Fiscal stimulus plans and households' inflation expectations*

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March 1, 2023

Abstract

[PRELIMINARY AND INCOMPLETE, PLEASE DO NOT QUOTE]

We assess the impact of large fiscal stimulus packages on households' inflation expectations in the United States. We use data from the New York Fed Survey of Consumer Expectations and assess how they have react to two announcements of major fiscal expansion through the sample in which the SCE is available: the 2017 tax break and the Covid-related support measures deployed in 2020. Results show that inflation expectations of households with higher education react positively to fiscal news, hence highlighting that these agents have a basic understanding of the key economic relationships linking inflation and economic activity.

Keywords: inflation expectations, households, fiscal news, stimulus package

JEL Codes: E30, E40, E50, E70

*We thank QQQ for useful comments.

†BIS and CEPR

‡BIS

§BIS

1 Introduction

Inflation expectations are a key variable for monetary policy. This is not only because their firm anchoring around central banks' inflation targets ensures that deviations can be quickly reabsorbed, but also because communication strategies aimed at steering them can give extra boost to monetary policy decisions. For that to happen, however, agents' expectations need to react consistently to policy decisions, and macroeconomic news more broadly.

There is a wide literature on the impact of monetary policy announcements on expectations. Evidence is particularly rich when it comes to evaluate the reaction of expectations elicited from financial markets' participants to monetary policy announcements. Much less explored is the reaction of households' expectations. One reason is that data has to be collected through surveys, and their coverage is much more limited that what can be inferred from financial prices. The literature focusing on household expectations can be broadly organised in two strands: one exploiting ad-hoc surveys in which participants are fed with information on monetary policy decisions, and one which uses regularly conducted surveys, for which the exposure to news about monetary policy is "natural", in the sense that respondents are not forced to read specific material, and instead have to fetch the news themselves (if so they wish), as they would do in real life.

In this latter strand of literature, most contributions so far (see Lamla and Vinogradov 2019, De Fiore, Lombardi and Schuffels 2021) point to a relatively limited and uncertain impact of monetary policy shocks, not only on inflation but on expectations more generally. One reason could be the limited understanding of households of basic economic mechanisms, such as the link between interest rates and inflation, consumption or unemployment, as captured by the workhorse macroeconomic models. A competing explanation is that households understand the basic forces behind macroeconomic developments but have limited reach of monetary policy news through the media they have access to. Indeed, some evidence show that monetary policy affects mostly highly-educated households, as well as those with a mortgage who may be more attentive to news that directly affect their income and spending

plans (De Fiore, Lombardi and Schuffels, 2022).

In this paper, we test households' understanding of the basic economic transmission mechanisms by considering announcements of large fiscal spending programs in the United States which affected households' finances directly and therefore attracted their attention. This is the case for the XXX policies, which [BRIEF DESCRIPTION OF THE TRANSFERS INVOLVED IN EACH OF THE MEASURES]. In addition, we capture the degree of households' attention to the specific announcement through a measure of google searches. Our working assumption is that households may pay more attention to news about fiscal spending that directly affect their finances than they do to monetary policy announcements. This enables us to test their understanding by measuring the impact of the announcements on their expectations.

We use data from the NY Fed Survey of Consumer Expectations (SCE henceforth) and assess how they have react to two announcements of major fiscal expansion through the sample in which the SCE is available: the 2017 tax break and the Covid-related support measures deployed in early 2020.

The rest of the paper is organised as follows. Section 2 puts our paper in perspective with the existing literature. Section 3 describes in detail our dataset and section 4 introduces our empirical strategy. Results are presented in section 5, and section 6 concludes.

2 Literature Review

TBD

3 Data

The Survey of Consumer Expectations is a monthly online survey conducted by the Federal Reserve Bank of New York, eliciting economic expectations among the U.S. population. The questions cover a wide range of macroeconomic as well personal financial expectations.

Participation in the survey is capped at 12 months, after which a respondent ceases to be surveyed. Outgoing respondents are being replaced on a rolling basis and new respondents are selected based on a stratified sampling procedure aiming to maintain a representative sample of the population in terms of its demographic and socioeconomic composition. Respondents who fail to respond to three consecutive modules are not invited to complete further survey modules. In total, between 1200 and 1400 respondents are surveyed each month since June 2013. The sample available at the time of our analysis runs until QQQ. **?** provide a comprehensive overview of the survey design.

