Beyond Groceries: Forecast Confidence and the Gender Gap in Inflation Expectations

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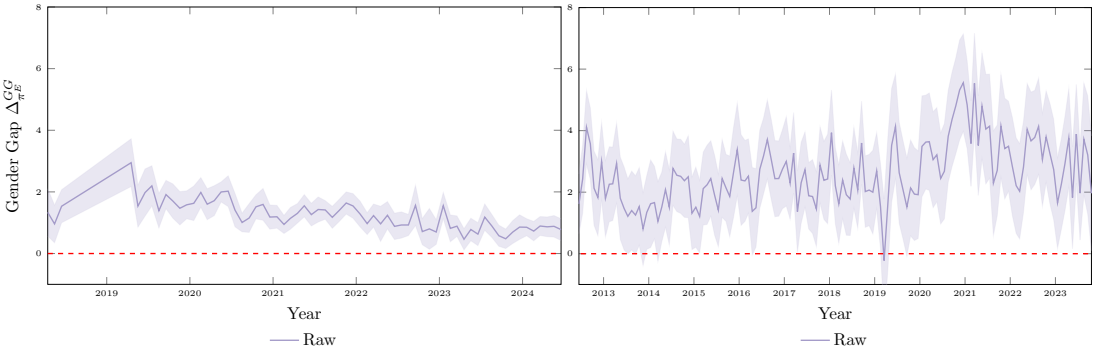
In a Nutshell

Observation: Women have on average higher inflation point forecasts than men.

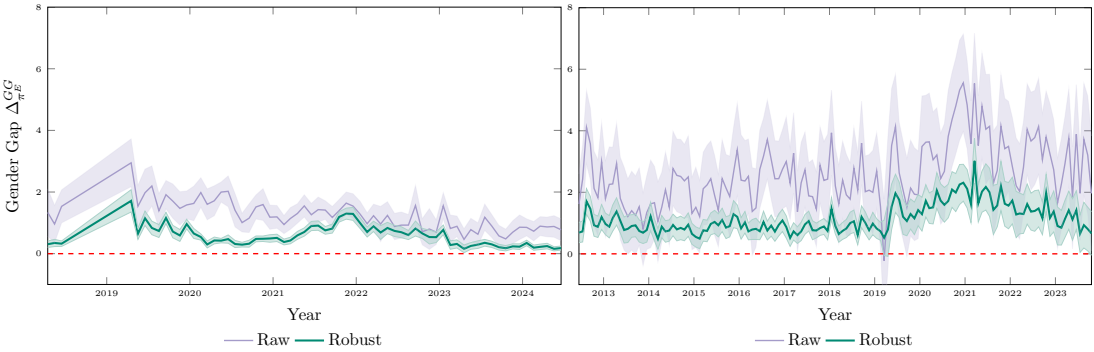


BOP-HH, Germany

SCE, United States

In a Nutshell

Observation: Women have on average higher inflation point forecasts than men.
This is driven partially by outliers.



BOP-HH, Germany

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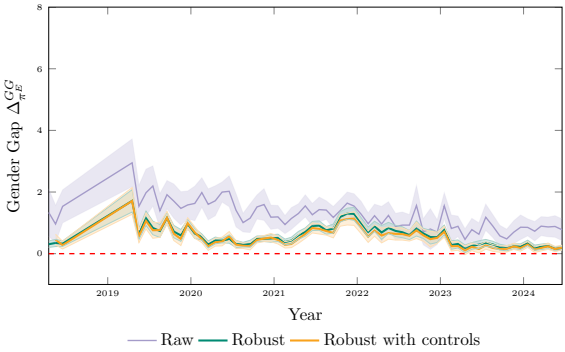
In a Nutshell

Observation: Women have on average higher inflation point forecasts than men.
But cannot be explained through demographics.



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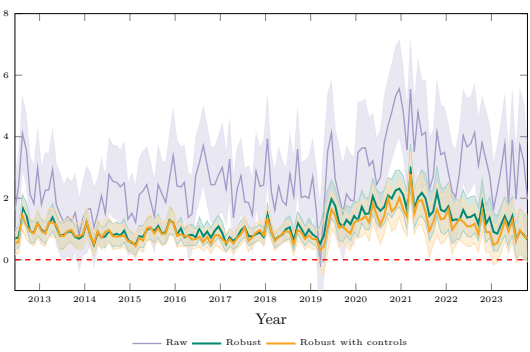

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Exposure

Women in traditional households roles are more exposed to food prices
[Jonung, 1981, D'Acunto et al., 2021b].

Distribution of historical Food CPI

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Distribution of historical Food CPI

Forecast confidence

Women have lower confidence in their financial skills [Bucher-Koenen et al., 2024] and thus report rounded, less precise forecasts [Reiche and Meyler, 2022].

Distribution of point forecasts

In a Nutshell

Observation: Women have on average higher inflation point forecasts than men.
Question: What are possible drivers of the gender gap in inflation expectations?

Part I: Bayesian updating framework illustrates interaction of signals (experiences) and priors (confidence) on posterior expectations

→ Volatile signals (i.e. grocery shopping experience) increase average posterior expectations only if priors are imprecise (i.e. forecast confidence is low)

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Part II: Empirical analysis using household data from Germany and US

→ Confidence dominates exposure.

→ Grocery shopping matters for low confidence.

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→ Low confidence is in parts driven by lower financial literacy.

→ Confidence explains heterogeneity beyond gender.

