

CENTRAL BANKING · LECTURE 1

01/

The information channel of monetary policy.

CENTRAL BANKING · LECTURE ONE

Worcester College

Central Bank Communication.

Words, expectations, and the anchoring of inflation in modern monetary policy.

Fatih Kansoy
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CENTRAL BANKING · LECTURE 1

01/A

Section A

CENTRAL BANKING · LECTURE ONE

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Central bank communication fundamentals.

Definitions, audiences, channels, and why words are part of monetary policy.

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EPIGRAPH

*Monetary policy is **98%** talk and only **2%** action.*

— Ben S. Bernanke · on the practice of central banking, 2015 · [Link to source](#)

The policy rate is one number, set eight times a year. Markets price thousands of forward rates off the language used to justify it. **The language is the policy.**

BEN S. BERNANKE

Federal Reserve Chair, 2006–2014 · Nobel Laureate, 2022

Interactive figure

Interactive media · <https://fred.stlouisfed.org/graph/graph-landing.php?g=1VkPH&width=965&height=475>



Mario Draghi
President of the ECB, 2011–2019 · London, 26 July 2012

A SPEECH THAT RE-PRICED THE EUROZONE

“Within our mandate, the ECB is ready to do **whatever it takes** to preserve the euro.”

“And believe me, it will be enough.”

Global Investment Conference · London · 26 July 2012 · [Link to speech](#)

THE MARKET RESPONSE — THREE SENTENCES, THREE YEARS

24 JUL 2012		12 SEP 2012	
Italy 10y	6.6%	Italy 10y	5.1%
Spain 10y	7.6%	Spain 10y	5.7%
EUR/USD	1.21	EUR/USD	1.29
13 DEC 2012		20 DEC 2013	
Italy 10y	4.6%	Italy 10y	4.1%
Spain 10y	5.5%	Spain 10y	4.1%
EUR/USD	1.31	EUR/USD	1.37

The Outright Monetary Transactions (OMT) programme was never deployed. **Words alone repriced sovereign risk** because they were *credible* and *state-contingent*. Communication is policy when the framework supports it.

Decomposing a stressed sovereign yield

Term-structure components of an n-period bond under stress

YIELD $\approx$ EXPECTED POLICY PATH + TERM PREMIUM + SOVEREIGN STRESS PREMIUM

$$y_t^{(n)} \approx \frac{1}{n} \sum_{j=0}^{n-1} E_t[i_{t+j}] + TP_t^{(n)} + SP_t$$

EXPECTED POLICY PATH

$\frac{1}{n} \sum_{j=0}^{n-1} E_t[i_{t+j}]$ — the average expected short rate over the bond's life. The index j runs over each future period to maturity.

TERM PREMIUM

$TP_t^{(n)}$ — compensation required by the marginal investor for holding a long-maturity claim rather than rolling short rates.

SOVEREIGN STRESS PREMIUM

SP_t — issuer-specific compensation: default risk, illiquidity, and (in a currency union) redenomination risk.

The July 2012 intervention operated through SP_t , not $E_t[i_{t+j}]$: it collapsed the market-implied probability of euro break-up. Routine forward guidance, by contrast, works through $E_t[i_{t+j}]$. **Communication is a regular instrument of monetary policy** — not a collection of famous speeches.

Transparency and communication are not the same

Transparency is the principle; communication is its operational use to shape beliefs.

DEFINITION

*Central bank communication is the **strategic** provision of information by the central bank about its mandate, its assessment of the economy, its decisions, its instruments, the balance of risks, and its likely reaction function — addressed to different audiences through different channels for specific policy and institutional purposes.*

THE PRINCIPLE

Transparency

The institutional commitment to openness: what the central bank makes public, on what schedule, and with what completeness.

TYPICAL OUTPUTS

decisions · rules · minutes · forecasts · data · voting records

OPERATIONAL USE

Communication

The active, time-specific practice of conveying policy content through deliberate language, timing, and interaction.

TYPICAL CHANNELS

language · statements · speeches · press conferences · interviews

A bank can be highly transparent — many documents published on time — and still communicate poorly: the reaction function may be unclear and messages may be inconsistent. **Transparency is necessary for modern communication; it is not sufficient.**

Key forms of central bank communication

The channels through which the regime makes itself observable



Policy announcements

Statements and press releases issued at the close of monetary policy meetings, recording the decision and its rationale.



Regular reports

Periodic publications such as Inflation Reports, Monetary Policy Reports, and Financial Stability Reports.



Press conferences

Live briefings by the governor or chair, including a Q&A in which the reaction function is probed in real time.



Meeting minutes

Written records of policy discussions, voting patterns, and the balance of arguments behind the decision.



Forecasts & projections

Numerical projections for inflation, output, and the policy path; SEP and dot plot at the Fed; staff projections at the ECB.

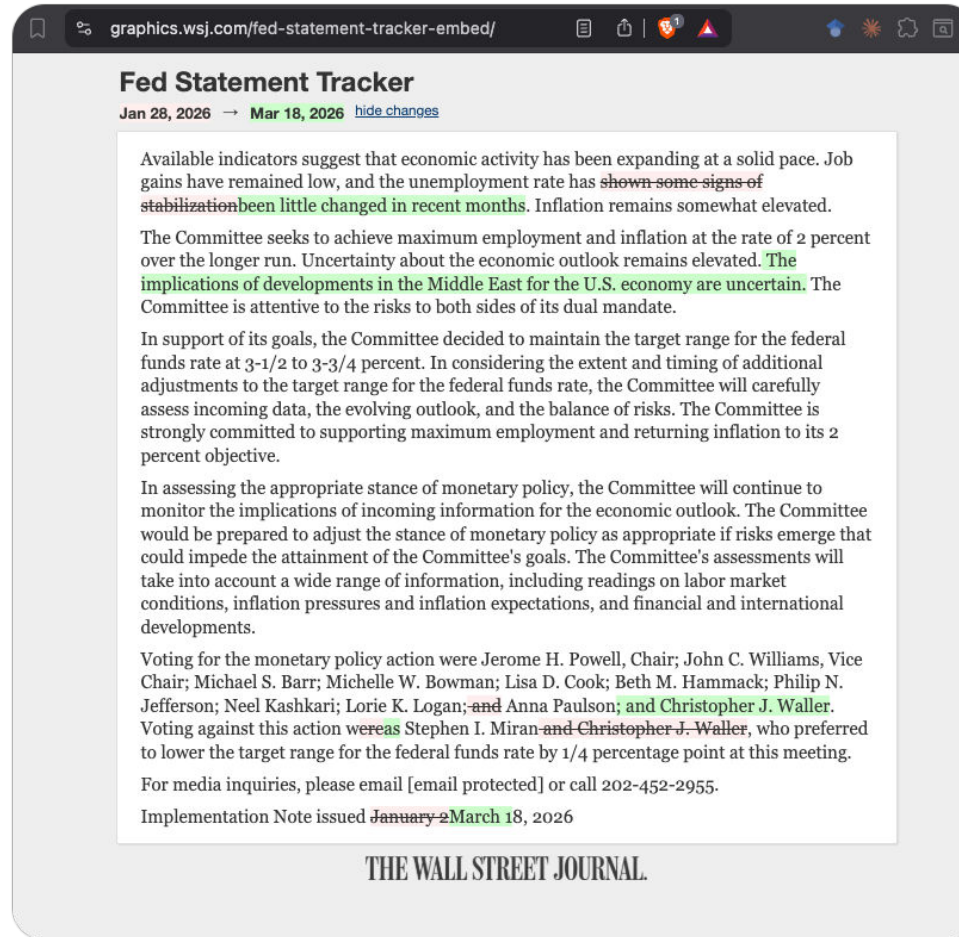


Speeches & testimony

Public addresses by Council and Board members, and parliamentary testimony delivered between meetings.

Six channels, one regime. Each is a way the audience can read the bank's stance, outlook, reaction function, or risk view.

Every word matters



Fed Statement Tracker
Jan 28, 2026 → **Mar 18, 2026** [hide changes](#)

Available indicators suggest that economic activity has been expanding at a solid pace. Job gains have remained low, and the unemployment rate has ~~shown some signs of stabilization~~ **been little changed in recent months**. Inflation remains somewhat elevated.

The Committee seeks to achieve maximum employment and inflation at the rate of 2 percent over the longer run. Uncertainty about the economic outlook remains elevated. **The implications of developments in the Middle East for the U.S. economy are uncertain**. The Committee is attentive to the risks to both sides of its dual mandate.

In support of its goals, the Committee decided to maintain the target range for the federal funds rate at 3-1/2 to 3-3/4 percent. In considering the extent and timing of additional adjustments to the target range for the federal funds rate, the Committee will carefully assess incoming data, the evolving outlook, and the balance of risks. The Committee is strongly committed to supporting maximum employment and returning inflation to its 2 percent objective.

In assessing the appropriate stance of monetary policy, the Committee will continue to monitor the implications of incoming information for the economic outlook. The Committee would be prepared to adjust the stance of monetary policy as appropriate if risks emerge that could impede the attainment of the Committee's goals. The Committee's assessments will take into account a wide range of information, including readings on labor market conditions, inflation pressures and inflation expectations, and financial and international developments.

Voting for the monetary policy action were Jerome H. Powell, Chair; John C. Williams, Vice Chair; Michael S. Barr; Michelle W. Bowman; Lisa D. Cook; Beth M. Hammack; Philip N. Jefferson; Neel Kashkari; Lorie K. Logan; **and Anna Paulson; and Christopher J. Waller**.

Voting against this action ~~were~~ **as** Stephen I. Miran ~~and Christopher J. Waller~~, who preferred to lower the target range for the federal funds rate by 1/4 percentage point at this meeting.

For media inquiries, please email or call 202-452-2955.

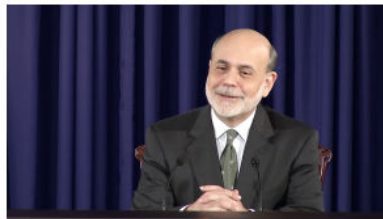
Implementation Note issued ~~January 2~~ **March 18**, 2026

THE WALL STREET JOURNAL.

WSJ Fed Statement Tracker

Fed Face.

Markets read the Chair's expression, not only the words.



Panel A: Ben Bernanke, March 20th 2013

Emotion	Intensity Score
Anger	0.00
Contempt	0.00
Disgust	0.00
Fear	0.00
Happiness	1.00
Neutral	0.00
Sadness	0.00
Surprise	0.00



Panel B: Janet Yellen, December 14th 2016

Emotion	Intensity Score
Anger	0.02
Contempt	0.00
Disgust	0.00
Fear	0.00
Happiness	0.00
Neutral	0.98
Sadness	0.00
Surprise	0.00



Panel C: Jerome Powell, January 30th 2019

Emotion	Intensity Score
Anger	0.00
Contempt	0.05
Disgust	0.00
Fear	0.00
Happiness	0.00
Neutral	0.04
Sadness	0.91
Surprise	0.00

Figure A1: Emotion Intensity Scores

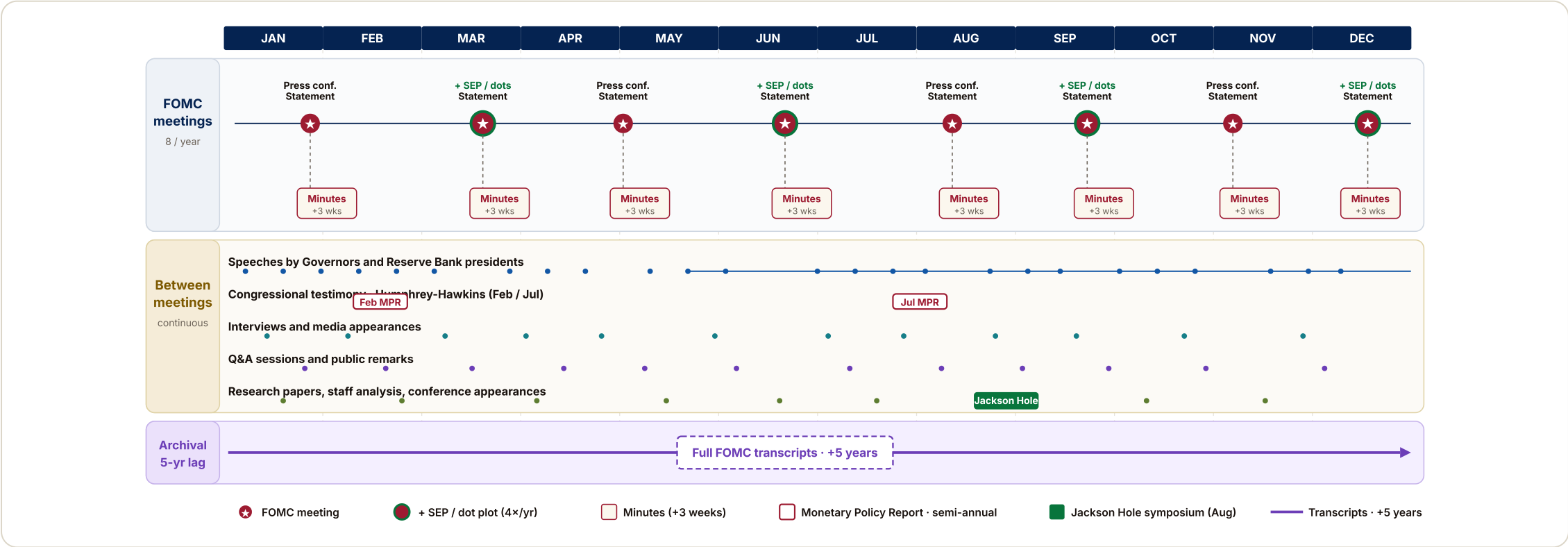
This figure presents emotion intensity scores as captured by the Microsoft Azure Cognitive Services Emotion API. Panel A shows Ben Bernanke during the FOMC press conference held on March 20th, 2013, Panel B shows Janet Yellen during the FOMC press conference held on December 14th, 2016, and Panel C shows Jerome Powell during the FOMC press conference held on January 30th, 2019.

