Discussion of "Inflation: Old and New Perspectives"

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The views expressed in this discussion are solely those of the author and may differ from official Bank of Canada views. No responsibility for them should be attributed to the Bank.

Some key takeaways

- The role of inflation expectations in the NKPC may be overstated

- Asymmetric shocks could be captured in aggregate cost push shocks

- No *direct* effect of long-run expectations on actual inflation

My reactions & plan for today

1. **What do Phillips curves used at central banks say about the role of inflation expectations in recent years?**

   › Inflation decomposition with BoC version of FRB-New York DSGE model

2. **Is the role of asymmetric shocks in recent inflation quantitatively important?**

   › BoC extension of Ferrante, Graves and Iacoviello (2023 JME)

3. **What about *indirect* effects of long-run inflation expectations?**

   › BoC update of Carvalho, Eusepi, Moench and Preston (2023 AEJ: Macro, "CEMP")

NKPC in the FRB-New York DSGE model

$$\pi_t = 0.002 mc_t + 0.184\pi_{t-1} + 0.815 E_t\{\pi_{t+1}\} + \epsilon_t$$

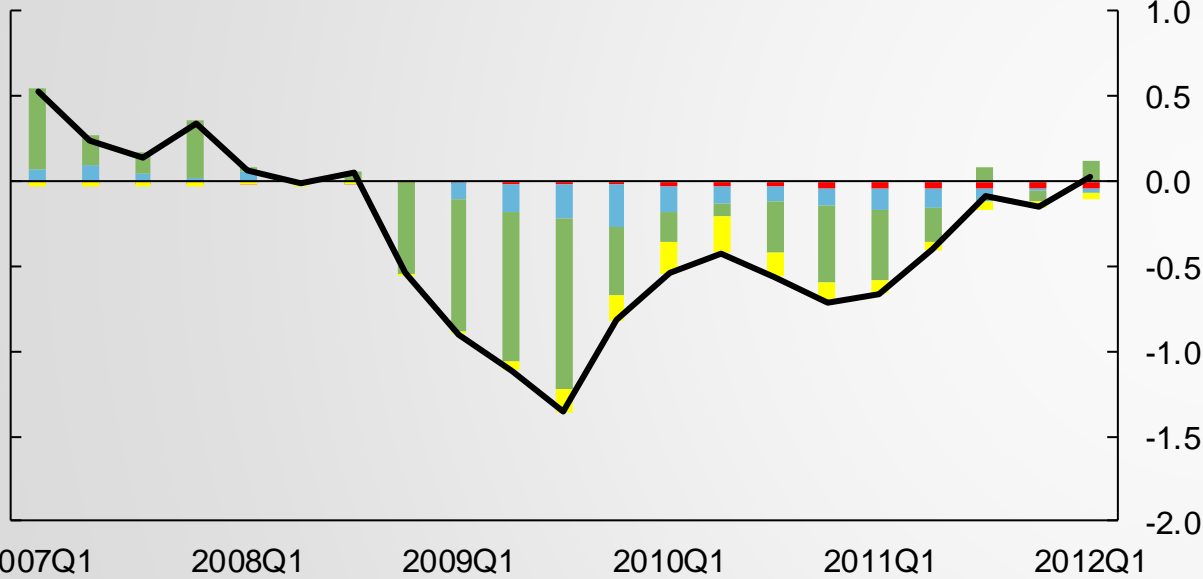- π_t: core PCE inflation

- Model estimated over 1954Q3-2019Q4 under the assumption of model-consistent expectations, with $E_t\{\pi_{t+1}\}$ treated as an unobservable

- Alternative decomposition will replace model-consistent expectations with SPF data

SPF and model-consistent expectations telling similar stories post-GFC…

Inflation decomposition using model-consistent inflation expectations
Percentage point deviation from steady state, year-over-year

p.p.

Last obs: 2012Q1

Legend:
- Marginal cost (red)
- Lagged inflation (blue)
- Inflation expectations (green)
- Shock (yellow)
- Inflation (black line)

Inflation decomposition using SPF core PCE inflation expectations
Percentage point deviation from steady state, year-over-year

p.p.