Contributions

Unifying framework to connect Exposure with Forecast Confidence.

Theoretically...
[Evans and Honkapohja, 2001, Malmendier and Nagel, 2016]
[Coibion and Gorodnichenko, 2015, Bordalo et al., 2020, Kohlhas and Walther, 2021]

..empirically...
[Cavallo et al., 2017, D'Acunto et al., 2021a, Weber et al., 2022, D'Acunto and Weber, 2024, D'Acunto et al., 2024, Anesti et al., 2025]
[Burke and Manz, 2014, Lusardi and Mitchell, 2014, Bucher-Koenen et al., 2017, Bucher-Koenen et al., 2024, Reiche and Meyler, 2022, D'Acunto et al., 2023]

..and over time.
[Bracha and Tang, 2024, Pfäuti, 2024, Weber et al., 2025, Granziera et al., 2025]

Overview

1. **Framework**

2. Data and Measurement

3. The Effects of Forecast Confidence and Exposure
   - 3.1 Forecast confidence dominates exposure.
   - 3.2 Exposure matters only through confidence.

4. Financial literacy as a mitigating factor

5. Applications Beyond Gender

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Modeling Experience and Confidence

Prior: $\log \pi \sim \mathcal{N}\left(\mu_0, \frac{1}{\tau_0}\right)$

Average density forecast

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Confidence channel

Modeling Experience and Confidence

Prior: $\log \pi \sim \mathcal{N}\left(\mu_0, \frac{1}{\tau_0}\right)$

Average density forecast

Signal: $\log x = \log \pi + \epsilon$,
where $\epsilon \sim \mathcal{N}\left(0, \frac{1}{\tau_x}\right)$

Distribution of historical CPI

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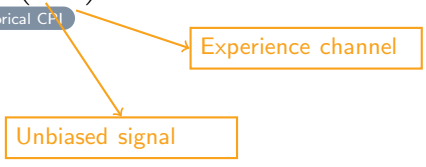

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Distribution of historical CPI

Posterior: $\log \pi | x \sim \mathcal{N}\left(\frac{\tau_0 \mu_0 + \tau_x \log x}{\tau_0 + \tau_x}, \frac{1}{\tau_0 + \tau_x}\right)$

Distribution of point forecasts

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Distribution of point forecasts

$$\mathbb{E}(\pi|x) = \exp\left(\frac{\tau_0 \mu_0 + \tau_x \log x + \frac{1}{2}}{\tau_0 + \tau_x}\right)$$

$$IQR(\pi|x) = \exp\left(\frac{\tau_0 \mu_0 + \tau_x \log x}{\tau_0 + \tau_x} + \frac{\Phi^{-1}(0.75)}{\tau_0 + \tau_x}\right) - \exp\left(\frac{\tau_0 \mu_0 + \tau_x \log x}{\tau_0 + \tau_x} + \frac{\Phi^{-1}(0.25)}{\tau_0 + \tau_x}\right)$$

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Distribution of point forecasts

Calibrate τ_0 and τ_x for men and women by matching posterior moments:

	BOP-HH, Germany		SCE, US	
	Men	Women	Men	Women
Model τ_0	0.57	0.45	0.60	0.40
Model τ_x	8.22	9.39	1.27	1.32
Model Actual Gap	1.24		2.35	
Empirical Gap	1.22		2.61	
Equalized Gap	-0.07		-0.07	
Share Explained by τ_0	1.08		0.93	

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Combining three household surveys

Survey	Time/Place	Participants	Questions of Interest
BOP-HH	Apr.2020-Sep.2022, DE	2000/month	*in/deflation* + (definition) from 0-100 Q $\Rightarrow \mathbb{E}_i(\pi\|x)$ + Probabilistic bins for inflation Q $\Rightarrow IQR_i(\pi\|x)$ Engelberg et al. 2009 + Household responsibilities $\Rightarrow$ shop_groceries$_i$ + Financial literacy test + survey feedback

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SCE	Jun.2013-Nov.2020, US	1200/month	*inflation/deflation* from 0-100 + Probabilistic bins for inflation + Financial literacy test + survey feedback + Inflation of specific items

Measuring Confidence

Rounding as a Measure of Forecast Confidence

→ Indicates low confidence in precise forecasting [Krifka, 2007]

→ Used in macro-uncertainty indices [Binder, 2017, Reiche and Meyler, 2022]

Distribution of point forecasts

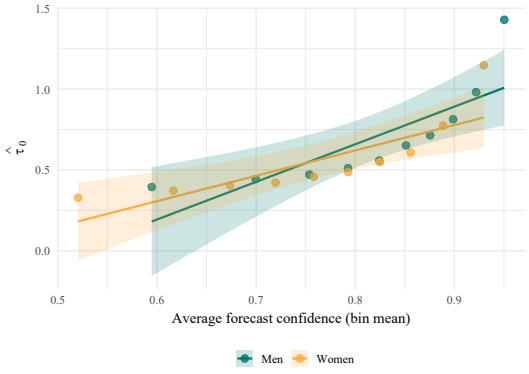
$$\text{prob\_confident}_i = 1 - \frac{1}{1 + e^{-\left(\hat{\alpha}_0 + R_{i,t}\hat{\beta} + X_{i,t}\hat{\gamma}\right)}}$$

where:

