Unit Cost Expectations and Uncertainty: Firm's Perspectives on Inflation

Brent Meyer, Federal Reserve Bank of Atlanta
Xuguang Simon Sheng, American University

For presentation at Cleveland Fed/ECB Conference on
"Inflation: Drivers and Dynamics"

"Price stability is the state in which expected changes in the general price level do not effectively alter business or household decisions."

-Alan Greenspan, July 1996 FOMC Meeting

- **Question:** Why do firms and households hold "aggregate inflation" expectations that appear disconnected from actual measured inflation and inflation expectations of professional forecasters?

A puzzle regarding inflation expectations

- **Question:** Why do firms and households hold "aggregate inflation" expectations that appear disconnected from actual measured inflation and inflation expectations of professional forecasters?

- **Answer:** **They don't care [when inflation is low and stable].**

In July 2022, 17% of respondents told Gallup that inflation was the country's biggest problem.

Share of survey respondents who say "high cost of living/inflation" is the most important problem facing this country today (Source: Gallup)
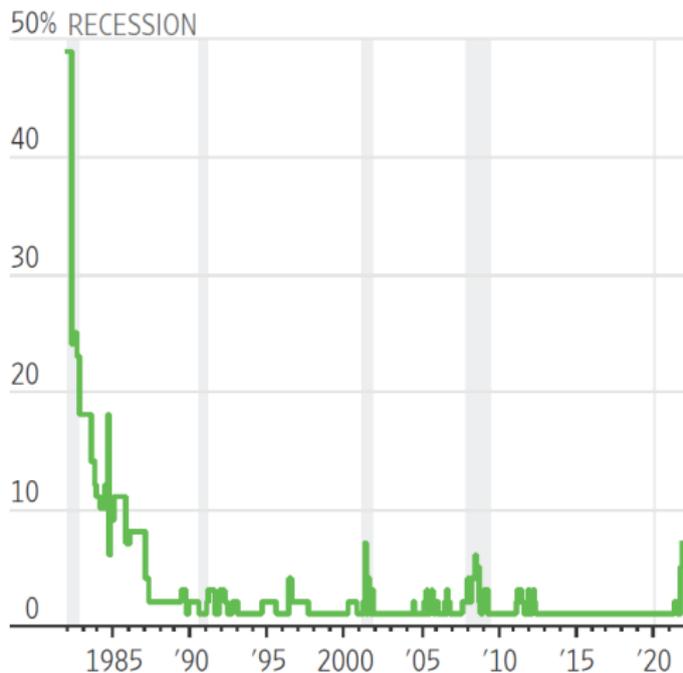
Changes in CPI had no or very little influence on most firms' business decisions.
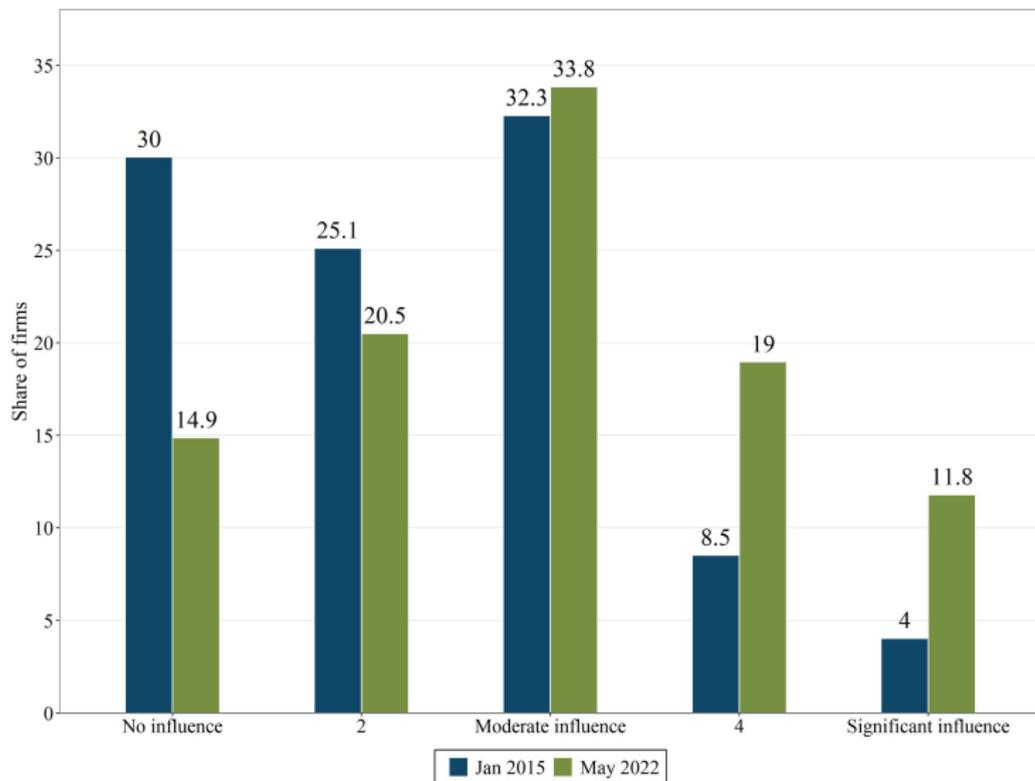
- **Question:** Is there a measure of "price growth" that is both relevant to firms **and** statistically connected to actual measured inflation?

Informative expectations

- **Question:** Is there a measure of "price growth" that is both relevant to firms **<u>and</u>** statistically connected to actual measured inflation?

- **Answer:** Yes - "price growth" associated with an aggregation of firm-specific unit cost growth.

Unit costs = nominal marginal costs

- A non-controversial viewpoint: Prices depend on costs.

Unit costs = nominal marginal costs

- A non-controversial viewpoint: Prices depend on costs.
- A non-trivial problem: How to approach asking firms about nominal marginal costs.

Unit costs = nominal marginal costs

- A non-controversial viewpoint: Prices depend on costs.
- A non-trivial problem: How to approach asking firms about nominal marginal costs.
- In *Asking about Prices* (Blinder 1994): "This turned out to be a tricky question because the term marginal cost is not in the lexicon of most business people ... For the purposes of the survey, we translated "marginal cost" into "variable costs of producing additional units"."

