Households' Preferences Over Inflation and Monetary Policy Tradeoffs*

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Abstract

We document novel facts about U.S. household preferences over inflation and monetary policy. Many households are highly attentive to news about monetary policy and to interest rates. The median household perceives the Federal Reserve's inflation target to be three percent, but would prefer it to be lower. Quantifying the tradeoff between inflation and unemployment, we find an average acceptable sacrifice ratio of 0.6, implying that households are likely to find disinflation costly. Average preferences are well represented by a non-linear loss function with near equal weights on inflation and unemployment. These preferences also exhibit sizable demographic heterogeneity.

Keywords: Household Survey, Attention, Inflation Target, Sacrifice Ratio, Dual Mandate

JEL: D12, E52, E58

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1. Introduction

Congress has mandated the Federal Reserve to promote maximum employment, stable prices, and moderate long-term interest rates. This mandate does not specify how to weigh these objectives when they are in conflict. It also leaves open the precise definition of each objective, including the inflation target. One way to establish such prescriptions is through the use of macroeconomic models, especially those that were built in the New-Keynesian tradition. However, the resulting policy prescriptions vary greatly with the assumptions embedded in these models—for example, the slope of the Phillips curve, the degree of competition in the economy, and the form of households' utility function (Woodford, 2003). Instead of relying on such models to postulate numerical objectives and their relative weighting, in this paper we ask households directly about their preferences over inflation and monetary policy tradeoffs.

We designed a special survey with questions regarding attention to news, interest rate expectations, and preferences and attitudes toward monetary policy. The special survey was fielded in June 2023 as part of the well-established Survey of Consumer Expectations (SCE) of the Federal Reserve Bank of New York. Our first finding is that households are surprisingly attentive to monetary policy. About half of respondents reported paying attention to federal funds rate at least at a quarterly frequency. More than half of the respondents reported paying attention to news about the Federal Reserve at least monthly. The frequency of attention to news about the Federal Reserve significantly increases with educational attainment, reported income, for middle-age respondents, and for male respondents.

Second, we ask respondents about the inflation objective of the Federal Reserve, and find a fair degree of disagreement in their responses, with a median response of 3 percent. About one-third of the respondents answer 2 percent, the actual target pursued by the Federal Reserve.[1] Higher income households report a lower perceived target, while female respondents report a higher perceived target. We also ask respondents about their perceptions of the *optimal* inflation rate for the American economy. Households display significant disagreement when answering this question. 59 percent of households think a positive inflation rate is optimal; of those, the median response is 2 percent. However, 41 percent of all respondents replied that they think it is optimal for the American economy to have deflation.[2] These respondents have more than 1 percentage point higher perceptions of the FOMC's inflation objective than those who think positive inflation is optimal. Overall, the difference of the perceived and the optimal inflation target is about one percentage point. This difference is higher for students and female respondents and lower for those with higher educational attainment. Additionally, we observe that short- and medium-run inflation expectations are positively correlated with the perceived and especially the optimal inflation target.

Third, we elicit respondents' relative preferences over inflation, unemployment, and interest rates by asking respondents to evaluate several hypothetical scenarios. Our findings provide the first direct

[1] See the FOMC's Statement on Longer-run Goals and Monetary Policy Strategy.

[2] Shiller (1997) and Stantcheva (2024) report reasons for households' aversion to inflation. Also, during the inflation surge in 2021–23, Armantier et al. (2022) observe a sizable increase in households expecting deflation for all forecast horizons in the SCE. Households who expect deflation rationalize their forecasts with price mean reversion and generally expect *better* economic outcomes, not worse.

evidence of how U.S. households would want the different parts of the Federal Reserve's mandate to be weighed relative to each other. At the time of the survey, 80 percent of the respondents preferred a reduction in inflation to a reduction in unemployment, while their relative preferences over interest rates were more dispersed: A majority of the respondents found lower interest rates to be desirable and a quarter preferred higher interest rates.

Fourth, we quantify the perceived tradeoff between inflation and unemployment. Our analysis reveals that U.S. households place a large weight on the employment side of the Federal Reserve's dual mandate. We construct the *acceptable* sacrifice ratio—the increase in unemployment that households would find just acceptable to reduce inflation by one percentage point. By contrast, the existing literature focuses almost exclusively on the *necessary* sacrifice ratio by estimating the costs that are necessary to reduce inflation via macro-econometric models (see, for example, Ball, 1994, Cecchetti and Rich, 2001, and Tetlow, 2022). Our acceptable sacrifice ratios are much lower than the necessary sacrifice ratios estimated in the literature, implying that U.S. households are likely to find disinflation costly. That said, there is considerable non-linearity and heterogeneity in the weight households place on inflation stabilization. Acceptable sacrifice ratios are higher when inflation is high, for more educated households, for those that have higher numeracy, and for retirees. In addition, female and Latino respondents tend to have lower sacrifice ratios.

Finally, we estimate a flexible simple loss function that nests the quadratic loss function widely used in the evaluation of monetary policy strategies and New-Keynesian models in particular. The estimated weight on unemployment is about the same as that on inflation, implying a preference for unemployment stabilization that is much stronger than in the standard New-Keynesian model. This finding has important consequences for the conduct of monetary policy. In the standard New-Keynesian model, optimal monetary policy under our survey-implied preferences reduces unemployment fluctuations at least threefold relative to optimal policy under model-implied preferences.

A precursor to our analysis of the perceived inflation-unemployment tradeoff are Di Tella et al. (2001) and Wolfers (2003) who calculate a necessary sacrifice ratio from time-series correlations of life satisfaction indexes with unemployment and inflation in several countries, but notably excluding the United States due to data limitations. Instead of relying on time-series correlations, our survey module aims at directly eliciting preferences through the evaluation of hypothetical scenarios. Despite this difference in methodology, our estimated average sacrifice ratio for American households, at 0.6, is close to the estimates of Di Tella et al. (2001) for European countries. More recently, Binetti et al. (2024) document results from a survey, conducted about a year after ours, in which respondents are asked a series of binary choices between hypothetical scenarios. Their results yield a sacrifice ratio of about 2. The difference may be attributable to their assumption of linear preferences and very high values for inflation in the scenarios. Indeed, in line with the assumptions in macroeconomic models, we find strong evidence of curvature in utility, implying that the sacrifice ratio increases with the level of inflation.

The survey was conducted in an elevated inflation environment and some of the results regarding attention and expectations could depend on this environment. Previous research has shown that the formation of inflation expectations depends on the environment and that consumers are more

attentive to inflation developments in a high inflation environment (see, e.g., Pfajfar and Žakelj, 2014, Cavallo et al., 2017, and Weber et al., 2023). At the same time, such an environment is also particularly relevant for monetary policy. We also expect monetary policy preferences to be relatively stable and not dependent on inflation environment (Dräger et al., 2022).

The remainder of this paper is structured as follows. Section 2 provides a review of the literature. We then present our data and survey design in Section 3 and results in Section 4. Section 5 concludes. An appendix contains the full set of survey questions.

2. Literature Review

Our paper relates to several strands of the literature that developed within the inflation expectations literature in the last years. There have been few attempts to ask households and firms about their perceptions of the inflation target and of monetary policy. One such survey that periodically asks about the FOMC's inflation objective is the Survey of Firms' Inflation Expectations (SoFIE) introduced in Candia et al. (2020). In the second quarter of 2023, the mean value from that survey was 3.1 percent with a standard deviation of 1.3 percent. This value is close the the mean perceived inflation target in our survey module, while the standard deviations is a bit lower. In the SoFIE the perceived inflation target question is asked once a year and its mean response was in the rage between 1.7 and 3.7 percent during the 2018–2023 period. Binder and Rodrigue (2018) create a survey-based experiment to test the response of consumers' inflation expectations to information about the inflation target and past inflation but before the experiment they gauge respondent's knowledge about the Federal Reserve and the FOMC. They found that that 48 percent of the respondents said they knew the FOMC's inflation target but only half of these respondents said that the target was 2 percent.[3] Our responses suggests a slightly higher share of households in June 2023 that answered in line with the FOMC's long-run inflation objective.[4] Our results are similar to those in Afrouzi et al. (2024) who conducted a survey about the optimal and perceived inflation target in February and March 2024.

Binder (2017) shows that most U.S. households have little knowledge about the names or objectives of Federal Reserve policymakers.[5] Carvalho and Nechio (2014) and Dräger et al. (2016) study the knowledge of U.S. consumers about monetary policy by analyzing the comovement of macroeconomic forecasts. Specifically, they assess whether households (and professionals) are forming

[3] Binder and Skinner (2023) report that 35 percent of households in their survey correctly identify the FOMC's 2 percent inflation target. Coibion et al. (2022a) also ask a question about the perceived inflation target—in 2018 the mean perception was 3.4 percent, close to what we find.

[4] Blinder and Krueger (2004) study the public knowledge about fiscal policy issues and the demand for being informed about this issues.

[5] Binder (2017) also summarizes the results from a few other surveys that ask about public awareness about central banks (objectives). In Japan, South Africa, and among the Eurozone countries there are still some households that are unaware of central banks and its duties. van der Cruijsen et al. (2015) and Bottone et al. (2021) assess households' knowledge of ECB's monetary policy objectives and find that their knowledge is "far from perfect." Kumar et al. (2015) document that managers of New Zealand firms are unaware of who the central bankers are in their country and of the central bank's objectives.

expectations that are in line with basic principles embedded in the Taylor rule.[6] Furthermore, Andre et al. (2022) measure perceptions about the effects of macroeconomic shocks on unemployment and inflation by providing households and experts with identical information about various shocks, including federal funds rate shocks, and previous realizations of macroeconomic variables. They find that households' perceptions about the effects of monetary policy shocks (and other shocks) exhibit a large degree of heterogeneity and depend on narratives such as supply- and demand-side mechanisms.

