Low Pass-Through from Inflation Expectations to Income Growth Expectations: Why People Dislike Inflation[*]

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June 25, 2025

Abstract

Using a large, nationally representative survey of US consumers, we estimate a causal 20 percent pass-through from inflation expectations to income growth expectations, with considerable heterogeneity in pass-through associated with socio-demographic factors. The results also indicate that higher inflation expectations cause an increase in consumers' likelihood to search for higher-paying jobs and weakly, hours worked, but do not change the likelihood of asking for a raise, suggesting that consumers recognize significant wage rigidity with their current employer. In a calibrated search-and-matching model, we find that demand and supply shocks combined with incomplete pass-through produce a strong negative relationship between expected inflation and expected utility. Taken together, the survey results and model analysis provide a labor market account of why people dislike inflation.

JEL codes: E31, E24, E71, C83

Keywords: inflation, wage-price spiral, expectations, randomized controlled trial

[*]The randomized controlled trial is registered at the AER RCT Registry (#AEARCTR-0009062). The views expressed here are solely those of the authors and do not necessarily reflect the views of the Federal Reserve Bank of Cleveland or the Federal Reserve System. We thank Oscar Arce, Alex Bick (discussant), Mark Bils, Olivier Coibion, Julia Coronado, Jon Faust, Juan Herreño, Olena Kostyshyna, Emiliano Luttini (discussant), Ayşegül Şahin, Maarten van Rooij (discussant), Michael Weber and seminar participants at various institutions for valuable comments and discussions. We thank Caroline Smith from Morning Consult for her work fielding the experiments.

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1 Introduction

The rapid economic recovery in the US from the COVID-19-induced recession was characterized by the highest inflation rates seen in the last forty years. These high inflation readings were accompanied by increases in inflation expectations and strong wage gains in tight labor markets, raising concerns about the potential feedback into expectations of other macroeconomic aggregates, in particular in the labor market (e.g., Curtin (2022); Blanchard (1986)).[1] However, disentangling the causal effect of inflation expectations on income growth expectations is challenging because these concepts should be related in general equilibrium.[2] More generally, while the literature on expectations formation has made progress in examining how expectations respond to information treatments, it has made less progress in understanding how individuals perceive the relationship between different expected variables.

This paper sheds new light on these issues by investigating the causal relationship between inflation expectations and income growth expectations, and how those expectations affect labor market decisions, in the context of a randomized controlled trial (RCT) for a large, nationally representative survey of the US population. Three key findings emerge. First, inflation expectations causally affect income growth expectations but pass-through from the former to the latter is far less than one-for-one, on the order of 20 percent. Second, higher inflation expectations cause an increase in consumers' likelihood to search for higher-paying jobs and weakly, hours worked, but do not change the likelihood of asking for a raise. This finding is consistent with consumers' recognition of substantial nominal wage rigidity with their current employer.[3] Third, a canonical search-and-matching model calibrated to fit our empirical findings shows that low pass-through from expected inflation into expected income growth is consistent with consumers' beliefs that higher future inflation will reduce their expected utility. Taken together, the survey results and our model analysis formalize a labor market channel underlying consumers' aversion to inflation.

Our empirical findings primarily come from a survey experiment fielded by the decision intelligence company Morning Consult in March 2022, at a time when inflation expectations and inflation concerns were starting to rise to notable levels, and before inflation had clearly begun to turn

[1]See Lorenzoni and Werning (2023) for a theoretical analysis on the wage-price spiral in the context of a New Keynesian model.

[2]See, for example, Werning (2022) for a discussion on the challenges related to pinning down the pass-through from inflation expectations to current inflation.

[3]The recent finding of JÃ¤ger et al. (2024) that workers wrongly anchor their beliefs about outside options on their current wage speaks to the role that perceived nominal wage rigidity plays for workers' income growth expectations.

back down.[4] The embedded experimental module consisted of four parts. The first part elicited inflation expectations and income growth expectations over the next 12 months prior to any experimental treatments ("prior" expectations).[5] The second part consisted of an RCT that allowed us to provide information to respondents on two key objects, inflation or income growth, to determine the causal relationship between inflation expectations and income growth expectations. In particular, we randomly assigned information treatments to six groups: one control group; one placebo group; three groups that received different information on inflation; and one group that received information on wage growth, which is the primary source of income growth for most consumers.

Following the treatments, the third part of the experiment re-elicited inflation expectations and income growth expectations ("posterior" expectations). This experimental step allows us to measure how consumers' posterior expectations of inflation and income growth react to information treatments while conditioning on their prior expectations. Specifically, the resulting exogenous, experimentally induced variation in posterior inflation expectations then allows us to estimate the causal impact on income growth expectations. This passthrough estimate is causal as it considers exogenous variation of inflation or income, while allowing respondents to form their own mental models about the precise transmission mechanism as highlighted in Andre et al. (2022a). For example, consumers might have in mind different interpretations of the origin of the inflationary shock. In this paper, we take a complementary approach. Our analysis focuses on estimating how *on average* consumers' perceived changes in inflation and income are related, estimating a pass-through rate that reflects the distribution of subjective models that consumers may hold. We then interpret this raw moment structurally through a model with a variety of shocks.

Our central finding is this: A 1.0 percentage point increase in inflation expectations increases income growth expectations, but only by 0.2 percentage points – implying an expected decrease in real income growth of 0.8 percentage points. At the same time, there is considerable variation in pass-through associated with socio-demographic characteristics. While the extent of pass-through is high and statistically significant for higher-income respondents, it is low and statistically insignificant for lower-income respondents. This finding is consistent with the former group believing it is better protected from increases in expected inflation than the latter group. We also find a larger pass-through point estimate for male respondents than for female respondents. This result

[4] We also performed a pilot in January 2022 as well as a follow-up exercise in September 2022 that confirms the March results.

[5] We ran robustness exercises with different prior question wordings to mitigate any concern about particular wording, finding no statistical difference depending on the specific prior. This exercise includes using the point estimate question of the NY Fed Survey of Consumer Expectations instead of the question fielded by Morning Consult.

is consistent with evidence that highlights different characteristics in the labor market for women and men. For instance, Biasi and Sarsons (2022) find that in the US, women engage less frequently in pay negotiations, whereas Card et al. (2016) find that, in Portugal, women are less likely to work at firms where workers have high bargaining power. However, pass-through remains incomplete and is well below one-for-one in all cases considered.

Finally, the fourth part of our survey asks respondents about the likelihood of pursuing different labor market actions over the following year to increase their incomes and potentially offset the effects of inflation. Exploiting the exogenous variation in beliefs once again for estimation purposes, we find that higher inflation expectations moderately increase the perceived likelihood that an individual applies for another job paying a higher wage.[6] It also weakly increase the probability of working longer hours. However, higher inflation expectations does not increase the perceived likelihood of asking for a raise from a current employer. Taken together, these results suggest that consumers' mental models (see, for example, Andre et al. (2022a) for a general study of subjective models) encapsulate the belief that there is a high degree of nominal wage rigidity associated with their current employer.

Interpreting our findings through a structural model can provide further economic insight, which, in particular, can help explain why people may dislike inflation. We show how this conclusion can arise by adapting a relatively standard New Keynesian model with search-and-matching in labor markets as in Mortensen and Pissarides (1994), tracing out the expected utility implications of demand and supply shocks. A central finding from this model setup is that wage rigidity stands out in capturing a labor market channel explanation why people dislike inflation. While current work by Afrouzi et al. (2024) and Guerreiro et al. (2024) provides further micro-founded modeling advances in this context, our modeling exercise also gauges the extent to which a canonical model can fit our empirical facts.

The model features several frictions. Motivated by the observation that the provision of publicly available information moves consumers' expectations, which contrasts with a full-information rational expectations view of the world, we follow Mankiw and Reis (2002) and allow for sticky information in the inflation expectations formation process. We calibrate the degree of information stickiness to be consistent with the estimated effect that new information from treatments has on our respondents' inflation expectations. In addition, matching our survey findings requires

[6] Pilossoph and Ryngaert (2022) find that higher inflation expectations are correlated with the likelihood that workers will search for other jobs in the short term.

sluggish wage adjustment. We model wage rigidity as infrequent nominal wage renegotiation in a Calvo (1983) fashion, calibrated to match our estimate of empirical pass-through as a moment. Finally, to capture the impact of inflation expectations on labor market actions, we assume that workers who cannot renegotiate their wages and who apply for other jobs due to higher inflation expectations generate an outside contract with certainty. This wage-push factor puts upward pressure on their nominal wage with the current employer, with an elasticity that we calibrate to match our empirical findings.

Given this setup, our model analysis highlights the responses of key macroeconomic variables to a positive demand shock and a positive (adverse) supply shock that are meant to broadly capture the prevailing inflationary disturbances in the US economy at the time of our survey in early 2022. A central finding that emerges is that nominal wage rigidity plays a crucial role in driving the dynamics of macroeconomic variables within the model. When we subject the model to an inflationary demand shock, this rigidity causes a decline in real wages relative to a counterfactual of full pass-through from inflation expectations to expected nominal wage growth. When we subject the model to an inflationary supply shock, sticky wages temper the movements in real wages compared to the counterfactual of full pass-through. In both cases, the responses of real wages under imperfect pass-through help to amplify the fluctuations in output and consumption, generating additional volatility in the wake of the original shock. Moreover, the model predicts that greater wage rigidity produces a stronger negative relationship between inflation expectations and expected utility regardless of whether we look at supply or demand shocks. This latter result is particularly important because it identifies a labor market channel that can explain why consumers dislike inflation.

The rest of the paper is organized as follows. Section 2 discusses work related to our paper. Sections 3 and 4 provide a detailed description of our experiment and its implementation, respectively. Section 5 explains our identification strategy and presents the main empirical findings. Section 6 gives a brief overview of the model, our calibration strategy, and the macroeconomic implications of the model. Section 7 concludes.

2 Literature Review

Our paper is most closely related to a series of papers that study the issue of public attitudes about inflation, specifically *why* consumers and firms associate higher inflation expectations with lower output and well-being. For example, Shiller (1997) and Candia et al. (2020) provide evidence consistent with our results, though that evidence is non-causal. Other studies, such as Savignac et al. (2021), look at the relationship between firms' inflation expectations and wage expectations (through the lens of the latter as a cost of production), finding a low correlation in the case of France. Concurrent work focuses on the perceived relationship between inflation expectations and income expectations for consumers (Jain et al., 2024; Stantcheva, 2024) and firms (Buchheim et al. (2024)). Jiang et al. (2024) study how people react in terms of expenditure to higher inflation expectations. Our contribution to this literature lies in providing evidence from the consumers' point of view of a *causal* relationship from inflation expectations to income growth expectations, using a RCT to disentangle the mechanism. Moreover, our RCT was implemented at a unique point in time in a context of rising inflation after years of low and stable inflation, an appropriate environment to measure significant changes in inflation expectations and potentially relevant economic decisions.

A further contribution of our paper lies in considering various labor market actions that consumers may endogenously undertake to affect their income growth. Without reliance on behavioral biases or inattention as in Kamdar (2019), our empirical evidence suggests that frictions in nominal wages and limited pass-through from inflation expectations to income growth expectations may explain why consumers associate higher inflation with worse economic outcomes. While this negative association seems straightforward from a supply-side view, the perceived frictions affecting nominal incomes found in the empirical analysis help explain why consumers associate inflation with worse economic outcomes even in the presence of demand shocks. Our empirical labor market findings also align with the correlations found empirically in other survey data and predicted theoretically by the concurrent work of Pilossoph and Ryngaert (2022).

Methodologically, our paper is related to the growing literature that focuses on survey data to understand how economic agents form expectations about key variables such as inflation; see, e.g., Coibion and Gorodnichenko (2015), Bordalo et al. (2020), Coibion et al. (2020b), Angeletos et al. (2021), Coibion et al. (2022), and Andre et al. (2022b) among many others. Relying on the overwhelming evidence of imperfect information presented by these studies, another significant contribution of our paper is using information treatments to exogenously vary beliefs about both expected inflation and expected income growth and then uses the variation to estimate the perceived causal link between these *two* variables. This estimated link may serve to discipline the modeling of underlying economic transmission mechanisms in general equilibrium.

Finally, our paper is related to the New Keynesian literature that incorporates Mortensen and Pissarides (1994) types of labor market search-and-matching frictions. Our model is largely adapted from papers such as Trigari (2006), Christoffel and Kuester (2008), Christoffel et al. (2009), and Gertler and Trigari (2009). This framework allows us to incorporate general equilibrium aspects and explore different shocks that consumers might have in mind when forming expectations (Andre et al., 2022b). In contrast to these papers, we calibrate the model, specifically, the nominal wage stickiness and elasticity of the wage-push factor with respect to inflation expectations, to match our new empirical facts.[7] Papers such as Christiano et al. (2005), Smets and Wouters (2007), and Gali et al. (2012) have shown that wage rigidities play an important role in explaining US aggregate data. Our paper provides additional evidence that wage rigidity is deeply embedded in consumers' inflation and income growth expectations, at least as of the time of our survey in 2022, amid a period of elevated inflation. Recent work by Afrouzi et al. (2024) and Guerreiro et al. (2024) provide further evidence in this context as well as more micro-founded modeling approaches.

3 Experimental Description

To quantify the causal relationship between inflation expectations, income growth expectations and labor market decisions, we design a randomized controlled trial (RCT) and embed it within an established consumer survey. While the next section outlines the details of the survey implementation, the structure of the embedded experimental component has four main parts.

First, the survey elicits initial inflation expectations and income growth expectations from all respondents ("priors"). Second, participants are randomly assigned to a group and either receive the information treatment for that group or no information if they are in the control group. Third, the survey re-elicits expectations ("posteriors") about inflation and income growth. Fourth, to conclude, we collect information about expected labor market decisions. The exact wording of the questions that measure both prior and posterior beliefs is described in detail in the next section, Section 4. The Online Appendix A provides the full survey questionnaire.

In a first step, the survey thus elicits prior inflation expectations and income growth expectations from all respondents according to these questions. By doing so, our analysis follows common practice in experiments, eliciting prior beliefs to capture any systematic apriori belief differences across respondents. Because initial beliefs may matter for the responsiveness to a treatment, it is important to take them into account: For example, respondents who already hold very high initial

[7]The assumption of a wage-push factor plays a similar role to within-quarter job-to-job transition probabilities being affected by inflation expectations. Krusell et al. (2017), for instance, consider within-period job-to-job transitions with a fixed probability.

inflation expectations may just not be very reactive to an information treatment about inflation. Prior belief data thus allows for a more efficient estimation of the treatment effects.

In a second step, participants are randomly divided into six groups, including a control group, with each participant in those groups receiving the same treatment. The information received by each treatment group is as follows:

1. Control (receives no information). (N=1,075)
2. The Federal Reserve targets an inflation rate of 2% per year in the long run. (N=1,155)
3. A recent survey from the Conference Board found that wages were expected to rise 3.9% in 2022. (N=1,093)
4. Between January 2021 and January 2022, the Consumer Price Index (CPI), which measures the average change in prices over time that consumers pay for goods and services, showed the inflation rate in the US was 7.5%. (N=1,112)
5. According to the Survey of Professional Forecasters, the Consumer Price Index (CPI), which measures the average change in prices over time that consumers pay for goods and services, showed the inflation rate will be 3.7% by the end of 2022. (N=1,074)
6. According to the US Census Bureau, the United States population was 332,402,978 as of December 31, 2021. (N=1,120)

Treatment 2 aims to inform respondents about the price stability objective of the Federal Reserve and potentially influence their long-run inflation expectations. Treatment 3 provides information about a forecast of future aggregate wage growth. Treatment 4 provides information about past inflation that may affect future inflation expectations as well as perceived real income in case the reported inflation rate was not known. Treatment 5 provides information about a forecast of future aggregate inflation. Last, treatment 6 provides information that should not be relevant and is intended to work as a placebo, allowing us to determine whether consumers react to receiving any information. A priori, we would expect that information about aggregate wage growth in treatment 3 could affect an individual's expected wage growth, while information about aggregate inflation in treatments 2, 4, and 5 could affect the individual's inflation forecast.

In a third step, the survey re-elicits beliefs ("posteriors") about inflation and income growth. Notably, the experiment uses question wordings that slightly differ between prior and posterior. While one would ideally use identical prior and posterior question wordings, such modulating us-age is best practice in the survey literature due to several considerations.[8] The central criterion for the choice of wording – one that we verify in our implementation section below – is that responses to the prior wording and the posterior wording capture highly correlated information. Why? Beyond the requirement of capturing information about the same variable (but not violating survey design concerns) the presence of such correlation allows one to detect any *systematic* resulting variation in the correlation from treatments, relative to a control group. In Section 5.2, our analysis exploits the variation in this systematic, respondent-level correlation to form an instrument for our causal analysis. Overall, while there is no theoretically optimal correlation that one would like to obtain, the questions should sensibly measure similar information. Section 5.1.1 establishes such a sensible relation between prior and posterior in our survey data and Section 5.1.2 treatment effect on the posterior. Note that our final analysis is always in terms of the posterior question.

In a fourth step, the survey additionally asks respondents about labor market decisions. This latter set of questions includes an open-ended answer option, which aims to record any further decisions that survey respondents might offer but were not included into the set of possible answer choices.

Overall, the order of the experiment can be summarized as follows:

1.a **Prior Inflation**: Inflation expectations wording 1 ("Indirect measure of inflation expectations question")

1.b **Prior Wages**: Income growth expectations wording 1 ("Income over the next year question")

2. **Information Treatment or Control**

3.a **Posterior Inflation**: Inflation expectations wording 2 ("Prices in general inflation expectations question")

3.b **Posterior Wages**: Income growth expectations 2 ("Income December 2022-December 2023 question")

4. **Actions**: Options about labor market outcomes question

With this simple treatment-control design we are able to determine the causal effect of treatment-

[8] There are several considerations: First, respondents exposed to the same question twice might want to be consistent. Second, respondents might think that the survey designers are playing with them or "testing" them, especially in the case of the control group where they would receive the identical question twice in short succession without any intervening information. Third, slightly differently worded questions may also help overcome respondent survey-taking fatigue and short attention spans. Because of these considerations, it is preferable to use a question that measures beliefs of consumers without repeating the exact same question (Haaland et al., 2023). Many papers have prior and posteriors that measure similar information, but are not about the exact same concept. For example, Weber et al. (2023) use priors different from posteriors, such as past inflation in some cases.

induced variation in inflation expectations and wage growth expectations on each of the posterior responses – our main variables of interest – and labor market actions. For example, when we induce variation in inflation expectations, we can then measure, relative to the control group, to what extent income growth expectations move. Prior expectations in this design serve to capture differences in respondent information sets before any treatments are applied. Section 5 below presents these methodological details and the results of the analysis.

4 Implementation

This section details the implementation of our experimental design and specifies the exact wording of our prior, posterior, and labor market questions.

To implement our experimental design, we ran three surveys. Our main implementation consists of a survey in March 2022 when CPI inflation in the US was rising and reached a level of 8.5 percent.[9] A subsequent survey was fielded in September 2022, where we performed the same exercise as in March, except that we updated the information provided in the information treatments to reflect the passage of time. In September 2022, inflation was 8.1 percent, but declining, so this follow-up can be viewed as a test of validity in a different inflationary context. Prior to these main surveys, in January 2022, we performed a short pilot survey as proof of concept. Respondents received only the prior questions on inflation expectations and income growth expectations. The pilot survey did not provide any treatments, nor did we ask the posterior questions or the labor market questions. Table 8 in Appendix B reports the correlation between inflation and income-growth expectations from the January 2022 pilot. Respondents for all three surveys come from a large, nationally representative sample of the US population.[10] All data represent repeated cross-sections so the respondents in the main survey were neither surveyed previously nor in the September follow-up.

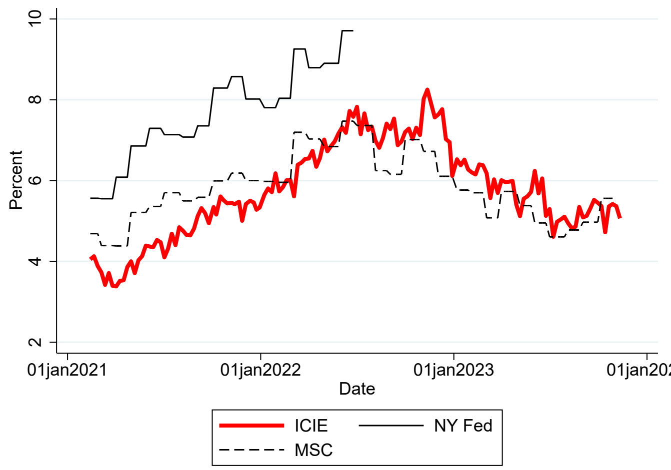
What prior and posterior question wordings did we use? First, our prior question on inflation expectations borrows the approach of Hajdini et al. (2022a) by indirectly eliciting consumers' *individual* inflation expectations. The idea underlying this approach to measuring expectations is not to ask about aggregate inflation expectations directly, but rather to ask for the change in income that consumers think will be required to buy the same goods and services a year from the date of the survey. Details of the implementation and analysis of the results of this survey-based measure

[9] CPI inflation peaked in June 2022, at 8.99 percent.

[10] See Table 7 in Appendix B to see how our population compares to the US population.

of indirect consumer inflation expectations (ICIE) over a long time span are described in Hajdini et al. (2024). Notably, as Figure 1 illustrates, the average ICIE response evolves very similarly compared to the Michigan Survey of Consumers and the NY Fed Survey of Consumers Expectations. Such co-movement should not be surprising since, as shown by D'Acunto et al. (2021), consumers use their own prices to form expectations about aggregate inflation (see also (Kuchler and Zafar, 2019)).

Figure 1: ICIE and Other Surveys of Inflation Expectations



Notes: The figure plots different measures of inflation expectations from 2021 to 2023, or its last available data. ICIE is the Indirect Consumer Inflation Expectations. MSC denotes the inflation expectations from the Michigan Survey of Consumers. NY Fed denotes the inflation expectations from the NY Fed Survey of Consumer Expectations. For each measure, we trim answers below the 10th percentile and above the 90th percentile each month. CPI is the price CPI inflation for the US.

