Does Policy Communication during COVID Work?*

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Using a large-scale survey of U.S. households during the COVID-19 pandemic, we study how new information about fiscal and monetary policy responses to the crisis affects households' expectations. We provide random subsets of participants in the Nielsen Homescan panel with different combinations of information about the severity of the pandemic, recent actions by the Federal Reserve, stimulus measures, as well as recommendations from health officials. This experiment allows us to assess to what extent these policy announcements alter the beliefs and spending plans of households. In short, they do not, contrary to the powerful effects they have in standard macroeconomic models.

JEL Codes: E31, C83, D84, J26.

The single biggest problem in communication is the illusion that it has taken place.

–George Bernard Shaw

[*For monetary policy to be most effective*] *not only do expectations about policy matter, but, at least under current conditions, very little else matters.*

–Woodford (2005)

*We thank the National Science Foundation for financial support (grant number SES-1919307) in conducting the surveys. We also thank Shannon Hazlett and Victoria Stevens at Nielsen for their assistance with the collection of the PanelViews Survey, as well as Carola Binder, Luc Laeven, and an anonymous referee for helpful comments. The randomized control trial is registered at the AER RCT Registry (#AEARCTR-0005989).

1. Introduction

Monetary and fiscal policies affect the economy (Romer and Romer 2004, 2010), but how they operate remains a point of contention. A common thread across many macroeconomic models is the role of expectations: policies have powerful effects in modern mainstream models in large part because firms and households incorporate these announcements into their decision plans. In real business cycle models, for example, an announcement of higher government spending should make households feel poorer (since they will have to pay for this spending via higher taxes now or in the future), which induces them to work more. Forward guidance on the part of monetary policymakers is predicted to have large effects in New Keynesian models because the promise of future lower interest rates by the central bank should induce households to anticipate higher inflation in the future, which in turn should lead them to consume more today before those price increases materialize.

How powerful are these mechanisms in practice? Recent research should give one pause: there is a growing body of evidence documenting that, in advanced economies, inattention to macroeconomic policy and the broader economic environment is pervasive among households and firms. Announcements by monetary and fiscal policymakers are rarely found to have large effects on the expectations of economic agents other than those participating directly in financial markets, suggesting that these expectational forces may in fact be quite weak. Still, one might expect a strengthening of these forces in a crisis, as a worried population turns its attention to its leaders for guidance and support.

Using a large-scale survey of U.S. households during the COVID-19 pandemic, we study how new information about policy responses affects the expectations and decisions of respondents. Specifically, we provide random subsets of participants with different combinations of information about the severity of the pandemic, recent actions by the Federal Reserve, stimulus measures implemented by Congress, as well as recommendations from the U.S. Center for Disease Control (CDC). We then characterize how their economic expectations and spending plans respond to these information treatments. This allows us to assess to what extent these policy announcements alter the beliefs and plans of economic agents.

By and large, we find very little effect of these information treatments on the economic expectations of agents for income, mortgage rates, inflation, or the unemployment rate, nor do we find an effect on their planned decisions, contrary to the powerful effects they have in standard macroeconomic models. Why might agents' economic beliefs not respond to this information? One possible explanation is that they were already aware of the information provided in the treatments. For example, the policy announcements that we describe were widely covered in the press. Health pronouncements by government officials were also frequent headliners in national media. If the effect of these announcements were already reflected in household expectations, our treatments would not be providing any new information to households and should therefore have no effects on expectations. However, we view this possibility as unlikely to be driving our results. For example, households' prior beliefs about the transmission rate of COVID-19 or its recovery rate were wildly misinformed prior to the information treatments, even though these rates were widely discussed in the media. Furthermore, previous work has documented how uninformed households tend to be about most monetary and fiscal policies and how even large policy announcements do not make their way into households' aggregate expectations, even in the midst of a crisis (e.g., Coibion, Gorodnichenko et al. 2020). Furthermore, Binder (2020) documents that even after the historic policy actions of the Federal Reserve in response to the COVID-19 crisis, only a third of U.S. households had heard about these policy actions.

A second possible explanation for finding no effect of information treatments is if households are skeptical of the information that we provide. Again, we view this as very unlikely because other information treatments in identical settings have previously been found to lead to dramatic revisions in households' views about the economy (e.g., Coibion, Gorodnichenko, and Weber 2019). A third possible explanation rests on the idea that, because of cognitive constraints, many households might not directly understand the implications of complex policies for their optimal savings and consumption decisions (e.g., D'Acunto, Hoang, and Weber 2021, D'Acunto, Hoang et al. 2021). The fourth, and in our view most likely, explanation is that households do not believe that the policy responses described in the treatments are effective: i.e., the multipliers they associate with the

described policy responses are close to zero. These zero multipliers could be interpreted in one of two ways. According to the first one, households literally believe that changes in monetary or fiscal policy have little direct impact on macroeconomic outcomes. The second interpretation reflects the endogeneity of the policy decisions: large expansionary policy actions are taken only in times when economic conditions are particularly weak. Policy announcements may then have little effect on overall economic expectations, as they convey negative information about the state of economy along with positive information about policy actions, with the two washing out on average.

Our paper builds on a recent but growing literature in macroeconomics that relies on surveys to measure expectations and randomized information treatments to establish causality (e.g., Cavallo, Cruces, and Perez-Truglia 2017, Coibion, Gorodnichenko, and Kumar 2018, Armona, Fuster, and Zafar 2019, D'Acunto et al. 2020, D'Acunto, Fuster, and Weber 2021, D'Acunto, Hoang, and Weber 2021). We depart from previous work along several dimensions. First, we use a large-scale survey of U.S. households participating in the Nielsen Homescan panel, providing us with a sample size that is an order of magnitude larger than in commonly available surveys. Second, our survey was run in April 2020 in the midst of the COVID epidemic, so we are able to study the dramatic policy actions taken specifically in response to the outbreak. In addition, we are able to provide new insight about how informed households were about both the deadliness of the disease and how it spreads across the population. There has been a surge of research on the coronavirus in recent months, much of it relying on surveys. We build on this growing body of work by utilizing randomized control trials (RCTs) to study the effects of economic policy responses to the crisis. Third, we combine treatments about the severity of the disease with treatments not only about economic policy responses (e.g., fiscal and monetary) but also about health policies (recommendations from the CDC). This allows us to speak about the relative benefits of very different types of policy responses within a common framework.

Previous work has documented extensively how inattentive households (and firms) tend to be to macroeconomic conditions (Bachmann, Berg, and Sims 2015, Coibion, Gorodnichenko, and

Kumar 2018, Coibion et al. 2019, D'Acunto et al. 2019). We find the same qualitative patterns hold during the COVID crisis but also document that this lack of understanding extends to information about the coronavirus. For example, when we ask households what they think the recovery rate is once infected with COVID, they report an average answer of 73 percent, far lower than the 97 percent reported by the World Health Organization (WHO). Similarly, when we ask them how many people tend to be infected by someone carrying the COVID virus, their average answer is 21, far higher than the actual rate of around 2 estimated by the WHO. This suggests that information treatments that provide factual information about transmission and recovery rates could potentially have important effects on households' expectations about the economy.

Despite this, we find very small effects of providing information about the deadliness and ease of spread of the disease on households' expectations. When respondents are treated with information that, on average, the disease is harder to spread and less deadly than they had originally thought, their views about future inflation, mortgage rates, and unemployment are effectively unchanged. They reduce their reported expected future income on average, but the change is economically insignificant. Their perceptions about whether now is a good or bad time to buy durables are also effectively unchanged. The one exception is for unemployed workers who are asked about the likelihood of finding a job: those who are treated with information about the disease raise their likelihood of finding a job by about 20 percentage points. These results suggest that the large changes in expectations during the COVID-19 pandemic for income, the stock market, or mortgage rates are less likely driven by direct concerns about the virus but more likely a response to the lockdowns imposed by local authorities in line with findings in Coibion, Gorodnichenko, and Weber (2020).

Information treatments about fiscal, monetary, or health policies similarly do very little to the expectations of households, both about the aggregate economy and about their own income. And when they do, those effects are not necessarily positive. For example, among the unemployed who become more optimistic about their future job prospects when they are told that COVID-19 spreads less easily and is less deadly than they thought, providing additional

information about the responses of policymakers fully offsets the effect of the information about the disease. This is again consistent with the presence of an information effect to policies: finding out that fiscal, monetary, or health policymakers are implementing large policy changes makes the unemployed less optimistic about their job prospects, but only when done in conjunction with information about the disease. Information treatments that are only about policy changes have effectively no effect on most agents' macroeconomic or individual expectations. These results are consistent with recent findings documenting an information effect of monetary policy which suggest that large policy moves might reveal information about the state of the economy which is called Delphic in the context of forward guidance (see, e.g., Campbell et al. 2012).