Qualitative polls on preferences over inflation and unemployment have been fielded in various forms since 1935 (Fischer and Huizinga, 1982). In most periods households report that inflation is a more serious problem than unemployment.[7] Shiller (1997) studies preferences and opinions regarding inflation in the US, Germany, and Brazil. Concerns about inflation are often related to worries about a decline in the standard of living, and are connected to concerns with respect to national prestige or trust in public institutions. More recently, Stantcheva (2024) revisits the question of why households' dislike inflation and confirms that the predominant reason for their aversion to inflation is the perception that it diminishes their buying power.[8] Michelacci and Paciello (2024) study preferences regarding inflation and interest rates in the UK. The authors show that preferences are inversely linked to expectations and argue that this is consistent with expectation formation under Knightian uncertainty and thus provide empirical evidence for the mechanism outlined in ambiguity aversion models with Knightian uncertainty. Dräger et al. (2022) also study individual consumers' preferences on expected inflation and interest rates and their relationship with expectations on these variables. They find that for a given level of expectations, there is substantial heterogeneity in these macroeconomic preferences among German households. While these papers *only* ask whether consumers prefer higher or lower inflation, we also ask for a numeric perceived and optimal inflation target.

Another strand that has attracted a lot of attention recently utilizes the randomized control trial (RCT) design, where information treatments often convey information about central bank inflation target or other relevant information regarding the pursuit (design) of monetary policy, and studies whether this information has an impact on consumer's inflation expectations and their economic decisions. While one can safely argue that central bank communication is effective in steering expectations of financial market participants, the effect of central bank communication on the general public is much less clear and debated in the literature (Lamla and Vinogradov, 2019; Coibion et al., 2020b, 2022b). Furthermore, there is no consensus on what constitutes an optimal communication strategy (Ehrmann and Fratzscher, 2007, Blinder et al., 2008). However, several recent papers have shown that information about the inflation target, current or forecast inflation, and monetary policy communication can affect both short-run and medium-run inflation expectations (Coibion et al., 2020a, Coibion et al., 2022b, Dräger et al., 2024). Using a RCT design, Coibion et al. (2023b)

[6] Dräger et al. (2016) in addition assess whether the forecasts are also in line with the Fisher equation and the Phillips curve.

[7] Easterly and Fischer (2001) report that particularly lower income households often report inflation as their top national concern.

[8] Stantcheva (2024) also reports that households blame the government and businesses for the recent high inflation.

study the effect of different forms of forward guidance on various macroeconomic forecasts, including communication about the FOMC's inflation objective.[9] D'Acunto et al. (2020) show that communication that focuses on policy targets and objectives rather than on the instruments designed to reach such objectives is more effective, particularly for lower income households.[10] Several papers in this literature show that the exogenous variation induced by the information treatments in the context of the RCT results in a meaningful impact on their economic choices.[11]

3. Data

The data used in this paper are part of the Survey of Consumer Expectations (SCE), a nationally representative, internet-based survey of a rotating panel of approximately 1,300 household heads each month. This survey is conducted by the Federal Reserve Bank of New York and focuses primarily on expectations about economic outcomes related to inflation, the labor market, and household finance. Among other characteristics, the survey tracks the respondent's age, income, education, homeownership status, employment history, and region; it also tests for a level of numeracy. Since the SCE launched in 2013, it has become one of the most valuable surveys of household macroeconomic expectations next to the Reuters Michigan Surveys of Consumers. Respondents participate in the main survey for up to twelve months, with a roughly equal number rotating in and out of the panel each month.[12] In addition to regular monthly surveys, the SCE occasionally fields ad-hoc "special surveys" to answer specific policy or research questions. Questions studied in this paper were part of a such a special survey that was fielded in June 2023 with 2,155 respondents in total. Household heads who participated in this special survey previously participated in the SCE for the full 12-month tenure as part of the regular monthly survey.[13] The economic environment in June 2023 was characterized by historically high inflation and low unemployment as the US economy had emerged from the pandemic of the previous years. Interest rates were also at the highest levels in decades.

The full set of questions that we included in the special survey is available in Appendix B.

4. Results

We begin by studying the determinants of attention to various macroeconomic news and news about the Federal Reserve. We then investigate preferences over inflation and views of the optimal level of inflation. Next, we focus on household preferences over inflation, unemployment, and interest rates.

[9] Coibion et al. (2020a) document large responses of firm expectations in Italy to information about the inflation target. Similarly, Hunziker et al. (2022) shows that firms in Switzerland react to information about the inflation objective of the Swiss National Bank.

[10] In addition, D'Acunto et al. (2021) report that diverse policy committees have a better likelihood that their communication reaches underrepresented groups.

[11] See, e.g., Coibion et al. (2020a, 2023c,a,b) as well as Kumar et al. (2023).

[12] The SCE questionnaire design was subject to extended testing and experimentation between 2006 and 2012, see Armantier et al. (2017).

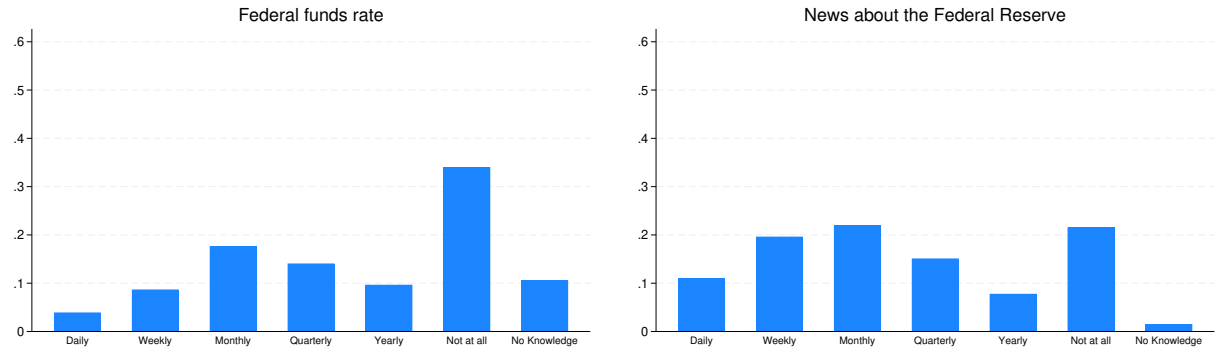
[13] Note that our participants rotated out of the sample between September 2015 and February 2023. On average they were out of the sample for a bit more than 2.5 years.

Finally, we quantify the tradeoff between stabilizing unemployment and inflation, and illustrate the importance of our results for monetary policy design.

4.1. Attention to News about Federal Reserve and Macroeconomy

Previous research has indicated that attention to news about the Federal Reserve and the macroeconomy is less than perfect and that there are biases coming from reporting more unfavorable macroeconomic developments. The role of news and its transmission to inflation expectations has been studied extensively using survey data on inflation expectations (Carroll, 2003, Pfajfar and Santoro, 2013). In our survey module, we ask about the frequency of attention to a number of different macroeconomic variables, interest rates, and policy news (see Appendix B for the full set of questions). We focus on variables that are relevant for monetary policy and compare these attention indicators to a subset of other attention indicators.

Figure 1. Attention Paid to Monetary Policy



Note: Shares of total survey responses to the question: "How often do you pay attention to the following: [...]". Distributions are weighted by sample weights. N=2106 for both items.

Figure 1 displays the frequency of attention to news about monetary policy. The left panel depicts the distribution of attention to the federal funds rate, the main instrument for U.S. monetary policy, and the right panel to news about the Federal Reserve. Among respondents, only about 10 percent of households indicated that they are not aware what the federal funds rate is and only about 1 percent of households indicated that they have no knowledge about the Federal Reserve. 79 percent of households reported paying some attention to news about the Federal Reserve, and about 55 percent of households paid attention to the federal funds rate. This finding is in contrast to previous research that indicates that households may not be aware of the policy rate or the institution that sets it (Binder, 2017).[14]

[14]One explanation for the high levels of attention among respondents is that our sample consists of people who already participated in the regular SCE for 12 months, making them more informed than the general population. Kim and Binder (2023) find evidence for this "learning-through-survey" effect. However, many respondents took the regular survey several years before participating in our module, and we find no correlation between the level of attention and the time since taking the regular survey.

Table 1: Determinants of Attention

	(1) Fed. funds	(2) Mortg. rates	(3) Stock m.	(4) Sav.&invest.	(5) Labor m.	(6) Inflation	(7) Gov. Econ. p.	(8) Fed. Reserve
education	0.034***	0.018	0.054***	0.009	0.075***	0.046***	0.055***	0.063***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
income	0.003***	0.003***	0.005***	0.004***	0.002***	0.001**	0.001**	0.002***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
retired	0.070	-0.096	0.295***	0.172*	-0.028	-0.055	-0.033	-0.027
	(0.09)	(0.10)	(0.11)	(0.10)	(0.10)	(0.11)	(0.11)	(0.10)
highnum	-0.014	0.229***	0.235***	0.273***	0.196**	0.142*	0.144*	0.212***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
age	0.042***	0.008	0.043***	-0.014	0.054***	0.055***	0.045***	0.052***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
100*age^2	-0.034***	-0.013	-0.039***	0.014	-0.046***	-0.038**	-0.030*	-0.034**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
female	-0.400***	-0.213***	-0.632***	-0.375***	-0.382***	-0.209***	-0.388***	-0.366***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
native	0.216	0.119	-0.440*	-0.782***	-0.476**	-0.582**	-0.632***	-0.335
	(0.29)	(0.16)	(0.24)	(0.23)	(0.24)	(0.25)	(0.24)	(0.23)
Observations	2106	2106	2106	2106	2106	2105	2105	2106
Pseudo R^2	0.034	0.030	0.080	0.042	0.039	0.027	0.035	0.045

Note: Each column represents an ordered probit regression with the dependent variable being the frequency of attention paid to a particular source of macroeconomic information. Robust standard errors in parentheses. Additional control variables (ethnicity, race, employment status, and home ownership) not shown. "highnum" stands for high numeracy score and "native" stands for Native Americans. "retired," "female," and "native" are indicator variables. All regressions are weighted by sample weights.

Going from the extensive to the intensive margin of attention, we find that U.S. households paid a considerable amount attention to news about monetary policy in June 2023. About half of the respondents reported that they heard news about the federal funds rate at least at a quarterly frequency, while more than half of the respondents heard news about the Federal Reserve at least at a monthly frequency. Interestingly, more than 10 percent of households heard daily news about Federal Reserve and weekly news about the federal funds rate. These results suggest that households pay considerable attention to news about monetary policy.[15]

To study which households pay more or less attention to the news about monetary policy, we estimate an ordered probit regression on the reported frequency of attention and focus on sociodemographic characteristics as explanatory variables. Table 1 reports the results for a selection of attention variables that we collect. Focusing on the attention to news about monetary policy, we see that attention to news about the federal funds rate and the Federal Reserve significantly increase with educational attainment and reported income and decreases for female respondents.

