Comment: Aggregate Risk or Aggregate Uncertainty? Evidence from UK Households

Claudio Michelacci & Luigi Paciello

Silvia Miranda-Agrippino
Northwestern University, Bank of England and CFM

BdF Heterogeneous Agents vs Heterogeneous Info
Which Route for Monetary Policy
Paris - December 5-6, 2019

[▷]

M&P's Paper #1

- Introduce a novel way to measure uncertainty using HH preferences

In a Nutshell:

$$\underbrace{\mathbb{E}^{\kappa}_{i,t}(\pi_{t+h})}_{\text{Uncertainty}} = \underbrace{\mathbb{E}^{\sigma}_{i,t}(\pi_{t+h})}_{\text{Risk}} + \text{BIAS}_{i,t}$$

BIAS:

1. drives heterogeneity in HH $\mathbb{E}_t(\pi_{t+h})$;
2. is negative;
3. **depends on HH preferences**

- Estimates of effects of HH preferences on $\mathbb{E}_t(\pi_{t+h})$
  ➔ BoE's Inflation Attitudes Survey (BEIAS)
- **Model-based series of uncertainty** & implications for output

M&P's Paper #2

- **Model:**

$$\mathbb{E}^{\kappa}_{i,t}(\pi_{t+h}) = \mathbb{E}^{\sigma}_{i,t}(\pi_{t+h}) - \theta^{MP}_{\pi}\underline{\varepsilon}^{MP}_{t} d^{MP}_{i} + \theta^{TFP}_{\pi}\underline{\varepsilon}^{TFP}_{t} d^{TFP}_{i}$$

  - $\theta^{MP}_{\pi}, \theta^{TFP}_{\pi}$ ➔ eqm coefficients MP & TFP $\rightarrow \pi$
  - $\underline{\varepsilon}^{MP}_{t}, \underline{\varepsilon}^{TFP}_{t}$ ➔ worst case MP & TFP shocks
  - d^{MP}_{i}, d^{TFP}_{i} ➔ preference dummies for MP & TFP

- **Empirics:**

$$\mathbb{E}_{i,t}(\pi_{t+h}) = \bar{\pi}_t + \beta^{MP}_{i,t} d^{MP}_{i,t} + \beta^{TFP}_{i,t} d^{TFP}_{i,t} + \text{controls} + \epsilon_{i,t}$$

  - $\beta^{MP}_{i,t}, \beta^{TFP}_{i,t}$ ➔ estimates from BEIAS

M&P's Paper #3

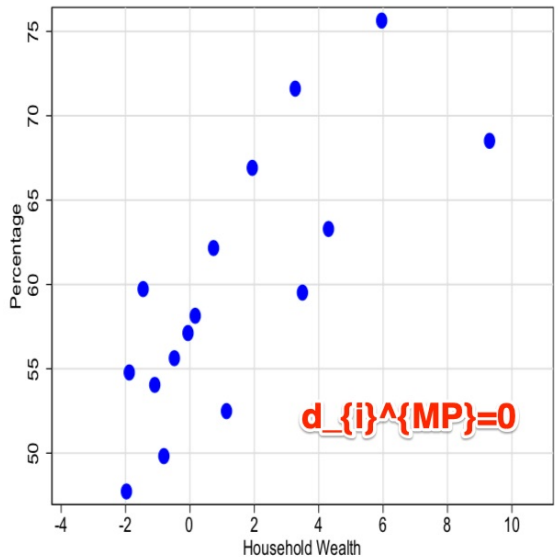
1. Preferences for π

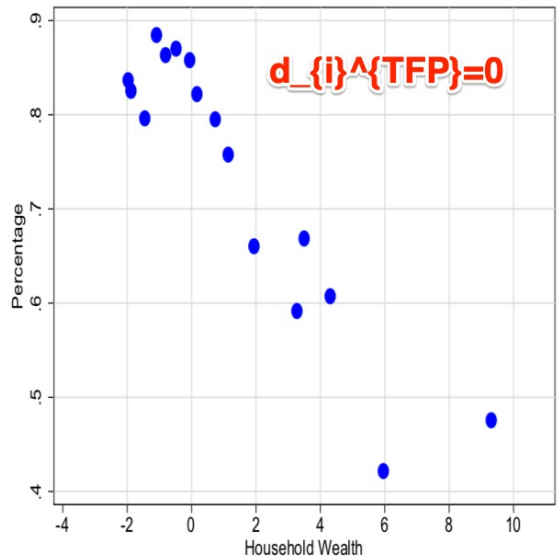
$$d_{i,t}^{MP} = \begin{cases} 1 & \text{HH likes } \pi \rightarrow \text{would rather have low/stable } i \\ 0 & \text{HH dislikes } \pi \rightarrow \text{would rather have higher } i \end{cases}$$

