots the bin scatter between 1-year-ahead expectations of higher interest rate on savings accounts (or forecast revisions) and 1-year-ahead inflation forecasts (or forecast revisions). The survey question is: "What do you think is the percent chance that 12 months from now the average interest rate on saving accounts will be higher than it is now?" The sample period is 2014Q1-2023Q4. Uses Huber robust regression to downweight the importance of outliers and influential observations. Regression uses sampling weights and controls for time fixed effect. Robust standard error is in parentheses.