By studying the effect of policy actions on households' macroeconomic expectations through RCTs, our paper is closest to Andre et al. (2019). They present specific scenarios of both fiscal and monetary shocks to households (as well as experts) to assess how they believe these shocks will affect the economy. They find that households' views about fiscal shocks are similar to those of experts, but their perceptions of how monetary shocks affect the economy differ significantly from those in standard models or those perceived by experts. One important difference is that Andre et al. (2019) present respondents with hypothetical exogenous shocks to either fiscal or monetary policy, whereas we present households with information about clearly endogenous policy responses. Our results therefore speak directly to the effects of *systematic* policy changes, whereas theirs are focused on exogenous policy. Our findings suggest that these systematic policy responses have little effect on households' expectations, either because they believe they are ineffective or because policy responses induce an information effect (in which households interpret the sheer fact of a policy response as indicative of a weaker economy) that effectively offsets the effect of the policy change.

Our work is also closely related to that of Binder (2020) and Fetzer et al. (2020), who assess how randomized provision of COVID-19 health facts influences concerns (about personal financial situation and about aggregate economy) of households participating in online

surveys.[1] Apart from the fact that we are using a survey that is an order of magnitude larger in size (and hence more precise estimates of treatment effects), we also study how the provision of health facts and/or policy responses shapes expectations. Like these studies, however, it must be emphasized that our survey was run at the beginning of a pandemic when uncertainty was widespread. This represents a unique setting, and effects of information treatments during this time may not necessarily carry over to other settings. While we view the fact that the survey was run during the height of the crisis as a plus since crises are rare, the external validity of the results may be more limited than RCTs during more normal conditions.

Our research also relates to a broader literature on the effect of monetary policy on household expectations. That literature has documented that monetary policy decisions and announcements have little to no effect on household inflation expectations (e.g., Lamla and Vinogradov 2019, Coibion, Gorodnichenko et al. 2020). This result is generally interpreted as indicating that households are unaware of the policy actions. Our results suggest an additional possible mechanism underlying these results: even when households are made aware of these policy decisions, they do not view them as having meaningful effects on the aggregate economy. Hence, it is not only important to reach households with communication but also to design and implement policies that are easy and simple to grasp for non-expert households and to explain the implications of policies for optimal consumption, savings, and investment decisions (D'Acunto, Hoang, and Weber 2021).

2. Survey Description

In this section, we describe the implementation of the survey as well as the information treatments. We build on our earlier work (Coibion, Gorodnichenko, and Weber 2019; Coibion, Georgarakos et al. 2020; D'Acunto, Malmendier, and Weber 2020; D'Acunto,

[1]Binder (2020) also uses a difference-in-difference approach to study how informing households about the Federal Reserve's policy rate cut changes expectations.

Malmendier et al. 2021) using the Nielsen Homescan panel to study expectations and spending decisions.

2.1 The Survey

Our survey was run in April 2020 on the Nielsen Homescan panel of households. This panel consists of 80,000–90,000 households who track their spending daily for A.C. Nielsen. Following Coibion, Gorodnichenko, and Weber (2019) and Coibion, Georgarakos et al. (2020), we ran a survey on these households that included various information treatments that we provided in a randomized fashion. The survey consisted of an initial set of questions designed to measure the prior beliefs and plans of households, followed by a randomized information treatment, and concluding with a final set of questions meant to assess how/whether treatments affected the expectations and plans of participants. A total of 13,771 individuals responded to the survey, yielding a response rate of 27 percent. The response rate compares favorably to the average response rates of surveys on Qualtrics, which is the most commonly used survey platform for online surveys that estimates a response rate between 5 percent and 10 percent. Survey questions are provided in the appendix.

Nielsen attempts to balance the panel on nine dimensions: household size, income, age of household head, education of female household head, education of male household head, presence of children, race/ethnicity, whether or not the household is Hispanic, and occupation of the household head. Panelists are recruited online, but the panel is balanced using Nielsen's traditional mailing methodology. Nielsen checks the sample characteristics on a weekly basis and performs adjustments when necessary. Nielsen provides sampling weights to correct for possible imbalances in the composition of respondents in our survey. All of our reported results use sampling weights.

Nielsen provides households with various incentives to guarantee the accuracy and completeness of the information households report. They organize monthly prize drawings, provide points for each instance of data submission, and engage in ongoing communication with households. Panelists can use points to purchase gifts from a Nielsen-specific award catalog. Nielsen structures the

incentives to not bias the shopping behavior of their panelists. The Kilts-Nielsen Consumer Panel (KNCP) has a retention rate of more than 80 percent at the annual frequency. Nielsen validates the reported consumer spending with the scanner data of retailers on a quarterly frequency to ensure high data quality. The KNCP filters households that do not report a minimum amount of spending over the previous 12 months. Information on scanned consumer spending is available only with a pronounced lag, however, so we are not yet able to combine information from our survey responses with underlying spending decisions on the part of households.

Table 1 reports moments of initial beliefs and expectations reported by households. We present raw moments as well as "robust" moments controlling for outliers using Huber (1964) robust methods, and we focus on the latter in our discussions. On average, households in April 2020 perceived an inflation rate of 2.6 percent and expected a lower inflation rate of 1.7 percent over the next 12 months, significantly lower than in other comparable survey waves of Nielsen panelists (e.g., Coibion, Gorodnichenko, and Weber 2019, Coibion, Georgarakos et al. 2020). Inflation expectations and perceptions exhibit significant cross-sectional dispersion, with a standard deviation of close to 3 percent. This dispersion can also be seen in Figure 1, which plots the distribution of answers as well as the current value of the variable at the time of the survey (vertical line). Unlike in previous waves, households believed that the unemployment rate was nearly 10 percent in April and expected an even higher rate of unemployment 12 months later (nearly 11 percent). Disagreement about both current and future unemployment was also pervasive, as illustrated in panels C and D of Figure 1. Table 1 also reports households' perceptions of the current mortgage interest rate as well as their expectations for this interest rate at the end of 2020, the end of 2021, and over the longer horizon of three to five years. The average belief about the current mortgage rate was 3.6 percent, close to the average value of 3.3 percent on March 26, 2020, with households anticipating a very gradual increase in mortgage rates over the next three to five years.[2] As illustrated in panels E and F of Figure 1,

[2]The survey is conducted over mortgage lenders originating loans in the United States. See FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/MORTGAGE30US.

Table 1. Descriptive Statistics

	Huber-Robust Moments		Raw Moments		
	Mean (1)	St. Dev. (2)	Mean (3)	Median (4)	St. Dev. (5)
Pre-treatment Data					
Perceived Inflation, Previous 12 Months	2.61	2.47	4.67	3.00	10.00
Expected Inflation, Implied Mean, 12-Month Ahead	1.66	3.26	1.70	1.29	5.81
Perceived Unemployment Rate, Current	9.79	6.77	12.66	10.00	9.58
Expected Unemployment Rate, 12-Month Ahead	10.64	6.53	13.10	10.00	9.04
Expected Unemployment Rate, in 3–5 Years	6.08	3.54	9.50	6.00	7.93
Expected Household Income Growth, 12-Month Ahead	—	—	−2.36	0.00	14.39
Perceived and Expected Mortgage Rate for a "Person Like You"					
Current	3.57	1.08	5.46	3.80	5.64
End of 2020	3.55	1.38	5.79	4.00	6.11
End of 2021	4.09	1.42	6.24	4.00	6.00
Next 5–10 Years	4.61	1.56	7.25	5.00	7.98
Post-treatment Data					
Expected Inflation, Point Prediction, 12-Month Ahead	3.93	3.68	6.64	4.00	9.57
Expected Unemployment Rate, End of 2020	10.61	6.54	13.20	10.00	9.18
Expected Unemployment Rate, Next 3–5 Years	5.32	2.88	8.93	5.00	7.93
Expected Household Income Growth, 12-Month Ahead	0.52	1.71	1.04	0.00	17.77
Perceived and Expected Mortgage Rate for a "Person with Excellent Credit"					
Current	3.63	1.21	5.62	4.00	5.97
End of 2020	3.72	1.47	5.96	4.00	6.16
End of 2021	4.16	1.41	6.32	4.00	6.10
Next 5–10 Years	4.57	1.53	6.57	5.00	5.93

Note: Pre-treatment expected inflation (12 months ahead) is computed as mean implied from the reported probability distribution over a range of bins. All other measures of inflation are reported as point predictions. Perceived and expected mortgage rates are elicited for "a person like you" at the pre-treatment stage and for "someone with excellent credit" at the post-treatment stage. Moments in columns 1 and 2 are computed using the Huber-robust method. Because many households report zero changes in household income, the Huber method to compute moments robust to outliers does not converge and hence robust moments are not available for pre-treatment expectations for household income growth.