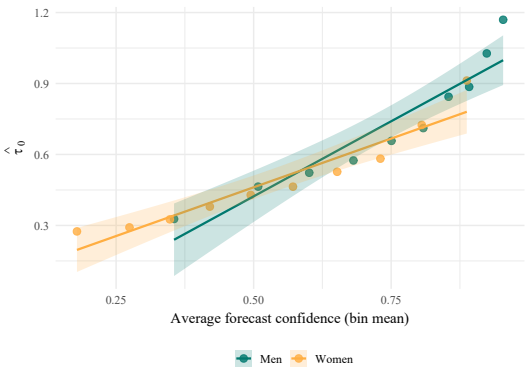
- $\hat{\text{prob}}\text{round}_i$ is the predicted probability that individual i rounds their inflation forecast
- D_i is a vector of uncertainty measures (feedback, rounding, repeated participation) and X_i contains household characteristics

Regression results

Measuring Confidence



BOP-HH, Germany



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Decomposing the Gender Gap

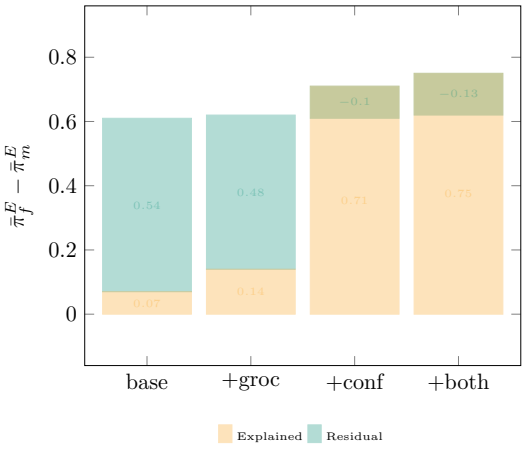
Kitagawa-Oaxaca-Blinder decomposition
[Kitagawa, 1955, Oaxaca, 1973, Blinder, 1973]

$$\pi^E_{i,t} = \beta_0 + X_{i,t}\gamma_1 + D_t\gamma_2 + R_i\gamma_3 + v_i + \rho_t,$$

$$\bar{\pi}^E_w - \bar{\pi}^E_m = \underbrace{\hat{\gamma}_w(\bar{W} - \bar{M})}_{\text{explained by differences in } \bar{W},\bar{M}} + \underbrace{\bar{M}(\hat{\gamma}_w - \hat{\gamma}_m)}_{\text{residual}}.$$

- $\bar{W}, \bar{M}$: vector of average values of the independent variables for women/men
- $\hat{\gamma}_w, \hat{\gamma}_m$: vector of estimated coefficients from the female/male sample
- $X_{i,t}$: vector of demographic characteristics: age, income, education, full-time, part-time, unemployed, retired, homemaker, refresher
- D_t: vector of time dummies
- R_i: vector of regional dummies

Confidence as Main Driver



Kitagawa-Oaxaca-Blinder

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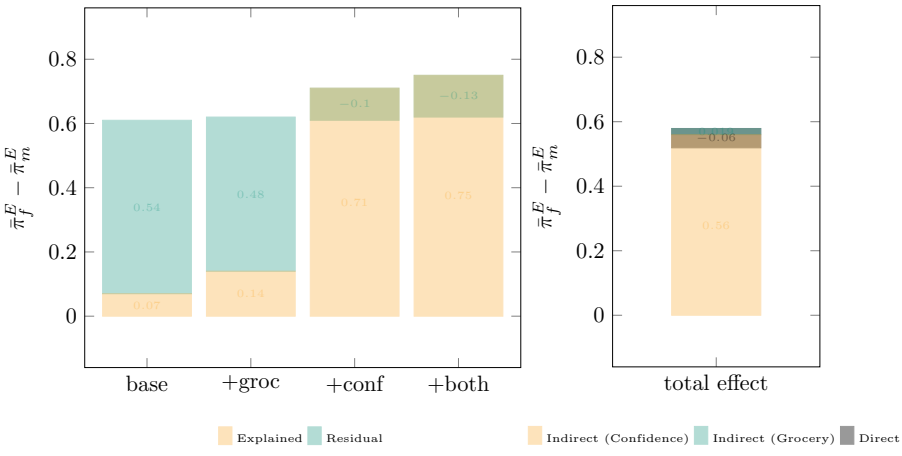

Kitagawa-Oaxaca-Blinder

Mediation Model explain

The effect of forecast confidence on exposure

Interaction Specification

$$\pi^{E}_{i,t} = \beta_0 + \beta_1 female_i + \beta_2 prob\_confident_{i,t} + \beta_3 shop\_groceries_i$$
$$+\beta_4 prob\_confident_{i,t} \times shop\_groceries_i + X_{i,t}\gamma_1 + D_t\gamma_2 + R_i\gamma_3 + v_i + \rho_t,$$

where

- $X_{i,t}$ is a vector of demographic characteristics: age, income, education, full-time, part-time, unemployed, retired, homemaker, refresher
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The effect of forecast confidence on exposure

	Inflation expectation (12m ahead, point estimate)
female	-0.08***
	(0.01)
prob_confident	-11.20***
	(0.06)
shop_groceries	0.07***
	(0.01)
prob_confident x shop_groceries	
Residual SE	1.65

*p<0.1; **p<0.05; ***p<0.01;
N = 155,202. Standard errors in parentheses.

