

Inflation Targeting and Expectations

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Why the target is 2 percent, what it means for expectations to be anchored, how expectations are measured, why the Phillips curve flattened and then steepened, what credibility buys in a disinflation, how central banks talk, and what 2021–2023 tested. Eight lessons with sources and flashcards.

Why two percent?

Where inflation targeting came from, why the target is positive rather than zero, and the argument for raising it.

Almost every advanced-economy central bank aims at inflation of about 2 percent a year. The number looks arbitrary, and in part it is: it was chosen in New Zealand in 1989–1990 as a range that seemed low enough to count as price stability and high enough to be achievable, and other central banks copied it because it worked. But there are reasons a small positive number beats zero, and there is a live argument that it should be higher.

The origin

The Reserve Bank of New Zealand Act of 1989 made price stability the bank’s sole statutory objective and required the governor and the finance minister to agree a numerical target in a public document (New Zealand Parliament, 1989). Canada followed in 1991, the United Kingdom in 1992, Sweden in 1993. Bernanke, Laubach, Mishkin and Posen described the framework as it stood at the end of the decade and gave it its standard definition: a public numerical target, a commitment to price stability as the primary goal, transparency about the outlook and decisions, and accountability for outcomes (Bernanke et al., 1999). The Federal Reserve adopted an explicit 2 percent objective only in January 2012; the ECB defined price stability numerically from 1998 and clarified it as symmetric 2 percent in 2021 (European Central Bank, 2021).

Definition 1 (Inflation targeting). A monetary policy framework with (1) a public numerical inflation objective, (2) price stability as the primary goal, (3) decisions explained in terms of the inflation forecast, and (4) accountability for missing the target. The instrument is not fixed by the framework; the goal is.

Why not zero?

Three arguments explain why the number is positive.

Measurement bias. Consumer price indices overstate inflation because they capture quality improvements and substitution imperfectly. The Boskin Commission put the bias in the US CPI at about 1.1 percentage points a year in the mid-1990s (Boskin et al., 1996); later methodological changes reduced it, but a measured 2 percent still corresponds to a smaller true rise in the cost of living.

Downward nominal wage rigidity. Workers resist cuts in nominal wages more than they resist real wage erosion through inflation. Akerlof, Dickens and Perry argued that at zero inflation firms cannot lower real wages where they need to, so unemployment is permanently higher; a little inflation “greases the wheels” (Akerlof et al., 1996).

Room above the lower bound. The neutral nominal rate is $r^* + \pi^*$. With a higher target the central bank has more room to cut before hitting the bound described in The effective lower bound. This argument grew in weight as r^* fell.

The case for four

Blanchard, Dell’Ariccia and Mauro asked after 2008 whether 2 percent had been a mistake: with a 4 percent target, central banks would have had two more points to cut in 2008–2009 (Blanchard et al., 2010). Ball made the case in full, arguing that the costs of 4 percent inflation are small and the benefit of avoiding the bound is large (Ball, 2014). The counter-arguments are that the transition would cost credibility, that the costs of inflation are nonlinear in ways the models miss, and that the tools of Forward guidance and asset purchases substitute for the missing rate cuts. No major central bank changed its number; the debate resurfaced in 2022, when raising the target looked like an excuse for missing it.

What the number does

The target is less important as a number than as an *anchor*, the subject of Anchored expectations. A central bank that is believed to deliver 2 percent has households and firms setting prices and wages on that assumption, which makes 2 percent easier to deliver. The framework’s value is in that loop, and the loop is the reason central banks are reluctant to touch the number even when the arguments for a change are decent.

Anchored expectations

What anchoring means, why Friedman and Phelps made expectations central, and how anchoring is detected in the data.

“Well anchored” is the phrase central bankers use most about inflation expectations. It has a precise meaning: long-run expectations do not move in response to short-run inflation surprises. This lesson explains why that property is the whole point of a target and how it is measured.

Expectations enter the Phillips curve

Friedman and Phelps independently argued in the late 1960s that the trade-off between inflation and unemployment exists only for *unexpected* inflation (Friedman, 1968; Phelps, 1967). Workers and firms set wages and prices in advance on the basis of expected inflation; if actual inflation exceeds it, real wages fall and employment rises, but only until expectations catch up. In the long run unemployment returns to its natural rate at any steady inflation rate.

$$\pi_t = \pi_t^e - \alpha(u_t - u^n) + \varepsilon_t, \quad \alpha > 0. \quad (1)$$

Equation (1) is the expectations-augmented Phillips curve. Its policy content is that whatever expectations π_t^e are, that is where inflation goes when the economy is at the natural rate. A central bank that controls expectations controls inflation; one that does not is chasing a moving target. The Phillips curve takes up the modern version.