Unit costs = nominal marginal costs

- A non-controversial viewpoint: Prices depend on costs.
- A non-trivial problem: How to approach asking firms about nominal marginal costs.
- In *Asking about Prices* (Blinder 1994): "This turned out to be a tricky question because the term marginal cost is not in the lexicon of most business people ... For the purposes of the survey, we translated "marginal cost" into "variable costs of producing additional units"."
- At the formation of the survey in 2011, the Atlanta Fed engaged in many face-to-face interviews to better understand how c-suite execs would interpret variations around marginal costs and variable costs per unit. The outcome from these cognitive interviews was to ask about "unit costs".

Related studies on firms' expectations

- Using firm-level survey to study properties of agent perceptions and expectations. See, e.g., Enders, Hunnekes and Muller (2019), Ma, Ropele, Sraer and Thesmar (2020), Bachmann, Carstensen, Lautenbacher and Schneider (2021), Fiori and Scoccianti (2021), Barrero (2022), Altig, Barrero, Bloom, Davis, Meyer and Parker (2022), ...

Related studies on firms' expectations

- Using firm-level survey to study properties of agent perceptions and expectations. See, e.g., Enders, Hunnekes and Muller (2019), Ma, Ropele, Sraer and Thesmar (2020), Bachmann, Carstensen, Lautenbacher and Schneider (2021), Fiori and Scoccianti (2021), Barrero (2022), Altig, Barrero, Bloom, Davis, Meyer and Parker (2022), ...

- We contribute to this literature by eliciting own-firm quantities to make inference about the aggregate economy. By aggregating across firm-specific unit cost growth, we uncover a relevant proxy for business inflation expectations.

- Popularized by Manski (2004).

Related studies on eliciting probability forecasts

- Popularized by Manski (2004).
- Density forecasts made by professional forecasters in the surveys conducted by the Philadelphia Fed (Engelberg, Manski and Williams, 2009) and European Central Bank (Rich and Tracy, 2010).

Related studies on eliciting probability forecasts

- Popularized by Manski (2004).
- Density forecasts made by professional forecasters in the surveys conducted by the Philadelphia Fed (Engelberg, Manski and Williams, 2009) and European Central Bank (Rich and Tracy, 2010).
- New York Fed's Survey of Consumer Expectations adopts a similar methodology in eliciting a household's distribution of inflation beliefs (Armantier, de Bruin, Potter, Topa, van der Klaauw and Zafar, 2013).

Related studies on eliciting probability forecasts

- Popularized by Manski (2004).
- Density forecasts made by professional forecasters in the surveys conducted by the Philadelphia Fed (Engelberg, Manski and Williams, 2009) and European Central Bank (Rich and Tracy, 2010).
- New York Fed's Survey of Consumer Expectations adopts a similar methodology in eliciting a household's distribution of inflation beliefs (Armantier, de Bruin, Potter, Topa, van der Klaauw and Zafar, 2013).
- Our density forecasts take a similar form by assigning probabilities to pre-specified bins. To our knowledge, our firm-level survey is the longest monthly survey of businesses in the U.S. that asks probability distributions.

Related studies on rational inattention

- Firms and households face an information constraint and pay little attention to aggregate conditions. See, e.g., Sims (2003), Woodford (2003), Mackowiak and Wiederholt (2009), Cavallo, Cruces and Perez-Truglia (2017), Coibion, Gorodnichenko and Kumar (2018), Afrouzi (2020), Candia, Coibion and Gorodnichenko (2021), Hajdini, Knotek, Pedemonte, Rich, Leer and Schoenle (2022)....

Related studies on rational inattention

- Firms and households face an information constraint and pay little attention to aggregate conditions. See, e.g., Sims (2003), Woodford (2003), Mackowiak and Wiederholt (2009), Cavallo, Cruces and Perez-Truglia (2017), Coibion, Gorodnichenko and Kumar (2018), Afrouzi (2020), Candia, Coibion and Gorodnichenko (2021), Hajdini, Knotek, Pedemonte, Rich, Leer and Schoenle (2022)....

- Our results suggest that firms put very little weight on understanding/tracking official measures of aggregate inflation.

Related studies on rational inattention

- Firms and households face an information constraint and pay little attention to aggregate conditions. See, e.g., Sims (2003), Woodford (2003), Mackowiak and Wiederholt (2009), Cavallo, Cruces and Perez-Truglia (2017), Coibion, Gorodnichenko and Kumar (2018), Afrouzi (2020), Candia, Coibion and Gorodnichenko (2021), Hajdini, Knotek, Pedemonte, Rich, Leer and Schoenle (2022)....

- Our results suggest that firms put very little weight on understanding/tracking official measures of aggregate inflation.

- Due to rational inattention to aggregate inflation, investigating inflation expectations requires a different lens. In the case of firms, that lens is own-firm unit costs.

Focus on firms: Atlanta Fed Business Inflation Expectations (BIE) survey

- A monthly, online survey of roughly 500 corporate c-suite execs (CFOs, CEOs, etc) and owners in the Fed's 6th District (Southeast US).

Focus on firms: Atlanta Fed Business Inflation Expectations (BIE) survey

- A monthly, online survey of roughly 500 corporate c-suite execs (CFOs, CEOs, etc) and owners in the Fed's 6th District (Southeast US).
- The survey has been fielded continuously since October 2011.

Focus on firms: Atlanta Fed Business Inflation Expectations (BIE) survey

- A monthly, online survey of roughly 500 corporate c-suite execs (CFOs, CEOs, etc) and owners in the Fed's 6th District (Southeast US).
- The survey has been fielded continuously since October 2011.
- The survey asks probability question about firm "unit cost" expectations (in a manner similar to the New York Fed's household survey), and a "special question" for use in research and for policy guidance.

The core of the BIE survey

"Projecting ahead, to the best of your ability, please assign a percent likelihood to the following changes to UNIT COSTS over the next twelve months. (Values should sum to 100%.)"