[15] Hamilton (2004) and Soroka (2006) report that the media reports more "bad" news than "good" news and that especially bad news may influence the information set—which may be the case in a high inflation environment. Therefore, the media may potentially introduce a bias in this part of the transmission channel, especially as consumers may be relatively more exposed to news about inflation and monetary policy in times of high inflation compared to times of low inflation.

The effect of age is hump-shaped. We observe a similar pattern for attention to news about labor markets, inflation, and economic policy, and stock market prices. An exception is that retired respondents report paying more attention to stock market prices, perhaps due to their paying attention to 401(k)-type retirement accounts. Similarly, retirees also paid more attention to personal savings and investments. Attention to news about mortgage rates increases for households with higher income and for male respondents. These patterns match those documented in the inflation expectations literature that documents which households forecast more accurately, consistent with a link between attention and forecast accuracy.[16]

4.2. Perceived Inflation Objective and Optimal Inflation

We now look at perceptions, preferences, and expectations about inflation. While respondents almost unanimously agree that they prefer lower inflation than what was realized in June 2023, they report much more disagreement about the long-run inflation objective that the FOMC is trying to achieve and about the likelihood that the Federal Reserve will achieve this objective in the long run. Furthermore, the reported values for the optimal inflation objective for the American economy are significantly lower than the perceived long-run inflation objective of the FOMC.

Table 2: Perceived and Optimal Inflation Targets

	(1) perceived	(2) perceived (restricted)	(3) optimal (restricted)	(4) difference (restricted)	(5) optimal	(6) difference
median	3	3	2	.3	.51	2
mean	3.3	2.9	2.2	.63	.62	2.3
sd	1.7	1.2	1.1	1	1.6	2.4
skewness	1.3	1.2	1.1	.72	.2	.89
min	0	0	0	-3	-3.8	-8
max	12	10	10	5	7	14
N	1947	1109	1152	1092	2077	1988

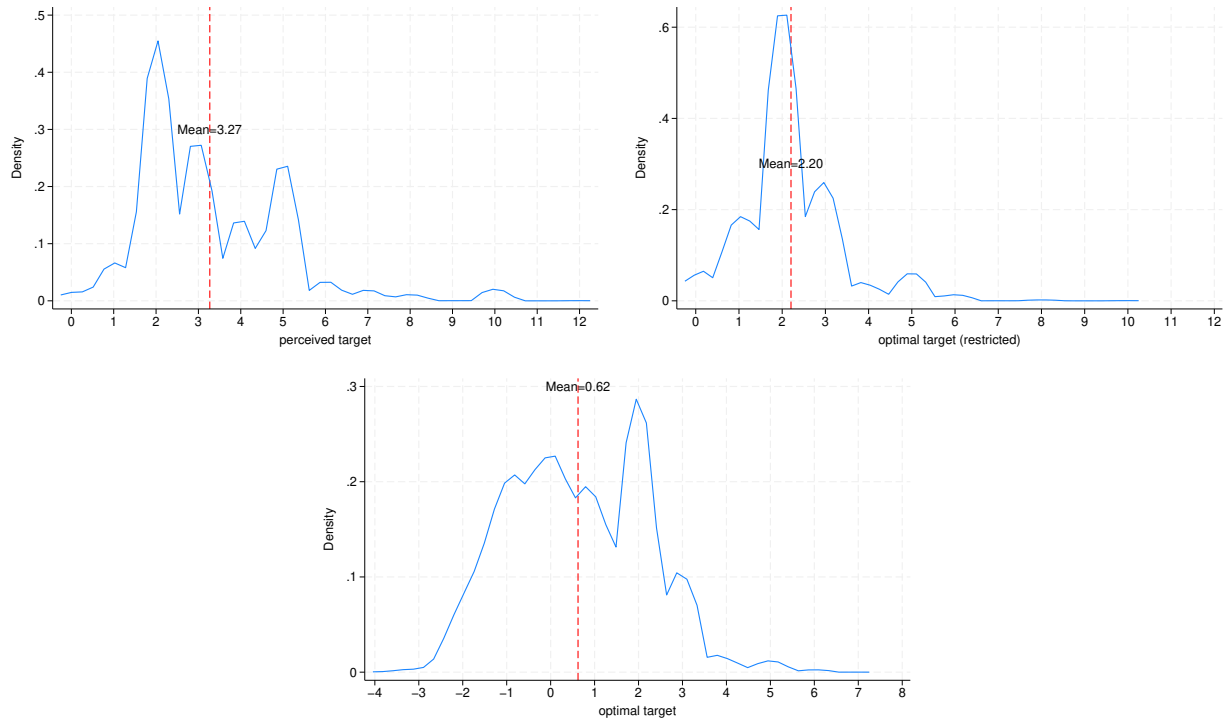
Note: "Perceived" is the rate of inflation that the Federal Reserve aims to achieve between five and ten years from the survey date. "Optimal (restricted)" excludes respondents who answered that deflation would be optimal. "Optimal (restricted)" is the rate of inflation that would be best for the American economy, excluding respondents who answered that deflation would be optimal. "Difference (restricted)" is the difference between Columns (2) and (3). "Optimal" calculates the optimal rate of deflation for those that answered deflation is optimal using the Tobit predictive regression in Column (5) of Table 3. "Difference" is the difference between Columns (5) and (1). All statistics are computed using Huber (1964) and sample weights.

When asked about the perceived inflation objective of the FOMC over the long run (for the period between 5 and 10 years from the time of the survey), the median response was 3 percent (with a mean of 3.3 percent). Summary statistics are reported in Table 2. As can be seen in the left panel of Figure 2, there is substantial disagreement among these responses, where only about one third of the respondents reported the actual inflation objective, 2 percent, as set by the FOMC.

[16]Some of the earlier contributions include Jonung (1981), Bryan and Venkatu (2001), and Pfajfar and Santoro (2009). These papers show higher levels of both perceived and expected inflation for women, low education, and low income groups, with a u-shaped effect of age where young and old respondents have higher expectations than middle-age respondents (Malmendier and Nagel, 2016), a robust finding across different countries and time spans.

As can be seen in this panel, there is also a substantial share of the respondents that perceive that the Federal Reserve is pursuing an inflation objective of 5 percent.[17]

Figure 2. Distribution of Perceived and Optimal Inflation Targets



Note: "Perceived target" is the rate of inflation that the Federal Reserve aims to achieve between five and ten years from the survey date ($N = 1931$). "Optimal target (restricted)" is the rate of inflation that would be best for the American economy ($N = 1150$), counting only those who answered that non-negative inflation is optimal. "Optimal target" is again the optimal inflation rate for respondents who answer a positive number, and also predicts values for the optimal inflation rate using the Tobit regression (5) in Table 3 for those who find deflation to be optimal ($N = 2028$). All distributions and means are weighted using Huber (1964) and sample weights.

In addition to the perceived inflation objective of the FOMC, we also asked participants about their perception about the rate of inflation that would be best for the American economy. 41 percent of households indicated that they think that deflation is optimal for the American economy. While this answer could indicate that they approached the question from their personal finance perspective, it is also possible that these households believe that it is optimal for the American economy to pursue average inflation targeting or price level targeting, where past inflation increases matter for "optimal" inflation in the current and future periods. Remarkably, among households that answered that optimal inflation is positive (shown in the right panel of Figure 2 and Column 3 of Table 2), the median response to this question is 2 percent. In fact, about 42 percent of these

[17] Ehrmann et al. (2017) presents evidence that consumers' attitudes like optimism and pessimism regarding the economic outlook influence also the level of inflation expectations and other answers in the survey. D'Acunto et al. (2022a) and D'Acunto et al. (2022b) note that daily grocery shopping experiences and observation of gasoline prices influence beliefs about inflation. It is possible that a higher perceived long-run inflation objective may be a product of "visibly" higher inflation in June 2023.

respondents answer that the inflation objective is 2 percent. While some households still respond that the optimal inflation target is 1, 3, or 5 percent, their shares are significantly smaller than in the case of the perceived inflation objective.

We then study the difference between perceived and optimal target. As a first step, in Column (2) of Table 2, we restrict the sample to respondents with a positive optimal inflation target and find that the median perceived inflation target is the same as in the overall sample, while the mean response is slightly lower. Next, we report in Column (4) the difference between perceived and optimal target in this restricted sample. The median difference is 0.4 percentage points (with a mean difference of 0.63 percentage points). These results show that there exists a sizable difference between perceived and optimal target.

We next use a Tobit predictive regression to estimate the optimal target for those that think deflation is optimal and combine these predictions with the remaining responses. Summary statistics for the optimal inflation target thus obtained are in Column (5) of Table 2 and a kernel density plot is in the lower panel of Figure 2). According to this measure, the median optimal inflation target is 0.51 percent with a mean of 0.62. This is notably lower than the FOMC's inflation objective. The difference between perceived inflation objective and this measure of optimal inflation can be found in Column (6) of Table 2. The median difference is 2 percentage points.

Our results align quite closely with Afrouzi et al. (2024) who conducted a survey about the optimal and perceived inflation target nine months after ours. One important difference is that our question for optimal inflation explicitly asks about the inflation that is "best for the American economy" while their question is more ambiguous. Our results are also consistent with Coibion et al. (2022a) whose 2018 survey contains a question about the perceived inflation target. The similarity in these results indicates that the perceived and optimal inflation target are relatively stable over time.

To better understand the determinants of the perceived and optimal inflation target and its difference, we study whether socioeconomic characteristics and attention to news about monetary policy and macroeconomy can explain perceptions and preferences regarding inflation. We further look at their correlation with short- and medium-run inflation expectations. Results are reported in Table 3. The determinants of the perceived inflation target are reported in Column (1). We observe that households with higher income tend to report a lower perceived inflation target. Female respondents report a higher inflation target, similar to a phenomenon that has been extensively documented for inflation expectations (see, e.g., Jonung, 1981, Bryan and Venkatu, 2001, or Pfajfar and Santoro, 2009). Somewhat surprisingly, respondents that are not working report lower values for the perceived inflation target. The frequency of attention to news is not correlated with the perceived inflation target, including the frequency of attention paid to news about the Federal Reserve. However, the optimal and perceived inflation objectives are highly correlated. A 1 percentage point higher optimal inflation target predicts a 0.44 percentage point higher perceived inflation target. Those that think deflation is optimal have more than one percentage point higher perceptions of the FOMC's inflation objective.