Definition 2 (Anchored expectations). Long-run inflation expectations are anchored when they are (1) close to the target and (2) insensitive to news about current inflation and activity. The second condition is the operative one: anchoring is about the *response* of expectations, not their level.

What anchoring buys

With anchored expectations, a supply shock that raises inflation for a year does not feed into wage demands and prices for the next, so the central bank can look through it without a recession. With unanchored expectations, the same shock raises π^e , and (1) says inflation stays higher until the central bank pushes unemployment above the natural rate to bring it down. The difference between the two cases is the difference between the 1970s and the 2010s.

The mechanism also runs in the helpful direction. When expectations are anchored at 2 percent and inflation is below it, firms expect prices to rise and set their own prices accordingly, which pulls inflation back up without policy action. A credible target is partly self-enforcing.

Detecting anchoring

Long-horizon expectations. Surveys of professional forecasters and market prices for inflation five to ten years ahead should be flat near the target. In the United States the median five-to-ten-year expectation in the Survey of Professional Forecasters has sat within a few tenths of 2 percent since the late 1990s.

Sensitivity to news. Gürkaynak, Sack and Swanson tested the second condition directly: if expectations are anchored, long-term forward rates should not react to data surprises about current inflation and activity. They found that US far-forward rates *did* react in the years before 2004, evidence of imperfect anchoring, while UK forward rates stopped reacting after the Bank of England became independent in 1997 (Gürkaynak et al., 2005). This event-study design is the standard test.

Dispersion and tails. Anchoring also shows in the cross-section: when the distribution of expectations across forecasters narrows and the probability assigned to inflation far from target falls, the anchor is holding. Reis used these features to argue in 2021 that the US anchor was starting to slip (Reis, 2021), a question The 2021–2023 test returns to.

Whose expectations?

The Phillips curve in (1) is about the expectations of the people who set prices and wages: firms and workers. The measures above are mostly about professional forecasters and financial markets, whose expectations are better behaved and less relevant. Measuring expectations shows how large the gap is, and why household and firm expectations are the ones central banks worry about when they use the word “anchored”.

Measuring expectations

Surveys of professionals, households and firms, market-based measures and their risk premia, and why households’ expectations look nothing like the target.

Expectations are not observed; they are asked for or inferred. Each method measures a different group with different biases, and the differences are large enough to change the reading of whether the anchor from Anchored expectations is holding.

Surveys

Professional forecasters. The Philadelphia Fed’s Survey of Professional Forecasters (since 1968) and the ECB’s Survey of Professional Forecasters (since 1999) ask a few dozen economists for point forecasts and probability distributions at horizons up to ten years. Their long-run expectations are the best-behaved series available: close to target, slow-moving, narrowly dispersed. They are also the least informative about price setting, because forecasters do not set prices.

Households. The University of Michigan Surveys of Consumers (monthly since 1978) and the New York Fed’s Survey of Consumer Expectations (since 2013) ask households what they expect inflation to be over the next year and over five years. Household expectations are systematically higher than realised inflation, widely dispersed, and strongly influenced by the prices people see most often, especially fuel and food. Weber and co-authors summarise a decade of evidence: households’ expectations are biased upward, respond to salient prices, differ by demographic group, and nonetheless predict spending decisions (Weber et al., 2022).

Firms. Firms are the price setters and, until recently, the least surveyed. Coibion, Gorodnichenko and Kamdar reviewed the evidence and found that firms’ inflation expectations resemble households’ rather than professionals’: inattentive, dispersed, and often far from the target, even in economies where the target had been met for years (Coibion et al., 2018). Central banks have since built firm surveys: the Atlanta Fed’s Business Inflation Expectations, the Bank of Italy’s, the ECB’s SAFE.

Market-based measures

Break-even inflation is the difference between the yield on a nominal government bond and an inflation-indexed bond of the same maturity:

$$\text{BEI}_t^{(n)} = y_t^{(n)} - r_t^{(n)} = \mathbb{E}_t \bar{\pi}_{t,t+n} + \text{IRP}_t^{(n)} - \text{LP}_t^{(n)}. \quad (2)$$

The first term is the market’s expected average inflation over n years, which is what the analyst wants; the other two are an inflation risk premium and a liquidity premium on the indexed bond. Both vary over time and can be large: in March 2020 US break-evens collapsed because indexed bonds became illiquid, not because expected inflation fell to 0.5 percent. **Inflation swaps** give a cleaner read at the cost of a smaller market.