2. Preferences for R

$$d_{i,t}^{TFP} = \begin{cases} 1 & \text{HH prefers higher } R \ \& \ d_{i,t}^{MP} == 1 \\ 0 & \text{HH dislikes } R \ \& \ d_{i,t}^{MP} == 0 \end{cases}$$

Preferences & wealth





M&P's Paper #4

preferences & $\mathbb{E}_t(\pi_{t+h})$

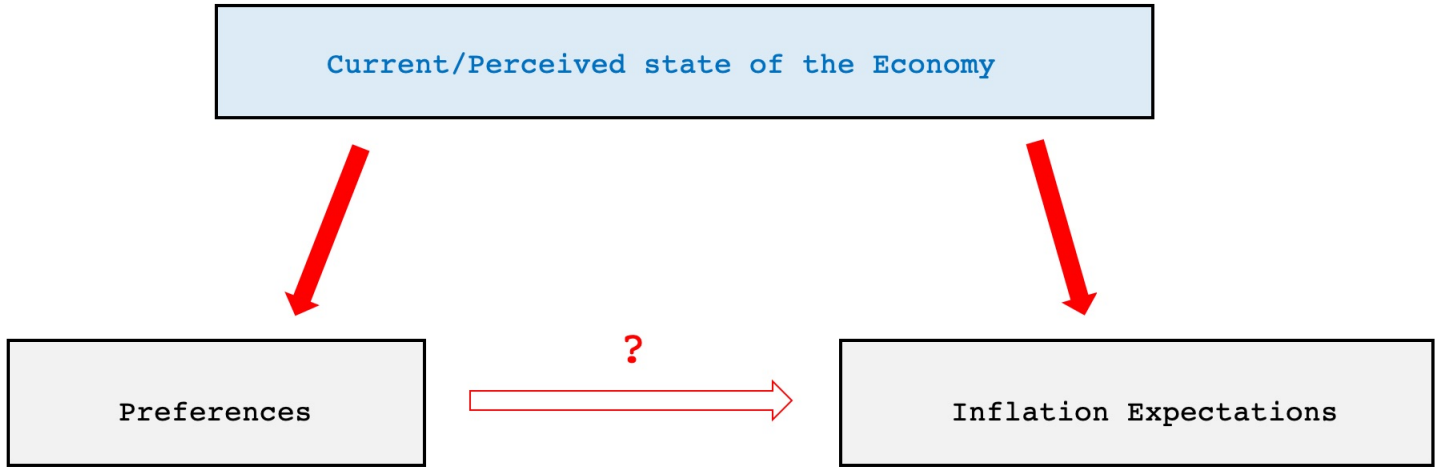
Table 4: Effects of Preferences on expected inflation

VARIABLES	(1) Π^e	(2) Π^e	(3) Π^e	(4) Π^e
HH prefers high Π	-0.18***	-0.14***	-0.15***	-0.13***
	(0.02)	(0.02)	(0.02)	(0.02)
HH prefers i up			-0.13***	-0.08***
			(0.02)	(0.02)
HH prefers i unchanged			-0.16***	-0.13***
			(0.02)	(0.02)
HH is indifferent on i			-0.06**	-0.03
			(0.03)	(0.03)

- The more HH prefer π over R, the lower their $\mathbb{E}_t(\pi_{t+h})$
- The more HH prefer higher π & R ($\downarrow$ TFP), the lower their $\mathbb{E}_t(\pi_{t+h})$