Our analysis studies the reaction of economic expectations of SCE respondents to announcements of large fiscal stimulus plans. Table 1 contains information about the outcome variables employed in our analysis. The survey makes use of two different approaches to the measurement of economic expectations. Some variables, namely those on interest rates on savings accounts, aggregate unemployment and stock market expectations, are elicited by asking respondents about the probability they assign to an increase in the respective variable over the 12 months following the survey response. The other macroeconomic and personal financial variables (except unemployment) are elicited in terms of their expected growth rate over a specified time horizon. Expectations about personal unemployment in the 12 months following the survey response are instead elicited by asking for the expected probability of that event. For the exact wording of each question we refer to the second column of Table 1.

In terms of the fiscal announcements, we focus on two episodes that stand out, over the sample period covered by the survey of consumer expectations, not only for their relevance and media coverage, but also for its size: the 2017 tax cuts[1], as well as the stimulus checks

[1]Officially the *Tax Cuts and Jobs Act*, which was introduced on 2 November 2017 and became public law on 21 December 2017, for more information on the legislative process see: `https://www.congress.gov/bill/115th-congress/house-bill/1/actions`

Table 1: Overview Economic and Financial Expectations

Variable Name	arraybackslashSurvey Question	Time Coverage	Answer Range
Inflation Rate 12m	arraybackslashWhat do you expect the rate of inflation/deflation to be over the next 12 months?	2013/06-2019/03	$\mathbb{R}$
Inflation Rate 36m	arraybackslashWhat do you expect the rate of inflation/deflation to be between 24 and 36 months from now?	2013/06-2019/03	$\mathbb{R}$
Lose Job 12m	arraybackslashWhat do you think is the percent chance that you will lose your main/current job during the next 12 months?	2013/06-2019/03	0-100%
Household Spending 12m	arraybackslashBy about what percent do you expect your total household spending to increase/decrease?	2013/06-2019/03	$\mathbb{R}$
Household Income 12m	arraybackslashOver the next 12 months, what do you expect will happen to the total income of all members of your household (including you), from all sources before taxes and deductions?	2013/06-2019/03	$\mathbb{R}$

provided in the aftermath of the COVID-19 outbreak.[2]

3.1 Episode 1 - Tax cuts and Jobs Act of 2017

The first episode, the Tax Cuts and Jobs Act, was first announced on 2 November 2017. After some legislative steps, it became public law on 21 December 2017. To evaluate the impact of this Act on household inflation expectations we base our analysis on the announcement date, that is: 2 November 2020. To avoid the noise around the exact date of the news release we excluded from the analysis those individuals who responded the survey either on the second and the third of November 2020.

[2]Including the *Families First Coronavirus Response Act*, which became public law on 18 March 2020 and the *Coronavirus Aid, Relief, and Economic Security Act* (CARES) which became public law on 27 March 2020; for more information on the legislative process see: `https://www.congress.gov/bill/116th-congress/house-bill/6201/actions` and `https://www.congress.gov/bill/116th-congress/house-bill/748/actions`

3.2 Episode 2 - COVID-19 related fiscal packages

The second episode is based on the fiscal packages due to the COVID-19 pandemic. For this episode we consider two separate Acts which were released within the same week, that is the Families First Coronavirus Response Act, which became public law on 18 March 2020 and the Coronavirus Aid, Relief, and Economic Security Act (CARES) which became public law on 27 March 2020. To avoid the noise implied by the overlap of these two policies, we dropped all observations between 18 March 2020 and 27 March 2020.

4 Empirical strategy

We estimate the treatment effect of fiscal stimulus by comparing the expectations of survey respondents right before the stimulus announcement with those given right after. This identification strategy is borrowed from event studies on financial market responses (see among others e.g. **??**) and has recently been applied to household and firm survey data at a lower frequency (see among others e.g. **??**).

We use a symmetric time window around the fiscal stimulus announcements, so that the pool of respondents is split into control and treatment group based on whether a survey response has been completed before or after. Figures 1 and 2 provide a visual representation of both event studies.

