



FIRMS' INFLATION EXPECTATIONS: NEW EVIDENCE FROM FRANCE

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The views expressed in this presentation are those of the authors and do not necessarily reflect those of the Banque de France or the Eurosystem.

WHY DO CENTRAL BANKS NEED FIRM-LEVEL INFORMATION ABOUT INFLATION EXPECTATIONS?

- **Monitoring aggregate inflation expectations of firms**

- Key determinant for medium-term inflation dynamics (Phillips curve)
- Topical issue in a higher-than-usual inflation context:

P. Lane 2022 *“a protracted phase of temporarily-high inflation runs the risk of affecting medium-term inflation dynamics through a re-setting of inflation expectations.”*

I Schnabel May 2022 *“We need to prevent high inflation from becoming entrenched in expectations.”*

- **Growing but still limited evidence about aggregate inflation expectations of firms**

- Most monthly business surveys help to document **short-term movements in firms’ prices**
- **Some large country-representative surveys** with quantitative questions on **aggregate inflation expectations**

Banca d’Italia since 1999 (Visco, 1987, Bartiloro et al. (2019), Uruguay (Frache and Luberías 2019), Ukraine (Coibion and Gorodnichenko 2015), Japan (Kaihatsu and Shiraki 2016, Muto 2015), US (Candia et al. 2021, McClure et al. 2022).



A NEW FIRM SURVEY ON INFLATION EXPECTATIONS

Quarterly module of Banque de France monthly business survey

- About 8,000 firms (1/4 interviewed each quarter)
- Phone survey among CEOs/CFOs
- Large and small firms in all sectors (industry, construction, services)
- High response rates

Four quantitative questions

- Perceived inflation, inflation expectations (1- year horizon and long-term horizon 3-5 years)
- Wage growth in the next 12 months (within the firm)

Two phases

Pilot phase in two regions: 5 waves in two regions (about 1,000 firms) – End 2020 + May 21 - [This paper]

National survey: from Q4 2021 [first results on Q42021 and Q12022]

THIS PAPER

□ How do firms form their inflation expectations?

Results based on the pilot survey (Sep. 20-May 21)

- Wording of questions (concepts and long-term horizons)
- Job position of the respondent (CEO, CFO...); firm characteristics
- Wage growth expectations

□ How do firms' inflation expectations move with inflation?

(preliminary results from the survey, Q4 2021 – Q1-2022)

Contributions

- 1) Practical design of such surveys
- 2) Expectation formation process

MAIN FACTS ON FRENCH FIRMS' INFLATION EXPECTATIONS

□ A positive but small bias in perceptions

- **Overestimation** of actual inflation (1.8% compared to 0% end 2020 and 1.4% in May 2021) but smaller than households' perceptions
- **Underestimation** of base wage growth

□ Limited dispersion in answers (Figure)

- Inflation: small number of firms answering very large values for expected inflation Wage growth: less dispersion than for inflation expectations

□ Firms managers are not all the same (Table)

- CFOs have higher inflation perceptions and expectations than CEOs but smaller than other job respondents
- Using EC French HH data: still a manager effect after controlling for age, income, education, etc.
- Firms' characteristics: Smaller firms: higher perceptions and expectations