Figure 1. Perceptions and Expectations

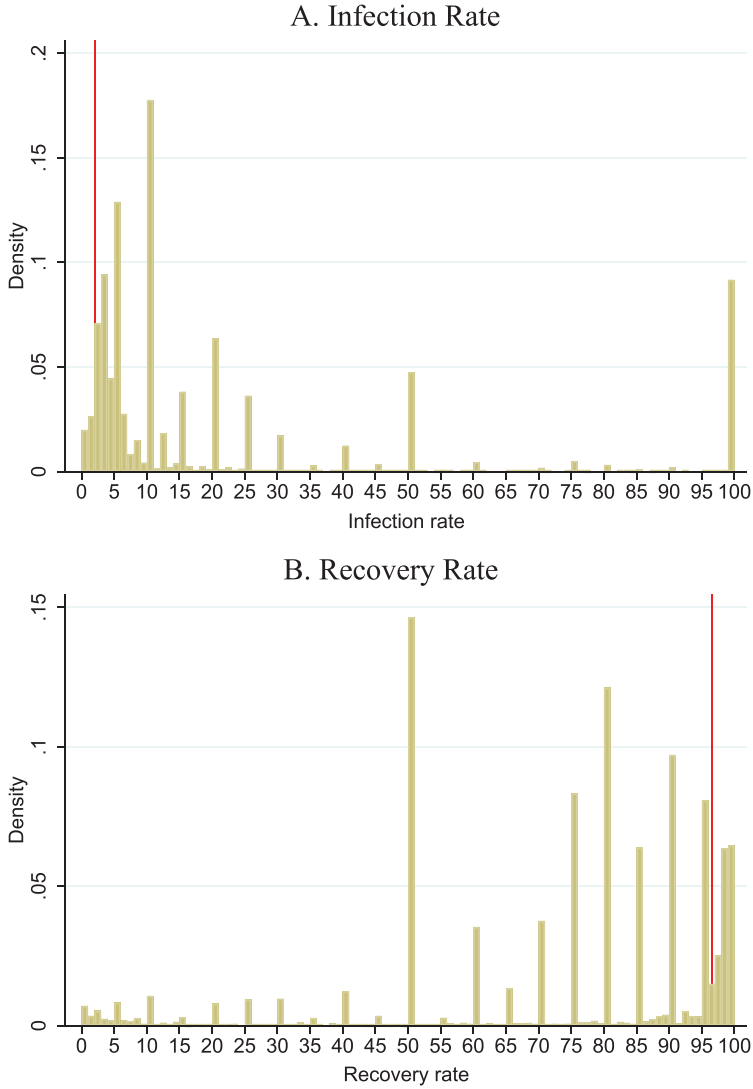
Note: Each panel plots the distribution of pre-treatment beliefs in the Nielsen household panel. The red, vertical line shows the current value of the corresponding variable at the time of the survey (for figures in color, see online version at http://www.ijcb.org). Panels A, C, and E report perceptions of current values. Panels B, D, and F report one-year-ahead forecasts.

however, there is significant disagreement across households about the path of future interest rates.

Respondents were also asked questions about COVID-19. First, we asked them about the infection rate, i.e., how many uninfected people might be expected to be infected by one person carrying the virus. As panel A of Figure 2 documents, households reported a wide range of answers, with many answering 100 or more. Very few gave answers close to the WHO's estimate of an infection rate of 2, suggesting that most households significantly over-estimated how contagious the virus actually is. Second, they were asked about how lethal the virus is. Specifically, we asked them how likely a person was to survive after having been infected with the virus, i.e., the recovery rate. We plot responses to this question in panel B of Figure 2. Again, the range of answers provided by households is enormous, with a recovery rate of 50 percent being the most commonly provided answer, nowhere near the answer of 96–97 percent provided by the WHO. We conclude that, consistent with Binder (2020) and Fetzer et al. (2020), households were very uninformed about the actual contagiousness and danger of the disease, with most households being far more pessimistic about the disease than health authorities.

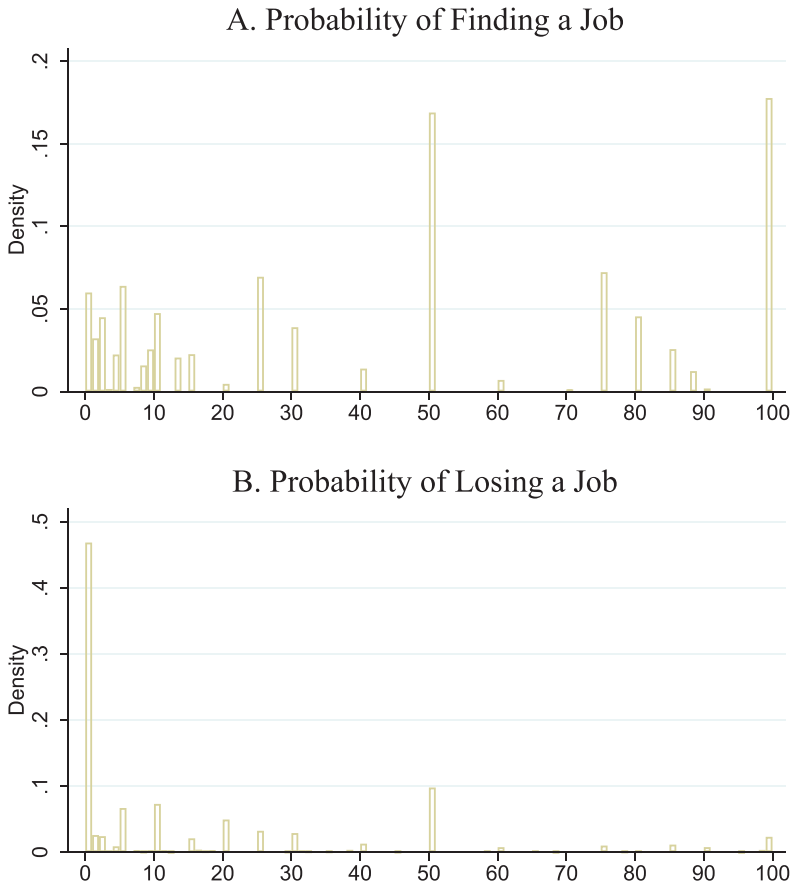
Finally, respondents were also asked about expectations about their own economic situation. For example, we asked them to report how they expected their income to change over the next 12 months. As reported in Table 1, the raw average was –2.4 percent, again masking significant variation (cross-sectional standard deviation of 14 percentage points). In addition, we asked respondents to tell us whether they were currently employed. Those reporting being employed were then asked about the probability of losing their jobs over the next 12 months. Panel B of Figure 3 plots the resulting distribution of answers. Most respondents report a probability very close to or equal to 0 percent, indicating limited concerns about losing their jobs. For those reporting that they were not currently employed but are looking for a job (approximately 7 percent of respondents), we asked them about the probability of finding a job over the next 12 months. As illustrated in panel A of Figure 3, answers were extremely dispersed. While some report probabilities of finding a job close to 100 percent, almost as many report a probability of just 50 percent and 32 percent report a probability of 10 percent or less.

Figure 2. Distribution of Beliefs about How Contagious and Fatal the COVID-19 Virus Is



Note: Panel A: Infection rate is measured as the response to the following question: "Think of a person who has the coronavirus. How many non-infected people do you think will catch the virus from this person?" The response is winsorized at 100. Panel B: The recovery rate is measured as the response to the following question: "If a person contracts coronavirus, what do you think is the probability that this person recovers from the virus? Please enter a number between 0 (Do not recover) and 100 (Recover for sure)." In each panel, the red, vertical line shows the estimates provided by the World Health Organization.

Figure 3. Subjective Probabilities for Labor Market Transitions



Note: The histograms plot distribution of perceived probabilities of finding a job (panel A) and losing a job (panel B). Both panels report data for the control group only. Panel A is only for people who are unemployed (don't have a job and look for a job). Panel B is only for people who have a job.

2.2 Treatments

After being asked this initial set of questions, respondents were then randomly assigned to one of multiple treatments groups. The first group is the control group, which does not get any information.