Last obs: 2012Q1

Legend:
- Marginal cost (red)
- Lagged inflation (blue)
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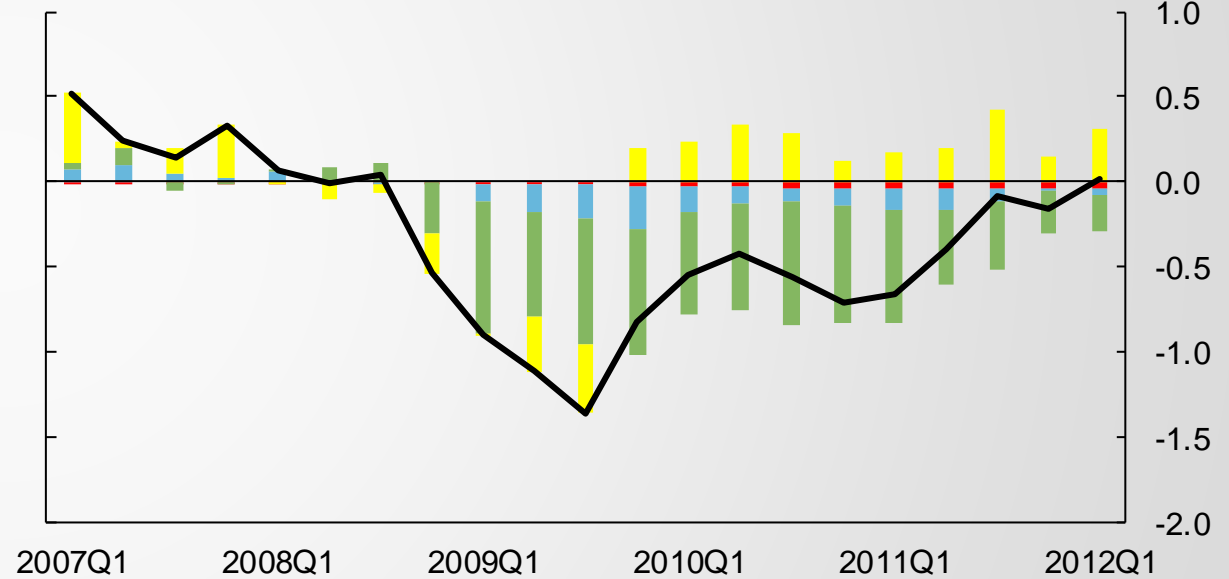
…but starting to disconnect in the mid-2010s…

Inflation decomposition using model-consistent inflation expectations
Percentage point deviation from steady state, year-over-year

Inflation decomposition using SPF core PCE inflation expectations
Percentage point deviation from steady state, year-over-year

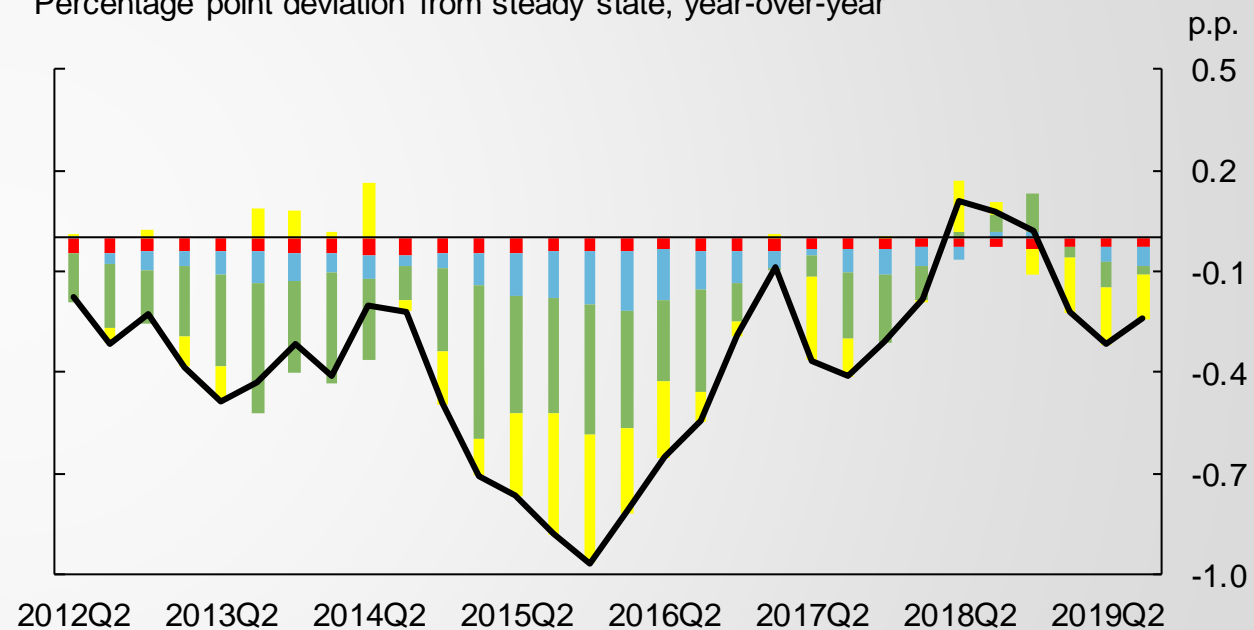Legend (left): Marginal cost, Lagged inflation, Inflation expectations, Shock, Inflation

