

Responsiveness of consumers' medium-term inflation expectations: evidence from a new euro area survey

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Introduction

Background

- *“For the actual process of setting wages and prices, it is the expectations of the public that matter most.”*
Christine Lagarde, 2020
- Rapidly accelerating inflation in emerging and advanced economies
- Are inflationary shocks persistent?
- Increasing risk of de-anchored inflation expectations?

- Analysis of responsiveness of consumer inflation expectations
 - ▶ How strongly do consumers' medium-term inflation expectations co-move with changes in their short-term inflation views?
 - ▶ How responsiveness of consumer inflation expectations is related to consumers' financial literacy and their trust in the central bank?
 - ▶ What is the impact of the Covid-19 pandemic on consumer inflation expectations?
- Evidence on euro area consumers' inflation views based on new ECB Consumer Expectations Survey
- Comparison of two different inflation regimes

Related literature (1/2)

- Responsiveness of inflation expectations (Apokritis et al. 2019; Bouno and Formai 2018; Corsello et al. 2021; Ehrmann 2015; Łyziak and Paloviita 2017; Moessner and Takas 2020; Yetman 2020)
 - ▶ Closely related to the concept of anchoring (e.g., Beechey et al. 2011; Ciccarelli and Osbat 2017; Kumar et al. 2015)
 - ★ Anchoring refers to a long-term horizon and captures more features than limited responsiveness to short-term developments
- Growing literature on the impact of the Covid-19 on consumer expectations and economic decisions (Armantier et al. 2020; Binder 2020; Coibion et al. 2020; Dietrich et al. 2022)

Related literature (2/2)

- Financial literacy and consumer inflation expectations (Bruine De Bruin et al. 2011; Burke and Manz 2014; Lusardi and Mitchell 2008, 2014; Rumler and Valderrama 2020; Van Rooij et al. 2011)
- Nexus between trust in the central bank and consumer inflation expectations (Christelis et al. 2020; Mellina and Schmidt 2018; Rumler and Valderrama 2020)

Data and methods

Data (1/2)

- ECB Consumer Expectations Survey (CES)
 - ▶ https://www.ecb.europa.eu/stats/ecb_surveys/consumer_exp_survey/html/index.en.html
- Monthly online survey, launched in pilot phase in January 2020
- Micro data with panel structure from six euro area countries accounting for 86% of the euro area (Belgium, France, Germany, Italy, the Netherlands and Spain)
- Sample size approx. 10 000 respondents
- 21 survey waves from April 2020 to December 2021
- About 230 000 questionnaires completed by more than 20 660 consumers

Data (2/2)

- ECB CES provides fully comparable information across countries on several topics, including
 - ▶ Qualitative and quantitative inflation perceptions
 - ▶ Qualitative and quantitative short-term inflation expectations (12 months ahead)
 - ▶ Qualitative and quantitative medium-term inflation expectations (between 2 and 3 years ahead)
 - ▶ Covid-19 concerns
 - ▶ Financial literacy
 - ▶ Trust in the ECB

Quantitative survey questions on inflation views

- Inflation perceptions:

How much higher/lower do you think prices in general are now compared with 12 months ago in the country you currently live in? Please give your best guess of the change in percentage terms.

- Short-term inflation expectations:

How much higher/lower do you think prices in general will be 12 months from now in the country you currently live in? Please give your best guess of the change in percentage terms.

- Medium-term inflation expectations:

By about what percentage do you expect prices in general in the country you currently live in to increase/decrease over the 12-month period between [survey month, year+2] and [survey month, year+3]? Please give your best guess of the change in percentage terms.

Consumers' inflation expectations and Covid-19 concerns

Figure: Inflation views

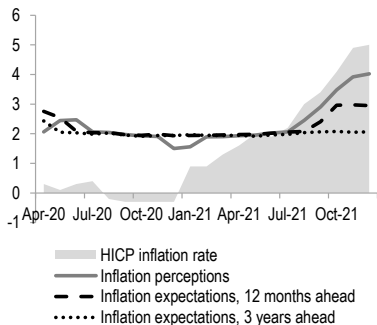
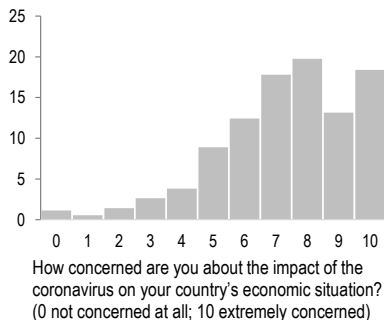