The prior inflation question, which is part of a larger survey that Morning Consult and the Federal Reserve Bank of Cleveland run and publish every week since February 2021, is the following:

"Next we are asking you to think about changes in prices during the next 12 months in relation to your income. Given your expectations about developments in prices of goods and services during the next 12 months, how would your income have to change to make you equally well-off relative to your current situation, such that you can buy the same amount of goods and services as today? (For example, if you consider prices will fall by 2% over the next 12 months, you may still be able to buy the same goods and services if your income also decreases by 2%.) To make me equally well off, my income would have to"

Respondents then select from three options, filling in the percentages if they select (1) or (3), while (2) is coded as zero:

1. Increase by %;
2. Stay about the same; and
3. Decrease by %.

Second, our posterior inflation expectations question uses the following wording, which is similar to the MSC:

"In the next year, do you think prices in general will increase, decrease, or stay about the same?"

If respondents' answers indicated an expected increase or decrease, then they were subsequently asked to provide a quantitative percentage response. In terms of the interpretation of the results in the rest of the paper, all analyses in terms of *inflation* will consider this question as the posterior. Notably, while the ICIE question is used to measure respondents' priors, our results are not affected if we select the canonical NY Fed inflation expectations question to elicit the prior inflation expectations, as Appendix F shows.

Third, our second prior question elicits income growth expectations in the following way:

"Do you expect your income to increase, decrease, or stay about the same over the next 12 months?"

The question comes with the same options as in the inflation posterior question. If respondents indicated they expect their income to increase or decrease, then they were subsequently asked to provide a quantitative percentage response.

Fourth, our posterior income growth expectations question uses the following wording:

"Between December 2022 and December 2023, do you expect your income to increase, decrease, or stay about the same over the next 12 months?"

Compared to the prior question on income growth expectations, this question mainly differs in its reference to a fixed time period. This period partially overlaps with the previous income growth question so we expect a positive correlation with the previous question given the overlap as well as the fact that many wages are adjusted infrequently and at a particular time of the year.

Finally, questions about labor market decisions follow the elicitation of all these posterior expectations, asking consumers:

"How likely are you to do the following to increase your income over the next three months?"

We asked respondents to provide answers for three actions, choosing from the response set *very likely*, *somewhat likely*, *somewhat unlikely*, *very unlikely*, or they *do not know*. The actions we asked for are:

- Apply for a job(s) that pays more

- Work longer hours
- Ask for a raise

In addition to these actions, an open-ended answer option records any further possibilities that survey respondents might offer.

From the data gathering process, due to typos and other issues, we obtain some answers that are either extremely high (over 10 million percent) or unfeasible (deflation lower than 100 percent). Because of that, we winsorize 2.5 percent of the lowest and 2.5 percent of the highest answers of all numerical responses. This method is similar to Weber et al. (2023), who limit answers to be not higher than 100 percent for example.[11]

5 Empirical Analysis

This section establishes the causal impact of RCT-elicited inflation expectations on both income-growth forecasts and short-term labor-market plans, identifying three main findings: First, the pass-through of inflation expectations to income-growth expectations is positive and statistically significant but falls short of unity. Second, this pass-through differs across demographic groups, with some differences reaching statistical significance. Third, while higher inflation expectations raise consumers' reported likelihood of searching for a higher-paying job, and weakly the likelihood of working more hours, they do not affect the anticipated probability of requesting a raise.

Our analysis uses treatment-induced variation in posterior beliefs to identify these causal relationships. Leading up to this central exercise, the subsection below first establishes two intermediate results necessary for such an analysis: First, posterior beliefs indeed systematically capture similar information to prior beliefs (Subsection 5.1.1). Second, the RCT treatments induce systematic variation in posterior beliefs (Subsection 5.1.2). This latter intermediate result is especially relevant because it induces the exogenous variation on expectations that can we use as an instrument to infer causal effects of changes in expectations on other variables. A reader less keenly interested in these detailed prerequisites of identification may choose to directly go to the causal inference results in Subsections 5.2 and 5.3.

5.1 Priors, Posteriors, and the Impact of Experimental Treatments

To establish these intermediate results, Subsections 5.1.1 and 5.1.2 estimate two specifications that relate prior beliefs to posterior beliefs. In the case of inflation expectations, we estimate the fol-

[11] In our case, the prior for inflation goes from -2 percent to 100 percent. The posterior for inflation goes from -2 percent to 50 percent. The prior and posterior for income goes from -10 percent to 50 percent.

lowing specification:

$$E_i\left[\pi_p^{Posterior}\right] = \alpha + \beta E_i\left[\pi_p^{Prior}\right] + \sum_{j=2}^{6}\gamma_p^j \times T_i^j + \sum_{j=2}^{6}\theta_p^i \times T_i^j \times E_i\left[\pi_p^{Prior}\right] + \varepsilon_i \tag{1}$$

where $E_i\left[\pi_p^{Prior}\right]$ denotes respondent i's prior inflation expectations from the ICIE question and $E_i\left[\pi_p^{Posterior}\right]$ denotes the posterior general price growth expectations in the next year. T_i^j is a dummy variable that is equal to 1 if respondent i received treatment j and 0 otherwise. The control group $j = 1$ is the reference group. We estimate a similar regression for income growth expectations:

$$E_i\left[\pi_y^{Posterior}\right] = \alpha + \beta E_i\left[\pi_y^{Prior}\right] + \sum_{j=2}^{6}\gamma_y^j \times T_i^j + \sum_{j=2}^{6}\theta_y^j \times T_i^j \times E_i\left[\pi_y^{Prior}\right] + \varepsilon_i \tag{2}$$

where $E_i\left[\pi_y^{Posterior}\right]$ denotes the posterior expectations of income growth between December 2022 and December 2023 and $E_i\left[\pi_y^{Prior}\right]$ denotes the prior income growth expectations over the next 12 months. We estimate regressions in (1) and (2) for the full sample of respondents and the control group.

In doing so, our analysis takes into account potentially influential survey responses in several ways: First, we conduct Huber-robust regressions, and second, we run trimmed regressions, with the latter dropping 5 percent of the largest changes between individuals' prior and posterior beliefs. Huber-robust regressions aim to underweight observations that report large residuals in the objective regression. This method is widely used, especially in expectations surveys that involve consumers, as they can exhibit large revisions that can overly influence regressions. The trimming procedure presents a more intuitive, but arbitrary way to remove large revisions. By contrast, our general, initial winsorization of the data aims to remove outliers from the cross-sectional distribution of expectations rather than from influential changes due to the treatments. Drawing upon the common practice in survey analysis (for example, Coibion et al. (2020b)), we view the Huber-robust regressions as our preferred specification, with the trimmed regressions serving mainly as a robustness check. Appendix D implements a third, quantile regression approach, with results reported in Table 17.

What do we expect from the estimation of these specifications? Across these two specifications, a statistically significant positive coefficient β will provide evidence for a systematic relationship between prior and posterior beliefs, yielding intermediate result (1). The coefficient θ_k^i with $k \in (p, y)$ which is expected to be negative should indicate if a treatment T_i^j with $j \in (2,6)$ provides information that is useful to forecast the posterior while potentially pushing it away from the prior.[12] Note that any significant difference in the correlation of the prior and posterior between treated and control group will be due to the treatment. The treatment effect should be valid in particular because the demographic makeup of the treatment and control groups is observationally the same with respect to the treatment due to randomization, as Table 9 shows.

In all of this, the inclusion of the prior allows us, as outlined in the description of the experimental setup in Section 3, to measure the information set of the respondent with respect to inflation and income expectations which are then altered by the treatment. Notably, in anticipation of building an individual-level instrument for expectations, the individual-specific variation induced by the interaction of treatments and priors provides such continuous, individual-level exogenous variation. The discrete treatments alone whose effect is captured by γ_k^j may not provide sufficient variation, especially if their estimates were to be of similar magnitudes (e.g. $\gamma_k^1 = \gamma_k^2$). Nonetheless, both direct treatment effects and interaction of prior and treatment effects provide the basis for construction of the instrument in Section 5.2, yielding intermediate result (2).

5.1.1 Significant Relationship between Prior and Posterior Question

The results presented in this subsection show the answers to the prior and posterior question are statistically significantly related. This relationship forms part of the basis for our identification strategy, providing intermediate result (1). It also validates the choices of question wording against the backdrop of the design considerations outlined above in the experimental description.

Our results show that there is indeed a high correlation of the posteriors with the priors as columns 1-2 and respectively 3-4 in Table 1 shows.[13] For inflation expectations, we find that a 1 percentage point increase in the prior of the control group increases the posterior by approximately 0.51 percentage point in the case of Huber robust estimation, and 0.49 in case of the trimming regression. This correlation between prior and posterior for the control group is similar to the one found in other, similar household experiments. For example, Coibion et al. (2019) or Coibion et al. (2022) find a correlation of 0.54 and 0.66 using a distributional question as prior. Our

[12] Weber et al. (2023), among many others, use a similar empirical strategy.

[13] Figure 4 in Appendix C shows the underlying distributions of the prior and posterior beliefs while Figure 5 in Appendix C shows the distribution of the posterior for each treatment group. We observe rounding (see Binder (2017)) in particular at zero as is common in other surveys (43 percent for the prior, 32 percent for the posterior; see Andrade et al. (2023) for properties of zero answers). Hajdini et al. (2024) describe in more detail the distribution of the prior.

finding confirms that the ICIE measure provides a good prior for aggregate inflation expectations. In the case of income growth expectations, the correlation is even higher and associates the same 1 percentage point increase in prior beliefs with an increase in the posterior beliefs of between 0.78 and 0.96 percentage points.

Table 1: Effects of Treatments on Expectations

	(1) $E_i\left[\pi_p^{Posterior}\right]$	(2) $E_i\left[\pi_p^{Posterior}\right]$	(3) $E_i\left[\pi_y^{Posterior}\right]$	(4) $E_i\left[\pi_y^{Posterior}\right]$
$E_i\left[\pi_p^{Prior}\right]$	0.506***	0.490***		
	(0.006)	(0.020)		
$E_i\left[\pi_y^{Prior}\right]$			0.775***	0.960***
			(0.056)	(0.010)
T2: Target	0.126	-0.382	-0.292	-0.081
	(0.138)	(0.395)	(0.296)	(0.104)
T3: Wages	0.771***	-0.540	-0.445*	0.146
	(0.153)	(0.385)	(0.256)	(0.108)
T4: CPI	0.586***	-0.547	-0.271	-0.048
	(0.150)	(0.395)	(0.277)	(0.112)
T5: SPF	0.720***	-0.429	-0.147	-0.049
	(0.149)	(0.409)	(0.338)	(0.106)
T6: Placebo	0.498***	0.482	-0.439	-0.182*
	(0.148)	(0.403)	(0.274)	(0.106)
T2 x Prior	-0.023***	-0.053*	-0.116	-0.003
	(0.008)	(0.028)	(0.081)	(0.015)
T3 x Prior	-0.213***	-0.036	-0.037	-0.029*
	(0.013)	(0.028)	(0.087)	(0.017)
T4 x Prior	-0.258***	-0.065**	-0.171*	0.013
	(0.011)	(0.027)	(0.092)	(0.013)
T5 x Prior	-0.281***	-0.084***	-0.061	0.005
	(0.011)	(0.030)	(0.085)	(0.016)
T6 x Prior	-0.008	-0.026	-0.103	0.006
	(0.008)	(0.026)	(0.085)	(0.015)
Constant	1.343***	4.223***	0.925***	0.274***
	(0.098)	(0.291)	(0.217)	(0.075)
Regression	Huber	Trimmed	Huber	Trimmed
Observations	5,892	6,373	6,622	6,335
R-squared	0.786	0.432	0.555	0.922

Notes: The table shows estimates of equations (1) and (2) that relate priors and posteriors, as well as estimates of equations (1) and (2) that gauge the effect of treatments and their interaction with prior beliefs. Robust standard errors in parenthesis.

5.1.2 Treatment Effects on Posterior Beliefs

This subsection establishes which treatments induce variation in posterior beliefs, some of which is mediated at the individual level through the interaction of priors and treatments. This individual-level variation forms the foundation for our causal inference in the next subsections. The direct treatment effect sometimes also bear statistical significance, but do not provide sufficient variation at the individual level for our subsequent causal inference. Together, these results embody intermediate result (2) as discussed above.

In terms of the inflation expectations, the relevant treatments show the statistically significant impact at the individual respondent level that is necessary for our subsequent causal analysis. As Table 1 shows in columns (1) and (2) the estimated coefficients $\hat{\theta}_p^j$ on the interaction of treatments and prior are negative statistically significant for all inflation treatments, but the placebo. In our baseline Huber regression which is reported in column (1), this negative coefficient is highly statistically significant for treatments T2, T3, T4 and T5. In the case of trimmed sample (column (2)), the negative coefficient is smaller, and less significant in some cases.[14] The negative sign of the estimated coefficients indicates that consumers who receive one of the treatments place less weight on their prior beliefs. All direct treatment effects except for T2 are statistically significant in the Huber regression shown in column (1), but insignificant in the trimmed regression as shown in column (2).[15] Since they provide little variation in levels and since the number of inflation treatments is limited to three, this absence of significance in the trimmed cased is of little consequence for the construction of individual respondent-level variation for the subsequent causal inference.[16]

In contrast to inflation expectations, the regression results show that the treatments have little effect on the posterior beliefs of income growth expectations. This insight immediately follows from the high correlation between the prior and posterior beliefs: most respondents do not revise their answers, in line with this high correlation. The Huber-robust regressions fail to run with the standard tuning factor due to the small number of outliers that can be dropped. When we use the minimum tuning value to achieve convergence, the results in column (3) – both for direct and indirect treatment effects – indicate that the treatments generally exert little influence on the posterior beliefs. The same conclusion also arises for the trimmed regressions which are reported

[14]Comparing both methods, there are some relevant differences in the intercepts associated to the treatments. The intercepts capture the location of the various regressions along the y-axis, compared to the control group. Because the composition of respondents differs across estimation methods, the intercept might change, but there are generally less informative in reflecting a change in the posterior relative to the prior.

[15]The statistically significant sign of the direct placebo treatment in column (1) is of no consequence for our subsequent causal analysis: We do not use it to build our instrument. Conceptually, it may capture a general information treatment effect or simply the effect of providing an "anchor."

[16]As a robustness check using other techniques, Table 17 in Appendix D confirms these results using quantile regressions. Figures 6 and 7 in Appendix C plot the distribution of priors and posteriors and their relationship with the control group. We observe big differences between the control group and treatments 3, 4, and 5. The change in the slope is smaller but statistically significant for treatment 2. The control group and the placebo have a very similar distribution, with small differences that are irrelevant in terms of the magnitude and the distribution of the responses.

in column (4). We find no effect from the information treatments on respondents' posterior beliefs for income growth expectations other than from the wage inflation treatment.

Overall, the results in Table 1 do not only show that our inflation treatments – crucially through the interaction with the priors – generate the necessary variation in individual inflation beliefs for our causal inference. The results also suggest that the information treatments about inflation have a greater effect on inflation expectations than on income growth expectations. Such evidence of strong priors for income growth expectations is consistent with the view that consumers are very attentive to their income trajectories, which, as in Weber et al. (2023), makes their forecasts less responsive to information treatments about aggregate variables. In the case of inflation expectations, however, the findings suggest that respondents are subject to some type of information frictions as all treatments contain public information. In fact, even though inflation was high at the time of the experiment and salient because of elevated news coverage and the notable impact of inflation on consumers' budgets, the results suggest that consumers were not fully informed about price developments and did not hold firm inflation expectation priors.

5.2 The Causal Effect of Inflation Expectations on Income Growth Expectations

This subsection uses the variation induced by the treatments to infer the causal effect of inflation expectations on income growth expectations, which yields our main findings. To do so we regress posterior income growth expectations on the inflation expectations that are exogenously varied by the experiment, plus the prior income growth expectations, while including the control group as necessary reference group. That is, we estimate the following specification:

$$E_i\left[\pi_p^{Posterior}\right] = \alpha + \beta E_i\left[\widehat{\pi_p^{Posterior}}\right] + \zeta E_i\left[\pi_y^{Prior}\right] + \epsilon \tag{3}$$

where $E_i\left[\widehat{\pi_p^{Posterior}}\right]$ denotes the variation in inflation expectations that is exogenous due to the treatment. Because the wage treatment is not effective in shifting posterior expectations about income growth, our analysis does not focus on the effect of wage expectations on inflation expectations.

We construct the instrument for expected inflation, $E_i\left[\widehat{\pi_p^{Posterior}}\right]$, using the following specification:

$$E_i\left[\widehat{\pi_p^{Posterior}}\right] = \begin{cases} \sum_{j=2,4,5} \gamma_p^j \times T_i^j + \sum_{j=2,4,5} \theta_p^j \times T_i^j \times E_i\left[\pi_p^{Prior}\right] & if \quad T_i = 2,4,5 \\ 0 & if \quad T_i = 1,6 \end{cases} \tag{4}$$

where we exclude the treatment providing information on wage inflation (T3) because the reported results indicate it directly affects income growth expectations – the dependent variable in our ultimate instrumented regression (3). In constructing the instrument this way, we use $\hat{\gamma}_p^i$ and $\hat{\theta}_p^i$ from the OLS regression as well as from the Huber and trimmed regressions in the corresponding OLS, Huber and trimmed regression versions of estimating equation (3). These estimated coefficients represent the weights assigned to each of our treatments. This approach is similar in spirit to the one in Coibion et al. (2019), among others, which uses the variation induced by the treatment as an instrument, using the direct effect and the interaction with the prior.[17] Notably, the sample size for the instrumental variable regressions will be smaller compared to Table 1: we exclude the wage expectations treatment in constructing the instrument and only focus on information that directly affects inflation and that has an effect on inflation expectations according to Table 1.

Our identification strategy is validated by a combination of factors related to our survey design and the estimated effects of information treatments on expectations. First, the assignment of information treatments to the respondents in the survey is random. Second, we only use targeted, carefully worded treatments containing information about inflation to form the instrument for inflation expectations. Third, and in line with the findings of other RCT work on inflation expectations, we find that providing people with publicly available information treatments – even at a time when inflation was particularly salient – tends to move their beliefs, invalidating full-information rational expectations. Fourth, the results in Table 1 demonstrate that the inflation treatments in the first stage only change the posterior beliefs of inflation expectations but do not have an effect on income growth expectations, which serves as a test of exclusion restrictions in the instrumentation. Moreover, our finding that inflation-related information treatments only affect inflation expectations is consistent with the theoretical findings in Angeletos and Lian (2023) that information frictions attenuate general equilibrium inference.

Our key result then arises from estimating the instrumented regression: There is a moderate positive causal relationship from inflation expectations to income growth expectations that reflects only partial pass-through. As shown in column 1 of Table 2, the OLS regression indicates that inflation expectations exhibit a very low correlation with income growth expectations of 0.085. However, as shown in Column 2, the Huber IV regression yields a notably higher coefficient of 0.203. In particular, the estimate implies that a 1 percentage point increase in inflation expectations

[17] Coibion et al. (2020b) also exploit similar variation, but using past inflation as the prior interacted with a treatment as an instrument, in a panel survey. Unfortunately, our data do not have the required same time series dimension.

Table 2: Effect of Inflation Expectations on Income Growth Expectations

	(1)	(2)	(3)
	$E_i\left[\pi_y^{Posterior}\right]$	$E_i\left[\pi_y^{Posterior}\right]$	$E_i\left[\pi_y^{Posterior}\right]$
$E_i\left[\pi_p^{Posterior}\right]$	0.085***	0.201***	0.168***
	(0.014)	(0.070)	(0.045)
$E_i\left[\pi_y^{Prior}\right]$	0.674***	0.637***	0.624***
	(0.025)	(0.034)	(0.033)
Constant	0.109	-0.805	-0.563*
	(0.101)	(0.521)	(0.332)
Regression	OLS	IV	IV
Sample	All	Huber	Trimmed
F-test		117.408	289.517
Observations	5,525	5,525	5,322
R-squared	0.558	0.539	0.538

Notes: This table shows results from OLS and IV regressions of the posterior of income growth expectations on the prior of income growth expectations and the posterior of inflation expectations. Columns (2) and (3) use IV, instrumenting with $E_i\left[\widehat{\pi_p^{Posterior}}\right]$. Column (2) uses the instrument constructed equation (4) with Huber weights, whereas column (3) uses the instrument constructed from the trimmed regression. The estimates of γ_p^j and θ_p^j, where $j = \{2,4,5\}$, for both Huber and trimmed regressions are reported in Table 1. Robust standard errors are in parentheses.

increases expected income growth by 0.2 percentage points.[18] The trimmed IV regression in column 3 shows a slightly lower pass-through estimate of 0.17, but it is within one standard deviation of the estimate in column 2. Moreover, the instrument displays a relatively high F-test statistic.

Looking more closely at the Huber IV regression, which is our preferred specification, the results suggest that pass-through is considerably lower than one-to-one.[19] Viewed differently, the same 1 percentage point increase in inflation expectations implies a 0.8 percentage point *reduction* in expected real income growth. A key takeaway from this finding is that it suggests consumers associate increases in expected inflation with a marked decline in expected real income growth, offering one reason for an aversion to inflation. In a complementary fashion, our subsequent analysis in the next subsection explores how the effect of expected inflation on real income influences

[18]This pass-through differs markedly from a correlation of 0.37 in the raw data, as shown in Table 8 in Appendix B. This difference highlights the importance of estimating a causal relationship as we do based on our RCT.

[19]In Table 21 in Appendix E, we calculate the pass-through for each of the treatments individually, rather than combining them as in Table 2. Each of the inflation treatments produces very similar estimates, pointing to incomplete pass-through in each treatment, with the magnitudes similar to the main result of 0.2. Additionally, in Table 10 in Appendix B, we show that this result is robust to many alternative specifications.

the labor market actions of consumers and further shapes their attitudes toward inflation.