Market measures are available daily and respond to news, which makes them the natural input to the event studies of Anchored expectations. Their weakness is that they reflect the marginal investor, whose expectations and risk appetite are not those of the median worker.

Why the gap matters

Measure	Typical level (US, 2010s)	Dispersion	Reacts to
SPF, 10-year	about 2.0–2.3 percent	narrow	little
Break-even, 10-year	1.5–2.5 percent	not applicable	news and premia
Michigan, 1-year	2.5–3.5 percent	wide	fuel, food, headlines
Michigan, 5–10-year	2.5–3.0 percent	wide	slowly
Firm surveys, 1-year	similar to households	wide	own costs

A central bank that reads only the first two rows concludes expectations are anchored at 2 percent. One that reads the last three concludes that the target has never been fully absorbed by the people who set prices, and that their expectations move with what they buy. Both readings are correct about their own group.

Practical guidance

- Use professional and market measures for the *level* and *sensitivity* tests of anchoring; use household and firm measures for the *transmission* to prices and wages.
- Watch the *change* in household expectations more than the level; the upward bias is roughly constant, the movements carry information.
- Correct break-evens for premia when possible, or at least compare with swaps.
- In the euro area, the ECB’s Consumer Expectations Survey (since 2020) filled the household gap; in Switzerland the SECO consumer survey and the SNB’s own company surveys serve the same purpose.

Communication shows what central banks can do about the household numbers; the answer is less than they would like.

The Phillips curve

The New Keynesian Phillips curve, why the curve looked flat for twenty years, the state-level evidence, and the nonlinearity that returned in 2021.

The Phillips curve links inflation to slack. Its slope determines how much unemployment a disinflation costs and how much inflation a boom produces, so it is the parameter on which most of monetary policy’s arithmetic rests. It has been declared dead several times, most recently in the 2010s, and it came back in 2021.

The New Keynesian version

With staggered price setting, the Phillips curve becomes forward-looking: inflation today depends on *expected* inflation next period and on current marginal cost, for which the output gap or unemployment gap proxies (Galí & Gertler, 1999):

$$\pi_t = \beta \mathbb{E}_t \pi_{t+1} + \kappa x_t. \quad (3)$$

Iterating forward,

$$\pi_t = \kappa \sum_{k=0}^{\infty} \beta^k \mathbb{E}_t x_{t+k}, \quad (4)$$

inflation is the discounted sum of expected *future* gaps. This has a consequence that is easy to miss: in (4) there is no independent role for a long-run expectation. The anchor of Anchored expectations enters through the constant that the equation is written in deviations from. Empirical versions therefore add a long-run expectation term:

$$\pi_t = \pi_t^{LR} + \kappa x_t + \gamma (\pi_{t-1} - \pi_t^{LR}) + \varepsilon_t. \quad (5)$$

The anchor π_t^{LR} is where inflation settles when the gap is closed, and the slope κ is how far a given gap moves it. Both are estimated, and both have changed.

The flat curve

From the mid-1990s to 2019 the estimated slope in most advanced economies fell to something close to zero. Unemployment in the United States fell from 10 percent in 2009 to 3.5 percent in 2019 with core inflation barely moving. Three explanations compete.

- **Anchoring.** If expectations are anchored, inflation does not drift with the gap, and a regression of inflation on the gap finds a small coefficient even when the true κ is unchanged. The curve looks flat because policy works.
- **A genuinely flatter curve.** Globalisation, lower worker bargaining power and more strategic complementarity in pricing reduced the pass-through of slack to prices.
- **Mismeasured slack.** If the natural rate fell, the gap was smaller than measured, and inflation responded as the curve implied.

Hazell, Herreño, Nakamura and Steinsson separated these with US state-level data, where the anchor is common and slack varies across states. They found a slope that was small and had fallen only modestly since the 1980s, and concluded that most of the apparent flattening at the national level was anchoring: the Volcker disinflation of Credibility and disinflation reduced the response of expectations, not the response of prices to slack (Hazell et al., 2022).

