Inflation targeting: How flexible?

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Overview

- 35 years of inflation targeting
  - How flexible? Tolerance for fluctuations in inflation and for pursuing other objectives
  - Borio and Chavaz (2025)
- Supply shocks and real economy considerations
  - Do central banks look through supply-driven inflation?
  - Hofmann, Manea and Mojon (2024)
- Mitigating financial imbalances
  - Lean or clean?
 - Boissay, Collard, Gali and Manea (2025)

Borio and Chavaz (2025): Tracking changes in inflation targeting flexibility

- New database on all changes to inflation targeting frameworks since 1990

- Data sources: official statements and reports of 26 BIS member central banks (RBNZ, 1990 – RBI, 2016)

- Key focus: measure flexibility to deviate from strict inflation targeting.

- Flexibility score for each component: 0 (least flexible) to 1 (most flexible)
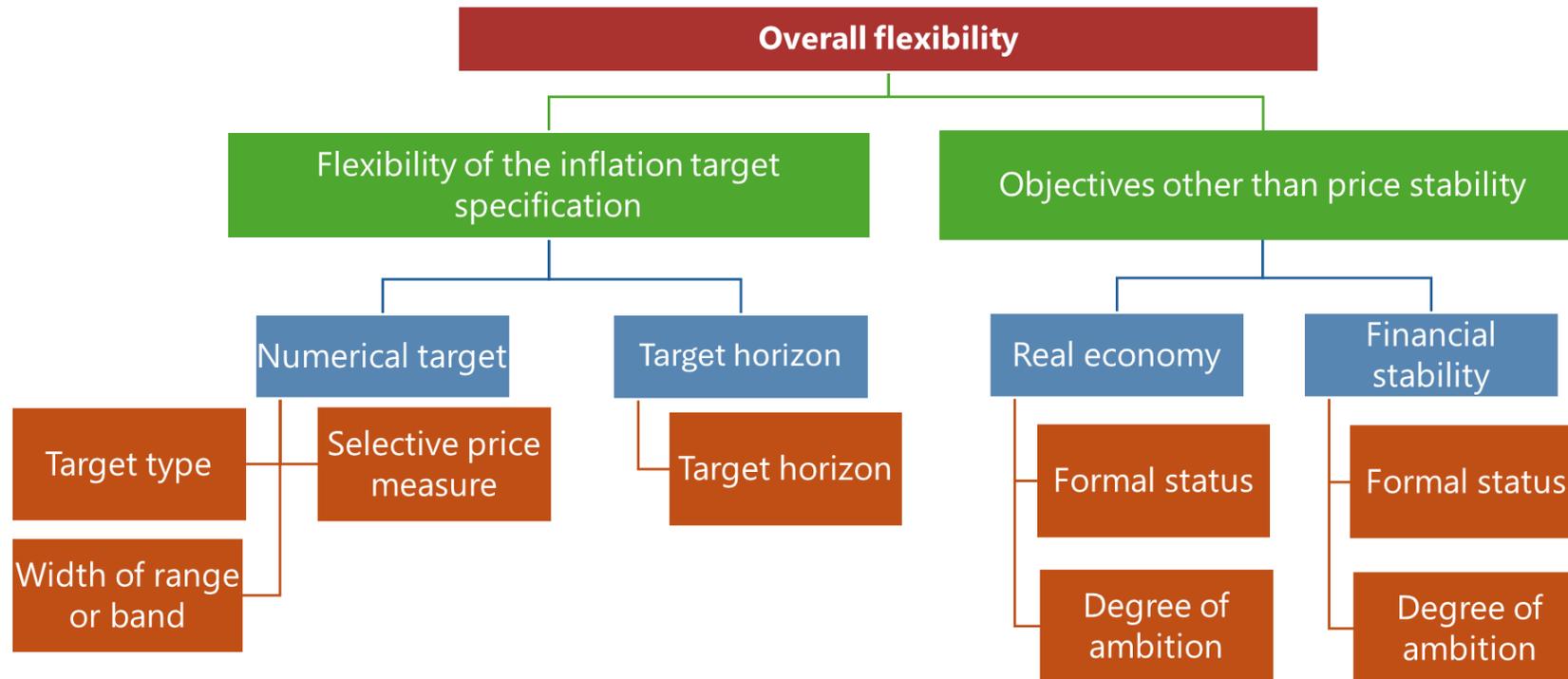
Inflation target flexibility over time
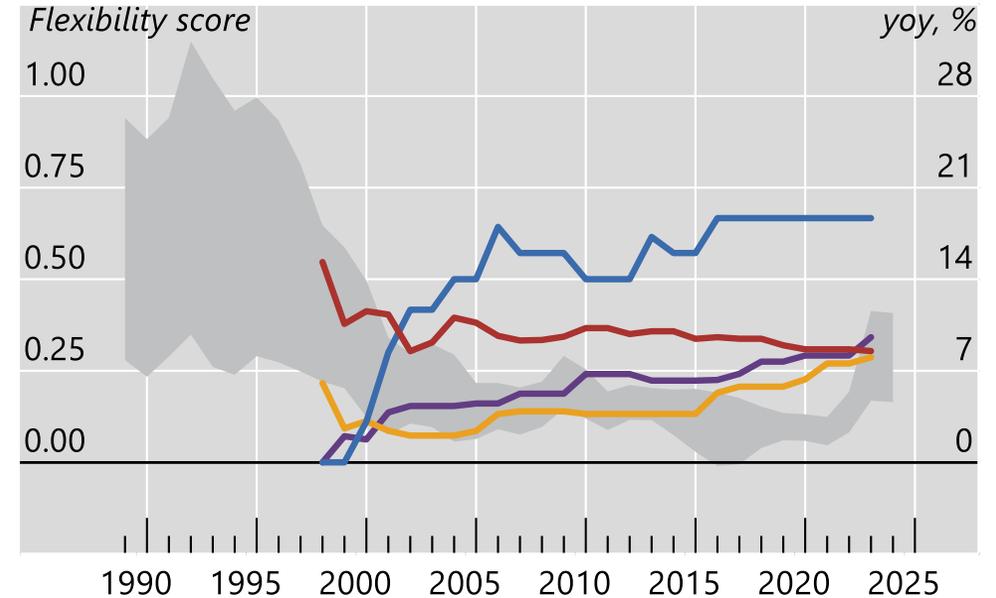