Table 2. Summary of Treatments

Treatment	Health Information Is Provided (Basic COVID-19 Facts about Recovery and Contagion Rates)	Policy Response Is Provided
T1 (Control)	No	No
T2	No	Fed Actions
T3	No	Congress Actions
T4	No	Fed and Congress Actions
T5	No	Health Officials (CDC Recommendations and the Prevalence of Shelter-in-Place Orders)
T6	Yes	No
T7	Yes	Fed Actions
T8	Yes	Congress Actions
T9	Yes	Fed and Congress Actions
T10	Yes	Health Officials (CDC Recommendations and the Prevalence of Shelter-in-Place Orders)

However, they still receive the same set of follow-up questions which allow us to measure any change in their expectations for comparison to treatment groups. Even though they are not provided with information, we may still observe changes in expectations because the wording of questions pre- and post-treatment is generally different, a strategy we employ to avoid respondents leaving the survey if they are being asked the same questions twice. For example, inflation expectations are initially measured using a distributional question, while posterior beliefs are measured by respondents being asked to provide a point estimate. Because the wording of questions can lead to some differences in answers, having the control group answering both sets of questions allows us to control for any effect that different wording may induce.

Respondents not assigned to the control group were randomly placed in one of nine groups, as summarized in Table 2. These nine groups differ first in terms of whether they received information about the COVID-19 virus, and second in terms of whether they were provided with additional information about fiscal, monetary, or

health policies of the government. With respect to the information about the virus, approximately half of non-control group participants received the information about the virus (treatment groups 6–10), while the other half did not (treatment groups 2–5). The specific wording used in providing the WHO information about the virus to treatment groups 6–10 was as follows:

> According to official estimates of the World Health Organization for these rates: The recovery rate from the coronavirus is approximately 96–97 percent (that is, there is 96–97 in 100 chance to recover). Approximately 2 non-infected people will catch the coronavirus from a person who has the coronavirus.

In addition to the possibility of being treated with information about the severity of the COVID epidemic, households could also randomly be treated with information about the fiscal policy response (treatment groups T3 and T8), the monetary policy response (treatment groups T2 and T7), both (treatment groups T4 and T9), neither (control group T1 and treatment group T6), or the recommendations from health officials (treatment groups T5 and T10). For each type of policy treatment, we therefore have two treatment groups: one that also received the information treatment vis-à-vis the severity of the disease and one that only received the policy treatment. The objective of this exercise is to measure the effectiveness of policy communication when background information is also provided. This feature of our survey is a key innovation relative to previous research that studies the effects of information provision on expectations such as Coibion, Georgarakos et al. (2020) that treat households with forward guidance by the Federal Reserve. Treatments about the path of future interest rates as in Coibion, Georgarakos et al. (2020) allow clean identification of treatments on revisions of expectations but possibly do not provide all necessary information to policymakers that are interested in the response of households to *endogenous* policy actions. In the context of forward guidance, for example, one might want to study the effect of providing information on future interest rates with conditional statements typically used by the Federal Reserve such as "until the unemployment rate falls below x%." We build on this work by providing real-world

information treatments that explicitly identify endogenous policy actions.

The specific, truthful policy treatments that we consider are as follows. The monetary policy treatment is given by the following quote:

> In response to the COVID-19 crisis, the Federal Reserve reduced short-term interest rates to zero and implemented additional measures similar to what it did during the last recession.

The fiscal policy treatment is given by the following:

> In response to the COVID-19 crisis, the Congress approved a $2 trillion package to stimulate the economy, including one-time $1,200 checks per person (plus another $500 per child) to persons with annual income less than $75,000. Couples who filed jointly and made less than $150,000 will get a one-time $2,400 check (plus another $500 per child).

The joint monetary and fiscal treatment is as follows:

> In response to the COVID-19 crisis, the Federal Reserve reduced short-term interest rates to zero and implemented additional measures similar to what it did during the last recession. In addition, the Congress approved a $2 trillion package to stimulate the economy, including one-time $1,200 checks per person (plus another $500 per child) to persons with annual income less than $75,000. Couples who filed jointly and made less than $150,000 will get a one-time $2,400 check (plus another $500 per child).

The health recommendation treatment is as follows:

> The U.S. government health officials encourage social distancing, avoiding discretionary travel, and working remotely. Three in four Americans are in areas with local governments declaring "shelter in place" (lockdown).

If provided, these information bits about policy responses appear immediately after the WHO health facts. Note that both the fiscal and monetary treatments (as well as the joint monetary–fiscal treatments) explicitly tie the policy response to the COVID-19 crisis, indicating that these are *endogenous* policy responses unlike

the *exogenous* shocks proposed to households in Andre et al. (2019). Consistent with random assignment of treatments, we find (Table A.1 in the online appendix at http://www.ijcb.org) that treatment status is not predicted by personal/household characteristics.

3. Econometric Framework

To measure the effect of policy communications on households' beliefs and plans, we use the following specification as a baseline:

$$E_i^{post}(X) - E_i^{prior}(X) = \sum_{s=1}^{S} \beta_s \times Treatment_{s,i} + error, \qquad (1)$$

where i indexes respondents, X is an outcome variable, $E_i^{post}(\cdot)$ and $E_i^{prior}(\cdot)$ are post-treatment ("posterior") and pre-treatment ("prior") beliefs of respondent i about variable X and $Treatment_{s,i}$ is an indicator variable equal to one if respondent i received treatment s and zero otherwise. The β_s coefficients provide an estimate of the average effect of each treatment on the revision in beliefs. Although one may expect that β for the control group is equal to zero, differences in the wording of the pre- and post-treatment questions, mean reversion in the responses, and the like can generate non-zero belief revision for the control group. We will therefore report $\hat{\beta}$ for a treatment group relative to $\hat{\beta}$ for the control group.

While specification (1) provides a useful summary of information treatments on the beliefs, it may give an incomplete picture of how treatments influence beliefs if the provided signals happen to be in the middle of the distribution for prior beliefs. For example, if households believe on average that inflation will be 2 percent, treating households with a 2 percent inflation projection prepared by professional forecasters will not move the average belief in the treatment group, but it should make the posterior distribution more concentrated on 2 percent by moving beliefs of those who initially predicted inflation other than 2 percent closer to 2 percent after the treatment. While our treatments do not have a numeric forecast and so it is hard to assess whether provided information is in the middle or tail of prior distributions, we can nonetheless utilize an alternative specification to measure this more subtle adjustment of beliefs:

$$E_i^{post}(X) = \sum_{s=1}^{S} \beta_s \times Treatment_{s,i} + \sum_{s=1}^{S} \gamma_s \times Treatment_{s,i} \times E_i^{prior}(X) + error. \quad (2)$$

In this specification, βs and γs measure "level" and "slope" effects of treatments, respectively. If a signal happens to be above (below) the average pre-treatment belief, β should be positive (negative). As discussed in e.g., Coibion, Georgarakos et al. (2020), estimated slopes should be smaller for treated groups relative to the control group if respondents are Bayesian learners. If there is no difference in slopes between control and treatment groups, then the provided message is not informative for households. We will report $\hat{\beta}$ and $\hat{\gamma}$ for a treatment group relative to $\hat{\beta}$ and $\hat{\gamma}$ for the control group.

Specifications (1) and (2) utilize pre-treatment and post-treatment beliefs, but some survey responses are available only at the post-treatment stage. For these responses, we employ the following specification:

$$E_i^{post}(X) = \sum_{s=1}^{S} \beta_s \times Treatment_{s,i} + error. \quad (3)$$

Given that treatment assignment is random, specifications (1)–(3) do not require controls to account for respondents' heterogeneity to estimate treatment effects. Including controls only reduces standard errors and does not make material impact on our estimates (results are available upon request). To keep our analysis simple, we thus do not include controls in the reported results. To attenuate the adverse effects of extreme survey responses and, more generally, influential observations on our estimates, we winsorize data at the bottom and top 1 percent, drop implausible values (e.g., mortgage rates greater than 40 percent), and estimate specifications (1)–(3) using Huber (1964) robust regressions. Huber-robust regressions differ from using winsorized data in standard regressions because they also take correlations across variables into account.

4. Results

Using these empirical specifications, we now turn to how treatments affect households' beliefs and plans. We discuss each of these in turn.

4.1 Macroeconomic Expectations

Modern macroeconomic theory emphasizes the central role of expectations and the power of communicating policy actions to economic agents. Indeed, credible announcements about current or future policy are predicted to have large effects on perceptions and expectations about macroeconomic variables and thus influence firms' and households' choices. We now examine whether informing households about COVID-19 facts as well as policy actions taken in response by various government bodies can move households' expectations.