The curve comes back

In 2021–2022 inflation rose faster than any linear estimate of (5) predicted. Benigno and Eggertsson argued that the curve is nonlinear: when labour markets are tight enough that vacancies exceed unemployed workers, the slope steepens sharply, so a small additional tightening of the labour market produces a large rise in inflation (Benigno & Eggertsson, 2023). The 1970s look the same way on this reading. A nonlinear curve reconciles the flat 2010s with the steep 2021: the same equation, different regions of it.

Definition 3 (Sacrifice ratio). The cumulative percentage-point-years of unemployment above its natural rate required to lower inflation permanently by one percentage point. In a linear Phillips curve it is inversely related to the slope; with a nonlinear curve it depends on where the economy starts.

The sacrifice ratio is the practical payoff of knowing the slope. If the curve is steep where the economy is, disinflation is cheap; if it is flat, every point of inflation costs years of slack. The next lesson uses history to put numbers on it.

What to take from the debate

- Anchoring and the slope are separate things that look the same in aggregate data; the state-level evidence is the cleanest separation available.
- The forward-looking equation (3) makes expected *future* slack matter, which is why guidance about the path of policy is a Phillips-curve instrument, not only a financial one.
- Nonlinearity means the cost of tolerating an overheated labour market is convex: the last point of tightness costs far more inflation than the first.

Credibility and disinflation

What the ends of hyperinflations and the Volcker disinflation say about the cost of bringing inflation down, and why credibility is the variable that sets the bill.

Lowering inflation costs output. How much depends on the slope of The Phillips curve and, more than anything else, on whether the public believes the central bank will finish the job. Two bodies of evidence bracket the range.

The ends of big inflations

Sargent studied the ends of the hyperinflations in Austria, Hungary, Germany and Poland in the early 1920s and found that inflation stopped almost overnight, with far less unemployment than a Phillips-curve calculation would predict (Sargent, 1982). His explanation is that the stabilisations were *regime changes*: a new central bank statute, an end to monetary financing of the deficit, often a foreign loan with conditions. Once the public understood that the regime had changed, expectations reset immediately, and with expectations reset there was no need for a long period of slack.

The argument is the rational-expectations version of the credibility idea: the sacrifice ratio is not a technological constant but a function of how quickly expectations adjust, which is a function of how convincing the change in policy is. Gradual disinflations are expensive precisely because they are not convincing.

The Volcker disinflation

The United States between 1979 and 1983 is the reference case for a modern disinflation. Inflation fell from about 13 percent to about 4 percent; unemployment rose to 10.8 percent in late 1982; the cumulative output loss was large by any measure. Ball, comparing disinflations across countries and decades, found sacrifice ratios that varied widely, were lower when disinflation was fast, and were lower in economies with more flexible wage contracts (Ball, 1994). The United States in the early 1980s sits near the middle of his range, which is to say that the Volcker disinflation was not cheap.

Goodfriend and King asked why, given that Volcker's commitment was unusually visible. Their answer is that credibility was acquired, not announced: long-term rates and inflation expectations came down only after the Fed had *demonstrated* its willingness to tolerate the 1981–1982 recession, and the delay is what made the episode expensive (Goodfriend & King, 2005). Words alone did not change the regime; sustained action did.

Theorem 1 (Credibility lowers the sacrifice ratio). *In the expectations-augmented Phillips curve $\pi_t = \pi_t^e - \alpha(u_t - u^n)$, a disinflation from π_0 to π^* costs cumulative unemployment $\sum_t (u_t - u^n) = \frac{1}{\alpha} \sum_t (\pi_t^e - \pi_t)$. If expectations fall to π^* immediately, the cost is zero; if they adjust only as inflation is observed to fall, the cost is $(\pi_0 - \pi^*)/\alpha$ per period of adjustment lag.*

Proof. Rearranging the curve gives $u_t - u^n = (\pi_t^e - \pi_t)/\alpha$; summing over the disinflation gives the expression. Each period in which expectations lag actual inflation by the full distance to the target contributes $(\pi_0 - \pi^*)/\alpha$; with immediate adjustment every term is zero. $\square$

The proof is a model, not a forecast; its content is the direction. Everything a central bank does to make its target believable, from independence to communication, is a way of shortening the lag in the sum.

