



OESTERREICHISCHE NATIONALBANK

EUROSYSTEM

Monetary policy in times of serial shocks

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Main argument in today's lecture

1. Credibility is a key concept in modern central banking: **credibility reduces the costs of macroeconomic stabilization.**
2. In the medium run, effective monetary policy can maintain credibility only if it **delivers on the central bank's mandate.**
3. The last decade has proven a **litmus test for ECB credibility** - one with many challenges for the euro area.
4. Instead of justifying caution and hesitancy, the post-pandemic era of serial shocks and the connected surge in inflation in the euro area require **forceful tightening action to maintain and restore credibility.**

Outline

- I. Making sense of central bank mandates: The case of the ECB**
- II. Why central bank credibility matters**
- III. Linking central bank performance and credibility**
- IV. Explaining hesitancy in an era of serial shocks**
- V. Conclusion**

I.

Making sense of central bank mandates: The case of the ECB

The central bank's loss function

Modern central banks' goal is to minimize fluctuations ...

1. of the inflation rate (π) around their inflation target (π^T)
2. and of output (y) around equilibrium output (y_e).

Formalization:

$$L = \beta(\pi - \pi^T)^2 + (y - y_e)^2$$

= one concrete example for a **central bank loss function** (many possible others exist)

Corresponding ECB mandate as defined in TEU 127 (1):

1. Primary mandate: price stability
2. Only considered secondary: economic growth, full employment, social progress etc.

Understanding loss functions

$$L = \beta(\pi - \pi^T)^2 + (y - y_e)^2$$

Features of central bank loss functions:

1. Symmetric or asymmetric around objectives (ex. above = symmetric)
2. Linear or non-linear (ex. above = non-linear, i.e. quadratic)
3. Coefficient β = relative weight attached to inflation deviations from target

What we know about ECB loss function (c.f. [ECB Strategy Review 2021](#)):

1. Asymmetric loss for inflation to account for *effective lower bound (ELB)*
2. ECB inflation target: $\pi^T = 2\%$
3. Coefficient β should be >1 as price stability is clear primary objective

Implications of the ECB's mandate

How would you define a monetary policy hawk?

Technically precise answer based on previous two slides:



Tweet



Ricardo Reis @R2Rsquared · 30. Sep. 2019



Being a monetary policy "hawk" means putting a high weight on inflation deviations from target, relative to output stabilization.

Given its clear primary mandate, **ECB** positions itself as more “**hawkish**” **central bank** than e.g. the U.S. Federal Reserve (Fed) which has a dual mandate:

- Fed: price stability and maximum sustainable employment equally important
- ECB: conceived to follow “Bundesbank tradition”

The ECB's “medium term” qualifier

ECB pursues price stability over the medium term:

“We adopt a medium-term orientation in pursuing our primary objective of price stability. This accounts for uncertainties in the transmission of monetary policy to the economy and to inflation. [...]

The ECB's definition of medium term is flexible because the appropriate monetary policy response to a deviation of inflation from the target depends on the origin, magnitude and persistence of the deviation.” – [ECB medium-term orientation](#)

Implications:

- Not all deviations from target are equally “costly” for the ECB
- Only persistent, longer-term deviations represent losses, e.g.:
 - Persistent undershooting following European sovereign debt crisis in 2012
 - Recent persistent and large overshooting since mid-2021

II.

Why central bank credibility matters

The Phillips Curve constraint

Phillips Curve (PC) describes relationship between output and inflation rate:

$$\pi = \pi^E + \alpha(y - y_e)$$

Components of PC:

1. Expected inflation rate (π^E)
2. Deviation of output from (y) equilibrium output (y_e) = so-called output gap
3. Coefficient α : sensitivity of inflation to output gap (slope of the PC)

PC works as a constraint for central banks:

→ PC shows all combinations of output gap and π which central banks can achieve given π^E

Observing π^E , central banks use monetary policy (interest rate and other tools) to influence y (and thus output gap) and achieve desired inflation target π^T , so that $\pi = \pi^T$.