- **Negative expressions** move prices within three-minute windows.
- One standard deviation more negativity: **SPY -0.53 bp, VIX +3.76 bp, EUR/USD -0.18 bp.**
- The effect remains after controlling for verbal tone, hawkishness, the rate decision, and market conditions.
- Negative faces line up with later FOMC minutes, suggesting genuine information, not only noise.

Curti and Kazinnik (2023), "Let's face it: Quantifying the impact of nonverbal communication in FOMC press conferences." Journal of Monetary Economics

Federal Reserve communication timeline

Layered scheduled, periodic, and archival communication across one year



Source: [Federal Reserve FOMC calendars](#)

Federal Reserve communication is a layered system: meeting-day signals (statement, press conference, dot plot), delayed scheduled releases (minutes), continuous discretionary streams (speeches, testimony, interviews, research), and long-lag archival material (transcripts, +5 years).

Evolution of central bank communication

From "do not give reasons" to "the explanation is the policy"



"Not only do expectations about policy matter, but, at least under current conditions, very little else matters."

— Michael Woodford, Jackson Hole Conference, 2005



1930s – 1980s

Era of secrecy

"It is a dangerous thing to start to give reasons."

— Sir Stephen Harvey, Bank of England

"Never explain, never excuse."

— Montagu Norman, Bank of England



1990s

Transition period

"Since becoming a central banker I have learned to mumble with great incoherence."

"If I've made myself too clear, you must have misunderstood me."

— Alan Greenspan, Fed



2000s

Modern era

"Sometimes the explanation is the policy."

— Janet Yellen, Fed



Post-2008

Forward-guidance era

"Monetary policy is 98 percent talk and 2 percent action."

— Ben Bernanke, Fed

Objectives of central bank communication

What communication is meant to do, in the language of the regime



Enhance policy effectiveness

Strengthen transmission by making the stance, strategy, and outlook legible, so that the intended financial-conditions response is what actually occurs.



Anchor expectations

Hold π^e at long horizons close to target, raising the credibility weight χ and reducing the persistence of supply shocks.



Reduce uncertainty

Improve the predictability of policy decisions, lowering term premia and dampening volatility around announcements.



Ensure accountability

Discharge the democratic bargain that comes with independence: explain the mandate, the decisions, and the rationale to elected representatives and the public.



Build credibility

Foster public confidence through consistent and clear communication of policy commitments, so that words about the future are priced as binding rather than discounted as cheap talk.

Communication does not have one purpose. It is the joint instrument by which the regime delivers transmission, anchoring, predictability, accountability, and credibility.

Three axes

Same sentence, three independent effects — analyse along each axis separately

AXIS 01 Audience who hears it — and with what attention	Markets high attention, fast reaction, narrow vocabulary	Price-setters low attention; decisions feed inflation	Households very low attention; salient prices dominate	Political bodies arena of accountability and legitimacy	Peer central banks spillovers, coordination, credibility
AXIS 02 Channel through what medium, format, and lag	Decisions terse statements; high signal density per word	Explanatory press conferences and reports; looser register	Deliberation minutes and transcripts; lagged, dissent visible	Forecasts projections and dot plots; quantitative outlook	Outreach speeches, testimony, blogs, listening events
AXIS 03 Objective what the message is meant to achieve	Anticipation make the reaction function readable from data	Path-shaping move expected future short rates	Anchoring tie long-run inflation to the target	Accountability legitimacy and democratic standing	Crisis stabilisation compress tail risk in transmission

A central bank does not address a representative listener. Identical language can be decisive for markets and invisible to households; one objective may demand a different audience-and-channel mix from the next. **Consistency across channels is itself a problem to be solved.**

Communication is also listening

The communication problem is solved by the round trip, not the broadcast

→ OUTWARD

The bank conveys policy content to its audiences.

← INWARD

The same encounters return information about beliefs, expectations, and conditions on the ground.

A MESSAGE SUCCEEDS ONLY IF THE AUDIENCE CLEARS ALL THREE

CONDITION 01

Notice

Has the audience seen the message at all? For households the answer is usually no.

CONDITION 02

Understand

Has the content been parsed correctly?
Technical vocabulary creates predictable misreadings.

CONDITION 03

Interpret

Does the audience map the message to the bank's intended meaning, or to a different one?

*Communication is part of the **information-production process** of monetary policy — not only of its transmission. Sending a message does not solve the problem. The round trip does.*

cf. Haldane, [A Little More Conversation, A Little Less Action](#) (2017)

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01/B

Section B

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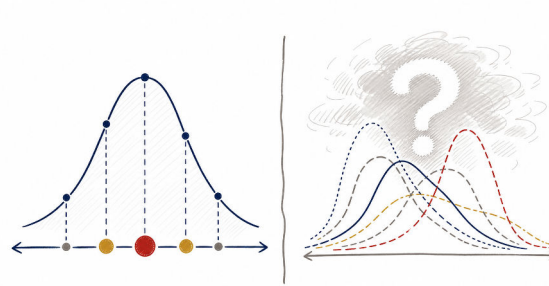
Risk and Uncertainty.

Distributions, fan charts, scenarios, and the balance of risks.

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Risk and uncertainty require different forecast language

One known distribution versus several plausible distributions



Known probability weights on the left; model and probability doubt on the right.

RISK · KNOWN DISTRIBUTION

Unknown outcomes, known weights

Report the centre, dispersion, and tail balance of one conditional distribution.

$$E_t[Y_{t+h}] = \sum_{i=1}^N p_i y_i$$

UNCERTAINTY · MODEL DOUBT

The weighting system is disputed

Report scenarios, assumptions, and model dependence rather than hiding them behind one baseline.

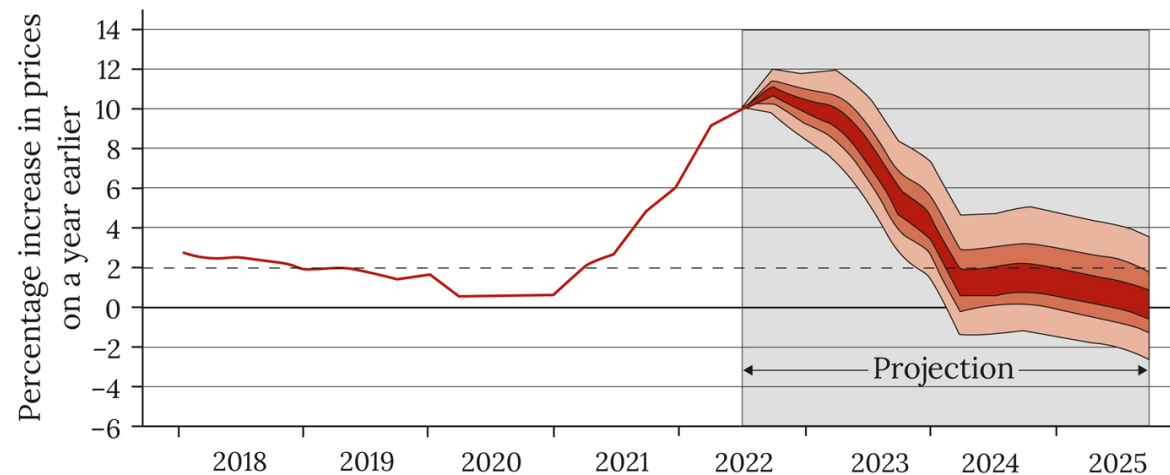
$$Y_{t+h} \sim F_m(\cdot), \quad m \in \mathcal{M}$$

Risk varies the probability weights within one model; uncertainty questions the model itself.

Forecasts are distributions

A baseline summarises a distribution — policy depends on more than the centre

A statement such as "inflation will be 2.3%" is shorthand for one moment of the conditional distribution $Y_{t+h} | \mathcal{I}_t$, where $\mathcal{I}_t$ is the information set at date t .



CENTRE

$$E_t[Y_{t+h}]$$

The modal/mean path — the figure quoted in the press release.

WIDTH

$$\text{Var}_t(Y_{t+h})$$

Spread of the bands at any horizon — how confident the bank is.

SKEW

$$\text{Skew}_t(Y_{t+h})$$

Asymmetry above versus below the modal path — the balance of risks.

TAIL MASS

$$P(Y_{t+h} < \bar{Y}^{\text{bad}})$$

Probability mass below a catastrophic threshold.

Draghi's intervention did not move $E_t[Y_{t+h}]$ much; it **collapsed** $P(Y_{t+h} < \bar{Y}^{\text{bad}})$ — the perceived probability of catastrophic euro-area outcomes.

Communication can act on any moment of the forecast distribution, not only on the centre.

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01/C

Section C

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Expectations.

Static, adaptive, and rational expectation formation inside the Phillips curve.

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One Phillips curve, four expectation rules

The same equation, four theories of how π_t^e is formed

EXPECTATIONS-AUGMENTED PHILLIPS CURVE

$$\pi_t = \pi_t^e + \alpha (y_t - y_e) + u_t$$

inflation = expected inflation + slack term + supply shock

EACH PARADIGM CLOSES THE MODEL WITH A DIFFERENT RULE FOR π_t^e

RULE 01 Static	RULE 02 Adaptive	RULE 03 Rational	RULE 04 Behavioural
$\pi_t^e = \bar{\pi}$	$\pi_t^e = \pi_{t-1}^e + \lambda(\pi_{t-1} - \pi_{t-1}^e)$	$\pi_t^e = E_{t-1}[\pi_t \mid \mathcal{I}_{t-1}]$	$\pi_t^e = \mathbb{F}_{t-1}[\pi_t]$
A fixed nominal anchor; expectations do not respond to data.	Beliefs revised mechanically toward most recent realisation.	Conditional expectation given the model and information set.	Subjective expectation $\mathbb{F}$ — bounded attention, noisy updating, biases.

The choice of expectation rule determines what the slack coefficient α identifies, what the residual u_t contains, and whether announcing a change in policy can move inflation without changing y_t .

Static expectations: a fixed nominal reference point

Wage- and price-setters enter every period with the same belief

RULE

$$\pi_t^e = \bar{\pi}$$

$$\pi_t - \pi_t^e = \pi_t - \bar{\pi}$$

The forecast error is then the deviation of realised inflation from a fixed reference point — not from a moving belief:

THREE IMPLICATIONS

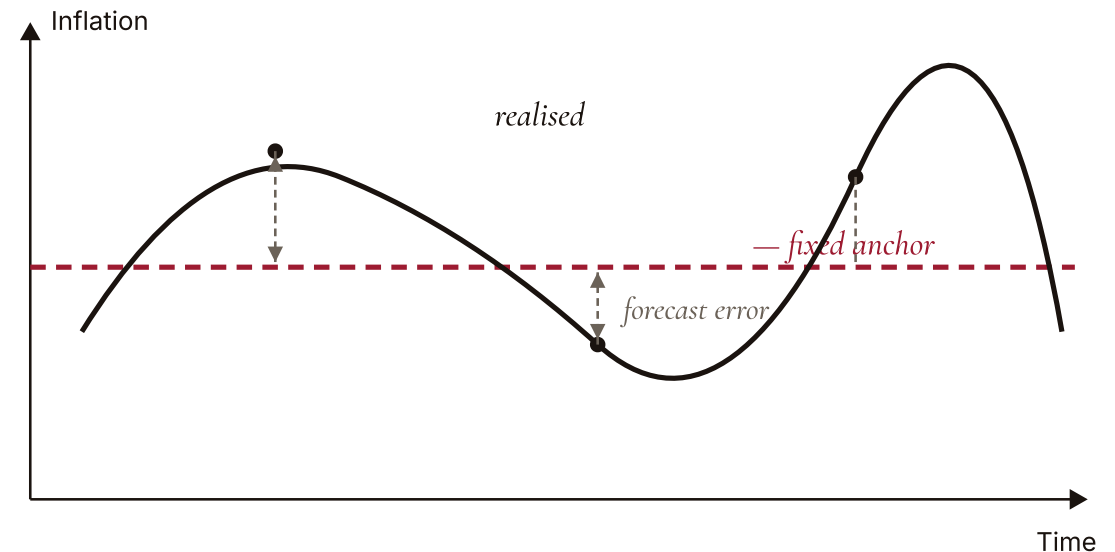
A useful benchmark for a world in which inflation expectations are **passive**.