More formally, for each of the two announcements, we conduct the following regression:

$$x_i = \alpha + \beta_1 \mathbf{1}_i + \beta_2 \mathbf{E}_i + \beta_3 \mathbf{E}_i \mathbf{1}_i + \gamma C_i + \varepsilon_i, \tag{1}$$

where x_i is the change in respondent i's expectations from the previous round, $\mathbf{E}_i$ is a dummy variable taking value 1 if the respondent has college education, $\mathbf{1}_i$ is a dummy variable taking value 1 if the respondent submitted after the fiscal announcement and C_i is

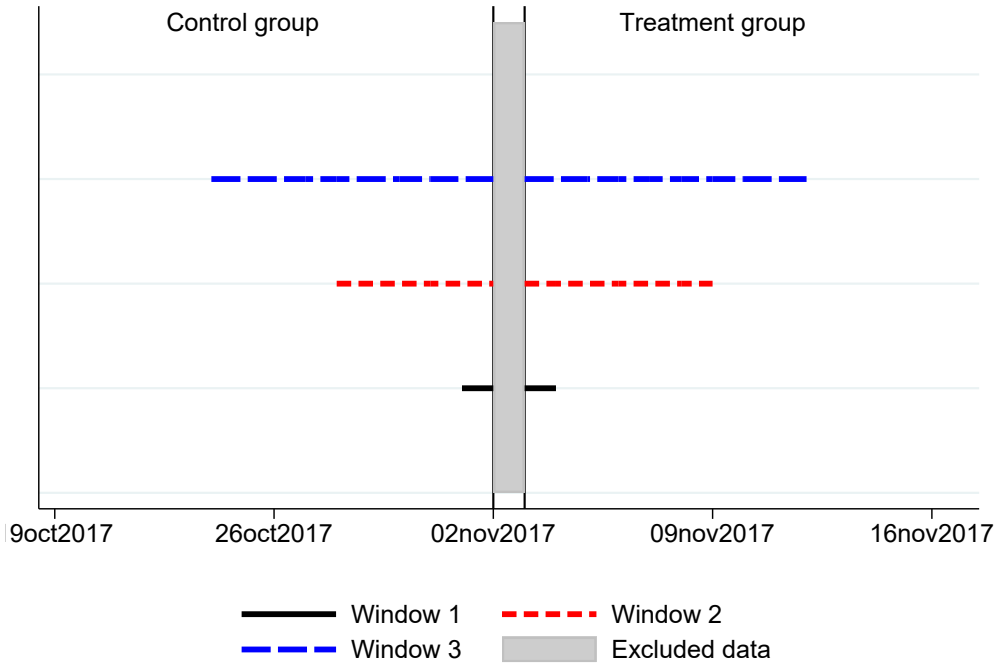

Figure 1: Graphical representation of the event study for the tax cuts and jobs Act of 2017.

a matrix of respondent-specific controls, including age, income, the number of days elapsed since the previous response, the total number of months in the survey, the stringency level related to COVID-19 measures as well as the change in actual, publicly-available inflation numbers between the two responses.

5 Results

Tables 2 and 3 show the baseline results for one-year-ahead inflation expectations and a selection of window lengths on the two episodes described above. The coefficient on the education dummy tends to be negative, meaning that, on average, educated repsondents tend to have lower inflation expectations. Yet the sign of the interaction with the exposure dummy is positive and statistically significant (more unequivocally so for the Covid support package), which indicates overall higher inflation expectations after the announcement.To better visualise the results, Figures 3 and 4 summarises the size and significance of the coef-