What drives inflation expectations (π^E)?

Some agents' expectations are backward looking:

→ Expected inflation \approx inflation last period ($\pi^E = \pi_{t-1}$)

Some agents' expectations are forward looking:

→ Agents know model (incl. monetary policy loss function) and use all available info

→ Expected inflation = inflation target ($\pi^E = \pi^T$)

Using this insight, we obtain a more detailed PC equation:

$$\pi_t = [(1 - \chi) \pi_{t-1} + \chi \pi^T] + \alpha(y - y_e)$$

$1 - \chi$ = share of agents in economy with backward-looking π^E

χ = share of agents in economy with forward-looking π^E

Central bank credibility and expectations

A loss of central bank credibility erodes χ :

- Forward-looking agents stop believing central bank will achieve target π^T
- Forward-looking agents' best guess gradually becomes $\approx \pi_{t-1}$
- If π^E detaches from π^T in economy = de-anchoring

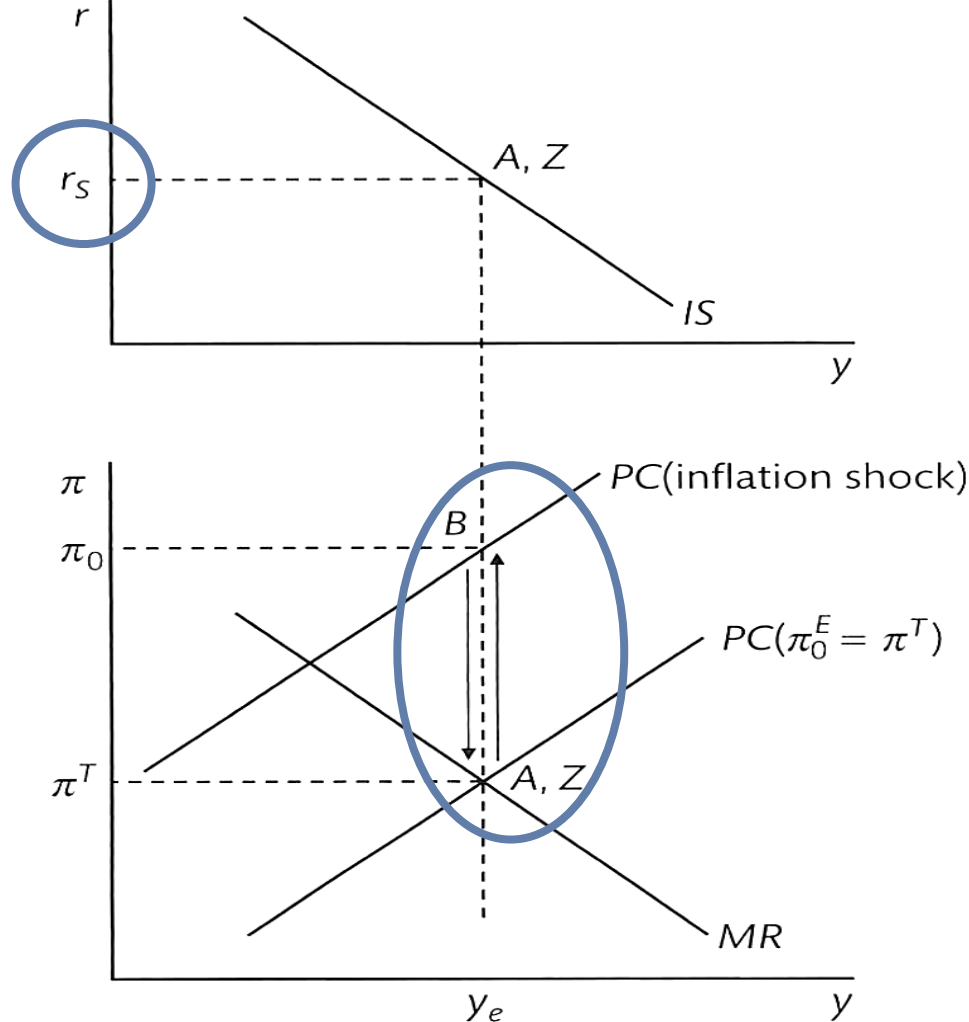
What drives central bank credibility?