Higher inflation today does not mechanically change tomorrow's expected inflation.

The model generates **level effects** — not a theory of inflation persistence.

Static expectations are not a claim that agents are sophisticated; the opposite. Expected inflation is treated as **given**, so policy works through current demand — not through changing beliefs about future inflation.

VISUALISATION



Realised inflation deviates from a fixed belief; the belief itself does not adjust.

Static expectations and the Phillips curve

Substituting the static rule into the E-A Phillips curve yields a level relation

DERIVATION

01 Start from the expectations-augmented Phillips curve:

$$\pi_t = \pi_t^e + \alpha(y_t - y_e) + u_t$$

02 Impose the static rule $\pi_t^e = \bar{\pi}$:

$$\pi_t = \bar{\pi} + \alpha(y_t - y_e) + u_t$$

03 Equivalently, the reduced form:

$$\pi_t - \bar{\pi} = \alpha(y_t - y_e) + u_t$$

READING

A positive output gap raises π_t above $\bar{\pi}$, but realised inflation does **not feed back** into expected inflation.

There is no acceleration mechanism: a sustained positive gap shifts the level of inflation, not its rate of change.

The model implies a **stable short-run trade-off** between economic slack and the level of inflation.

Adaptive expectations

Beliefs revised toward the most recent realisation — persistence from the rule itself

ADAPTIVE EXPECTATIONS RULE

$$\pi_t^e = \pi_{t-1}^e + \lambda (\pi_{t-1} - \pi_{t-1}^e), \quad 0 < \lambda \leq 1$$

λ is the speed of updating: the weight placed on last period's forecast error.

SPECIAL CASE: $\lambda = 1$

$$\pi_t^e = \pi_{t-1}$$

last period's inflation becomes today's expectation

Mechanism

Expectations are **backward-looking**: λ governs the speed at which beliefs absorb the most recent forecast error. Higher realised inflation revises expected inflation upward in the next period, regardless of cause.

Implication

Inflation inherits **persistence from its own past**. A sequence of shocks — even temporary ones — lifts inflation for prolonged periods if beliefs keep adjusting upward.

Disinflation becomes **harder** the longer inflation has been elevated: yesterday's inflation feeds directly into today's beliefs, and policy must work against that inheritance — not just against current demand.

Adaptive expectations and the Phillips curve

The output gap drives the change in inflation — the accelerationist Phillips curve

DERIVATION

01 E-A Phillips curve:

$$\pi_t = \pi_t^e + \alpha(y_t - y_e) + u_t$$

02 Impose adaptive expectations with $\lambda = 1$:

$$\pi_t^e = \pi_{t-1}$$

03 Substitute:

$$\pi_t = \pi_{t-1} + \alpha(y_t - y_e) + u_t$$

04 Take first differences — the **accelerationist Phillips curve**:

$$\Delta\pi_t = \alpha(y_t - y_e) + u_t$$

READING

The output gap now drives the **change** in inflation, not its level. This is the Phillips curve associated with Friedman (1968) and Phelps (1967).

A stable long-run trade-off **disappears**: holding $y_t > y_e$ does not permanently lower unemployment — it generates continuing inflation increases.

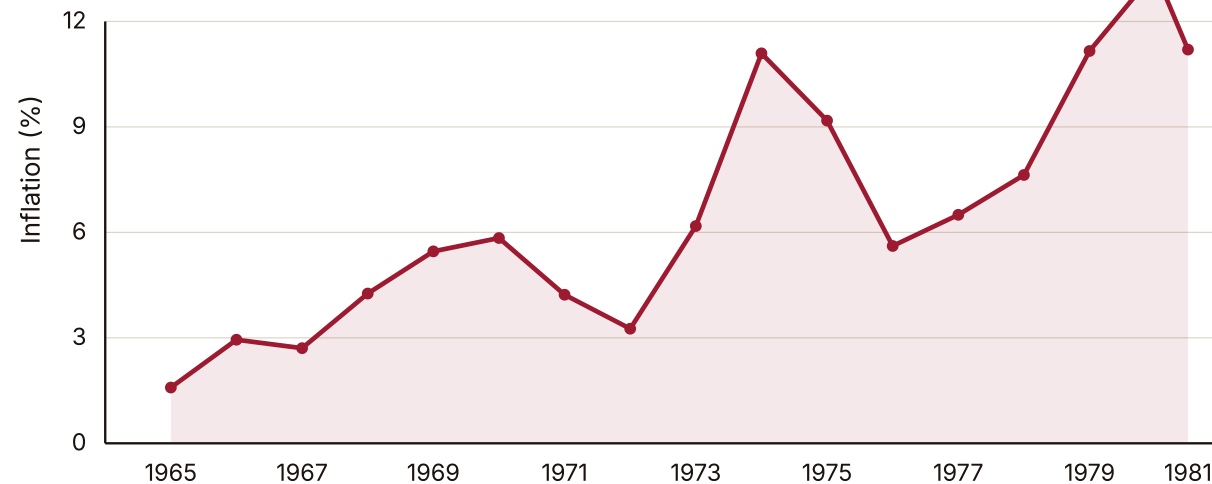
A central bank that persistently targets output above equilibrium is choosing an inflation path with **no natural stopping point**.

The persistence comes from the expectation-formation rule itself, not from sticky prices, contracts, or supply shocks. Change the rule and the dynamics change.

Adaptive expectations in the post-war record

The Great Inflation as a slow-moving inheritance — not a sequence of independent shocks

U.S. CPI INFLATION, 1965–1981



THE GREAT INFLATION

The 1970s pattern is consistent with persistence and backward-looking belief formation: each new outcome fed into the next round of expectations.

Negative supply shocks and accommodative policy lifted realised inflation, and wage indexation made the propagation mechanism especially powerful.

Disinflation, when it came, required a regime change deliberate enough to be perceived as one — not just tighter policy.

LIMITATIONS OF THE ADAPTIVE RULE

Mechanically backward-looking. No role for forward information or expectation about the future.

Insensitive to announcements. The rule does not allow expectations to respond directly to credible policy regime changes.

Not model-consistent. The expectation-formation rule itself is fixed and exogenous to the model agents inhabit.

Rational expectations

Beliefs are the model-consistent conditional expectation, given the information set

DEFINITION

$$\pi_t^e = E_{t-1}[\pi_t \mid \mathcal{I}_{t-1}]$$

$\mathcal{I}_{t-1}$: information set at the time the expectation is formed

ORTHOGONALITY (THE TESTABLE PROPERTY)

$$E_{t-1}[\pi_t - \pi_t^e] = 0$$

forecast errors are mean-zero given $\mathcal{I}_{t-1}$

What the assumption means

- Agents use all information in $\mathcal{I}_{t-1}$ when forming π_t^e .
- Systematic forecast-error patterns can be learned away.
- Only genuinely new information generates errors: $E_{t-1}[\pi_t - \pi_t^e] = 0$.

Why it matters for policy

- A systematic policy rule is already embedded in $E_{t-1}[\pi_t \mid \mathcal{I}_{t-1}]$.
- Only **unanticipated** policy moves generate forecast errors.
- Credibility and communication become more central because they shape $\mathcal{I}_{t-1}$.

Rational expectations do not say that agents are always right — they say that agents are **not predictably wrong**. The discipline is on the structure of errors, not on the contents of beliefs.

What rational expectations does — and does not — claim

Three misconceptions and the actual content of the assumption

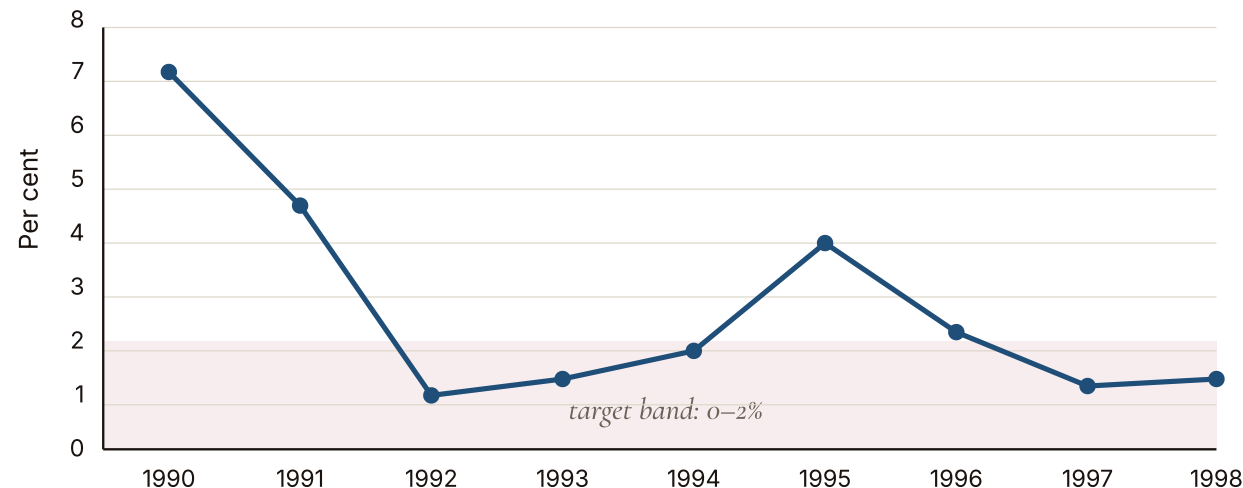
THE MISCONCEPTION	WHAT IS ACTUALLY CLAIMED
01 Agents are always correct about the future.	→ Forecast errors occur, but they have zero mean conditional on the information set: $E_{t-1}[\pi_t - \pi_t^e] = 0$.
02 Monetary policy is irrelevant — only surprises matter, and surprises are by construction unpredictable.	→ With sticky prices and wages, policy still has real effects . Unanticipated policy moves outcomes; the systematic part is anticipated and built into private decisions.
03 Communication is decorative — what matters is what the bank does.	→ Beliefs → expectations → current decisions. A regime that is understood and believed alters dynamics immediately; one that is announced but not believed does not.

Under rational expectations, credibility and communication are **more** central, not less. The bank does not have to fool the public — but it does have to be understood and believed.

Rational expectations: empirical illustration

New Zealand's inflation-targeting regime as a credible nominal anchor

N.Z. CPI INFLATION, ANNUAL AVERAGE, 1990–1998



Annual average CPI inflation. Reserve Bank of New Zealand became inflation-targeting in 1990.

A credible regime change, understood and believed, can shift current inflation dynamics **immediately**. Under rational expectations, credible communication is part of the transmission mechanism — not a sideshow.

READING THE EVIDENCE

Inflation fell from roughly 7% in 1990 to near 1% by 1992 — faster than any backward-looking rule could generate from a sequence of demand shocks alone.

The shift to inflation targeting is a candidate for a **credible nominal anchor**: a regime change visible enough that private agents updated π_t^e directly, without repeated policy surprises.

Temporary deviations from target after 1995 did not destroy credibility once the regime itself was understood.

Lawrence Schembri, Deputy Governor of the Bank of Canada



“It's not often that a policy performs better than expected. Our inflation-control target did just that, and continues to do so. Over the past 27 years, we have reduced inflation as measured by the CPI and maintained it at a level close to our 2 per cent target, with no persistent episodes outside our control range. It has served as an anchoring and coordinating mechanism, allowing Canadians to make better economic decisions and achieve better economic outcomes. In addition, there has been much less volatility in interest rates and output growth.”

© First lesson

The clarity and simplicity of the 2 per cent target has facilitated its communication and broad acceptance, and that has helped enhance the target's credibility.



Second lesson

As inflation expectations have become firmly anchored at the 2 per cent target, the effectiveness of the policy has increased.

🔄 Third lesson

The more successful we are at hitting the target, the more credible the policy is and the more confident Canadians are that inflation will remain on target.