Table 3: Determinants of Inflation Expectations and Targets

	(1) perceived trg.	(2) optimal trg. (restricted)	(3) difference (restricted)	(4) defl. optimal	(5) Tobit reg.	(6) 1-year exp.	(7) 5-year exp.
5-year exp.						0.361***	
						(0.02)	
perceived trg.						0.278***	-0.005
						(0.03)	(0.04)
optimal target–full	0.440***					0.315***	0.881***
	(0.04)					(0.04)	(0.07)
Deflation optimal	1.126***					0.276	0.168
	(0.13)					(0.20)	(0.26)
attn to Fed funds rate	0.036	0.112***	-0.039	-0.018*	0.185**	-0.114**	-0.020
	(0.03)	(0.02)	(0.03)	(0.01)	(0.08)	(0.05)	(0.06)
attn to inflation news	-0.016	-0.025	0.071*	0.016	-0.073	0.080	-0.174
	(0.05)	(0.04)	(0.04)	(0.01)	(0.14)	(0.07)	(0.11)
attn to Fed news	-0.025	-0.018	-0.046	-0.030**	0.071	0.078	0.171*
	(0.04)	(0.03)	(0.04)	(0.01)	(0.14)	(0.08)	(0.10)
education	-0.016	0.051***	-0.052***	-0.033***	0.059	0.026	-0.011
	(0.02)	(0.02)	(0.02)	(0.01)	(0.04)	(0.03)	(0.04)
income	-0.002**	0.001	-0.000	-0.000	-0.000	-0.001	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ownhome	0.061	0.192**	-0.097	-0.035	0.916**	-0.116	0.340
	(0.11)	(0.08)	(0.11)	(0.04)	(0.36)	(0.20)	(0.28)
notworking	-0.266*	-0.003	-0.207	0.006	0.762	0.146	0.321
	(0.16)	(0.11)	(0.18)	(0.05)	(0.56)	(0.33)	(0.41)
student	0.100	0.029	0.542**	-0.158	1.460	-1.088	0.065
	(0.32)	(0.21)	(0.26)	(0.12)	(1.07)	(0.76)	(0.52)
retired	-0.158	0.111	-0.101	-0.051	0.622	0.026	0.400
	(0.14)	(0.10)	(0.14)	(0.04)	(0.42)	(0.25)	(0.32)
female	0.279***	0.039	0.248***	0.102***	-0.659**	-0.146	-0.645***
	(0.09)	(0.07)	(0.09)	(0.03)	(0.29)	(0.16)	(0.21)
Observations	1858	1138	1103	2105	2028	1947	1932
R^2	0.192	0.080	0.076	0.143		0.599	0.312

Note: "perceived trg." is the rate of inflation that the Federal Reserve aims to achieve between five and ten years from the survey date. "optimal trg." is the rate of inflation that would be best for the American economy (restricted to those that answer numerically). "difference" is the difference between perceived and optimal target (restricted to those that answer numerically). "defl. optimal" reports estimates of the linear probability model for calculates those that answered that deflation is optimal. "Tobit reg." is reporting a Tobit predictive regression for left-censored observations in optimal inflation (those that answered deflation is optimal). "1-year exp." is the expectation for the rate of inflation between one and two years from the survey date. "5-year exp." is the expectation for the rate of inflation between five and six years from the survey date. Robust standard errors in parentheses. Additional control variables (ethnicity, race, employment status, and constants) not shown. "notworking" indicates those that are not employed, not studying, and not retired. "ownhome" stands for home owners. "retired," "female," "student," "ownhome," and "notworking" are indicator variables. Each regression is weighted using Huber (1964) and sample weights.

The determinants of the optimal inflation target are detailed in Column (2) of Table 3. Our set of explanatory variables explains a lower share of cross-sectional variation in the reported optimal inflation objective than in the perceived inflation target. As expected, this objective negatively correlates with the frequency of news about the Federal Reserve reported. Homeowners and more educated households report higher values for the optimal inflation target. When homeowners have

a fixed-rate mortgage—the majority of mortgages in the U.S.—it is in their interest to have higher inflation realizations, because the real value of their debt decreases with high inflation. This result also suggests that, despite the question asking explicitly for the optimal inflation objective for the American economy, some respondents may be influenced by their personal interest. Furthermore, it is interesting to study the difference between the perceived and optimal inflation objective as shown in Column (3). The difference between the perceived and optimal inflation objective negatively correlates with educational attainment and positively with female respondents and students.

In Column (4) of Table 3 we report a linear probability model for the event that a respondent finds deflation to be optimal for the American economy. According to this model, this probability is higher for less educated or female respondents. Interestingly, it increases when households report paying attention to news about Federal Reserve or news about the federal funds rate. Column (5) of this table reports the Tobit predictive regression for left-censored observations in optimal inflation used previously to predict negative optimal inflation targets. Respondents who pay less attention to federal funds rate news, are homeowners, or male tend to report a higher optimal inflation target.

It is also interesting to see whether there is any correlation between households' perceived and optimal inflation objectives and their inflation expectations. These results are presented in Column (5) for short-run inflation expectations and in Column (6) for medium-run inflation expectations. When including 5-year ahead inflation expectations, optimal and perceived inflation objectives, and attention to federal funds rate news in the set of explanatory variables, we do not find any sociodemographic characteristics significantly correlated with 1-year ahead inflation expectation. Short- and medium-run inflation expectations are positively correlated, as well as with perceived and optimal inflation objectives. An increase of 1 percentage point in the optimal inflation objective is associated with, on average, 32 basis points higher short-run inflation expectations.

Medium-run inflation expectations are also correlated with optimal inflation objectives as can be seen in Column (6) of Table 3. Unlike the short-run inflation expectations, attention to news about inflation and Federal Reserve are significantly correlated with medium-run inflation expectations. Those respondents who reported higher frequency of hearing news about the Federal Reserve have lower inflation expectations and those who report hearing inflation news have higher inflation expectations. However, medium-run inflation expectations are lower for female respondents after controlling for perceived and optimal inflation target. The optimal inflation objective has a much higher correlation than perceived target, where a 1 percentage point increase in optimal inflation is associated with 88 basis points increase in medium-run inflation expectations. Medium-run inflation expectations are highly correlated with the perception of optimal inflation, a good sign from the perspective of anchoring of these expectations. However, there is still room to reduce the heterogeneity of these perceptions, potentially through effective communication.

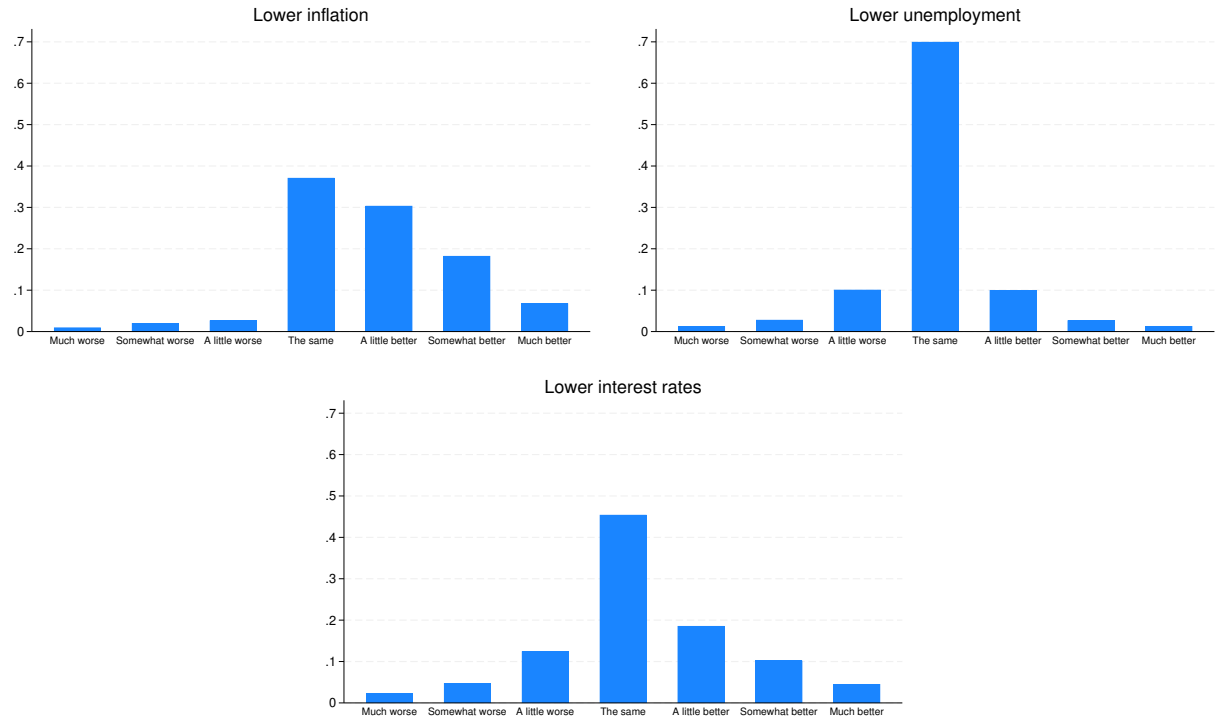
4.3. Preferences Over Inflation, Unemployment, and Interest Rates

The Federal Reserve Act mandates that the Federal Reserve conduct monetary policy "so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates." The Act leaves it up to policymakers to decide how much weight to assign to each of these

objectives. In macroeconomic models, the weights assigned to the objectives are derived under the assumption that monetary policy maximizes welfare, which is embodied in household preferences. Here, we ask U.S. households directly about their relative preference for each outcome: stable prices, low unemployment, and moderate interest rates. Our findings are the first direct evidence of the subjective relative weighting of these objectives by U.S. households.

Specifically, we present respondents with three hypothetical scenarios. The outcomes in these scenarios are randomized, with the baseline scenarios as follows: *"In Scenario A, the rate of inflation over the past 12 months was lower than it actually was by 1 percentage point. In Scenario B, the unemployment rate over the past 12 months was lower than it actually was by 1 percentage point. In Scenario C, the general level of interest rates on things such as mortgages, bank loans, bonds, and savings over the past 12 months was lower than it actually was by 1 percentage point."* Half the respondents instead get presented with higher inflation and higher unemployment in Scenarios A and B. In an independent randomization, half the respondents get presented with higher interest rates in Scenario C. We then ask respondents to rank Scenarios A, B, and C in terms of their hypothetical impact on their and their family's economic and financial situation. After that, respondents are asked to evaluate each scenario relative to their current situation on a seven-point scale.