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prob_confident	-11.20***	-10.76***
	(0.06)	(0.10)
shop_groceries	0.07***	0.66***
	(0.01)	(0.10)
prob_confident x shop_groceries		0.72***
		(0.12)
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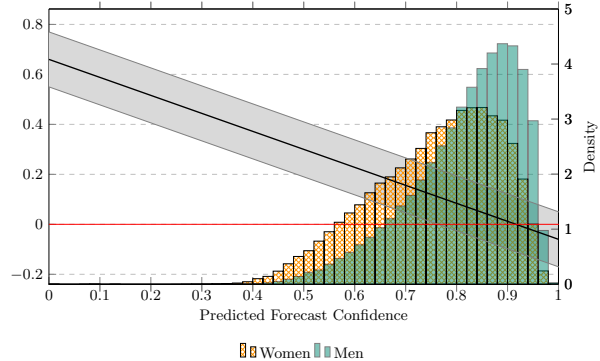

The Gender Gap and Skewness

Framework: Heterogeneity in $\frac{1}{\tau_0}$ and $\frac{1}{\tau_x}$ affects $\mathbb{E}(\pi|x)$ positively because of the right skew

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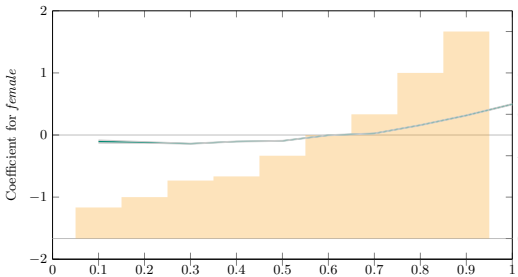
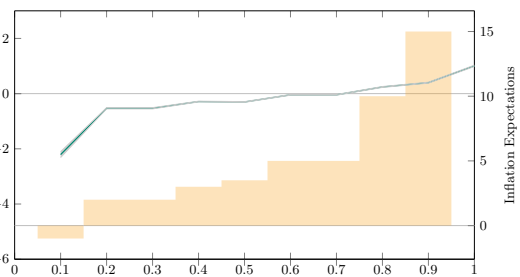
Framework: Heterogeneity in $\frac{1}{\tau_0}$ and $\frac{1}{\tau_x}$ affects $\mathbb{E}(\pi|x)$ positively because of the right skew
Estimate the baseline model along percentiles of the distribution of $\pi^E_{i,t}$



BOP-HH, Germany



SCE, US

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Measuring Financial Literacy

Lower confidence may be linked to lower financial literacy among women [Bucher-Koenen et al., 2024]

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How to measure *Financial Literacy:*

- Standardized Financial Literacy Test [Lusardi and Mitchell, 2014] in SCE and BOP-HH
- Score of 1 assigned for correct answers on interest, inflation, and risk
- Dummy *fin_lit*: 3 correct answers

Financial Literacy and Forecast Confidence

Financial Literacy Specification:

$$\begin{aligned} prob\_confident_{i,t} = \beta_0 + \beta_1 female_i + \beta_2 fin\_lit_{i,t} + \beta_3 female_i \times fin\_lit_{i,t} \\ + X_{i,t}\gamma_1 + D_t\gamma_2 + R_i\gamma_3 + v_i + \rho_t, \end{aligned}$$

where

- $X_{i,t}$ is a vector of demographic characteristics: age, income, education, full-time, part-time, unemployed, retired, homemaker, refresher
- D_t is a vector of time dummies
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Financial Literacy and Forecast Confidence

	Predicted confidence			Inflation point forecast
female	-0.16***	-0.16***	-0.17***	
	(0.001)	(0.001)	(0.001)	
fin_lit		0.02***	0.001	
		(0.001)	(0.001)	
fin_lit:female			0.04***	
			(0.002)	
Observations	145,452	145,452	145,452	
Residual SE	0.18	0.18	0.18	

*p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses. Source: SCE.

Financial Literacy and Forecast Confidence

	Predicted confidence			Inflation point forecast	
				High literacy	Low literacy
female	-0.16***	-0.16***	-0.17***	0.82***	2.72***
	(0.001)	(0.001)	(0.001)	(0.09)	(0.10)
fin_lit		0.02***	0.001		
		(0.001)	(0.001)		
fin_lit:female			0.04***		
			(0.002)		
prob_confident				-2.57***	-4.86***
				(0.10)	(0.14)
prob_confident:female				-1.23***	-3.69***
				(0.13)	(0.15)
Observations	145,452	145,452	145,452	46,252	99,200
Residual SE	0.18	0.18	0.18	2.11	3.75

*p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses. Source: SCE.

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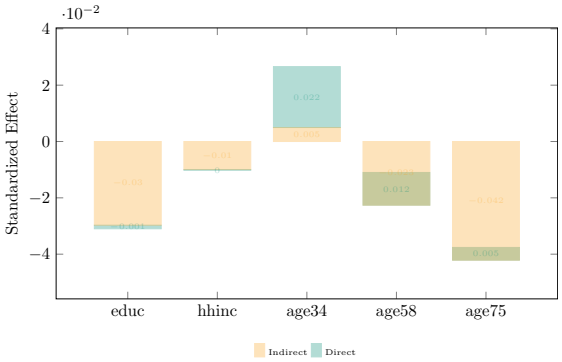
A framework for heterogeneity in general

How much of the effect of x on $\pi^E_{i,t}$ is explained by the confidence channel?



