The Inflation Expectations of the Hand-to-Mouth

Gabriele Buontempo

LMU Munich

Why the Inflation Expectations of the HtM?

Aim: Answer 2 questions

1. How do inflation expectations **differ** between HtM and non-HtM ?
2. How does this difference **affect** the transmission of policy ?

Why?

- Inflation expectations matter for the **consumption/saving decision** and for the **effectiveness of monetary policy**.
  → Which expectations matter? HtM or non-HtM?
  [Angeletos and Lian, 2018, Coibion et al., 2020]
- HtM matter for the **transmission of policy** through GE effects.
  → Do inflation expectations affect the importance of this channel?
  [Kaplan et al., 2018, Auclert et al., 2020, Bilbiie, 2020]
- Evidence of **underreaction** to inflation news.
  → Does it differ between HtM and non-HtM? What does it imply?
  [Coibion and Gorodnichenko, 2015, D'Acunto et al., 2022]

The Data

- Microdata from **Survey of Consumer Expectations** (SCE) of the NY Fed
- **Identify Hand-to-Mouth** households with the question:

What do you think is the percent chance that you could come up with $2,000 if an unexpected need arose within the next month?

- Yielding that ≈ 40% **of households are HtM** , half of which are ***wealthy*** HtM.
  → In line with Kaplan & Violante 2014.

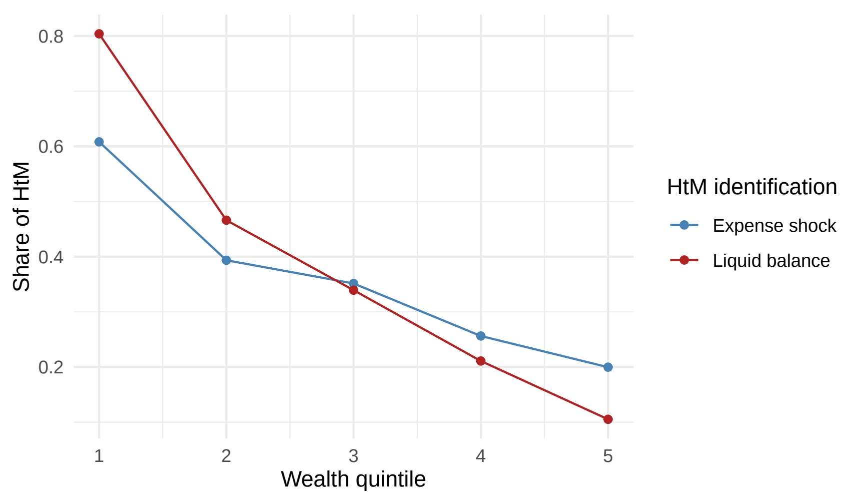

Figure 1. HtM identification in the SCE

Four Facts about HtM Inflation Expectations

The inflation expectations of HtM households:

1. Have a **higher forecast error** compared to those of non-HtM.
   → 100 bp higher during low inflation, 250 bp higher during inflation surge.
2. Have a **higher *absolute* forecast error** compared to those of non-HtM.
   → 100 bp higher during low inflation, 200 bp higher during inflation surge.
3. Are **more volatile** compared to those of non-HtM.
   → Variance of the time series for HtM is more than 3 times higher.
4. Are **more dispersed in the cross-section** compared to those of non-HtM.
   → RMS deviation from the group mean is 25% higher for HtM.