Figure 3. Preferences Over Inflation, Unemployment, and Interest Rates



Note: Share of responses to the question: "Please rate the impact of each scenario on you and your family's economic and financial situation relative to your current situation." The scenarios are presented as: "In Scenario A, the rate of inflation over the past 12 months was lower than it actually was by 1 percentage point. In Scenario B, the unemployment rate over the past 12 months was lower than it actually was by 1 percentage point. In Scenario C, the general level of interest rates on things such as mortgages, bank loans, bonds, and savings over the past 12 months was lower than it actually was by 1 percentage point."

The distribution of the qualitative evaluation of each scenario relative to respondents' current situation is presented in Figure 3. The responses are normalized so that they all evaluate the baseline scenarios of lower inflation, lower unemployment, and lower interest rates.[18] The top left panel of the figure shows that in June 2023, almost half of U.S. households thought that they would be better off if inflation had been one percentage point lower than it was. By contrast, most households thought that a reduction (or an increase) in the unemployment rate would leave their economic and financial situation about the same as it was. These findings are not surprising given the historically high rates of inflation and historically low rates of unemployment at the time. In fact, a simple quadratic loss function as often used in monetary policy analysis is consistent with low marginal losses when unemployment is near maximum employment and inflation is far away from target. We estimate such a loss function in Section 4.4.

The lower panel of Figure 3 shows the distribution of ratings of a one percent decrease in the general level of interest rates. Here, the answers are most dispersed. The share of respondents preferring lower interest rates is higher than the share of respondents preferring higher interest rates, although the latter share is also sizable.

Importantly, we not only ask respondents to rank each scenario relative to their current situation, but also relative to the other scenarios, thus providing a sense of the relative importance of all parts of the Federal Reserve's mandate. A summary of these relative rankings is shown in Table 4. We normalize responses so that they all refer to the lower inflation and lower unemployment versions of Scenarios A and B.[19] Column (5) in the upper panel of the table reveals that more than 80 percent of respondents prefer a one percent reduction in inflation over a one percent reduction in the unemployment rate over the 12 months leading up to the survey date. Remarkably, more than half the respondents also have a strong preference for lower interest rates, as shown in the bottom row of the panel: 20 percent prefer this scenario the most (Column 1), and about 30 percent rank it in between reductions in inflation and in unemployment (Column (2)). This result speaks to the impact that high interest rates had on households in 2023. However, this impact is highly heterogeneous: A further 25 percent think of a reduction in interest rates as the least beneficial scenario (Column 3), and 25 percent state that that lower rates would have left them worse off than their current situation (Column (4)), implying they strictly prefer higher rates.[20]

In the bottom panel of Table 4, the distribution of rankings is displayed again for respondents that were presented with the higher interest rate version of Scenario C. It is clear from Column 5 that the relative ranking of inflation and unemployment is unaffected by this alternative version of

[18] That is, if a respondent is presented with the higher inflation version of Scenario A, we flip the response so that "A little better" becomes "A little worse" and so on. In removing the effects of the randomization, we lose some information about the asymmetry of preferences. We have found that the responses to Scenario A exhibit a moderate degree of asymmetry: The higher inflation version of Scenario A is rated worse than the lower inflation version is rated better. However, the degree of asymmetry is mild and responses to Scenarios B and C do not exhibit any asymmetry.

[19] That is, if a respondent gets presented with the higher inflation and higher unemployment version of Scenarios A and B, we flip their relative ranking of the three scenarios. In this case, we also regard their ranking of Scenario C as that of the opposite version: If they were presented with the higher interest rate version, we regard the position of Scenario C in the flipped ranking as referring to the lower interest rate version and vice versa.

[20] Column 3 includes respondents who rank Scenario C the lowest but see little difference to their current economic situation.

Table 4: Relative Ranking of Scenarios

Scenario: lower interest rates (a)

	(1) Prefer most	(2) In between	(3) Prefer least	(4) Prefer higher rates	(5) Total
Prefer lower unemployment	5.7	3.1	3.8	2.0	14.6
Prefer lower inflation	14.6	29.1	20.4	21.2	85.4
Total	20.3	32.2	24.3	23.3	100.0

Scenario: higher interest rates (b)

	(1) Prefer most	(2) In between	(3) Prefer least	(4) Prefer lower rates	(5) Total
Prefer lower unemployment	3.4	3.2	7.5	2.6	16.6
Prefer lower inflation	4.4	16.9	26.2	35.8	83.4
Total	7.8	20.1	33.7	38.4	100.0

Note: Each cell represents the share of responses implying a given ranking. "Prefer lower unemployment": Inflation Scenario A was ranked lower than unemployment Scenario B. "Prefer lower inflation": Inflation Scenario A was ranked higher than unemployment Scenario B. "Prefer most": Interest rate Scenario C was ranked highest. "In between": Interest rate Scenario C was ranked in the middle between the inflation and unemployment Scenarios (A and B). "Prefer least": Interest rate Scenario C was ranked lowest, but not worse than the current situation. "Prefer higher (lower) rates": Interest rate Scenario C was ranked lowest and worse than current situation. N=619 in Table (a) and N=650 in Table (b).

Scenario C: The responses satisfy the independence axiom. About 40 percent of respondents state that higher interest rates would leave them worse off (Column (4)), implying they would strictly prefer lower rates. This share is roughly consistent with the responses in the upper panel. About 8 percent prefer higher interest rates to either a reduction in inflation or unemployment (Column (1)), while 17 percent rank them more desirable than lower unemployment but less than lower inflation. In sum, a plurality of US households perceive lower interest rates as beneficial, but this perceived effect is highly heterogeneous.

Table 5 shows some demographic determinants of the scenario rankings. The first column shows the outcome of a linear probability regression on the binary outcome of whether respondents prefer a one percentage point reduction in inflation to a one percentage point reduction in the unemployment rate. Most demographic observables are insignificant, with the exception of education, numeracy, and gender. More educated, highly numerate, or non-female respondents have a stronger tendency to prefer lower inflation.[21] The second column uses the same linear probability regression on the outcome of whether respondents rate a one percentage point reduction in interest rates better than their current situation. Respondents who are not working prefer lower interest rates, perhaps because the level of loans is high relative to income. Those who have a stronger preference for lower inflation over lower unemployment also tend to prefer lower interest rates. The third column of the table will be discussed below.

[21] D'Acunto et al. (2019) show that cognitive abilities play an important role in forming inflation expectations (and other opinions). More generally, the relationship between macroeconomic literacy and economic forecasting is studied in Blanchflower and Kelly (2008), Armantier et al. (2015), and Burke and Manz (2014).

Table 5: Determinants of Preferences over Aggregate Outcomes

	(1) prefer lower π over u	(2) prefer lower i	(3) Sacrifice ratio
education	0.013**	0.006	0.021***
	(0.01)	(0.01)	(0.01)
not working	-0.022	0.182***	-0.076
	(0.05)	(0.06)	(0.05)
retired	0.071	0.060	0.160***
	(0.04)	(0.05)	(0.04)
high numeracy	0.160***	-0.006	0.108***
	(0.04)	(0.04)	(0.03)
age	0.010	0.004	-0.016**
	(0.01)	(0.01)	(0.01)
female	-0.062**	-0.020	-0.091***
	(0.03)	(0.03)	(0.03)
latino	-0.017	-0.156***	-0.141**
	(0.07)	(0.06)	(0.06)
prefer lower π over u		0.126***	
		(0.04)	
π_{Ai}			0.084***
			(0.01)
u_{Bi}			-0.101***
			(0.01)
Observations	1588	1588	1152
R^2	0.095	0.055	0.345

Note: The first two columns are linear probability regressions on binary variables: whether respondents rank the lower inflation scenario A higher than the lower unemployment scenario B; and whether they rank the lower interest rate scenario C higher than their current situation. The third column is a linear regression of the acceptable sacrifice ratio S_i as described in Section 4.4. "not working" indicates those that are not employed, not studying, and not retired. "high numeracy" stands for high numeracy score and "latino" stands for Hispanic and Latino Americans. "retired," "female," "latino," and "not working" are indicator variables. Robust standard errors are in parentheses. Regressions are weighted using sample weights; the sacrifice ratio regression additionally uses Huber (1964) weights.

4.4. Quantifying the Tradeoff Between Inflation and Unemployment

In the last part of our survey module, we ask respondents to quantify their relative preference for inflation and unemployment stabilization, independent of current economic circumstances. This relative preference is paramount for monetary policy because of the tradeoff between these two objectives: A reduction in inflation through tighter monetary policy will typically engender an increase in unemployment. In standard New-Keynesian models, which remain the cornerstone of monetary policy theory, a Phillips curve embodies a tradeoff between stable inflation and efficient resource utilization, while policymakers are modelled as minimizing a loss function which represents the desire to achieve both objectives. The responses to our questions reveal for the first time how American households value price and employment stabilization relative to each other.

Respondents are presented with two hypothetical scenarios. In Scenario A, inflation is low but unemployment is high. Specifically, the value of inflation shown to respondent i takes on a randomized value of $\pi_{Ai} \in \{0, 2, 4\}$ percent, while the unemployment rate is $u_A = 10$ percent. In Scenario B, inflation is high but unemployment is low. Specifically, inflation is $\pi_B = 10$ percent,

while the unemployment rate takes on a randomized value of $u_{Bi} \in \{3, 7, 9\}$ percent. We first ask respondents which of the two scenarios would be better for them and their families. Then, we ask them which value of the unemployment rate in Scenario A would make them indifferent between the two scenarios. Assuming a utility function $U_i(\pi, u)$ for inflation and unemployment, we are eliciting $\underline{u}_{Ai}$ such that:

$$U_i(\pi_{Ai}, \underline{u}_{Ai}) = U_i(\pi_B, u_{Bi}). \tag{1}$$

We only place mild assumptions on U_i—namely, that it is strictly decreasing in the unemployment rate. Therefore, if respondents rate Scenario A better than Scenario B, then we only consider responses satisfying $\underline{u}_{Ai} > u_A$. Conversely, if respondents rate Scenario A worse than Scenario B, then we only consider responses satisfying $\underline{u}_{Ai} < u_A$. And if they are indifferent between the two original scenarios, then $\underline{u}_{Ai} = u_A$.[22]

From these responses, we can compute sacrifice ratios for each respondent as

$$S_i = \frac{\underline{u}_{Ai} - u_{Bi}}{\pi_B - \pi_{Ai}}. \tag{2}$$

The sacrifice ratio computed here captures the increase in the unemployment rate *acceptable* to reduce inflation by one percentage point. Most existing studies of the sacrifice ratio instead capture the increase in unemployment that is *necessary* to reduce inflation by one percentage point.[23] These two concepts complement each other: The acceptable sacrifice ratio represents the (marginal) rate of substitution between the inflation and unemployment objectives, while the necessary sacrifice ratio represents the (marginal) rate of transformation between the two.