→ Difficult-to-gauge concept, only approximation possible:

$$\text{Credibility} = f \left\{ \begin{array}{l} 1. \text{ Central bank independence} \\ 2. \text{ Central bank track record} \\ 3. \text{ Public attention to track record (saliency)} \\ 4. \text{ Transparency, communication} \\ \text{etc.} \end{array} \right\}$$

Monetary policy efficiency when credibility (χ) is high

Source: Carlin and Soskice (2015)



Scenario 1: well-anchored π^E with $\chi = 1$

- Temporary inflationary shock shifts PC up
- π^E does not change, stays at π^T
- Next period: inflation back at target

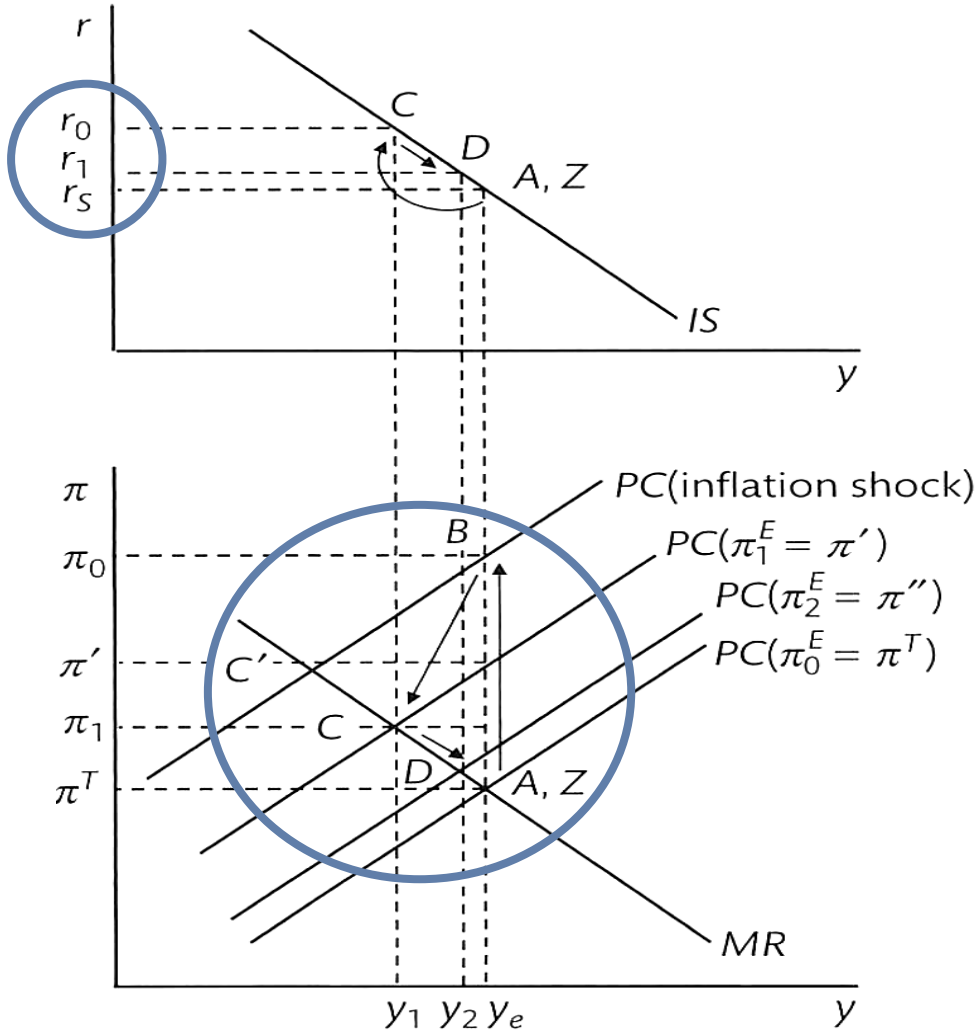
Key insight:

High credibility (higher χ) reduces costs of macroeconomic stabilization

→ Little/no interest rate increases necessary:
 r stays at level r_s

Monetary policy efficiency when credibility (χ) is low

Source: Carlin and Soskice (2015)



Scenario 2: de-anchored π^E with $\chi = 0.5$

- Temporary inflationary shock shifts PC up
- π^E changes, deviates from π^T
- Next period: inflation at **C** instead of π^T

Key insight:

Lower credibility (lower χ) increases costs of macroeconomic stabilization

→ Interest rate increases necessary to disinflate economy:

hike to r_0 to create negative output gap

III.

Linking central bank performance and credibility

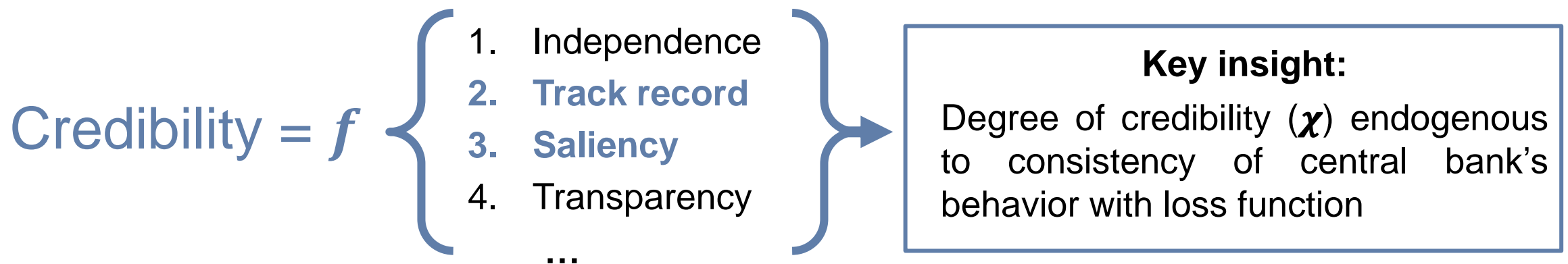
A simple theoretical bridge between β and χ

Coefficient β in loss function:

- Imposed by mandate \rightarrow represents chosen degree of hawkishness
- Central bank must act accordingly

If central bank consistently incurs losses due to deviations from π^T :

- \rightarrow Raises doubts about size of real β
- \rightarrow Consequence: mandate to achieve π^T loses credibility