A secondary finding also emerges from our analysis: Distinct demographic characteristics are associated with different degrees of pass-through from inflation expectations to income growth expectations. Our analysis obtains this result when we separate the sample based on the gender of survey respondents and their self-reported annual income (less than $50,000, between $50,000 and $100,000, and more than $100,000). Table 11 in Appendix B reports the OLS and IV regression results. In particular, it shows that male respondents have a statistically significantly higher pass-through coefficient compared to female respondents (whose interaction coefficient is negative). The coefficient for males lies between 0.27 and 0.31 compared to a coefficient for females between 0.16 and 0.07. This coefficient is not statistically different from zero. In the case of differences across income groups, we also observe very heterogeneous effects. Respondents in the highest income group have a perceived pass-through that is more than 2.5 times higher than that for the lowest-income respondents. The coefficient for high income is between 0.34 and 0.43, compared to a coefficient between 0.13 and 0.09, respectively for low income. The pass-through coefficient is statistically significant for respondents in the middle or highest income group, but not the lowest income group. However, differences are only statistically different for certain specifications and only for the high-income group.

These heterogeneous results might reflect some characteristics of the labor market that these groups face. For example, Card et al. (2016) find that, in Portugal, women are less likely to work in firms where workers have high bargaining power. In the case of the US, Biasi and Sarsons (2022) find that women engage less frequently in negotiations over pay, which helps to determine workers' ability to bargain for higher wages. In the next section, we look at various labor market actions.

5.3 Labor Market Decisions

Inflation expectations have a moderate effect on some labor market decisions, but not others, as this subsection shows. The effect is moreover heterogeneous across demographic groups. These results suggest a reason why consumers do not like inflation. They also provide targets for a macro literature that studies the cost of inflation in the context of the labor market, such as Afrouzi et al. (2024) and Guerreiro et al. (2024).

To assess the extent to which expected inflation drives labor market decisions, we run regressions of the reported individual decision of undertaking each labor market action j that the survey elicited, ℓ_i^j, on expected inflation. These actions included "Apply for a job(s) that pays more," "Work longer hours," and "Ask for a raise." For each of these actions, respondents were asked to indicate the respective likelihood, as explained above in Section 3.

The motivation for these regressions is clear: if consumers believe that higher inflation will reduce their real wages, they may take actions to protect themselves against lower real wages. Here, ℓ_i^j takes values from 1 to 4, indicating assessments ranging from *very unlikely* to *very likely*. We use the same instrument for expected inflation as before, estimating the following ordered probit specification when consumer i's labor market action L_i equals ℓ_i^j:[20]

$$Prob(L_i = \ell_i^j) = \alpha + \beta E_i \left[\widehat{\pi_p^{Posterior}} \right] + \varepsilon_i \tag{5}$$

Results from the estimation indicate that inflation expectations have a moderate effect on some labor market decisions, but not others. Table 3 presents the probit and probit-IV estimates of equation (5).[21] In particular, results indicate that higher expected inflation increases the likelihood that consumers may apply for another job that pays more.

In the case of "Apply for a job(s) that pays more," the estimated regression shows that a 1 percentage point increase in inflation expectations increases the likelihood of applying for another job by 2.6 percent. When we run the probit-IV regression, the estimated coefficient of the effect of inflation expectations on applying for another job increases and is statistically significant, with a six-fold increase in the probit coefficient. Overall, the evidence indicates that higher expected inflation increases the likelihood that consumers will consider applying for a new and higher-paying job. This finding also implies an increase in the probability of job-switching on the part of a consumer.

[20] Table 12 in Appendix B also provides OLS estimates which have excellent approximation properties and serve well in non-predictive contexts.

[21] The results using the trimming regression display a similar pattern, and are hence relegated to Table 13 in Appendix B. Additionally, Table 12 in Appendix B show robustness using linear probability regression. We find very similar results.

Table 3: Effect of Inflation Expectations on Wage Increase Actions

	Apply for a job(s) that pays more		Work longer hours		Ask for a raise	
	(1)	(2)	(3)	(4)	(5)	(6)
$E_i[\pi_p^{Posterior}]$	0.004***	0.026***	0.004**	0.008*	-0.002	0.003
	(0.001)	(0.005)	(0.001)	(0.005)	(0.002)	(0.005)
Type	O-Probit	O-Probit IV	O-Probit	O-Probit IV	O-Probit	O-Probit IV
Observations	4,651	4,651	4,573	4,573	4,409	4,409

Notes: This table shows ordered Probit and IV ordered Probit regressions from equation 5. ℓ_i^j is a value that ranges from 1 to 4, where 1 is "Very unlikely, " 2 is "Somewhat unlikely," 3 is "Somewhat likely" and 4 is "Very likely." For columns (1) and (2) ℓ_i^j is the answer to the question about "apply for a job(s) that pays more," columns (3) and (4) are the answers to the question about "work longer hours," and columns (5) and (6) are the answers about "ask for a raise." Robust standard errors are in parentheses.

In terms of the other margins, we also find evidence that respondents systematically connect their inflation expectations to a choice of working longer hours. A 1 percentage point increase in the expected inflation rate is associated with an 0.8 percent higher probability of working longer hours. Notably, again, the coefficient increases in the IV regression, doubling from .004 to .008, but it is only weakly significant. We do not find evidence of a channel through which expected inflation will lead respondents to ask for a raise in their current jobs.

Following our earlier evidence on pass-through, these labor market action results suggest an additional reason for consumers to display an aversion to inflation. Applying for a new job requires search time and effort, which is costly. Furthermore, the elasticities that we document are not very high, consistent with a view that relatively few workers will ultimately undertake this application process to offset higher expected inflation. While there is a small elasticity of working longer hours, there is little evidence that people will ask for a raise and they will generally associate higher inflation with a reduced standard of living.

Our results also indicate demographic heterogeneity in terms of the effect of inflation expectations on labor market actions. Tables 14, 15, and 16 in Appendix B show this result. We find that female and middle-income workers have a higher coefficient and elasticity in terms of the causal effects of inflation expectations on the likelihood of applying for another job and working longer hours. A statistically significant effect of inflation expectations on asking for a raise for higher-income workers also emerges, consistent with the view that they may have more bargaining power, but the pertinent elasticity remains relatively small.

In addition to the question concerning consumers' possible labor market actions, we added a complementary open-ended question to investigate if respondents were undertaking any other actions beyond those we considered to increase their incomes. From the 6,629 total responses, 5,993 (90.4 percent) decided not to provide any additional information. From the 636 who responded, 199 (3.0 percent) said that they were going to look for a second job in different ways, while 112 (1.7 percent) said that they received some type of fixed income, such as retirement or Social Security.[22] Among the other answers, some individuals named different forms of investments or adjusting their billing rates (likely for independent contractors, who have the power to set their wages); some others associated this situation with adjusting their spending. Only one respondent claimed that their income is adjusted automatically every year to keep up with inflation.

Finally, in September 2022, we conducted a follow-up exercise to our original survey. The details and results of this exercise are described in Appendix E. In the follow-up exercise we repeated the survey questions in the same order as described above and updated treatments to the latest information available. We also conducted the same empirical exercise using a pseudo-panel structure, which allowed us to take advantage of our doubled sample size while controlling for time fixed effects. We found very similar effects, suggesting that the findings in September 2022 remained relevant in an environment where the COVID situation had shown further improvement. In addition, the fielding of the survey took place after a year of relatively high inflation, suggesting that persistently high inflation did not change consumers' perceptions of the linkage between their incomes and inflation or their attitudes on how inflation would affect their labor market actions.

6 Why Do Households Dislike Inflation?

This section uses a structural model to assess the role of our empirical findings, and in particular the role of inflation expectations, for the macroeconomic adjustment process to shocks. The analysis employs an off-the-shelf DSGE model with search-and-matching in the labor market. While we thus do not purport to provide a model more sophisticated than conventional search-and-matching models, we do explicitly allow for inflation expectations to affect nominal wage growth expectations. To capture our finding that consumers' inflation expectations are affected by publicly available information, we also allow for sticky information in inflation expectations sim-

[22] Survey respondents did not indicate whether these payments were indexed for inflation. Notably, Social Security payments are indexed to inflation, but with a lag.

ilar to Mankiw and Reis (2002). The model is calibrated to match the reaction of our respondents' inflation expectations to information treatments and two of our main empirical facts:[23]

1. **Less than unit pass-through to income growth expectations:** A 1 percentage point increase in inflation expectations causes nominal income growth expectations to rise by about 0.20 percentage point.

2. **Small impact on labor market actions:** A 1 percentage point increase in inflation expectations raises the probability of applying for another job by about 0.11 percentage point.

Two lessons emerge when we focus our analysis on the responses of key macroeconomic variables to a positive demand shock and a positive (adverse) supply shock, which we view as the prevailing shocks hitting the US economy around the time of our survey. First, regardless of the source of the shock, the dampened response of real wages due to nominal wage rigidity necessary to match Fact 1 translates into an amplified responsiveness and volatility of output and consumption. Inflationary shocks, whether coming from the demand side or the supply side, produce a decline in consumers' utility. In the case of a demand-side shock, the utility decline is greater for higher degrees of nominal wage rigidity. Second, the mechanism we propose to capture the relationship between inflation expectations and labor market actions has a negligible effect on the macroeconomic dynamics of the model; on average, consumers' efforts to increase their wages due to higher inflation expectations do not improve their utility, real wage, or consumption. Overall, we view the lessons coming from this modeling exercise as helping us further understand why consumers dislike current and future inflation.

6.1 A Search-and-Matching Model

We employ a New Keynesian model featuring a Mortensen and Pissarides (1994) type of search-and-matching frictions in labor markets. We further incorporate a right-to-manage feature as developed in Trigari (2006), where firms and workers bargain over nominal wages and then workers guarantee to supply the labor hours demanded by firms at the bargained wage.[24] A matched

[23]The purpose of the model is to qualitatively understand the macroeconomic implications of the moderate pass-through from inflation expectations to income growth expectations. In contrast to the experiment, within the model setting it is impossible to isolate the causal effect of inflation expectations on income growth expectations (see, for instance, Werning (2022) for a discussion on the difficulties of isolating the effects of inflation expectations). However, we can match the empirical pass-through as a moment along the impulse response functions in the model.

[24]For our purposes, the right-to-manage (RTM) framework differs from, for instance, "efficient bargaining" (EB), where labor supply always equals labor demand. The advantage of the RTM over EB is that it generates more realistic movements in inflation dynamics, which facilitates matching the model-implied pass-through with the empirical estimates. On the other hand, RTM can trigger fluctuations in labor hours that are larger than what is observed in the data. The increased variability in labor hours is a particularly important limitation that we return to below, especially

firm-worker pair negotiates wages infrequently in a Calvo fashion. Finally, as in Christoffel and Kuester (2008), we account for firms' fixed costs of maintaining a job.[25]

The economy in the model is composed of representative families that make optimal decisions on behalf of their members with respect to consumption and one-period riskless bond holdings. There are three types of firms: labor goods firms produce a homogeneous labor intermediate good; wholesalers use the labor good as an intermediate to produce differentiated goods and face Calvo price rigidity; and retailers bundle the differentiated goods into a homogeneous consumption basket sold to households and the government. Monetary policy sets the nominal interest rate following a Taylor rule, and government spending is exogenous. Because these parts of the model are standard in the literature and are not central to our paper, we describe them in more detail in Appendix G.1.

We now lay out some key features of the labor market because they directly connect the model with our empirical findings presented in Section 5. The matching process between workers and labor firms is governed by a Cobb-Douglas function:

$$m_t = \sigma_m u_t^{\xi} v_t^{1-\xi} \tag{6}$$

where m_t are matches formed in period t; u_t is unemployment; v_t are vacancies; $\xi \in [0,1]$ is the elasticity of matching with respect to unemployment; and $\sigma_m > 0$ is matching efficiency. Matches become productive in the following period so employment in the extensive margin evolves according to

$$n_t = (1-\mu)n_{t-1} + m_{t-1} \tag{7}$$

where $\mu \in [0,1]$ is the employment separation rate. Labor market tightness is defined as:

$$\theta_t = \frac{v_t}{u_t} \tag{8}$$

Then, the probabilities that a vacancy is filled and that an unemployed worker matches with a firm are, respectively,

$$q_t = \frac{m_t}{v_t}, \quad s_t = \frac{m_t}{u_t} \tag{9}$$

because our empirical results suggest that consumers do not expect to increase their hours when they raise their inflation expectations. See de Walque et al. (2009) for an instructive review of such tensions in this group of models.

[25]The RTM framework can counterfactually dampen the response of employment in the extensive margin, and, as shown in Christoffel and Kuester (2008), the presence of a fixed cost amplifies the response of unemployment over the business cycle.

To match our findings in Table 1 that providing an individual a treatment consisting of publicly available information at time t has an effect on our respondents' inflation expectations, we assume that inflation expectations are subject to sticky information, such that:

$$\widetilde{\mathbb{E}}_t \hat{\pi}_{t+h} = (1-\lambda)\mathbb{E}_t \hat{\pi}_{t+h} + \lambda \widetilde{\mathbb{E}}_{t-1} \hat{\pi}_{t+h}, \qquad \text{for any } h \geq 1 \tag{10}$$

where $\mathbb{E}_t$ is the full-information rational expectations operator, $\lambda \in [0,1]$ denotes the probability that our agents do *not* update their information set in period t, and $\hat{\pi}_t$ is inflation in log-linear deviation from its steady-state value. Appendix G.4 shows that there is an equivalence between our assumption of sticky information in inflation expectations and dispersed noisy information about future inflation.

To match Fact 1, we assume that agents in the economy face nominal wage rigidities. If a worker is not separated from employment, she can bargain her nominal wage to W^*_{t+1} in period $(t+1)$ with probability $(1-\gamma) \in [0,1]$. In contrast, the nominal wage of the γ share of workers who cannot bargain partially adjusts for past inflation such that $W_{t+1} = W_t(e^w_t \pi_t^{\zeta^w} \bar{\pi}^{1-\zeta^w})$, where $\zeta^w \in [0,1]$ denotes time-varying wage indexation to past inflation and e^w_t is a newly introduced wage-push factor explained further in the subsequent paragraph. In our setup, different combinations of the nominal wage stickiness parameter, γ, generate different levels of model-implied pass-through from inflation expectations to nominal wage growth expectations. This model feature allows us to study the macro implications of a counterfactual scenario of unit pass-through.

To match Fact 2 one would ideally incorporate on-the-job search and allow for inflation expectations to affect on on-the-job search. However, for reasons of simplicity, we abstract from formally micro-founding this channel. Instead, we introduce a wage-push factor, e^w_t, that is affected by inflation expectations and that, in turn, has an effect on the nominal wage only if the worker anticipates to not be able to bargain over the wage to W^*_{t+1}. The assumed underlying mechanism is that in the presence of higher inflation expectations, the worker applies for another job with some probability and is able to generate an outside contract with certainty, which is used to put upward pressure on the nominal wage with her current employer.[26] The wage-push factor

[26] The wage-push factor plays a role similar to having within-quarter job-to-job transitions with a time-varying transition probability that is only affected by inflation expectations. Within-period job-to-job transitions with constant probability have been incorporated in Krusell et al. (2017). Another interpretation would be to have a non-bargaining worker's nominal wage indexed to a base, fixed real wage growth that is greater than 1, along with indexation to past inflation. Time variation in this case would only be induced by inflation expectations.

in log deviation from its steady state, $\hat{e}^w_t$, is disciplined as follows:

$$\hat{e}^w_t = \rho_w \hat{e}^w_{t-1} + \bar{e}_\pi \mathbb{E}_t \hat{\pi}_{t+1}, \tag{11}$$

where $\bar{e}_\pi$ is the elasticity between inflation expectations and the wage-push factor; and $\rho_w \in [0, 1)$ is the wage-push factor persistence. For workers who bargain in a given period, the nominal wage is set according to Nash bargaining,

$$W^*_t = argmax_{W_t} (\mathcal{V}^E_t - \mathcal{V}^U_t)^{\eta_t} (J_t)^{1-\eta_t}, \tag{12}$$

where $\mathcal{V}^E_t$ and $\mathcal{V}^U_t$ denote, respectively, the value of employment and unemployment for a worker; J_t is the market value of a labor firm matched to a worker; and η_t is the time-varying bargaining power of workers.[27]

6.2 Calibration

Our model calibration aims to capture our main empirical findings. We report the model parameter values in Table 4. In terms of steady-state values, we set the unemployment rate equal to 5.5 percent, as in Morales-Jiménez (2022). The steady-state vacancy and separation rates are both set equal to 3 percent to match the respective quarterly average rates in the US from 2001 to 2019.[28] These choices imply that in the steady state the probability of finding a job is about 52 percent, whereas the likelihood that a firm finds a worker is about 95 percent. The elasticity of matches with respect to unemployment, ζ, is set to 0.6, consistent with Petrongolo and Pissarides (2001). Wage bargaining power is set to its conventional value in the literature, i.e., $\eta = 0.5$. The implied efficiency of matching, σ_m, is set to 0.6569 to be consistent with the steady-state values of the unemployment and vacancy rates, and matching. We assume the wage-push factor process is persistent with an autocorrelation coefficient of 0.9.

[27] Under efficient bargaining, optimal nominal wages satisfy $\eta_t J_t = (1 - \eta_t)(\mathcal{V}^E_t - \mathcal{V}^U_t)$. In our case of a right-to-manage framework, the optimal nominal wage condition is $\eta_t \delta^W_t J_t = (1 - \eta_t)\delta^F_t (\mathcal{V}^E_t - \mathcal{V}^U_t)$, where δ^W_t and δ^F_t denote, respectively, the net marginal benefits from an increase in the wage to the worker and the firm. See Christoffel and Kuester (2008) for more details.

[28] The steady-state separation rate matches the one in Shimer (2005).

Table 4: Model Parameters

Parameter	Value	Description
$\bar{u}$	5.5 percent	Unemployment rate; value from Morales-Jiménez (2022)
$\bar{v}$	3 percent	Quarterly average vacancy rate, US data 2001:I - 2019:IV
μ	3 percent	Quarterly average separation rate, US data 2001:I - 2019:IV (similar to Shimer (2005))
$\bar{s}$	0.5155	Probability of finding a job (implied by the steady-state model equilibrium)
$\bar{q}$	0.9450	Probability of finding a worker (implied by the steady-state model equilibrium)
ξ	0.6	Elasticity of matches w.r.t. unemployment; see Petrongolo and Pissarides (2001)
η	0.5	Bargaining power of workers; conventional value
σ_m	0.6569	Efficiency of matching; reconciles m with $u = 5.5$ percent and $v = 3$ percent
ρ_w	0.9	Persistence of the wage-push factor
$\bar{e}_\pi$	0.0228	Wage-push elasticity w.r.t. inflation expectations across all respondents; Tables 2, 12
$\bar{e}_\pi$	0.114	Wage-push elasticity w.r.t. inflation expectations in counterfactual analysis; Table 12
γ	0.855	Nominal wage stickiness; pass-through across all respondents in Table 2
γ	0.575	Nominal wage stickiness; unit pass-through for counterfactual analysis
ζ_w	0.365	Wage indexation; pass-through across all respondents in Table 2
ζ_w	0.35	Wage indexation; pass-through for counterfactual analysis
λ	0.285	Information stickiness; Table 5

A few more parameters remain to be calibrated in a way that is directly related to our empirical results. First, to calibrate λ, the information stickiness parameter, we gauge how our respondents react to new information.[29] Specifically, we rearrange equation (10) as follows

$$\underbrace{\widetilde{\mathbb{E}}_t \pi_{t+h} - \widetilde{\mathbb{E}}_{t-1} \pi_{t+h}}_{\text{(posterior - prior)}} = (1-\lambda) \underbrace{\left(\mathbb{E}_t \pi_{t+h} - \widetilde{\mathbb{E}}_{t-1} \pi_{t+h} \right)}_{\textit{new} \text{ info in period } t}, \tag{13}$$

with $(1 - \lambda)$ capturing the effect of *new* information made available in period t on inflation expectations. To discipline λ consistently with our experiment, we use the estimates from the following regression:

$$E_i \left[\pi_p^{Posterior} \right] - E_i \left[\pi_p^{Prior} \right] = \alpha + \beta T_i \left[I_{ij} - E_i \left[\pi_p^{Prior} \right] \right] + \varepsilon_i, \tag{14}$$

where T_i is an indicator that takes value 1 if individual i receives treatments 2, 4, or 5 (and possibly 3, depending on the specification), and takes a value of zero if the individual i is in the control or placebo group. $\left[I_{ij} - E_i \left[\pi_p^{Prior} \right] \right]$ captures new information due to information treatment j. I_{ij} is the numerical information contained in treatments 2, 3, 4, or 5. In this specification, $\beta = (1 - \lambda)$.

[29] As shown by Coibion and Gorodnichenko (2015), in a setting with information stickiness similar to ours, the frequency of updating the information set $(1 - \lambda)$ is all one needs to pin down the response of expectations to new information at the time of forecast.

Table 5 presents the estimates of β. As our benchmark calibration, we use the estimate of $\hat{\beta} = 0.715$, or equivalently, $\hat{\lambda} = 0.285$, as reported in column (4) of Table 5, where we account for the control, placebo, and wage treated groups.[30] Our baseline estimate of information stickiness of $\hat{\lambda} = 0.285$ is generally lower than estimated values of information stickiness reported in, for example, Coibion and Gorodnichenko (2015), but it is consistent with the degree of consumers' update of their inflation expectations following information treatments.

Table 5: Effect of New Information on Inflation Expectations

	(1)	(2)	(3)	(4)
New information	0.742***	0.711***	0.742***	0.715***
	(0.014)	(0.014)	(0.012)	(0.012)
Constant	1.581***	-0.678***	1.702***	-0.251
	(0.163)	(0.208)	(0.139)	(0.181)
Wage Treatment	No	No	Yes	Yes
Control and Placebo	No	Yes	No	Yes
Observations	3,338	5,528	4,430	6,620
R-squared	0.730	0.432	0.735	0.483

Notes: The table shows estimates of equation (14). Column (1) only contains information for treatments 2, 4 and 5. Column (2) includes the placebo and control groups. Column (3) is (1) plus treatment 3 and column (4) contains all treated and control groups. We use robust standard errors.