 Source: Bank of Canada, 2019. · [Link to speech](#)

CENTRAL BANKING · LECTURE 1

01/D

Section D

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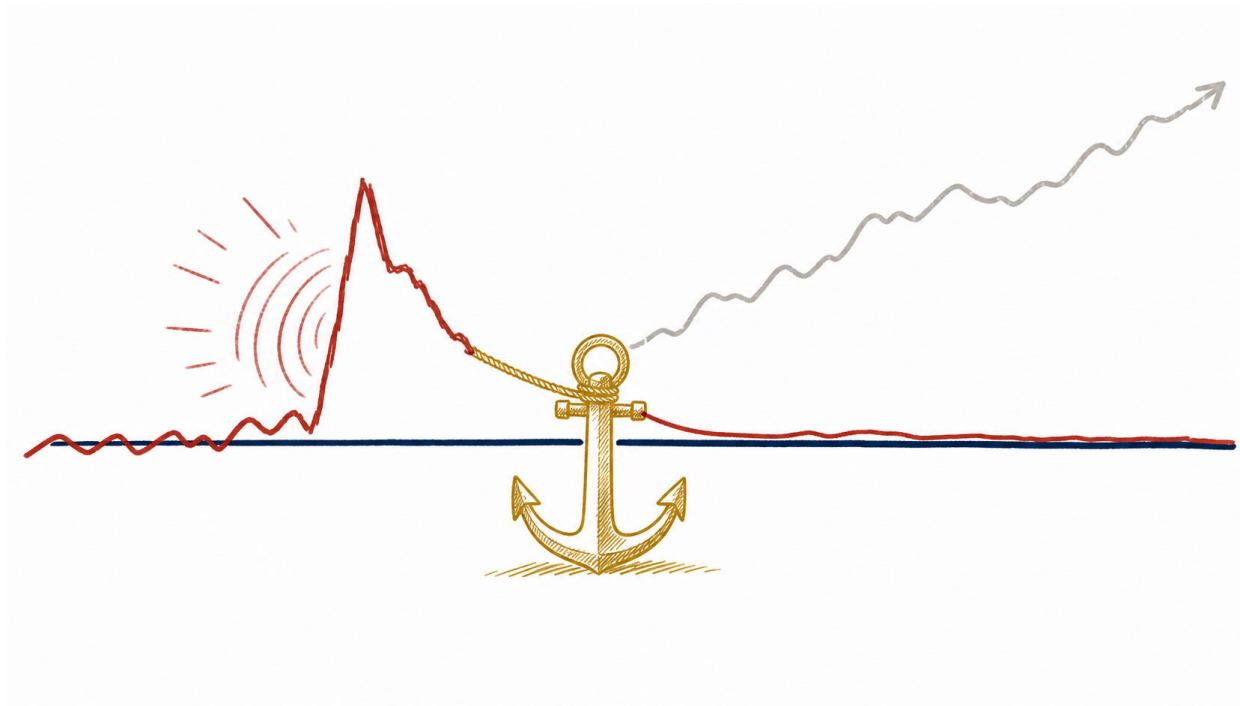
Anchoring **expectations.**

Credibility, persistence, and the output cost of returning inflation to target.

Fatih Kansoy
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Credibility anchors expectations after a shock

The weight on the target determines whether inflation returns or drifts



The crimson path returns to target; the grey counterfactual drifts when the anchor fails.

ANCHORED EXPECTATION RULE

$$\pi_t^e = \chi \pi^T + (1 - \chi) \pi_{t-1}, \quad \chi \in [0, 1]$$

χ is the credibility weight placed on the announced target.

- **Gold anchor:** a credible target pulls long-run beliefs back toward π^T .
- **Crimson path:** the shock fades when χ is high.
- **Grey path:** recent inflation dominates when credibility fails.

A larger χ shortens inflation persistence and lowers the output cost of returning to target.

Credibility as a measurable object

χ is inferred from whether long-horizon beliefs stay near target when current inflation moves

WHERE CREDIBILITY IS OBSERVED

Professional forecasters

SPF and market economists give explicit forecasts. Useful for asking whether experts still put weight on π^T .

Household surveys

Noisier and more dispersed. They reveal whether the target is understood outside financial markets.

Breakeven inflation

Difference between nominal and inflation-indexed bond yields. It embeds expectations plus risk and liquidity premia.

5y5y inflation swap

A derivatives-market price for average inflation over years 5 to 10. Standard long-horizon anchoring gauge.

THE LATENT OBJECT

$$\pi_t^e = \chi \pi^T + (1 - \chi) \pi_{t-1}$$

χ is not directly observed. We infer it from how expectations respond to news.

High anchoring: one-year measures move with oil, gas, food, or tax shocks, but five-to-ten-year measures stay close to target.

Low anchoring: long-horizon measures drift when current inflation rises. Markets and households begin to doubt the regime.

HOW ASSET PRICES MEASURE ANCHORING

Breakeven inflation

$$i_t^N - i_t^R$$

i_t^N is the yield on a nominal government bond. i_t^R is the real yield on an inflation-indexed bond, such as TIPS or linkers. The spread prices expected inflation plus inflation-risk and liquidity premia.

5y5y inflation swap

A swap is a derivative contract: one side pays a fixed inflation rate, the other pays realised inflation. The 5y5y rate is the fixed rate for average inflation over years 5 to 10, so it looks past near-term shocks.

HOW TO READ THE SIGNAL

Level. Is the long-horizon rate near the inflation target?

Sensitivity. Does it jump when current CPI or energy prices jump?

Caveat. It is not a pure expectation: premia and market liquidity must be stripped out.

Analytical setup, and a propagation law

One supply shock, T periods, one credibility weight χ , output gap held at zero

1. PHILLIPS CURVE

$$\pi_t = \pi_t^e + \alpha x_t + \varepsilon_t$$

Cost-push shock ε_t , output gap x_t , slope $\alpha > 0$.

2. INITIAL CONDITIONS

$$\pi_{-1} = \pi^T, \quad x_t = 0$$

Economy starts at target. Output gap held at zero to isolate propagation through expectations alone.

3. THE SHOCK

$$\varepsilon_0 = \bar{\varepsilon} > 0, \quad \varepsilon_t = 0 \quad \forall t \geq 1$$

A single adverse supply shock at $t = 0$, nothing thereafter.

4. ANCHORED RULE

$$\pi_t^e = \chi \pi^T + (1 - \chi) \pi_{t-1}$$

Hybrid rule from the previous slide. Single weight χ on the target.

SUBSTITUTE, ITERATE · IMPACT AND PROPAGATION

$$\pi_0 - \pi^T = \bar{\varepsilon}, \quad \pi_t - \pi^T = (1 - \chi)(\pi_{t-1} - \pi^T) = (1 - \chi)^t \bar{\varepsilon}$$

1. Define the state variable. Let $g_t \equiv \pi_t - \pi^T$. This is the inflation gap: how far inflation is from target after the initial shock.

3. AR(1) law of motion. The gap follows $g_t = (1 - \chi)g_{t-1}$. The eigenvalue is $1 - \chi$: the multiplier on yesterday's state.

2. Remove new disturbances. For $t \geq 1$, $\varepsilon_t = 0$ and $x_t = 0$. Any movement in inflation now comes only from expectations carrying forward the old gap.

4. Persistence mechanism. Iterating gives $g_t = (1 - \chi)^t \bar{\varepsilon}$. Higher credibility means higher χ , a smaller eigenvalue, and faster decay back to target.

Three cases nested by χ , and why $\chi = 0$ is the costly corner

Reading $\pi_t - \pi^T = (1 - \chi)^t \bar{\varepsilon}$ at the three benchmark values

$X = 1$ · FULLY ANCHORED

$$\pi_0 - \pi^T = \bar{\varepsilon}, \quad \pi_t = \pi^T \quad \forall t \geq 1$$

One-period level effect. Inflation is back at target the period after the shock with no internal propagation.

$X = 0.5$ · PARTIALLY ANCHORED

$$\pi_t - \pi^T = (0.5)^t \bar{\varepsilon}$$

Geometric decay at rate 0.5. Half-life of one period. About 1/16 of the original deviation remains by $t = 4$.

$X = 0$ · UNANCHORED

$$\pi_t - \pi^T = \bar{\varepsilon} \quad \forall t \geq 0$$

Permanent level shift. Without policy action, the temporary shock is built into every subsequent period.

WHY $X = 0$ IS THE COSTLY CORNER

$$\pi_t^e = \pi_{t-1} \implies \pi_t = \pi_{t-1} + \alpha x_t + \varepsilon_t \implies \pi_0 = \pi^T + \bar{\varepsilon}, \pi_1 = \pi_0, \pi_2 = \pi_1, \dots$$

Under $\chi = 0$ the previous period's inflation is the next period's expectation. With $x_t = 0$, the original deviation $\bar{\varepsilon}$ is written into the next round of wage- and price-setting, and into the round after that. Returning inflation to target requires the central bank to engineer a negative output gap. The sacrifice ratio that follows is the subject of the closing slide.

Fully anchored expectations: $\chi = 1$

The shock raises inflation once. The Phillips curve returns by itself.

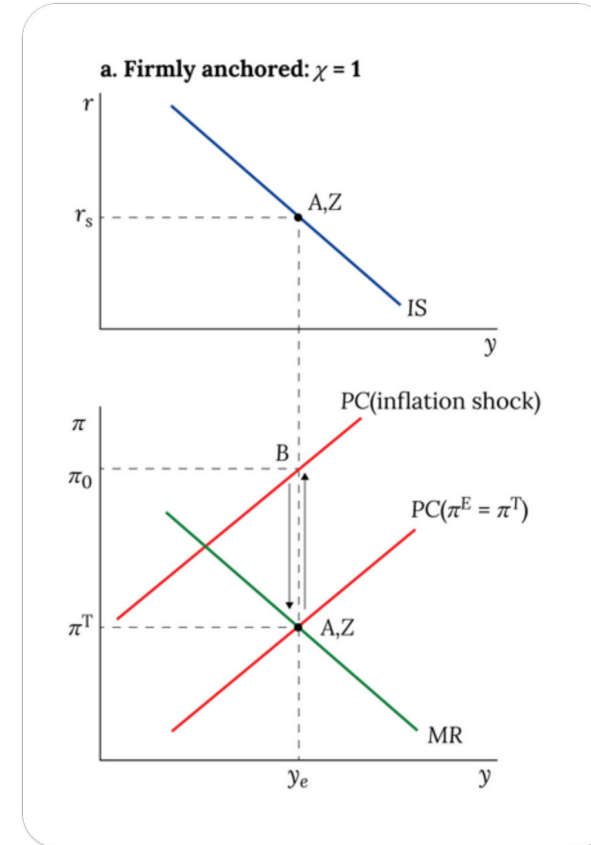
ALGEBRA AT $\chi = 1$

$$\pi_0 - \pi^T = \bar{\varepsilon}, \quad \pi_t - \pi^T = 0 \quad \forall t \geq 1$$

MECHANISM · PERIOD BY PERIOD

- Economy starts at the medium-run equilibrium $A = Z$, with $\pi = \pi^T$ and $y = y_e$.
- Shock at $t = 0$ shifts the Phillips curve up to $PC(\pi^e = \pi^T, \bar{\varepsilon})$. Inflation rises to π_0 at point B .
- Because $\chi = 1$, the next period's expectation is still π^T . The Phillips curve drops back to its original position.
- The central bank holds the policy rate at the stabilising rate r_s . Output never leaves y_e .

The credibility of the target absorbs the shock. The episode is a price-level event, not an inflation regime.



Carlin & Soskice (2024), Figure 4.7, panel (a)

Partially anchored expectations: $\chi = 0.5$

Geometric path back to target; policy traces a sequence of contractions along the MR line

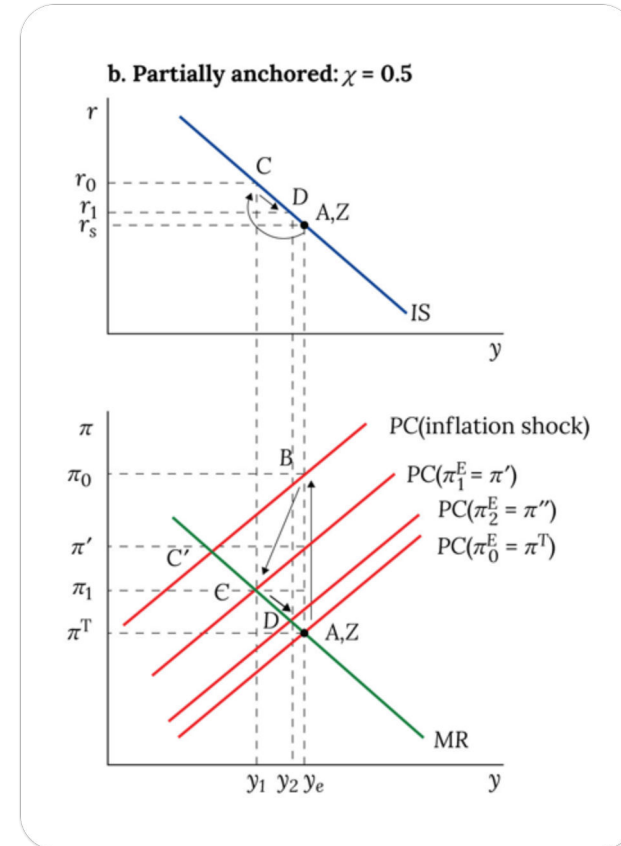
CLOSED FORM AT $\chi = 0.5$

$$\pi_t - \pi^T = (0.5)^t \bar{\varepsilon}$$

MECHANISM · PERIOD BY PERIOD

- $t = 0$: shock takes inflation to π_0 at point B on $PC(\pi^e = \pi^T, \bar{\varepsilon})$.
- $t = 1$: expectation $\pi_1^e = 0.5 \pi^T + 0.5 \pi_0 \equiv \pi'$. Phillips curve shifts to $PC(\pi^e = \pi')$. The bank raises the rate to r_0 , output falls to y_1 , inflation lands at point C on π_1 .
- $t = 2$: expectation updates to $\pi_2^e = \pi''$. The curve shifts down. The rate eases to r_1 , output recovers toward y_2 , inflation lands at point D .
- The economy converges back to $A = Z$ along the MR line, with the deviation falling by half each period.