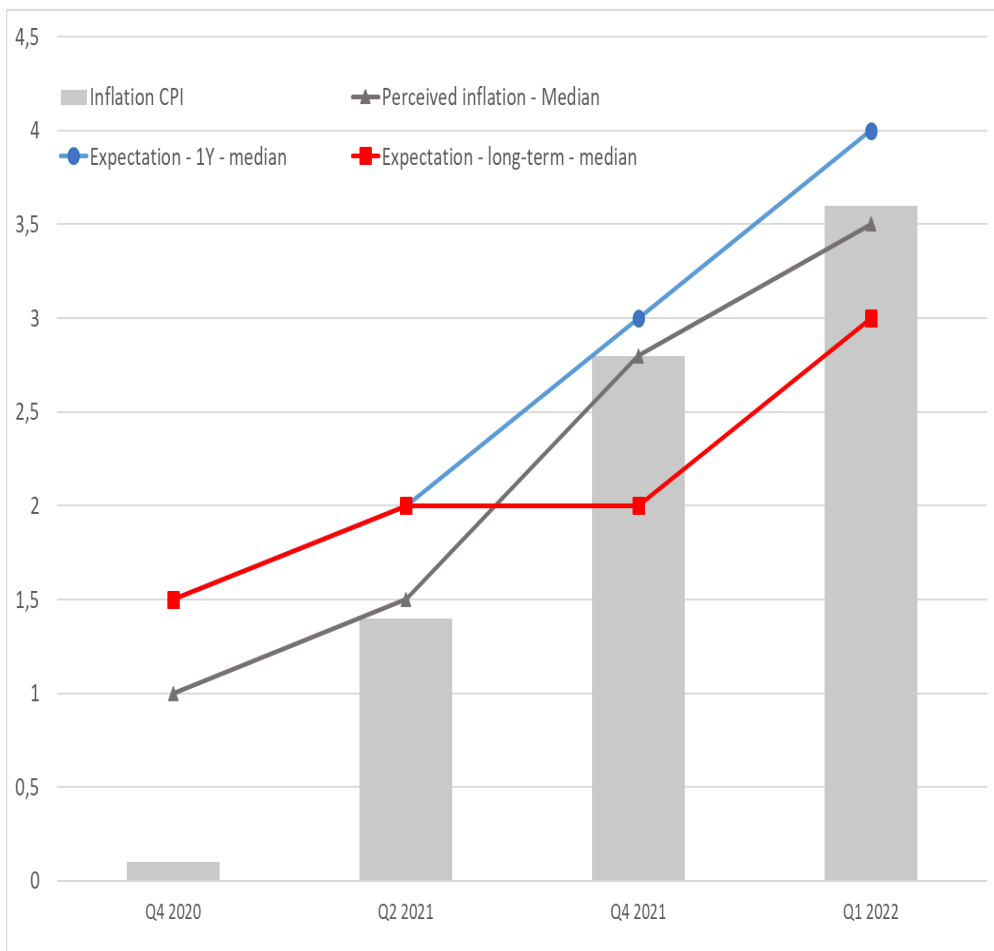
□ Wording of questions matters (Table)

- Higher perceptions for « prices » vs « inflation »
- Effect of information treatment: i) Significant effect ii) Short lived (T. in December, no more effect in May)

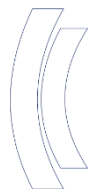
□ Weak connection in the cross-section between expectations on wages and inflation (Figure)

INFLATION EXPECTATIONS DO MOVE WITH INFLATION

Inflation 2020 -2022

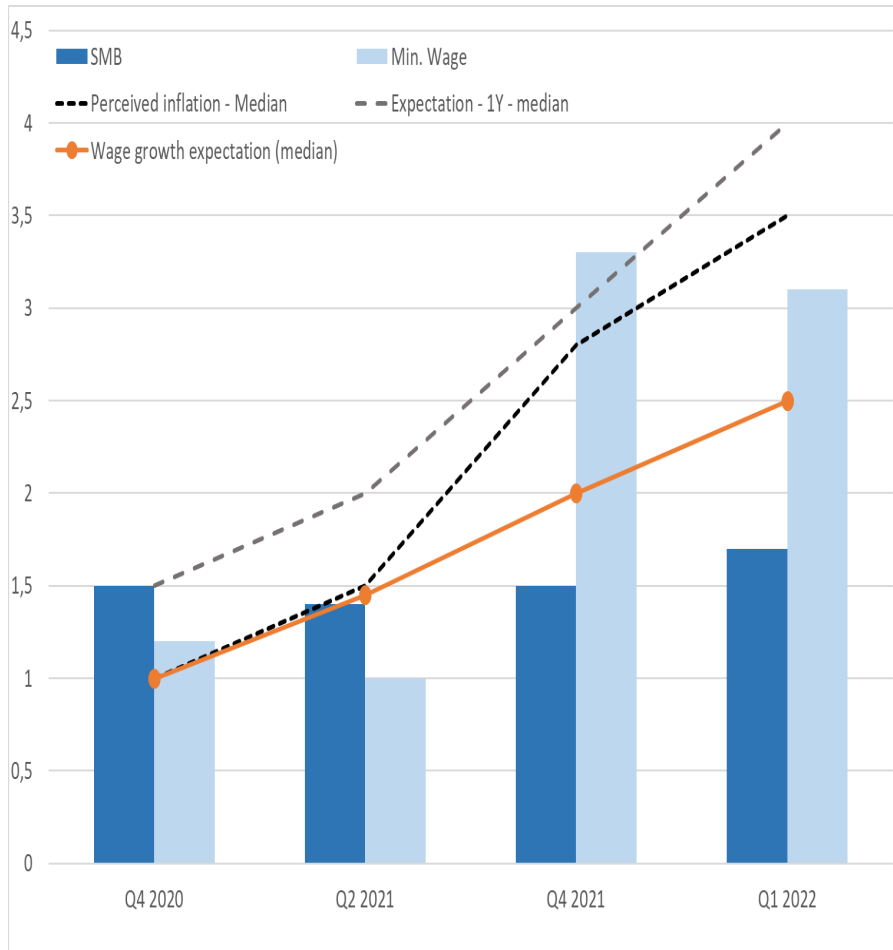


- New evidences based on the ongoing survey, focusing on the 2 regions surveyed for the pilot
- Perceptions and expectations (1 Y) shifted with observed inflation
- Perception bias vanishes with increasing inflation
- Increase in long run expectations, but to a lesser extent