Last obs: 2019Q3

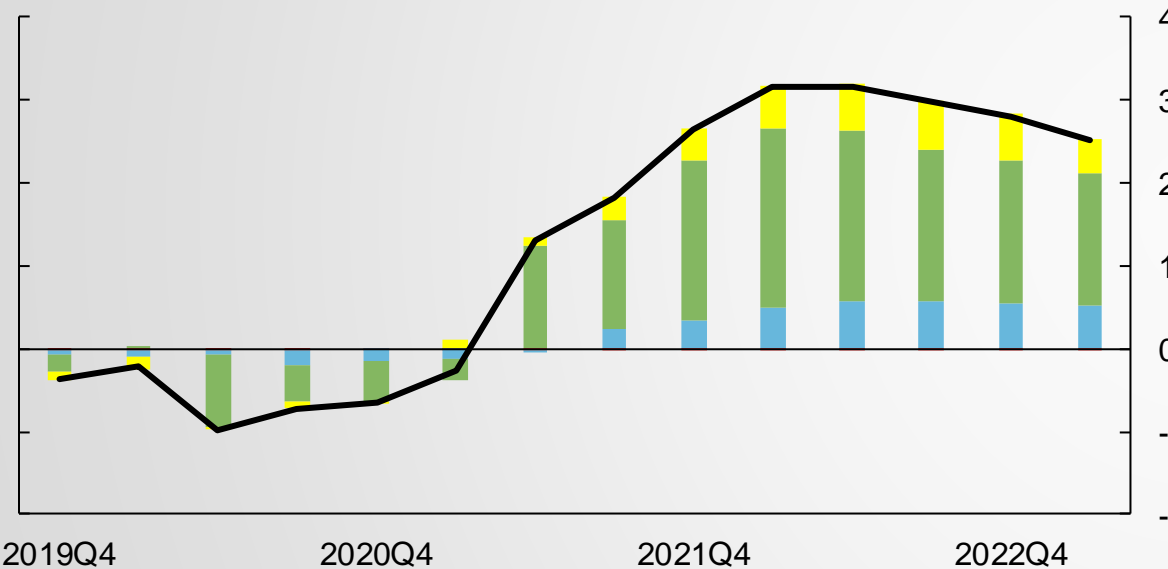Legend (right): Marginal cost, Lagged inflation, Inflation expectations, Shock, Inflation
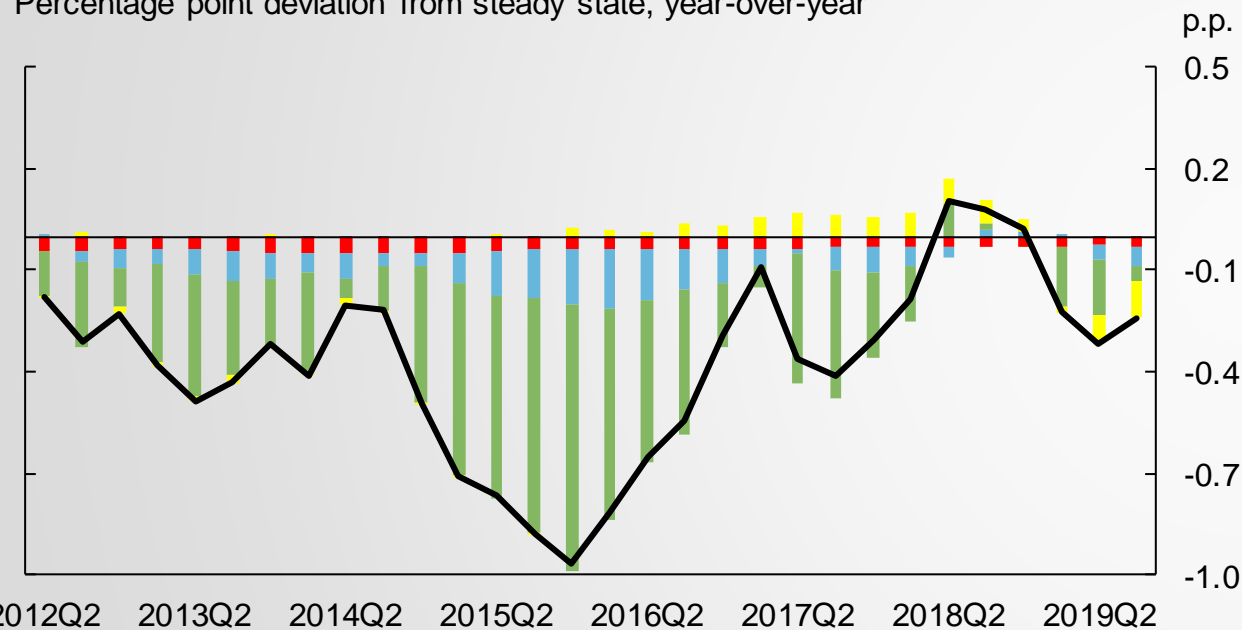
Last obs: 2019Q3

...and telling very different stories during and after the pandemic

Inflation decomposition using model-consistent inflation expectations
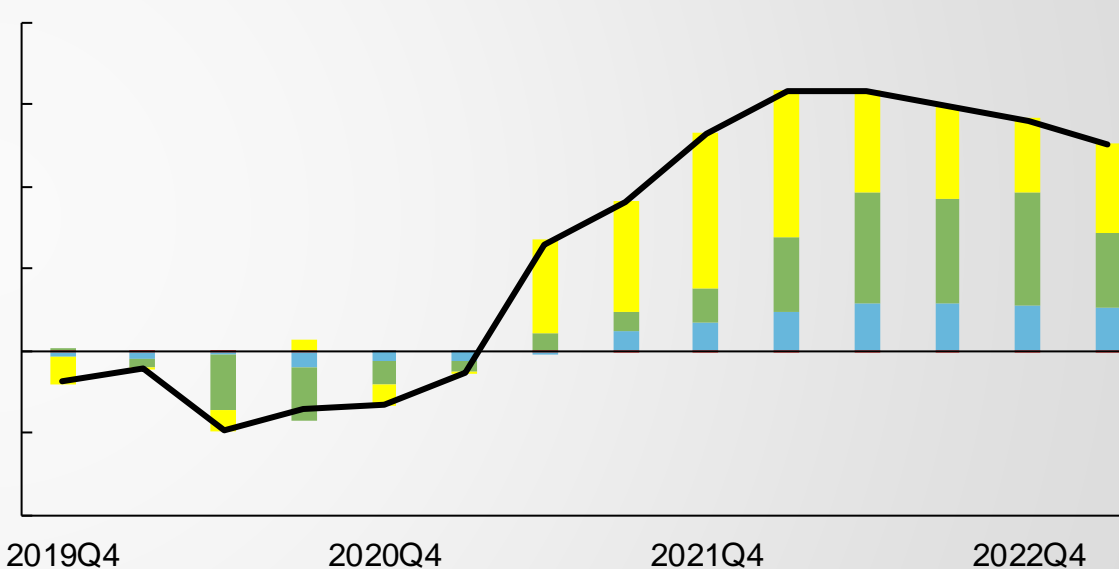Percentage point deviation from steady state, year-over-year