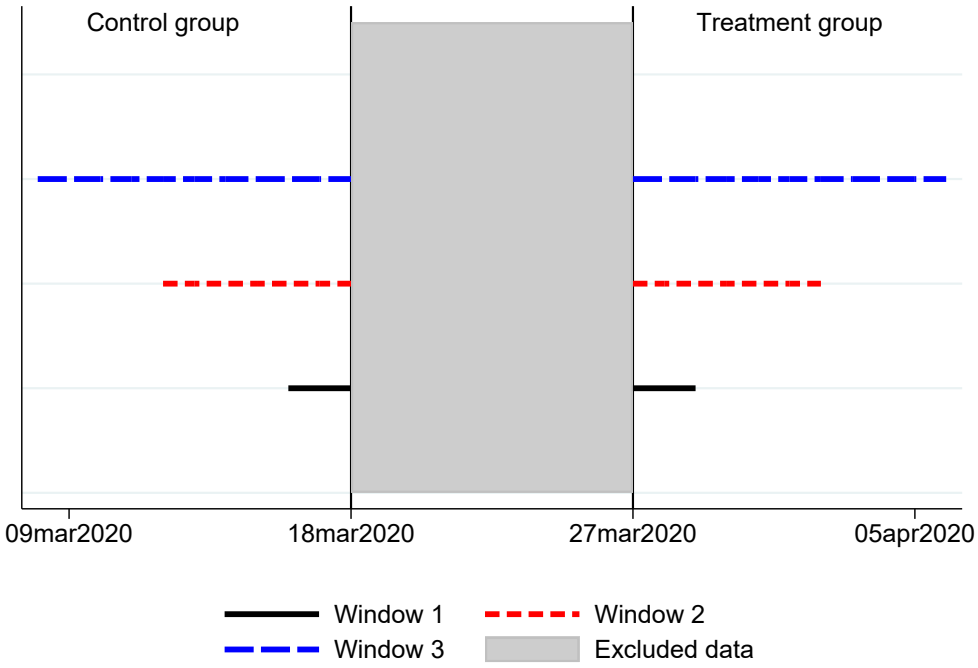

Figure 2: Graphical representation of the event study for the Coronavirus-related packages of 2020

ficient on the interaction for various lengths of the window. The effects somewhat fade away as the window grows due to the contaminating effect of other news, but remain statistically significnat for the COVID-19 measures.

Moving to three-year-ahead inflation expectations, the picture is more clear for the 2017 tax cuts, while the Covid-19 support package had less of a visible impact: the intraction dummies are not always positive, and lack statistical significance up to windows of 10 days.

By contrast, slicing the data across different dimensions does not seem to help. If we condition on the income of the repsondents, instead of their education level, the interaction coefficient is not statistically significant (Table 6). The same goes conditioning on age (Table 3).

6 Conclusion

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Table 2: 1-year ahead inflation expectations results for the 2017 tax cuts, interactions with education

Dependent variable: π^e_{1y}						
	2 days window		6 days window		10 days window	
	(1)	(2)	(3)	(4)	(5)	(6)
exposed (β_1)	−0.17	0.83	−0.79	−0.57	−0.66	−025
	(0.772)	(0.506)	(0.259)	(0.578)	(0.155)	(0.199)
educ (β_2)	−0.98	−1.16	−0.50	−0.68	−0.22	−0.37
	(0.160)	(0.358)	(0.183)	(0.249)	(0.318)	(0.285)
expeduc (β_3)	0.94	0.98	1.36***	1.70**	0.45	0.76
	(0.326)	(0.513)	(0.013)	(0.016)	(0.155)	(0.142)
Controls	No	Yes	No	Yes	No	Yes
State effects	No	Yes	No	Yes	No	Yes
Observations	118	118	284	284	557	557
R^2	0.028	0.371	0.037	0.198	0.014	0.115

Controls include the number of days elapsed between the two responses, the stringency level related to COVID-19, the change in actual publicly-available inflation numbers, age and income. Virtually all state-level fixed effects are significant at 1% level.
*p<0.1; **p<0.05; ***p<0.01

Table 3: 1-year ahead inflation expectations results for the Covid support package, interactions with education

Dependent variable: π^e_{1y}						
	2 days window		6 days window		10 days window	
	(1)	(2)	(3)	(4)	(5)	(6)
exposed (β_1)	−0.61	−0.98	0.24	0.308	−1.06	−2.60
	(0.541)	(0.842)	(0.806)	(0.869)	(0.352)	(0.315)
educ (β_2)	−1.45**	−1.77*	−0.64*	−1.17***	−0.85**	-1.24***
	(0.015)	(0.072)	(0.065)	(0.002)	(0.012)	(0.001)
expeduc (β_3)	2.44	5.35**	0.34	2.23**	1.02	1.49**
	(0.132)	(0.015)	(0.695)	(0.039)	(0.106)	(0.030)
Controls	No	Yes	No	Yes	No	Yes
State effects	No	Yes	No	Yes	No	Yes
Observations	111	111	363	363	489	489
R^2	0.124	0.541	0.045	0.289	0.074	0.241

Controls include the number of days elapsed between the two responses, the stringency level related to COVID-19, the change in actual publicly-available inflation numbers, age and income. Virtually all state-level fixed effects are significant at 1% level.
*p<0.1; **p<0.05; ***p<0.01