Half-credibility halves the deviation each period. The output cost is real but bounded; the path is short.



Carlin & Soskice (2024), Figure 4.7, panel (b)

Unanchored expectations: $\chi = 0$

A temporary shock becomes a permanent regime shift unless policy intervenes

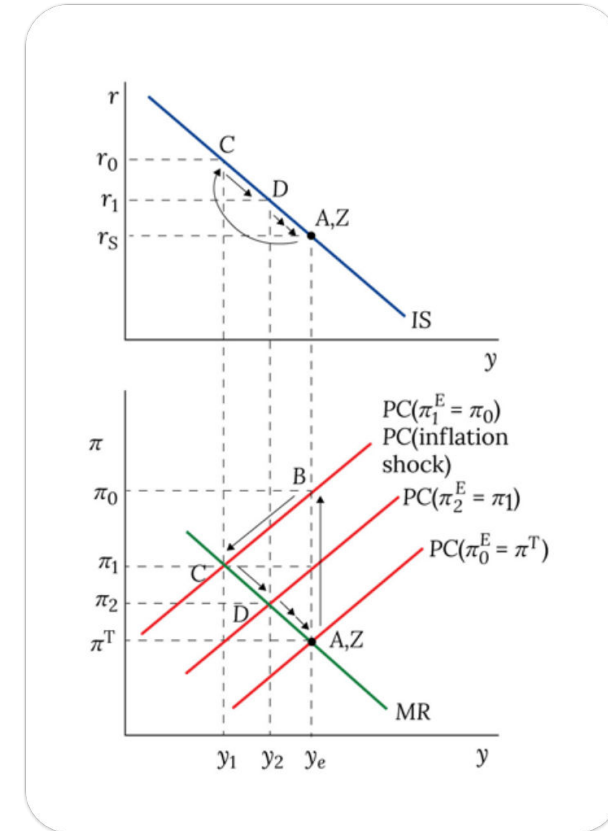
ALGEBRA ABSENT POLICY

$$\pi_0 = \pi^T + \bar{\varepsilon}, \quad \pi_1 = \pi_0, \quad \pi_2 = \pi_1, \quad \dots$$

MECHANISM

- Expectations follow last period's inflation: $\pi_t^e = \pi_{t-1}$. The target plays no role.
- $t = 0$: shock places inflation at π_0 at point B .
- $t = 1$: $\pi_1^e = \pi_0$. The Phillips curve shifts up by the full amount of the shock and stays there absent policy. The bank raises the rate to r_0 , drives output to y_1 , and lands at point C .
- $t = 2$: a further sequence of negative output gaps via r_1, y_2 and point D is required. Convergence is slow and costly.

The 1970s episode in stylised form. The Phillips curve does not return on its own; it is dragged back by a sustained contraction.



Carlin & Soskice (2024), Figure 4.7, panel (c)

What policy must do

The output cost of disinflation is the unanchored part of the shock divided by the Phillips-curve slope

POLICY PROBLEM IN PERIOD 1

$$\begin{aligned}\pi_0 &= \pi^T + \bar{\varepsilon}, & \varepsilon_1 &= 0, & \pi_1^e &= \chi\pi^T + (1 - \chi)\pi_0 \\ \pi_1 &= \pi^T = \pi_1^e + \alpha x_1 + \varepsilon_1 = \chi\pi^T + (1 - \chi)(\pi^T + \bar{\varepsilon}) + \alpha x_1 \implies x_1 = -\frac{(1 - \chi)\bar{\varepsilon}}{\alpha}\end{aligned}$$

The new shock is gone; policy offsets the inherited expectation gap $(1 - \chi)\bar{\varepsilon}$.

WHAT MONETARY POLICY OFFSETS

$$\text{Inherited expectation gap} = (1 - \chi)\bar{\varepsilon}$$

The central bank is not offsetting the original shock itself. It is offsetting the portion that wage- and price-setters carry into the next period. Credibility reduces that inherited component before interest rates do anything.

WHY α MATTERS

$$\alpha x_1 = -(1 - \chi)\bar{\varepsilon}$$

α is the slope of the Phillips curve. If inflation is insensitive to slack, a larger negative output gap is required. If expectations are well anchored, less slack is needed for the same return to target.

A ONE-NUMBER EXAMPLE

Suppose the shock raises inflation by 2 percentage points and $\alpha = 0.5$. Then $x_1 = -4(1 - \chi)$.

FULLY ANCHORED

$$\chi = 1 \Rightarrow x_1 = 0$$

No demand contraction is needed.

HALF ANCHORED

$$\chi = 0.5 \Rightarrow x_1 = -2$$

Only half the shock is inherited.

UNANCHORED

$$\chi = 0 \Rightarrow x_1 = -4$$

The whole shock must be offset by slack.

The new lesson is a policy decomposition: rate policy moves x_1 , but communication and credibility move χ . A higher χ lowers the sacrifice ratio before the central bank creates unemployment.

Forward guidance: words about the future move yields today

Communication aimed at the path component of the longer-maturity yield

$$\text{LONGER-MATURITY YIELD} = \text{AVERAGE EXPECTED SHORT RATE} + \text{TERM PREMIUM}$$

REDUCED-FORM YIELD DECOMPOSITION

$$y_t^{(n)} \approx \frac{1}{n} \sum_{j=0}^{n-1} E_t[i_{t+j}] + TP_t^{(n)}$$

1. THE PATH COMPONENT

$$\frac{1}{n} \sum_{j=0}^{n-1} E_t[i_{t+j}]$$

The average expected short rate over the bond's life.

Communication that shifts $E_t[i_{t+j}]$ moves $y_t^{(n)}$ today, before any rate decision.

2. THE LOWER BOUND

$$i_t = i^{ELB}$$

When the current short rate is at its effective lower bound, the only remaining rate channel runs through $E_t[i_{t+j}]$ for $j > 0$.

3. THE COMMITMENT CASE

$$E_t[i_{t+j}] < i_{t+j}^*$$

Eggertsson and Woodford (2003): optimal policy commits to keep rates lower for longer than discretion would later choose, raising current output and inflation.

Forward guidance is the explicit application of the expectations channel built up in the previous sections. The Draghi episode worked partly through the path component, alongside the sovereign-specific premium SP_t that decomposed the same equation in Lecture 1.

Forward guidance by form

How the future policy path is written into the message



Qualitative

General language signals the likely direction of future policy without a date or numerical threshold.

“Rates will remain low for an extended period.”

DIRECTION, NOT A PRECISE TRIGGER



Calendar-based

The policy path is linked to specific dates, horizons, or minimum time periods.

“At least through mid-2013.”

TIME-CONTINGENT GUIDANCE



State-dependent

Policy changes are conditioned on observable economic outcomes.

“Until unemployment falls below 6.5%.”

OUTCOME-CONTINGENT GUIDANCE

Forward guidance by meaning

The economic content is either information about the outlook or a commitment about future policy



Delphic

FORECAST-BASED SIGNAL

The central bank reveals its economic outlook and likely policy response.

- Based on forecasts and staff assessment.
- Reveals the bank's view of future conditions.
- Primarily informational: markets learn what the bank knows or believes.

Impact: helps markets infer the reaction function and the bank's assessment of the economy.



Odyssean

COMMITMENT-BASED SIGNAL

The central bank tries to bind future policy actions to dates, states, or thresholds.

- Contains an explicit policy commitment.
- Can be time-contingent or state-contingent.
- Stronger signal: markets price the promised future stance.

Impact: moves expectations more forcefully when the commitment is credible.

Form and meaning are separate. A date or threshold can be read as a forecast, a commitment, or both; the market response depends on which interpretation is credible.

CENTRAL BANKING · LECTURE 1

01/E

Section E

CENTRAL BANKING · LECTURE ONE

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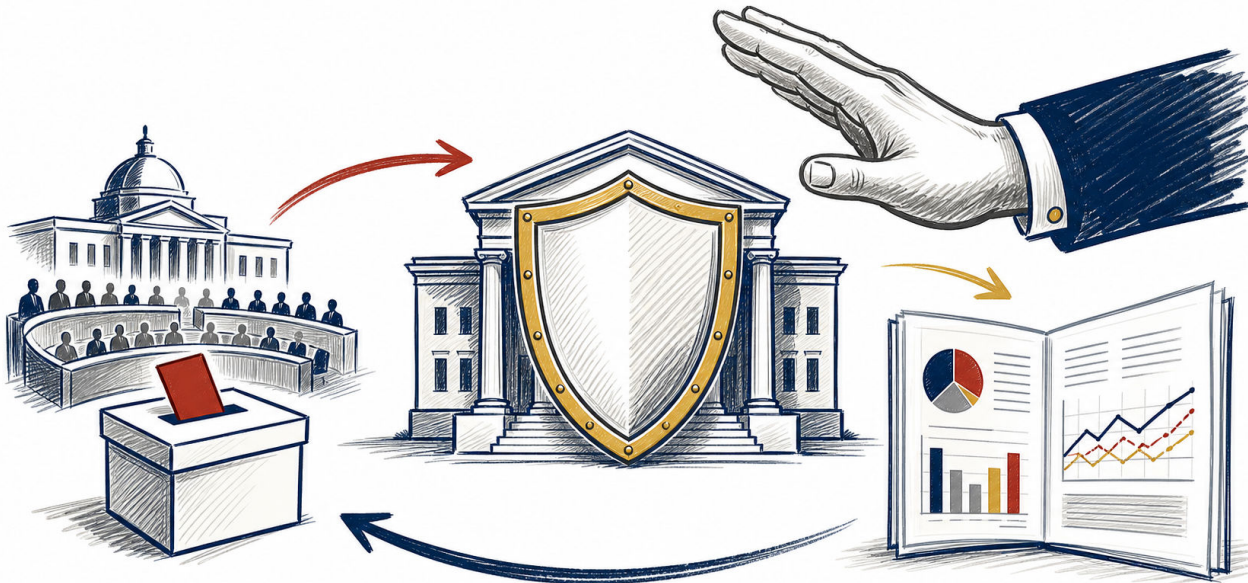
Central bank **independence** and reputation.

Institutional credibility, political pressure, and the reputation mechanism.

Fatih Kansoy
Worcester College

Independence protects the instrument, not unchecked power

The democratic bargain combines mandate, insulation, scrutiny, and visible pressure



Delegation works as a loop: mandate, protected instrument choice, and public review.

- 1 Mandate**
Parliament and voters set the objective.
- 2 Shield**
Law protects operational choices from day-to-day politics.
- 3 Scrutiny**
Reports, testimony, minutes, and review close the democratic loop.
- 4 Pressure**
Political demands remain visible but outside the shield.

TWO DISTINCTIONS

Independence is usually **instrument**, not goal, independence; it must hold **de facto**, not only in law.

Independence without accountability cannot sustain democratic legitimacy.

The empirical record, and three institutional designs

Evidence disciplines the case for independence; accountability disciplines the institution



Lower inflation

ALESINA & SUMMERS, 1993

More independent central banks are associated with lower average inflation and lower inflation volatility, without clear long-run output costs.



Political turnover matters

GOVERNOR-TRANSITION EVIDENCE

Politically motivated leadership changes are followed by higher realised and expected inflation, lower short rates, and a temporary growth impulse.



Credibility is observable

EXPECTATIONS AT LONG HORIZONS

If realised inflation moves but long-horizon expectations remain close to target, the regime is still credible. Repeated inconsistency erodes that anchor.

SAME DELEGATION LOGIC, DIFFERENT CONSTITUTIONAL DESIGNS



Federal Reserve

GOAL

Congress: dual mandate

TOOL

FOMC

SCRUTINY

Testimony, Monetary Policy Report, minutes, SEP, press conferences, transcripts.



ECB

GOAL

Treaty: price stability

TOOL

Governing Council

SCRUTINY

Annual Report, ECON hearings, written questions, monetary policy accounts.



Bank of England

GOAL

Government remit, renewed annually

TOOL

MPC

SCRUTINY

Monetary Policy Report, Treasury Committee, open letters after large target misses.

The empirical claim is not that central banks should be unaccountable. It is that credible instrument independence works when it is paired with visible, enforceable accountability.

Bank of England: the open letter rule

An accountability technology built into the inflation-targeting regime

Bank of England

The Rt Hon Rachel Reeves
Chancellor of the Exchequer
HM Treasury
1 Horse Guards Road
SW1A 2HQ

Andrew Bailey
Governor

18 December 2025

Dear Rachel,

On 17 December 2025, the Office for National Statistics (ONS) published data showing that twelve-month inflation in the Consumer Prices Index (CPI) was 3.2% in November, down from 3.6% in October.

This letter sets out the outlook for inflation and the policy action the Monetary Policy Committee (MPC) is taking to return inflation to the 2% target, along with other considerations required by the MPC's remit when inflation moves away from the 2% target by more than 1 percentage point.