WAGE GROWTH EXPECTATIONS REACT (BUT LESS) TO AGGREGATE INFLATION

Expected Wage Growth 2020 -2022



- New evidences based on the ongoing survey, focusing on the 2 regions surveyed for the pilot
- Increase in wage growth expectations
- But to a lesser extend compared to perceived or expected inflation

=> Decrease in real wage expectations



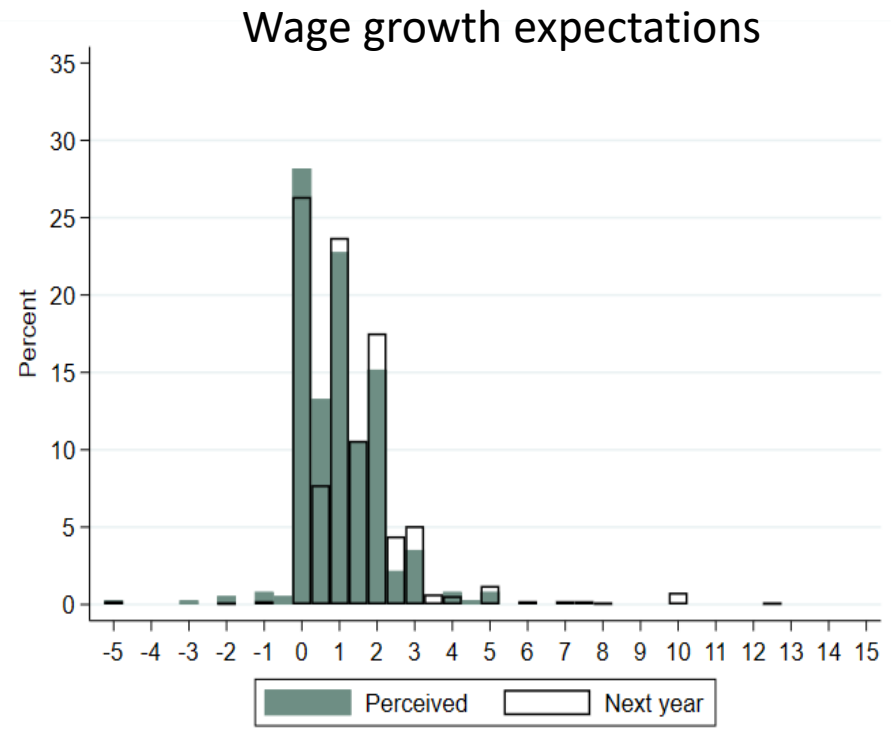
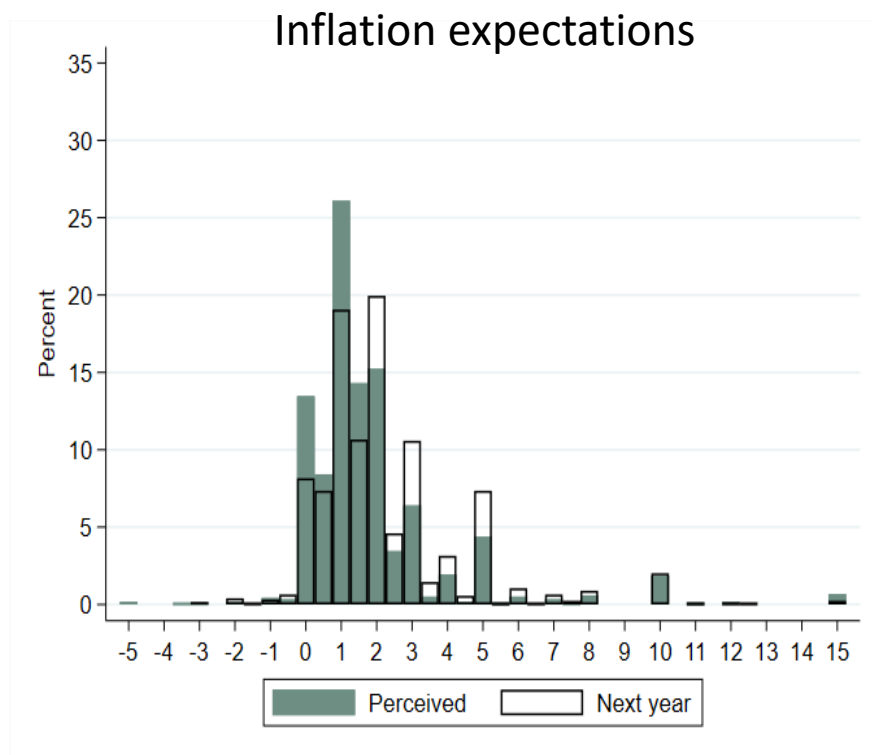
CONCLUSION