p.p.

2019Q4   2020Q4   2021Q4   2022Q4

■ Marginal cost   ■ Lagged inflation
■ Inflation expectations   ■ Shock
— Inflation

Last obs: 2023Q1

Inflation decomposition using SPF core PCE inflation expectations
Percentage point deviation from steady state, year-over-year

p.p.

2019Q4   2020Q4   2021Q4   2022Q4

■ Marginal cost   ■ Lagged inflation
■ Inflation expectations   ■ Shock
— Inflation
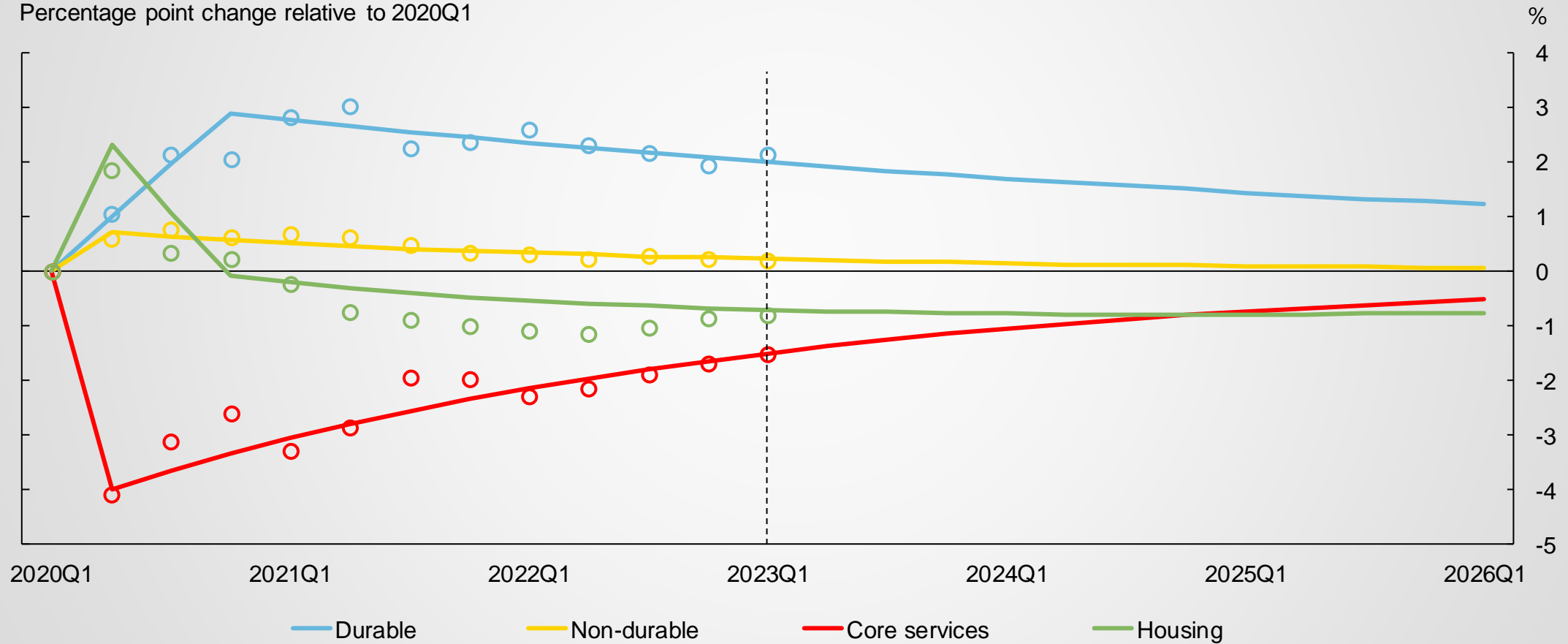
Last obs: 2023Q1

The role of asymmetric shocks

Sketch of BoC version of Ferrante et al. (2023)

- Multi-sector DSGE model

- 17 sectors feeding into 5 consumption bundles: durables, core non-durables, housing, core services ex housing, food & energy

- Input-output linkages

- Sector-specific nominal price rigidities

- Hiring costs: difficult for sectors to expand quickly but costless to downsize

Sector-specific demand shocks reproduce sectoral shifts since early 2020...