Figure 4 shows the distribution of S_i across all survey responses. The distribution has a mean of 0.69. Most of the mass of the distribution is to the left of the necessary sacrifice ratios estimated in the literature: Tetlow (2022) finds that the modal necessary sacrifice ratio across 40 models is 3.5, with a mean across models of 8.1, much higher than our values for the acceptable sacrifice ratio.[24] In other words, the preferences of most U.S. households lean heavily toward the employment side of the dual mandate. The typical increase in unemployment necessary to reduce inflation would leave households worse off at least for some time. Our measure of the acceptable sacrifice ratio is in line with indirect evidence for European countries based on life satisfaction indexes (Di Tella et al., 2001), but considerably lower that in the more recent study of Binetti et al. (2024) who estimate a sacrifice ratio of about 2. Higher values of the sacrifice ratio found in their paper may

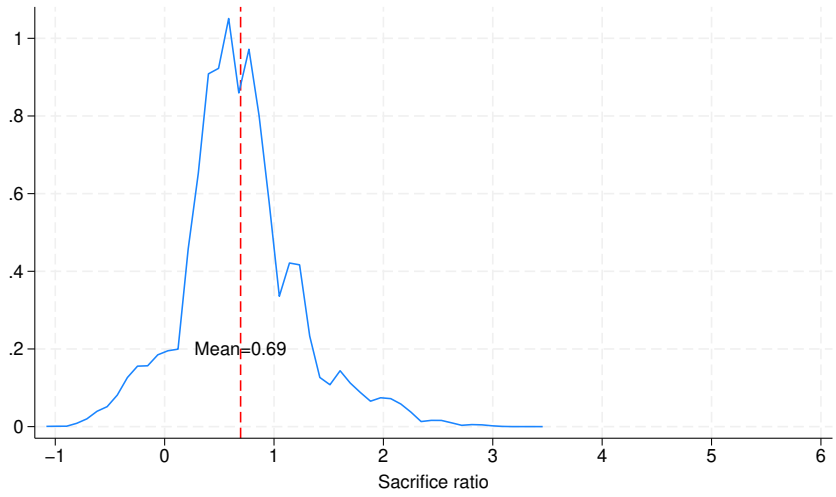
[22] We check the robustness of our results by excluding the indifferent respondents in the first part of our question, i.e., those that rate Scenario A as equal to Scenario B, from our analysis. This robustness exercise yields relatively small changes to our main results; if anything, the acceptable sacrifice ratio increases on average.

[23] See, for example, Ball (1994), Cecchetti and Rich (2001), and Tetlow (2022) for empirical estimates of the necessary sacrifice ratio.

[24] The sacrifice ratios are estimated in GDP space and converted into unemployment space using an Okun's law coefficient of two. Note also that the time frame of the reduction in inflation and the increase in unemployment matters. A temporary reduction in inflation by one percentage point will necessitate a smaller cost than a permanent one, for example. Our question does not specify such time frames, so our comparison to the literature can only be an approximate one.

be attributable to their only eliciting scenario rankings and very high values for inflation in the scenarios.[25]

Figure 4. Distribution of the Acceptable Sacrifice Ratio



Note: Distribution and mean are computed using Huber (1964) and sample weights.

Table 6 provides additional summary statistics for the acceptable sacrifice ratio. The mean and median in Column (1) are close together. A standard deviation of about 0.5 percentage point elucidates substantial heterogeneity in preferences among U.S. households. The distribution is skewed to the right, implying that there exists a sizable tail of people who prefer inflation stabilization even when it leads to large increases in unemployment. Note also that some respondents have negative acceptable sacrifice ratios, i.e., they stated that a simultaneous decrease in inflation and unemployment would leave them indifferent. It is possible that these respondents misunderstood the question. If we exclude these responses in Column (2), the distribution skews more to the right but otherwise changes little.

Column (3) in Table 5 establishes some determinants of the heterogeneity of the acceptable sacrifice ratio among respondents. The penultimate row shows that S_i depends positively on π_{Ai}. Recalling that inflation is reduced from $\pi_B = 10$ percent to $\pi_{Ai} \in \{0, 2, 4\}$ percent, the positive coefficient implies that respondents are willing to sacrifice more employment for an initial reduction of inflation from a high level than for a subsequent reduction from a lower level. This finding is consistent with increasing marginal disutility from inflation, $\partial^2 U_i / \partial \pi^2 < 0$. The last row shows that S_i depends negatively on u_{Bi}, implying that respondents are willing to sacrifice less employment if the unemployment rate is high to start with. This finding is consistent with increasing marginal disutility from unemployment, $\partial^2 U_i / \partial u^2 < 0$.

[25] With only scenario rankings, Binetti et al. (2024) estimate the sacrifice ratio indirectly from a linear probability model of choosing one scenario over the other. Our results suggest that this probability is highly state-dependent because of curvature in the utility function, as described further below.

Table 6: Summary Statistics for the Acceptable Sacrifice Ratio

	(1) all values	(2) non-negative values
median	.63	.63
mean	.69	.73
sd	.48	.4
skewness	.46	.9
min	-1	0
max	2.8	2.8
N	1152	1068

Note: Statistics use Huber (1964) and sample weights.

Furthermore, we document some demographic determinants of the acceptable sacrifice ratio. A higher education level predicts a larger S_i, i.e., a stronger preference for inflation stabilization, but a higher income does not. Retired respondents have a particularly strong preference for inflation stabilization, consistent with the fact that unemployment fluctuations do not affect their personal situation. Younger respondents, who are generally more at risk from unemployment, report a stronger implicit preference for low unemployment compared to price stability. Finally, the results in this column also reveal that the sacrifice ratio is one of the few places where we found significant differences by ethnicity. In particular, "Hispanic, Latino, or Spanish origin" households have a stronger preference for low unemployment, as well as female respondents.

We now proceed to estimate a simple functional form for the preference function. We express the preference as a loss function by working with $-U_i$, which takes the form of

$$-U_i(\pi, u) = (\pi - \pi_i^*)^\rho + \lambda(u - u_i^*)^\rho. \tag{3}$$

This form of a loss function has a long history in monetary economics. In the analysis of standard New-Keynesian models, the expected utility of the representative household can be approximated with a quadratic loss function of the form above with $\rho = 2$, summed and discounted over time.[26] The weight λ depends on the model parameters but is typically small. The optimal level of inflation is typically $\pi_i^* = 0$ because stable prices imply no price dispersion or menu costs in the models. The optimal or "natural" rate of unemployment can be time-varying and represents the efficient level of resource utilization. However, from an individual perspective, a lower unemployment rate is always preferable, all else equal.

The loss function above has four parameters that could potentially all be estimated, but in practice it is challenging to estimate all parameters precisely. Instead, we proceed in steps where in some estimations we calibrate certain parameters of the loss function. In calibrating the π_i^*—besides relying on FOMC's inflation objective and no inflation benchmarks—we can also rely on individual answers regarding optimal inflation that are detailed above. These answers provide us with additional cross-sectional variability that improves the precision of our estimates. We estimate

[26] See Debortoli et al. (2018) for a discussion of loss functions in New-Keynesian models and an overview of the underlying literature.

the parameters of the loss function via non-linear least squares, by re-arranging the relation (1) to the following form:

$$\underline{u}_{Ai} = u_i^* + \left| |u_{Bi} - u_i^*|^\rho + \frac{|\pi_B - \pi_i^*|^\rho - |\pi_{Ai} - \pi_i^*|^\rho}{\lambda} \right|^{1/\rho} + \varepsilon_i. \tag{4}$$

Table 7 tabulates results for several variations of this estimation.

Columns (1)–(3) of Table 7 estimate quadratic loss functions where the curvature ρ is restricted. The resulting estimates for the relative weight on unemployment λ are 0.85, 0.63, and 1.35, respectively. These estimates are an order of magnitude larger than what a standard New-Keynesian model implies, consistent with the relatively low sacrifice ratios discussed above.[27] In Column (2) we additionally estimate π_i^* and in Column (3) we estimate u_i^*. While these parameters are less precisely estimated, we find that $\pi_i^* = 1.47$ and $u_i^* = 3.01$. These estimates are not significantly different from the FOMC's inflation objective of 2 percent and Summary of Economic Projections' median assessment of the long-run rate of unemployment at the time of the survey (4 percent). Thus, in Column (4) we set $\pi_i^* = 2$ and $u_i^* = 4$ and estimate the curvature ρ. The point estimates are around 2.75, although the quadratic form $\rho = 2$ cannot be rejected. A higher curvature implies faster diminishing marginal utility from reducing inflation or unemployment toward their optimal levels. The parameter λ in this specification is around 1.13. Across all four specifications, the fit of the regression measured by R^2 is similar. The reason is that all right-hand side variables in eq. (4) only vary with the randomization of the scenarios, while the left-hand side variable is a response that has substantial heterogeneity. A regression simply fitting dummy variables for each realization of the randomization achieves a similar R^2 as well.