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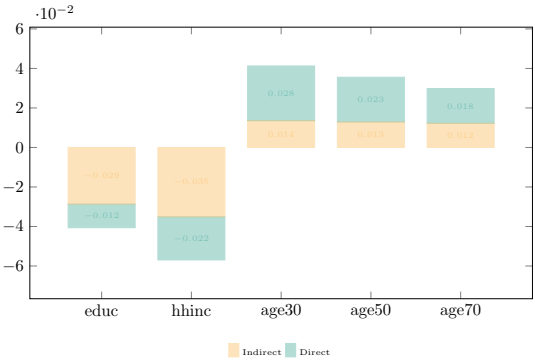

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Macro Implications

When do food prices matter? Framework suggests that food prices are more important when macroeconomic uncertainty is high (and priors are more imprecise).

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Test using regression model in [Coibion and Gorodnichenko, 2015]

$$\Delta\pi^{E}_{i,t} = \beta_0 + \beta_1\pi^{\text{food}}_{t} + \beta_2\pi^{\text{food}}_{t} \times \Delta\text{EPU}_t + \beta_3\Delta\text{EPU}_t + X_{i,t}\gamma_1 + R_i\gamma_3 + v_i + \rho_t,$$

where

- $\Delta\pi^{E}_{i,t}$ is the change in inflation forecast of individual i over a 6 months time period
- π^{food}_{t} is food price inflation in period t
- ΔEPU_t is the 6-months change in the [Baker et al., 2016] economic policy uncertainty index

Food Prices Matter in Uncertain Times

$$\Delta\pi^{E}_{i,t} = \beta_0 + \beta_1\pi^{\text{food}}_{t} + \beta_2\pi^{\text{food}}_{t} \times \Delta\text{EPU}_t + \beta_3\Delta\text{EPU}_t + X_{i,t}\gamma_1 + R_i\gamma_3 + v_i + \rho_t,$$

	BOP-HH		SCE	
π^{food}_t	0.12***	0.11***	-0.005	-0.01***
	(0.001)	(0.001)	(0.004)	(0.004)
$\pi^{food}_t \times \Delta\text{EPU}_t$		0.001***		0.001***
		(0.0000)		(0.0001)
ΔEPU_t	0.01***	0.0004***	-0.0005**	-0.002***
	(0.0000)	(0.0001)	(0.0002)	(0.0003)
Observations	100,482	100,482	57,122	57,122
Residual SE	2.48	2.37	2.72	2.72

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- Volatile signals can increase posterior mean if priors are imprecise if distribution is right-skewed

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Empirical Analysis: Test predictions from the framework using three expectations surveys

- Experience channel is insufficient in explaining stylized observations in the data
- Controlling for confidence (more than) closes the gender gap;
  Effect of grocery shopping on inflation expectations depends on forecasting confidence
- Gender gaps in confidence are (at least partially) caused by gender gaps in financial literacy

Conclusion

Framework: Bayesian updating with heterogeneous signal and prior precision

- Volatile signals can increase posterior mean if priors are imprecise if distribution is right-skewed

Empirical Analysis: Test predictions from the framework using three expectations surveys

- Experience channel is insufficient in explaining stylized observations in the data
- Controlling for confidence (more than) closes the gender gap;
  Effect of grocery shopping on inflation expectations depends on forecasting confidence
- Gender gaps in confidence are (at least partially) caused by gender gaps in financial literacy

$\Rightarrow$ **A unified framework to explain**

- Substantial heterogeneity across different demographic dimensions
- why food prices matter more when macroeconomic uncertainty is high

Thank you!

Overview

7. Appendix

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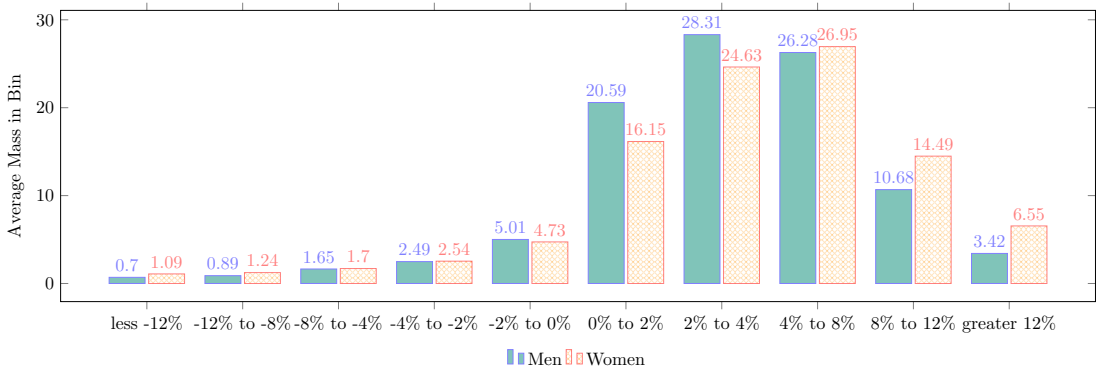
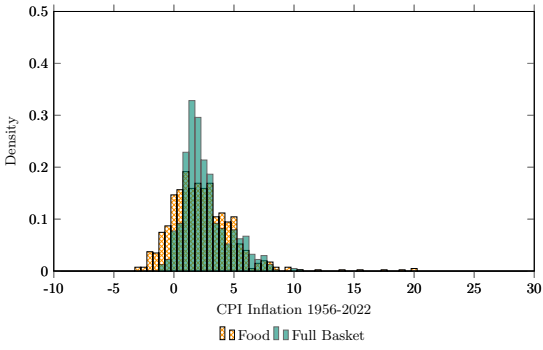
Average Density Forecast