Demand reallocation shocks
Percentage point change relative to 2020Q1

%

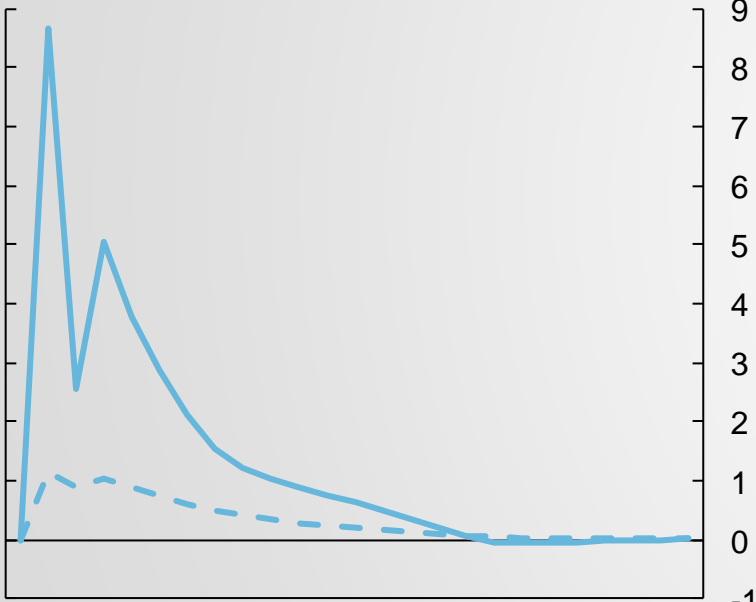Legend: Durable — Non-durable — Core services — Housing

Last obs: data, 2023Q1; simulation, 2026Q1

...leading to sizable impacts on output and inflation...

Interest rate
Deviation in percentage points, annualized   p.p.
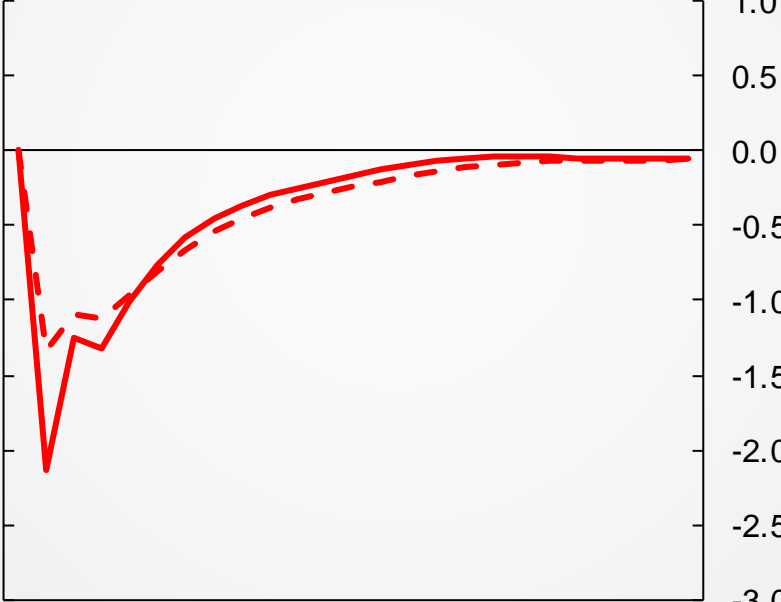
Real GDP
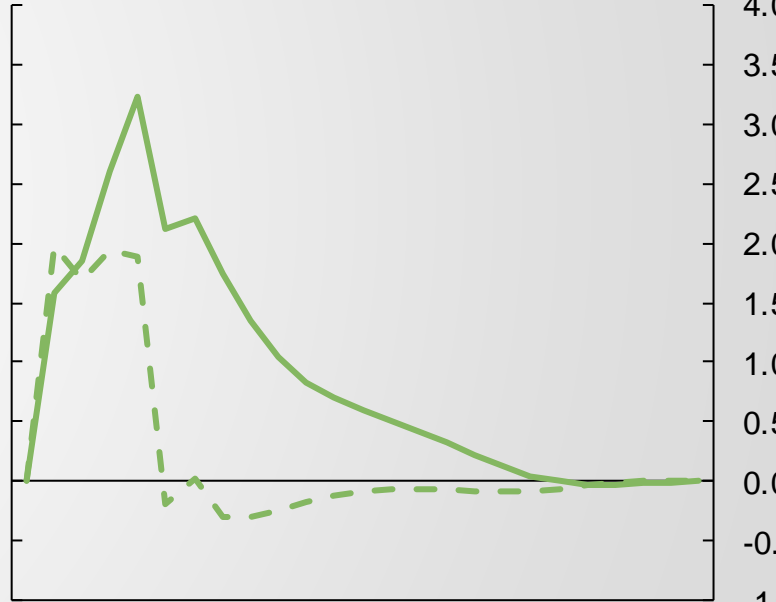Percent deviation   %

Core inflation
Deviation in percentage points, year-over-year   p.p.