Second, we calibrate nominal wage stickiness, γ, and wage indexation to past inflation, ζ_w, to match Fact 1 *quantitatively* along the IRFs of nominal wage growth to various shocks. Solving the model under rational expectations, one can show under general assumptions (see details in Appendix G.2) that the response of nominal wage growth expectations to a change in inflation expectations is given by:

$$\frac{\partial \widetilde{\mathbb{E}}_t(\hat{W}_{t+7} - \hat{W}_{t+3})}{\partial \widetilde{\mathbb{E}}_t \hat{\pi}_{t+4}} = \frac{a_1 - a_2}{1 - \lambda} + 1 + a_3, \tag{15}$$

where a_1, a_2, and a_3 are convoluted functions of many structural parameters of the model.[31] Wage indexation to past inflation, ζ_w, and especially wage stickiness, γ, are central parameters in these functions; we therefore calibrate them carefully so as to quantitatively replicate Fact 1. In partic-

[30] Coibion et al. (2022) argue that the inclusion of the control group is important since the prior and posterior questions about inflation expectations are worded differently. Our results remain qualitatively similar if we calibrate λ to a lower value of about 0.26.

[31] While there are many parameter combinations that can match the model-implied pass-through in (15) with the empirical one, we interpret a less than unit pass-through as evidence of significant nominal wage rigidity and thus remain focused on calibrating this parameter together with the wage indexation to past inflation.

ular, we can match the inflation expectations pass-through to nominal wage growth across our respondents by choosing a wage contract duration of about 8 quarters ($\gamma = 0.855$) with indexation to past inflation of 0.365.[32] To construct a counterfactual scenario of unit pass-through from inflation expectations to nominal wage growth expectations, we set $\gamma = 0.575$, which implies an average wage contract duration of about 3 quarters. Wage indexation to past inflation in this case is set to $\zeta_w = 0.35$. These choices of nominal wage rigidity while different lie in the vicinity of the posterior estimate in Smets and Wouters (2007) that range from 0.64 to 0.78. At the same time, the baseline calibrated value for wage stickiness is consistent with a 20% probability that job-stayers would receive a wage change in any quarter between 2008 and 2016, as reported by Grigsby et al. (2021). Note that while many choices of time horizons exist for computing moments, we choose the time horizons in equation (15) to align with those in the survey.

Third, to match Fact 2, we parameterize the elasticity of the wage-push factor with respect to inflation expectations to match the evidence in Table 2 and Table 12 in the Appendix. Parameter $\bar{e}_\pi$ is the elasticity between inflation and nominal wage growth expectations *conditional* on having applied for another job due to higher inflation expectations, such that

$$\bar{e}_\pi = \underbrace{\text{pass-through}}_{\text{Table 2}} \times \underbrace{\text{elasticity of job applications w.r.t. inflation expectations}}_{=0.114,\ \text{Table 12}}. \tag{16}$$

Hence, $\bar{e}_\pi = 0.2 \times 0.114 = 0.0228$ in the case of 20% pass-through and $\bar{e}_\pi = 0.114$ in the case of unit pass-through.

6.3 Impulse Response Functions: Lessons

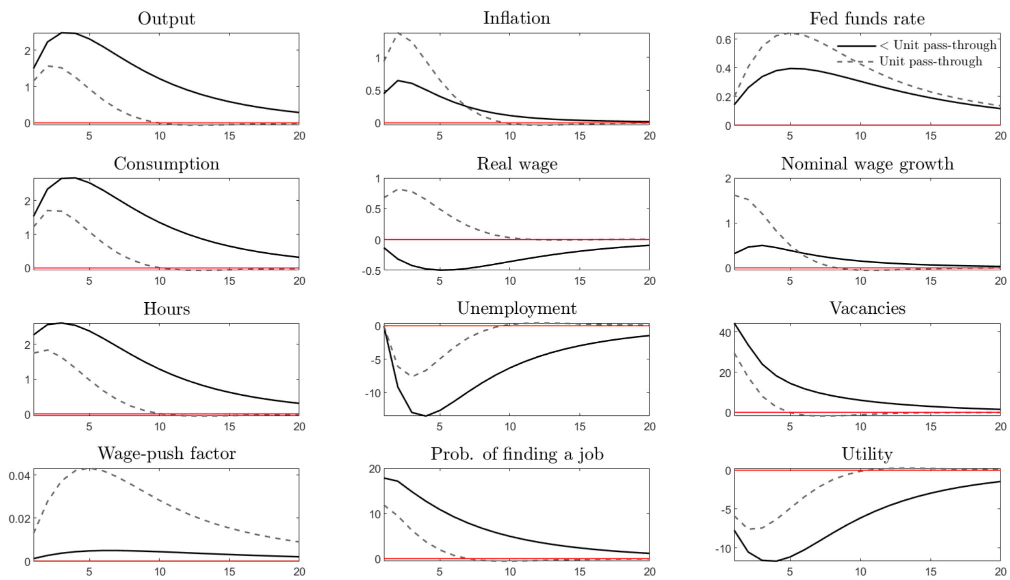
When analyzing the dynamics of our model, two lessons emerge that help us understand the mechanism why household associate higher inflation with worse economic outcomes, consistent with our empirical findings and the work of Shiller (1997) and Candia et al. (2020). Specifically, this analysis considers a positive demand shock and a positive (adverse) cost-push shock, the two predominant disturbances that we judge were affecting the US economy around our survey period.

Lesson 1: Negative or dampened responses of real wages to shocks due to nominal wage rigidity translate into greater fluctuations and volatility in output and consumption.

[32] Duration of a wage contract is given by $1/(1-\gamma)$.

Regardless of whether the model is subjected to a demand- or supply-side inflationary disturbance, an economy calibrated to quantitatively match our empirical pass-through of inflation expectations to income growth expectations has large ramifications for real wage dynamics relative to a counterfactual scenario of a unit pass-through. As we subsequently explain, severe nominal wage rigidity is the driving source for consumers' dislike of inflation in the model.

Figure 2: Response to a Positive Demand Shock



Notes: In black: calibration matching our empirical pass-through from inflation to nominal wage growth expectations ($\gamma = 0.855, \zeta_w = 0.365$). In dashed gray: calibration matching counterfactual of unit pass-through from inflation to nominal wage growth expectations ($\gamma = 0.575, \zeta_w = 0.35$). In red: x axis.

Consider Figure 2, where the economy is subject to a one standard deviation positive demand shock.[33] Relative to the counterfactual of unit pass-through, real wages decline, which results in a larger increase in labor hours that amplifies the responses of output and consumption.[34] The dynamics of real wage and inflation are such that the nominal wage growth, which is defined as the sum of real wage growth and inflation, increases in both cases. A representative family's period

[33] The standard deviation of the demand shock is set equal to 1.

[34] On impact, the real wage is given by $\hat{w}_t = (1-\gamma)\hat{w}_t^* - \gamma\hat{\pi}_t$, where $\hat{w}_t^*$ is the fully flexible real wage. In contrast to the case of incomplete pass-through, under unit pass-through, real wages are sufficiently flexible to respond positively to a positive demand shock.

utility in deviation from its steady-state value is given by:

$$\mathcal{U}_t = \left(c(1-\varrho)\right)^{1-\sigma}\left(\hat{c}_t - \varrho\hat{c}_{t-1}\right) - \frac{\kappa_h n h^{1+\varphi}}{1+\varphi}\left(\hat{n}_t + (1+\varphi)\hat{h}_t\right), \tag{17}$$

where $\hat{c}_t$ and $\hat{h}_t$ denote consumption and labor hours, respectively, in deviation from their steady-state values; ϱ is the degree of external habit in consumption; φ is the inverse of labor supply elasticity; and κ_h is a scaling factor to labor disutility.[35] Period-utility is affected by two opposing forces: it declines in response to working more along both the extensive and the intensive margins (in line with our empirical finding of a weakly significant increase in hours), but it increases in response to higher consumption. The former channel is considerably larger in the case of 20 percent pass-through compared to full pass-through, yielding a larger decline in utility even though inflation has risen by less.

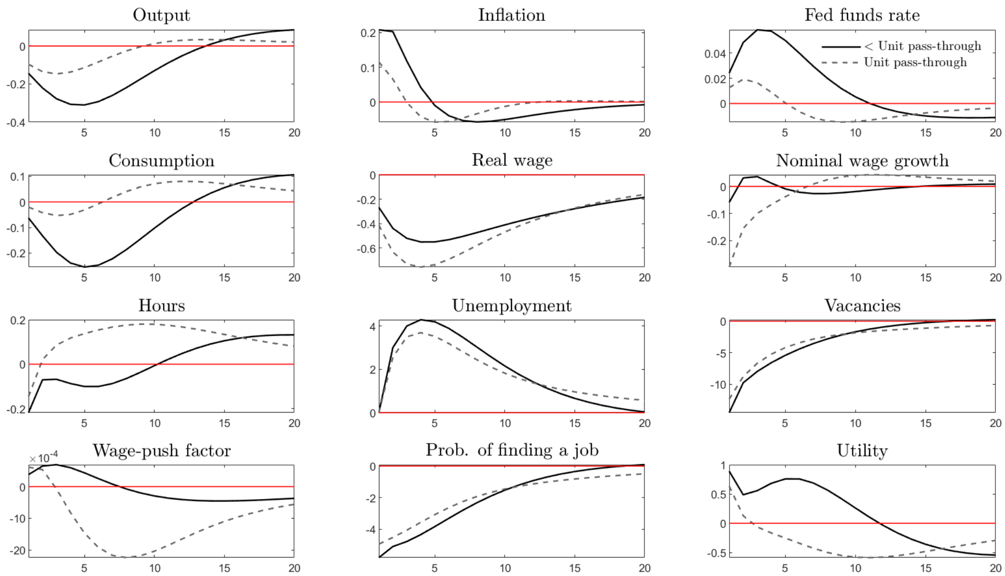
Figure 3 considers the case where the economy is shocked by a one-standard deviation cost-push supply disturbance.[36] Relative to the counterfactual of a unit pass-through economy, the decline in real wages is smaller, putting more downward pressure on labor hours. Since wages are more flexible in the counterfactual scenario of a unit pass-through, they decrease more and faster compared to the incomplete pass-through case, resulting in a decline in the nominal wage growth. The large initial decline in hours worked translates into large declines in output and consumption. Under a supply shock, greater nominal wage frictions cause larger increases in inflation and larger decreases in consumption/output, strengthening consumers' negative association between the two. As was the case for a positive demand shock, a positive cost-push shock initially causes an increase in utility, followed by a decline a few periods later as consumers receive less utility from working more. Unlike in the case of a demand shock, the fluctuations on impact along the hours margin run counter to our survey results. However, hours increase at longer horizons which aligns with the overall positive, but weak empirical increase in hours worked. We note that the increase in utility following a positive cost-push shock is attributed to the calibration of the labor supply elasticity which implies a high value of the scaling factor to labor disutility κ_h in steady state. We explore this dimension in Appendix G.6 and show that when adjusting the labor supply elasticity so that κ_h is sufficiently small, period utility declines shortly after a positive cost push shock hits the economy.[37]

[35]See Table 25 for their calibration.

[36]The standard deviation of the cost-push shock is set equal to 1.

[37]The scaling factor to labor disutility is set so that it is consistent with the steady-state hours worked per employee of $h = 1/3$.

Figure 3: Response to a Positive Cost-Push Shock



Notes: In black: calibration matching our empirical pass-through from inflation to nominal wage growth expectations ($\gamma = 0.855, \zeta_w = 0.365$). In dashed gray: calibration matching counterfactual of unit pass-through from inflation to nominal wage growth expectations ($\gamma = 0.575, \zeta_w = 0.35$). In red: x axis.

Comparing the responses of nominal wage growth and inflation under unit and less than unit pass-through sheds light on the importance that nominal wage rigidity has for rationalizing our empirical findings. One could argue that when wages are relatively flexible – as in the unit pass-through scenario in Figure 3 – an adverse supply shock would naturally limit the pass-through from inflation expectations to income growth expectations due to decline in real wages. However, the unit pass-through scenario in Figure 3 shows that when the economy is *exclusively* hit by a supply shock, nominal wage growth and inflation move in opposite directions for a few periods, yielding a negative pass-through between inflation expectations and expected wage growth that is counterfactual to our empirical results.[38] As a result, wage rigidity is at the heart of our finding of a positive, but limited, pass-through from inflation expectations to income growth expectations.

Next, we show that the correlation between expected period utility and inflation expectations is strongly dependent on nominal wage rigidity: it falls as wage stickiness rises, ζ_w and rises as indexation to past inflation γ increases. To establish this insight, we simulate 50 periods of expected

[38]When the nominal wage is flexible, it inherits the decline in real wages in response to an adverse cost-push shock.

period utility and inflation expectations data when separately shocking the model with demand and cost-push innovations, for a given pair j of (γ, ζ_w), and consider the following regression of simulated data:[39]

$$\mathbb{E}_t \mathcal{U}_{j,t+1} = \beta \widetilde{\mathbb{E}}_t \hat{\pi}_{t+1} + \theta_\gamma \left(\gamma_j \times \widetilde{\mathbb{E}}_t \hat{\pi}_{t+1} \right) + \theta_{\zeta_w} \left(\zeta_{w,j} \times \widetilde{\mathbb{E}}_t \hat{\pi}_{t+1} \right) + \varepsilon_{j,t}. \tag{18}$$

Table 6: Relationship between Expected Inflation and Utility for Different Levels of Wage Rigidity

	Cost-push Shock				Demand Shock			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\widetilde{\mathbb{E}}_t \pi_{t+1}$	5.447***	0.246	4.956***	4.633***	2.639***	0.073	1.755***	1.006***
	(1.485)	(0.778)	(1.732)	(1.648)	(0.339)	(0.569)	(0.346)	(0.266)
γ	0.130***		0.128***		-1.483***		-1.455***	
	(0.019)		(0.019)		(0.072)		(0.069)	
$\gamma \times \widetilde{\mathbb{E}}_t \pi_{t+1}$	-6.358**		-6.771***	-6.406***	-10.758***		-11.152***	-11.998***
	(2.483)		(2.295)	(2.221)	(0.379)		(0.405)	(0.359)
ζ_w		0.030**	0.031**			0.744***	0.711***	
		(0.013)	(0.013)			(0.056)	(0.046)	
$\zeta_w \times \widetilde{\mathbb{E}}_t \pi_{t+1}$		0.765	1.226	1.231		0.016	1.285***	1.590***
		(1.405)	(1.314)	(1.254)		(0.352)	(0.280)	(0.248)
Period FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pair (γ, ζ_w) FE	No	No	No	Yes	No	No	No	Yes
Observations	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500
R-squared	0.178	0.158	0.180	0.188	0.736	0.571	0.751	0.839

Notes: This table shows results for regression (18). Columns (1) to (4) show results conditional on a positive cost-push shock and columns (5) to (8) show results conditional on a positive demand shock. Robust standard errors are in parenthesis.

As shown in Table 6, the correlation between expected period utility and inflation expectations in the model is strongly dependent on the extent of wage rigidity. Focusing on the estimate of θ_γ from equation (18), higher wage stickiness γ puts downward pressure on the correlation between expected utility and expected inflation, so that for sufficiently high levels of wage rigidity the correlation turns negative. Turning to the estimate of θ_{ζ_w}, higher indexation of wages to past inflation puts upward pressure on the correlation between expected inflation and expected utility, as indexation insulates wages from high inflation. Consistent with our empirical findings, the model exhibits a sticky wage channel to explain consumers' dislike of inflation that holds regardless of whether inflation increases due to a demand or supply shock.[40]

[39]For each type of shock, we consider a total of $10 \times 11 = 110$ pairs of (γ, ζ_w), where $\gamma \in \{0, 0.1, ..., 0.9\}$ and $\zeta_w \in \{0, 0.1, ..., 0.9, 1\}$

[40]In Appendix G.3 we explore in more detail the implied correlation between expected utility and inflation, and show that the correlation between the two is non-linear in the two parameters governing nominal wage rigidity. However, a deeper dive into the implications of such non-linearities is beyond the scope of the present paper.

Lesson 2: No macroeconomic effects from inflation expectations operating through the wage-push factor.

The second macroeconomic implication of our empirical facts is that the positive relationship between expected inflation and nominal wages running through the wage-push factor as we have captured it appears to generate no discernible effects on the macroeconomy in the context of this benchmark calibrated model. To show this, we repeat the same IRF exercises when the wage-push factor responds to inflation expectations with an elasticity that matches the pass-through across all respondents, that is, $\bar{e}_\pi = 0.0228$, compared to a case when $\bar{e}_\pi = 0$. Figures 10 and 11 in Appendix G.5 plot the response of key macroeconomic variables under both scenarios when the economy is subject to a positive demand shock and cost-push shock, respectively. We find that the wage-push factor has virtually no effect on the response of macroeconomic variables to shocks. This result implies that, on average, consumers' efforts to raise their wages due to higher inflation expectations do not generate visible changes in their utility, real wage, or consumption.

7 Conclusion

This paper relies on an experimental setup to study the causal effect of consumers' inflation expectations on their income growth expectations. Based on the results from a large, nationally representative survey, we find that the rate of pass-through from consumers' inflation expectations to income growth expectations is incomplete, on the order of only 20 percent. Moreover, higher inflation expectations cause a higher willingness to search for a job that pays more, but do not affect the likelihood of working longer hours or asking for a raise. Finally, we find that information about the aggregate economy has little effect on households' expected income growth.

In a general equilibrium model with search-and-matching in labor markets, we calibrate the degree of nominal wage rigidity and wage indexation to past inflation to match the empirical pass-through of inflation expectations to income growth expectations in our survey data. We show that regardless of whether an inflationary shock originates from the demand or the supply side, the matched (less than unit) pass-through generates amplifications and additional volatility in the output and consumption responses, relative to a counterfactual scenario of unit pass-through. As wage rigidity rises, higher rates of expected inflation tend to depress expected utility in the model.

In a seminal paper, Shiller (1997) argued that consumers associate higher inflation with a reduction in their purchasing power. We find that this negative relationship between inflation and consumers' earning prospects holds causally based on our experimental setup. We also explore the consequences of these results. Respondents appear to perceive that their nominal incomes are very rigid with their current employers, as higher inflation expectations only make them more willing to look for another job in order to improve their wages rather than asking for a raise. The implication from these results is that consumers associate inflationary shocks with a reduction in welfare, which can explain why consumers more generally associate higher inflation expectations with worse economic outcomes, as shown by Candia et al. (2020)). Overall, our empirical findings and our theoretical model provide evidence of a labor market channel that can explain why people dislike inflation.

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Appendix (For Online Publication)

A Survey Details and Questions

The experiment was put into the field by Morning Consult during the first week of March 2022. The goal was to sample a total of 6,600 adult respondents. The number of collected responses was 6,629. The survey starts with demographic questions. These are the ones we include in the paper:

- What is your five-digit ZIP Code?
- What is your gender?
  - Male
  - Female
- What is your age?
  - 18-34
  - 35-44
  - 45-64
  - 65+
- Which category represents the total combined income of all members of your HOUSEHOLD during the past 12 months? This includes money from jobs, net income from business, farm or rent, pensions, dividends, interest, Social Security payments and any other money income received by members of your family who are 15 years of age or older.
  - Under 50k
  - 50k-100k
  - 100k+

Then, we have the prior questions for the experiment:

- Next we are asking you to think about changes in prices during the next 12 months in relation to your income. Given your expectations about developments in prices of goods and services during the next 12 months, how would your income have to change to make you equally well-off relative to your current situation, such that you can buy the same amount of goods and services as today? (For example, if you consider prices will fall by 2% over the next 12 months, you may still be able to buy the same goods and services if your income also decreases by 2%.) To make me equally well off, my income would have to

- Increase by __%;
- Stay about the same; and
- Decrease by __%.

- Do you expect your income to increase, decrease, or stay about the same over the next 12 months?
  - Increase by __%;
  - Stay about the same; and
  - Decrease by __%.

At this point, respondents were randomly assigned to receive either a single treatment or to be part of the control group of respondents (with the number of respondents in parentheses):

- Control (N=1,075)
- The Federal Reserve targets an inflation rate of 2% per year in the long run. (1,155)
- A recent survey from the Conference Board found that wages were expected to rise 3.9% in 2022. (1,093)
- Between January 2021 and January 2022, the Consumer Price Index (CPI), which measures the average change in prices over time that consumers pay for goods and services, showed the inflation rate in the US was 7.5%. (1,112)
- According to the Survey of Professional Forecasters, the Consumer Price Index (CPI), which measures the average change in prices over time that consumers pay for goods and services, showed the inflation rate will be 3.7% by the end of 2022. (1,074)
- According to the US Census Bureau, the United States population was 332,402,978 as of December 31, 2021. (1,120)

After being assigned to the control group or receiving a treatment, we asked everybody for their posteriors in the following questions:

- In the next year, do you think prices in general will increase, decrease, or stay about the same?
  - Increase by __%;
  - Stay about the same; and
  - Decrease by __%.
- Between December 2022 and December 2023, do you expect your income to increase, decrease, or stay about the same over the next 12 months?

- Increase by __%;
- Stay about the same; and
- Decrease by __%.

After the posteriors, individuals were asked about their likely labor market actions to increase their income over the next three months.