Table 3 reports results for specification (1). We generally find that the average size of belief revisions in the control group is economically small, with the only exception being inflation expectations (column 1). The large revision for inflation expectations reflects the fact that the pre-treatment expectations are elicited via a distribution question with pre-set upper and lower bounds at +/–12 percent similar to the wording in the Federal Reserve Bank of New York's Survey of Consumer Expectations, while post-treatment expectations are collected as point predictions.

We find that informing households about COVID-19 recovery (opposite of fatality) and contagion rates (treatment T6) generally has no material effect on expectations for inflation (column 1), the unemployment rate (columns 2 and 3), mortgage rates (columns 4–7), or households' expected income growth. Note that the vast majority of households is overly skeptical about the COVID-19 recovery and contagion rates and therefore this treatment presents a clear, one-sided surprise for households. While the estimated coefficients are statistically significant for the current mortgage rate and expected household income growth, the economic significance of these effects is very small. For example, this information treatment lowers households' expected income growth by 0.094 percentage point, which is smaller relative to the standard deviation of the belief revision in the control group (0.906 percentage point; column 8, bottom row, Table 3) by an order of magnitude. Our results are in line with the findings in Binder (2020) and Fetzer et al. (2020), who also document that randomized provision of COVID-19 health facts has at most a very modest (if any) effect on economic (personal or aggregate) expectations. These results are consistent with two views. One is that households are unable to

Table 3. Macroeconomic and Household-Level Expectations

Treatment	Health Info Is Provided	Policy Response Is Provided	Inflation (1)	Unemployment Rate: Short Run (2)	Unemployment Rate: Long Run (3)	Mortgage Rate: Current (4)	Mortgage Rate: End of 2020 (5)	Mortgage Rate: End of 2021 (6)	Mortgage Rate: In 3–5 Years (7)	Household Income Growth (8)
T1	No	No (Control Group)	2.442***	−0.024	−0.300***	0.003*	0.131***	0.064***	−0.007	0.124***
			(0.138)	(0.101)	(0.044)	(0.002)	(0.017)	(0.020)	(0.017)	(0.023)
	Relative to Control Group									
T2	No	Fed Actions	−0.691***	0.166	−0.034	−0.003	−0.084***	0.032	0.019	0.011
			(0.190)	(0.140)	(0.064)	(0.002)	(0.025)	(0.029)	(0.024)	(0.033)
T3	No	Congress Actions	0.360*	0.348**	0.089	−0.003	−0.032	0.025	−0.002	−0.076**
			(0.194)	(0.141)	(0.063)	(0.002)	(0.024)	(0.028)	(0.023)	(0.031)
T4	No	Fed and Congress Actions	−0.291	0.396***	−0.064	−0.005**	−0.074***	0.023	−0.003	−0.006
			(0.191)	(0.140)	(0.062)	(0.002)	(0.024)	(0.029)	(0.024)	(0.033)
T5	No	Health Officials	0.179	0.280**	0.016	−0.005**	−0.008	0.013	0.008	−0.043
			(0.195)	(0.138)	(0.063)	(0.002)	(0.025)	(0.029)	(0.023)	(0.033)
T6	Yes	No	−0.183	−0.056	0.061	−0.006***	−0.004	0.032	−0.004	−0.094***
			(0.190)	(0.138)	(0.060)	(0.002)	(0.024)	(0.028)	(0.023)	(0.030)
T7	Yes	Fed Actions	−0.137	0.250*	−0.081	−0.002	−0.062**	−0.056*	−0.031	0.020
			(0.196)	(0.142)	(0.063)	(0.002)	(0.025)	(0.029)	(0.025)	(0.034)
T8	Yes	Congress Actions	−0.253	−0.021	−0.060	−0.006***	0.042*	0.053*	0.020	−0.106***
			(0.190)	(0.139)	(0.065)	(0.002)	(0.025)	(0.029)	(0.023)	(0.032)
T9	Yes	Fed and Congress Actions	−0.000	0.050	−0.182***	−0.004*	−0.068***	−0.016	−0.038	0.033
			(0.192)	(0.142)	(0.063)	(0.002)	(0.024)	(0.029)	(0.024)	(0.034)
T10	Yes	Health Officials	−0.371**	−0.035	−0.022	−0.001	−0.027	−0.002	−0.010	−0.014
			(0.186)	(0.142)	(0.063)	(0.002)	(0.024)	(0.029)	(0.024)	(0.033)
Observations			12,248	11,716	11,412	8,433	11,389	11,639	11,302	9,351
R-squared			0.003	0.002	0.002	0.001	0.003	0.002	0.001	0.003
St. Dev. of Dep. Variable in Control Group			4.912	3.869	1.687	0.0720	0.645	0.743	0.640	0.906

Note: The table reports Huber-robust estimation of specification (1) for macroeconomic expectations. All dependent variables are measured in percent. Revisions in inflation expectations are measured as post-treatment inflation forecast prediction minus pre-treatment implied-mean inflation forecast. Inflation expectations is at the one-year horizon. Revisions in short-run unemployment expectations are measured as post-treatment unemployment rate expected at the end of 2020 minus pre-treatment one-year-ahead forecast of the unemployment rate. Revisions in long-run unemployment expectations are measured as post-treatment unemployment rate expected at the next three to five years minus pre-treatment unemployment rate expected in the three to five years. Revisions in mortgage rate expectations (perceptions) are measured as post-treatment expected mortgage rate for "a person with excellent credit" minus pre-treatment expected mortgage rate for "a person like you." Revision in household expected income is measured as post-treatment expectations (one year ahead; "How much higher or lower do you think your household's total net income will be over the next 12 months compared to the last 12 months? Please provide an answer in percentage terms.") minus pre-treatment expectations (one year ahead; "How much higher or lower do you think your household's total after-tax (i.e., 'take home') income will be over the next 12 months compared to the last 12 months? Please provide an answer in percentage terms."). Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 1 percent, 5 percent, and 10 percent level, respectively.

interpret health facts in a macroeconomic context, that is, they cannot draw a connection between the severity of COVID-19 and macroeconomic outcomes. The second viewpoint is that households believe that COVID-19 does not influence economic outcomes. This alternative view is unlikely to be empirically relevant. For example, Coibion, Gorodnichenko, and Weber (2020) document that households attribute pervasive, large losses in their income and wealth to the COVID-19 outbreak and that they are highly concerned about their financial situation because of the COVID-19 pandemic. Thus, we interpret this result as implying that households are unable to quickly draw connections between the severity of the disease and macroeconomic outcomes. One implication of this is that policy responses which focus on communicating about the disease and its health consequences cannot be expected to significantly affect households' economic expectations. Health communications cannot be a substitute for economic communications unless it clearly communicates how these health facts are relevant for individuals and the broader economy.

Appraising households of the Federal Reserve's actions (treatment T2) *lowers* inflation expectations by 0.7 percentage point. While one might have expected to see an increase in households' inflation expectations in response to this policy, our finding is consistent with Coibion, Georgarakos et al. (2020) documenting a positive co-movement of inflation and interest rate expectations unconditionally and in response to treatments with numeric inflation/interest rate information. Specifically, when the Fed lowers interest rates, households lower their inflation expectations, which could capture an "information effect" of policy announcements. Also in agreement with Coibion, Georgarakos et al. (2020), our estimates suggest that households do not believe in the ability of the Fed to influence the unemployment rate: treatment T2 has no discernable effect on the expected unemployment rate in either the short or long run (columns 2 and 3 in Table 3, respectively). Nor do we find any economic effect on the mortgage rate expectations: the estimated coefficients are close to zero. This result suggests that, given how low mortgage rates were by historical standards before the COVID-19 crisis, households may view the Fed's power to lower mortgage rates even further as limited. Finally, households do not observe a connection between monetary policy and their income growth. This latter

result suggests that indirect effects of monetary policy on income expectations are weak in household surveys contrary to theoretical predictions in Heterogeneous Agent New Keynesian (HANK) models.

In contrast, informing households about the fiscal policy response ("Congress actions"; treatment T3) raises inflation expectations modestly by 0.3 percentage point. Interestingly, this treatment also raises short-run expectations for the unemployment rate (column 2) by a similar magnitude. This positive co-movement of inflation and unemployment ("stagflation") is consistent with Kamdar (2018): households tend to view high inflation as positively associated with high unemployment. It is also in line with the simple affective heuristic proposed in Andre et al. (2019). However, this fiscal policy action does not move households' longer-run expectations for the unemployment rate (column 3) or mortgage rate expectations (columns 4–7). Strikingly, although the fiscal policy action involves a direct transfer to households (which we provide in the treatment) and the vast majority of households participating in the survey qualify for these transfers, households do not view this policy as having a materially important effect on their expected income growth. In fact, the estimated coefficient is negative (column 8), again suggesting a potential information effect.