Two lessons for today

- **Fast and credible beats slow and hedged.** The 2022 tightening cycles in the United States and the euro area were unusually fast by historical standards, and the disinflation of 2023–2024 was cheaper than the Volcker template, with unemployment rising little. Anchored expectations, the product of the earlier decades, did the work that slack did in 1982.
- **Credibility is spent as well as earned.** The delay in 2021 was costly not because it produced a large inflation overshoot on its own but because it raised doubts about whether the target would be defended; the fast tightening that followed was partly the price of restoring that belief. The 2021–2023 test returns to this.

The mirror image of a disinflation is the problem of the 2010s: raising inflation *to* the target when expectations have settled below it. Communication and Flexible targeting and its alternatives are the tools central banks reached for.

Communication

How central banks talk, what the evidence says reaches markets and households, the dot plot, the conditional inflation forecast, and the limits of talking.

Fifty years ago central banks said as little as possible; the Federal Reserve did not announce its rate decisions until 1994. Today every major central bank publishes a target, a forecast, minutes, projections and a press conference. The change was driven by the logic of Anchored expectations: if expectations do the work, the central bank must shape them, and it can only shape what it explains.

Why talk

Blinder and co-authors surveyed the theory and evidence and put the rationale in two parts (Blinder et al., 2008). Communication *creates news* by moving expectations of policy, which is the mechanism Forward guidance exploits. And it *reduces noise* by making policy predictable, so that markets react to the economy rather than to guesses about the central bank. Their evidence was that communication moves asset prices in the intended direction and that predictability had risen with transparency; whether it improves macroeconomic outcomes was, and remains, harder to show.

The instruments

Instrument	Who	What it does
Numerical target	all	Fixes the anchor
Published forecast	all; SNB's <i>conditional inflation forecast</i> since 2000	Explains decisions as responses to the outlook
Policy-rate projections	Fed "dot plot" since 2012, Riksbank, Norges Bank, RBNZ	Shows the expected path; risks being read as a promise
Minutes and votes	Fed, BoE, Riksbank; ECB "accounts" since 2015	Reveal the debate and the balance of views
Press conference	ECB since 1998, Fed since 2011, SNB since 2000	Puts the reasoning on record in real time
Speeches and testimony	all	Test ideas and prepare changes

The SNB's conditional inflation forecast deserves a note: it is the forecast on the assumption that the policy rate stays where it is, so a forecast above 2 percent at the horizon is a statement that the rate will have to rise. It is guidance disguised as a forecast, and it has served as the SNB's main instrument of communication for a quarter of a century (Swiss National Bank, 2024).

What reaches whom

Markets read everything. The event studies of Measuring expectations show that statements, projections and press conferences move yields within minutes, and that the *tone* of a press conference can move them in the opposite direction from the decision.

Households read almost nothing. Coibion, Gorodnichenko and Weber ran a randomised experiment on 20,000 US households, giving different groups different pieces of Fed communication and measuring their inflation expectations afterwards (Coibion et al., 2022). Simple statements of the target or of current inflation moved expectations substantially; the full FOMC statement moved them little more than a newspaper article; and most treatments had faded within months. Their conclusion is that central banks *can* reach households, but only with messages far simpler than the ones they write, and only if they repeat them.

Definition 4 (Layered communication). Messages designed for different audiences: a one-sentence statement for the public, a page for the press, the full statement and projections for markets and economists. The Bank of England adopted a layered format for its Inflation Report in 2017; the ECB simplified its statements after the 2021 strategy review for the same reason.

Limits

- **Projections become promises.** The dot plot was meant as information about individual views; markets read the median as a plan, and deviations from it cost credibility.
- **More words, more noise.** The volume of central bank communication has grown faster than its information content; when every member speaks, the signal is the dispersion, not the mean.
- **Communication cannot substitute for action.** As Credibility and disinflation showed, expectations followed demonstrated willingness to bear costs, not announcements.
- **The audience that matters is the hardest to reach.** Price and wage setters form expectations from what they buy and pay; a press conference does not enter that calculation.

The frameworks in Flexible targeting and its alternatives are, in part, attempts to make the message simpler by making the promise more mechanical.

Flexible targeting and its alternatives

Flexible inflation targeting as a loss function, and the makeup strategies proposed for the lower bound: price-level targeting, average inflation targeting, nominal GDP targeting.

“Inflation targeting” as practised is *flexible*: the central bank cares about inflation and about the real economy, and it trades the two off over a horizon. The alternatives proposed since 2008 are mostly ways of making the framework do better at the lower bound, by promising to make up for misses.