Baseline Taylor Rule — — MP Inertia

Last obs: 2026Q1

Baseline Taylor Rule — — MP Inertia
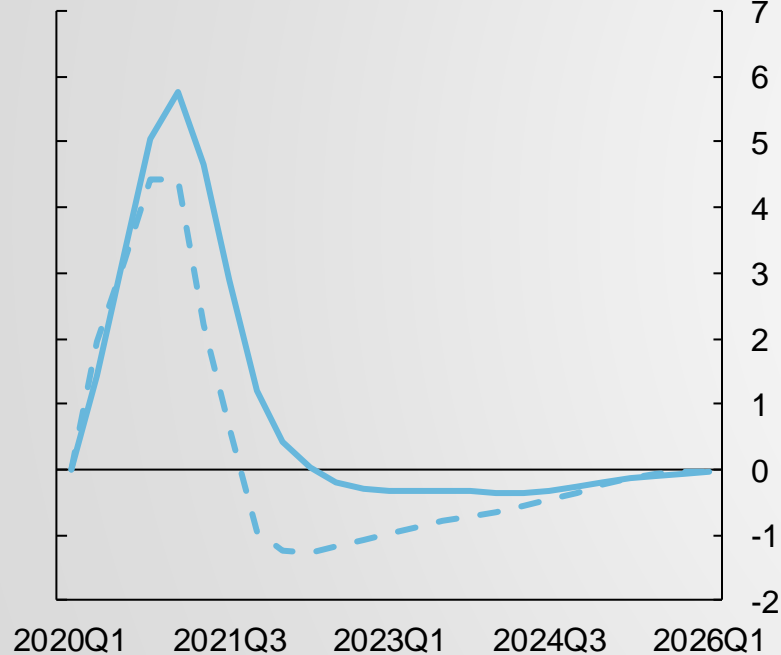
Last obs: 2026Q1

Baseline Taylor Rule — — MP Inertia

Last obs: 2026Q1

...and rich heterogeneity across inflation components

Core goods inflation
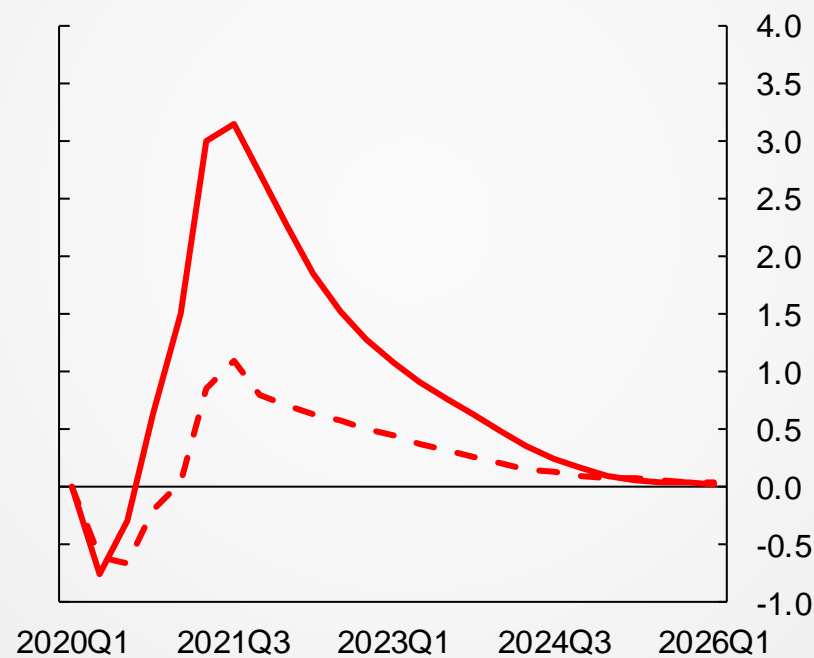Deviation in percentage points, year-over-year

Core services ex housing inflation
Deviation in percentage points, year-over-year

Housing inflation
Deviation in percentage points, year-over-year

Baseline Taylor Rule — — MP Inertia

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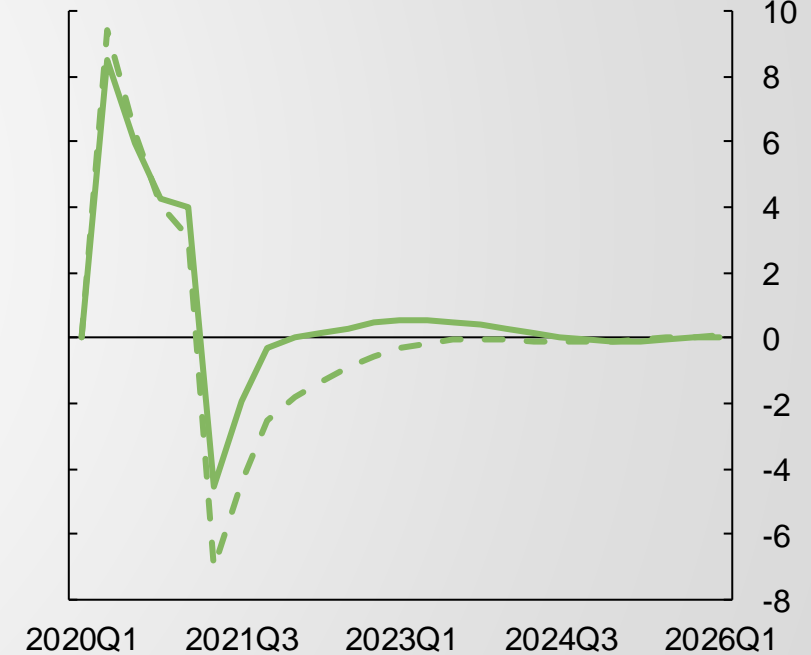
Last obs: 2026Q1