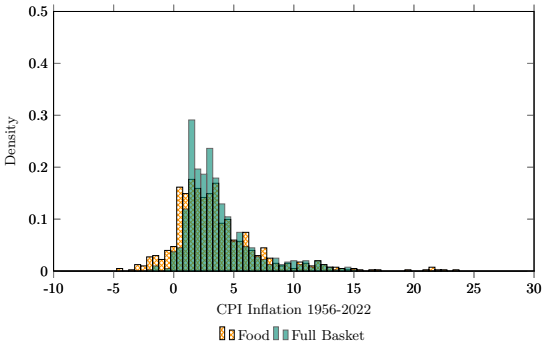


BOP-HH

Historical distribution of inflation

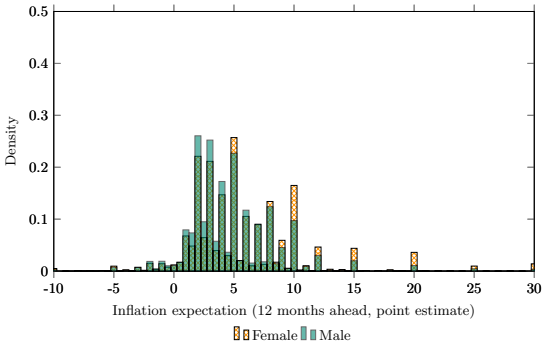


Germany

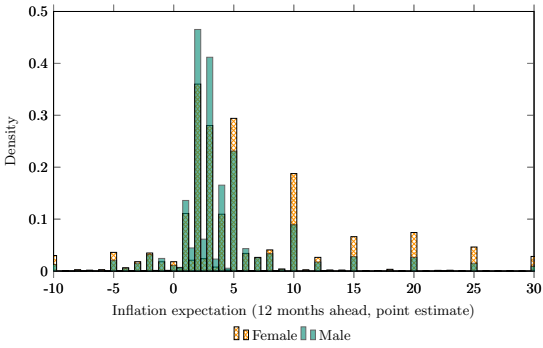


United States

Distribution of point forecasts



BOP-HH, Germany



SCE, United States

Inflation Point Forecast

BOP-HH

Q1: Do you think inflation or deflation is more likely over the next twelve months?

Note: Inflation is the percentage increase in the general price level. It is mostly measured using the consumer price index. A decrease in the price level is generally described as "deflation".

Q2: What do you think the rate of inflation/deflation in Germany will roughly be over the next twelve months?

Motivation | Measuring Inflation Expectations

SCE

Q1: Over the next 12 months, do you think that there will be inflation or deflation? (Note: deflation is the opposite of inflation)

Q2: What do you expect the rate of inflation/deflation to be over the next 12 months? Please give your best guess.

Inflation Density Forecast

BOP-HH

Q3: In your opinion, how likely is it that the rate of inflation will change as follows over the next twelve months?

Note: The aim of this question is to determine how likely you think it is that something specific will happen in the future. You can rate the likelihood on a scale from 0 to 100, with 0 meaning that an event is completely unlikely and 100 meaning that you are absolutely certain it will happen. Use values between the two extremes to moderate the strength of your opinion. Please note that your answers to the categories have to add up to 100. Please select one answer.

SCE

Q3: Now we would like you to think about the different things that may happen to inflation over the next 12 months. [...] In your view, what would you say is the percent chance that, over the next 12 months...

Note: Your answers can range from 0 to 100, where 0 means there is absolutely no chance, and 100 means that it is absolutely certain.

a The rate of deflation will be 12% or higher.
b The rate of deflation will be between 8% and less than 12%.
c The rate of deflation will be between 4% and less than 8%.
d The rate of deflation will be between 2% and less than 4%.
e The rate of deflation will be between 0% and less than 2%.
f The rate of inflation will be between 0% and less than 2%.
g The rate of inflation will be between 2% and less than 4%.
h The rate of inflation will be between 4% and less than 8%.
i The rate of inflation will be between 8% and less than 12%.
j The rate of inflation will be 12% or higher.

Density Forecast

Case 1: One bin

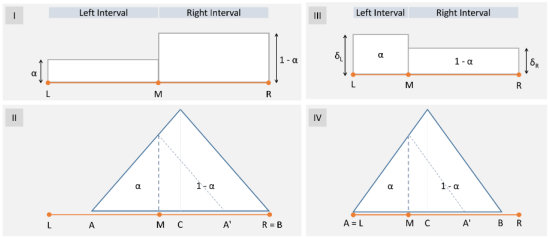
Fit isoscleles triangle with bin edges as limits of support

Density Forecast

Case 1: One bin

Case 2: Two bins

Fit isoscleles triangle where limits of support are weighted based on density and relative probability mass in the two bins [Becker et al., 2021]



Density Forecast

Case 1: One bin
Case 2: Two bins
Case 3: Three or more bins

Fit generalized Beta distribution where limits of support are determined by outer bin edges (open-ended bins are set to $\pm 20\%$)

$$Beta(t, a, b, l, r) = \left\{ \begin{array}{cc} 0 & \text{if} \quad t \leq l \\ \frac{1}{B(a,b)} \int_l^t \frac{(x-1)^{a-1}(r-x)^{b-1}}{(a-l)^{a-b-1}} dx & \text{if} \quad l < t \leq r \\ 1 & \text{if} \quad t \geq r \end{array} \right\}$$

$$\textit{where} \quad B(a, b) = \frac{\Gamma(a)\Gamma(b)}{\Gamma(a+b)} \quad \text{and} \quad \Gamma(a) = \int_0^\infty x^{a-1} e^{-1} dx$$