Advanced economies

Emerging market economies
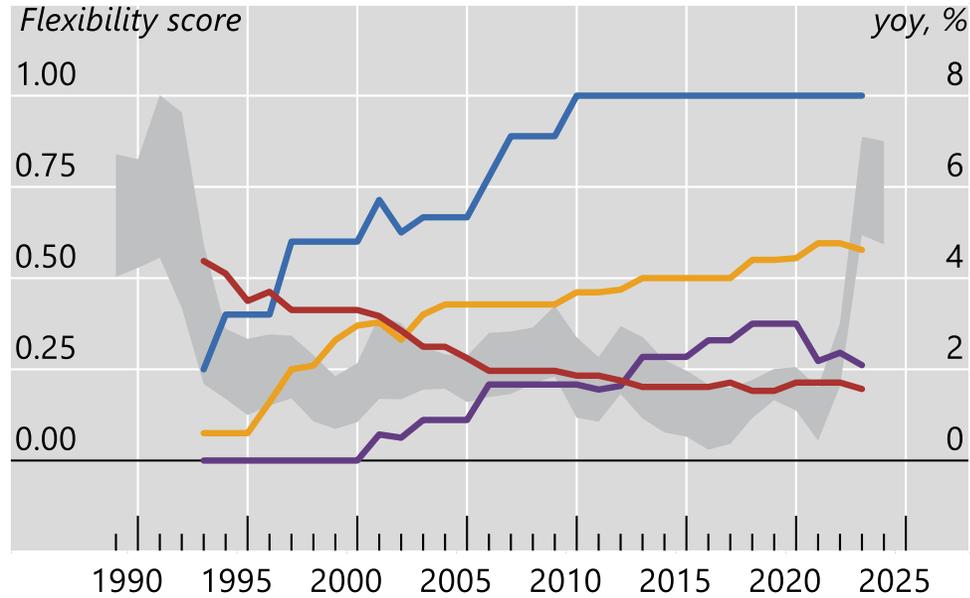
Average (lhs): — Flexibility of the numerical target — Weight on real economy — Flexibility of the target horizon — Weight on financial stability

Interquartile range (rhs): Inflation

# How have inflation targeting frameworks evolved since 1990?

Key findings:

- Increasing weight on objectives other than price stability – in particular real economy and (less so) financial stability
- Increasingly vague time horizon to meet the inflation target, but increasingly strict definition of the target
- Trends significantly stronger for AEs. Growing gap with EMEs.
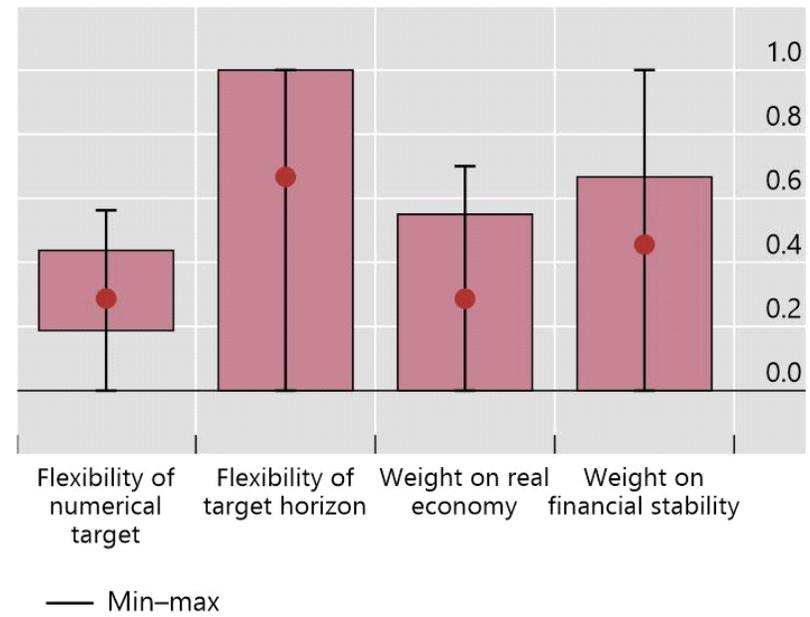
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Inflation targeting flexibility varies more widely in EMEs

Flexibility score, by sub-dimension, as of end_2023

Advanced economies
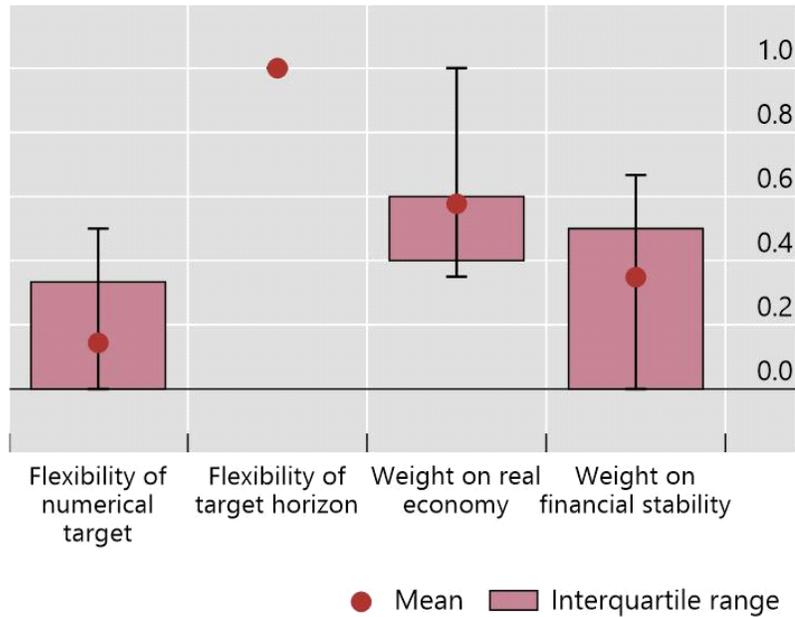
Emerging market economies

Where is the Norges Bank?

- Quantitative target: Annual consumer price inflation of close to 2 percent over time
- Low and stable inflation is an overriding objective
- But inflation targeting shall be forward-looking and flexible so that it can contribute to high and stable output and employment and to counteracting the build-up of financial imbalances