Last obs: 2026Q1

Last obs: 2026Q1

Sectoral dynamics can explain large shares of the peak responses of core inflation and its components

	SIZE OF INFLATION PEAKS (Y/Y, difference relative to 20Q1 in percentage points)			TIMING OF INFLATION PEAKS		
	Data	Model (baseline TR)	Model (with MP inertia)	Data	Model (baseline TR)	Model (with MP inertia)
Core inflation	3.63	3.22	1.98	22Q1	21Q1	20Q2
Core goods	7.81	5.77	4.44	22Q1	21Q1	20Q4
Core services ex housing	2.57	3.14	1.09	21Q4	21Q3	21Q3
Housing	4.81	8.53	9.43	23Q2	20Q2	20Q2

Long-run inflation expectations and their indirect effects

CEMP model in a nutshell

- Simple NK model with non-rational expectations and learning about CB's long-run inflation target

- Firms' inflation forecasts partly depend on the LR target that they currently perceive

- Each period, firms choose between two ways of updating beliefs on the LR target:
  - Decreasing gain = weak response to new information
  - Constant gain = strong response to new information

- "De-anchoring" switches from decreasing- to constant-gain regime more likely to occur if firms have recently experienced large, persistent forecast errors

- Estimated on inflation and ST professional forecasts (1955Q1-2019Q4)

Long-run inflation expectations seem much more important in explaining the Great Inflation

Inflation decomposition in the CEMP model: the 70s and 80s
Percentage point deviation from target

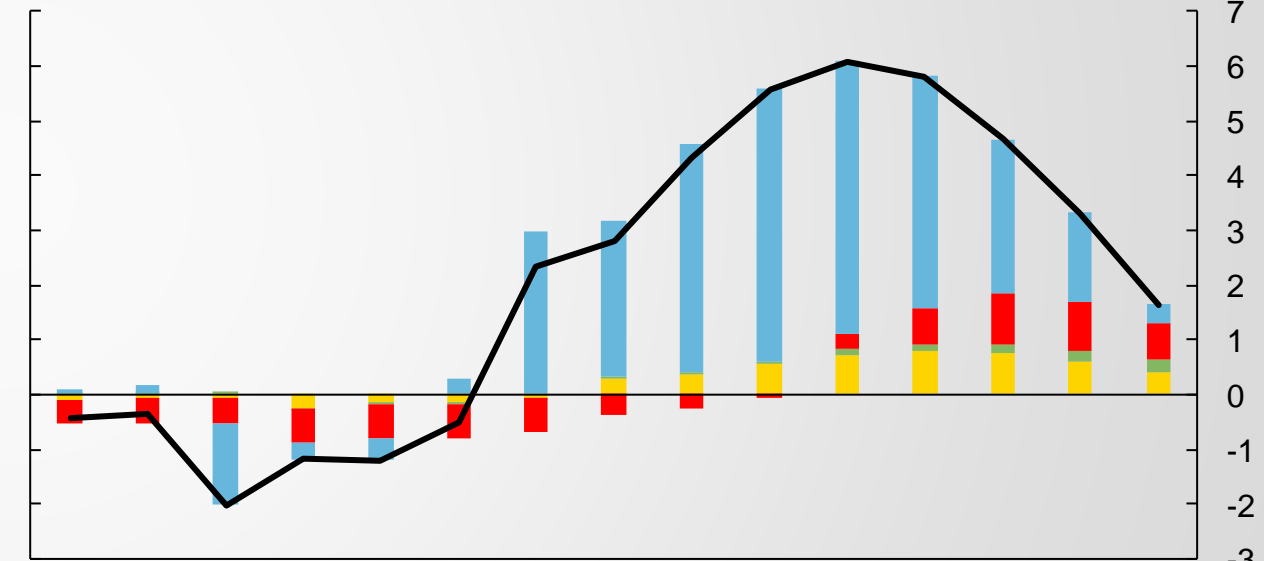**Inflation decomposition in the CEMP model: the 2020s**
Percentage point deviation from target
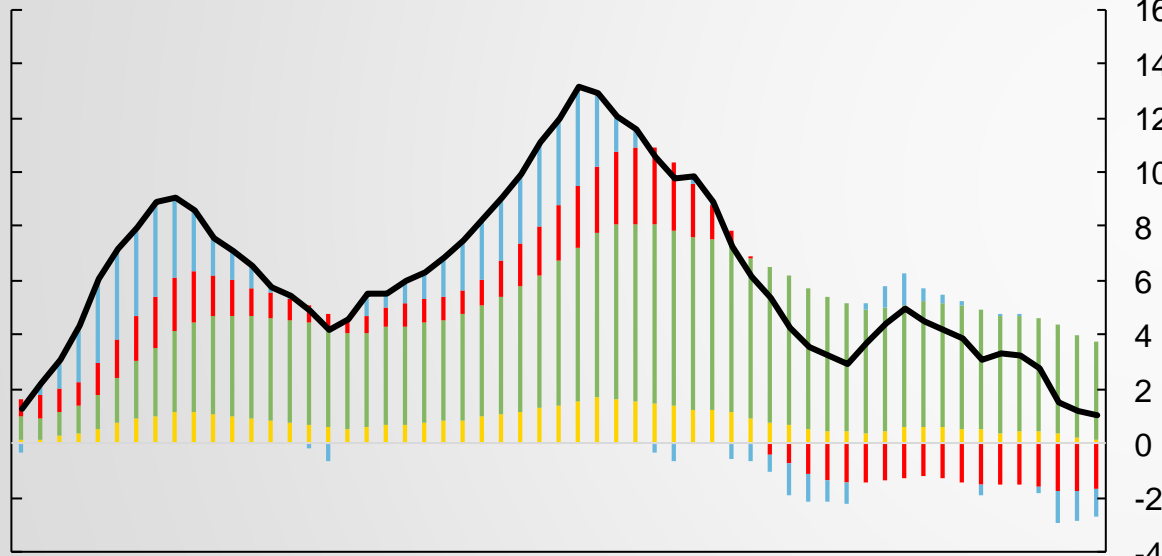
Lagged CPI Inflation · Perceived LR target · Demand shock · Supply shock · Inflation