Why has inflation moved away from the 2% target?

Consumer price inflation has fallen significantly over the past few years, staying close to the 2% target for much of last year, in part owing to the restrictiveness of the MPC's monetary policy stance. As the Committee had expected, CPI inflation rose again this year, peaking at 3.8% over the July to September period, before falling to 3.6% in October and 3.2% in November.

Against the backdrop of a continued gradual easing in underlying price pressures in the UK economy, the increase in CPI inflation through to this autumn owed largely to higher food and administered prices, coming alongside a swing from falling to moderately increasing energy prices.



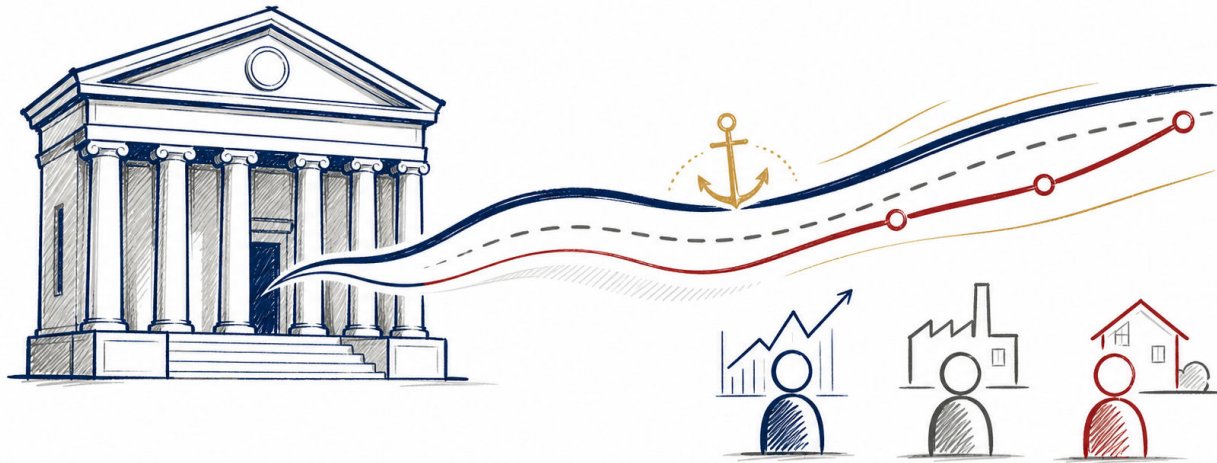
Bank of England | Threadneedle Street, London, EC2R 8AH
+44 (0)20 3461 4444 | www.bankofengland.co.uk

- **Trigger:** CPI inflation more than 1 percentage point above or below the 2% target.
- **Purpose:** explain the miss, identify the shocks, and set out the path back to target.
- **Tone:** procedural and analytical, not apologetic; accountability through explanation.

Specific letter shown · See all letters of Bank of England

The forward path runs from mandate to private decisions

Words transmit through expectations and prices; outcomes feed back into credibility



A credible signal reaches three decision-makers through expectations and financial prices.

- 1 Mandate and institution**
The regime makes the source of the message credible.
- 2 Policy signal**
Statements, forecasts, and speeches reveal a path.
- 3 Expectations and yield curve**
Expected short rates move financial prices before macro data arrive.
- 4 Markets, firms, households**
Repricing changes portfolios, investment, hiring, and spending.

FEEDBACK PATH

Realised output and inflation validate or erode the institution behind the next message.

A speech transmits through prices and plans: persuasion alone is not the mechanism.

When communication works, and when it fails

The message is only as strong as the regime behind it

Works when FOUR REGIME CONDITIONS

Clear objective

A public nominal anchor: inflation target, mandate, or equivalent destination.

Readable reaction function

Markets can infer how the bank responds to inflation, activity, and risk.

Instruments behind the words

The audience sees the policy capacity that would make the statement actionable.

Institutional credibility

Independence, accountability, and a record consistent with the stated objective.

Fails when FIVE RECURRING BREAKDOWNS

Cheap talk under weak credibility

Words are discounted before they are tested.

Framework complexity

A stance that is hard to read loses precision through expectations.

Policy news vs information news

Markets react to the bank's economic read, not only to intended policy.

Audience heterogeneity

Markets, firms, households, and politicians parse different messages.

False precision under uncertainty

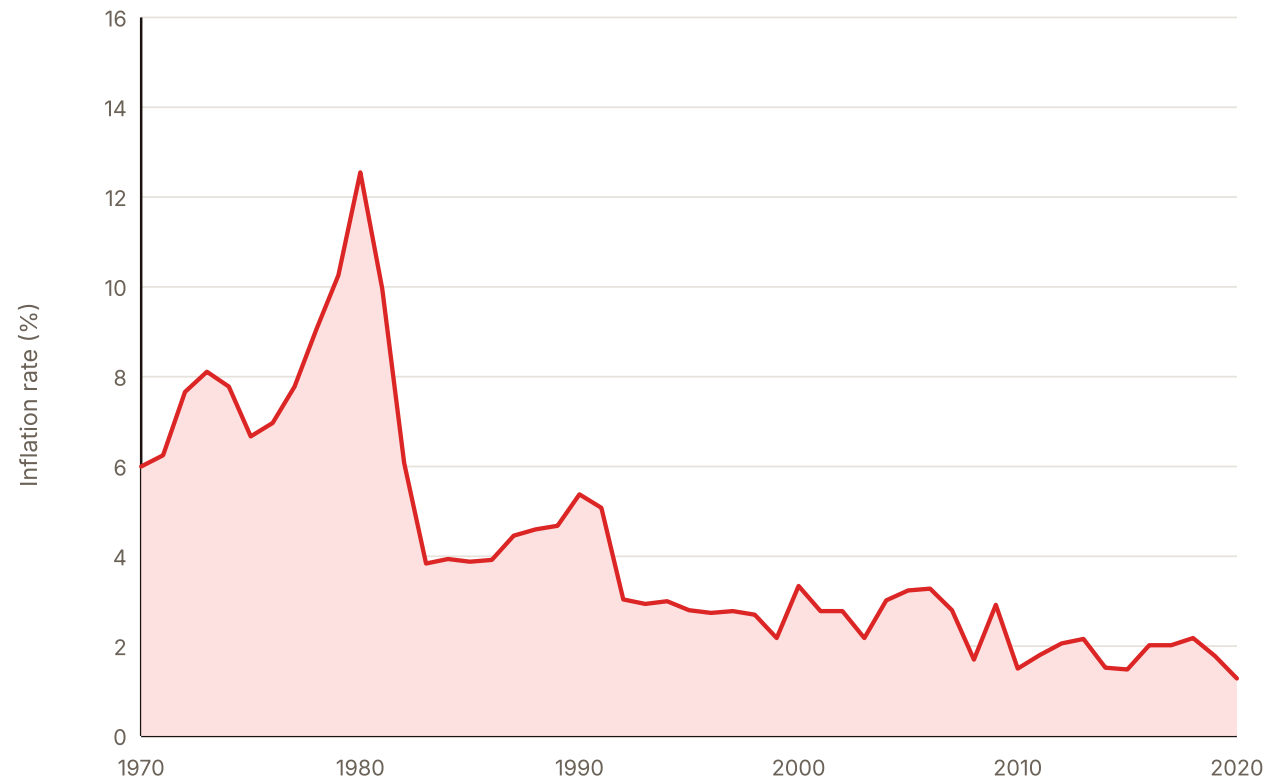
Overconfident paths damage credibility when reality moves.

DIAGNOSIS

When communication fails, first inspect the regime: objective, reaction function, instruments, and credibility. Speaking more rarely fixes a broken framework.

Independence can be costly

U.S. inflation rates (1970–2020)



Independence: in practice

Two episodes that test the institutional framework against real political pressure

Central bank independence in practice — clip 1

Interactive media ·

[https://www.youtube.com/embed/qDj4jgQBp5E?
rel=0&modestbranding=1&enablejsapi=1](https://www.youtube.com/embed/qDj4jgQBp5E?rel=0&modestbranding=1&enablejsapi=1)

CLIP 1 · Jerome Powell said he would not step down from his position as Fed chief even if President-elect Donald Trump asked him to.

[Open clip 1 on YouTube](#)

Central bank independence in practice — clip 2

Interactive media ·

[https://www.youtube.com/embed/BjcdOIFGrXo?
rel=0&modestbranding=1&enablejsapi=1](https://www.youtube.com/embed/BjcdOIFGrXo?rel=0&modestbranding=1&enablejsapi=1)

CLIP 2 · Federal Reserve chairman Jerome Powell said he would not step down if Trump asked and that it is "not permitted under law" for the White House to force him out.

[Open clip 2 on YouTube](#)

Two short clips, two ways of seeing the same point. Independence is a practical condition, observable in how a central bank conducts itself under pressure, and reflected in the credibility premium it earns or loses.

Reputation under stress: Venezuela, 2005

FT, 7 July 2005 · "Venezuela poised to seize bank's reserves"

FINANCIAL TIMES · 7 JULY 2005

Venezuela poised to seize bank's reserves

Andy Webb-Vidal in Caracas

Venezuela's central bank is bracing itself for a hostile takeover bid by an unlikely suitor: the government of President Hugo Chávez.

Legislators loyal to Mr Chávez are close to approving a law that will allow the government to withdraw and spend at least \$5bn (€4.2bn, £2.9bn) of the bank's international reserves, which currently stand at \$29bn.

For more than a year, Mr Chávez has insisted that the level of reserves accumulated by the world's fifth-largest oil exporter is too high, and that the money would be better used for social programmes. Among Latin American economies, Venezuela has the highest level of reserves as measured by equivalent weeks' worth of imports.

The central bank, says Mr Chávez, should belong to "the people", and it must come under full control of his radical nationalistic "Bolivarian revolution".

Government-aligned deputies, who maintain a narrow but effective majority in the National Assembly, began the final debate on the law on Thursday and they predict its passage next week. But the move is leaving some economists aghast at what they see

as the demise of the bank's role as guardian of the bolívar, Venezuela's national currency. The bank has tried to resist the law.

Source: Andy Webb-Vidal, ["Venezuela poised to seize bank's reserves"](#), Financial Times, 7 July 2005. Scroll within the panel to read the full article.

Turkey: when the Fisher equation is read backwards

"Recep Tayyip Erdoğan believes high inflation is the outcome of high interest rates."



FISHER EQUATION

$$i = r + \pi^e$$

Nominal rate = real rate + expected inflation.

THE DOCTRINE

- The textbook reading: a credible cut in π^e permits a lower i . Causation runs from inflation to nominal rates.
- The Erdoğan doctrine inverts the arrow: cut i first, and π will follow down. The Fisher identity is read as a causal claim from i to π .

The institutional question is not whether the doctrine is correct — it is whether a central bank can be made to act on it.

Once you open the dam ...



Financial Times
<https://www.ft.com> › Currencies › Economy › Europe

Erdogan ousts Turkey central bank governor days after rate ...

19 Mar 2021 — Turkey's president has fired the governor of the central bank just three months into his term and replaced him with an academic who has lobbied for lower ... [Read more](#)



Financial Times
<https://www.ft.com> › ... › Emerging markets › Europe

Erdogan ousts head of Turkish central bank after lira plunge

6 Nov 2020 — Turkey's president Recep Tayyip Erdogan has fired the governor of the country's central bank and replaced him with a former finance minister ... [Read more](#)



Financial Times
<https://www.ft.com> › ... › Emerging markets › Europe

Erdogan sacks Turkish central bank governor

6 Jul 2019 — Recep Tayyip Erdogan has sacked Turkey's central bank governor, raising fresh concerns about the independence of the rate-setter at a ... [Read more](#)



Financial Times
<https://www.ft.com> › ... › Emerging markets › Europe

Erdogan fires deputy governor of Turkey's central bank

25 May 2021 — In March, Erdogan fired Naci Agbal, the third central bank governor in less than two years. The market-friendly Agbal was replaced by Sahap ... [Read more](#)



Financial Times
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Recep Tayyip Erdoğan's authority to fire Turkey's central ...

4 Jun 2024 — Turkey's constitutional court has struck down part of a decree signed by President Recep Tayyip Erdoğan that authorised him to sack central ... [Read more](#)



Financial Times
<https://www.ft.com> › ... › Emerging markets › Europe

Turkish lira hits record low after Erdogan sacks central ...