Inflation targeting flexibility indicators as of end-2023

Flexibility score, by sub-dimension , as of end_2023

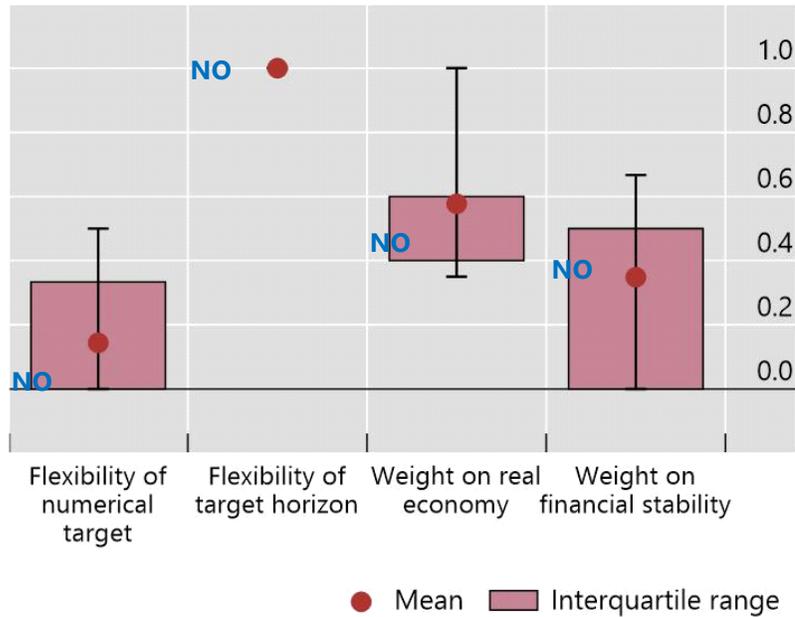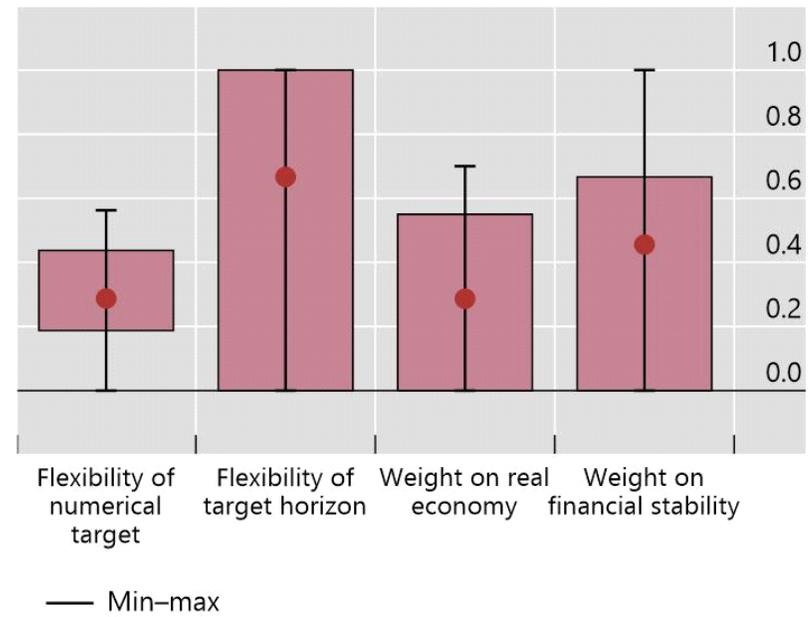Advanced economies

Emerging market economies

Inflation targeting has proved remarkably durable

- But under the surface, IT frameworks' flexibility has evolved significantly.
  - In EMEs, inflation targeting is closer to how it initially looked like.
  - But in AEs, significantly more ambition both for employment and financial stability.
- Partly explained by growing confidence in the ability to control inflation and in the frameworks' credibility, as well as the legacy of the Global Financial Crisis
- The adaptability of IT can partly explain its spread and durability
  - Constrained discretion: Commitment to meeting a target for inflation, but with discretion in terms of how/when to achieve it and to pursue other objectives.
- How relevant are differences in flexibility for reaction functions, outcomes and welfare?

Supply shocks and real economy considerations

- The supply-chain disruptions due to Covid-19, the sharp rise in energy and food prices following the unwarranted Russian invasion of Ukraine and recent US tariff policies have highlighted the increased incidence of supply shocks.

- Monetary policy theory and doctrine suggest that central banks should react *less* to supply shocks as long as medium-term inflation expectations remain well-anchored because:
    - their effects on inflation are often transitory and monetary policy takes time to have an effect (eg commodity price shocks)
    - they give rise to a trade-off between stabilizing inflation and economic activity

- Hofmann, Manea and Mojon (2024) test this hypothesis by estimating reaction coefficients to supply versus demand-driven inflation for seven advanced economies.

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Decomposition of inflation in demand and supply factors
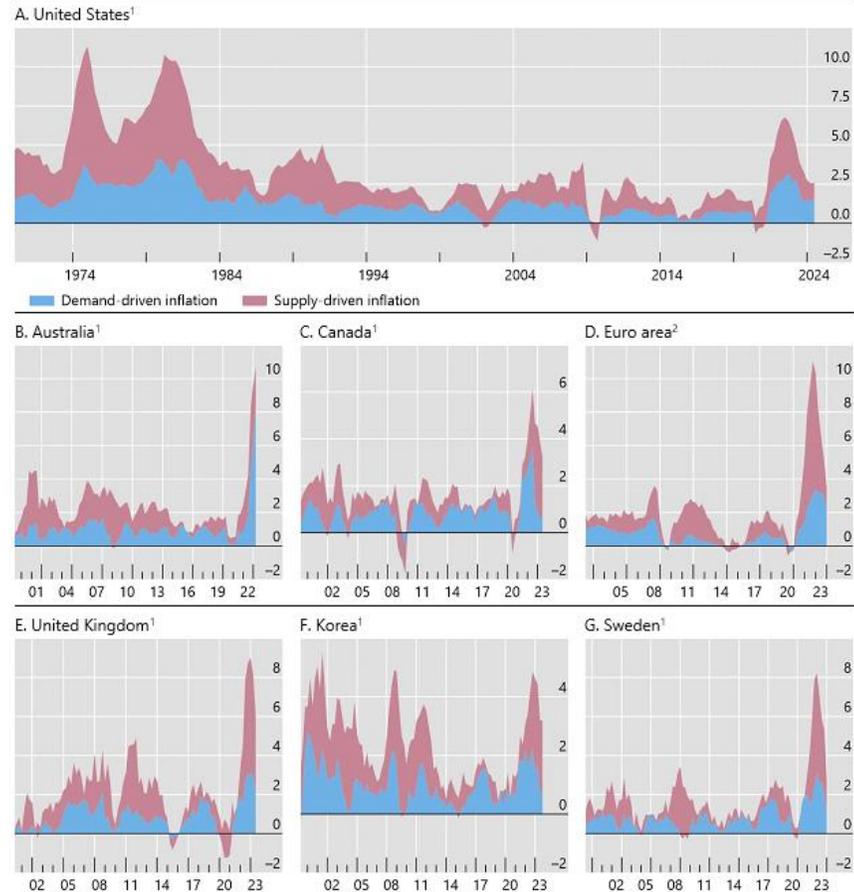
Based on Shapiro (2022) and Eickmeier and Hofmann (2022)