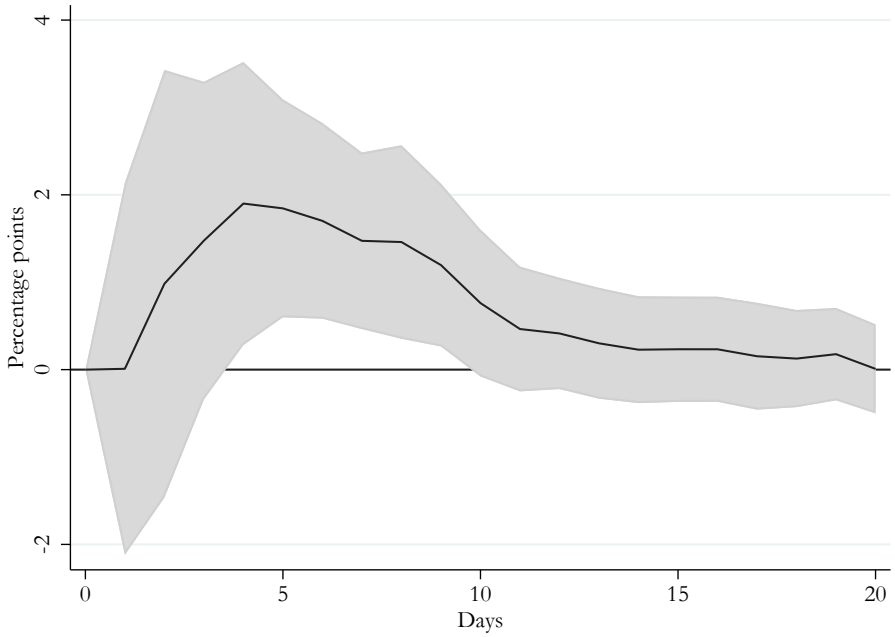

Figure 3: Effects of exposure to fiscal news on 1-year ahead inflation expectations for the first episode (Tax Cuts and Jobs Act of 2017). The coefficient shown is the interaction between exposure and education. The range shows the 90% confidence band.

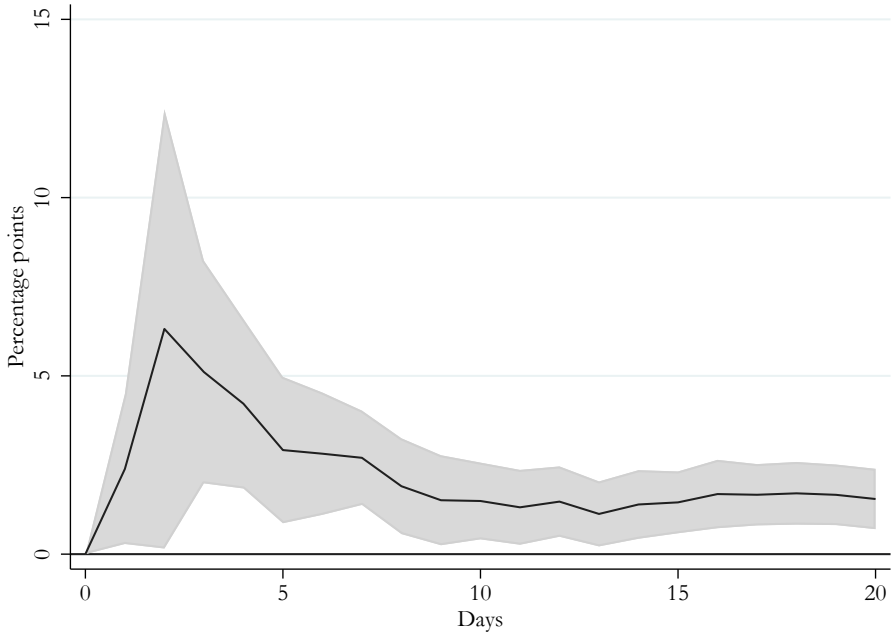

Figure 4: Effects of exposure to fiscal news on 1-year ahead inflation expectations for the second episode (COVID-related packages of 2020). The coefficient shown is the interaction between exposure and education. The range shows the 90% confidence band.