Table 7: Loss Functions Fitted to Survey Responses

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
λ	0.845***	0.631***	1.350***	1.129***	0.971***	0.896***	1.401***
	(0.05)	(0.19)	(0.41)	(0.11)	(0.07)	(0.06)	(0.11)
π^*	0	1.472	0	2	optimal	optimal	optimal
		(1.32)			target	target	target
u^*	0	0	3.013*	4	4	0	4
			(1.47)				
ρ	2	2	2	2.753	1.448***	1.559***	1.546***
				(2.02)	(0.32)	(0.16)	(0.27)
R^2	0.685	0.685	0.685	0.685	0.672	0.661	0.668
N	1162	1162	1162	1162	541	1149	1149

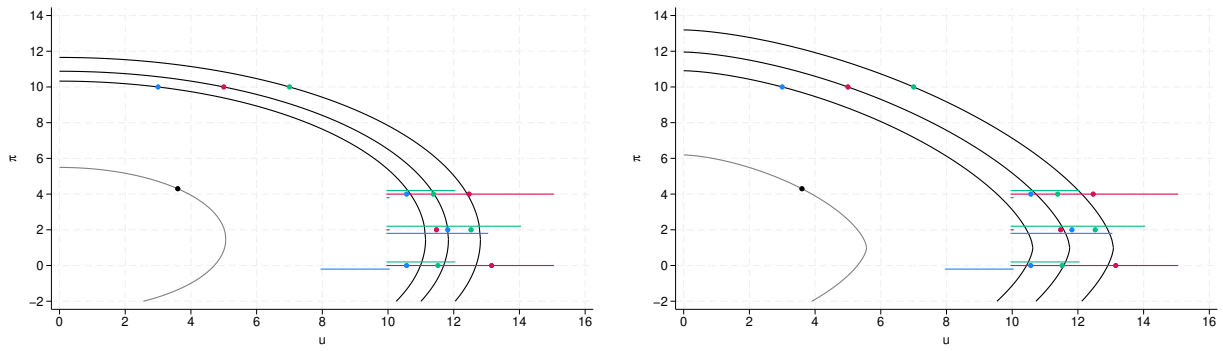
Note: Estimated using non-linear least squares regression as described in the text. Robust standard errors in parentheses. Where no standard error is given, the values are fixed. For regressions with "optimal target," π_i^*, is given, for each respondent, by their answer to what rate of inflation would be best for the American economy. Column (5) is estimated on the restricted sample for those that provided numerical answer to optimal inflation question. Columns (6) and (7) use optimal inflation target calculated using a Tobit predictive regression for those that answered deflation is optimal. All regressions use sample weights.

[27] For example, Adam and Billi (2006) either use a value of 0.003 or 0.007 to parameterize λ.

The optimal inflation rate, π_i^*, is imprecisely estimated and neither two or zero can be rejected as possible values in Column (2). An alternative to estimating this coefficient is to identify it with the optimal inflation target that we elicited in one of the previous survey questions. In Columns (5)–(7), we set π_i^* to this survey response. In Column (5) we restrict our sample to only those that provided a non-negative value to the optimal inflation question, while in Columns (6) and (7) we use also the Tobit-predicted response for those that claim that deflation is optimal. In these estimations, the curvature, ρ, is more precisely estimated and drops markedly below two. In Column (5) the estimate of λ is about 0.97. In Columns (6) and (7) we find similar values for ρ, around 1.55, but the estimate of λ is somewhat dependant on the assumed value for the u_i^*, as it increases from 0.9 in Column (6), where we assume $u_i^* = 0$, to 1.4 in Column (7), where we assume $u_i^* = 4$. Nevertheless, for any plausible value of u_i^*, the estimate of λ is orders of magnitude higher than in the standard New-Keynesian model.

We visualize these estimates by plotting the indifference curves generated from the corresponding utility functions. The left panel of Figure 5 does so for the point estimates of the specification in Column (2) of Table 7, i.e., using a quadratic utility function with an estimated optimal inflation rate. The three indifference curves shown are chosen such that they contain the three possible random realizations for Scenario B in the upper-left area of the figure.

Figure 5. Indifference Curves of Fitted Loss Function



Note: The left panel corresponds to Column (2) in Table 7 and the right panel corresponds to Column (6). Black lines represent indifference curves from the fitted model. Dots in the upper left area represent values for Scenario B shown to respondents. Dots in the lower right area represent mean survey responses for Scenario A such that respondents are indifferent between both scenarios. Horizontal bars denote the interquartile range of responses. Statistics are weighted by sample weights. Randomized values for inflation in Scenario A are zero, two, or four percent. Randomized values for unemployment in Scenario B are denoted with colors: three (blue), five (red) or seven (green) percent. The black dot represents the location of inflation (headline CPI, 12-month change) and the unemployment rate in June 2023.

The fit of the loss function to the average responses (visualized with colored dots) is good. The loss function implies sacrifice ratios that are state-dependent: A similar decrease in inflation is worth a larger increase in unemployment when inflation is high or if unemployment is low. Consequently, at the locus of inflation and unemployment as of June 2023 (represented by a black dot), these preferences imply a stronger preference for inflation reduction relative to a reduction

in unemployment, consistent with the responses in Section 4.3. In general, however, the relative preference for unemployment stabilization relative to inflation stabilization is strong.

The right panel of Figure 5 provides a visualization for point estimates in Column (6) in Table 7. Here we can observe a more pronounced kink around the average response for the optimal inflation due to the lower curvature parameter of about 1.6.

4.5. Importance for Monetary Policy Design

We close this section with an illustration of the importance of our results for monetary policy. We take the simplest and most widely known model of monetary policy, the standard New-Keynesian model, and solve for optimal monetary policy under discretion with a loss function as in Equation (3). Under discretion, the policymaker at time t minimizes this loss function subject to a Phillips curve tradeoff:

$$\min_{\pi_t, u_t} (\pi_t - \pi^*)^2 + \lambda (u_t - u_t^*)^2$$

$$\text{s.t. } \pi_t - \pi^* = \beta (E_t \pi_{t+1} - \pi^*) + \kappa (u_t - u_t^*) + e_t. \tag{5}$$

Here, we have imposed that the loss function is quadratic. The supply (e.g., mark-up) shock e_t follows an AR(1) process with autocorrelation ρ_e.[28] In this simple model, future expectations are taken as given by the discretionary policymaker at time t, making this problem easy to solve. The solution implies the following optimal tradeoff between inflation and unemployment stabilization:

$$\frac{1}{\kappa} = -\frac{1}{\lambda} \frac{\pi_t - \pi^*}{u_t - u_t^*}. \tag{6}$$

The left-hand side of this expression is the necessary sacrifice ratio: the increase in current-period unemployment necessary to reduce inflation by a marginal unit equals $1/\kappa$. The right-hand side is the (marginal) acceptable sacrifice ratio: the increase in unemployment that would be just tolerable to reduce inflation by a marginal unit. It is the inverse slope of an indifference curve in Figure 5. The acceptable sacrifice ratio is larger the smaller the preference for unemployment stabilization, λ. At the optimum, households are indifferent to a marginal reduction in inflation along the Phillips curve: Their acceptable sacrifice ratio should equal the necessary sacrifice ratio.

Solving for the equilibrium using the Phillips curve yields:

$$\pi_t - \pi^* = \frac{\lambda}{(1 - \beta\rho_e)\lambda + \kappa^2} e_t \tag{7}$$

$$u_t - u_t^* = \frac{-\kappa}{(1 - \beta\rho_e)\lambda + \kappa^2} e_t. \tag{8}$$

Table 8 calculates the standard deviations of inflation and the unemployment gap under optimal discretionary policy, for different parameterizations of the simple New-Keynesian model. The first column uses a standard calibration from Adam and Billi (2006) while the other two columns use

[28] The nominal interest rate implementing the optimal policy can be backed out from an IS equation.

Table 8: Importance of the Unemployment Stabilization Preference for Optimal Policy.

	(1)		(2)		(3)	
κ	0.048		0.005		0.300	
β	0.991		0.995		0.995	
ρ_e	0		0.8		0.8	
λ	0.012	1	0.001	1	0.044	1
$\sigma(\pi_t - \pi^*)/\sigma(e_t)$	0.84	1.00	4.20	4.90	0.45	3.40
$\sigma(u_t - u_t^*)/\sigma(e_t)$	3.36	0.05	28.5	0.03	3.03	1.02

Note: The table shows the standard deviations of inflation $\pi_t - \pi^*$ and the unemployment gap $u_t - u_t^*$ under optimal discretionary policy in the textbook New-Keynesian model, and relative to the standard deviation of supply (mark-up) shocks e_t. For each parameterization, the relative weight on unemployment stabilization λ is set to either its model-implied value or to one in accordance with the results from our survey module.

higher values for β and ρ_e (which make λ less important) and use lower and upper bounds for the value of κ found in the literature. The relative weight on unemployment stabilization is set to either its model-implied value of $\lambda = \kappa/\theta$ with $\theta = 6.7$—a standard value for the elasticity of substitution between varieties of the consumption good—or to $\lambda = 1$ in accordance with the results from our survey module.

Economic outcomes under optimal monetary policy using the preferences implied by our results are very different from those using model-implied preferences. For the parameters in Column (1), the model-implied preferences lead to sizable volatility in unemployment of 3.36 (expressed relative to the standard deviation of the supply shock e_t). By contrast, when policymakers place equal weights on unemployment and inflation, they reduce the unemployment rate volatility to 0.05, more than fiftyfold. When the Phillips curve is even flatter, as in Column (2), this discrepancy is even larger because a stronger preference for stabilizing unemployment can now be accommodated at lower costs in terms of inflation volatility. At the other extreme, a very steep Phillips curve, as in Column (3), entails smaller differences: The unemployment rate volatility with model-implied preferences is 3.03, while the volatility is 1.02 with survey-implied preferences. This reduction is still threefold, but now comes with a sizable increase in inflation volatility.

5. Conclusion

In this paper, we have documented novel facts about the preferences of U.S. households for monetary policy. The use of a special module in the Survey of Consumer Expectations of the Federal Reserve Bank of New York gave us access to a representative sample of about 2,000 U.S. households in June 2023.

We have shown that households are surprisingly attentive to U.S. monetary policy: Over half of respondents reported paying attention to news about the Federal Reserve and the federal funds rate at least once per quarter. The median household perceives the Federal Reserve's inflation target to be 3 percent; however, when asked about the rate of inflation that would be best for the American

economy, the response is much lower. Among those who think positive inflation is optimal, the median response is 2 percent, while 42 percent of respondents think that deflation is optimal. As predicted by theory, inflation expectations are significantly cross-sectionally correlated with either version of the inflation target. Finally, we elicit respondents' relative preferences for stable inflation and low unemployment. Our analysis reveals that U.S. households place a large weight on the employment side of the Federal Reserve's dual mandate. Necessary sacrifice ratios estimated in the literature exceed the values that most U.S. households would find acceptable. That said, there is considerable heterogeneity in the weight households place on inflation stabilization. When we estimate a simple loss function on our responses, the estimated weight on unemployment stabilization exceeds the values implied by standard New-Keynesian models by an order of magnitude, which has important consequences for the conduct of monetary policy in these models.