Stronger policy response to demand- than to supply-driven inflation

Taylor rules: panel estimates for AU, CA, EA, GB, KR, SE and US

A. Conventional Taylor rule
- Interest rate smoothing coefficient
- Response to inflation
- Response to output gap
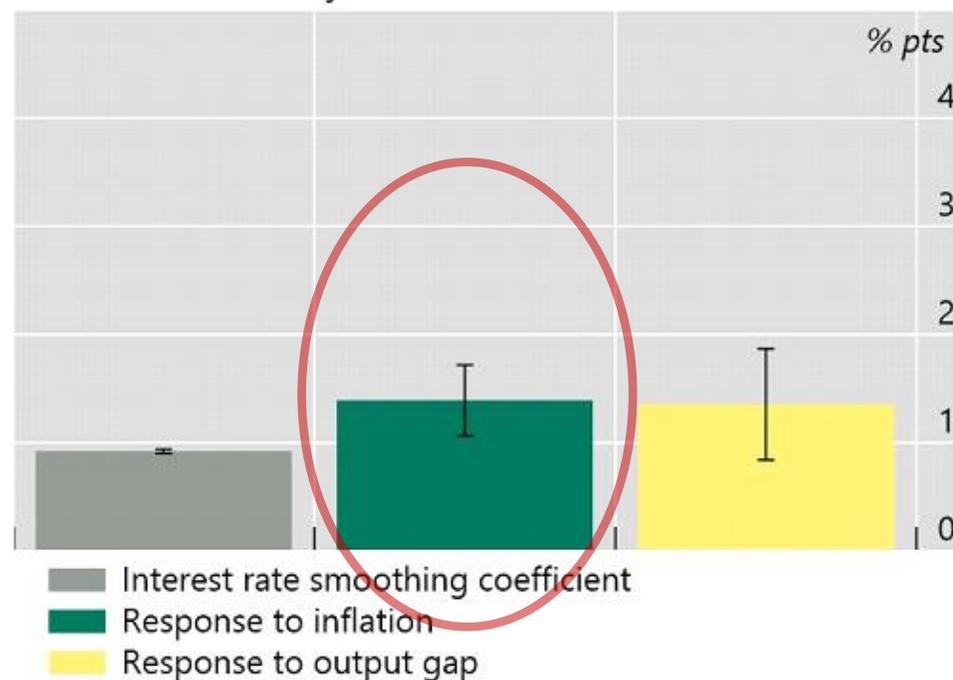
$$i_t = i + \rho i_{t-1} + (1-\rho)[\alpha \pi_t + \beta y_t] + \varepsilon_t$$

B. Targeted Taylor rule
- Interest rate smoothing coefficient
- Response to demand-driven inflation
- Response to supply-driven inflation
- Response to output gap
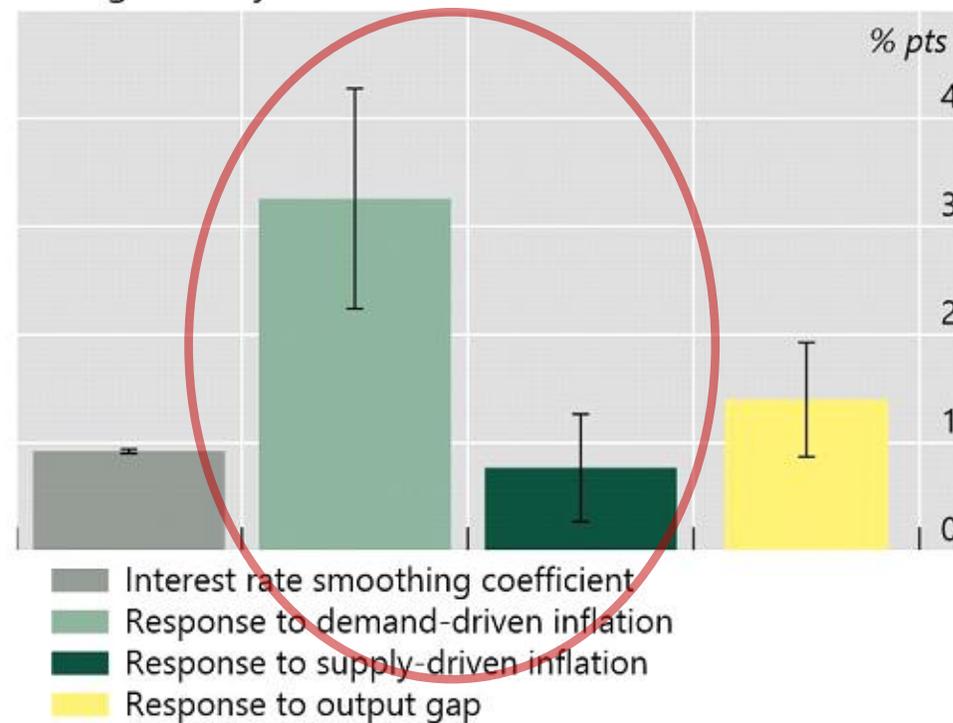
$$i_t = i + \rho i_{t-1} + (1-\rho)[\alpha^d \pi_t^d + \alpha^s \pi_t^s + \beta y_t] + \varepsilon_t$$

With limited variation across countries

Taylor rules: individual estimates

Percentage points, median and interquartile ranges

Graph 4

A. Conventional Taylor rule[1]
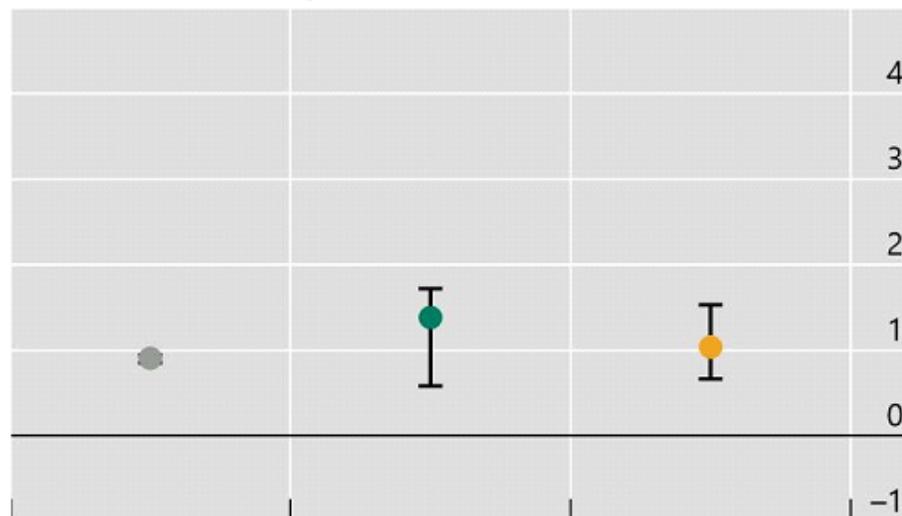
B. Targeted Taylor rule[2]

- Interest rate smoothing coefficient
- Response to inflation
- Response to output gap
— Interquartile range
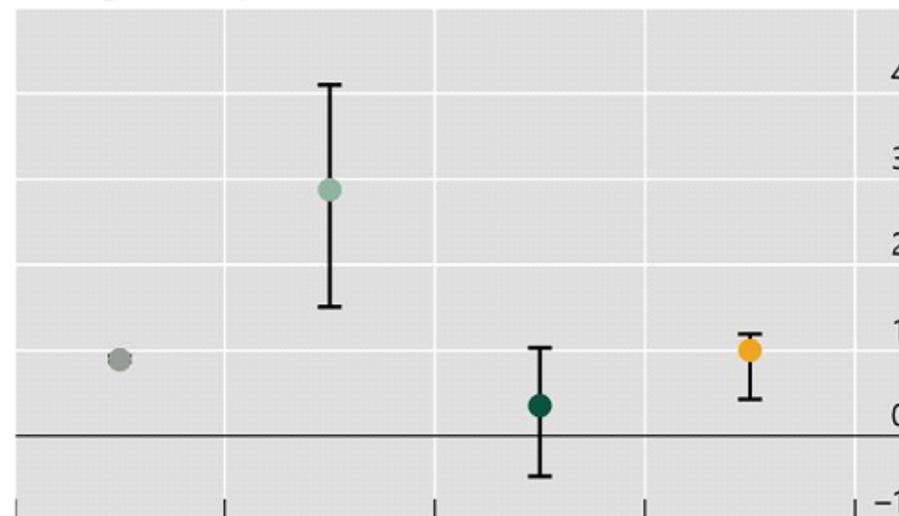
- Interest rate smoothing coefficient
- Response to demand-driven inflation
- Response to supply-driven inflation
- Response to output gap
— Interquartile range