- ❑ New evidences on how firms form their inflation expectations
- ❑ Role of inflation perceptions, job of the respondent, local environment
- ❑ Perceptions and expectations evolve with inflation
- ❑ Wages expectations and its connection with prices: weak correlation

Appendix



FACT 2: LIMITED DISPERSION IN INFLATION EXPECTATIONS



- Inflation: small number of firms answering very large values for expected inflation
- Wage growth: less dispersion than for inflation expectations
- Asymmetry in both distributions despite inflation close to 0 (end 2020) (see Gorodnichenko and Sergeyev (2021) or Andrade et al. 2021 for recent household evidence)

FACT 4: THE PHRASING OF QUESTIONS AFFECTS REPORTED INFLATION EXPECTATIONS

	Reported Inflation Expectation				Difficulty Responding
	<i>Last year</i>	<i>One year ahead</i>	<i>Two year ahead</i>	<i>Five year ahead</i>	
Question used					
Price	0.798*** (0.289)	0.304 (0.263)	0.235 (0.241)	-	-0.082* (0.046)
Inflation without info.	Ref	Ref	Ref	Ref	Ref
Inflation with info.	-	-0.733*** (0.183)	-0.659*** (0.279)	-0.419 (0.275)	0.019 (0.074)
# observations	1,196	1,242	801	542	1,445

* Controls for size, sector, wave, job position, region are included

- Higher perceptions for « prices » vs « inflation »
- Effect of information treatment
 - Significant effect
 - Short lived: no effect on firms in May 2021

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FACT 5: THE JOB OF THE RESPONDENT AND FIRM CHARACTERISTICS AFFECT INFLATION EXPECTATIONS

Job position on inflation expectations

	Reported Inflation Expectation				Difficulty Responding
	<i>Last year</i>	<i>One year ahead</i>	<i>Two year ahead</i>	<i>Five year ahead</i>	
Job Position					
CEO	Ref	Ref	Ref	Ref	Ref
CFO	0.369** (0.169)	0.323** (0.149)	0.226 (0.180)	-0.131 (0.272)	0.006 (0.032)
Other	0.718*** (0.257)	0.654*** (0.206)	0.502** (0.217)	0.312 (0.352)	0.132*** (0.037)
R2	0.066	0.095	0.062	0.044	-
# observations	1,196	1,242	801	542	1,445

* Controls for size, sector, wave, questionnaire, region are included

- CFOs have higher inflation perceptions and expectations than CEOs but smaller than other job respondents

Difficulty of responding as a measure of uncertainty?

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HOW DO THE JOB OF THE RESPONDENT AND FIRM CHARACTERISTICS AFFECT INFLATION EXPECTATIONS?

- Comparing firms and households expectations (using EC French HH data)

	Perceptions	Expectations
All managers (chief officers, all executive managers...)	-0.804***	-0.916***
	(0.121)	(0.115)
#Obs	21,010	19,568
R2	0.07	0.04
General Director, Deputy General Director	-0.951***	-0.524**
	(0.300)	(0.259)
Other managers	-0.786***	-0.548***
	(0.118)	(0.117)
Other categories of workers	Ref.	Ref.
#Obs	14,051	13,138
R2	0.07	0.04
Skilled manual labor	0.126	0.024
	(0.238)	(0.218)
Small retail business manager	-0.694***	-0.501***
	(0.169)	(0.165)
CEO (firms with more than 10 employees)	-1.550***	-1.591***
	(0.371)	(0.303)
Executive managers (administrative, engineers...)	-1.061***	-0.790***
	(0.103)	(0.101)
Non-manager categories	Ref.	Ref.
R2	0.07	0.04
# observations	21,691	20,209