- How likely are you to do the following to increase your income over the next three months?
  - Apply for a job(s) that pays more
    - Very likely
    - Somewhat likely
    - Somewhat unlikely
    - Very unlikely
    - Don't know / No opinion
  - Work longer hours
    - Very likely
    - Somewhat likely
    - Somewhat unlikely
    - Very unlikely
    - Don't know / No opinion
  - Ask for a raise
    - Very likely
    - Somewhat likely
    - Somewhat unlikely
    - Very unlikely
    - Don't know / No opinion
  - Other (in this case, respondents are asked to provide a description of labor market actions)

B Additional Tables

Table 7: US Survey Respondent Characteristics

	Survey	US Population		Survey	US Population
Age			**Education**		
18-34	25.87 %	28.99%	<College	56.48%	58.3%
35-44	17.32%	16.56%	Bachelor's degree	25.48%	23.50%
45-64	34.74%	32.21%	Post-grad	18.04%	14.4%
65+	22.08%	22.24%			
			Income		
Gender			**Under 50k**	45.07%	37.8 %
Male	49.25%	48.70%	50k-100k	34.50%	28.6%
Female	50.75%	51.29%	100k+	20.43%	33.6%

Notes: Entries report statistics for the survey respondents and the US population, as obtained from the US Census Bureau. Household income and education (25 years and older): CPS ASEC, 2021; gender: ACS, 2019, which does not report gender other than "male" and "female"; age, race, region: National Population Estimate, 2019.

Table 8: Summary Statistics and Relationship between Price and Wage Inflation

	Panel A			Panel B	
	Inflation Exp	Nominal Income Growth Exp	Real Income Growth Exp		Nominal Income Growth Exp
1st percentile	-2	-12	-100	Inflation Exp	0.365***
First quartile	0	0	-7		(0.012)
Median	0	0	0	Constant	0.891***
Third quartile	10	2	0		(0.104)
99th percentile	100	100	50		
Mean	12.692	5.523	-7.169		
Standard deviation	24.536	18.822	22.735		
Observations	20,550	20,550	20,550		20,550

Notes: This table shows summary statistics for expectations of inflation and nominal income growth. We also report a measure of expected real income growth derived as the difference between expected nominal income growth and expected inflation at the individual level. The right part of the table shows a regression of expected nominal income growth on expected inflation. Huber regression and robust standard errors are in parentheses. *** denotes statistical significance at the 1 percent level.

Table 9: Demographic Characteristics and Treatment

	(1)	(2)	(3)	(4)
	Income	Gender	Age	Education
T2: Target	0.034	-0.012	0.013	0.034
	(0.033)	(0.021)	(0.046)	(0.033)
T3: Wages	0.011	-0.017	0.025	0.043
	(0.033)	(0.021)	(0.047)	(0.033)
T4: CPI	-0.031	-0.031	0.081*	-0.001
	(0.033)	(0.021)	(0.047)	(0.033)
T5: SPF	0.004	-0.009	0.070	0.007
	(0.033)	(0.022)	(0.047)	(0.033)
T6: Placebo	-0.020	-0.033	0.066	0.051
	(0.033)	(0.021)	(0.047)	(0.033)
Constant	1.754***	1.524***	2.488***	1.592***
	(0.024)	(0.015)	(0.033)	(0.024)
Observations	6,617	6,617	6,617	6,617
R-squared	0.001	0.001	0.001	0.001

Notes: This table shows result of a regression where we regrees demographic variables for income, gender, age and education on dummies that take a value of 1 if the respondent received a particular treatment and zero otherwise.The variable income take a value of one of the income is under 50k, 2 if income is between 50k and 100k and 3 if income is over 100k. The variable gender take a value of one if the respondent is male and 2 if is female. The variable age take a value of 1 if the respondent is between 18 and 34 years old, 2 if between 35-44, 3 between 45 and 64 and 4 if over 65 years old. The variable education takes a value of 1 if the respondent has less than college, 2 if bachelor's degree and 3 if postgrad. Robust standard errors are in parentheses. *** denotes statistical significance at the 1 percent level.

Table 10: Results of Table 2, under different specifications

	(1)	(2)	(3)	(4)	(5)	(6)
Posterior Inflation	0.201***	0.184***	0.198***	0.085**	0.231**	0.234**
	(0.070)	(0.064)	(0.066)	(0.035)	(0.106)	(0.104)
Prior Income	0.637***	0.646***	0.631***	0.606***	0.598***	0.594***
	(0.034)	(0.030)	(0.033)	(0.042)	(0.043)	(0.043)
Prior Inflation					-0.036	-0.035
					(0.035)	(0.034)
Placebo Control	No	Yes	Yes	Yes	Yes	Yes
Demographic Controls	No	No	Yes	Yes	No	Yes
Huber Weights	No	No	No	Yes	Yes	Yes
F stat	117.4	138.6	130.0	713.1	191	191
Observations	5,525	5,525	5,525	4911	4,911	4,911
R-squared	0.540	0.546	0.549	0.499	0.491	0.495

Notes: This table shows results from IV regressions of the posterior of income growth expectations on the prior of income growth expectations and the posterior of inflation expectations. We instrumenting with $E_i\left[\widehat{\pi_p^{Posterior}}\right]$. Placebo Control are controls by the interacting term and the treatment dummy of the placebo group. Demographic Controls include age, age squared, education, gender, income, political afiliation and employment status. While all first stage use Huber weights, columns (4), (5) and (6) use Huber weights in the second stage as well as in Coibion et al. (2019). Robust standard errors are in parentheses.

Table 11: Pass-Through from Inflation Expectations to Income Growth Expectations, by Demographics

	$E_i\left[\pi_y^{Posterior}\right]$					
	(1)	(2)	(3)	(4)	(5)	(6)
$E_i\left[\pi_p^{Posterior}\right]$	0.148***	0.267***	0.313***	0.052***	0.129	0.089
	(0.026)	(0.103)	(0.071)	(0.018)	(0.091)	(0.064)
$E_i\left[\pi_p^{Posterior}\right]$ x Female	-0.105***	-0.111	-0.244***			
	(0.031)	(0.142)	(0.091)			
$E_i\left[\pi_p^{Posterior}\right]$ x 50k-100k				0.052*	0.180	0.118
				(0.032)	(0.194)	(0.093)
$E_i\left[\pi_p^{Posterior}\right]$ x >100k				0.093**	0.207	0.343**
				(0.042)	(0.152)	(0.140)
$E_i\left[\pi_y^{Prior}\right]$	0.669***	0.621***	0.560***	0.675***	0.656***	0.606***
	(0.033)	(0.054)	(0.051)	(0.034)	(0.041)	(0.046)
$E_i\left[\pi_y^{Prior}\right]$ x Female	-0.008	0.014	0.090			
	(0.050)	(0.070)	(0.069)			
$E_i\left[\pi_y^{Prior}\right]$ x 50k-100k				-0.040	-0.077	0.015
				(0.058)	(0.078)	(0.073)
$E_i\left[\pi_y^{Prior}\right]$ >100k				0.033	-0.067	-0.075
				(0.062)	(0.110)	(0.112)
Female	0.768***	0.545	1.465**			
	(0.207)	(1.071)	(0.654)			
50k-100k				-0.318	-1.248	-0.895
				(0.240)	(1.477)	(0.704)
>100k				-0.611**	-1.189	-2.094**
				(0.249)	(1.065)	(0.925)
Constant	-0.294**	-1.079	-1.333***	0.332**	-0.314	0.006
	(0.141)	(0.660)	(0.437)	(0.154)	(0.741)	(0.503)
Regression	OLS	IV	IV	OLS	IV	IV
F-Test		30.974	74.163		9.068	13.233
Instrument		Huber	Trimmed		Huber	Trimmed
Observations	5,525	5,525	5,322	5,525	5,525	5,322
R-squared	0.563	0.544	0.539	0.562	0.533	0.528

Notes: This table shows results from IV regressions from different demographic subsamples. The regression used is the same as in column (2) in Table 2. Robust standard errors are in parentheses.

Table 12: Effect of Inflation Expectations on Wage Increase Actions

	Apply for a job(s) that pays more		Work longer hours		Ask for a raise	
	(1)	(2)	(3)	(4)	(5)	(6)
$E_i\left[\pi_p^{Posterior}\right]$	0.005***	0.030***	0.004**	0.009	-0.002	0.002
	(0.002)	(0.006)	(0.002)	(0.005)	(0.002)	(0.006)
Constant	2.231***	2.013***	2.263***	2.216***	2.111***	2.072***
	(0.022)	(0.053)	(0.022)	(0.050)	(0.022)	(0.051)
Regression	OLS	IV	OLS	IV	OLS	IV
F-Test		143.3		149.8		143.3
$\frac{dy}{dx}\frac{\bar{x}}{\bar{y}}$	0.019	0.114	0.015	0.034	-0.009	0.011
Observations	4,651	4,651	4,573	4,573	4,409	4,409

Notes: This table shows OLS and IV regressions from equation 5. ℓ_i^j is a value that ranges from 1 to 4, where 1 is "Very unlikely, " 2 is "Somewhat unlikely," 3 is "Somewhat likely" and 4 is "Very likely." For columns (1) and (2) ℓ_i^j is the answer to the question about "apply for a job(s) that pays more," columns (3) and (4) are the answers to the question about "work longer hours," and columns (5) and (6) are the answers about "ask for a raise." Robust standard errors are in parentheses.

Table 13: Effect of Inflation Expectations on Wage Increase Actions, Trimmed Sample

	Apply for a job(s)		Work longer hours		Ask for a raise	
	(1)	(2)	(3)	(4)	(5)	(6)
$E_i\left[\pi_p^{Posterior}\right]$	0.005***	0.018***	0.004**	0.008**	-0.002	0.004
	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)
Constant	2.212***	2.103***	2.263***	2.225***	2.110***	2.063***
	(0.023)	(0.039)	(0.022)	(0.039)	(0.022)	(0.041)
Regression	OLS	IV	OLS	IV	OLS	IV
F Test		423.226		447.834		388.324
$\frac{dy}{dx}\frac{\bar{x}}{\bar{y}}$	0.019	0.067	0.014	0.031	-0.008	0.015
Observations	4,471	4,471	4,406	4,406	4,256	4,256
R-squared	0.002	-0.013	0.001	-0.001	0.000	-0.003

Notes: This table shows OLS and IV regressions from equation 5. ℓ_i^j is a value that ranges from 1 to 4, where 1 is "Very unlikely, " 2 is "Somewhat unlikely," 3 is "Somewhat likely" and 4 is "Very likely." For columns (1) and (2) ℓ_i^j is the answer to the question about "apply for a job(s) that pays more," columns (3) and (4) are the answers to the question about "work longer hours," and columns (5) and (6) are the answers about "ask for a raise." We use as an instrument the values generated from column (3) in Table 1 Robust standard errors are in parentheses.

Table 14: Effect of Inflation Expectations on Apply for a Job(s) by Demographics

	Apply for a Job(s) That Pays More					
	All	Male	Female	<50k	50k-100k	100k+
	(1)	(2)	(3)	(4)	(5)	(6)
$E_i\left[\pi_p^{Posterior}\right]$	0.029***	0.021***	0.042***	0.019**	0.048***	0.025***
	(0.006)	(0.007)	(0.010)	(0.010)	(0.011)	(0.007)
Constant	2.015***	2.172***	1.802***	2.173***	1.801***	2.033***
	(0.054)	(0.060)	(0.102)	(0.095)	(0.096)	(0.074)
Regression	IV	IV	IV	IV	IV	IV
F-Test	143.328	82.591	59.017	59.277	36.924	137.812
$\frac{dy}{dx}\frac{\bar{x}}{\bar{y}}$	0.114	0.072	0.184	0.076	0.182	0.094
Observations	4,651	2,371	2,280	1,984	1,662	1,005

Notes: This table shows IV regressions from equation 5. ℓ_i^j is a value that ranges from 1 to 4, where 1 is "Very unlikely, " 2 is "Somewhat unlikely," 3 is "Somewhat likely" and 4 is "Very likely." ℓ_i^j is the answer to the question "apply for a job(s) that pays more." Column (1) is for the full sample, column (2) only for male respondents, column (3) for female respondents, column (4) for respondents who have an income lower than 50k, column (5) for respondents with income between 50k and 100k, and column (6) for respondents with income higher than 100k. We use as an instrument the values generated from column (3) in Table 1. Robust standard errors are in parentheses.

Table 15: Effect of Inflation Expectations on Work Longer Hours by Demographics

	Work Longer Hours					
	All	Male	Female	<50k	50k-100k	100k+
	(1)	(2)	(3)	(4)	(5)	(6)
$E_i\left[\pi_p^{Posterior}\right]$	0.009	0.004	0.018**	0.001	0.024**	0.012
	(0.005)	(0.007)	(0.009)	(0.009)	(0.011)	(0.008)
Constant	2.219***	2.372***	2.008***	2.263***	2.067***	2.296***
	(0.051)	(0.060)	(0.091)	(0.088)	(0.093)	(0.078)
Regression	IV	IV	IV	IV	IV	IV
F-Test	149.752	88.642	60.033	61.735	39.939	138.630
$\frac{dy}{dx}\frac{\bar{x}}{\bar{y}}$	0.034	0.014	0.080	0.003	0.088	0.043
Observations	4,573	2,339	2,234	1,942	1,630	1,001

Notes: This table shows IV regressions from equation 5. ℓ_i^j is a value that ranges from 1 to 4, where 1 is "Very unlikely, " 2 is "Somewhat unlikely," 3 is "Somewhat likely" and 4 is "Very likely." ℓ_i^j is the answer to the question "work longer hours." Column (1) is for the full sample, column (2) only for male respondents, column (3) for female respondents, column (4) for respondents who have an income lower than 50k, column (5) for respondents with income between 50k and 100k, and column (6) for respondents with income higher than 100k. We use as an instrument the values generated from column (3) in Table 1. Robust standard errors are in parentheses.

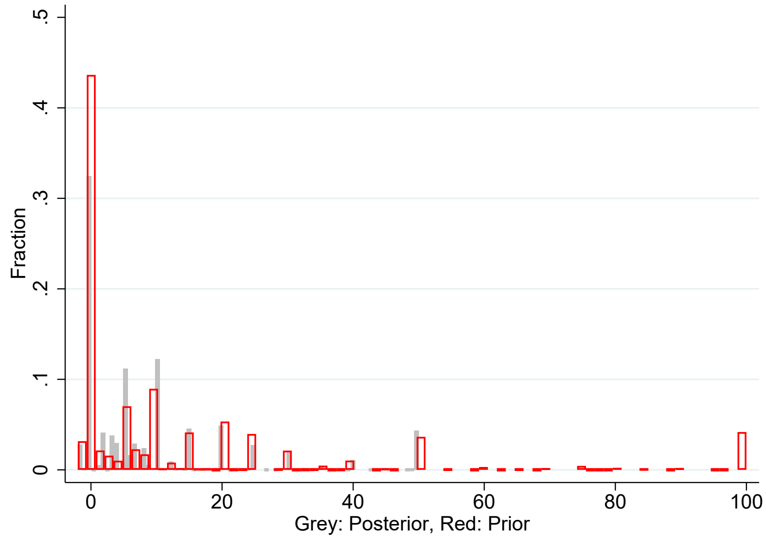
Table 16: Effect of Inflation Expectations on Ask for a Raise by Demographics

	Ask for a Raise					
	All	Male	Female	<50k	50k-100k	100k+
	(1)	(2)	(3)	(4)	(5)	(6)
$E_i\left[\pi_p^{Posterior}\right]$	0.003	0.007	0.000	-0.011	0.016*	0.018**
	(0.006)	(0.007)	(0.010)	(0.010)	(0.009)	(0.008)
Constant	2.068***	2.205***	1.910***	2.100***	1.962***	2.112***
	(0.052)	(0.058)	(0.092)	(0.094)	(0.083)	(0.076)
Regression	IV	IV	IV	IV	IV	IV
F-Test	143.25	88.667	53.836	49.857	50.938	194.820
$\frac{dy}{dx}\frac{\bar{x}}{\bar{y}}$	0.011	0.023	0.002	-0.051	0.064	0.066
Observations	4,406	2,283	2,126	1,847	1,593	969

Notes: This table shows IV regressions from equation 5. ℓ_i^j is a value that ranges from 1 to 4, where 1 is "Very unlikely, " 2 is "Somewhat unlikely," 3 is "Somewhat likely" and 4 is "Very likely." ℓ_i^j is the answer to the question "Ask for a raise." Column (1) is for the full sample, column (2) only for male respondents, column (3) for female respondents, column (4) for respondents who have an income lower than 50k, column (5) for respondents with income between 50k and 100k, and column (6) for respondents with income higher than 100k. We use as an instrument the values generated from column (3) in Table 1. Robust standard errors are in parentheses.

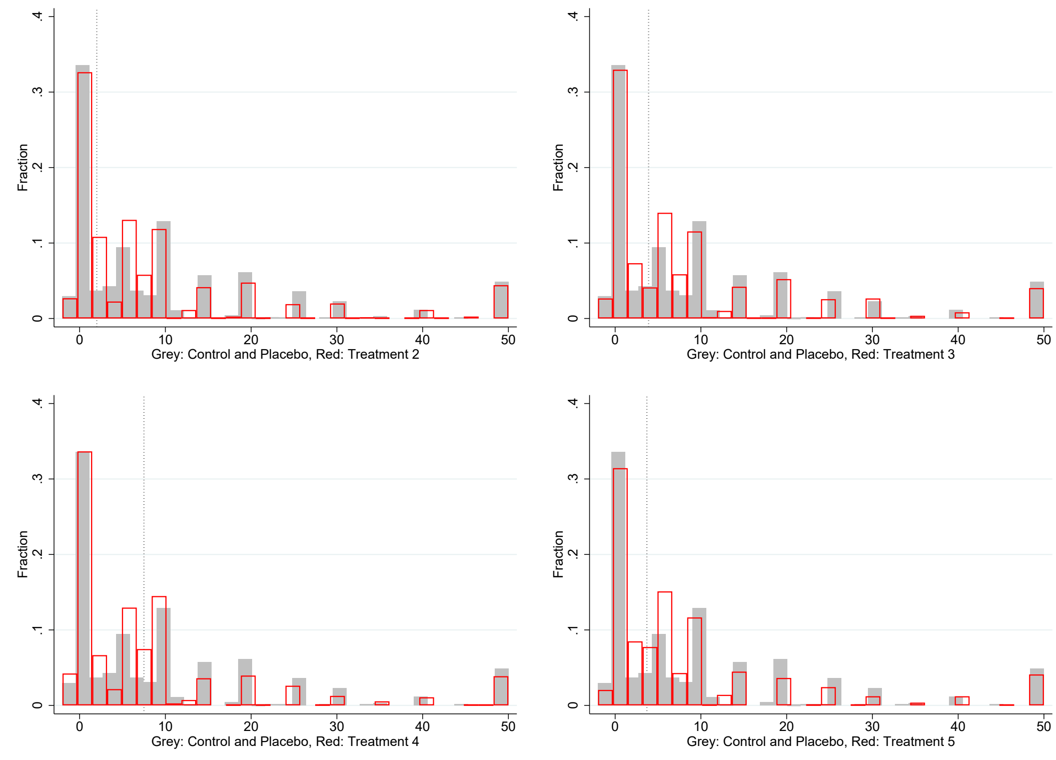
C Additional Figures

Figure 4: Distribution of Price Prior and Posterior



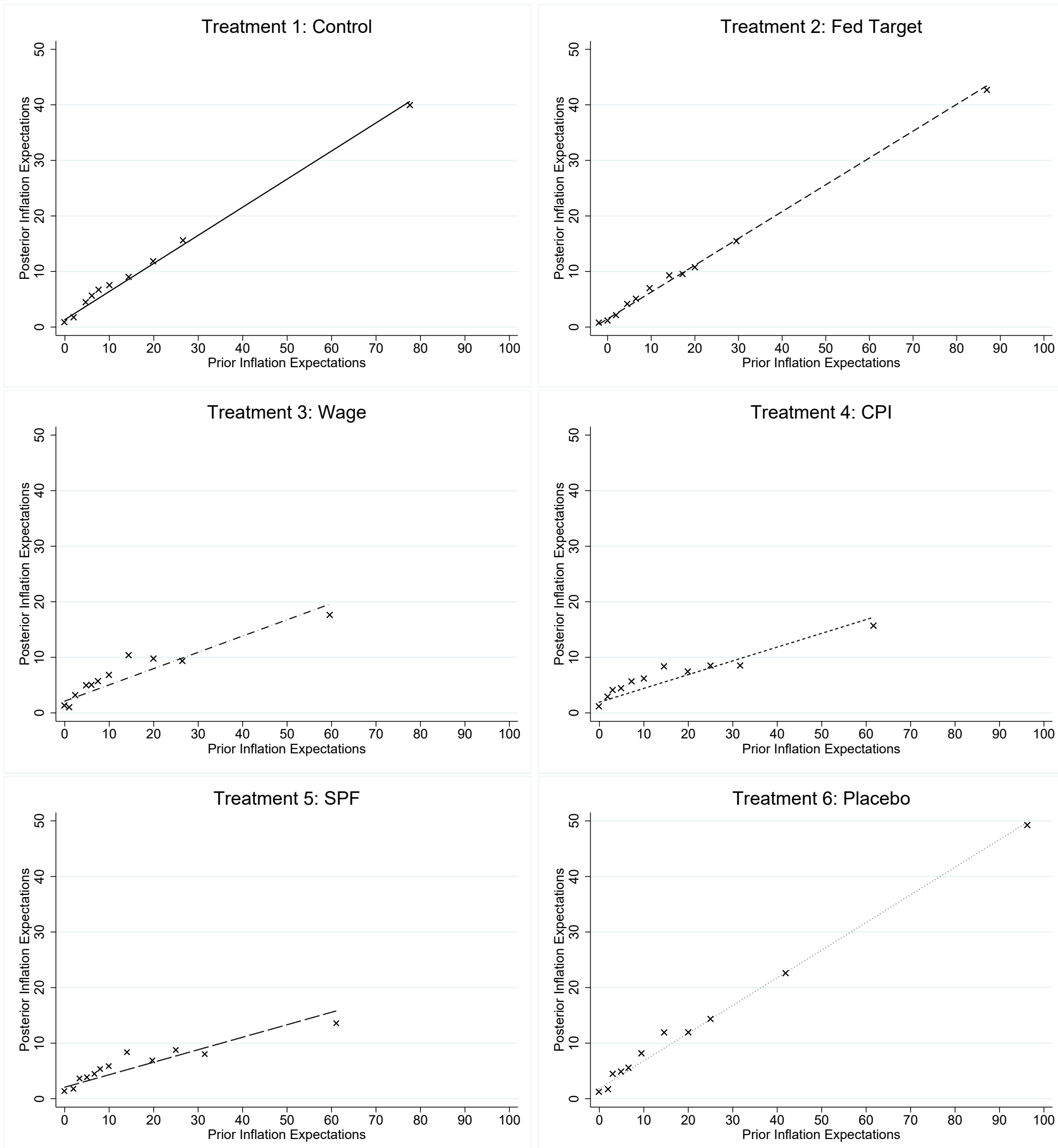
Notes: The figure shows the distribution of the prior (red) and posterior (grey) groups for treated and control groups.