And also true with core inflation

Taylor rules for the US: core versus non-core

Percentage points

Graph 5

A. Taylor rule with core and non-core inflation[1]

B. Targeted Taylor rule with core and non-core inflation[2]

Legend A:
- Interest rate smoothing coefficient
- Response to core inflation
- Response to non-core inflation
- Response to output gap

Legend B:
- Interest rate smoothing coefficient
- Response to core demand-driven inflation
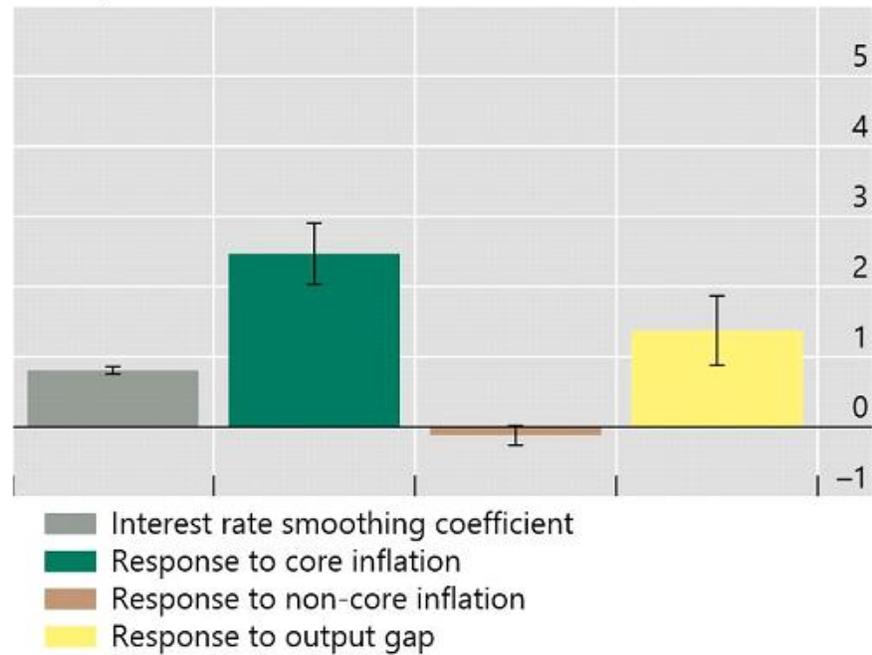- Response to core supply-driven inflation
- Response to non-core inflation
- Response to output gap
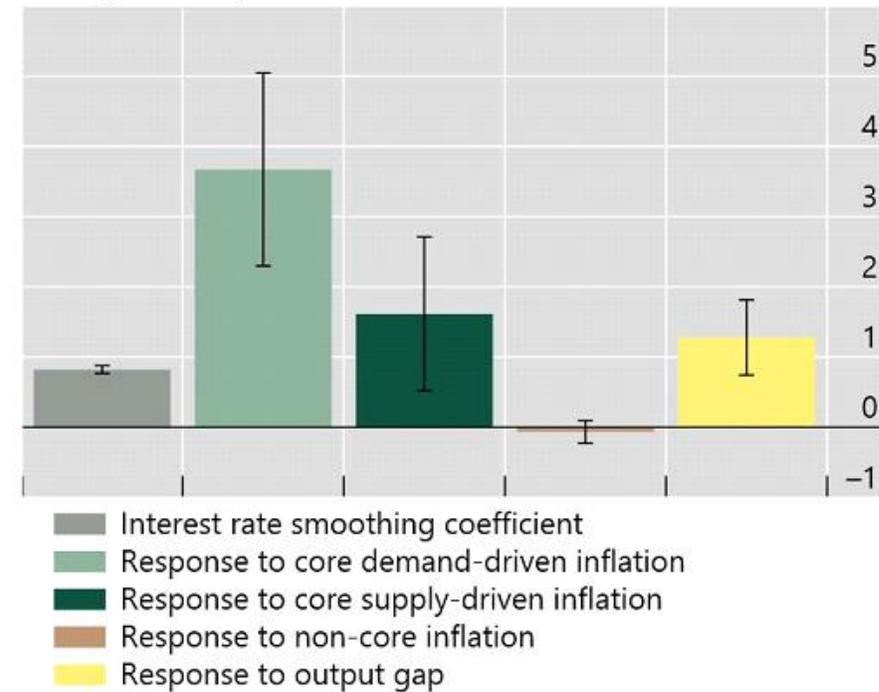
Some further thoughts

- Real economy trade-off considerations are quite universal across central banks and show up in central banks typically looking through supply shocks.

- Norges Bank: "In the short term, a conflict may arise between the two considerations. In its conduct of monetary policy, the MP/FSC then seeks to strike a balance between the objective of maintaining a stable inflation rate around target and high and stable employment, …"

- Hofmann, Manea and Mojon (2025) show in a New Keynesian model that such a targeted inflation response is closer to the optimal policy under commitment than a standard Taylor rule.

- Pervasive structural change (due to trade fragmentation, geopolitical tensions, AI-based technological innovation, population ageing and climate change) that also in the future we are likely to be confronted with a higher likelihood of supply shocks.

