

# Discussion

The Central Bank's Dilemma: Look Through Supply  
Shocks or Control Inflation Expectations?

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The views expressed are mine and do not necessarily reflect those of the ECB or the Bank of England.

# Summary

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- A very nice paper and model to analyse the current trade-off central banks face between looking through the energy price shock and the need to maintain anchored inflation expectations. Takes the signalling channel of monetary policy seriously.
- Explains the recent pivoting (non-linear) behaviour of central banks in response to the energy price shock:
  - First, central banks looked through the shocks in the sense of not reacting to rising inflation. This inert response was typically defended by pointing to the supply-side origins of the inflation, as well as the likelihood that high inflation would prove to be temporary.
  - However, when inflation shocks kept materializing, central banks pivoted to a much more aggressive policy stance and spent considerable effort defending the pivot as being necessary to anchor expectations in order to avoid igniting a wage-price spiral.
- Argues that the observed monetary policy responses are hard to rationalize in environments where central banks view the public as being either fully rational (i.e., having rational expectations) or as simply forming adaptive expectations.
- Instead, if central banks view agents as having bounded rationality and, more precisely, as using level-k thinking, the authors show that pivoting behaviour becomes optimal.

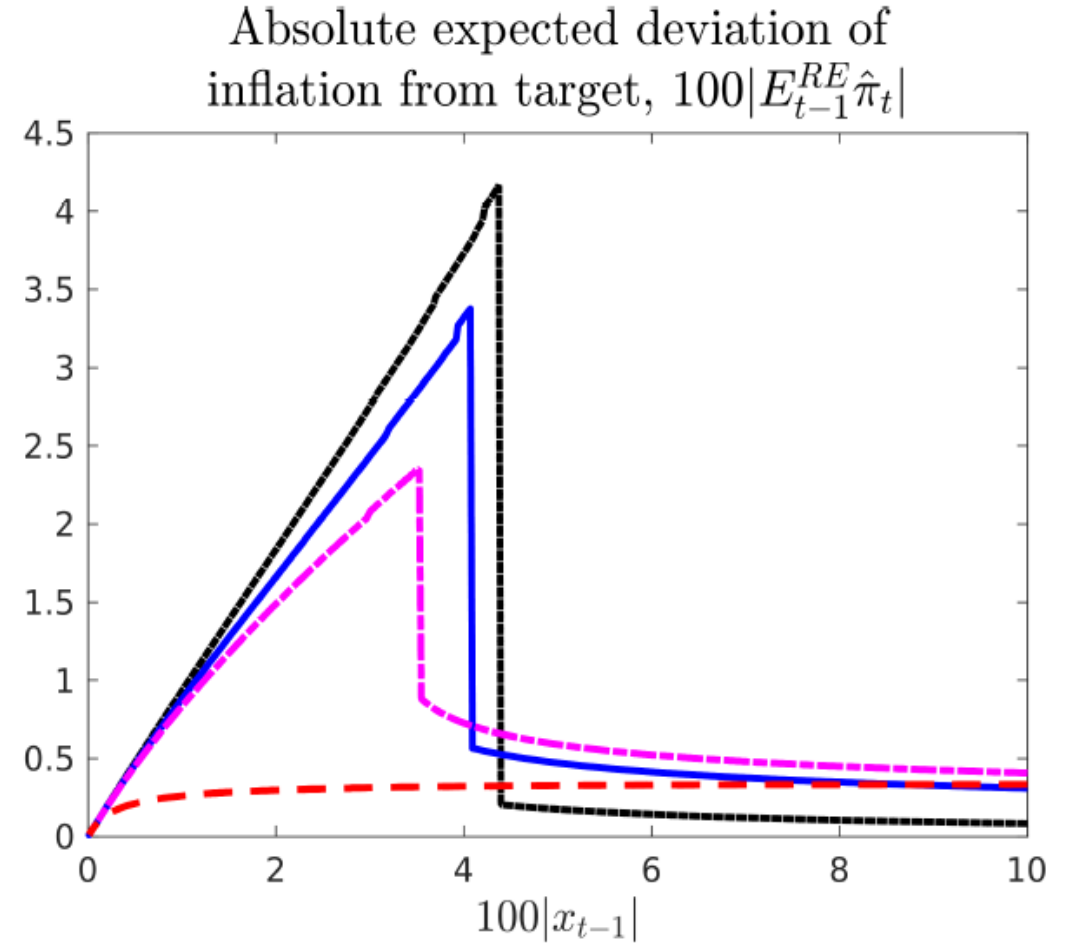
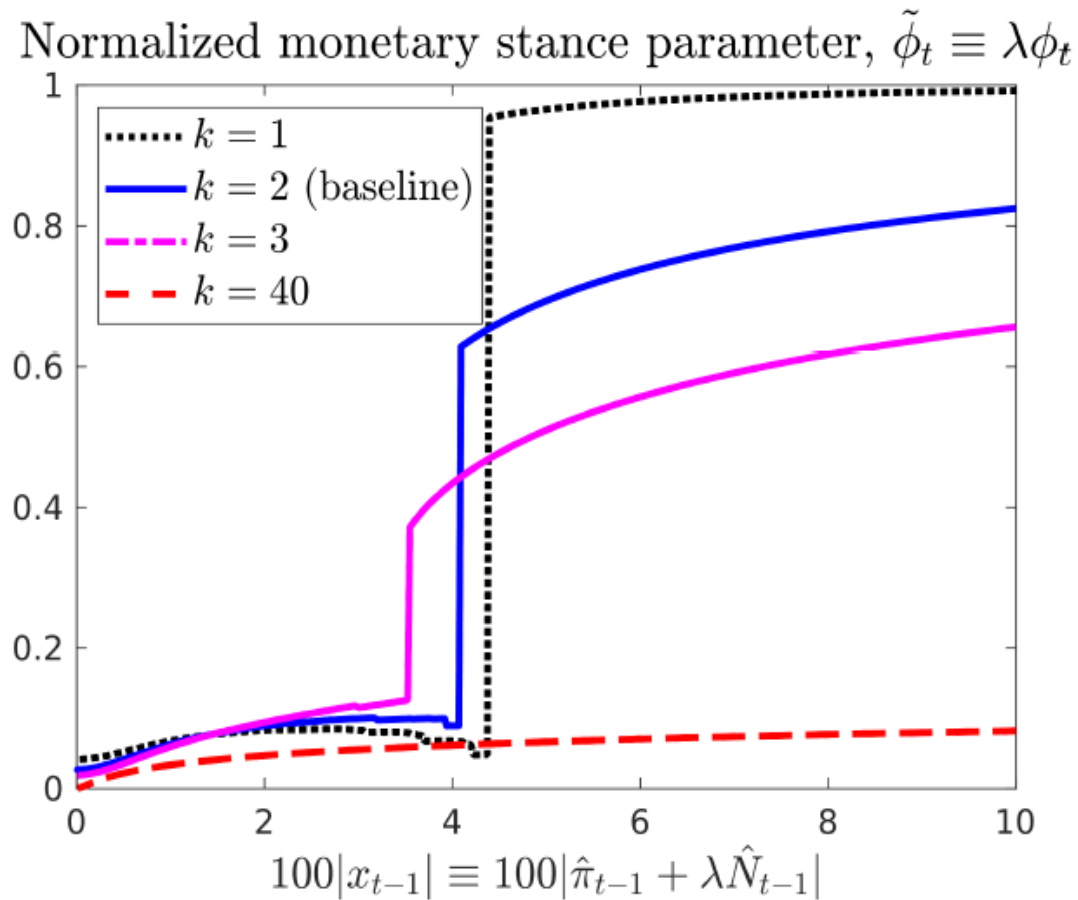
# Intuition for the non-linearity