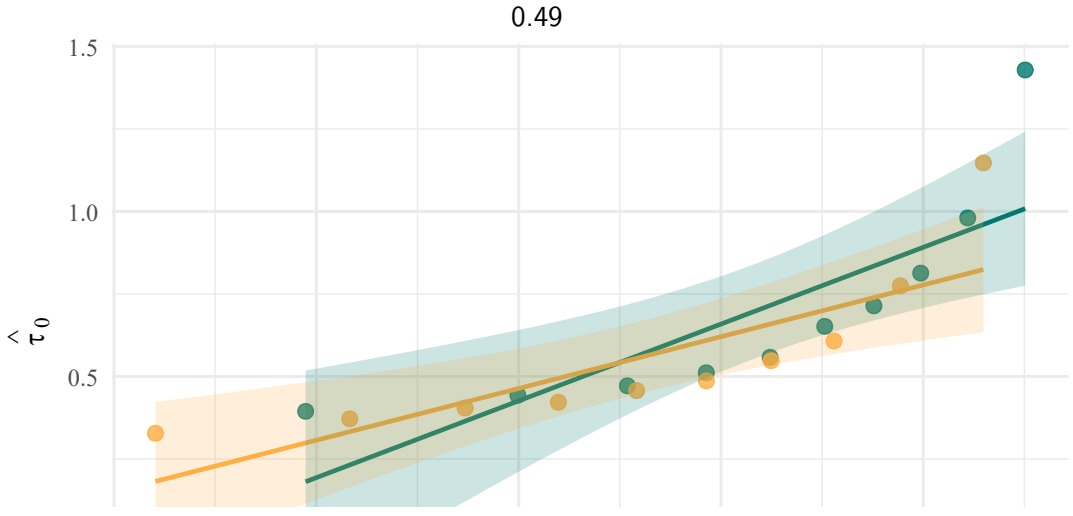
$$\min_{a>1, b>1} \sum_{i=1}^{9} (Beta(t_i, a, b, l, r) - F(t_i))^2$$

Predicting Confidence through Rounding

	round_π^E_point		
	BOP-HH	SCE	MSC
	(1)	(2)	(3)
round_expint_point	0.23***		
	(0.02)		
round_debt_point		0.98***	
		(0.02)	
round_exphp_point	0.64***	1.11***	0.38
	(0.03)	(0.02)	(0.00)
Observations	57,251	100,712	68,971

*p<0.1; **p<0.05; ***p<0.01
Standard errors in parentheses.

Relating τ_0 to prob_confident$_i$



Financial Literacy Test

1. Let's say you have $200 in a savings account. The account earns ten per cent interest per year. Interest accrues at each anniversary of the account. If you never withdraw money or interest payments, how much will you have in the account at the end of two years?
2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?
   -More than today
   -Exactly the same
   -Less than today
3. Please tell me whether this statement is true or false: Buying a single company's stock usually provides a safer return than a stock mutual fund.

Interaction of Confidence with Gender

Gender Gap Specification:

$$\pi^{E}_{i,t} = \beta_0 + \beta_1 female_i + \beta_2 prob\_confident_{i,t} + \beta_3 shop\_groceries_i$$
$$+\beta_4 prob\_confident_{i,t} \times female_i + \beta_5 shop\_groceries_i \times female_i$$
$$+X_{i,t}\gamma_1 + D_t\gamma_2 + R_i\gamma_3 + v_i + \rho_t,$$

where

- $X_{i,t}$ is a vector of demographic characteristics: age, income, education, full-time, part-time, unemployed, retired, homemaker, refresher
- D_t is a vector of time dummies
- R_i is a vector of regional dummies

Decomposition

Interaction of Confidence with Gender

	Inflation expectation (12 months ahead, point estimate)		
	BOP-HH	SCE	MSC
female	3.92***	1.46***	0.31
	(0.55)	(0.31)	(0.19)
prob_confident	-8.61***	-8.64***	-6.31***
	(0.77)	(0.37)	(0.48)
prob_confident x female	-4.37***	-2.48***	-0.66**
	(0.70)	(0.42)	(0.33)
shop_groceries			
shop_groceries x female			
Observations	43,276	64,779	55,992
R^2	0.12	0.05	0.10

*p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.

Interaction of Confidence with Gender

	Inflation expectation (12 months ahead, point estimate)			
		BOP-HH	SCE	MSC
female	3.92***	1.09***	1.46***	0.31
	(0.55)	(0.12)	(0.31)	(0.19)
prob_confident	-8.61***		-8.64***	-6.31***
	(0.77)		(0.37)	(0.48)
prob_confident x female	-4.37***		-2.48***	-0.66**
	(0.70)		(0.42)	(0.33)
shop_groceries		0.03		
		(0.09)		
shop_groceries x female		0.19		
		(0.16)		
Observations	43,276	64,503	64,779	55,992
R^2	0.12	0.11	0.05	0.10

*p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.