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Supply/demand drivers of inflation sentiment
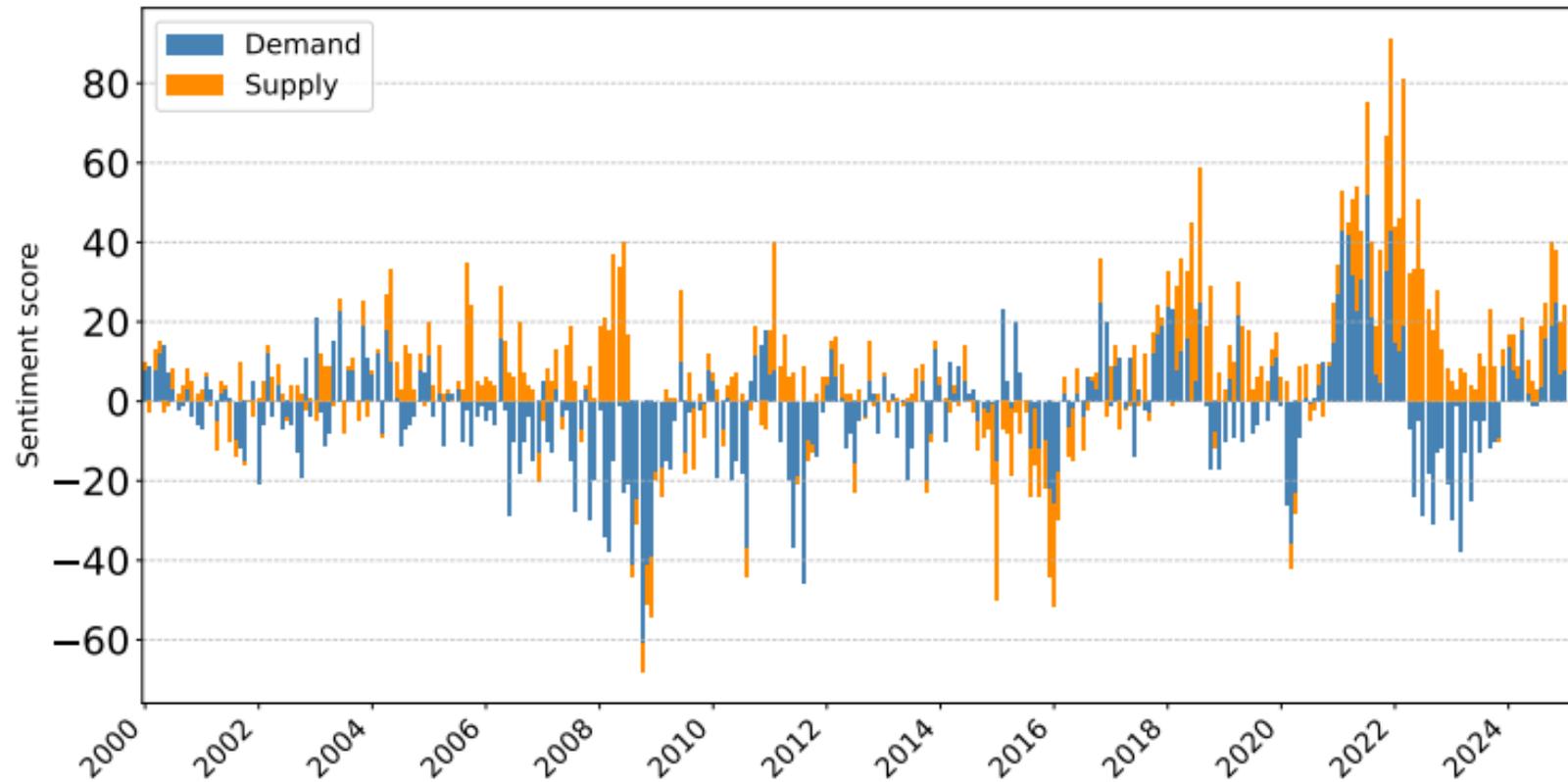
Based on Kwon, Park, Rungcharoenkitkul and Smets (2025)
"Parsing the pulse: Decomposing macroeconomic sentiment with LLMs"
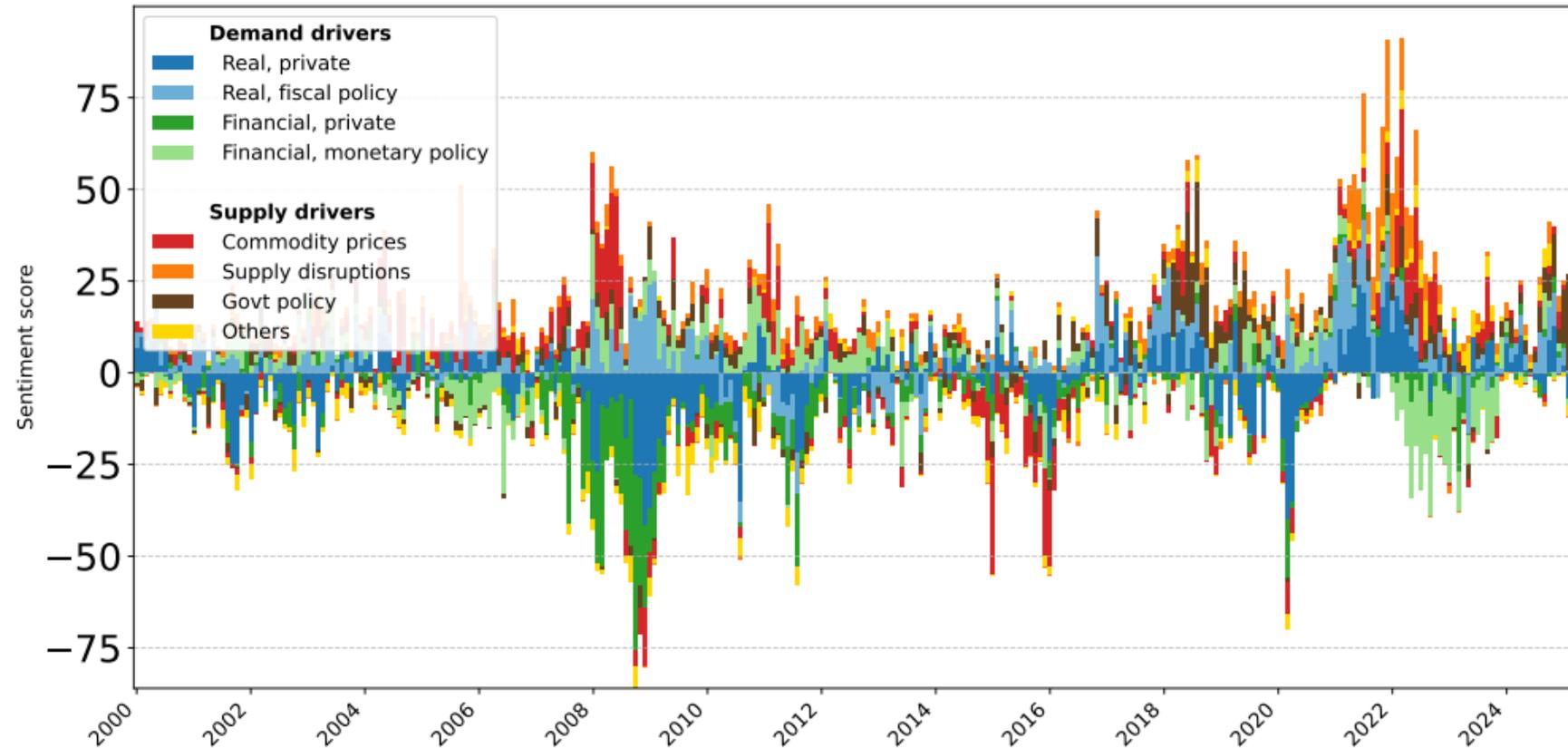
Detailed demand/supply decomposition of inflation sentiment

Based on Kwon, Park, Rungcharoenkitkul and Smets (2025)
"Parsing the pulse: Decomposing macroeconomic sentiment with LLMs"

Dealing with higher likelihood of supply shocks

- Covid experience suggests IT provided flexibility to tolerate above-target inflation, without large-scale response of medium-term inflation expectations,
- But it did raise questions about the costs of a large increase in the price level.
- Hofmann et al (2023) argue that the slow reaction to the post-pandemic inflation surge may be (partly) due to a misdiagnosis of inflation as being mainly supply-driven
- Pervasive structural change may continue to create uncertainty about demand-supply imbalances (the output gap) and r*
  - See eg current debate around inflation effects of AI-driven productivity increases
- Suggests that robustness checks such as using, for example, the first-difference rule of Orphanides (2003) are advisable.