Unit costs down (less than -1%)	0 %
Unit costs about unchanged (-1% to 1%)	0 %
Unit costs up somewhat (1.1% to 3%)	0 %
Unit costs up significantly (3.1% to 5%)	0 %
Unit costs up very significantly (more than 5%)	0 %
Total	0 %

Quality of the BIE survey

- Sample has size and industry characteristics that are close to the true U.S. distribution of firms.

Quality of the BIE survey

- Sample has size and industry characteristics that are close to the true U.S. distribution of firms.
- Relatively high response rate: about 40%.

Quality of the BIE survey

- Sample has size and industry characteristics that are close to the true U.S. distribution of firms.
- Relatively high response rate: about 40%.
- No evidence of tenure effect.

- Sample has size and industry characteristics that are close to the true U.S. distribution of firms.
- Relatively high response rate: about 40%.
- No evidence of tenure effect.
- Firms' expectations are closely related to their outcomes.

- Nonparametric estimation by assuming that the probability is concentrated at the midpoint of each interval.

- Nonparametric estimation by assuming that the probability is concentrated at the midpoint of each interval.
- Parametric estimation by assuming uni-modality:

- Nonparametric estimation by assuming that the probability is concentrated at the midpoint of each interval.
- Parametric estimation by assuming uni-modality:
  - Normal distribution, e.g. Giordani and Soderlind (2003)

Analyzing the probability forecasts

- Nonparametric estimation by assuming that the probability is concentrated at the midpoint of each interval.
- Parametric estimation by assuming uni-modality:
  - Normal distribution, e.g. Giordani and Soderlind (2003)
  - Beta distribution, e.g. Engelberg, Manski and Williams (2009)

Analyzing the probability forecasts

- Nonparametric estimation by assuming that the probability is concentrated at the midpoint of each interval.
- Parametric estimation by assuming uni-modality:
  - Normal distribution, e.g. Giordani and Soderlind (2003)
  - Beta distribution, e.g. Engelberg, Manski and Williams (2009)
  - Both distributions work well for experts' density forecasts, Binder, McElroy and Sheng (2022).

Analyzing the probability forecasts

- Nonparametric estimation by assuming that the probability is concentrated at the midpoint of each interval.
- Parametric estimation by assuming uni-modality:
  - Normal distribution, e.g. Giordani and Soderlind (2003)
  - Beta distribution, e.g. Engelberg, Manski and Williams (2009)
  - Both distributions work well for experts' density forecasts, Binder, McElroy and Sheng (2022).
- Some firms, however, give bimodal distributions. To accommodate the bimodality, we adopt the bimodal asymmetric power normal (BAPN) distribution, proposed by Bolfarine, Martnez-Flrez and Salinas (2018).

An example of bimodality

The bimodal asymmetric power normal (BAPN) distribution gives:
(1) Lowest BIC, obtained from the likelihood function when fitting each parametric distribution;
(2) Lowest MSE between the fitted and the empirical cumulative distribution function; and
(3) Highest p-value from the Kolmogorov-Smirnov test

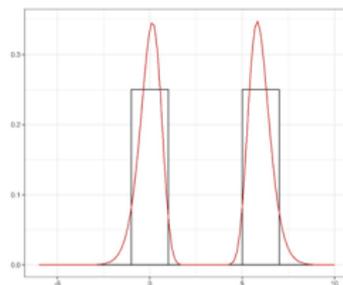having the fitted model as the null model against the two-sided alternative.
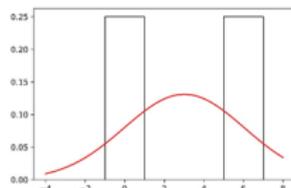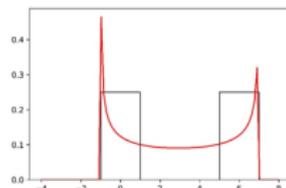
- Firms that have bimodal distributions are typically much more uncertain.

# Causal factors of bimodality

- Firms that have bimodal distributions are typically much more uncertain.
- We followed up with roughly 10 interviews having firms tell us more about their expectations. The majority (8 out of 10) gave us some notion of a range of conditional outcomes (e.g. if "X" happened, then my costs would likely be really high; but if "Y" happened, then my costs would be low).

We document 5 key findings:

1. In aggregate, firms' unit cost realizations closely comove with U.S. inflation statistics.

2. Once aggregated, firms' unit cost expectations significantly outperform households' inflation expectations in forecasting horseraces (and resemble the expectations of professional forecasters).

3. Use a flexible parametric technique to estimate firms' unit cost uncertainty. Up until the start of the pandemic inflation uncertainty was declining.