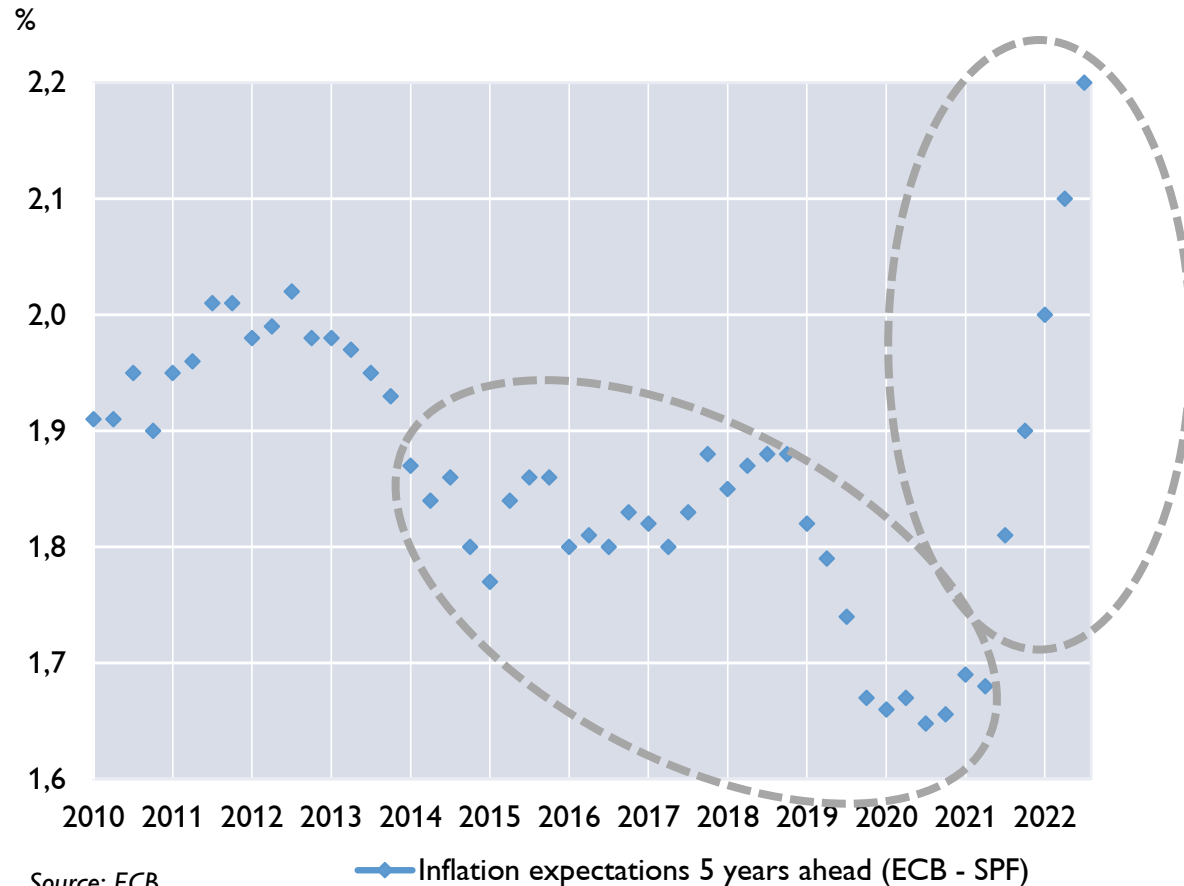
Where do we stand? The ECB's performance in fulfilling its mandate



Source: Eurostat

Approximating the evolution of credibility in the euro area

Survey-based inflation expectations for the euro area



Survey of Professional Forecasters (SPF)

- Part of most “sophisticated”, forward-looking agents
- Known for sticking closely to target
- Usually very high χ

Key insight:

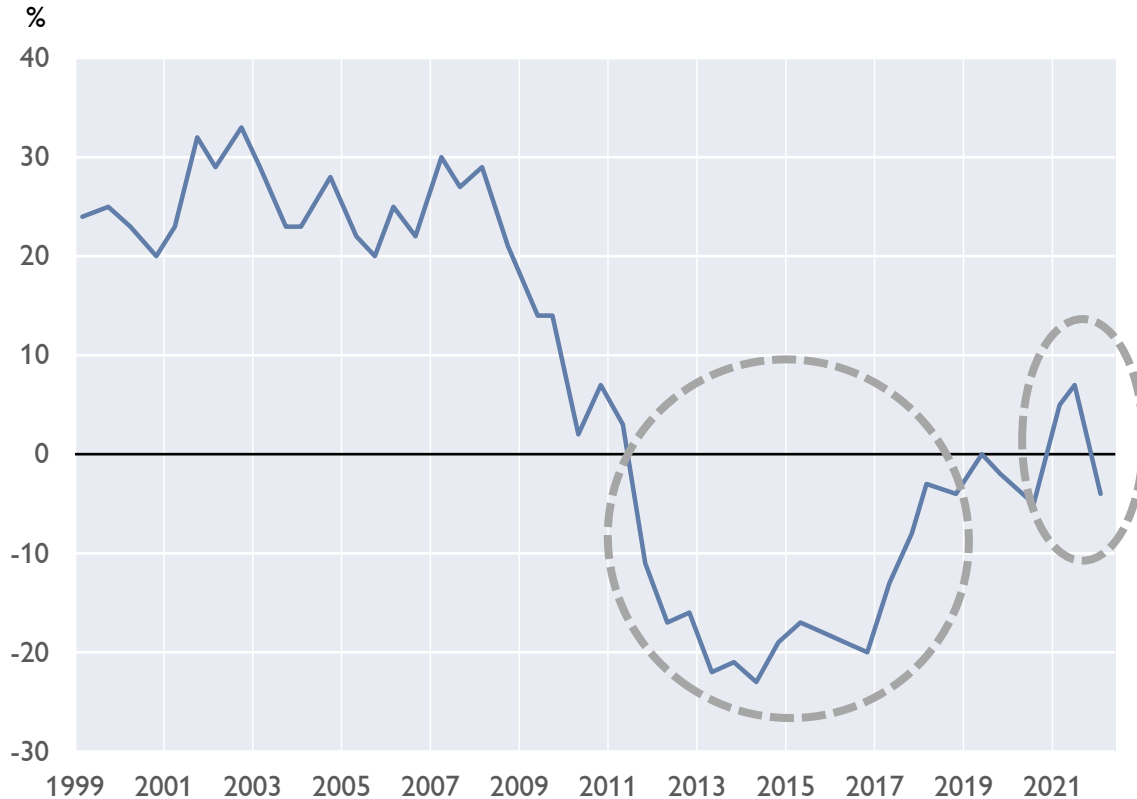
Size of χ has decreased markedly even among SPF participants.