Hysteresis and the case for temporary inflation overshoots

- Norges Bank also takes into account the possibility of hysteretic effects of recessions
    - "If there are signs that hysteresis effects may have occurred following a downturn, it may be appropriate to accept that inflation will temporarily overshoot the target while labour market conditions normalise"
- Abbritti, Consolo and Weber (2025)
    - Build a NK model with endogenous growth and downward nominal wage rigidity leading to asymmetric business cycles and hysteretic effects of recessions
    - Show that hysteresis may be addressed by a larger response to unemployment
    - It also suggests a higher optimal inflation target than in the basic NK model
- But possible trade-off with higher risk of inflation de-anchoring and the build-up of financial imbalances

Mitigating the build-up of financial imbalances

- Section 4 of Norges Bank's Monetary Policy Strategy Statement
  - "Monetary policy cannot take primary responsibility for mitigating the build-up of financial imbalances"
  - But "if there are signs that financial imbalances are building up, the consideration of longer-term stability may warrant maintaining a somewhat higher policy rate than the consideration of maintaining high and stable output and employment in the short term may suggest."
  - "In many situations, the degree of conflict between the two considerations will be minimal"

Mitigating the build-up of financial imbalances: Lean of clean?

- In Smets (2014), "Monetary policy and financial stability: How closely interlinked?", I argued that it depends on the answers to three questions:
  - What is the effect of monetary policy on risk taking and financial stability?
  - How effective is macroprudential policy in maintaining financial stability?
  - What is the risk of financial dominance, i.e., the risk that financial stability considerations undermine the credibility of the central bank's price stability mandate?

Robust evidence of link between loose monetary policy and financial crises

(a) *stance (pps)*
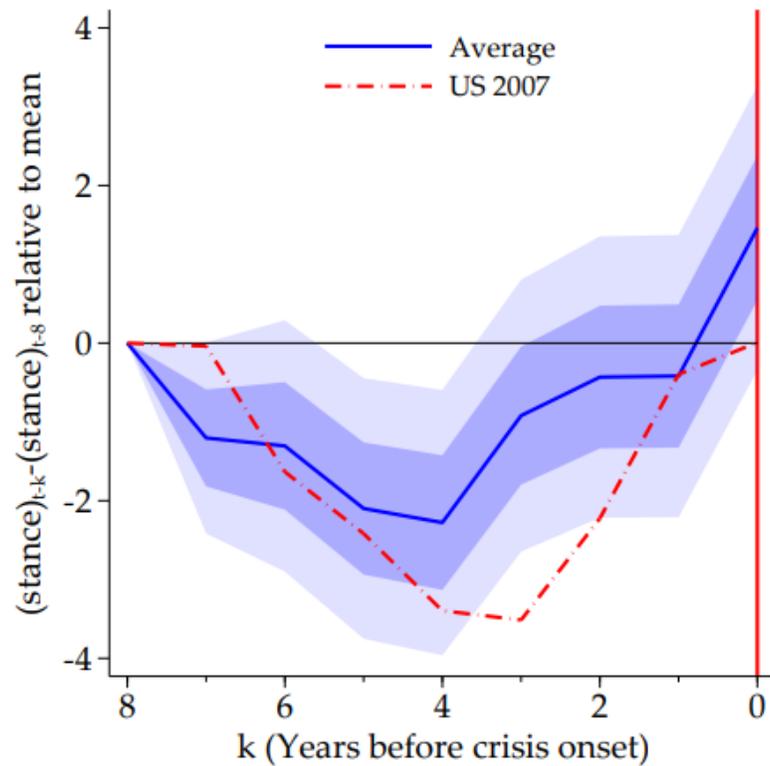
(b) *Credit-to-GDP ratio (pps)*
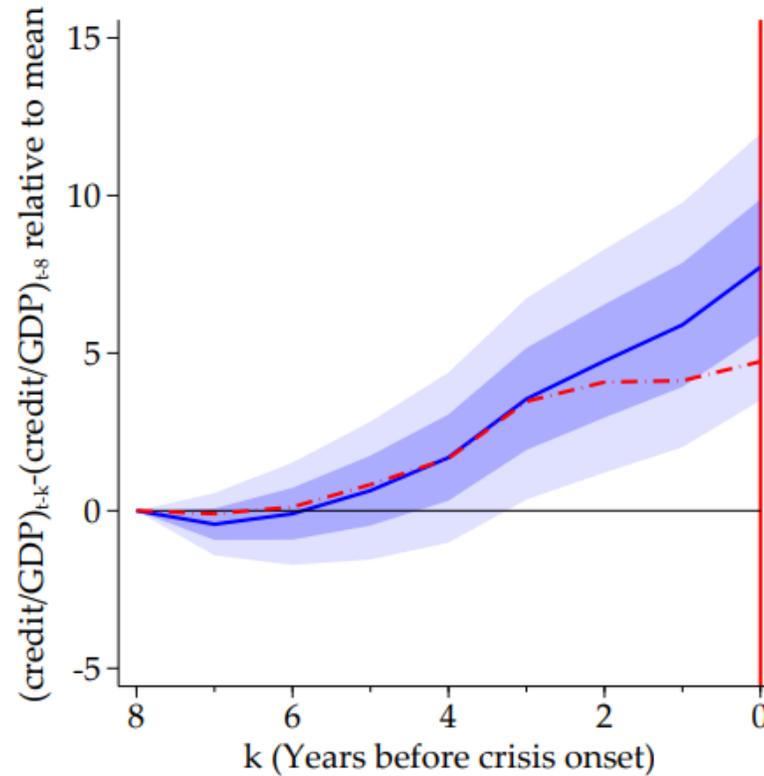
Grimm, Jorda, Schularick and Taylor (2022):

- An accommodative stance of monetary policy over an extended period increases the likelihood of financial turmoil down the road.

- Credit creation and asset price overheating are important intermediating channels.