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- Monetary policy affects employment in the model through two channels:
  - (a) direct effect: economic activity is reduced by tighter policies for any given level of expected inflation;
  - (b) indirect effect: tighter policy reduces inflation expectations.
- These two effects go in opposite directions: the direct effect decreases employment, while the indirect effect raises it by keeping real wages low.
- Under level-k thinking, **the effect of a tight monetary stance on inflation expectations increases with the tightness of policy**, which is the source of the non-linearity. **In other words, the signalling channel is stronger with a large tightening.**
- Consequently, there is a benefit to tightening by a sufficiently large amount once inflation deviations reach a threshold level:
  - At low levels of inflation, the cost of depressing demand is higher than the benefit of stabilising inflation expectations, implying a small reaction coefficient.
  - At high levels of inflation, the beneficial impact on stabilising inflation expectations offsets the direct negative effect on economic activity, implying a large reaction coefficient.
- These counterbalancing forces open the possibility of a soft-landing for employment, despite a strong policy pivot, when policy is designed optimally.

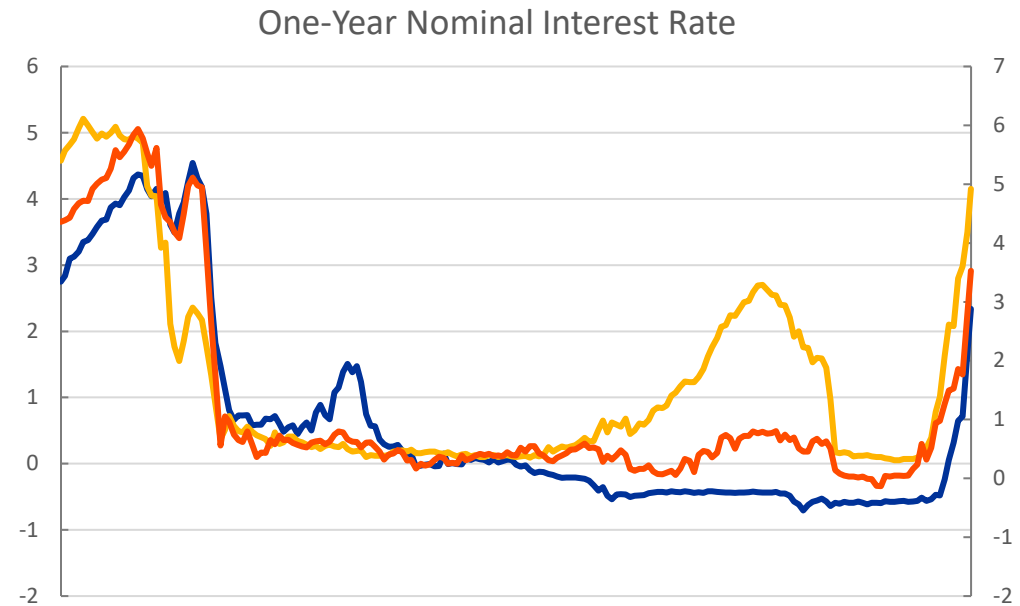
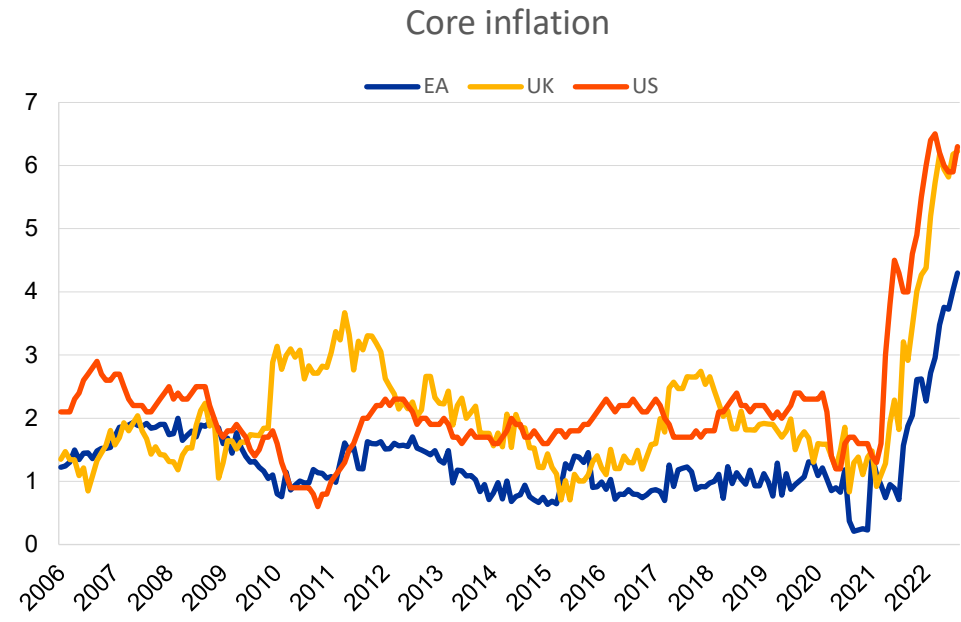
# Key figure