Figure 5: Distribution of Price Posterior by Treatment Group



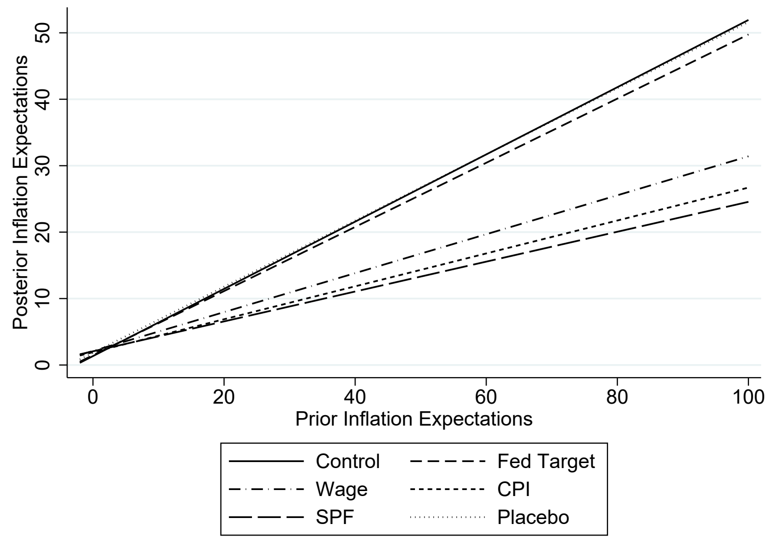
Notes: The figures show the distribution of the posterior for the control and placebo groups (grey) and the treatment groups (red). The upper-left panel shows results for treatment 2 related to the Fed target. The upper-right panel shows results for treatment 3 related to the wage growth expectations. The lower-left panel shows results for treatment 4 related to CPI inflation. The lower-right panel shows results for treatment 5 related to the inflation forecast. The black vertical dots indicate the numerical information provided in the treatment.

Figure 6: Distribution of Prior and Posterior by Treatment Group



Notes: The graph plots a bin scatter plot (n=25) and the linear prediction, weighted by the Huber weights as in Table 1, for each treatment group. The x axis shows the prior inflation expectations and the y axis the posterior inflation expectations.

Figure 7: Prior and Posterior Inflation Expectations by Treatment Group



Notes: The graph shows the linear prediction for the distribution of priors and posteriors for inflation expectations by treatment group. The distribution is weighted by the Huber weights in Table 1. The slope and intercept correspond with results of column (4) in Table 1

D Robustness Table 1

Table 1 show two specifications. One uses Huber robust regression. This type of regressions are common in survey analyses, in particular in of consumers (Coibion et al., 2019, 2022, 2024). This procedure removes outliers and very influential observations, by creating weights of tom give less importance to those observations. In the case of our regressions, what Huber regression do is to put less weight in responses that changed dramatically between the prior and the posterior. Those observations are related with individuals that make dramatic change in expectations, from very high to very low numbers. In the case of our sample the individuals that Huber weight effectively remove make on average revisions of over 30 percent. Knotek et al. (2024) show that the weights of Huber regression are positively related with individuals that that pay attention to the survey, meaning that the individuals that receive lower weights are not paying too much attention to the survey.

As this method is widely used and it is a little bit agnostic, the results with Huber are our favorite. Alternatively, we provide another type of regression, where we directly remove people that make dramatic change, in particular 5 percent of those observations. This method is more arbitrary, but easier to understand. Because of that Table 1 show result for those methods. While there are some difference, the coefficient on change in the correlation between prior and posterior remain similar, and the conclusions about the effectiveness of the treatment are similar.

Additionally, in table 17 we show the OLS results, and quantile regressions, that is another way to remove the influence of outliers.

Table 17: Robustness First Stage Exercise with Trimmed and Quantile Regressions

	(1)	(2)	(3)	(4)
	$E_i\left[\pi_p^{Posterior}\right]$	$E_i\left[\pi_p^{Posterior}\right]$	$E_i\left[\pi_y^{Posterior}\right]$	$E_i\left[\pi_y^{Posterior}\right]$
$E_i\left[\pi_p^{Prior}\right]$	0.262***	0.467***		
	(0.026)	(0.016)		
$E_i\left[\pi_y^{Prior}\right]$			0.775***	1.000
			(0.048)	-
T2: Target	-0.627	0.558	-0.203	-
	(0.460)	(0.248)	(0.104)	-
T3: Wages	-0.695	1.333**	-0.208	-
	(0.450)	(0.592)	(0.230)	-
T4: CPI	-0.825*	0.533	-0.109	-
	(0.456)	(0.587)	(0.254)	-
T5: SPF	-0.749	1.556***	-0.100	-
	(0.465)	(0.596)	(0.247)	-
T6: Placebo	0.133	1.333**	-0.373	-
	(0.465)	(0.590)	(0.248)	-
T2 x prior	-0.002	-0.079***	-0.127*	-
	(0.036)	(0.022)	(0.072)	-
T3 x prior	-0.003	-0.107***	-0.047	-
	(0.035)	(0.022)	(0.071)	-
T4 x prior	-0.015	-0.107***	-0.114	-
	(0.035)	(0.022)	(0.074)	-
T5 x prior	-0.025	-0.189***	-0.039	-
	(0.036)	(0.023)	(0.071)	-
T6 x prior	0.047	0.013	-0.078	-
	(0.035)	(0.022)	(0.074)	-
Constant	5.667***	0.667	0.925***	-
	(0.337)	(0.419)	(0.185)	-
Sample	OLS	Quantile	OLS	Quantile
Observations	6,620	6,620	6,622	6,622
R-squared	0.261		0.559	

Notes: The table shows estimates of equations 1 and 2 that gauge the effect of treatments and their interaction with prior beliefs. Columns (1) and (3) show results that exclude responses in the tails of the distribution (less than the 5th percentile or greater than the 95th percentile) of changes between priors and posteriors, using robust standard errors. Columns (2) and (4) use quantile regressions at the median.

E Follow-Up Exercise

In the second week of September 2022, we ran a follow-up exercise. This exercise consisted of the same questions used in the first run, with the same phrasing and ordering. Then, we updated the wage, CPI, and SPF treatments with the most up-to-date information. This time we targeted a sample of 1500 respondents per treatment. The target and placebo treatments remained the same. The wage treatment changed its reference to a forecast from the CBO, as there was no update available on the Conference Board forecast used before and the old forecast was quite outdated at that point. The new wage treatment was the following: *"A recent forecast from the Congressional Budget Office projected that wages and salaries among non-government workers would rise 4.1% on average in 2023."* In the case of the CPI treatment, we used the CPI inflation rate as of July 2022 (8.5 percent) and moved forward the corresponding dates. In terms of the SPF projection, we used the forecast for the CPI inflation rate to the end of 2023 (3.2 percent). We then ran:

$$E_i\left[\pi_p^{Posterior}\right] = \alpha_t + \beta E_i\left[\pi_p^{Prior}\right] + \sum_{j=2}^{6}\gamma_p^j \times T_i^j + \sum_{j=2}^{6}\theta_p^i \times T_i^j \times E_i\left[\pi_p^{Prior}\right] + \varepsilon_i \tag{E.1}$$

and we estimated the following specification for income growth expectations:

$$E_i\left[\pi_y^{Posterior}\right] = \alpha_t + \beta E_i\left[\pi_y^{Prior}\right] + \sum_{j=2}^{6}\gamma_y^j \times T_{it}^j + \sum_{i=2}^{6}\theta_y^i \times T_{it}^j \times E_i\left[\pi_y^{Prior}\right] + \varepsilon_i \tag{E.2}$$

where α_t is a time or survey round fixed effect. In this case the treatment information is multiplied by its numerical value, which is why T_{it} varies by individual and time, since we use data from March and September. This is similar to the instrument used by Coibion et al. (2020b). The results are presented in Table 18.

Table 18: Follow-up Treatment Effect

	(1) $E_i\left[\pi_p^{Posterior}\right]$	(2) $E_i\left[\pi_p^{Posterior}\right]$	(3) $E_i\left[\pi_p^{Posterior}\right]$	(4) $E_i\left[\pi_p^{Posterior}\right]$	(5) $E_i\left[\pi_y^{Posterior}\right]$	(6) $E_i\left[\pi_y^{Posterior}\right]$	(7) $E_i\left[\pi_y^{Posterior}\right]$	(8) $E_i\left[\pi_y^{Posterior}\right]$
$E_i\left[\pi_p^{Prior}\right]$	0.199***	0.209***	0.300***	0.450***	0.658***	0.648***	0.570***	0.533***
	(0.015)	(0.018)	(0.038)	(0.005)	(0.036)	(0.046)	(0.042)	(0.060)
$E_i\left[\pi_y^{Prior}\right]$	0.199***	0.209***	0.300***	0.450***	0.658***	0.648***	0.570***	0.533***
	(0.015)	(0.018)	(0.038)	(0.005)	(0.036)	(0.046)	(0.042)	(0.060)
$Target_{it}$	-0.638**	-0.634**	0.442*	1.247***	-0.382**	-0.530***	0.093	0.133
	(0.274)	(0.318)	(0.268)	(0.104)	(0.156)	(0.204)	(0.074)	(0.091)
$Wages_{it}$	-0.603**	-0.510	0.000	1.179***	-0.188	-0.318	0.052	0.084
	(0.269)	(0.313)	(0.251)	(0.106)	(0.160)	(0.210)	(0.072)	(0.088)
CPI_{it}	-0.751***	-0.819***	0.000	1.010***	-0.047	-0.191	0.150*	0.137
	(0.274)	(0.313)	(0.246)	(0.106)	(0.172)	(0.214)	(0.078)	(0.089)
SPF_{it}	-0.696**	-0.710**	0.585**	1.322***	-0.104	-0.207	0.119	0.083
	(0.276)	(0.313)	(0.268)	(0.105)	(0.173)	(0.232)	(0.074)	(0.087)
$Placebo_{it}$	0.207	0.327	0.000	0.335***	-0.305*	-0.341	-0.013	-0.061
	(0.289)	(0.334)	(0.256)	(0.099)	(0.164)	(0.217)	(0.073)	(0.082)
$Target_{it} \times Prior_{it}$	-0.005	-0.008	-0.040*	-0.188***	-0.030	-0.008	-0.041	-0.040
	(0.010)	(0.013)	(0.022)	(0.004)	(0.026)	(0.031)	(0.030)	(0.040)
$Wages_{it} \times Prior_{it}$	0.001	-0.004	-0.012	-0.083***	-0.001	-0.001	-0.012	-0.020
	(0.005)	(0.006)	(0.011)	(0.002)	(0.013)	(0.016)	(0.014)	(0.021)
$CPI_{it} \times Prior_{it}$	-0.001	-0.001	-0.010*	-0.042***	-0.006	-0.007	0.000	0.001
	(0.002)	(0.003)	(0.005)	(0.001)	(0.007)	(0.008)	(0.007)	(0.010)
$SPF_{it} \times Prior_{it}$	-0.005	-0.006	-0.029**	-0.115***	0.004	0.008	-0.022	-0.015
	(0.006)	(0.008)	(0.012)	(0.002)	(0.015)	(0.018)	(0.017)	(0.022)
$Placebo_{it} \times Prior_{it}$	0.038*	0.019	0.057	0.004	-0.021	-0.008	-0.068	-0.045
	(0.021)	(0.025)	(0.047)	(0.007)	(0.052)	(0.062)	(0.055)	(0.072)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	All	All	All	All	Trimmed	Trimmed
Regression	OLS	Weights	Quantile	Huber	OLS	Weights	OLS	Weights
Observations	15,463	15,463	15,463	14,276	15,465	15,465	13,324	13,324
R-squared	0.212	0.216		0.580	0.487	0.488	0.333	0.314

Notes: The table shows estimates of equations **??** and **??** that relate priors and posteriors, as well as estimates of equations 1 and 2 that gauge the effect of treatments and their interaction with prior beliefs.

We can see from column (4) that we obtain similar effects for the treatments in terms of their effects on inflation expectations, with the exception of the placebo; that is, our treatments are effective in moving people's posterior inflation expectations. Thus, we can once again use our treatments to instrument for inflation expectations. By contrast, columns (5) to (8) show that the information treatments do not seem to affect consumers' posterior income growth expectations, conditional on the prior, meaning that the treated and control groups are effectively the same, and preventing us from doing the same to instrument for income growth expectations. As a result, we run

$$\widehat{E_i\left[\pi_p^{Posterior}\right]} = \begin{cases} \sum_{j=2,4,5}\gamma_p^j \times T_{it}^j + \sum_{j=2,4,5}\theta_p^j \times T_{it}^j \times E_i\left[\pi_p^{Prior}\right] & if \quad T_{it} = Target, CPI, SPF \\ 0 & if \quad T_{it} = Control, Placebo \end{cases}$$

where we use the numerical information provided within each treatment T^j_{it} that varies over time as above. Table 19 shows the results for the average and by demographics

Table 19: Pass-through from Inflation Expectations to Income Growth Expectations, by Demographics Follow-up

	$E_i\left[\pi_y^{Posterior}\right]$					
	All	Male	Female	<50k	50k-100k	>100k
$E_i\left[\pi_p^{Posterior}\right]$	0.174***	0.243***	0.135**	0.148***	0.210**	0.253**
	(0.043)	(0.068)	(0.056)	(0.056)	(0.087)	(0.107)
$E_i\left[\pi_y^{Prior}\right]$	0.594***	0.597***	0.582***	0.597***	0.567***	0.603***
	(0.019)	(0.030)	(0.026)	(0.025)	(0.037)	(0.062)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
F-test	314.429	123.973	185.655	185.638	76.927	61.875
Observations	12,882	6,039	6,843	6,029	4,452	2,401
R-squared	0.486	0.541	0.441	0.477	0.459	0.559

Notes: This table shows results from IV regressions from different demographics. The regression used is the same as in column (2) in Table 2. Regressions have robust standard errors.

We see a pattern similar to the one in the baseline exercise. The estimated pass-through is a little bit smaller, but still close to 20 percent. We find the same pattern for the results by demographics as before. Finally, we run the regressions on the labor market actions using the same strategies, meaning that we use the same controls and time fixed effects. The results are presented in Table 20.

Table 20: Effect of Inflation Expectations on Wage Increase Actions, Follow-up

	Apply for a job(s) that pays more		Work longer hours		Ask for a raise	
	(1)	(2)	(3)	(4)	(5)	(6)
$EE_i\left[\pi_p^{Posterior}\right]$	0.006***	0.036***	0.005***	0.015***	-0.002	0.002
	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)	(0.004)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Regression	OLS	IV	OLS	IV	OLS	IV
F-Test		372.1		377.8		359.9
$\frac{dy}{dx}\frac{\bar{x}}{\bar{y}}$	0.020	0.121	0.016	0.049	-0.007	0.007
Observations	4,651	4,651	4,573	4,573	4,409	4,409

Notes: This table shows OLS and IV regressions from equation 5. ℓ_i^j is a value that ranges from 1 to 4, where 1 is "Very unlikely, " 2 is "Somewhat unlikely," 3 is "Somewhat likely" and 4 is "Very likely." For columns (1) and (2) ℓ_i^j is the answer to the question about "apply for a job that pays more," columns (3) and (4) are the answers to the question about "work longer hours," and columns (5) and (6) are the answers about "ask for a raise." Regressions have robust standard errors.

We find very similar results in terms of point estimates and elasticities. Overall, the follow-up exercise confirms the robustness of the baseline results, suggesting that they are not driven solely by a particular time period in early 2022. In addition, it is worth noting that this exercise from September 2022 shows that our baseline results are robust to varying the precise time frame used in the priors and posteriors. In particular, in this exercise we used a time frame for the posterior income growth expectations question that had greater temporal overlap with the prior than was the case in our baseline exercise conducted in March 2022. Given that our results are essentially unchanged, we are comfortable that different timing assumptions were not driving the results documented in the body of the paper.[41]

In addition to this exercise, we use the variation on the same information treatment to learn about the effect of each treatment on the pass-through result. In order to do so, we use the "control" groups (placebo and control) and only one treatment group individually at a time. Table 21 describes the results for each treatment group.

[41] As a reminder, in the baseline survey results from March 2022, the inflation prior asked about income needed to offset price changes "over the next 12 months," while the inflation posterior asked about the growth in prices "in the next year." Meanwhile, the income growth prior asked about expected income changes "over the next 12 months" while the income growth posterior asked about expected income growth "between December 2022 and December 2023." In the survey results from September 2022, the wording of the prior and posterior questions was unchanged, meaning that there was now more overlap in the time frames for the income prior and posterior questions, whereas there had been little overlap in the March wave. The fact that our results are essentially the same implies that the lack of overlap in the baseline results was not important for our findings.

Table 21: IV Results for Each Individual Treatment

	$E_i\left[\pi_y^{Posterior}\right]$			
	(1)	(2)	(3)	(4)
$E_i\left[\pi_p^{Posterior}\right]$	0.174***	0.151*	0.148*	0.207**
	(0.043)	(0.078)	(0.079)	(0.090)
$E_i\left[\pi_y^{Prior}\right]$	0.594***	0.598***	0.602***	0.606***
	(0.019)	(0.028)	(0.028)	(0.030)
Time FE	Yes	Yes	Yes	Yes
Treatment	All	Target	CPI	SPF
F-Test	314.429	86.127	96.273	82.905
Observations	12,882	7,792	7,735	7,673
R-squared	0.486	0.494	0.478	0.491

Notes: This table shows results from IV regressions one treatment at a time. The regression used is the same as in column (2) in Table 2. Regressions have robust standard errors.

Table 21 shows that the effect changes slightly depending on the treatment. The estimated pass-through is slightly stronger when consumers are treated with information about future inflation, and slightly lower for the other treatments, but they are all comparable. The table shows that our main findings are highly robust: pass-through is on the order of roughly 20 percent. Because each inflation treatment is generating a similar pass-through estimate, we do not believe that the imbalance of having three inflation treatments and one wage treatment is a primary driver of our main result.

F Robustness of Experiment to Prior on Inflation Expectations

Here, we show that our novel indirect measure of inflation expectations, used to capture respondents' prior inflation expectations in the experiment, does not bias the effect of inflation expectations on income growth expectations or labor market actions. In Hajdini et al. (2022a), we describe our novel measure of inflation expectations in detail. In particular, we show that it has properties similar to other measures of inflation expectations such as those of the Federal Reserve Bank of New York's Survey of Consumer Expectations (SCE) or the Surveys of Consumers by the University of Michigan. We use the ICIE as the main variable on this paper because its good properties and because it allows us to obtain a larger amount of observations for the experiment, as it is part of the main product of the survey. Regardless of such evidence, we chose to perform a complementary RCT experiment in June 2023 to explore whether relying on our novel indirect measure of inflation expectations biases the effect of inflation expectations on income growth expectations or labor market actions. We find that the choice of the prior question does not yield any significant differences in our main results.

Specifically, a sample of around 4,400 respondents entered our RCT experiment in June 2023. Respondents were randomly assigned to two groups: one group was asked our novel ICIE question and the other group was asked the conventional inflation expectations question from the Federal Reserve Bank of New York's Survey of Consumer Expectations. In particular, the latter question asks consumers the following: "*In the next year, do you think that there will be inflation or deflation? (Note: deflation is the opposite of inflation).*" Respondents were then provided with the following options: "*1. Inflation (%); 2. Deflation (%); 3. Neither inflation nor deflation.*" Then, all respondents were asked the same question about income growth expectations, as in the regular exercise in the main text: "Do you expect your income to increase, decrease, or stay about the same over the next 12 months?" Subsequently, half of each group (randomly assigned) received a treatment related to inflation:

"*According to the Survey of Professional Forecasters, the Consumer Price Index (CPI), which measures the average change in prices over time that consumers pay for goods and services, showed the inflation rate will be 3.4% by the end of 2023.*"

The rest of the respondents received no treatment. Finally, all respondents were asked about their posterior inflation expectations and income growth expectations, respectively, relying on the following two questions:

"*In the next year, do you think prices in general will increase, decrease, or stay about the same?*"

"*Between December 2023 and December 2024, do you expect your income to increase, decrease, or stay about the same?*" Last, we ask respondents the labor market action questions in the same way as in the main RCT experiment.

The ultimate goal of this exercise is to understand whether the estimated pass-through from inflation expectations to income growth expectations depends on the question used to elicit prior inflation expectations. Our strategy is to first evaluate the effect of the prior and treatment on posterior inflation expectations, running regressions similar to (**??**) and (1). We do so for the two distinct priors separately as well as jointly, with results shown in Table 22.

Table 22: Effects of Treatments on Expectations: Different Priors

	(1)	(2)	(3)
	$E_i\left[\pi_p^{Posterior}\right]$	$E_i\left[\pi_p^{Posterior}\right]$	$E_i\left[\pi_p^{Posterior}\right]$
$E_i\left[\pi_p^{Prior}\right]$	0.491***	0.218***	0.399***
	(0.003)	(0.006)	(0.063)
T1: SPF	0.580***	0.130	0.239***
	(0.064)	(0.095)	(0.005)
T1 x Prior	-0.446***	-0.057***	-0.192***
	(0.005)	(0.010)	(0.005)
Constant	0.164***	0.830***	0.645***
	(0.035)	(0.066)	(0.041)
Sample	ICIE	NYFED	Pooled
Observations	1,813	1,974	3,846
R-squared	0.880	0.576	0.525

Notes: The table shows estimates of equation (**??**) that relate priors and posteriors, as well as estimates of equation (1) that gauge the effect of treatments and their interaction with prior beliefs. In column (1), $E_i\left[\pi_p^{Prior}\right]$ refers to prior inflation expectations elicited using the ICIE question, whereas in column (2), $E_i\left[\pi_p^{Prior}\right]$ denotes prior inflation expectations inferred from the NY Fed question. In column (3), both priors are pooled so $E_i\left[\pi_p^{Prior}\right]$ denotes prior inflation expectations inferred from both the ICIE and the NY Fed question.