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Appendix A. Appendix Tables and Figure

Appendix Table A1: Weights on Inflation Relative to Unemployment

	Prefer Scenario B to Scenario A					
	Two-Point Scale				Five-Point Scale	
	(1)	(2)	(3)	(4)	(5)	(6)
Difference in π	−0.0002	0.001	0.008	0.009	−0.011	−0.008
	(0.006)	(0.006)	(0.011)	(0.011)	(0.015)	(0.015)
Difference in u	0.026***	0.027***	0.026***	0.028***	0.064***	0.072***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.015)	(0.015)
Education		0.003		0.004		0.004
		(0.004)		(0.005)		(0.011)
Income		−0.00004		−0.0002		−0.0002
		(0.0002)		(0.0002)		(0.001)
Own Home		0.065***		0.079***		0.139**
		(0.022)		(0.027)		(0.058)
Not Working		0.080***		0.032		0.191***
		(0.028)		(0.035)		(0.073)
Student		−0.037		−0.053		−0.054
		(0.098)		(0.104)		(0.251)
Retired		−0.128***		−0.123***		−0.195***
		(0.028)		(0.034)		(0.073)
High Numeracy		−0.070***		−0.096***		−0.168***
		(0.021)		(0.026)		(0.056)
Female		0.010		0.037		0.124**
		(0.019)		(0.023)		(0.051)
Latino		0.072*		0.126***		0.183*
		(0.039)		(0.046)		(0.100)
Constant	0.022	0.058	0.077	0.132		
	(0.054)	(0.102)	(0.087)	(0.127)		
Race Controls?	✗	✓	✗	✓	✗	✓
Age Controls?	✗	✓	✗	✓	✗	✓
Observations	1,498	1,492	1,005	1,002	2,122	2,101
R^2	0.014	0.100	0.015	0.123		
Adjusted R^2	0.013	0.089	0.013	0.107		

*p<0.1; **p<0.05; ***p<0.01

Column (1) and Column (2) are linear probability models of whether someone strictly preferred Scenario B to Scenario A on a 5-point scale with no control and controls, respectively. Column (3) and (4) drop respondents who were randomized $X = 0$. Column (5) and Column (6) are ordered probit models with the same set of controls as Columns (1) and (2), but allows for a five-point ordinal scale instead of a strict preference for Scenario B to Scenario A as in the linear probability models.

Appendix B. Survey Questions

The following pages portray the SCE June 2023 special module as respondents have seen it.

Monetary Policy Expectations and Attitudes

Now we would like to ask you a few questions about interest rates, inflation, and unemployment. Remember, there is no right or wrong answer – we are interested in **your** views.

Question 1

How frequently do you pay attention to the following:

Please select only one answer for each row.

	Daily (1)	Weekly (2)	Monthly (3)	Quarterly (4)	Yearly (5)	Not at all (6)	I do not know what this is (7)
(a) Federal funds rate	○	○	○	○	○	○	○
(b) Savings rates	○	○	○	○	○	○	○
(c) Mortgage interest rates	○	○	○	○	○	○	○
(d) Credit card interest rates	○	○	○	○	○	○	○
(e) Other consumer loan rates	○	○	○	○	○	○	○
(f) Bond yields	○	○	○	○	○	○	○
(g) Stock market prices	○	○	○	○	○	○	○
(h) Value of my personal savings and investments	○	○	○	○	○	○	○
(i) News about the labor market	○	○	○	○	○	○	○
(j) News about inflation	○	○	○	○	○	○	○
(k) News about the government's economic policies	○	○	○	○	○	○	○
(l) News about the Central Bank	○	○	○	○	○	○	○

Question 2

[Not required. Display question only if at least one of QBoard1a, QBoard1b, QBoard1c, QBoard1d, QBoard1e, or QBoard1f includes code 1, 2, 3, 4, or 5]

Pick the label among Qboard1a to Qboard 1f that has the lowest response code. In case of a tie, pick the first label that appears in the previous question. Example: If the response codes to Qboard1a to Qboard1f are 6,5,5,3,3,4 pick "Credit card interest rates".

You just said that you pay attention to [label]. What do you expect the average level of these interest rates to be in **June 2024**? Please give your best guess.

Please enter a number greater than 0 or equal to 0.

I expect the label of [label] to be ___%.

Question 3

What do you think is the annual rate of inflation that the Federal Reserve is trying to achieve on average **over the five-year period between June 2028 and June 2033**?

Please enter a number greater than 0 or equal to 0.

The Federal Reserve is trying to achieve the rate of inflation of ___%.

Question 3a

How confident, if at all, are you that the Federal Reserve will achieve [answer in QBoard3]% annual rate of inflation on average over the five-year period between **June 2028** and **June 2033**?

Not confident at all (1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**Very confident (7)**
○	○	○	○	○	○	○

Question 4

Now think about the lowest rate of unemployment that the economy can sustain without generating unwelcome inflation. How confident, if at all, are you that the Federal Reserve will achieve this rate of unemployment on average over the five-year period between **June 2028** and **June 2033**?

Not confident at all (1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**Very confident (7)**
○	○	○	○	○	○	○

Question 5

To what extent do you agree or disagree with the following statement: "Inflation is giving my family and me cause for concern at the moment".

Totally disagree (1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**Totally agree (7)**
○	○	○	○	○	○	○

Question 6

To what extent do you agree or disagree with the following statement: "The risk of becoming unemployed is giving my family and me cause for concern at the moment."

Totally disagree (1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**Totally agree (7)**
○	○	○	○	○	○	○

Question 7

Earlier, you told us that you expect the rate of [inflation (if Q0A==1) / deflation (if Q0A==2)] to be [answer in Q0Apart2]% **over the next 12 months**. Now we would like you to think of the rate of inflation that would be best **for the American economy**. What do you think is this rate of inflation? Remember, there is no right or wrong answer—we are interested in **your** views.

○ I think an inflation rate of ___% would be best for the American economy (1).

○ I think deflation (negative inflation) would be best for the American economy (2).

○ The rate of inflation does not matter for the American economy (3).

Question 8

Now think of the general level of **interest rates** on things such as mortgages, bank loans, bonds, and savings. Do you think the current level of these interest rates is good **for the American economy**, or do you think a higher or lower level would be better?

Please select only one answer.

○ Much higher interest rates would be better (1).

○ Higher interest rates would be better (2).

○ Interest rates are more or less good (3).

○ Lower interest rates would be better (4).

○ Much lower interest rates would be better (5).

○ It does not matter either way (6).

Question 9

[Randomly assign X and Y to each individual respondent. Record X and Y for each individual. X can be either "0", "2", or "4"; Y can be either "3", "5", or "7" so there are 9 groups of equal size in total depending on the value of X and Y. Assignments remain the same in QBoard9a and QBoard9b—that is, the value of X and Y remain the same for a respondent.]

Now think about how inflation and unemployment affect you and your family personally. Think of two hypothetical scenarios.

In Scenario A, the rate of inflation is X%, but the unemployment rate is 10%.

In Scenario B, the rate of inflation is 10%, but the unemployment rate is Y%.

	Rate of Inflation	**Unemployment Rate**
Scenario A	X%	10%
Scenario B	10%	Y%

Which scenario would be better for you and your family?

Please select only one answer.

○ Scenario A would be much better (1).

○ Scenario A would be somewhat better (2).

○ The two scenarios are equally good or bad (3).

○ Scenario B would be somewhat better (4).

○ Scenario B would be much better (5).

Question 9a

What rate of unemployment would make Scenario A equally good or bad for you and your family as Scenario B?

Please enter a number greater than 0 or equal to 0.

	Rate of Inflation	**Unemployment Rate**
Scenario A	X%	___%
Scenario B	10%	Y%

Question 9b

Just to make sure, you are saying that when the rate of inflation is X% and the unemployment rate is [answer in QBoard9a]%, this is just as good or bad for you and your family as when the rate of inflation is 10% and the unemployment rate is Y%?

Please select only one answer.

○ Yes (1).

○ No, I want to revise my answer (2).

Question 10

[Distribute respondents randomly into four groups. The group names are LL,LH,HL,HH. In the text below, X and Y depend on the group as follows: Group LL: X="lower", Y="lower", Group LH: X="lower", Y="higher", Group HL: X="higher", Y="lower", Group HH: X="higher", Y="higher". Respondents remain in the same group also in QBoard10a]

Consider the following three hypothetical scenarios and think about how they would affect **you and your family's** economic and financial situation.

In Scenario A, the **rate of inflation over the past 12 months** was X than it actually was by 1 percentage point.

In Scenario B, the **unemployment rate over the past 12 months** was X than it actually was by 1 percentage point.

In Scenario C, the **general level of interest rates** on things such as mortgages, bank loans, bonds, and savings **over the past 12 months** was Y than it actually was by 1 percentage point.

	Rate of Inflation	**Unemployment Rate**	**Interest Rates**
Scenario A	1 percentage point X	Actual Level	Actual Level
Scenario B	Actual Level	1 percentage point X	Actual Level
Scenario C	Actual Level	Actual Level	1 percentage point Y

Which of these three scenarios would be **the best** in terms of their impact on **you and your family's** economic and financial situation?

○ A ○ B ○ C

And which of these three scenarios would be the worst in terms of their impact on you and your family?s economic and financial situation?

○ A ○ B ○ C

Question 10a

	Rate of Inflation	**Unemployment Rate**	**Interest Rates**
Scenario A	1 percentage point X	Actual Level	Actual Level
Scenario B	Actual Level	1 percentage point X	Actual Level
Scenario C	Actual Level	Actual Level	1 percentage point Y

Now, think of how these scenarios compare to **your current situation**. Please rate the impact of each scenario on you and your family's economic and financial situation **relative to your current situation**.

Please select only one answer for each row.

	Much worse (1)	**Somewhat worse (2)**	**A little worse (3)**	**The same (4)**	**A little better (5)**	**Somewhat better (6)**	**Much better (7)**
Scenario A	○	○	○	○	○	○	○
Scenario B	○	○	○	○	○	○	○
Scenario C	○	○	○	○	○	○	○