Figure: Covid-19 concerns



Trust in ECB

- *How much do you trust the European Central Bank?*
Scale: from 0 (no trust at all) to 10 (complete trust)

Figure: Distribution of responses

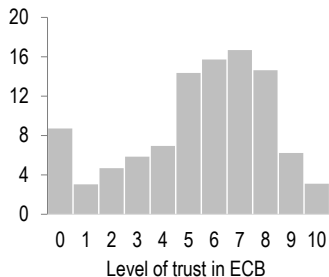


Table: Inflation views

	short-term inflation expectations	medium-term inflation expectations
low trust (0-4)	5.3%	5.1%
medium trust (5-7)	3.5%	3.2%
high trust (8-10)	3.0%	2.8%

Financial literacy test score

- Based on responses to survey questions related to savings accounts, real interest rates, risk diversification and interest compounding loans (see Bankowska et al. 2021)

Figure: Distribution of responses

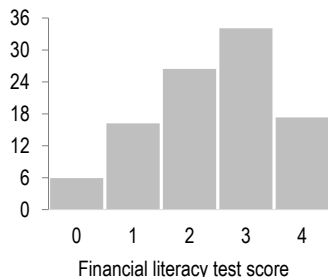


Table: Inflation views

Test score	short-term inflation expectations	medium-term inflation expectations
0	4.3%	4.1%
1	4.0%	3.8%
2	3.9%	2.7%
3	3.5%	3.3%
4	3.2%	2.9%

Responsiveness of inflation views – baseline regressions

$$\Delta\pi_{it}^{3Y} = \alpha_i + \beta\Delta\pi_{it}^P + \gamma\text{Cov}_{it} + \mu X_{it} + \epsilon_{it}$$

$$\Delta\pi_{it}^{3Y} = \alpha_i + \beta\Delta\pi_{it}^{1Y} + \gamma\text{Cov}_{it} + \mu X_{it} + \epsilon_{it}$$

$$\Delta\pi_{it}^{1Y} = \alpha_i + \beta\Delta\pi_{it}^P + \gamma\text{Cov}_{it} + \mu X_{it} + \epsilon_{it}$$

- $\Delta\pi^{3Y}$ – changes in medium-term inflation expectations
- $\Delta\pi^{1Y}$ – changes in short-term inflation expectations
- $\Delta\pi^P$ – changes in inflation perceptions
- Cov – Covid-19 dummy variable (1 = increased concern)
- X – a set of control variables (demography, sentiment, individual uncertainty, time dummies, country dummies).

Results

Responsiveness to changes in inflation perceptions

- Both short- and medium-term expectations adjust to changes in perceived inflation, but medium-term expectations to a smaller extent
- Comparable responsiveness of medium-term inflation expectations in non-inflationary and inflationary period
- Both short- and medium-term expectations increased due to Covid-19, but only during the 1st year of the pandemic

Table: Responsiveness to changes in inflation perceptions

Variable	Full time-span		Non-inflationary period		Inflationary period	
	$\Delta\pi^{1Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{1Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{1Y}$	$\Delta\pi^{3Y}$
$\Delta\pi^P$	0.38***	0.21***	0.39***	0.20***	0.38***	0.22***
<i>Cov</i>	0.11***	0.05	0.30***	0.18**	0.01	-0.01
<i>N</i>	183,768	183,768	60,064	60,064	123,704	123,704
$R^2_{overall}$	0.134	0.033	0.121	0.027	0.143	0.039

Notes: All specifications include in individual effects, country effects, time effects and demographic controls.

Non-inflationary period: April-December 2020. Inflationary period: January-December 2021.

RE estimations with robust se. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Responsiveness to changes in short-term inflation expectations

- Medium-term inflation expectations adjust to changes in short-term inflation expectations, even after orthogonalizing with respect to perceived inflation ($\Delta\tilde{\pi}^{1Y}$)
- Slightly increased responsiveness in inflationary period

Table: Responsiveness to changes in short-term inflation expectations

Variable	Full time-span		Non-inflationary period		Inflationary period	
	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$
$\Delta\pi^{1Y}$	0.32***	-	0.29***	-	0.33***	
$\Delta\tilde{\pi}^{1Y}$	-	0.28***	-	0.26***	-	0.29***
<i>Cov</i>	0.02	0.02	0.09	0.10*	-0.01	-0.01
<i>N</i>	183,768	183,768	60,064	60,064	123,704	123,704
$R^2_{overall}$	0.081	0.055	0.066	0.047	0.092	0.062

Notes: All specifications include in individual effects, country effects, time effects and demographic controls.