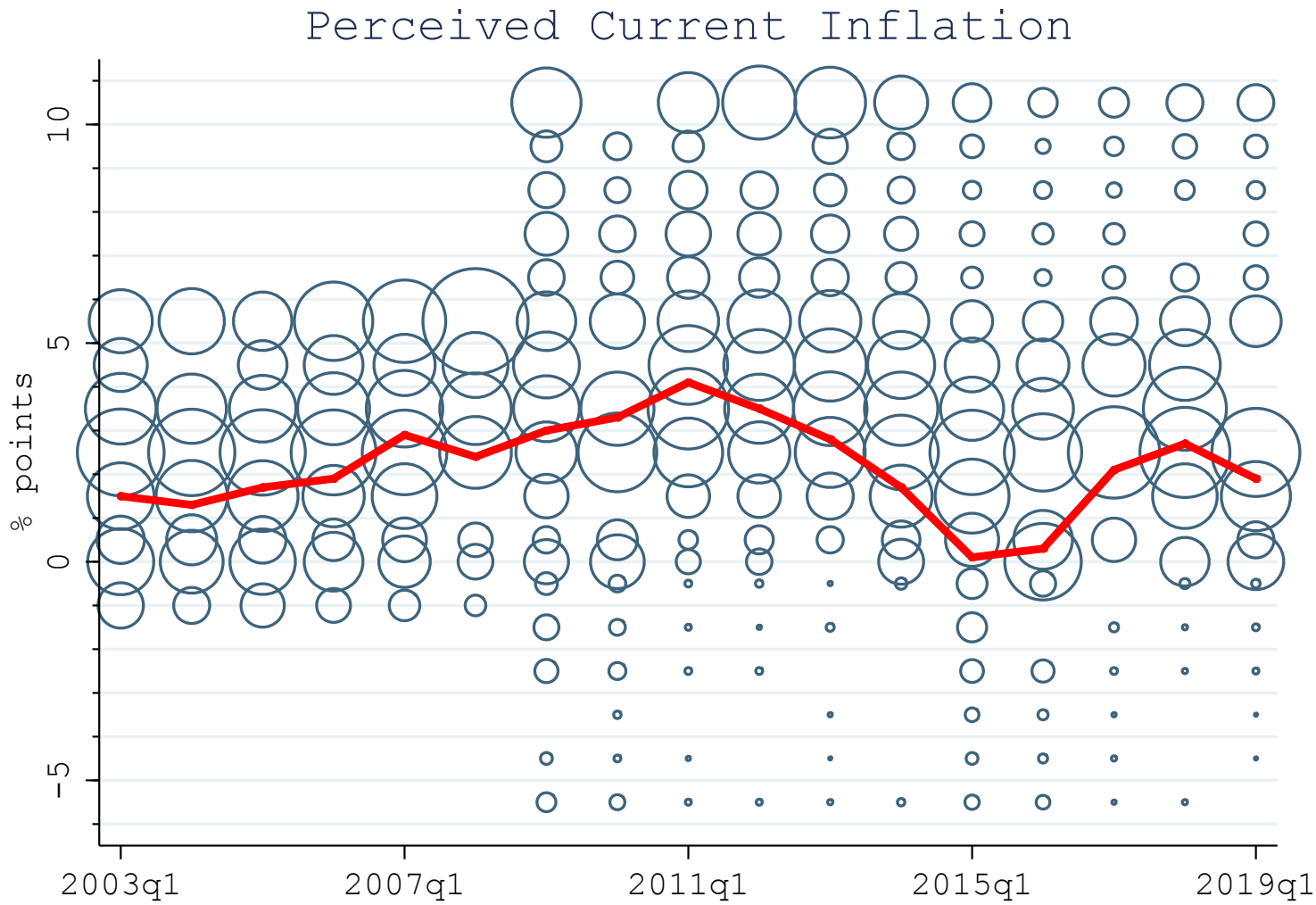
Stickiness

- BEIAS responses are **conditional statements**
- Depend on **current/perceived** state of the economy
- Which may in turn affect choices, **expectations & preferences**