HOW THE JOB OF THE RESPONDENT AND FIRM CHARACTERISTICS AFFECT INFLATION EXPECTATIONS

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■ Firm economic environment

	Reported Inflation Expectation				Difficulty Responding
	Last year	One year ahead	Two year ahead	Five year ahead	
Sector					
Construction	0.434** (0.213)	0.457** (0.222)	0.013 (0.257)	0.722* (0.434)	-0,074* (0.042)
Manufacturing	-0.222 (0.182)	-0.292* (0.154)	-0.396** (0.166)	-0.127 (0.235)	-0.067** (0.031)
Services	Ref	Ref	Ref	Ref	Ref
Size					
>50 employees	-0.670*** (0.180)	-0.638*** (0.148)	-0.565*** (0.162)	-0.428 (0.267)	-0.044 (0.029)
<50 employees	Ref	Ref	Ref	Ref	Ref
Firms own prices					
Decrease	-0.208 (0.406)	-0.419 (0.308)	0.415 (0.579)	0.593 (0.413)	0.058 (0.065)
Stable	Ref	Ref	Ref	Ref	Ref
Increase	0.417* (0.236)	0.438** (0.197)	0.113 (0.255)	0.107 (0.244)	0.006 (0.043)
R2	0.066	0.095	0.062	0.044	-
# observations	1,196	1,242	801	542	1,445

* Controls for job position, wave, questionnaire, region are included

FACT 6: WEAK CONNECTION BETWEEN WAGE GROWTH AND PRICE INFLATION (back)

	Aggregate wage		Firms' wages	All wages
	Last year	One year ahead	One year Ahead	One year ahead
Firm's Aggregate Inflation Expectation	0.017 (0.030)	0.043 (0.30)	0.053 (0.036)	0.049** (0.025)
Sector				
Construction	0.289 (0.238)	0.046 (0.185)	0.462** (0.218)	0.302** (0.153)
Manufacturing	0.249 (0.160)	0.220* (0.129)	0.291** (0.129)	0.258*** (0.092)
Services	Ref	Ref	Ref	Ref
Size				
>50 employees	0.040 (0.157)	0.057 (0.125)	-0.098 (0.130)	-0.081 (0.093)
<50 employees	Ref	Ref	Ref	Ref
Position				
CEO	Ref	Ref	Ref	Ref
CFO	-0.130 (0.152)	-0.054 (0.122)	-0.305** (0.124)	-0.195** (0.088)
Other	0.143 (0.199)	0.065 (0.150)	-0.108 (0.166)	-0.038 (0.118)
Wave				
Nov 2020	0.160 (0.144)	0.260* (0.149)		0.270* (0.146)
Dec 2020	Ref	Ref		Ref
May 2021	-	-		0.585*** (0.108)
R2	0.033	0.043	0.043	0.087
# observations	268	343	475	818

PILOT SURVEY – QUESTIONS by WAVE

Wave 1 - September 2020 (BACK)

Phrasing A1

Q1 According to you, over the last 12 months, how have consumption prices in France evolved?

[Options: They have gone up a lot/gone up somewhat/they have been pretty stable/they have gone down somewhat/they have gone down a lot.]

Q2. As a percentage, what do you think has been the change in consumption prices over the last 12 months? (ie between Sep 2019 and Sep 2020)

Q3. According to you, over the next 12 months, how will consumption prices in France evolve?

[Options: They will go up a lot/go up somewhat/they will be pretty stable/they will go down somewhat/ they will go down a lot.]

Q4. As a percentage, what do you think will be the change in consumption prices over the next 12 months? (ie between Sep 2020 and Sep 2021)

Q5. As a percentage, what do you think will be the change in consumption prices between Sep 2021 and Sep. 2022?

Phrasing A2

Q1. As a percentage, what do you think has been the change in consumption prices over the last 12 months? (ie between Sep 2019 and Sep 2020)

Q2. As a percentage, what do you think will be the change in consumption prices over the next 12 months? (ie between Sep 2020 and Sep 2021)

Q3. As a percentage, what do you think will be the change in consumption prices between Sep 2021 and Sep. 2022?

PILOT SURVEY – QUESTIONS by WAVE

Wave 2 - October 2020

Phrasing A2

Q1. As a percentage, what do you think has been the change in consumption prices over the last 12 months? (ie between Oct. 2019 and Oct. 2020)

Q2. As a percentage, what do you think will be the change in consumption prices over the next 12 months? (ie between Oct. 2020 and Oct. 2021)

Q3. As a percentage, what do you think will be the change in consumption prices between Oct. 2021 and Oct. 2022?

Phrasing B

Q1. As a percentage, what do you think is the current inflation rate in France?

Q2. As a percentage, what do you think the inflation rate will be in France in one year?

Q3. As a percentage, what do you think the inflation rate will be in France in two years?

Q4. As a percentage, what do you think the inflation rate will be in France in five years?