Flexible inflation targeting as a loss function

Svensson’s formulation is standard (Svensson, 2010). The central bank minimises

$$L_t = \sum_{k=0}^{\infty} \delta^k \mathbb{E}_t [(\pi_{t+k} - \pi^*)^2 + \lambda x_{t+k}^2], \quad (6)$$

with $\lambda > 0$ the weight on the output gap. Strict targeting is $\lambda = 0$. Under flexible targeting a supply shock that raises inflation and lowers output is met with a *gradual* return of inflation to target, because rushing it would require a large negative gap. The horizon over which the forecast returns to target is the operational expression of λ : two to three years at most inflation-targeting central banks.

Definition 5 (Inflation-forecast targeting). Setting the instrument so that the central bank’s own conditional forecast of inflation returns to the target over the policy horizon while the output gap closes. The forecast is the intermediate target; the decision rule is “adjust until the forecast looks right”.

Flexible targeting has a property that becomes a problem at the lower bound: it is *bygones-are-bygones*. A period of inflation below target is not made up; the target for next year is 2 percent regardless of last year. That means expected future inflation does not rise after a shortfall, and the real-rate stimulus that The effective lower bound needs does not appear. Every alternative below fixes this by making the future target depend on the past.

Price-level targeting

Under price-level targeting the central bank aims at a path for the price level rising at 2 percent a year. After a shortfall, inflation must run *above* 2 percent until the level is back on the path. Svensson showed that in a model with forward-looking expectations this delivers lower inflation *variability* as well as a determinate price level, which he called a “free lunch” (Svensson, 1999). At the lower bound it is exactly the Eggertsson–Woodford commitment: the promise of above-target inflation later lowers real rates now. The obstacles are communication (households do not think in levels) and asymmetric application (making up for overshoots requires deliberate disinflation, which no central bank wants to promise).

Average inflation targeting

The Federal Reserve’s 2020 framework was a bounded version: after periods of below-2-percent inflation, policy would aim for inflation “moderately above 2 percent for some time” so that inflation averages 2 percent (Federal Open Market Committee, 2020). The averaging window and the size of the overshoot were unspecified, which preserved discretion and weakened the commitment. The framework was designed for the 2010s problem of persistent shortfalls and was tested by the 2021 problem of an overshoot, for which it had no provision; the 2025 revision dropped the averaging language, as The 2021–2023 test discusses.

Nominal GDP targeting

Targeting the level of nominal GDP combines the makeup property of price-level targeting with automatic accommodation of supply shocks: when real output falls, the framework tolerates higher inflation without a change in the target. Woodford argued at Jackson Hole in 2012 that a nominal GDP level target was the most credible way to implement the commitment the lower bound calls for, because it is a single number that summarises both goals and does not require the central bank to promise inflation as such (Woodford, 2012). The objections are that nominal GDP is revised heavily and published late, and that the public has no intuition for it. No central bank has adopted it.

Comparing the options

Framework	Makes up for shortfalls?	Handles supply shocks?	Communication burden
Flexible inflation targeting	No	Yes, gradually	Low
Price-level targeting	Yes, fully	Poorly	High
Average inflation targeting	Partly, at discretion	As FIT	Medium; ambiguity is the cost
Nominal GDP level targeting	Yes	Yes, automatically	High

The trade-off is between the strength of the commitment and the ease of explaining it. Frameworks that would work best in the model are the ones the public understands least, which, given Communication, is not a small objection.

The 2021–2023 test

What drove the inflation surge, whether the anchor held, what the fast disinflation showed, how the frameworks changed, and an exercise on expectations data.

Between early 2021 and late 2022 inflation rose to 9 percent in the United States and above 10 percent in the euro area and the United Kingdom, the first serious test of inflation targeting since the frameworks were built. This lesson reads the episode through the concepts of the course.

What drove it

Bernanke and Blanchard decomposed US inflation with a small model of prices, wages and expectations (Bernanke & Blanchard, 2023). Their reading: the initial surge in 2021 came from supply shocks, energy and food prices and sectoral shortages, not from an overheated labour market; the labour market's contribution grew through 2022 as tightness persisted; and the risk that expectations would de-anchor was real but did not materialise. The decomposition matters because it says the early inflation was largely the kind a central bank can look through, while the later persistence was the kind it must act against. The mistake, on this reading, was not the initial patience but its duration.

In the euro area the energy shock of 2022 was larger relative to the economy and the labour-market component smaller, which is why the ECB's inflation fell faster once energy prices reversed.