Non-inflationary period: April-December 2020. Inflationary period: January-December 2021.

RE estimations with robust se. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Responsiveness and financial literacy

- Knowledge of economic and financial concepts
- The ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being (Hung et al. 2009)
- Consumers with high financial literacy have less sensitive medium-term inflation expectations than consumers with low financial literacy

Table: Coefficient estimates for consumers with low and high financial literacy

Variable	Low financial literacy		High financial literacy	
	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$
$\Delta\pi^P$	0.25***	-	0.17***	-
$\Delta\pi^{1Y}$	-	0.36***	-	0.26***
<i>Cov</i>	0.05	0.00	0.02	0.00
<i>N</i>	38,282	38,282	34,395	34,395
$R^2_{overall}$	0.046	0.104	0.022	0.059

Notes: All specifications include individual effects, country effects, time effects and demographic controls.

Low financial literacy = score below 2; high financial literacy = score above 3.

RE estimations with robust se. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Responsiveness and trust in central bank

- Consumers with high level of trust in the ECB have less sensitive medium-term inflation expectations than consumers with low level of trust
- Only consumers with low level of trust in the ECB expected the Covid-19 shock to have long-lasting impacts on inflation

Table: Coefficient estimates for consumers declaring low and high trust in ECB

Variable	Low trust		High trust	
	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$
$\Delta\pi^P$	0.25***	-	0.19***	
$\Delta\pi^{1Y}$	-	0.37***	-	0.29***
<i>Cov</i>	0.17***	0.13*	-0.03	-0.05
<i>N</i>	41,824	41,824	72,735	72,735
$R^2_{overall}$	0.045	0.106	0.028	0.071

Notes: All specifications include in individual effects, country effects, time effects and demographic controls.

Low trust = below 5; high trust = above 7.

RE estimations with robust se. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Conclusions

Conclusions

- We use micro-dataset from novel ECB CES survey to investigate how euro-area consumers revise their medium-term inflation expectations
- We find that medium-term inflation expectations co-move with changes in inflation perceptions and short-term inflation expectations
 - ▶ Medium-term expectations are less responsive than short-term expectations
 - ▶ Responsiveness to changes in inflation perceptions has not increased in the period of rapidly accelerating inflation, but responsiveness to changes in short-term inflation expectations has slightly increased
- First waves of Covid-19 pandemic contributed to higher inflation expectations
- High financial literacy and high trust in central bank lower responsiveness of inflation expectations
 - ▶ Clear support for central banks' education campaigns for different consumer groups

Thank you for your attention!

Additional slides

Additional results (1) – asymmetry

- Consumers' medium-term inflation expectations adjust symmetrically to changing shorter-term inflation views
 - ▶ However, consumers with low level of perceived inflation respond more strongly to decreasing inflation perceptions and decreasing short-term inflation expectations

Table: Asymmetric effects in responsiveness

Variable	Full sample		Low infl. perceptions		High infl. perceptions	
	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$	$\Delta\pi^{3Y}$
$\Delta\pi^{P+}$	0.21***	-	-0.03	-	0.23***	-
$\Delta\pi^{P-}$	0.22***	-	0.19***	-	0.24***	-
$\Delta\pi^{1Y+}$	-	0.31***	-	0.18***	-	0.34***
$\Delta\pi^{1Y-}$	-	0.32***	-	0.32***	-	0.32***
Cov	0.05	0.02	0.00	-0.01	0.09	0.06
$H_0 : \beta^+ = \beta^-$	0.33	0.19	71.46	52.72	0.55	0.80
p-val.	0.57	0.67	0.00	0.00	0.46	0.37
N	183,768	183,768	91,873	91,873	91,895	91,895
$R^2_{overall}$	0.033	0.081	0.024	0.067	0.037	0.087

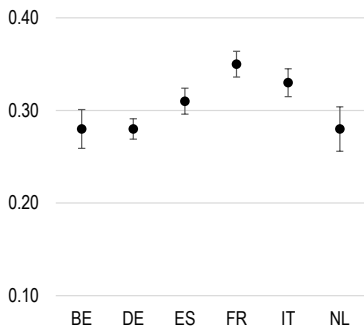
Notes: All specifications include in individual effects, country effects, time effects and demographic controls.

Low (high) inflation perceptions means below (above) median.

RE estimations with robust se. *p<0.10, **p<0.05, ***p<0.01.

Additional results (2) – cross-country heterogeneity

Figure: Estimates of responsiveness of medium-term inflation expectations to changes in short-term inflation expectations



Notes: Parameter estimates with 95% confidence interval.