We then take advantage of the exogenous variation in inflation expectations induced by our information treatment to construct our instrument for inflation expectations, similar to the main RCT experiment. We construct the instrumental variable in two ways: i) using the pooled first-stage regression, thereby assuming the same coefficient for both priors, and ii) allowing for prior-specific coefficients. Specifically,

$$E_i\left[\widehat{\pi_p^{Posterior}}\right] = \begin{cases} \gamma_p T_i + \theta_p \left(T_i \times E_i\left[\pi_p^{Prior}\right]\right) & \text{if treated group} \\ 0 & \text{if control group} \end{cases}$$

where $T_i = 1$ if individual i is treated with the inflation information and 0 otherwise; for the first variant of constructing the instrumental variable we rely on estimates of γ_p and θ_p reported in column (3) in Table 22, whereas for the second variant we use estimates of γ_p and θ_p reported in column 1 for the respondents who are asked the ICIE question and estimates shown in column (2) for those who are asked the Federal Reserve Bank of New York's SCE question.

We then estimate, analogously to our previous instrumented regression setup, the following regression

$$E_i\left[\pi_y^{Posterior}\right] = \alpha_0 + \alpha_1 \times NYFed + \beta_0 E_i\left[\pi_p^{Posterior}\right] + \beta_1\left(E_i\left[\pi_p^{Posterior}\right]] \times NYFed\right) + \psi E_i\left[\pi_y^{Prior}\right] + \varepsilon_i \tag{F.1}$$

where $NYFed$ is a dummy variable taking value 1 if prior inflation expectations are elicited using the Federal Reserve Bank of New York's SCE question and 0 otherwise. We note that, differently from the analysis in the main text, our regression above includes the dummy variable $NYFed$ as well as its interaction with the prior in order to test whether the effects of the choice of prior are significantly different or not. We instrument $E_i\left[\pi_p^{Posterior}\right]$ using $E_i\left[\widehat{\pi_p^{Posterior}}\right]$.

Similarly, we run the following regression of the reported likelihood of undertaking labor market action ℓ_i^j on expected inflation, to assess the extent to which inflation expectations drive labor market decisions:

$$\ell_i^j = \alpha_0 + \alpha_1 \times NYFed + \beta_0 E_i\left[\pi_p^{Posterior}\right] + \beta_1\left(E_i\left[\pi_p^{Posterior}\right] \times NYFed\right) + \varepsilon_i \tag{F.2}$$

where ℓ_i^j is a value that ranges from 1 to 4, where 1 is "Very unlikely, " 2 is "Somewhat unlikely," 3 is "Somewhat likely" and 4 is "Very likely" for three labor market actions: i) apply for a job(s) that pays more; ii) work longer hours; and iii) ask for a raise. As in (F.1), we control for the dummy variable $NYFed$ and its interaction with the prior to test whether the choice of prior has significantly different effects on the estimated pass-through from inflation expectations to labor market actions.

Table 23 shows the pass-through results and Table 24 shows the findings in terms of labor market actions.

Table 23: Pass-through Estimates for Different Inflation Expectations Priors

	(1)	(2)	(3)	(3)
	$E_i\left[\pi_y^{Posterior}\right]$	$E_i\left[\pi_y^{Posterior}\right]$	$E_i\left[\pi_y^{Posterior}\right]$	$E_i\left[\pi_y^{Posterior}\right]$
$E_i\left[\pi_p^{Posterior}\right]$	0.178***	0.106	0.178***	0.104
	(0.039)	(0.131)	(0.039)	(0.131)
$E_i\left[\pi_p^{Posterior}\right] \times NYFed(=1)$	-0.060	-0.120	-0.060	-0.119
	(0.048)	(0.141)	(0.048)	(0.141)
$E_i\left[\pi_y^{Prior}\right]$	0.531***	0.558***	0.531***	0.558***
	(0.029)	(0.034)	(0.029)	(0.034)
$NYFed(=1)$	-0.311	0.098	-0.311	0.092
	(0.233)	(0.684)	(0.233)	(0.681)
Constant	0.488***	0.753	0.488***	0.761
	(0.157)	(0.574)	(0.157)	(0.571)
Sample	Separated	Separated	Pooled	Pooled
Regression	OLS	IV	OLS	IV
F-Test		17.489		17.803
Observations	4,405	4,405	4,405	4,405
R-squared	0.423	0.409	0.423	0.409

Notes: This table shows results from OLS and IV regressions in (F.1). Columns (1) and (2) are the results of regressing the posterior of income growth expectations on the prior of income growth expectations and the posterior of inflation expectations using the IV constructed separately for both priors. In column (2) we use IV, instrumenting with $E_i\left[\widehat{\pi_p^{Posterior}}\right]$. Columns (3) and (4) are the results of regressing the posterior of inflation expectations on the prior of inflation expectations and the posterior of income growth expectations using the pooled estimation for the IV. In column (4) we use IV, instrumenting with $E_i\left[\widehat{\pi_p^{Posterior}}\right]$. $NYFed(=1)$ is a variable that takes a value of 1 if the prior is the NY Fed question. Robust standard errors are in parentheses.

Table 24: Effect of Inflation Expectations on Labor Market Actions

	Apply for a job(s)		Work longer hours		Ask for a raise	
	(1)	(2)	(3)	(4)	(5)	(6)
$E_i\left[\pi_p^{Posterior}\right]$	0.049***	0.049***	0.005	0.005	-0.008	-0.008
	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)
$E_i\left[\pi_p^{Posterior}\right]$ x $NYFed(=1)$	-0.025	-0.025	0.012	0.012	0.003	0.003
	(0.018)	(0.018)	(0.016)	(0.016)	(0.016)	(0.016)
$NYFed(=1)$	0.049	0.049	-0.146	-0.146	-0.052	-0.053
	(0.098)	(0.098)	(0.093)	(0.093)	(0.089)	(0.089)
Constant	1.688***	1.689***	1.949***	1.949***	1.770***	1.770***
	(0.076)	(0.076)	(0.072)	(0.071)	(0.072)	(0.071)
Sample	Separated	Pooled	Separated	Pooled	Separated	Pooled
F-test	21.521	21.274	21.521	21.274	21.521	21.274
Observations	4,405	4,405	4,405	4,405	4,405	4,405

Notes: This table shows IV regressions from equation (F.2). Columns (1) and (2) report the estimated pass-through from inflation expectations to labor market action "apply for a job(s) that pays more," columns (3) and (4) report the estimated pass-through from inflation expectations to labor market action "work longer hours," and columns (5) and (6) provide the estimated pass-through from inflation expectations to labor market action "ask for a raise." $NYFed(=1)$ is a variable that takes a value of 1 if the prior is the NY Fed question. Sample separated means that the instrument is built separately for each prior and pooled means that it is built jointly for both priors, as explained in the text. Robust standard errors are in parentheses.

The following results arise: First, the choice of wording for the inflation expectations question that forms the prior – ICIE or based on the SCE – makes no statistically significant difference in our pass-through regressions. The coefficients on the NY Fed SCE dummy and the interacted prior with the NY Fed SCE dummy are all statistically insignificant. Second, the levels of the pass-through estimates are somewhat lower than in our main exercise. This result indicates that consumers may not be strongly affected by the wording of the question, because in this period, independently of the prior, they expect a low pass-through. Third, we also find similar results in terms of labor market actions, which confirms the results of the main exercise in the paper and reinforces the main result of the robustness exercise – for a different outcome variable – that results are independent of the choice of prior.

G Model

G.1 Theoretical Model and Calibration

The model has been largely adapted from Christoffel and Kuester (2008) and Christoffel et al. (2009).

Households. There are a large number of identical families with unit measure. Each family consists of a measure n_t of employed members and $u_t = 1 - n_t$ of unemployed members. Each family member has the following utility function:

$$\widetilde{\mathbb{E}}_0 \sum_{t=0}^{\infty} \beta^t \left(\frac{(c_{it} - \varrho c_{t-1})^{1-\sigma}}{1-\sigma} - \kappa_h \frac{h_{it}^{1+\varphi}}{1+\varphi} \right) \tag{G.1}$$

where c_{it} denotes the consumption of consumer i; c_{t-1} is the family's aggregate real consumption in period $(t-1)$; h_{it} is the working hours of employed consumer i; $\kappa_h > 0$ is a parameter of work disutility; and $\varrho \in [0,1)$ captures the degree of external habit in consumption. Each family faces the following constraint:

$$c_t + \tau_t + \kappa_t v_t = \int_0^{1-u_t} w_{it} h_{it} di + u_t b + e_t^d d_{t-1} \frac{R_{t-1}}{\pi_t} - d_t + \Psi_t + n_t \Phi^K \tag{G.2}$$

where $\widetilde{\mathbb{E}}$ is a generic expectations operator; τ_t is lump-sum taxes per capita in real terms; κ_t denotes real cost per vacancy posting v_t; w_{it} is the real wage of employed consumer i; d_t denotes the risk-free one-period real bond holdings with return $e_t^d R_t$ and e_t^d being a shock to the risk premium; and b is real unemployment benefits. Variable Ψ_t denotes the real dividends of the family from firms in the economy, such that $\Psi_t = \Psi_t^C + \int_0^{1-u_t} \Psi_{it}^h di$, where Ψ_t^C and Ψ_{it}^h are dividends arising from the differentiated goods and labor goods firms, respectively, to be described in what follows. The model does not account for capital income, so we assume that the family receives a fixed share $n_t \Phi^K$, $\Phi^K \geq 0$, out of current revenue of labor firms as "capital income." The family makes optimal decisions on behalf of its members by maximizing the aggregate utility function in (G.1) with respect to consumption and real bond holdings, subject to the budget constraint in (G.2).

Firms. There are three types of firms: i) firms that produce a homogeneous intermediate good, "labor good"; ii) wholesale firms that purchase labor goods in a perfectly competitive market, and use them as inputs to produce differentiated goods; and iii) retail firms that purchase differentiated goods from the wholesalers and bundle those goods into a homogeneous consumption basket sold to consumers and the government.

Retailers' demand for differentiated good j is given by:

$$y_{jt} = \left(\frac{P_{jt}}{P_t}\right)^{-\varepsilon} y_t \tag{G.3}$$

where P_{jt} is the j^{th} good price; $\varepsilon > 1$ is the own-price elasticity of demand; P_t is the aggregate price level; and y_t denotes the final good/economy's aggregate output.

The wholesale sector has a unit mass with firms indexed by $j \in [0,1]$. Each firm produces variety j according to $y_{jt} = l^d_{jt}$, where l^d_{jt} denotes firm j's demand for the intermediate labor good, which it can acquire in a perfectly competitive market at real price x^h_t. Wholesalers face Calvo-type price stickiness such that in every period, a fraction $\omega \in (0,1)$ of them cannot reset the price. Similar to Christiano et al. (2005), we assume that the firms that cannot reoptimize can adjust prices by the index factor $\pi^{\zeta_p}_{t-1}\bar{\pi}^{1-\zeta_p}$, where $\zeta_p \in [0,1]$ denotes the degree of inflation indexation. The problem of wholesalers then is expressed as follows:

$$\max_{P_{jt}} \widetilde{\mathbb{E}}_t \sum_{h=0}^{\infty} \left[\omega^h \Gamma_{t,t+h} \left(\frac{P_{jt}\pi^{\zeta_p}_{t-1,t-1+h}(\bar{\pi}^{1-\zeta_p})^h}{P_{t+h}} - mc_{t+h}\right) y_{j,t+h}\right] \tag{G.4}$$

where $\Gamma_{t,t+h} = \beta^h \frac{\lambda_{t+h}}{\lambda_t}$, with λ_t being households' marginal utility of consumption; $\pi_{t-1,t-1+h} = P_{t-1+h}/P_{t-1}$; and $mc_t = x^h_t e^C_t$ is the marginal cost, with e^C_t being a cost-push shock. Total profits of the wholesale sector in period t are given by

$$\Psi^C_t = \int_{j=0}^{1} \left(\frac{P_{jt}}{P_t} - mc_t\right) y_{jt} dj \tag{G.5}$$

Finally, the labor good firms are homogeneous and they need exactly one worker to operate. So, there is a mass of $n_t = (1 - u_t)$ of such firms at any given time. Match i can produce l_{it} labor good units via $l_{it} = z_t h^\alpha_{it}$, where z_t is a productivity shock and $\alpha \in (0,1)$.

Labor markets. The matching process between workers and labor firms is governed by a Cobb-Douglas function,

$$m_t = \sigma_m u^\xi_t v^{1-\xi}_t \tag{G.6}$$

where m_t is matches formed in period t; u_t is unemployment; v_t is vacancies; $\xi \in [0,1]$ is the elasticity of matching with respect to unemployment; and $\sigma_m > 0$ is a scaling factor. Labor market tightness is defined as:

$$\theta_t = \frac{v_t}{u_t} \tag{G.7}$$

Then, the probabilities that a vacancy is filled and that an unemployed worker matches with a firm are, respectively,

$$q_t = \frac{m_t}{v_t}, \quad s_t = \frac{m_t}{u_t} \tag{G.8}$$

New matches become productive in $(t+1)$. Employment then evolves according to

$$n_t = (1-\mu)n_{t-1} + m_{t-1} \tag{G.9}$$

If a worker is not separated from employment, she can bargain her nominal wage to W^*_{t+1} in period $(t+1)$ with probability $(1-\gamma) \in [0,1]$. The nominal wage of the γ share of workers who cannot bargain partially adjusts for past inflation such that $W_{t+1} = W_t(e^w_t \pi_t^{\zeta_w} \bar{\pi}^{1-\zeta_w})$, where e^w_t is the wage-push factor as defined in the main text and $\zeta_w \in [0,1]$. In this framework, we define the value of employment as follows:

$$\begin{aligned} \mathcal{V}^E_t(W_{it}) = w_{it}h_{it} - \kappa_h \frac{h_{it}^{1+\varphi}}{(1+\varphi)\lambda_t} + (1-\mu)\widetilde{\mathbb{E}}_t \left[\Gamma_{t,t+1}\left(\gamma \mathcal{V}^E_{t+1}(W_{it}(e^w_t \pi_t^{\zeta_w} \bar{\pi}^{1-\zeta_w})) + (1-\gamma)\mathcal{V}^E_{t+1}(W^*_{t+1})\right)\right] \\ + \mu \widetilde{\mathbb{E}}_t \left[\Gamma_{t,t+1}\mathcal{V}^U_{t+1}\right] \end{aligned} \tag{G.10}$$

The value of an employed worker depends on her labor nominal income and her utility loss from working. An employed worker retains her job with probability $(1-\mu)$. In the next period, if she stays employed, she will not be able to renegotiate her nominal wage with probability γ, in which case her employment value is $\mathcal{V}^E_{t+1}(W_{it}(e^w_t \pi_t^{\zeta_w} \bar{\pi}^{1-\zeta_w}))$; in the case of rebargaining, the employment value is given by $V^E_{t+1}(W^*_{t+1})$. With probability μ the worker will be unemployed next period.

The value of unemployment is described as follows:

$$\mathcal{V}^U_t = b + s_t \widetilde{\mathbb{E}}_t \left[\Gamma_{t,t+1}\left(\gamma \mathcal{V}^E_{t+1}(W_t(e^w_t \pi_t^{\zeta_w} \bar{\pi}^{1-\zeta_w})) + (1-\gamma)\mathcal{V}^E_{t+1}(W^*_{t+1})\right)\right] + (1-s_t)\widetilde{\mathbb{E}}_t \left[\Gamma_{t,t+1}\mathcal{V}^U_{t+1}\right] \tag{G.11}$$

An unemployed worker finds a new job with probability s_t. In that case, she enters the same Calvo scheme as the average currently employed worker.[42]

Labor good firms are worthless unless they are matched with a worker. Therefore, the market value of a labor firm matched to a worker is

$$J_t(W_{it}) = \Psi^h_t(W_{it}) + (1-\mu)\widetilde{\mathbb{E}}_t \left[\Gamma_{t,t+1}\left(\gamma J_{t+1}(W_{it}(e^w_t \pi_t^{\zeta_w} \bar{\pi}^{1-\zeta_w})) + (1-\gamma)J_{t+1}(W^*_{t+1})\right)\right] \tag{G.12}$$

[42]The Calvo scheme of wages is imposed on both new matches and existing matches to preserve some degree of homogeneity in the model for tractability reasons.

where $\Psi_t^h(W_{it}) = x_t^h z_t h_{it}^{\alpha} - w_{it}h_{it} - \Phi$ with $\Phi \geq 0$ denoting a per-period fixed cost of production. For firms that bargain in a given period, the nominal wage is set according to Nash bargaining,

$$W_{it}^* = argmax_{W_{it}}(\mathcal{V}_{it}^E - \mathcal{V}_t^U)^{\eta_t}(J_{it})^{1-\eta_t} \tag{G.13}$$

where η_t is the time-varying bargaining power of workers.[43]

Free entry into the vacancy posting market implies that the ex ante value of vacancy posting is 0, yielding the following relationship:

$$\kappa_t = q_t\widetilde{\mathbb{E}}_t\left[\Gamma_{t,t+1}\left(\gamma J_{t+1}(W_t(e_t^w\pi_t^{\zeta_w}\bar{\pi}^{1-\zeta_w})) + (1-\gamma)J_{t+1}(W_{t+1}^*)\right)\right]. \tag{G.14}$$

Expectations. We assume that expectations about any variable, except inflation, are based on full information and are rational. We introduce some degree of information stickiness, $\lambda \in [0,1]$, in the inflation expectations formation process, such that

$$\widetilde{\mathbb{E}}_t\hat{\pi}_{t+1} = (1-\lambda)\mathbb{E}_t\hat{\pi}_{t+1} + \lambda\widetilde{\mathbb{E}}_{t-1}\hat{\pi}_{t+1}, \tag{G.15}$$

where $\mathbb{E}_t$ is the full-information rational expectations operator.

Policy. We assume that the monetary authority sets nominal interest rates R_t by responding to inflation deviations from a fixed target $\bar{\pi}$ and output growth.

$$log\left(\frac{R_t}{\bar{R}}\right) = \phi_R log\left(\frac{R_{t-1}}{\bar{R}}\right) + (1-\phi_R)\left[\phi_\pi log\left(\frac{\pi_t}{\bar{\pi}}\right) + \phi_{\Delta y} log\left(\frac{y_t}{y_{t-1}}\right)\right] + e_t^R, \tag{G.16}$$

where $\rho_R \in [0,1)$ denotes the interest rate smoothing and e_t^R is a monetary shock. On the fiscal front, we assume that government spending, g_t, is exogenous. Overall, there are a total of 7 shocks in the economy, e_t^d, e_t^R, e_t^C, g_t, κ_t, z_t, and η_t. Let $sh\hat{o}ck_t = log(shock_t/sh\bar{o}ck)$; then, each one of the shocks in log-linear deviation from the steady state is given by

$$sh\hat{o}ck_t = \rho_{shock}sh\hat{o}ck_{t-1} + \epsilon_t^{shock}, \epsilon_t^{shock} \sim \mathcal{N}(0,\sigma_{shock}^2). \tag{G.17}$$

[43] Differently from efficient Nash bargaining, we employ the right-to-manage framework of Trigari (2006). The difference between the two is that under the former, firms and workers bargain over both hours and wages, whereas under the latter, they bargain over wages only. Optimal hours and wages in the former case yield $\eta_t J_t = (1-\eta_t)(\mathcal{V}_t^E - \mathcal{V}_t^U)$. In our case, the optimality condition satisfies $\eta_t\delta_t^W J_t = (1-\eta_t)\delta_t^F(\mathcal{V}_t^E - \mathcal{V}_t^U)$, where δ_t^W and δ_t^F denote, respectively, the net marginal benefits from an increase in the wage to worker and firm. See Christoffel and Kuester (2008) for more details.