Did the anchor hold?

Reis warned in 2021 that several early-warning signs were present: the right tail of the distribution of expectations had fattened, the dispersion across forecasters had widened, and market-based measures had started to react to news again (Reis, 2021). The indicators from Anchored expectations were flashing.

They then stopped. Long-run professional expectations in the United States moved by a few tenths and returned; five-year break-evens rose to about 3 percent in early 2022 and fell back; household five-to-ten-year expectations rose and then drifted down. The Phillips-curve arithmetic of The Phillips curve shows why this mattered: with π^{LR} stable, the persistence of inflation came from the lagged term and from the tight labour market, both of which could be unwound without a change in regime.

The disinflation

Inflation fell from 9 percent to about 3 percent in the United States between mid-2022 and end-2023 with unemployment rising less than one percentage point. By the standards of Credibility and disinflation this is a sacrifice ratio near zero, and it is the strongest evidence for the value of the anchor that thirty years of targeting had built. Three qualifications belong beside it: much of the disinflation was the supply shocks reversing; the labour market's contribution unwound partly through falling vacancies rather than rising unemployment, which the nonlinear Phillips curve predicts; and the fast tightening of 2022, over four percentage points in a year, was itself part of what kept expectations in place.

How the frameworks changed

The episode exposed the asymmetry in the 2020 Fed framework described in Flexible targeting and its alternatives: it prescribed patience after shortfalls and said nothing about overshoots, and its "shortfalls" language discouraged pre-emptive tightening. In August 2025 the FOMC revised the statement, returning to a flexible inflation-targeting formulation with a symmetric 2 percent goal and dropping the averaging and shortfalls language. The ECB's 2021 strategy, with its symmetric target and explicit allowance for forceful action in either direction, needed less repair (European Central Bank, 2021). Neither bank changed the number, which is the answer to the question in Why two percent?: the anchor held, so the number stayed.

An exercise

Compare three measures of expectations through the episode. The series are on FRED; the code needs `pandas` and `pandas-datareader`.

```
import pandas as pd
from pandas_datareader import data as pdr
```

```

start = "2019-01-01"
bei5 = pdr.DataReader("T5YIE", "fred", start)           # 5-year break-even inflation,
    ↪ daily
bei5y5 = pdr.DataReader("T5YIFR", "fred", start)        # 5-year, 5-year forward
    ↪ break-even
mich = pdr.DataReader("MICH", "fred", start)            # Michigan 1-year expected
    ↪ inflation, monthly
cpi = pdr.DataReader("CPIAUCSL", "fred", start)         # CPI, monthly
infl = 100 * (cpi / cpi.shift(12) - 1)

df = pd.concat({
    "cpi_yoy": infl.iloc[:, 0],
    "bei_5y": bei5.resample("ME").mean().iloc[:, 0],
    "bei_5y5y": bei5y5.resample("ME").mean().iloc[:, 0],
    "michigan_1y": mich.iloc[:, 0],
}, axis=1).dropna()
print(df.loc["2021-01":"2023-12"].round(2).iloc[:, :3])

```

Look at the difference between the 5-year break-even and the 5-year-5-year forward in 2022: the first rose with current inflation, the second barely moved. That gap is the anchor in a single table. Then look at the Michigan series, which rose more and stayed up longer, the household pattern from Measuring expectations.

What the episode settled and what it did not

- Anchored expectations are worth what the theory says: a large shock, a fast disinflation, little unemployment.
- Patience with supply shocks is right until the labour market tightens; the framework must allow for the second case as well as the first.
- Makeup strategies designed for shortfalls need a symmetric counterpart or they become an excuse.
- Whether the anchor would have survived another year of 8 percent inflation is unknown, and nobody proposes to find out.