Robust evidence of link between loose monetary policy and financial crises

Figure 2: *The average level of monetary policy rates around past crises*

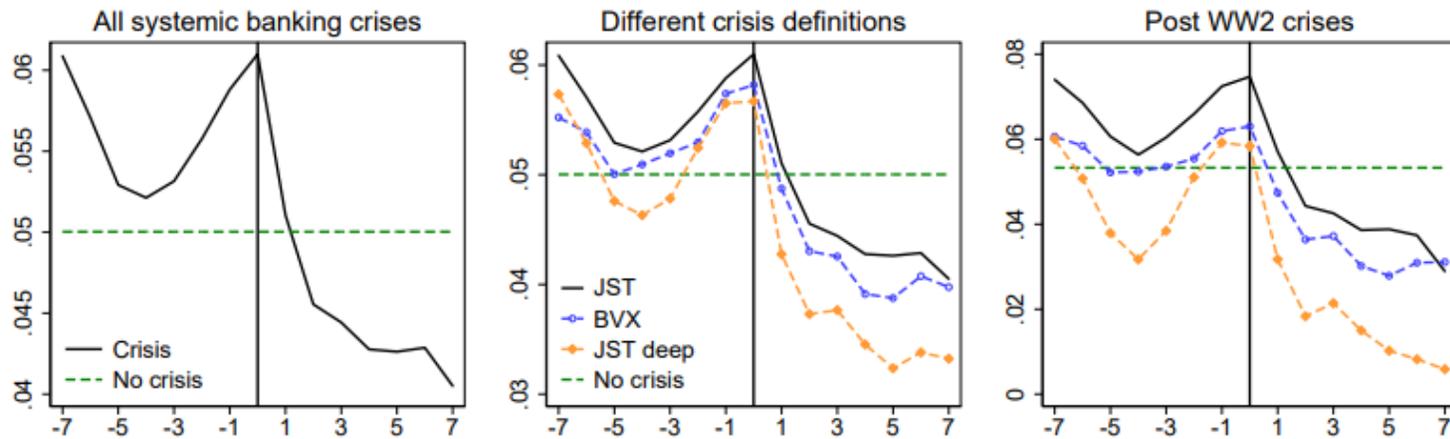*Notes:* Unweighted averages of the level of the short-term interest rate (monetary rate) in year t (start of the crisis at $t = 0$). Total of 77 crises (24 post-WW2). The left panel uses the narrative crisis definition from Jordà et al. (2016). The middle panel additionally considers the Baron et al. (2021) crisis chronology (BVX crises), and deep crises (JST deep crises) defined as Jordà et al. (2016) banking crises with -3% or less GDP growth in one year, or average -1% or less GDP growth over 3 years in the $t - 1$ to $t + 3$ crisis window. The right panel limits the sample to crises that started after 1945. Green dashed lines show the mean of the respective variable for non-crisis observations.

Jimenez, Kuvshinov, Peydro and Richter (2025):

- U-shaped monetary rate path increases banking crisis risk, via credit and asset price cycles
- Rate hikes increase crisis risk, but only if preceded by prolonged cuts.
- Prolonged cuts raise the likelihood of large credit and asset price booms

But…

- Little evidence that central banks systematically lean against credit booms
  - For example, Baxa and Zacek (2020).
- And some evidence that the costs can be non-trivial
  - Svensson (2014)
  - Coglianese, Olsson and Patterson (2025).

Have the post-GFC supervisory and regulatory reforms been effective?

- The most recent u-shaped policy has not led to a large systemic crisis (but mind SVB and Credit Suisse)
  - Due to a more resilient banking sector and the absence of a private credit boom?
    - For example, Boyarchenko, Giannone and Kovner (2020): An additional 100 basis points of bank capital reduces the probability of negative GDP growth by 10 percent at the one-year horizon, even controlling for credit growth and financial conditions, and without a significant drag on expected GDP growth.
  - Have "market-maker of last resort" policies by central banks helped?

Optimal policy response: Boissay, Collard, Gali and Manea (2025)

- Develop a New Keynesian model with capital accumulation and endogenous financial crises due to adverse selection and moral hazard in credit markets.

- Show that a calibrated version of the model can roughly replicate the typical economic patterns preceding financial crises, such as booming output, credit and asset markets, low inflation and a U-shaped monetary policy.

- Find that a central bank can reduce the incidence of crises in the medium–run by tolerating higher inflation volatility in the short–run.

- This can be implemented by an augmented Taylor rule that also responds to the buoyancy of asset markets.

- But also find that a "backstop" policy which entails conducting an exceptionally loose monetary policy in times of financial stress can lead to a significant welfare gain compared to strict inflation targeting.

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Chavaz and Smets (2025): Distinguish between two shades of asset purchases

	"Stance-oriented" purchases	"Transmission-oriented" purchases
Objective for monetary policy	**Offensive**: **Loosen** the stance of monetary policy (monetary stimulus)	**Defensive: Protect** the existing stance from impairments in monetary transmission
Success metric	Expected inflation on target	Restoration of orderly market functioning (eg bid/ask spreads, liquidity indicators)
Key transmission channels	Signaling, portfolio balance, bank reserve channel (**stock** more important)	Restoring market and funding liquidity (**flow** effects more important)
Calibration	**Quantum** of assets to purchase (for BoE)	**Whatever is needed** (backstop function)
Asset type	Mostly **government bonds** (longer maturities)	**Targeted and flexible** (focused on asset markets/segments with dysfunctions)
Timing	Typically, **longer-lasting**	**Forceful, temporary and flexible**
Pricing	**At/above** market price (to meet targeted quantum)	**Below** market price (to satisfy the backstop/Bagehot principle)
Fiscal cost	Balanced fiscal costs and benefits	Profitable
Complement / substitute tools	Forward guidance, negative interest rates, funding-for-lending, etc.	Market-maker / Lender of last-resort tools

Conclusions

- Over the past 35 years inflation targeting regimes have become more flexible
- More ambition in terms of both real economy and financial stability considerations
- Often involves complex reaction functions

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Thank you

Appendix

Measuring inflation targeting flexibility: scoring system

Table A1

(1) Dimension	(2) Sub-dimension	(3) Feature	(4) Scoring
A. Flexibility of the inflation target specification	A1. Numerical target	A1.1 How flexible is the type of target?	0 = point target
			0.5 = point target with tolerance interval (or range with midpoint)
			1 = range
		A1.2 How wide is the target range or interval?	0 = 1 percentage point
			0.5 = 2 percentage points
			1 = more than 2 percentage points
		A1.3 How selective is the price index?	0 = CPI inflation target (or equivalent)
			1 = core inflation target (or target with "escape clauses")
	A2. Target horizon	A2.1 How flexible is the target horizon?	0 = numerical horizon
			1 = qualitative (eg "over the medium term")

B. Objectives other than price stability	B1. Real economy	B1.1 What is the status of the objective?	0 = not an objective or consideration
			0.33 = only a consideration
			0.66 = secondary objective
			1 = primary objective
		B1.2 What is the degree of ambition?	0 = vague
			0.4 = dampen volatility
			0.8 = high/maximum level
			1 = shortfall from maximum level
	B2. Financial stability	B2.1 What is the status of the objective?	0 = not an objective or consideration
			0.33 = only a consideration
			0.66 = secondary objective
			1 = primary objective
		B2.2 What is the degree of ambition?	0 = vague
			0.5 = qualified leaning against the wind (LAW)
			1 = unqualified LAW

Source: Authors' elaboration based on central bank or government reports and statements (see Annex C).