Figure 7: Impact of changing the levels of private-sector thinking,  $k$



Empirical evidence?

Is there pivoting, a threshold effect, in the central banks reaction functions?



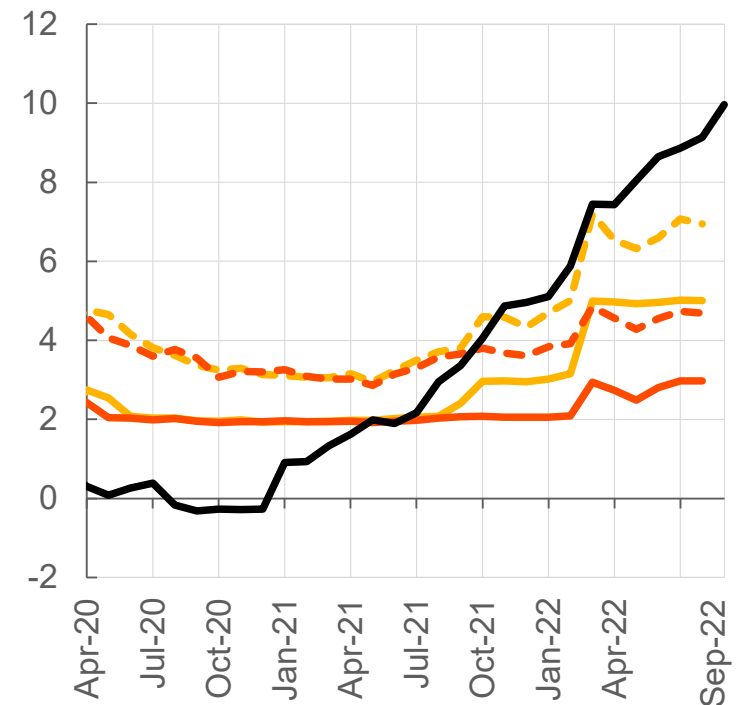
## Empirical evidence?

Is the signalling channel on inflation expectations stronger with large interest rate increases?

### ECB consumer expectations survey (CES)

(annual percentage changes)

- Inflation exp. one year ahead - median/mean
- Inflation exp. three year ahead median/mean
- Headline HICP



Source: ECB Consumer Expectations Survey (CES).

Note: Dashed lines represent the mean and solid line the median.

Latest observations: September 2022 (flash) for HICP. CES data from August 2022 round.