PILOT SURVEY – QUESTIONS by WAVE

Wave 3 - November 2020

Phrasing A2

Q1. As a percentage, what do you think has been the change in consumption prices over the last 12 months? (ie between Nov. 2019 and Nov. 2020)

Q2. As a percentage, what do you think will be the change in consumption prices over the next 12 months? (ie between Nov. 2020 and Nov. 2021)

Q3. As a percentage, what do you think will be the change in consumption prices between Nov. 2021 and Nov. 2022?

We are now going to turn to average changes of (base) salaries in France, meaning (base) wages (excluding bonuses or benefits).

Q4. As a percentage, what do you think has been the change in the average (base) salaries in France over the last twelve months?

Q5. As a percentage, what do you think will be the change in the average (base) salaries in France over the next twelve months?

Phrasing B

Q1. As a percentage, what do you think is the current inflation rate in France?

Q2. As a percentage, what do you think the inflation rate will be in France in one year?

Q3. As a percentage, what do you think the inflation rate will be in France in two years?

Q4. As a percentage, what do you think the inflation rate will be in France in five years?

We are now going to turn to average changes of wages in France.

Q5. As a percentage, what do you think has been the change in the average wages in France over the last twelve months?

Q6. As a percentage, what do you think will be the change in the average wages in France over the next twelve months?

PILOT SURVEY – QUESTIONS by WAVE

Wave 4 - December 2020

Phrasing B

Q1. As a percentage, what do you think is the current inflation rate in France?

Q2. As a percentage, what do you think the inflation rate will be in France in one year?

Q3. As a percentage, what do you think the inflation rate will be in France in two years?

Q4. As a percentage, what do you think the inflation rate will be in France in five years?

We are now going to turn to average changes of base wages in France.

Q5. As a percentage, what do you think has been the change in the average (base) salaries in France over the last twelve months?

Q6. As a percentage, what do you think will be the change in the average (base) salaries in France over the next twelve months?

Phrasing C

In November 2020, the inflation rate in France was 0.2%.

Q1. As a percentage, what do you think the inflation rate will be in France in one year?

Q2. As a percentage, what do you think the inflation rate will be in France in two years?

Q3. As a percentage, what do you think the inflation rate will be in France in five years?

We are now going to turn to average changes of base wages in France.

Q4. As a percentage, what do you think has been the change in the average (base) salaries in France over the last twelve months?

Q5. As a percentage, what do you think will be the change in the average (base) salaries in France over the next twelve months?

PILOT SURVEY – QUESTIONS by WAVE

Wave 5 - May 2021 (BACK)

Phrasing D

Q1. As a percentage, what do you think is the current inflation rate in France?

Q2. As a percentage, what do you think the inflation rate will be in France in one year?

Q3. As a percentage, what do you think the inflation rate will be in France in two years? or
3 to 5 years ? or 5 years?

We are now going to turn to average changes of base wages in your firm.

Q4. As a percentage, what do you think will be the change in the average (base) salaries in your firm over the next twelve months?

SAMPLE COMPOSITION (Pilot)

	Number of firms surveyed			
	Construction	Industry.	Services	Total
0 to 20 workers	31	18	137	186
21 to 50 workers	42	100	111	253
51 to 100 workers	17	61	53	131
101 to 200 workers	12	89	41	142
More than 201 workers	14	162	35	211
Total	116	430	377	923



RESPONSE RATES AND JOB POSITION OF RESPONDENTS

- Very high response rates ([table](#))

 - 88.4% on inflation perception

 - 86%, 79% and 66% for expectations at horizons 1, 2 and 5 years

 - Higher response rates on wage questions

 - Small heterogeneity across firms (mainly size effects)

- Job position of respondents ([table](#))

 - About 75% of respondents are CEOs or CFOs

 - More CEOs in smaller firms

RESPONSE RATES (back)