4. Policymakers' forecasts do little to alter firms' unit cost expectations.

5. At a firm level, unit costs are an important determinant of price setting behavior.

Sectoral-level Realized Unit Cost Growth (year-over-year)
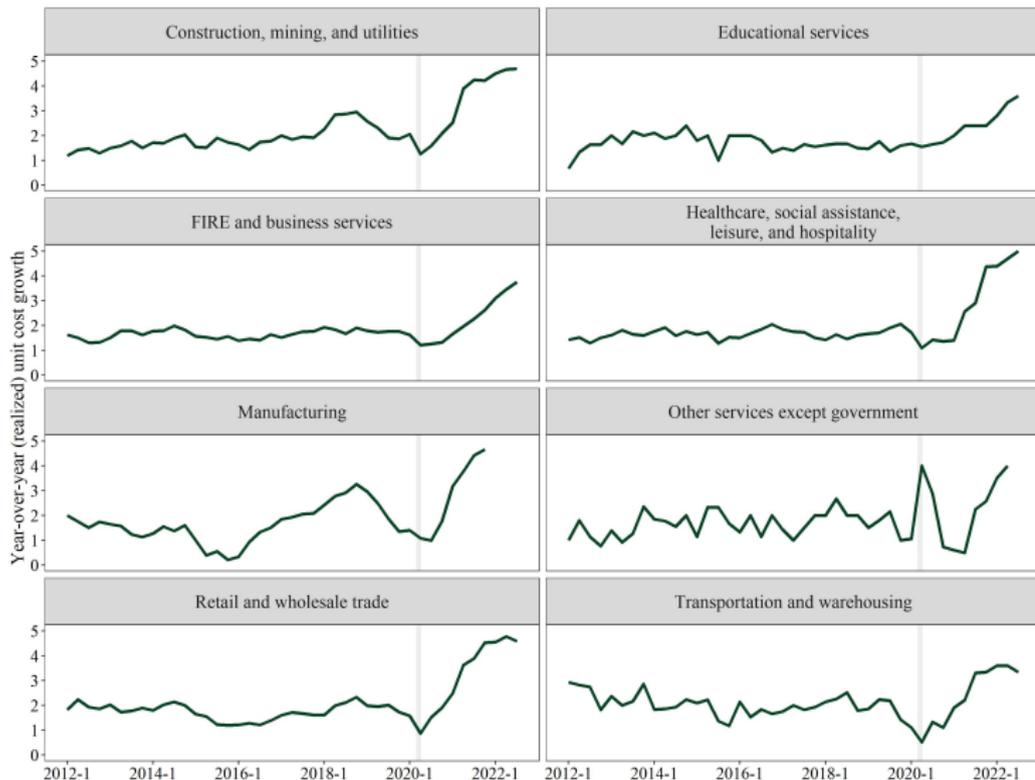
Movements in firms' unit cost perceptions mirror changes in actual inflation.

Firms' Realized Unit Cost Growth vs Actual Inflation (GDP Deflator)

Correlation .97

We document 5 key findings:

1. In aggregate, firms' unit cost realizations closely comove with U.S. inflation statistics.

2. Once aggregated, firms' unit cost expectations significantly outperform households' inflation expectations in forecasting horseraces (and resemble the expectations of professional forecasters).

3. Use a flexible parametric technique to estimate firms' unit cost uncertainty. Up until the start of the pandemic inflation uncertainty was declining.

4. Policymakers' forecasts do little to alter firms' unit cost expectations.

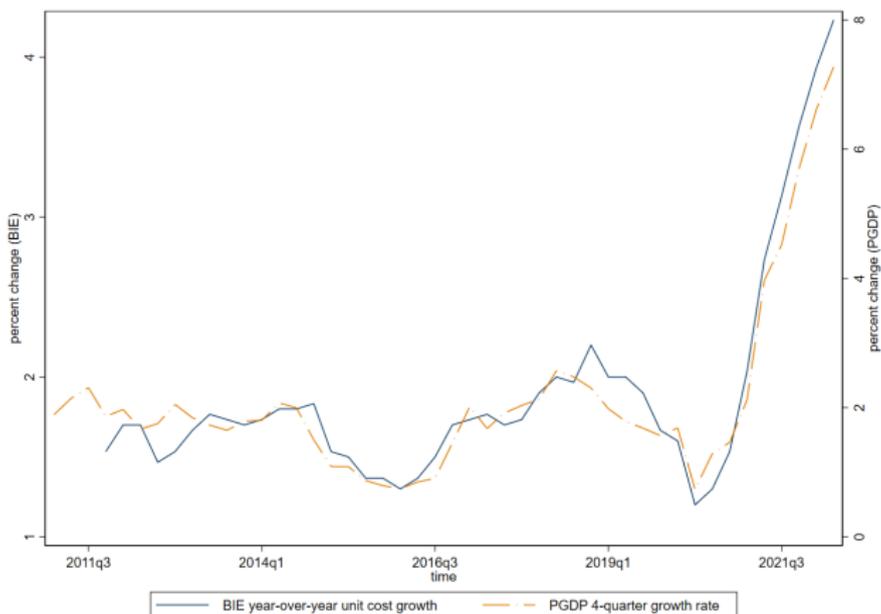5. At a firm level, unit costs are an important determinant of price setting behavior.

Firms' unit cost expectations tend to move in step with those of professionals.
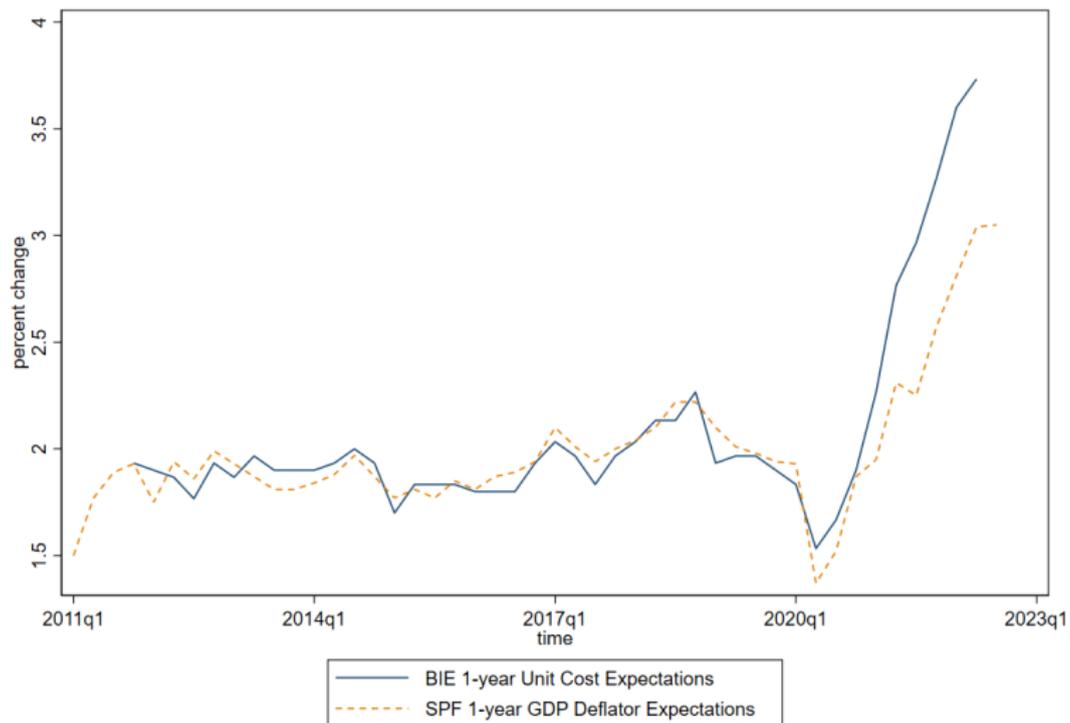
Correlation .92