Two special episodes:

1. Aftermath of sovereign debt crisis
2. Recent episode since mid-2021

A broader proxy for credibility: Net trust in the ECB

Net trust in the ECB



Source: ECB, Eurostat, Bergbauer et al. (2020)

Regular Eurostat question:

“Please tell me if you tend to trust the ECB or tend not to trust it?”

Calculating net trust:

$$\frac{N (\text{Tend to trust})}{N (\text{Respondents})} - \frac{N (\text{Tend not to trust})}{N (\text{Respondents})}$$

Net trust echoes SPF patterns

- And: net trust arguably more representative of broader public perception of credibility

IV.

Explaining hesitancy in an era of serial shocks

Monetary policy-making in an era of serial shocks

Despite persistent effects of Covid-19 pandemic since spring 2020 ...

- Demand shocks (e.g. explosion of uncertainty)
- Supply shocks (e.g. transport bottlenecks)

... and a fully-blown energy crisis due to Russia's aggression against Ukraine:

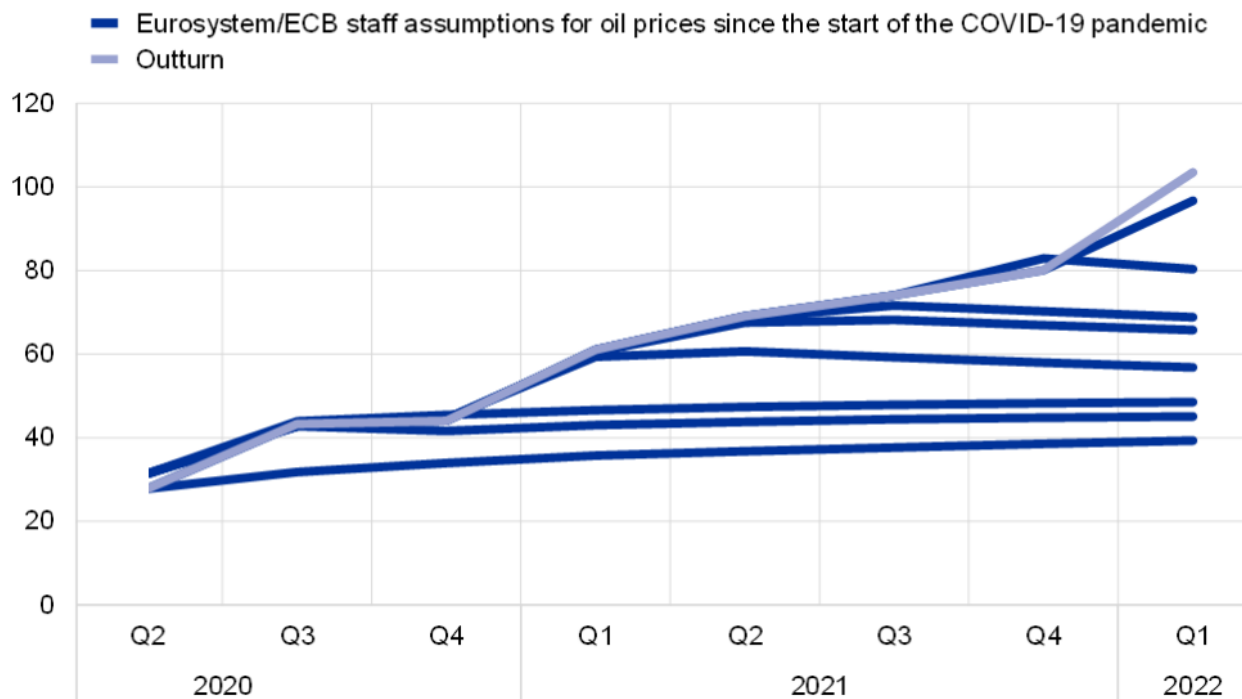
- First and foremost energy price shocks
- ... but also: substantial demand and supply implications.