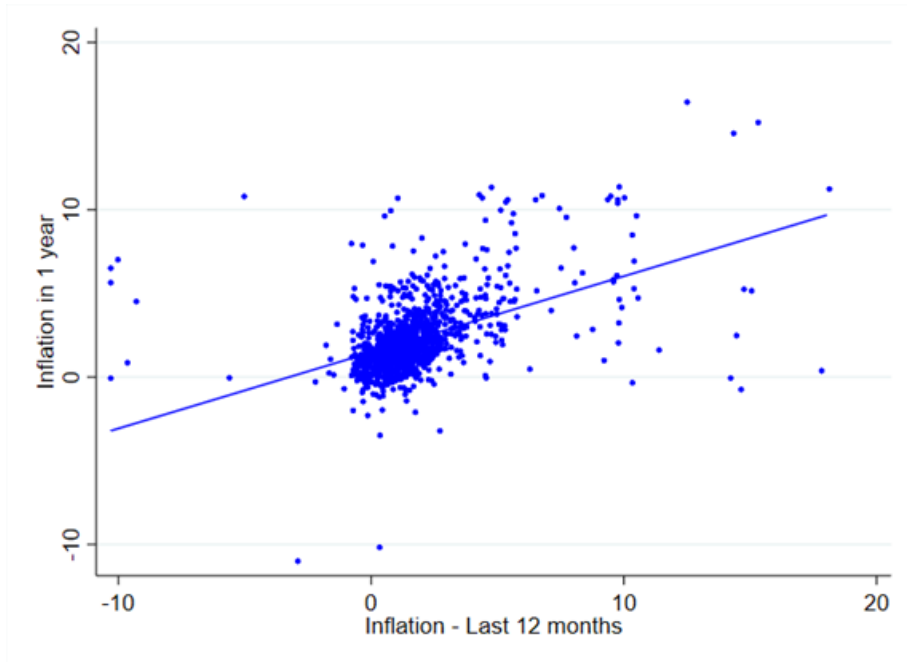
Response rate (%)	All - prices	Prices in general	Inflation		All - wages	Aggregate wages		Firms' wages
			No	Yes		No	Yes	
Information on past inflation	-	No	No	Yes		No	Yes	
Previous 12 months	88.4	87.3	88.9		94.4	94.3	94.6	-
Next 12 months	86.0	86.1	85.4	90.2	89.4	96.7	93.5	87.0
Two years ahead	78.6	76.4	79.5	84.8	-	-	-	-
5 years ahead	65.9	-	65.8	66.3	-	-	-	-
N	1,445	440	913	92	1,016	300	392	624

Job position (back)

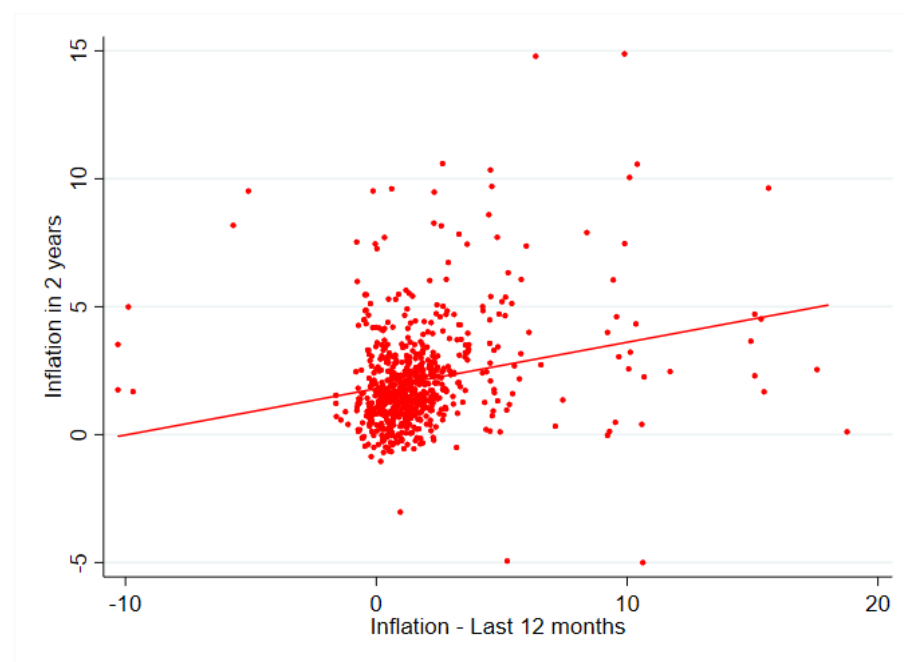
	Total	<50 employees	>50 employees	Construction	Manufacturing	Services
CEO	43.1	59.6	28.0	62.9	32.1	49.6
Administrative/Financial Officer (CFO)	30.4	17.5	42.3	17.2	39.3	24.4
Accounting Director	5.0	2.5	5.2	4.3	5.1	2.4
General Management	7.3	4.8	11.6	6.0	12.3	4.5
Production Supervisor	4.8	5.4	4.2	1.7	4.4	6.1
Human Resources Director	0.5	0.2	0.8	0,0	0.9	0.3
Other (marketing directors, sales executive...)	6.6	7.5	5.8	5.2	4.0	10.1
No job title provided	2.3	2.5	2.1	2.6	1.9	2.7
# Observations	923	441	482	116	430	377

STRONG CORRELATION BETWEEN INFLATION PERCEPTIONS AND EXPECTATIONS (BACK)

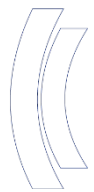
Inflation perceptions and 1-Y expectations



Inflation perceptions and 2-Y expectations



Imperfect information may be a source underlying disagreement across firms about the future