The Forecast Error of Inflation Expectations

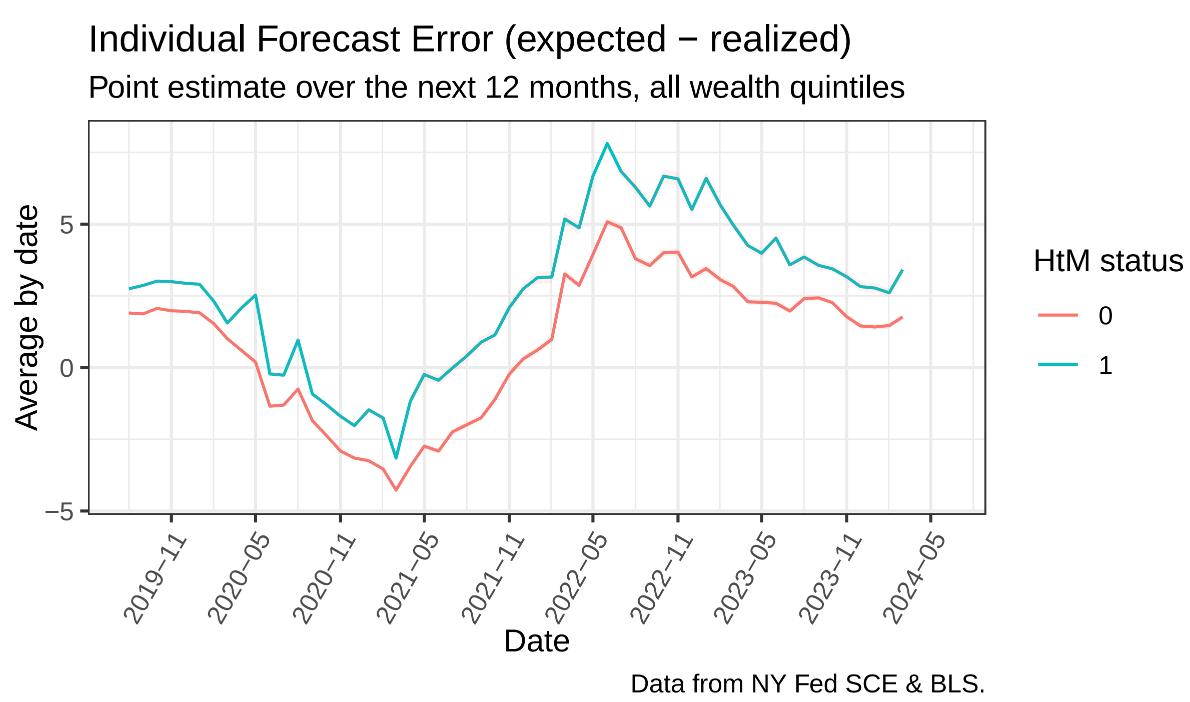

Figure 2. Forecast Error during the **inflation surge**

A Model of Inflation Expectations

A **noisy signal** model can **rationalize these facts** and allows to **estimate structural differences** in the inflation expectation processes.
[Mankiw and Reis, 2002, Woodford, 2003, Vellekoop and Wiederholt, 2019]

Idea:

- **Discrepancy** between the ***actual*** and the ***perceived*** inflation signal: bias μ and overconfidence σ_ε.
- Bias leads to **persistent forecast errors**, despite updating.
- Differences in confidence in the signal lead to **different Kalman gains**.

Perceived state equation:

$$\pi_{t+1} = \rho\pi_t + u_{t+1} \tag{1}$$

Perceived inflation signal:

$$s_t = \pi_t - \mu + \varepsilon_t \quad \text{with } \sigma_\varepsilon \text{ the variance of } \varepsilon_t \tag{2}$$

Using the Kalman gain, the **inflation forecast** over a quarter is:

$$\hat{\pi}_{t+1|t} = \rho\hat{\pi}_{t|t-1} + \rho \underbrace{\frac{P_{t|t-1}}{P_{t|t-1} + \sigma_\varepsilon}}_{K_t} \left(\pi_t - \hat{\pi}_{t|t-1} + \mu + \varepsilon_t^A\right) \tag{3}$$

Estimation

The yearly inflation forecast from the model can be rewritten as:

$$\hat{\Pi}_{t+4|t} = \beta_0 + \beta_1\hat{\Pi}_{t+3|t-1} + \beta_2\pi_t + \nu_t$$

that can be **estimated with a regression** where:

$$\begin{cases} \beta_0 &= K(\rho + \rho^2 + \rho^3 + \rho^4)\mu \\ \beta_1 &= \rho(1 - K) \\ \beta_2 &= K(\rho + \rho^2 + \rho^3 + \rho^4) \end{cases}$$

	Year-on-year inflation expectations: $\hat{\Pi}_{t+4\|t}$			
	2014-2020		2020-2024	
	HtM	non HtM	HtM	non HtM
	(1)	(2)	(3)	(4)
β_1 - Lagged expectations: $\hat{\Pi}_{t+3\|t-1}$	0.776***	0.780***	0.753***	0.742***
	(0.002)	(0.002)	(0.003)	(0.003)
β_2 - Quarterly inflation: π_t	0.061	-0.021	0.655***	0.439***
	(0.045)	(0.027)	(0.039)	(0.023)
β_0 - Constant	0.864***	0.724***	1.094***	0.905***
	(0.021)	(0.013)	(0.034)	(0.020)
Implied $\hat{\rho}$	0.776***	0.780***	0.934***	0.874***
Implied $\hat{K}$	0	0	0.193***	0.151***
Implied $\hat{\mu}$	.	.	1.670***	2.062***
Observations	46,309	68,810	29,478	42,456
Adjusted R^2	0.6192	0.6275	0.5991	0.5859

Key Takeaways

- Inflation expectations **differ** between HtM and non-HtM.
  → Four facts can be characterized.
  → In particular **higher forecast error**.
  → Aggregate forecast error on inflation expectations is **mainly driven by HtM households**.
- A noisy signal model **can rationalize** these differences.
  → Estimation implies **higher Kalman gain** for HtM than non-HtM.
- Ignoring these differences leads to **overestimate the Kalman gain**.
  → On the Euler equation, it's the Kalman gain of **non-HtM** that matters (≈ 0.15).

Next steps:

- Standard HANK assumes Kalman gain = 1.
- **Work in progress:** HANK with model of inflation expectations that fits the data.
- **Question:** How does the smaller K of non-HtM affect direct and GE effects ?
  → Should make GE effects relatively more important.