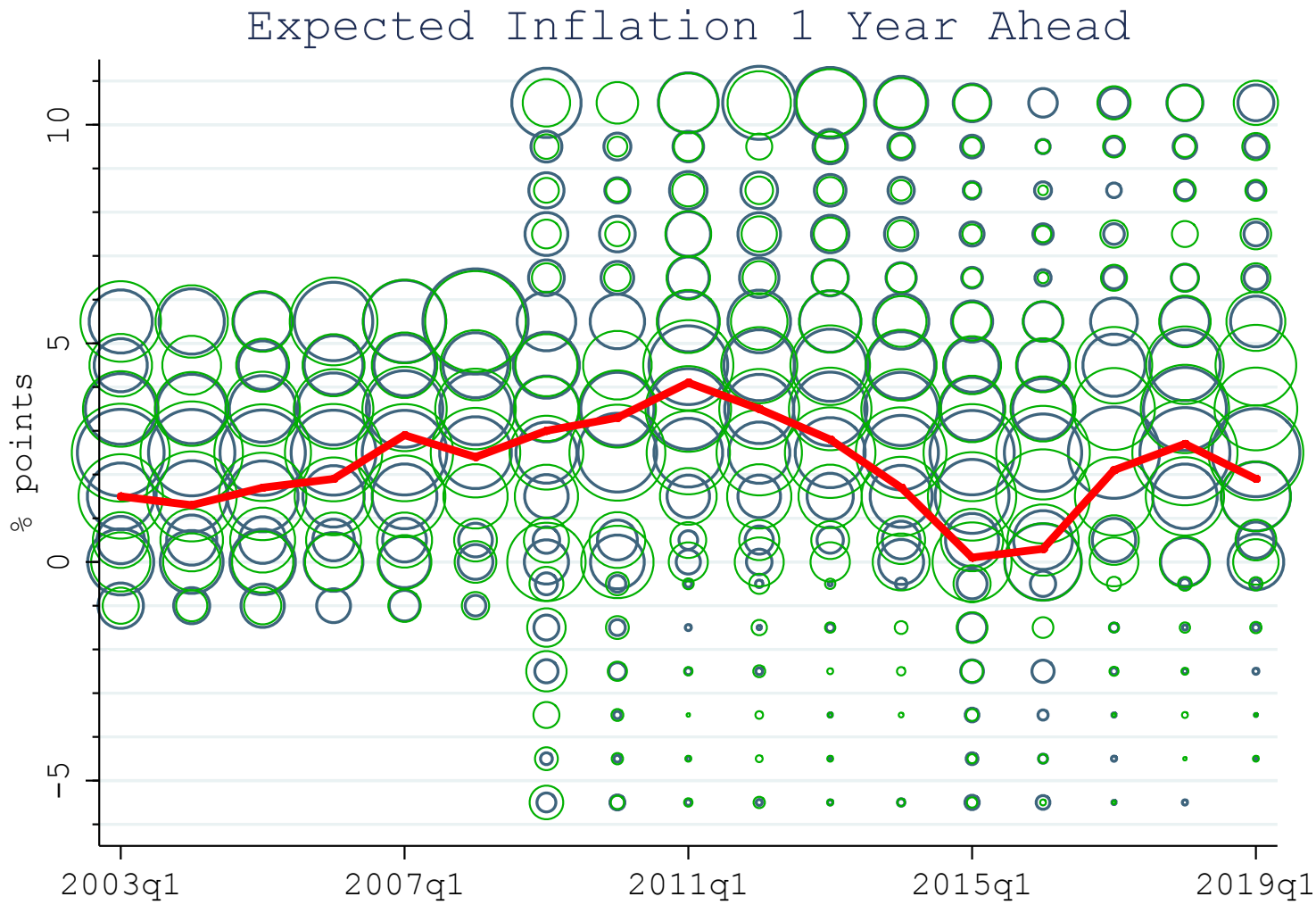
BEIAS Perceptions vs Reality

- Which option describes how prices have changed over the last 12 months?



Perceptions ≃ Expectations

- vs **how much would you expect prices to change over the next 12 months?**



Persistence #2

- BEIAS Perceptions of current π vs 1Year ahead Expectations

Perception	Expectations									
	-5.5	-1	0	1.5	2.5	3.5	4.5	5.5	10.5	Total
-5.5	30	0	66	13	29	8	8	11	18	183
-1	0	472	549	222	164	67	21	49	0	1,544
0	25	260	3,689	2,186	1,646	483	299	321	66	8,975
1.5	6	94	898	8,117	3,901	1,075	363	206	28	14,688
2.5	13	161	1,156	3,718	13,827	4,518	1,751	596	55	25,795
3.5	13	122	855	1,625	3,965	8,972	3,677	1,391	117	20,737
4.5	15	118	699	825	2,149	2,358	7,109	2,042	237	15,552
5.5	21	330	921	737	1,857	1,724	1,518	8,646	219	15,973
10.5	86	0	433	139	336	344	558	590	3,803	6,289
Total	209	1,557	9,266	17,582	27,874	19,549	15,304	13,852	4,543	109,736