Interaction of Confidence with Gender

	Inflation expectation (12 months ahead, point estimate)				
	BOP-HH			SCE	MSC
female	3.92***	1.09***	3.72***	1.46***	0.31
	(0.55)	(0.12)	(0.60)	(0.31)	(0.19)
prob_confident	-8.61***		-7.94***	-8.64***	-6.31***
	(0.77)		(0.82)	(0.37)	(0.48)
prob_confident x female	-4.37***		-4.38***	-2.48***	-0.66**
	(0.70)		(0.74)	(0.42)	(0.33)
shop_groceries		0.03	0.03		
		(0.09)	(0.12)		
shop_groceries x female		0.19	0.26		
		(0.16)	(0.20)		
Observations	43,276	64,503	37,181	64,779	55,992
R^2	0.12	0.11	0.12	0.05	0.10

*p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.

Robustness

Mediation model [MacKinnon, 2012, Tingley et al., 2014]

$$\pi^E_{i,t} = \beta_0 + \beta_1 female_i + v_i + \rho_t$$
$$\pi^E_{i,t} = \beta'_0 + \beta'_1 female_i + \beta_2 prob\_confident_{i,t} + \beta_3 shop\_groceries_i + v_i + \rho_t$$
$$\rightarrow \text{ Mediated effect: } \beta_1 - \beta'_1$$

Decomposition

Robustness

Mediation model [MacKinnon, 2012, Tingley et al., 2014]

$$\pi^E_{i,t} = \beta_0 + \beta_1 female_i + v_i + \rho_t$$
$$\pi^E_{i,t} = \beta'_0 + \beta'_1 female_i + \beta_2 prob\_confident_{i,t} + \beta_3 shop\_groceries_i + v_i + \rho_t$$
$$\rightarrow \text{ Mediated effect: } \beta_1 - \beta'_1$$

Decomposition

Robustness

Mediation model [MacKinnon, 2012, Tingley et al., 2014]

$$\pi^E_{i,t} = \beta_0 + \beta_1 female_i + v_i + \rho_t$$
$$\pi^E_{i,t} = \beta'_0 + \beta'_1 female_i + \beta_2 prob\_confident_{i,t} + \beta_3 shop\_groceries_i + v_i + \rho_t$$
$$\rightarrow \text{ Mediated effect: } \beta_1 - \beta'_1$$

Decomposition

Robustness

Mediation model [MacKinnon, 2012, Tingley et al., 2014]

$$\pi^E_{i,t} = \beta_0 + \beta_1 female_i + v_i + \rho_t$$
$$\pi^E_{i,t} = \beta'_0 + \beta'_1 female_i + \beta_2 prob\_confident_{i,t} + \beta_3 shop\_groceries_i + v_i + \rho_t$$
$\rightarrow$ Mediated effect: $\beta_1 - \beta'_1$

$$prob\_confident_{i,t} = \alpha^c_0 + \alpha^c_1 female_i + v_i + \rho_t$$
$$shop\_groceries_i = \alpha^g_0 + \alpha^g_1 female_i + v_i + \rho_t$$
$\rightarrow$ Effect mediated though grocery shopping: $\alpha^c_1 \beta_2$

$\rightarrow$ Effect mediated though grocery shopping: $\alpha^g_1 \beta_3$

Decomposition

Mediation Model Regression

	Inflation expectation (12 months ahead, point estimate)					prob_confident	shop_groceries
female	0.49***	-0.06***	0.47***	-0.08***	-0.08***	-0.05***	0.26***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.0005)	(0.002)
prob_confident		-11.20***		-11.20***	-10.76***		-0.08***
		(0.06)		(0.06)	(0.10)		(0.01)
shop_groceries			0.11***	0.07***	0.66***	-0.004***	
			(0.02)	(0.01)	(0.10)	(0.001)	
prob_confident:shop_groceries					-0.72***		
					(0.12)		
Constant	2.93***	11.46***	2.88***	11.42***	11.07***	0.76***	0.51***
	(0.20)	(0.20)	(0.20)	(0.20)	(0.21)	(0.01)	(0.04)
Observations	155,202	155,202	155,202	155,202	155,202	155,202	155,202
Residual SE	1.71	1.65	1.72	1.65	1.65	0.08	0.38

*p<0.1; **p<0.05; ***p<0.01. Robust standard errors in parentheses.

Decomposition

Decomposition of Spending Intentions

Estimate model with interaction terms

	Major items	Essential items	Entertainment
π^E	-0.01***	-0.001***	-0.01***
	(0.001)	(0.0003)	(0.0005)
female	-0.01**	-0.02***	-0.02***
	(0.01)	(0.003)	(0.01)
π^E x female	0.001**	-0.0003	0.003***
	(0.001)	(0.0004)	(0.001)
R^2	0.05	0.02	0.14

*p<0.1; **p<0.05; ***p<0.01; N=105,035. Standard errors in parentheses.

Decomposition of Spending Intentions

Estimate model with interaction terms and mediation model [MacKinnon, 2012]

	Major items		Essential items		Entertainment	
π^E	-0.01***	-0.01***	-0.001***	-0.001***	-0.01***	-0.01***
	(0.0003)	(0.001)	(0.0002)	(0.0003)	(0.0003)	(0.0005)
female	-0.01	-0.01**	-0.02***	-0.02***	0.003	-0.02***
	(0.005)	(0.01)	(0.003)	(0.003)	(0.004)	(0.01)
π^E x female		0.001**		-0.0003		0.003***
		(0.001)		(0.0004)		(0.001)
R^2	0.05	0.05	0.02	0.02	0.14	0.14

*p<0.1; **p<0.05; ***p<0.01; N=105,035. Standard errors in parentheses.

Decomposition of Spending Intentions