But the divergence occurred in late 2020.
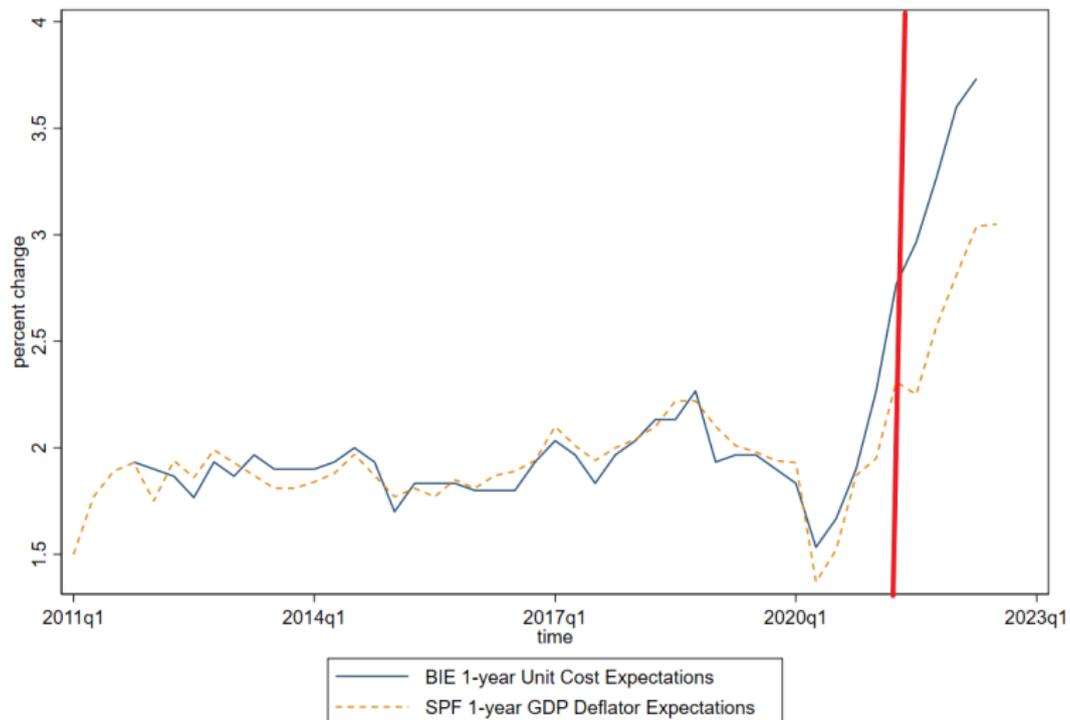
Correlation .92

Pseudo Out-of-sample forecast accuracy against an ARMA(1,1) benchmark

Model	CPI	Core CPI	RMSE PCE	Core PCE	PGDP
Benchmark					
ARMA(1, 1)	1.47	0.77	1.04	0.86	0.98
Firms					
BIE	0.74***	0.76*	0.82	0.55	0.70**
BIE:Supersector 1	0.76***	0.79**	0.89	0.66	0.79**
BIE:Supersector 2	0.71***	0.83	0.81	0.63	0.68*
BIE:Supersector 3	0.80***	0.82	0.92	0.68	0.79
BIE:Supersector 4	0.74***	0.71*	0.83	0.56	0.71*
Consumers					
MSC:Mean	1.45	2.10	2.14	2.23	1.97
MSC:Median	1.08	1.31	1.56	1.49	1.36
MSC:Low income	1.90	3.03	2.82	3.08	2.69
MSC:Low-med income	1.53	2.27	2.26	2.39	2.10
MSC:Med-high income	1.34	1.87	1.95	2.00	1.78
MSC:High income	1.14	1.44	1.64	1.60	1.46
Professional forecasters					
BCEI	0.71**	–	–	–	0.55**
SPF	0.75***	0.79*	0.81	0.54	0.73**

Pseudo Out-of-sample forecast accuracy against an ARMA(1,1) benchmark

Model	CPI	Core CPI	RMSE PCE	Core PCE	PGDP
Benchmark					
ARMA(1, 1)	1.47	0.77	1.04	0.86	0.98
Firms					
BIE	0.74***	0.76*	0.82	0.55	0.70**
BIE:Supersector 1	0.76***	0.79**	0.89	0.66	0.79**
BIE:Supersector 2	0.71***	0.83	0.81	0.63	0.68*
BIE:Supersector 3	0.80***	0.82	0.92	0.68	0.79
BIE:Supersector 4	0.74***	0.71*	0.83	0.56	0.71*
Consumers					
MSC:Mean	1.45	2.10	2.14	2.23	1.97
MSC:Median	1.08	1.31	1.56	1.49	1.36
MSC:Low income	1.90	3.03	2.82	3.08	2.69
MSC:Low-med income	1.53	2.27	2.26	2.39	2.10
MSC:Med-high income	1.34	1.87	1.95	2.00	1.78
MSC:High income	1.14	1.44	1.64	1.60	1.46
Professional forecasters					
BCEI	0.71**	–	–	–	0.55**
SPF	0.75***	0.79*	0.81	0.54	0.73**

We document 5 key findings:

1. In aggregate, firms' unit cost realizations closely comove with U.S. inflation statistics.

2. Once aggregated, firms' unit cost expectations significantly outperform households' inflation expectations in forecasting horseraces (and resemble the expectations of professional forecasters).

3. Use a flexible parametric technique to estimate firms' unit cost uncertainty. Up until the start of the pandemic inflation uncertainty was declining.