Why did monetary policy-makers initially hesitate to act forcefully? The 3 Us

1. Uncertainty: initially limited information on *temporary vs. permanent* nature of shocks
2. Uncomfortable trade-offs: end of “*Divine Coincidence*”
3. Unhelpful narratives: central banks' hands are tied when facing supply shocks

Uncertainty and the medium term orientation

Evolution of Eurosystem/ECB staff assumptions for oil prices



Initial shocks seen as temporary:

→ Example: evolution of oil prices

→ But: arrival of new shocks over time

Key insights:

Combination of (1) medium term orientation and (2) too optimistic forecast assumption:

Hope of being able to “see through” price and supply shocks

Sources: Eurostat, Bloomberg, Refinitiv, and Fraunhofer ISE.

The end of “Divine Coincidence”

For a decade monetary policy pushed into one direction only:

- In theory, policy action had a “comfortable life”:

“Divine Coincidence”

Given an economic environment characterized by

$$1) \pi - \pi^T < 0 \quad \text{and} \quad 2) y - y_e < 0$$

accommodative monetary policy addresses both undershootings:

→ No trade-off between output and inflation stabilization

→ Accommodative monetary policy minimizes loss function

Theory vs. practice:

1. Accommodative monetary policy not innocuous (side effects)
2. Policy actions still struggled to achieve stabilization

Radical change in post-pandemic world: 1) $\pi - \pi^T \gg 0$ while 2) $y - y_e = ?$