Table 4: 3-years ahead inflation expectations results for the 2017 tax cuts, interactions with education

Dependent variable: π^e_{1y}						
	2 days window		6 days window		10 days window	
	(1)	(2)	(3)	(4)	(5)	(6)
exposed (β_1)	−1.75	−2.38	−0.73	0.79	−0.75	−1.13
	(0.213)	(0.415)	(0.647)	(0.702)	(0.321)	(0.256)
educ (β_2)	−1.53	−1.64	−0.51	−0.15	−0.25	-0.07
	(0.102)	(0.245)	(0.240)	(0.791)	(0.533)	(0.868)
expeduc (β_3)	2.96**	3.57*	2.41***	2.50**	1.27**	1.44**
	(0.035)	(0.081)	(0.007)	(0.019)	(0.043)	(0.035)
Controls	No	Yes	No	Yes	No	Yes
State effects	No	Yes	No	Yes	No	Yes
Observations	123	123	300	300	601	601
R^2	0.027	0.451	0.039	0.245	0.027	0.157

Controls include the number of days elapsed between the two responses, the stringency level related to COVID-19, the change in actual publicly-available inflation numbers, age and income. Virtually all state-level fixed effects are significant at 1% level.
*p<0.1; **p<0.05; ***p<0.01

Table 5: 3-years ahead inflation expectations results for the Covid support package, interactions with education

Dependent variable: π^e_{3y}						
	2 days window		6 days window		10 days window	
	(1)	(2)	(3)	(4)	(5)	(6)
exposed (β_1)	0.00	4.64*	1.09	−0.07	−0.47	−2.7
	(0.997)	(0.100)	(0.651)	(0.645)	(0.736)	(0.204)
educ (β_2)	−0.14	0.32	−0.54**	−0.45	−0.52**	−0.82***
	(0.746)	(0.680)	(0.047)	(0.189)	(0.047)	(0.009)
expeduc (β_3)	−0.85	−0.35	0.31	0.34	0.57	1.06*
	(0.534)	(0.835)	(0.651)	(0.645)	(0.324)	(0.054)
Controls	No	Yes	No	Yes	No	Yes
State effects	No	Yes	No	Yes	No	Yes
Observations	117	117	369	369	516	516
R^2	0.066	0.504	0.051	0.227	0.056	0.192

Controls include the number of days elapsed between the two responses, the stringency level related to COVID-19, the change in actual publicly-available inflation numbers, age and income. Virtually all state-level fixed effects are significant at 1% level.
*p<0.1; **p<0.05; ***p<0.01

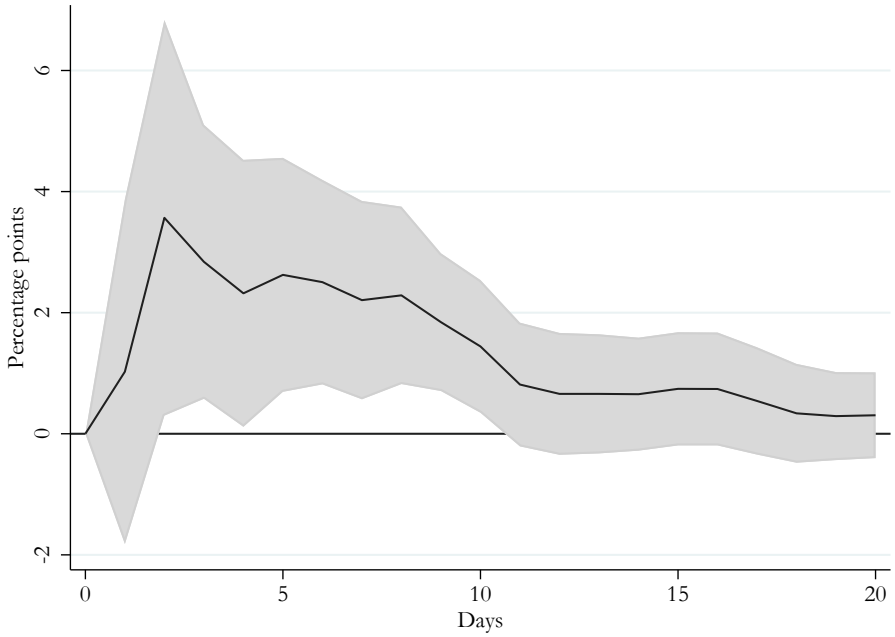

Figure 5: Effects of exposure to fiscal news on 3-years ahead inflation expectations for the first episode (Tax Cuts and Jobs Act of 2017). The coefficient shown is the interaction between exposure and education. The range shows the 90% confidence band.