When we tell households about the fiscal *and* monetary policy response (treatment T4), the estimated responses are roughly a mix of responses to treatments T2 and T3. We do not observe any evidence suggesting that the policies reinforce each other. Similar to T2 and T3, treatment T4 does not generate economically large responses of macroeconomic expectations. This finding is particularly remarkable given that policy responses are enormous by historical standards and yet the American public treats these as largely irrelevant for the economy.

Treating people with information about good practices and the share of people under shelter-in-place orders (treatment T5) similarly has no noticeable effect on macroeconomic expectations. One might expect this treatment to have a pronounced effect on macroeconomic expectations if (i) households were not fully aware of how nationally pervasive lockdown orders were at the time and (ii) if households believed that lockdowns significantly affected economic activity. While we do not observe individuals' prior beliefs about

the share of the U.S. population under lockdown at the time and therefore cannot test (i) directly, the fact that households were so uninformed about the recovery rates and transmission rates of the disease suggests that they were unlikely to be significantly more informed about lockdown policies. Thus, we interpret our finding of no effect from the health policy information treatment on households' macroeconomic expectations as indicative that they did not perceive lockdowns as very costly in economic terms.

One might anticipate that combining information on policy responses with health information on the severity of COVID-19 (treatments T7–T10) could alter how households translate policy responses into macroeconomic expectations. While we fail to find any marked difference in the responses of expectations for unemployment, mortgage rates, and income growth, we do observe several interesting facts for inflation expectations. First, the effect of the Fed's actions is considerably mitigated: when households were informed about the Fed policy response, they lowered their inflation expectations, but when households are also informed that COVID-19 is not as bad as they thought, the deflationary effect of the Fed policy response is largely gone (and is similar to the effect in response to information about only the recovery and contagion rates of COVID-19). Second, while the fiscal policy response ("Congress actions") raised inflation expectations, combining this response with health information lowers inflation expectations (although the effect is not statistically significant). Finally, providing information about COVID-19 recovery/contagion rate and information about CDC recommendations and the share of people under lockdown orders *lowers* inflation expectations. These results suggest that the broader context is important for inflation but other macroeconomic expectations are largely insensitive to information about health facts or policy responses.

To further explore the effect of treatments on macroeconomic expectations, we report estimated effects for specification (2) in Table 4 and visualize the distribution of post- and pre-treatment beliefs in Figures A.1–A.7 in the appendix. Column 1 of the table shows the results for inflation expectations. Note that the slope for the control group is 0.3 (rather than approximately 1) and the average revision (intercept) is 3.9 (rather than 0) because of the differences in the pre-treatment and post-treatment questions eliciting

Table 4. Macroeconomic and Household-Level Expectations (slope specification)

Health Info Is Provided	Policy Response Is Provided	Inflation (1)	Unemployment Rate		Mortgage Rate				Household Income Growth (8)
			Short Run (2)	Long Run (3)	Current (4)	End of 2020 (5)	End of 2021 (6)	In 3–5 Years (7)	
Intercept									
No	No (Control Group); T1	3.944***	1.496***	0.372***	0.002	0.252***	0.176***	0.104***	0.144***
		(0.122)	(0.157)	(0.074)	(0.001)	(0.028)	(0.034)	(0.032)	(0.027)
Relative to Control Group									
No	Fed Actions; T2	−0.668***	−0.311	0.173*	−0.003	−0.083**	−0.005	−0.021	0.020
		(0.165)	(0.207)	(0.102)	(0.002)	(0.040)	(0.045)	(0.041)	(0.038)
No	Congress Actions; T3	−0.018	−0.375*	−0.217**	−0.002	−0.069*	0.010	−0.046	0.112***
		(0.173)	(0.211)	(0.102)	(0.002)	(0.038)	(0.045)	(0.040)	(0.043)
No	Fed and Congress Actions; T4	−0.445***	−0.265	0.445***	−0.003	−0.145***	0.017	−0.059	−0.007
		(0.168)	(0.213)	(0.101)	(0.002)	(0.037)	(0.047)	(0.041)	(0.038)
No	Health Officials; T5	−0.104	−0.246	0.549***	−0.004**	−0.046	−0.008	0.015	−0.051
		(0.174)	(0.213)	(0.103)	(0.002)	(0.039)	(0.046)	(0.044)	(0.038)
Yes	No; T6	−0.483***	−0.363*	−0.364***	−0.005**	−0.098***	−0.038	−0.068*	−0.110***
		(0.167)	(0.208)	(0.096)	(0.002)	(0.036)	(0.043)	(0.039)	(0.036)
Yes	Fed Actions; T7	−0.300*	0.005	0.642***	0.000	−0.097**	−0.095**	−0.054	0.105**
		(0.172)	(0.215)	(0.102)	(0.002)	(0.039)	(0.045)	(0.044)	(0.044)
Yes	Congress Actions; T8	−0.640***	−0.209	0.496***	−0.005***	−0.005	0.033	−0.008	−0.127***
		(0.166)	(0.214)	(0.106)	(0.002)	(0.038)	(0.045)	(0.041)	(0.038)
Yes	Fed and Congress Actions; T9	−0.652***	−0.156	−0.183*	−0.003	−0.103***	−0.059	−0.054	0.031
		(0.168)	(0.219)	(0.104)	(0.002)	(0.038)	(0.044)	(0.042)	(0.039)
Yes	Health Officials; T10	−0.617***	0.046	0.762***	−0.000	−0.068*	0.058	−0.043	−0.015
		(0.171)	(0.223)	(0.096)	(0.002)	(0.037)	(0.051)	(0.043)	(0.039)

(*continued*)

Table 4. (Continued)

Health Info Is Provided	Policy Response Is Provided	Inflation (1)	Unemployment Rate: Short Run (2)	Unemployment Rate: Long Run (3)	Mortgage Rate: Current (4)	Mortgage Rate: End of 2020 (5)	Mortgage Rate: End of 2021 (6)	Mortgage Rate: In 3–5 Years (7)	Household Income Growth (8)
				Slope					
No	No (Control Group); T1	0.300***	0.849***	0.887***	1.000***	0.970***	0.975***	0.977***	1.000***
		(0.024)	(0.013)	(0.011)	(0.000)	(0.005)	(0.006)	(0.006)	(0.002)
	Relative to Control Group								
No	Fed Actions; T2	−0.124***	0.043**	−0.042***	0.000	0.001	0.009	0.010	−0.003
		(0.032)	(0.017)	(0.015)	(0.000)	(0.008)	(0.008)	(0.007)	(0.003)
No	Congress Actions; T3	0.033	0.073***	0.058***	0.000	0.008	0.003	0.010	−0.484***
		(0.034)	(0.018)	(0.014)	(0.000)	(0.008)	(0.008)	(0.007)	(0.008)
No	Fed and Congress Actions; T4	−0.046	0.062***	−0.095***	0.000	0.018***	0.001	0.013**	−0.001
		(0.033)	(0.017)	(0.014)	(0.000)	(0.006)	(0.009)	(0.007)	(0.003)
No	Health Officials; T5	0.016	0.051***	−0.116***	0.000*	0.008	0.005	−0.000	−0.003
		(0.036)	(0.018)	(0.015)	(0.000)	(0.008)	(0.008)	(0.008)	(0.003)
Yes	No; T6	−0.007	0.030*	0.075***	0.000	0.023***	0.017**	0.014**	−0.003
		(0.033)	(0.018)	(0.013)	(0.000)	(0.006)	(0.007)	(0.006)	(0.003)
Yes	Fed Actions; T7	−0.102***	0.020	−0.149***	0.000	0.009	0.009	0.005	−0.369***
		(0.033)	(0.018)	(0.015)	(0.000)	(0.007)	(0.008)	(0.008)	(0.008)
Yes	Congress Actions; T8	0.077**	0.038**	−0.114***	0.000*	0.013*	0.005	0.008	−0.004
		(0.033)	(0.018)	(0.015)	(0.000)	(0.007)	(0.008)	(0.007)	(0.003)
Yes	Fed and Congress Actions; T9	0.009	0.016	0.005	0.000	0.008	0.011	0.005	−0.006*
		(0.034)	(0.018)	(0.015)	(0.000)	(0.007)	(0.008)	(0.007)	(0.003)
Yes	Health Officials; T10	0.085**	−0.024	−0.165***	0.000	0.012*	−0.012	0.008	−0.002
		(0.034)	(0.019)	(0.013)	(0.000)	(0.006)	(0.009)	(0.007)	(0.003)
Observations		12,048	10,012	11,186	7,977	11,314	11,504	11,173	9,598
R-squared		0.147	0.866	0.913	1.000	0.976	0.969	0.977	0.982
St. Dev. of Dep. Variable in Control Group		4.344	8.554	5.739	4.102	3.619	3.856	3.264	9.185

Note: The table reports Huber-robust estimation of specification (2) for macroeconomic expectations. All dependent variables are measured in percent. See notes to Table 3 for definitions of variables. Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 1 percent, 5 percent, and 10 percent level, respectively.

inflation expectations (distribution versus point prediction). Relative to this benchmark, we find that the estimated "level" effects (i.e., coefficients β in specification (2)) tend to be negative. These results suggest that the received signals are interpreted by households as providing information that is below the average initial beliefs of households. At the same time, the slope effects tend to be close to zero in economic terms, although some coefficients are statistically different from zero. Therefore, the treatments generally shift the distribution of inflation expectations to the left without a discernible change in the cross-sectional variation in expectations. Interestingly, while some information treatment may be conceived as disinflationary, the monetary and fiscal policies that employed a wide arsenal of tools to fight the COVID-19 crisis are hardly disinflationary by themselves. This reaction to treatments thus appears to be consistent with significant information effects, that is, households could interpret strong policy responses as signaling a confirmation of an economic catastrophe.