# Alternative interpretation (1): Non-linear expectations formation

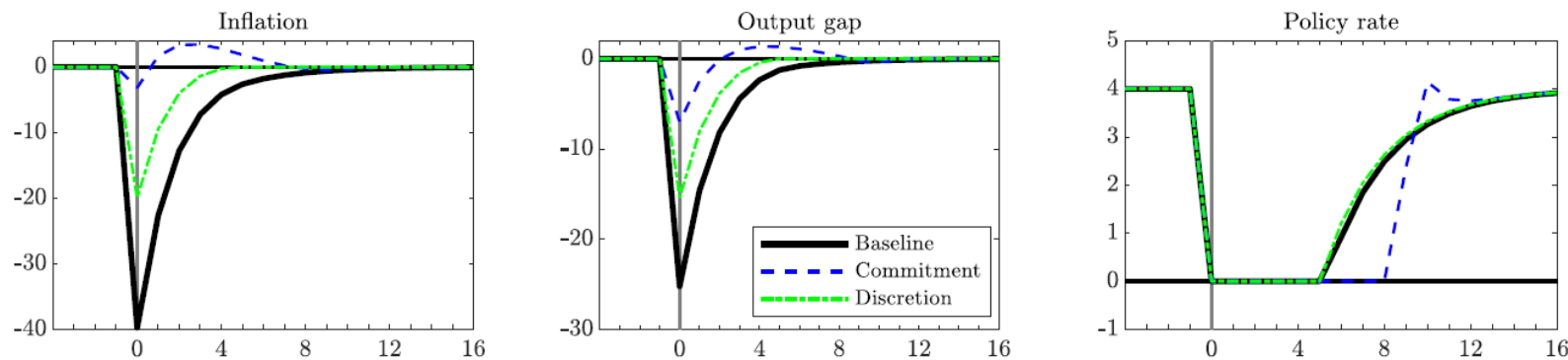
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- K-level thinking smooths out the response of inflation expectations to past inflation
- Other forms of expectation formation may strengthen the expectations response as inflation rises:
  - There is evidence that household inflation expectations are driven by the **salience** of the affected prices. Two thirds of the current high annual inflation number in the euro area is due to energy and food prices. Both food and energy are products that households buy very frequently. When those prices change a lot and persistently so, inflation expectations are likely to respond more and quicker.
  - Theory of **rational inattention** (Sims, Mackowiak and Wiederholt, and others):
    - When shocks are small and inflation is stable, there is no need to put a lot of effort in forming inflation expectations; expectations are driven by the central bank's inflation target.
    - When they are large and persistent, agents do adjust and start putting effort in forming inflation expectations: more responsive to observed inflation.
- To minimise the output effects of this convex adjustment of inflation expectations to higher inflation, the central bank may need to respond more.
- Here the non-linearity comes from the way expectations are formed, not from the stronger effects of the signalling channel when the signal/tightening is large.

# Alternative interpretation (2): Implications of forward guidance under ELB

- Another interpretation is that the non-linearity (delayed reaction) is due to the forward guidance (and in particular the low for longer strategy) that central banks implemented in order to lift inflation at the effective lower bound (ELB).
- Such a policy will keep interest rates at the ELB for longer (even allow inflation to be temporarily above target), but also implies a quicker return (front-loading) to neutral after lift-off.

Figure 4: Natural rate shocks and the zero lower bound



Note: All variables are given in percent. Inflation and the policy rate are annualized. The scenario is a 24% natural rate shock with  $\rho_{rn} = 0.7$ . With the baseline loss normalized to 1, the loss under commitment and discretion is 0.0253 and 0.2296, respectively.

From: De Groot, Mazelis, Motto and Ristinemi (2021)



Thank you

# Alternative interpretation (2): Forward guidance

Sequencing of exit:

- The Governing Council continues **to expect net asset purchases** to run for as long as necessary to reinforce the accommodative impact of its policy rates, and **to end shortly before it starts raising the key ECB interest rates**.
- In support of its symmetric two per cent inflation target and in line with its monetary policy strategy, the Governing Council expects the key ECB interest rates to remain at their present or lower levels **until it sees inflation reaching two per cent well ahead of the end of its projection horizon and durably for the rest of the projection horizon, and it judges that realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at two per cent over the medium term**. This may also imply a transitory period in which inflation is moderately above target.
- **Reinvestments** of the principal payments from maturing securities purchased under the APP **will continue, in full, for an extended period of time past the date when the Governing Council starts raising the key ECB interest rates**, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.

# Alternative interpretation (2): Forward guidance

## **Policy normalisation:**

- December 2021: announcement of end of PEPP net asset purchases
- 31 March 2022: end of PEPP net purchases
- 1 July 2022: end of APP net purchases
- 21 July 2022: first rate increase by 50bp and introduction of TPI
- 8 September 2022: second rate increase by 75bp
- 27 October 2022: third rate increase by 75 bp
- Frontloaded transition from the initial high accommodative level of policy rates towards levels that will ensure a timely return of inflation to 2%
- Based on the current assessment, the Governing Council expects to raise interest rates further to dampen demand and guard against the risk of a persistent upward shift in inflation expectations