13 Oct 2021 — The Turkish lira hit a record low overnight after President Recep Tayyip Erdogan ordered a new round of dismissals at the country's central bank. [Read more](#)

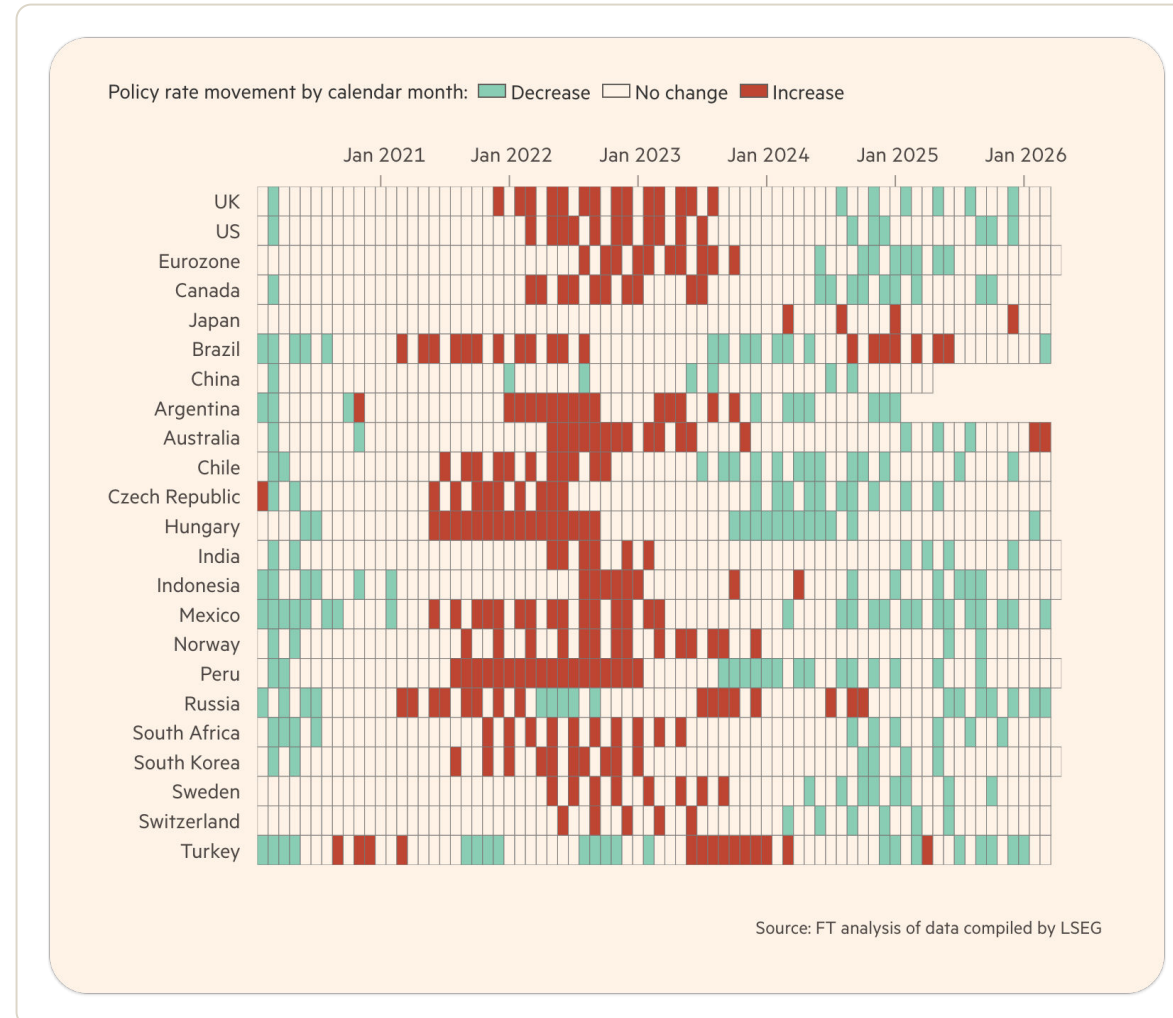


Financial Times
<https://www.ft.com> › ... › Emerging markets › Europe

Eviction of central bank boss shakes investor confidence in ...

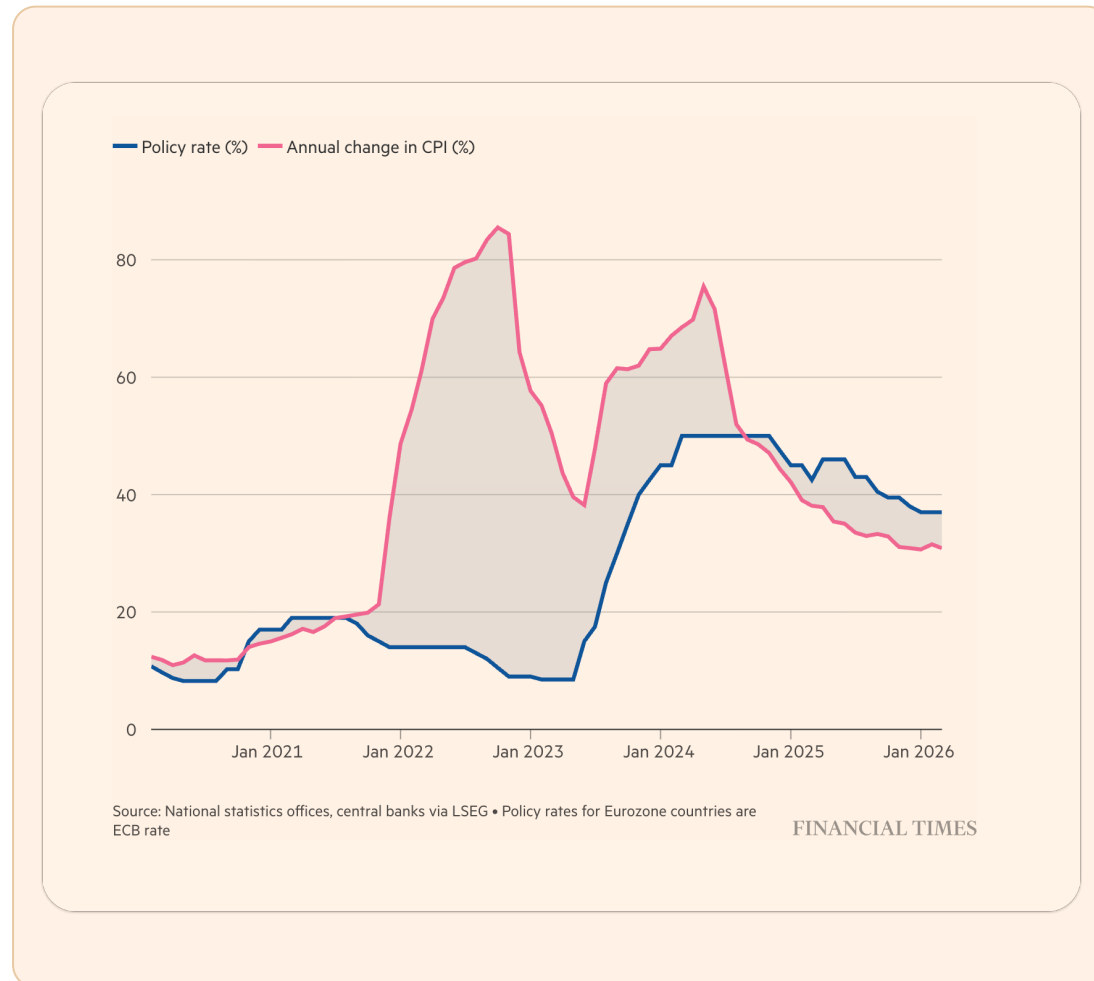
22 Mar 2021 — Recep Tayyip Erdogan's shock dismissal of Turkey's central bank chief has eroded investor confidence in the country's economic leadership ... [Read more](#)

"Something wrong with every one, not me"



Is it too late?

The 2023 reversal: orthodox policy resumed; the credibility stock has to be rebuilt



WHY DISINFLATION IS SLOW

- χ near zero: the propagation law $(1 - \chi)^t \bar{\varepsilon}$ implies long persistence. Each percentage point of disinflation costs $1/\alpha$ output.
- Markets price reversal risk into long-horizon π^e .
- The interest-rate channel transmits weakly when the rule itself is in doubt.
- The new and strong governor is doing monetary policy. But
- The institutional repair — statutory protection, dismissal rules, fiscal-monetary separation — has not been done.

Reputation is a stock, depleted in months and rebuilt in years. The constraint that produces credibility has not yet been put back.

Once inflation escapes, policy faces a coordination problem

The cat, the public, the committee, and a ladder that is too short



The inflation-control metaphor redrawn as a policy coordination problem.

THE METAPHOR

The cat is elevated inflation

It is visible to everyone, costly to leave high, and difficult to bring down safely.

- P Public**
Waits and bears uncertainty while inflation remains high.
- C Committee**
Debates who should act and how quickly.
- L Ladder**
The available tool is too short for the task.

Delay makes restoring inflation control harder and more costly.

CENTRAL BANKING · LECTURE 1

01/F

Section F

CENTRAL BANKING · LECTURE ONE

Worcester College

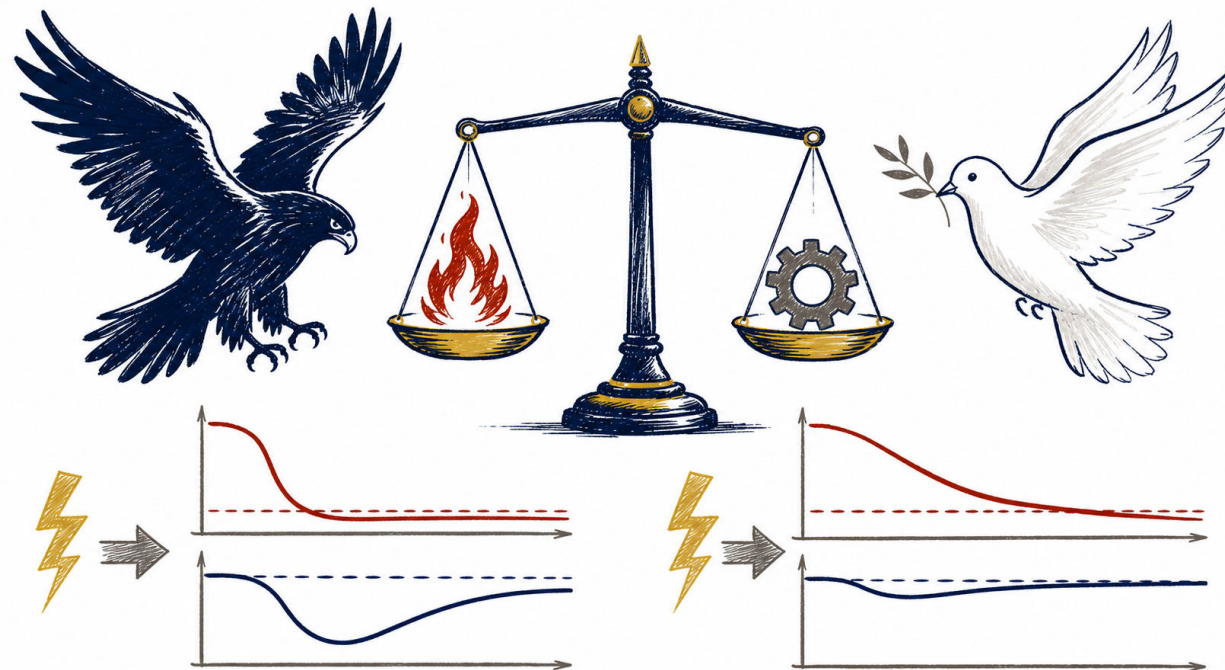
Hawks and Doves.

Inflation aversion, MR slopes, and how markets infer preferences from communication.

Fatih Kansoy
Worcester College

Hawks and doves choose different paths after the same shock

The labels are shorthand for the relative weight on inflation stabilisation



Inflation responses are shown above; output and employment responses below.

HAWK · HIGHER B

Faster inflation stabilisation

Tightens earlier and accepts a deeper output and employment trough.

DOVE · LOWER B

More gradual stabilisation

Tolerates more temporary inflation to limit the output and employment loss.

WHAT MARKETS INFER

Speeches, statements, votes, and actions reveal the committee's latent inflation-aversion weight.

Hawk and dove describe different preferences over the same inflation-output trade-off.

Two equations behind the labels

The reaction function the bank follows; the loss function it minimises

REACTION FUNCTION · TAYLOR FORM

$$i_t = r^* + \pi_t + \phi_\pi (\pi_t - \pi^T) + \phi_x x_t$$

ϕ_π is how much the policy rate responds to a one-point inflation gap. ϕ_x is how much it responds to a one-point output gap. A hawkish stance shows up as larger ϕ_π relative to ϕ_x .