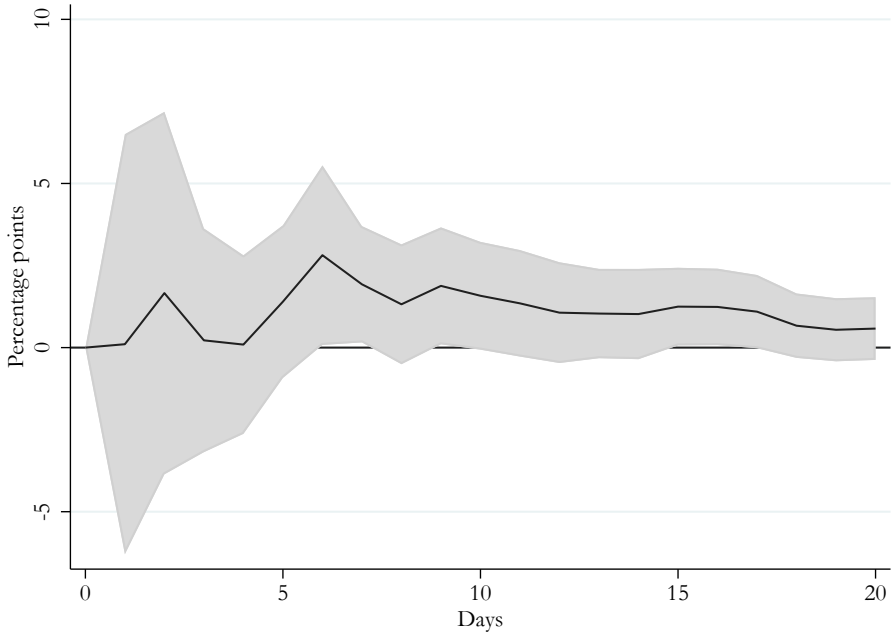

Figure 6: Effects of exposure to fiscal news on 3-years ahead inflation expectations for the second episode (COVID-related packages of 2020). The coefficient shown is the interaction between exposure and education. The range shows the 90% confidence band.

Table 6: 1-year ahead inflation expectations results for the second episode, interactions with income

Dependent variable: π^e_{1y}						
	2 days window		6 days window		10 days window	
	(1)	(2)	(3)	(4)	(5)	(6)
exposed (β_1)	0.90	-4.19**	−0.36	−1.72	−0.07	−1.53
	(0.613)	(0.042)	(0.617)	(0.139)	(0.911)	(0.132)
inc (β_2)	1.84	1.41	0.19	0.58	0.102	0.55
	(0.279)	(0.343)	(0.775)	(0.413)	(0.843)	(0.344)
expinc (β_3)	−1.26	−0.81	−0.59	−1.08	−0.45	−0.76
	(0.507)	(0.651)	(0.449)	(0.191)	(0.501)	(0.291)
Controls	No	Yes	No	Yes	No	Yes
State effects	No	Yes	No	Yes	No	Yes
Observations	221	221	534	534	709	709
R^2	0.008	0.247	0.010	0.110	0.003	0.094

Controls include the number of days elapsed between the two responses, the stringency level related to COVID-19, the change in actual publicly-available inflation numbers, education and age. Virtually all state-level fixed effects are significant at 1% level.
*p<0.1; **p<0.05; ***p<0.01

Table 7: 1-year ahead inflation expectations results for the second episode, interactions with age

Dependent variable: π^e_{1y}						
	2 days window		6 days window		10 days window	
	(1)	(2)	(3)	(4)	(5)	(6)
exposed (β_1)	0.199	-4.19**	−0.65*	−1.72	−0.25	−1.53
	(0.817)	(0.042)	(0.066)	(0.139)	(0.412)	(0.132)
age (β_2)	1.10	−0.832	0.30	0.25	0.105	0.362
	(0.298)	(0.553)	(0.479)	(0.663)	(0.526)	(0.436)
expage (β_3)	−1.13	−1.403	−0.353	0.15	−0.42	−0.226
	(0.471)	(0.466)	(0.705)	(0.893)	(0.598)	(0.803)
Controls	No	Yes	No	Yes	No	Yes
State effects	No	Yes	No	Yes	No	Yes
Observations	221	221	534	534	709	709
R^2	0.002	0.247	0.010	0.110	0.003	0.094

Controls include the number of days elapsed between the two responses, the stringency level related to COVID-19, the change in actual publicly-available inflation numbers, education and income. Virtually all state-level fixed effects are significant at 1% level.
*p<0.1; **p<0.05; ***p<0.01