- A wild world for some..
- But **mostly a RW**

Persistence #2

- BEIAS Perceptions of current π vs 1Year ahead Expectations

Perception	Expectations									
	-5.5	-1	0	1.5	2.5	3.5	4.5	5.5	10.5	Total
-5.5	30	0	66	13	29	8	8	11	18	183
-1	0	472	549	222	164	67	21	49	0	1,544
0	25	260	3,689	2,186	1,646	483	299	321	66	8,975
1.5	6	94	898	8,117	3,901	1,075	363	206	28	14,688
2.5	13	161	1,156	3,718	13,827	4,518	1,751	596	55	25,795
3.5	13	122	855	1,625	3,965	8,972	3,677	1,391	117	20,737
4.5	15	118	699	825	2,149	2,358	7,109	2,042	237	15,552
5.5	21	330	921	737	1,857	1,724	1,518	8,646	219	15,973
10.5	86	0	433	139	336	344	558	590	3,803	6,289
Total	209	1,557	9,266	17,582	27,874	19,549	15,304	13,852	4,543	109,736

- A wild world for some..
- But **mostly a RW**

Persistence #2

- BEIAS Perceptions of current π vs 1Year ahead Expectations

Perception	Expectations									
	-5.5	-1	0	1.5	2.5	3.5	4.5	5.5	10.5	Total
-5.5	30	0	66	13	29	8	8	11	18	183
-1	0	472	549	222	164	67	21	49	0	1,544
0	25	260	3,689	2,186	1,646	483	299	321	66	8,975
1.5	6	94	898	8,117	3,901	1,075	363	206	28	14,688
2.5	13	161	1,156	3,718	13,827	4,518	1,751	596	55	25,795
3.5	13	122	855	1,625	3,965	8,972	3,677	1,391	117	20,737
4.5	15	118	699	825	2,149	2,358	7,109	2,042	237	15,552
5.5	21	330	921	737	1,857	1,724	1,518	8,646	219	15,973
10.5	86	0	433	139	336	344	558	590	3,803	6,289
Total	209	1,557	9,266	17,582	27,874	19,549	15,304	13,852	4,543	109,736

- A wild world for some..
- But **mostly a RW**

Heterogeneity & Expectations Distortions

$$\mathbb{E}^{\kappa}_{i,t}(\pi_{t+h}) = \mathbb{E}^{\sigma}_{i,t}(\pi_{t+h}) - \theta^{MP}_{\pi}\varepsilon^{MP*}_{i,t} + \theta^{TFP}_{\pi}\varepsilon^{TFP*}_{i,t}$$

- $\varepsilon^{*}_{i,t}$ ➔ worst case beliefs
  1. $\varepsilon^{*}_{i,t} = (1 - 2\gamma_i(a_{i,t}))\underline{\varepsilon}_t$
  2. $\varepsilon_{i,t+1} \in [-\underline{\varepsilon}_t, \underline{\varepsilon}_t]$
  3. The higher $a_{i,t} \Longrightarrow \gamma_i(a_{i,t}) \to 1$
  4. The higher $a_{i,t} \Longrightarrow \varepsilon^{*}_{i,t} \simeq -\underline{\varepsilon}_t \Longrightarrow$ the more distorted $\mathbb{E}^{\kappa}_{i,t}(\pi_{t+h})$

- Additional testable prediction

- Does it imply that wealthy HH drive most of the uncertainty?

Summary

- Exciting new way to characterize role of HH preferences for beliefs formation
- Captures source of uncertainty which is not in existing measures
- Makes use of largely unexplored yet very rich dataset
- Role of perceptions of current π /reference point in determining
  1. expectations
  2. choices
  3. preferences
- Unexplored heterogeneity wrt wealth in
  1. expectations
  2. uncertainty

  are there classes of agents that 'matter more'? Whose $\mathbb{E}$ are likely to be more distorted?