Unhelpful narratives

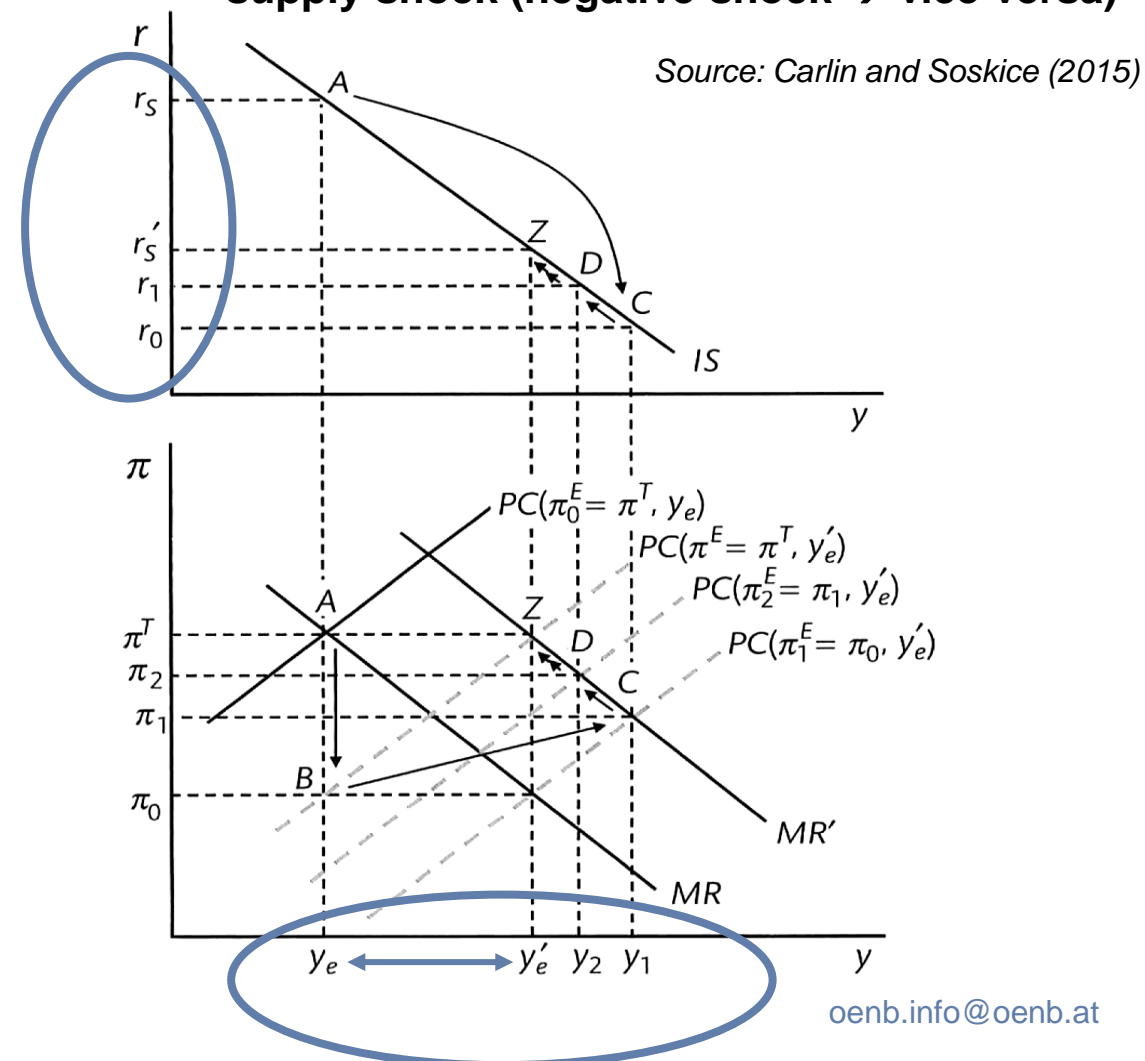
“Monetary policy neglect” hypothesis:

- Frequent interpretation:
Monetary policy cannot influence the supply side of the economy, so its hands are tied when facing supply shocks.

Does this hypothesis withstand scrutiny?

- Not necessarily:
If supply shocks are permanent ($y'_e \neq y_e$), then monetary policy must act to prevent overheating/accelerating inflation (negative supply shock) or recession/decelerating inflation (positive supply shock)
Otherwise: risk of eroding χ over time

Monetary policy action following a positive supply shock (negative shock \rightarrow vice versa)



V.
Conclusion

Policy implications for the euro area

Forceful and sustained tightening action must now replace hesitancy:

1. ECB's primary mandate is price stability, implying high β (see Part I)
 - Given its mandate, ECB should be relatively hawkish central bank
 - Losses for inflation deviations from target should be regarded as very damaging

2. ECB should deliver on β otherwise χ risks falling further (see Part II)
 - Emerging signs for de-anchoring in face of current inflation surge
 - ECB has to take all measures to strengthen credibility further

3. The post-pandemic era of serial shocks does not provide excuse for inaction (see Part III)
 - Temporary shocks have been perpetuated
 - Evolution of χ : danger of costly stabilization if we are not determined enough

Danke für Ihre Aufmerksamkeit

Thank you for your attention

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