4. Policymakers' forecasts do little to alter firms' unit cost expectations.

5. At a firm level, unit costs are an important determinant of price setting behavior.

More uncertain firms have larger absolute forecast errors
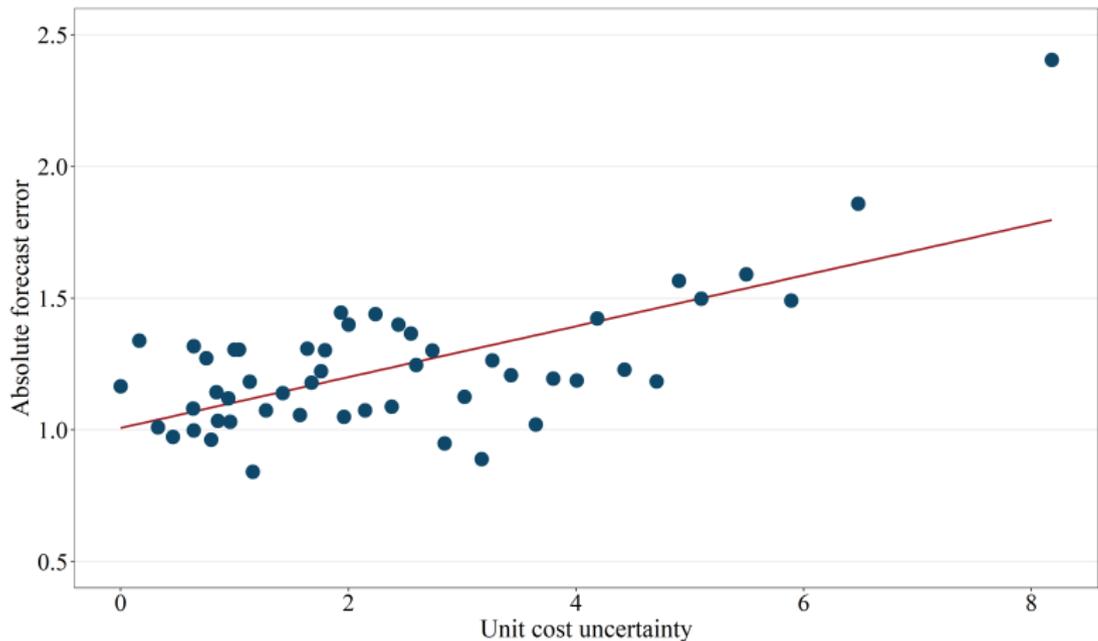
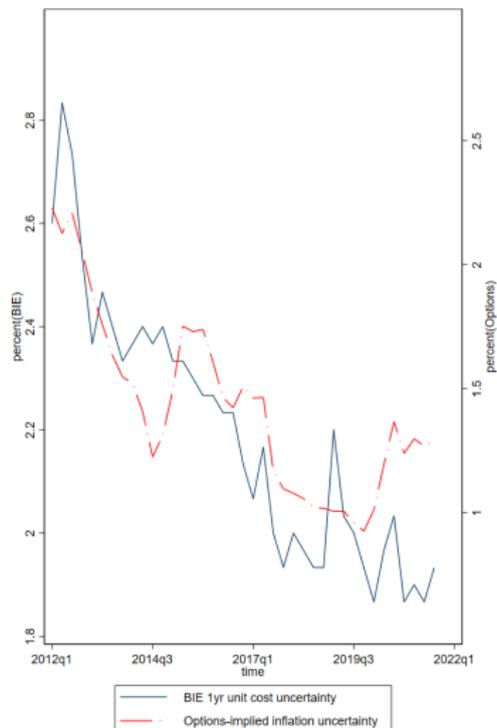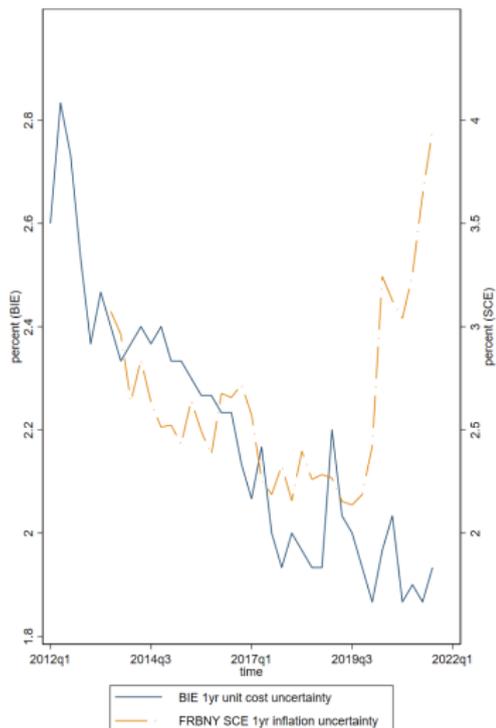# Measures of Inflation Uncertainty

Measures of Inflation Risk
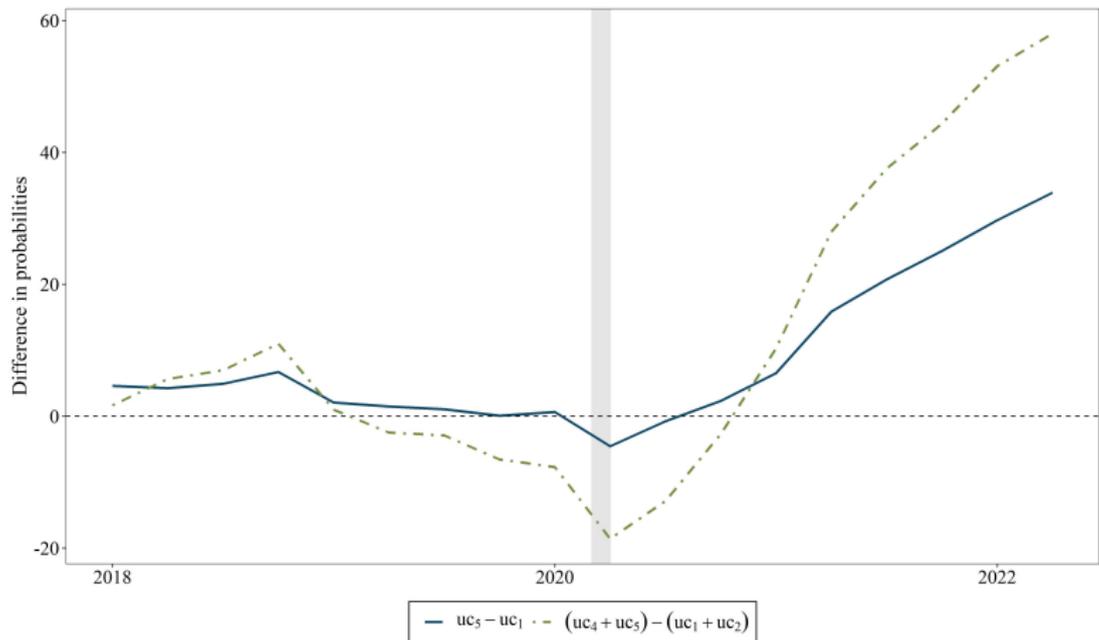
We document 5 key findings:

1. In aggregate, firms' unit cost realizations closely comove with U.S. inflation statistics.

2. Once aggregated, firms' unit cost expectations significantly outperform households' inflation expectations in forecasting horseraces (and resemble the expectations of professional forecasters).

3. Use a flexible parametric technique to estimate firms' unit cost uncertainty. Up until the start of the pandemic inflation uncertainty was declining.

4. **Policymakers' forecasts do little to alter firms' unit cost expectations.**

5. At a firm level, unit costs are an important determinant of price setting behavior.

- Randomly split firms into two groups: control group and treatment group.

- Randomly split firms into two groups: control group and treatment group.
- Both groups receive the following information: "The median expectation of monetary policymakers for inflation over calendar year 2021 was 1.7 percent (as of September 15th)."

- Randomly split firms into two groups: control group and treatment group.
- Both groups receive the following information: "The median expectation of monetary policymakers for inflation over calendar year 2021 was 1.7 percent (as of September 15th)."
- **Treatment**: "Based on forecasts over the past 20 years, there is a 70 percent chance that actual inflation will be in the range of 0.7 percent to 2.7 percent over calendar year 2021."

- Randomly split firms into two groups: control group and treatment group.
- Both groups receive the following information: "The median expectation of monetary policymakers for inflation over calendar year 2021 was 1.7 percent (as of September 15th)."
- **Treatment**: "Based on forecasts over the past 20 years, there is a 70 percent chance that actual inflation will be in the range of 0.7 percent to 2.7 percent over calendar year 2021."
- Question: "What is your best estimate for the highest and lowest potential rate of inflation over calendar year 2021?"

No influence on firms' aggregate inflation expectations

Panel A: Forecasts for 2021 Aggregate Inflation				
	Mean	P25	P75	N
Treatment Group				
Lowest potential rate of inflation	1.22	1.00	1.50	101
Highest potential rate of inflation	3.07	2.50	3.50	101
Spread (highest - lowest)	1.85	1.00	2.00	101
Control Group				
Lowest potential rate of inflation	1.17	1.00	1.50	99
Highest potential rate of inflation	3.01	2.00	3.50	99
Spread (highest - lowest)	1.84	1.00	2.50	99

Information treatment provided no sizeable difference on unit cost expectations or uncertainty one month later

Panel B: Revisions to Unit Cost Expectations and Uncertainty

	Mean	P25	P75	N
Treatment Group				
Difference in unit cost expectations (Nov - Oct)	0.13	-0.40	0.70	84
Difference in unit cost uncertainty (Nov - Oct)	-0.18	-0.56	0.32	84
Control Group				
Difference in unit cost expectations (Nov - Oct)	0.03	-0.40	0.23	80
Difference in unit cost uncertainty (Nov - Oct)	-0.06	-0.28	0.10	80

Another RCT on the impact of policymakers' views of inflation

- In October 2021, we performed another RCT: "What do you think the annual rate of inflation will be over calendar year 2022?"

Another RCT on the impact of policymakers' views of inflation

- In October 2021, we performed another RCT: "What do you think the annual rate of inflation will be over calendar year 2022?"

- **Treatment**: "The median expectation of monetary policymakers (as of September 22) for the annual rate of inflation over calendar year 2022 is 2.2 percent."

Another RCT on the impact of policymakers' views of inflation

- In October 2021, we performed another RCT: "What do you think the annual rate of inflation will be over calendar year 2022?"

- **Treatment**: "The median expectation of monetary policymakers (as of September 22) for the annual rate of inflation over calendar year 2022 is 2.2 percent."

- The RCT in October 2021 is different from the one we performed a year ago in two aspects: inflation environment and information treatment.

Another RCT on the impact of policymakers' views of inflation

- In October 2021, we performed another RCT: "What do you think the annual rate of inflation will be over calendar year 2022?"

- **Treatment**: "The median expectation of monetary policymakers (as of September 22) for the annual rate of inflation over calendar year 2022 is 2.2 percent."

- The RCT in October 2021 is different from the one we performed a year ago in two aspects: inflation environment and information treatment.

- Despite the differences in two RCTs, the results are almost the same. The new information treatment had **little** impact on firms' aggregate inflation expectations and **no** impact on their own unit cost expectations.

We document 5 key findings:

1. In aggregate, firms' unit cost realizations closely comove with U.S. inflation statistics.

2. Once aggregated, firms' unit cost expectations significantly outperform households' inflation expectations in forecasting horseraces (and resemble the expectations of professional forecasters).

3. Use a flexible parametric technique to estimate firms' unit cost uncertainty. Up until the start of the pandemic inflation uncertainty was declining.