LOSS FUNCTION · THE DEEPER OBJECT

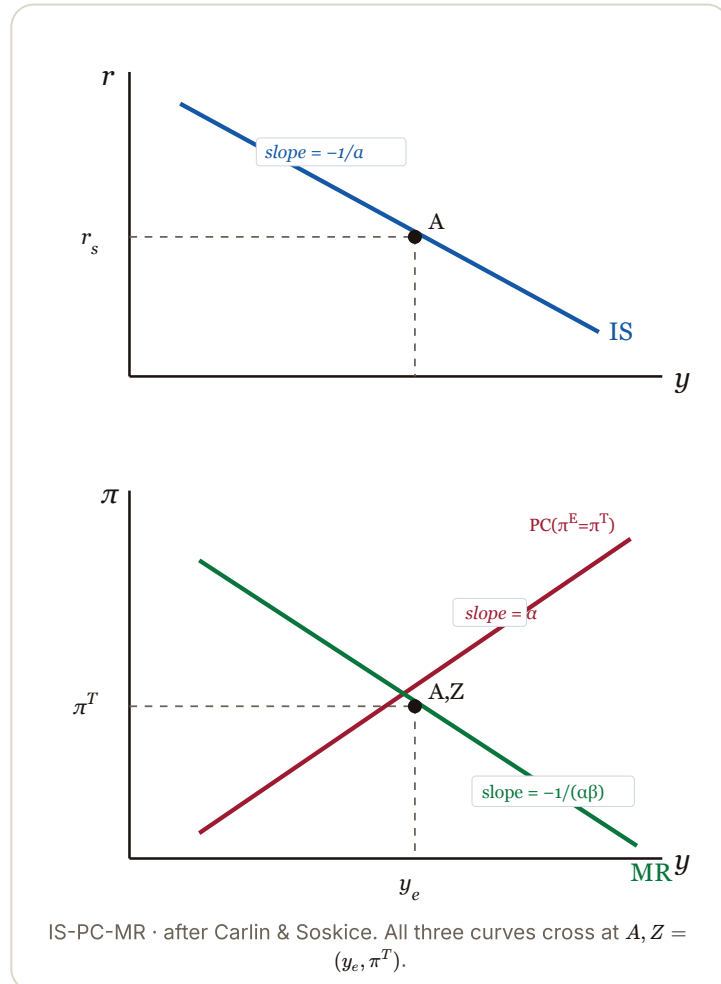
$$L_t = (y_t - y_e)^2 + \beta (\pi_t - \pi^T)^2, \quad \beta > 0$$

β is the relative weight on inflation stabilisation. A hawk has high β ; a dove has low β . The Taylor coefficients ϕ_π and ϕ_x are themselves derived from β and from the slope of the Phillips curve.

Markets do not observe β directly. Practitioner hawk/dove indices and academic text-as-data work on speeches and votes are formally exercises in recovering the cross-section of β inside a committee. The next slide turns β into a slope.

The MR curve and its slope: $-1/(\alpha\beta)$

Loss minimisation subject to the Phillips curve gives the analytical referent for hawk and dove



LOSS + PHILLIPS CURVE $\Rightarrow$ MR

$$\begin{aligned} \min_{y_1} & (y_1 - y_e)^2 + \beta(\pi_1 - \pi^T)^2 \\ \text{s.t. } & \pi_1 = \pi^e + \alpha(y_1 - y_e) \\ \Rightarrow & y_1 - y_e = -\alpha\beta(\pi_1 - \pi^T) \end{aligned}$$

SLOPE IN (Y, Π) SPACE

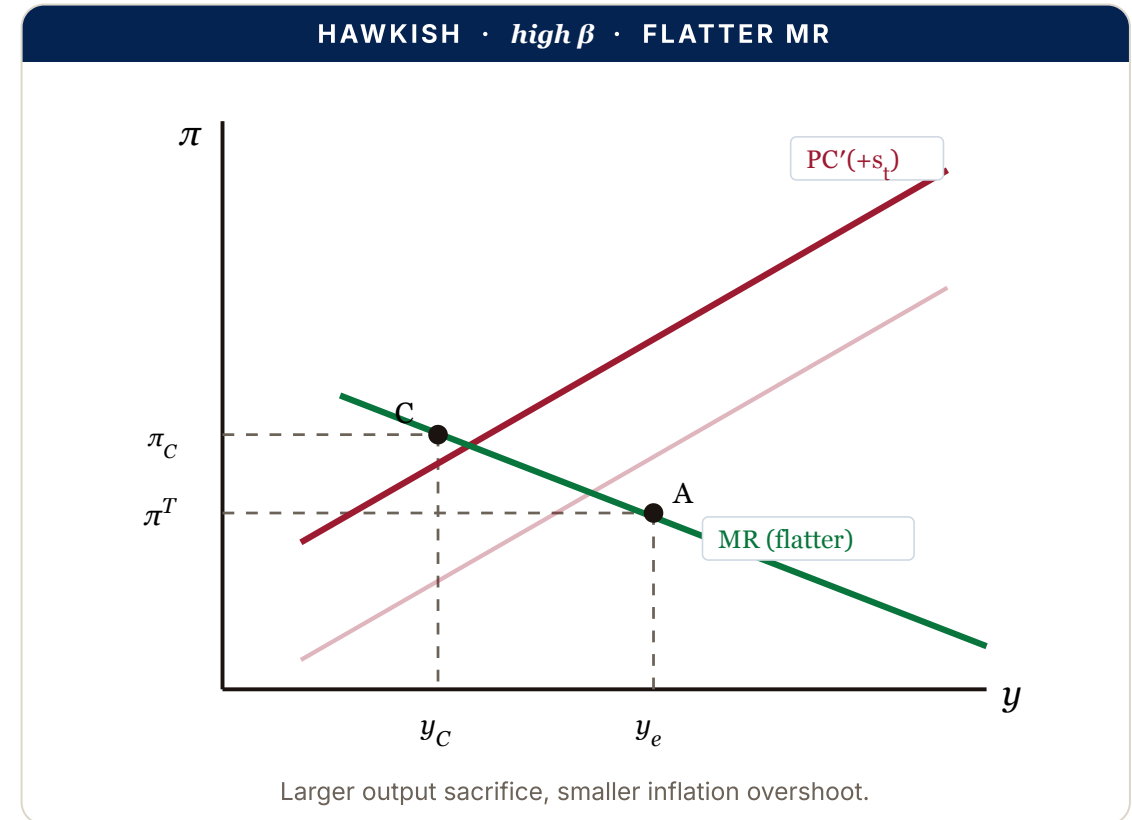
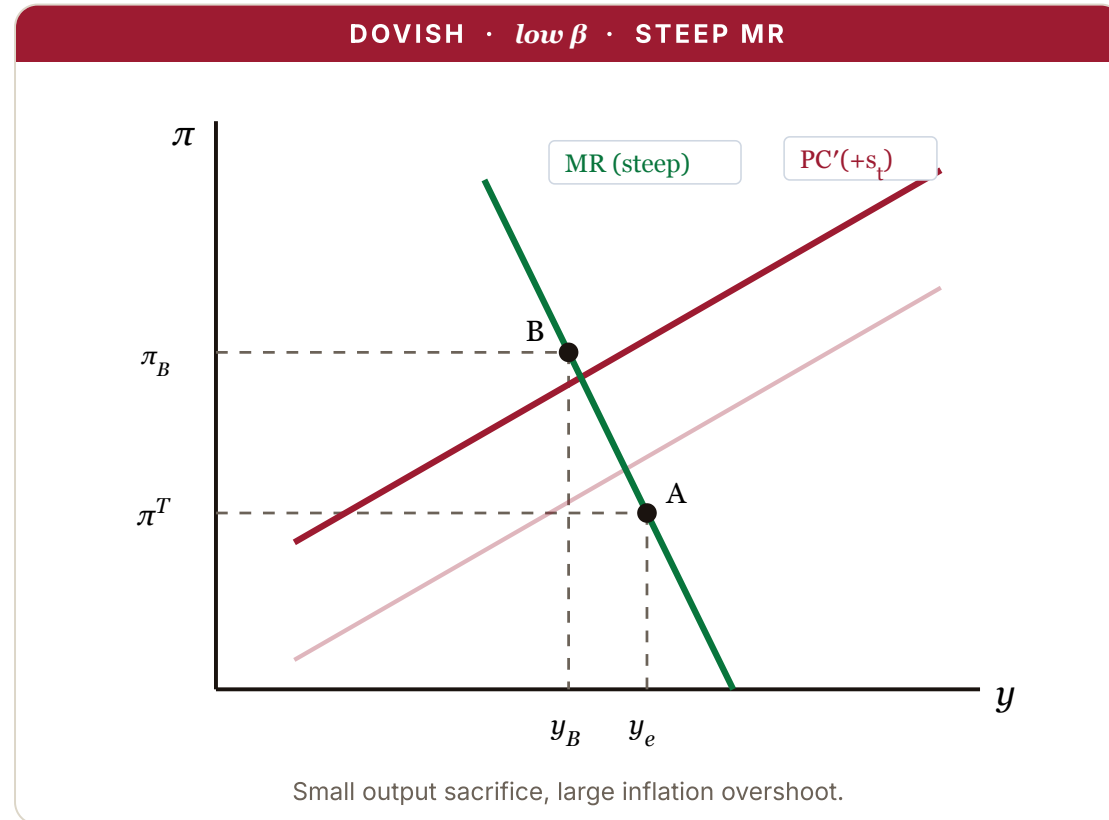
$$\left. \frac{d\pi}{dy} \right|_{\text{MR}} = -\frac{1}{\alpha\beta}$$

- **Higher** β (preferences) flattens MR $\Rightarrow$ more hawkish.
- **Higher** α (structure) flattens MR at fixed β : a steeper Phillips curve makes policy more responsive per unit of output cost.
- Symmetrically, lower β or lower α steepens MR $\Rightarrow$ more dovish.

In everyday usage, hawk and dove refer to differences in β across policymakers, holding α approximately constant. The slope of MR is what markets are trying to recover from communication.

One shock, two regimes

A positive cost-push shock s_t shifts PC up; the bank moves along its MR



Same shock, same Phillips-curve shift, two MR slopes, two outcomes. The dovish bank ends up at B ; the hawkish bank at C . The closed-form ratios are on the next slide.

Inflation vs unemployment

Inflation vs unemployment

Interactive media · https://www.youtube.com/embed/V_XIQRM5QoI?rel=0&modestbranding=1&enablejsapi=1

[Open video on YouTube](https://www.youtube.com/embed/V_XIQRM5QoI?rel=0&modestbranding=1&enablejsapi=1)

The trade-off as a ratio in β

Closed-form response of inflation, output, and unemployment to a one-off shock s_t

INFLATION GAP

$$\pi_t - \pi^T = \frac{s_t}{1 + \alpha^2 \beta}$$

Higher β shrinks the inflation gap.

OUTPUT GAP

$$y_t - y_e = - \frac{\alpha \beta}{1 + \alpha^2 \beta} s_t$$

Higher β enlarges the negative output gap.

UNEMPLOYMENT GAP · OKUN'S LAW

$$u_t - u^n \approx - \kappa (y_t - y_e)$$

The output sacrifice translates into higher unemployment.

The hawk-vs-dove choice is a position on the ratio $\alpha\beta/(1 + \alpha^2\beta)$; which value of β is welfare-maximising depends on the state of expectations and on how transitory the shock is.

The ECB Council, ranked dove → hawk

Practitioner hawk/dove tracking is empirically a recovery exercise on β across members

ECB - Hawk/Dove Analysis

Prepared for ITC Markets by

Econostream Media

Last Update: 17 June 2021

Name		Position	Hawk Scale	Voter?		
Most Dovish			22 Jul	09 Sep	28 Oct	
Panetta		Exec Board		✓	✓	✓
Hernández de Cos		Spain		✓	✗	✓
Lane		Exec Board		✓	✓	✓
Stournaras		Greece		✓	✓	✓
Visco		Italy		✓	✓	✓
Villeroy		France		✓	✓	✗
de Guindos		V President		✓	✓	✓
Herodotou		Cyprus		✓	✓	✓
Makhlouf		Ireland		✓	✓	✓
Centeno		Portugal		✗	✓	✓
Rehn		Finland		✓	✗	✗
Lagarde		President		✓	✓	✓
Wunsch		Belgium		✓	✓	✗
Scicluna		Malta		✓	✓	✓
Reinesch		Luxembourg		✓	✓	✓
Vasle		Slovenia		✗	✗	✓
Kažimír		Slovakia		✓	✗	✗
Schnabel		Exec Board		✓	✓	✓
Šimkus*		Lithuania		✓	✓	✓
Elderson		Exec Board		✓	✓	✓
Kazāks		Latvia		✓	✓	✓
Müller		Estonia		✓	✓	✓
Holzmann		Austria		✗	✓	✓
Knot		Netherlands		✗	✓	✓
Weidmann		Germany		✓	✓	✓
Most Hawkish						

Notes

* Mandate began 7 April 2021

THE MODEL'S READING

- High-unemployment members (Greece, Italy, Spain, Portugal) cluster at the dovish end. Implied β lower; MR steeper.
- Low-unemployment, inflation-averse members (Germany, Netherlands, Austria) cluster at the hawkish end. Implied β higher; MR flatter.
- Executive Board members carry the centrist line.

THE QUALIFICATION

- Council members are not national delegates. The mandate is euro-area price stability.
- National experience shapes priors and rhetoric; decisions are taken in the euro-area interest.

Hawk and dove are conditional on the regime: within a credible regime, the welfare gap between moderate hawks and moderate doves is small.

END · LECTURE 1

Words, anchors, *credibility.*

Fatih Kansoy

Central Banking · Lecture 1 · Worcester College

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