Short-term unemployment rate expectations (column 2 of Table 4) show little "level" or "slope" reaction to the treatments. In contrast, longer-term expectations (column 3) have some variation in the "level" effect, ranging from a 0.762 percentage point increase for treatment T10 (COVID facts and health information) to a −0.364 percentage point decrease for treatment T5 (COVID facts only). The slope effects are generally negative, suggesting some compression in the post-treatment disagreement across respondents. Consistent with the results in Table 3, we find no material "level" or "slope" response in expectations for mortgage rates (columns 4–7 of Table 4). Similarly, there is generally little variation in response to treatments for households' income growth (column 8 of Table 4).

In summary, our results suggest that while inflation expectations have some limited sensitivity to information treatments, other macroeconomic expectations (especially, expectations for mortgage rates) do not exhibit any discernible reaction to the provided information. Given that households are (on average) poorly informed about macroeconomic policies or health facts and that the benefits of having access to information about the enormous policy responses as well as health facts are predicted to be high by mainstream macroeconomic theory, this weak (if any) reaction to the information treatments is indeed striking.

4.2 Labor Market Expectations

We now consider how these treatments affect households' expectations for their labor market outcomes, specifically the probability of keeping their job if employed and the probability of finding a job if unemployed. Because we do not have pre-treatment measures of these subjective probabilities, we use specification (3) to estimate the effect of information treatments on perceived labor market outcomes. We find (Table 5) that information treatments do not have a materially important effect on the subjective probability of losing a job (column 1): the estimated coefficients are small (fractions of a percentage point) and generally not significant statistically. In contrast, when it comes to how the unemployed perceive the probability of finding a job, the provision of COVID-19 facts (treatment T6) raises this perceived probability by 20 percentage points, a large effect. Interestingly, any other treatment, including treatments where information about COVID-19 facts is combined with information on policy responses, generate no statistically significant effect on the perceived probability of finding a job. This pattern appears to suggest two conclusions. First, households do not view policy responses as having an important effect on their labor market outcome. Second, providing basic COVID-19 facts appears to be helpful in making unemployed households less pessimistic about their labor market prospects—thus suggesting some role for information campaigns highlighting public health implications of the COVID-19 outbreak—but the information effect in the policy response seems to offset this positive effect.

4.3 Planned Consumer Spending

Coibion, Gorodnichenko, and Weber (2020) and Dietrich et al. (2020) document that, during the COVID-19 crisis, households significantly downgraded their plans to buy durable goods such as houses/apartments, cars, and large appliances. In part, the policy response to the crisis was aimed at making households more enthusiastic about purchases of durable goods. For example, policy interest rates where cut down to zero and new rounds of quantitative easing reduced mortgage rates, thus making the financial cost of durable purchases more enticing. However, it remains unclear to what extent

Table 5. Probability of Losing a Job or Finding a Job

Treatment	Health Info. Is Provided	Policy Response Is Provided	Probability of Losing a Job (1)	Probability of Finding a Job (2)
T1	No	No (Control Group)	0.961***	45.853***
			(0.088)	(3.909)
		Relative to Control Group		
T2	No	Fed Actions	0.245*	2.638
			(0.135)	(5.575)
T3	No	Congress Actions	0.086	−2.978
			(0.130)	(5.791)
T4	No	Fed and Congress Actions	−0.188	6.957
			(0.115)	(5.444)
T5	No	Health Officials	−0.071	−2.930
			(0.121)	(5.934)
T6	Yes	No	0.015	20.138***
			(0.125)	(6.125)
T7	Yes	Fed Actions	0.011	−1.574
			(0.126)	(5.678)
T8	Yes	Congress Actions	−0.030	2.962
			(0.125)	(5.691)
T9	Yes	Fed and Congress Actions	0.149	6.608
			(0.132)	(5.971)
T10	Yes	Health Officials	0.129	7.017
			(0.131)	(5.943)
Observations			5,084	894
R-squared			0.002	0.031
St. Dev. of Dep. Variable in Control Group			2.414	34.98

Note: The table reports Huber-robust estimation of specification (3) for expected labor market outcomes. All dependent variables are measured in percent ranging from 0 to 100. The sample for column 3 includes only employed (at the time of the survey) people. The sample for column 2 includes only unemployed (don't have a job and look for a job at the time of the survey) people. Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 1, 5, and 10 percent level, respectively.

these policies turned the tide of pessimism and encouraged purchases of new goods.[3] To gauge the influence of these policies on

[3]At the same time, historically low rates did generate a wave of mortgage refinances. According to information from the Mortgage Bankers Association, refinances increased to $1.5 trillion as of early May, a 51 percent jump compared to 2019.

consumer spending, we asked respondents at the post-treatment stage to report whether it is a good time to buy a durable good. Specifically, respondents can report their beliefs on a scale of 1 (very good time) to 5 (very bad time).

Using specification (3), we find (Table 6) that information treatments generally make households more positive about buying a house (the coefficients are negative), but the magnitude of the response is quite small. The largest responses are approximately −0.1 to −0.15, while the scale varies from 1 to 5 and the standard deviation of scores in the control group is approximately one. The views for car or appliance purchases in response to the treatments are more mixed, with some treatments resulting in less positive views and some treatments resulting in more positive views. However, the economic magnitudes remain rather small. These results suggest that although informing households about policies or health facts is somewhat helpful in improving consumer sentiment, the effects are modest at best, thus again pointing to limited effectiveness of information provision on economic outcomes.

4.4 Policy Approval

While consumers seem to not understand the economic implications of the policy responses, they may still appreciate the reaction of various government bodies to the crisis. To measure this potential effect, we ask respondents to rate the actions of the President, the Congress, the Federal Reserve, and U.S. health officials by answering the following question on a scale running from 0 (not helpful at all) to 10 (extremely helpful): "How much do you trust the actions taken by [GOVERNMENT BODY] will be helpful for you? And the overall American population?" Note that we ask households to assess the value of the actions for them personally and for the country as a whole so that we can get a metric—however imperfect—about the ability of households to grasp partial-equilibrium and general-equilibrium effects.

For the control group, U.S. health officials have the highest scores (the averages are 6.3 for the country and 6.1 for the respondent), followed by the Fed (5.6 for the country and 5.0 for the respondent), the President (4.9 for the country and 4.6 for the respondent), and then Congress (4.5 for the country and 4.3 for the respondent).

Table 6. Good Time To Buy a Durable Good

Treatment	Health Info. Is Provided	Policy Response Is Provided	House (1)	Car (2)	Appliance (3)
T1	No	No (Control Group)	3.023***	3.019***	3.031***
			(0.029)	(0.028)	(0.016)
	Relative to Control Group				
T2	No	Fed Actions	−0.003	0.074*	−0.023
			(0.040)	(0.040)	(0.024)
T3	No	Congress Actions	0.076*	0.138***	0.041*
			(0.040)	(0.040)	(0.024)
T4	No	Fed and Congress Actions	−0.106***	0.076*	−0.008
			(0.040)	(0.040)	(0.024)
T5	No	Health Officials	−0.112***	−0.119***	−0.096***
			(0.040)	(0.040)	(0.024)
T6	Yes	No	0.016	0.014	−0.063***
			(0.040)	(0.040)	(0.023)
T7	Yes	Fed Actions	0.002	0.047	−0.019
			(0.040)	(0.040)	(0.023)
T8	Yes	Congress Actions	−0.144***	0.016	−0.006
			(0.040)	(0.040)	(0.024)
T9	Yes	Fed and Congress Actions	0.053	0.081**	0.018
			(0.040)	(0.040)	(0.023)
T10	Yes	Health Officials	−0.054	0.088**	0.005
			(0.040)	(0.040)	(0.023)
Observations			13,761	13,761	13,210
R-squared			0.005	0.004	0.003
St. Dev. of Dep. Variable in Control Group			1.021	1.022	0.664

Note: The table reports Huber-robust estimation of specification (3) for whether it is a good time to buy a durable. All dependent variables are measured in percent ranging from 1 (very good time) to 5 (very bad time). Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 1, 5, and 10 percent level, respectively.