4. Policymakers' forecasts do little to alter firms' unit cost expectations.

5. At a firm level, unit costs are an important determinant of price setting behavior.

Unit cost expectations matter in price formation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unit cost expectations	0.420***	0.253***	0.281***	0.129*	0.331***	0.238***	0.284***	0.197***	0.360***
	(0.109)	(0.084)	(0.055)	(0.074)	(0.064)	(0.053)	(0.045)	(0.061)	(0.028)
Unit cost growth	0.027	0.064	-0.021	0.012	-0.033	0.077*	0.024	0.054	0.083***
	(0.073)	(0.076)	(0.046)	(0.047)	(0.046)	(0.041)	(0.039)	(0.047)	(0.023)
Sales level	0.178*	0.022	-0.066	0.062	0.002	-0.034	-0.054	-0.005	0.043
	(0.096)	(0.124)	(0.065)	(0.060)	(0.060)	(0.068)	(0.062)	(0.063)	(0.030)
Sector FE	N	N	N	N	N	N	N	Y	
Period	Jun 2013	Feb 2019	Nov 2019	Dec 2020	Apr 2021	Jul 2021	Nov 2021	Mar 2022	Pooled
Observations	184	90	240	200	197	175	181	180	1,446
R^2	0.196	0.180	0.120	0.047	0.190	0.252	0.253	0.137	0.297

Source: FRBA Business Inflation Expectations (BIE) Survey.

Notes: In Columns (1) to (8), regressions are estimated via OLS of the form: $E_t p_{f,t+h} = \beta E_t uc_{f,t+1} + \theta uc_{f,t}^{perc} + \lambda s_{f,t} + \epsilon_{f,t}$, where $E_t p_{f,t+h}$ is year-ahead price change expectations (for a given month), $E_t uc_{f,t+1}$ is firms' unit cost expectations, $uc_{f,t}^{perc}$ is year-over-year unit cost realizations, and $s_{f,t}$ is sales level. Columns (1) through (8) use the responses to special questions on expected prices elicited in June 2013, February 2019, November 2019, December 2020, April 2021, July 2021, November 2021, and March 2022, respectively. Column (9) reports the result from a pooled regression across these eight special surveys. Given changes in question formatting, responses

Unit cost growth matter in price formation. Aggregate inflation expectations do not.

Pairwise correlations reported. Realized price change is the annualized 3-month price change realizations gathered from respondents quarterly from January 2019 to January 2020.

Variables	(1)	(2)	(3)	(4)	(5)
(1) Realized Price Change	1.000				
(2) Aggregate Inflation Expectation	0.010	1.000			
(3) Expected Price Change	0.468***	0.046	1.000		
(4) Lagged Unit Cost Expectation	0.101	0.065	0.235**	1.000	
(5) Unit Cost Growth	0.171**	0.031	0.248**	0.307***	1.000

``One useful insight into how actual inflation may affect expectations about its future path is based in the concept of ``rational inattention.'' When inflation is persistently high, households and businesses must pay close attention and incorporate inflation into their economic decisions. When inflation is low and stable, they are freer to focus their attention elsewhere.''

- Jerome Powell, Jackson Hole Symposium, August 26, 2022

Inflation expectations during low and high inflation periods

Panel A: 2011Q4 − 2019Q4

Surveys	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) BIE	1.000						
(2) UM	-0.014	1.000					
(3) SPF CPI	0.550***	-0.380**	1.000				
(4) SPF PCE	0.464***	-0.085	0.723***	1.000			
(5) SPF PGDP	0.818***	-0.470***	0.809***	0.589***	1.000		
(6) SPF Core CPI	0.645***	-0.622***	0.780***	0.678***	0.799***	1.000	
(7) SPF Core PCE	0.590***	-0.4738***	0.742***	0.780***	0.790***	0.907***	1.000

Panel B: 2011Q4 − 2022Q2

Surveys	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) BIE	1.000						
(2) UM	0.894***	1.000					
(3) SPF CPI	0.877***	0.619***	1.000				
(4) SPF PCE	0.821***	0.628***	0.910***	1.000			
(5) SPF PGDP	0.926***	0.614***	0.946***	0.898***	1.000		
(6) SPF Core CPI	0.793***	0.392***	0.901***	0.900***	0.909***	1.000	
(7) SPF Core PCE	0.778***	0.419***	0.889***	0.930***	0.905***	0.967***	1.000

Inflation expectations during low and high inflation periods

Panel A: 2011Q4 − 2019Q4							
Surveys	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) BIE	1.000						
(2) UM	-0.014	1.000					
(3) SPF CPI	0.550***	-0.380**	1.000				
(4) SPF PCE	0.464***	-0.085	0.723***	1.000			
(5) SPF PGDP	0.818***	-0.470***	0.809***	0.589***	1.000		
(6) SPF Core CPI	0.645***	-0.622***	0.780***	0.678***	0.799***	1.000	
(7) SPF Core PCE	0.590***	-0.4738***	0.742***	0.780***	0.790***	0.907***	1.000

Panel B: 2011Q4 − 2022Q2							
Surveys	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) BIE	1.000						
(2) UM	0.894***	1.000					
(3) SPF CPI	0.877***	0.619***	1.000				
(4) SPF PCE	0.821***	0.628***	0.910***	1.000			
(5) SPF PGDP	0.926***	0.614***	0.946***	0.898***	1.000		
(6) SPF Core CPI	0.793***	0.392***	0.901***	0.900***	0.909***	1.000	
(7) SPF Core PCE	0.778***	0.419***	0.889***	0.930***	0.905***	0.967***	1.000

- During these low inflation periods, eliciting expectations from firms (or households) that they pay attention to and connect up to the aggregate inflation statistics is crucial. Our proxy measure of the inflation expectations – that aggregates up own-firm unit cost expectations – does just this.

- During these low inflation periods, eliciting expectations from firms (or households) that they pay attention to and connect up to the aggregate inflation statistics is crucial. Our proxy measure of the inflation expectations – that aggregates up own-firm unit cost expectations – does just this.

- During the current high inflation environment, we show that unit cost expectations perform similarly to other measures that elicit aggregate inflation concepts, highlighting its durability as a useful measure of the inflation expectations of firms.

- During these low inflation periods, eliciting expectations from firms (or households) that they pay attention to and connect up to the aggregate inflation statistics is crucial. Our proxy measure of the inflation expectations – that aggregates up own-firm unit cost expectations – does just this.

- During the current high inflation environment, we show that unit cost expectations perform similarly to other measures that elicit aggregate inflation concepts, highlighting its durability as a useful measure of the inflation expectations of firms.

- Thank you for your attention!