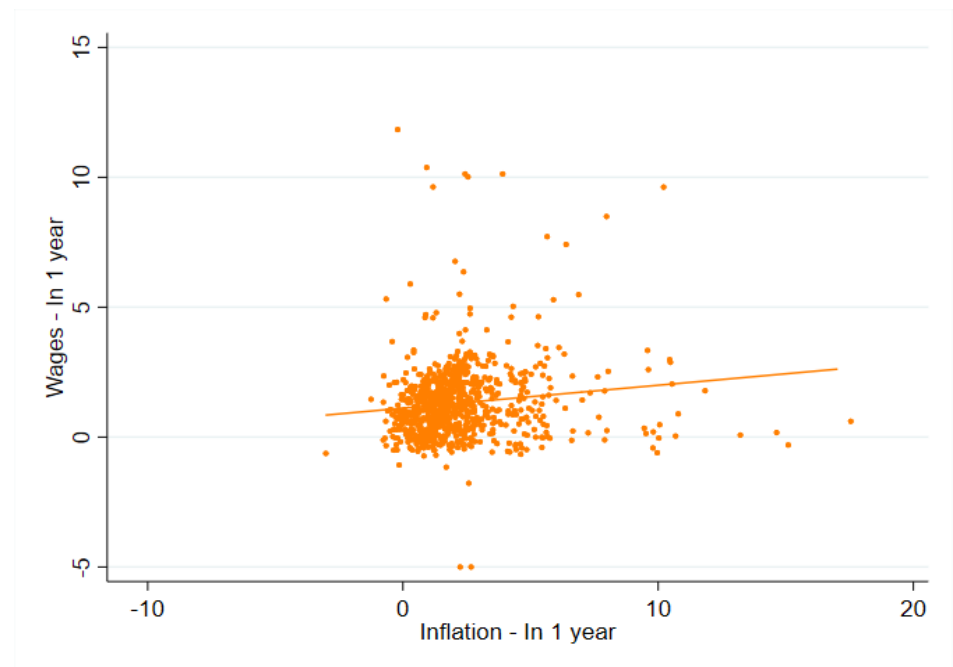
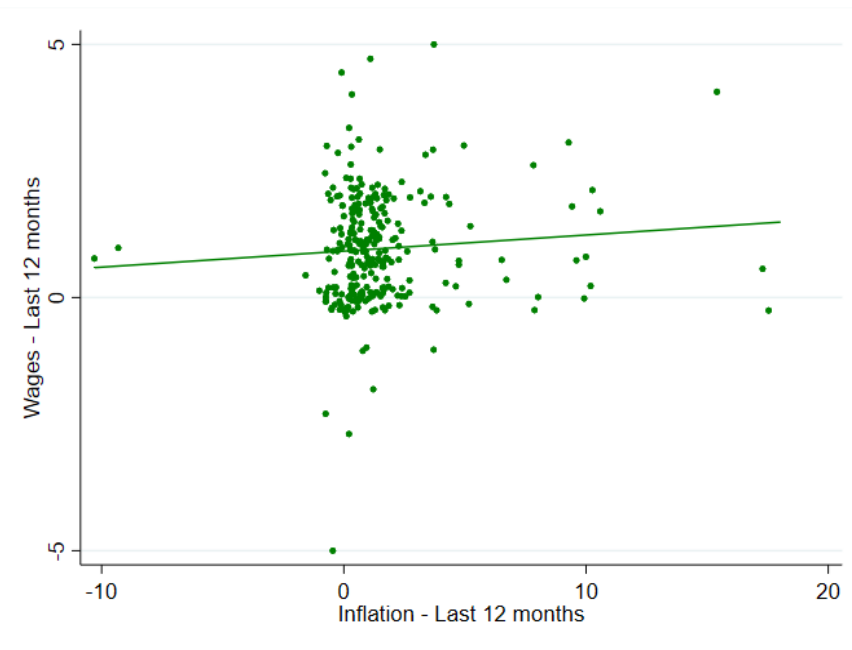


HOW FIRMS PERCEIVE WAGE GROWTH AND ITS CONNECTION WITH PRICE INFLATION

(back)

Inflation perceptions and wage growth perceptions

Inflation expectations and wage growth expectations



- ❑ Correlation between inflation expectations and wage growth expectations (OLS regressions - all controls included): $+0.05^{**}$
- ❑ No link between revisions in 1-Y inflation expectations and revisions in 1-Y wage growth expectations



HOW FIRMS PERCEIVE WAGE GROWTH AND ITS CONNECTION WITH PRICE INFLATION

Perceived and Expected Aggregate Wage Inflation