Last obs: 1986Q4

Last obs: 2023Q2

Policymakers have made lots of progress since then

Gain parameter in CEMP learning rule (= sensitivity of perceived LR target to new info)
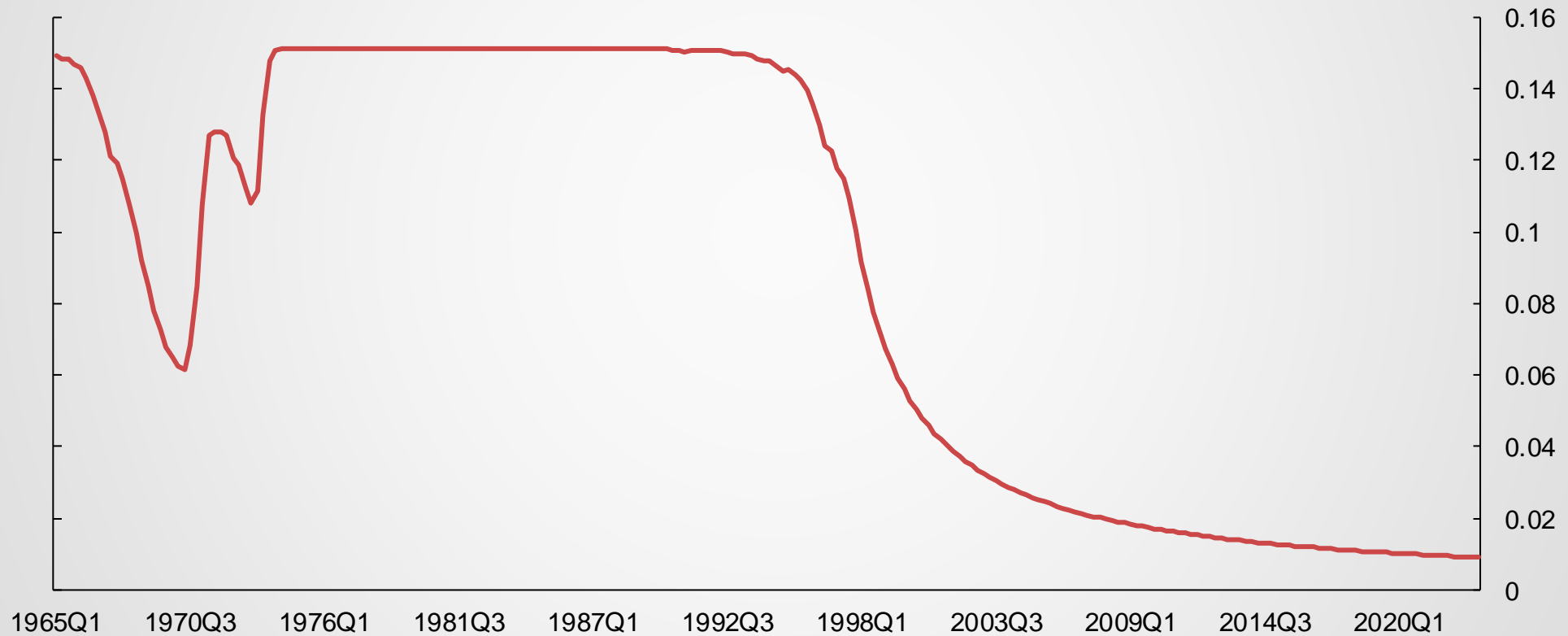
Last obs: 2023Q2

Concluding remarks

- Very interesting research agenda—it tries to better understand inflation and its determinants

- NKPC with SPF data suggests limited role for expectations during and after the pandemic

- Multi-sector DSGE with hiring costs points to potentially large role for asymmetric shocks in explaining recent inflation dynamics

- Indirect effects of long-run inflation expectations should not be underestimated