Table 25: Model Parameters

Parameter	Value	Description; Reference
$\bar{u}$	5.5 percent	Unemployment rate; value from Morales-Jiménez (2022)
$\bar{v}$	3 percent	Quarterly average vacancy rate, US data 2001:I - 2019:IV
μ	3 percent	Quarterly average separation rate, US data 2001:I - 2019:IV (similar to Shimer (2005))
$\bar{y}$	1	Output, normalized value
γ	0.855	Nominal wage stickiness; pass-through across all respondents in Table 2
γ	0.575	Nominal wage stickiness; unit pass-through for counterfactual analysis
ζ_w	0.365	Wage indexation; pass-through across all respondents in Table 2
ζ_w	0.35	Wage indexation; pass-through for counterfactual analysis
$\bar{e}_\pi$	0.0228	Wage-push elasticity w.r.t. inflation expectations across all respondents; Tables 2, 12
$\bar{e}_\pi$	0.114	Wage-push elasticity w.r.t. inflation expectations in counterfactual analysis; Table 12
ρ_w	0.9	Persistence of the wage-push factor
λ	0.285	Information stickiness; Table 5
ξ	0.6	Elasticity of matches w.r.t. unemployment; see Petrongolo and Pissarides (2001)
η	0.5	Bargaining power of workers; conventional value
σ_m	0.6569	Efficiency of matching; reconciles m with $u = 5.5$ percent and $v = 3$ percent
β	0.99	Discount factor; corresponds to a quarterly real rate of 1.01 percent
φ	1.5	Same calibration as in Morales-Jiménez (2022)
σ	1.38	Risk aversion; posterior mean found in Smets and Wouters (2007)
ϱ	0.71	Degree of external habit; posterior mean found in Smets and Wouters (2007)
κ_h	75.6289	Scaling factor to labor disutility; targets $h = 1/3$
α	0.66	Labor elasticity of production; matches labor share of about 60 percent
κ	0.216	Vacancy posting costs; reconciles m with $u = 0.042$ and $v = 0.07$
z	2.1851	Steady-state technology; matches with $y = 1$
Φ^K	0.3142	Imputed share of capital in revenue; matches with capital income share
Φ^h	0.0037	Fixed costs linked to labor; matches with y and h
ε	11	Price markup; conventional markup of 10 percent
ω	0.65	Calvo price stickiness; posterior mean found in Smets and Wouters (2007)
ζ_p	0.3	Price indexation to past inflation
ϕ_π	1.5	Response to inflation; conventional Taylor rule
$\phi_{\Delta y}$	0.5	Response to output growth; conventional Taylor rule
ϕ_R	0.8	Interest rate rule smoothness; conventional Taylor rule
b	0.2505	Unemployment benefits; matches replacement rate of 0.4
$\bar{s}$	0.5155	Probability of finding a job (implied by the steady-state model equilibrium)
$\bar{q}$	0.9450	Probability of finding a worker (implied by the steady-state model equilibrium)
$\bar{J}$	0.0136	Value of a labor firm (implied by the steady-state model equilibrium)
$\bar{\mathcal{V}}^E - \bar{\mathcal{V}}^U$	0.0136	Worker's surplus from working (implied by the steady-state model equilibrium)
$\bar{c}$	0.79	Consumption (implied by the steady-state model equilibrium)
$\bar{w}\bar{h}\bar{n}/\bar{y}$	0.6	Labor income share (implied by the steady-state model equilibrium)
$\bar{\pi}$	1	Inflation target
$\bar{g}$	0.2	Steady-state government spending; US government spending as share of GDP
ρ_{shock}	0.9	Autocorrelation of every shock
σ_{shock}	1	Standard deviation of every shock

G.2 Calibration Strategy for Nominal Wage Stickiness

Solving the model under full-information rational expectations, the minimum state variable solution is given by

$$\hat{X}_t = A\hat{X}_{t-1} + B\mathcal{E}_t \, , \mathcal{E}_t \sim MN(0,\Sigma) \tag{G.18}$$

where $\hat{X}_t$ is a vector of size $n_x \times 1$ containing the model's endogenous variables in deviations from their steady-state values; $\mathcal{E}_t$ is a vector of size $n_e \times 1$ containing the exogenous shock innovations; and Σ is the covariance (diagonal) matrix of $\mathcal{E}_t$.

In the presence of one-time innovations occurring in period $t = 0$, $\mathbb{E}_t \hat{x}_{t+h} = \hat{x}_{t+h}$ for any $t \geq 0$. Following a one-time shock innovation in period t, inflation expectations are described by:

$$\widetilde{\mathbb{E}}_t \hat{\pi}_{t+h} = (1-\lambda)\hat{\pi}_{t+h} \tag{G.19}$$

Let $A_{w:}$ denote the row in matrix A located in the same position as the real wage in $\hat{X}_t$, let $A_{:\pi}$ denote the column in matrix A located in the same position as inflation in $\hat{X}_t$, and let $A_{x_k x_j}$ be the element in A whose row is the same as x_k's and whose column is the same as x_j's in $\hat{X}_t$. Then, expectations about nominal wage growth, $(\hat{W}_{t+7} - \hat{W}_{t+3})$, are given by:

$$\begin{aligned}
\widetilde{\mathbb{E}}_t(\hat{W}_{t+7} - \hat{W}_{t+3}) &= \widetilde{\mathbb{E}}_t\left(\hat{w}_{t+7} - \hat{w}_{t+3} + \hat{P}_{t+7} - \hat{P}_{t+3}\right) = \mathbb{E}_t\left(\hat{w}_{t+7} - \hat{w}_{t+3}\right) + \widetilde{\mathbb{E}}_t \sum_{j=4}^{7} \hat{\pi}_{t+j} \\
&= \left(\hat{w}_{t+7} - \hat{w}_{t+3}\right) + (1-\lambda)\sum_{j=4}^{7} \hat{\pi}_{t+j} \\
&= A_{w:}A\hat{X}_{t+5} - \hat{w}_{t+3} + (1-\lambda)(\hat{\pi}_{t+4} + \hat{\pi}_{t+5}) + (1-\lambda)\left(A_{\pi:} + A_{\pi:}A\right)\hat{X}_{t+5}
\end{aligned} \tag{G.20}$$

Note that

$$\frac{\partial \hat{X}_{t+5}}{\partial \hat{\pi}_{t+4}} = A_{:\pi}$$

Therefore,

$$\frac{\partial \widetilde{\mathbb{E}}_t(\hat{W}_{t+7} - \hat{W}_{t+3})}{\partial \widetilde{\mathbb{E}}_t \hat{\pi}_{t+4}} = \frac{a_1 - a_2}{1-\lambda} + 1 + a_3$$

where $a_1 = A_{w:}AA_{:\pi}$, $a_2 = A_{w\pi}(A_{\pi:}A_{:\pi})^{-1}$, and $a_3 = A_{\pi\pi} + A_{\pi:}(I + A)A_{:\pi}$.

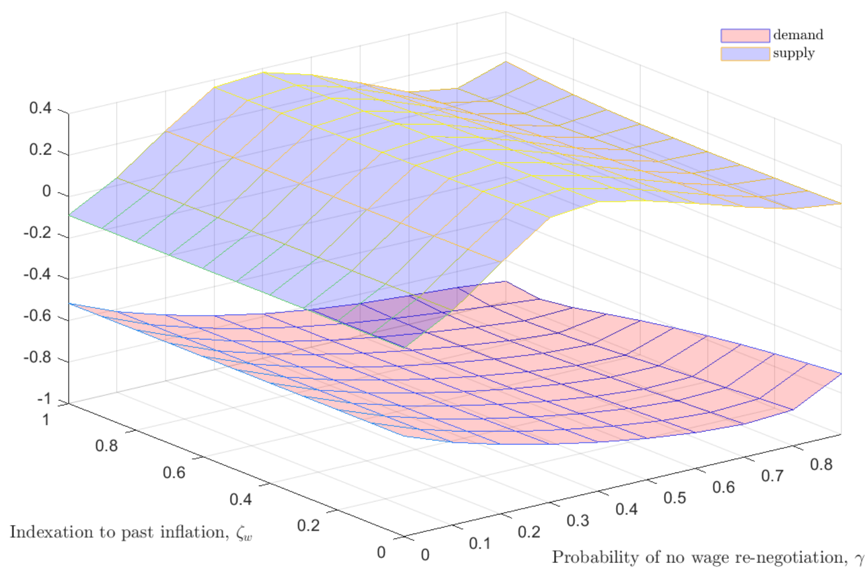
G.3 Correlation between Inflation and Utility Expectations

For a set of (γ, ζ_w) pairs, we compute the model-implied correlation between expected period utility and inflation expectations, conditional on the economy being shocked by only demand innovations or cost-push innovations, that is:

$$C_x = \frac{\mathbb{E}\left[\mathbb{E}_t(\mathcal{U}_{t+1})\widetilde{\mathbb{E}}_t(\hat{\pi}_{t+1})|\epsilon_t^x\right]}{\sqrt{\mathbb{E}\left[\mathbb{E}_t(\mathcal{U}_{t+1}|\epsilon_t^x)^2\right]\mathbb{E}\left[\widetilde{\mathbb{E}}_t(\hat{\pi}_{t+1}|\epsilon_t^x)^2\right]}}, \tag{G.21}$$

where ϵ_t^x denotes the innovation to shock x. Figure 8 shows the surfaces of the computed correlation in (G.21) for various pairs of (γ, ζ_w). The surfaces seem to vary substantially more with nominal wage rigidity in the extensive margin (γ) than in the intensive margin (ζ_w).

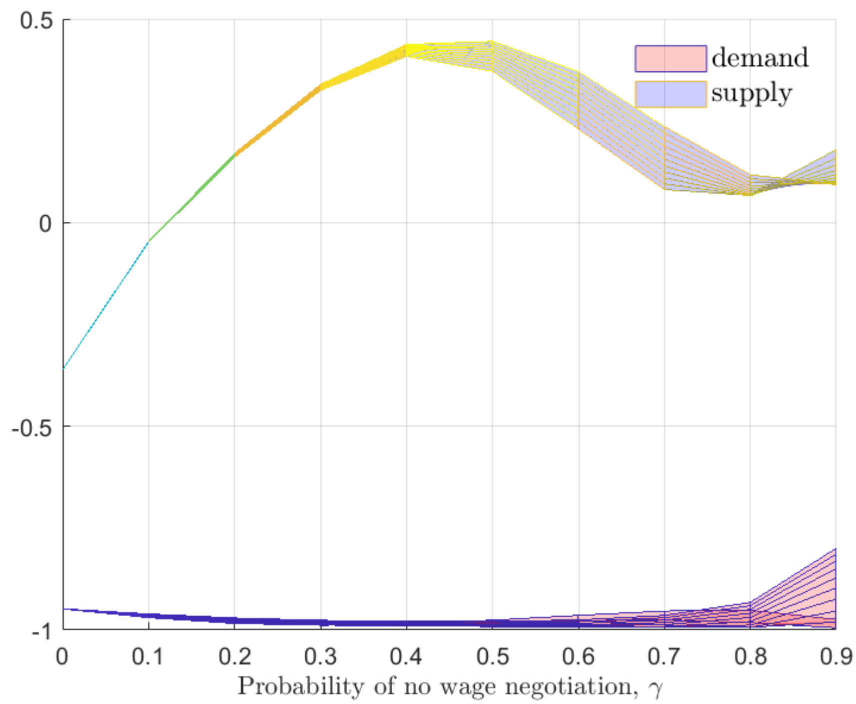
Figure 8: Correlation between $\mathbb{E}_t\mathcal{U}_{t+1}$ and $\widetilde{\mathbb{E}}_t\hat{\pi}_{t+1}$



Notes: In blue: cost-push shock; in red: demand shock.

To better understand the relationship between C_x and nominal wage rigidity, we project the 3-dimensional figure on the (γ, C_x) plane in Figure 9. Subject to cost-push shocks, the relationship between expected utility and inflation is clearly non-monotonic in γ, and it takes negative as well as positive values. On the other hand, conditional on demand innovations, the relationship between expected utility and inflation remains always negative, and it tends to decline with γ.

Figure 9: Correlation between $\mathbb{E}_t \mathcal{U}_{t+1}$ and $\widetilde{\mathbb{E}}_t \hat{\pi}_{t+1}$



Notes: In blue: cost-push shock; in red: demand shock.

G.4 Equivalence Between Sticky Information and Dispersed Noisy Information

This subsection shows that there is an equivalence between our assumption of sticky information in the model and dispersed noisy information.

Given that treatment effects are successful in inducing variation in inflation expectations, it has to be that the consumers' information set when they form *prior* inflation expectations, $\hat{\mathbb{E}}_{it}\pi_{t+h}$, is not updated to include variables of period t. Hence, prior inflation expectations $\hat{\mathbb{E}}_{it}\pi_{t+h}$ are based on $(t-1)$ information. Consumers are then exposed to a signal, s_{it}, that might be useful for the path of inflation going forward:

$$s_{it} = \pi_{t+h} + v_{it}, \text{ where } v_{it} \sim \mathcal{N}(0, \sigma_v^2) \tag{G.22}$$

For simplicity, we assume that the variance of the noise is the same across all consumers and that v_{it} is uncorrelated over time and across consumers. We note that differently from settings in, for instance, Morales-Jiménez (2022), where the signal is about one of the shocks in the economy, we purposefully choose the signal to be about inflation to remain as close to the experimental setting as possible.

Assuming that agents in our economy are Bayesian, their *posterior* inflation expectations, $\widetilde{\mathbb{E}}_{it}\hat{\pi}_{t+h}$, are given by

$$\underbrace{\widetilde{\mathbb{E}}_{it}\hat{\pi}_{t+h}}_{\text{posterior in t}} = \lambda \underbrace{\hat{\mathbb{E}}_{it}\hat{\pi}_{t+h}}_{\text{prior in t}} + (1-\lambda) \underbrace{s_{it}}_{signal} \tag{G.23}$$

where $(1-\lambda) = \frac{\mathbb{E}(\hat{\pi}_t^2)}{\mathbb{E}(s_{it}^2)} = \frac{\sigma_\pi^2}{\sigma_\pi^2+\sigma_v^2}$ is the steady-state value of the Kalman gain from the signal. If the signal is too noisy, that is, if $\sigma_v^2 \to \infty$, then $\lambda \to 1$ and agents do not place any weight on the signal; by contrast, if the signal is extremely precise, that is, if $\sigma_v^2 = 0$, then agents assign maximum weight to the signal. We further note that prior expectations in period t are posterior expectations in period $t-1$, hence $\hat{\mathbb{E}}_{it}\hat{\pi}_{t+h} = \widetilde{\mathbb{E}}_{i,t-1}\hat{\pi}_{t+h}$. Averaging across households in equation (G.23) and setting $\hat{\mathbb{E}}_t\pi_{t+h} = \widetilde{\mathbb{E}}_{t-1}\hat{\pi}_{t+h}$ delivers the same equation as in (10):

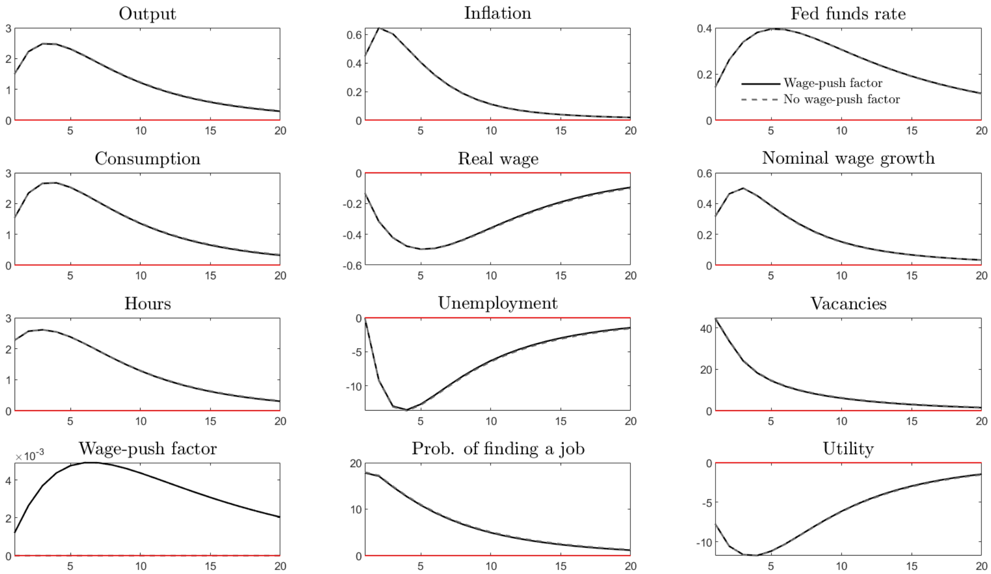
$$\widetilde{\mathbb{E}}_t\hat{\pi}_{t+h} = \lambda\widetilde{\mathbb{E}}_{t-1}\hat{\pi}_{t+h} + (1-\lambda)\mathbb{E}_t\hat{\pi}_{t+h} \tag{G.24}$$

where $\lambda = 1 - \frac{\sigma_\pi^2}{\sigma_\pi^2+\sigma_v^2}$ and it measures the share of agents that do not update their expectations in response to new information, or the probability that agents update expectations in response to new information.

G.5 Additional Impulse Response Functions

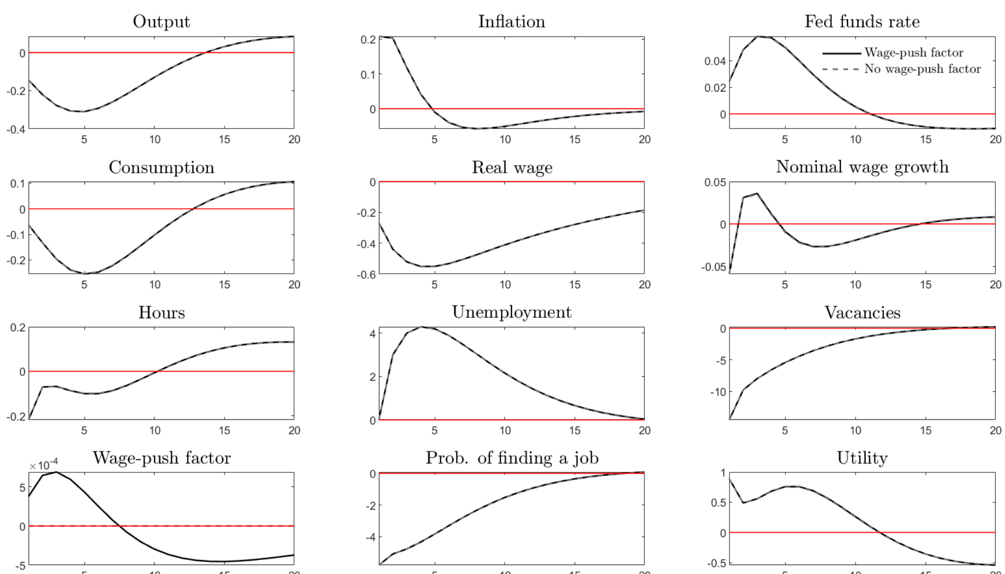
Figures 11 and 10 plot the IRFs to a positive demand and cost-push shock, respectively, when the wage-push factor responds to inflation expectations with an elasticity that matches the pass-through across all respondents, that is, $\bar{e}_\pi = 0.0228$, compared to a case when $\bar{e}_\pi = 0$.

Figure 10: Response to a Positive Demand Shock



Notes: In black: calibration matching our empirical pass-through from inflation expectations to wage-push factor ($\bar{e}_\pi = 0.0228$) according to equation (15). In dashed gray: counterfactual calibration of no pass-through from inflation expectations to wage-push factor ($\bar{e}_\pi = 0$). In red: x axis.

Figure 11: Response to a Positive Cost-Push Shock



Notes: In black: calibration matching our empirical pass-through from inflation expectations to wage-push factor ($\bar{e}_\pi = 0.0228$) according to equation (15). In dashed gray: counterfactual calibration of no pass-through from inflation expectations to wage-push factor ($\bar{e}_\pi = 0$). In red: x axis.

G.6 Exploring the Response of Period-utility

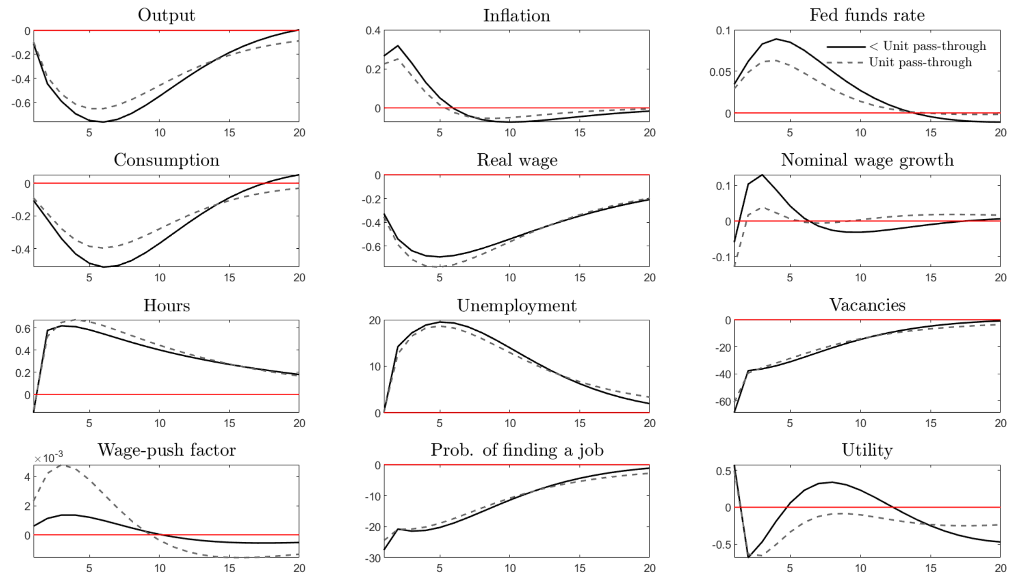
In this section, we show that the sign of the response of period-utility to a positive cost-push shock depends on the labor supply elasticity. In particular, we consider an alternative calibration of the model with $\varphi = 0.7$ instead of $\varphi = 1.5$. The new calibration delivers a much more elastic labor supply with respect to real wages, however, it also implies that in steady state, the parameter multiplying disutility stemming from working is much lower. Table 26 reports parameter values consistent with $\varphi = 0.7$.[44] Figure 12 plots the IRFs to a positive cost-push shock for this new calibration. Differently from the IRFs in Figure 2, utility drops sharply right after the shock hits the economy.

Table 26: Alternative Calibration

Parameter	Value	Description; Reference
φ	0.7	Alternative calibration
κ_h	31.4044	Scaling factor to labor disutility; targets $h = 1/3$
γ	0.77	Nominal wage stickiness; pass-through across all respondents in Table 2
γ	0.6325	Nominal wage stickiness; unit pass-through for counterfactual analysis
ζ_w	0.5	Wage indexation; pass-through across all respondents in Table 2
ζ_w	0.325	Wage indexation; unit pass-through for counterfactual analysis

[44] Values of parameters not reported in Table 26 are the same as in Tables 4 and 25.

Figure 12: Response to a Positive Cost-Push Shock for Lower κ_h



Notes: Model calibrated to match Frisch elasticity $\varphi = 0.7$, yielding a lower κ_h than in the baseline calibration. In black: calibration matching our empirical pass-through from inflation to nominal wage growth expectations ($\gamma = 0.77, \zeta_w = 0.5$). In dashed gray: calibration matching counterfactual of unit pass-through from inflation to nominal wage growth expectations ($\gamma = 0.6325, \zeta_w = 0.325$). In red: x axis.