Households consistently perceive policy institutions as being better for the country than for them personally. At the same time, we observe a high correlation (ranging from 0.7 for the Fed to 0.9 for the President) between responses for personal and country-level implications and much weaker correlation between assessment for various government bodies (e.g., the correlation between personal effect from the President's actions and the Fed's actions is 0.3), thus suggesting that households differentiate actions of various government branches during the crisis.

Information treatments have highly heterogeneous effects on these scores. Using specification (3), we find (columns 1 and 2 of Table 7) that information about actual policies does not improve approval of the President's actions. If anything, treatments T2 (monetary policy) and T4 (monetary and fiscal policy) reduce the approval of the President's actions. These results are consistent with the view that respondents generally have strong priors about the President. In contrast, *every* treatment raises the appreciation of Congress. This includes treating households with information about monetary policy which is not controlled (at least directly) by the Congress. The Federal Reserve is viewed less positively when households are informed about monetary policy (treatment T2), but the Fed gets some credit for fiscal policy. The views on the actions of U.S. health officials are weakly improved by the treatments when respondents are informed about basic COVID-19 facts. The latter observation suggests that when households are told that COVID-19 is not as contagious and fatal as they think initially, they tend to credit U.S. health officials.

While treatment effects are statistically significant, the economic significance of the effects varies. For example, treatments can materially improve the image of Congress, while views on the President's actions appear to be rather unresponsive to the provided information. Thus, similar to the responses of macroeconomic expectations, consumer expenditure plans, and labor market expectations, the perceptions of policy effectiveness show some reaction to information treatments, but the effects range from zero to modest. This is again consistent with the notion that the general public is rather confused about the responsibilities of various government bodies as well as implications of the bodies' actions. Specifically, fiscal and monetary policies get fairly little credit.

Table 7. Policy Evaluation

Treatment	Health Info	Policy Info	How much do you trust the actions taken by the [government bank] will be helpful for {you, U.S.}?							
			President		Congress		Federal Reserve		Health Officials	
			You (1)	U.S. (2)	You (3)	U.S. (4)	You (5)	U.S. (6)	You (7)	U.S. (8)
T1	No	No (Control Group)	4.522***	4.875***	4.241***	4.641***	5.184***	5.798***	6.390***	6.645***
			(0.103)	(0.100)	(0.059)	(0.055)	(0.049)	(0.048)	(0.056)	(0.053)
	Relative to Control Group									
T2	No	Fed Actions	−0.263*	−0.294**	0.179**	0.258***	−0.212***	−0.004	0.001	−0.070
			(0.146)	(0.143)	(0.082)	(0.076)	(0.069)	(0.068)	(0.081)	(0.077)
T3	No	Congress Actions	0.059	−0.016	0.216***	0.165**	0.160**	0.066	0.035	−0.001
			(0.147)	(0.142)	(0.083)	(0.078)	(0.069)	(0.069)	(0.081)	(0.077)
T4	No	Fed and Congress Actions	−0.311**	−0.417***	0.279***	0.274***	−0.127*	0.084	−0.047	0.059
			(0.147)	(0.143)	(0.083)	(0.077)	(0.070)	(0.069)	(0.080)	(0.076)
T5	No	Health Officials	−0.169	−0.229	0.172**	0.168**	−0.044	−0.203***	0.073	0.041
			(0.147)	(0.143)	(0.082)	(0.077)	(0.069)	(0.066)	(0.080)	(0.076)
T6	Yes	No	−0.038	−0.069	0.180**	0.075	0.007	−0.006	0.100	0.118
			(0.147)	(0.143)	(0.081)	(0.076)	(0.068)	(0.068)	(0.079)	(0.075)
T7	Yes	Fed Actions	0.184	0.173	0.200**	0.336***	−0.071	0.167**	0.106	0.127*
			(0.145)	(0.142)	(0.083)	(0.078)	(0.069)	(0.069)	(0.080)	(0.076)
T8	Yes	Congress Actions	−0.064	−0.097	0.495***	0.405***	0.209***	0.191***	0.361***	0.279***
			(0.147)	(0.143)	(0.082)	(0.076)	(0.069)	(0.068)	(0.080)	(0.076)
T9	Yes	Fed and Congress Actions	0.003	−0.003	0.570***	0.570***	0.213***	0.293***	0.115	0.073
			(0.145)	(0.141)	(0.082)	(0.078)	(0.068)	(0.069)	(0.080)	(0.076)
T10	Yes	Health Officials	−0.045	−0.088	0.050	0.130*	−0.000	0.050	0.175**	0.164**
			(0.147)	(0.143)	(0.083)	(0.078)	(0.070)	(0.068)	(0.080)	(0.076)
Observations			13,521	13,521	13,473	13,467	13,346	13,299	13,423	13,376
R-squared			0.002	0.002	0.006	0.006	0.005	0.005	0.003	0.002
St. Dev. of Dep. Variable in Control Group			3.391	3.336	2.152	2.069	1.882	1.767	1.986	1.872

Note: The table reports Huber-robust estimation of specification (3) for political approval of policies implemented by various government bodies. All dependent variables are measured on the scale ranging from 0 (not helpful at all) to 10 (extremely helpful). Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 1 percent, 5 percent, and 10 percent level, respectively.

5. Discussion and Concluding Remarks

Understanding the way in which policy actions affect the economy has long been a challenge for macroeconomists. Standard models imply that households' expectations play a large role in driving these effects, as households incorporate the announcements into their expectations and their decisions. Our results challenge this key mechanism: we find little evidence that even large policy decisions have much of an effect on households' economic expectations or their planned actions. This result obtains for both monetary and fiscal policies during the COVID-19 crisis, and extends to some of the health recommendations made by the federal government as well.

This result is in the same spirit as recent work documenting pervasive inattention on the part of households and firms to monetary policy actions and announcements. However, it goes beyond inattention because we directly inform participants about recent and dramatic policy decisions, yet even this directly provided information has essentially no effect on household beliefs. Perhaps, cognitive constraints as modeled in Angeletos and Lian (2018), Farhi and Werning (2019), Woodford (2019), and Gabaix (2020) and the singular nature of COVID-19 limit the ability of households to reason through the implications of the pandemic and policy responses (see, e.g., Iovino and Sergeyev 2020 for an application of this notion to quantitative easing) and, as a result, inattention and cognitive constraints reinforce each other in dampening the response of beliefs and hence economic outcomes to policy announcements.

Another feature of our results that differs from prior work on inattention is the fact that our information treatments have little effect on households' macroeconomic expectations. Other work has documented that when households are told about recent inflation rates or the central bank's inflation target, their macroeconomic expectations change sharply (e.g., Coibion, Gorodnichenko, and Weber 2019). Here, our focus is on policy interventions involving monetary, fiscal, and health policies, none of which induce significant revisions in beliefs. Given the evidence from prior work that households' macroeconomic expectations respond strongly to simple information treatments during normal times, our results should not be driven by the possibility that households do not care about macroeconomic outcomes. Instead, they are judging that the

policy announcements do not change their macroeconomic outlooks. This could reflect a belief that policy interventions themselves are ineffective or a belief that the interventions are offsetting even more pronounced economic weakness than what they initially anticipated, i.e., the information effect cancels out the effect of the policy intervention on beliefs.

Our results are also distinct from and complementary to Andre et al. (2019), who study how households respond to *exogenous* fiscal and monetary policy actions: we explicitly describe the policy treatments as an *endogenous* response to the COVID-19 crisis. Taken together, these results point toward a world in which policy shocks have non-trivial effects on household expectations and actions while systematic policy decisions have much smaller (if any) effects, which is the complete opposite of what we tend to observe in standard macroeconomic models in which systematic policy is close to all-powerful while policy shocks have much smaller effects. We view this as a fundamental challenge to workhorse models used by macroeconomists in which the rapid and endogenous adjustment of household expectations is a key driver of macroeconomic outcomes.

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