- Akerlof, G. A., Dickens, W. T., & Perry, G. L. (1996). The macroeconomics of low inflation. *Brookings Papers on Economic Activity*, 1996(1), 1–76. <https://doi.org/10.2307/2534646>
- Ball, L. (1994). What determines the sacrifice ratio? In N. G. Mankiw (Ed.), *Monetary policy* (pp. 155–193). University of Chicago Press.
- Ball, L. (2014). *The case for a long-run inflation target of four percent* (IMF Working Paper 14/92). International Monetary Fund.
- Benigno, P., & Eggertsson, G. B. (2023). *It's baaack: The surge in inflation in the 2020s and the return of the non-linear Phillips curve* (NBER Working Paper 31197). National Bureau of Economic Research. <https://doi.org/10.3386/w31197>
- Bernanke, B. S., & Blanchard, O. (2023). *What caused the US pandemic-era inflation?* (Working Paper 86). Hutchins Center on Fiscal; Monetary Policy, Brookings Institution.
- Bernanke, B. S., Laubach, T., Mishkin, F. S., & Posen, A. S. (1999). *Inflation targeting: Lessons from the international experience*. Princeton University Press.
- Blanchard, O., Dell'Ariccia, G., & Mauro, P. (2010). Rethinking macroeconomic policy. *Journal of Money, Credit and Banking*, 42(s1), 199–215. <https://doi.org/10.1111/j.1538-4616.2010.00334.x>
- Blinder, A. S., Ehrmann, M., Fratzscher, M., De Haan, J., & Jansen, D.-J. (2008). Central bank communication and monetary policy: A survey of theory and evidence. *Journal of Economic Literature*, 46(4), 910–945. <https://doi.org/10.1257/jel.46.4.910>
- Boskin, M. J., Dulberger, E. R., Gordon, R. J., Griliches, Z., & Jorgenson, D. W. (1996). *Toward a more accurate measure of the cost of living*. Advisory Commission to Study the Consumer Price Index, final report to the Senate Finance Committee.
- Coibion, O., Gorodnichenko, Y., & Kamdar, R. (2018). The formation of expectations, inflation, and the Phillips curve. *Journal of Economic Literature*, 56(4), 1447–1491. <https://doi.org/10.1257/jel.20171300>

- Coibion, O., Gorodnichenko, Y., & Weber, M. (2022). Monetary policy communications and their effects on household inflation expectations. *Journal of Political Economy*, 130(6), 1537–1584. <https://doi.org/10.1086/718982>
- European Central Bank. (2021). *The ECB’s monetary policy strategy statement*. Press release, 8 July. https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monpol_strategy_statement.en.html
- Federal Open Market Committee. (2020). *Statement on longer-run goals and monetary policy strategy*. Amended effective 27 August 2020. <https://www.federalreserve.gov/monetarypolicy/review-of-monetary-policy-strategy-tools-and-communications-statement-on-longer-run-goals-monetary-policy-strategy.htm>
- Friedman, M. (1968). The role of monetary policy. *American Economic Review*, 58(1), 1–17.
- Gali, J., & Gertler, M. (1999). Inflation dynamics: A structural econometric analysis. *Journal of Monetary Economics*, 44(2), 195–222. [https://doi.org/10.1016/S0304-3932\(99\)00023-9](https://doi.org/10.1016/S0304-3932(99)00023-9)
- Goodfriend, M., & King, R. G. (2005). The incredible Volcker disinflation. *Journal of Monetary Economics*, 52(5), 981–1015. <https://doi.org/10.1016/j.jmoneco.2005.07.001>
- Gürkaynak, R. S., Sack, B., & Swanson, E. (2005). The sensitivity of long-term interest rates to economic news: Evidence and implications for macroeconomic models. *American Economic Review*, 95(1), 425–436. <https://doi.org/10.1257/0002828053828446>
- Hazell, J., Herreño, J., Nakamura, E., & Steinsson, J. (2022). The slope of the Phillips curve: Evidence from U.S. states. *Quarterly Journal of Economics*, 137(3), 1299–1344. <https://doi.org/10.1093/qje/qjac010>
- New Zealand Parliament. (1989). *Reserve bank of new zealand act 1989*. Public Act 1989 No 157. <https://www.legislation.govt.nz/act/public/1989/0157/latest/whole.html>
- Phelps, E. S. (1967). Phillips curves, expectations of inflation and optimal unemployment over time. *Economica*, 34(135), 254–281. <https://doi.org/10.2307/2552025>
- Reis, R. (2021). Losing the inflation anchor. *Brookings Papers on Economic Activity*, 2021(2), 307–361. <https://doi.org/10.1353/eca.2022.0004>
- Sargent, T. J. (1982). The ends of four big inflations. In R. E. Hall (Ed.), *Inflation: Causes and effects* (pp. 41–98). University of Chicago Press.
- Svensson, L. E. O. (1999). Price-level targeting versus inflation targeting: A free lunch? *Journal of Money, Credit and Banking*, 31(3), 277–295. <https://doi.org/10.2307/2601112>
- Svensson, L. E. O. (2010). Inflation targeting. In B. M. Friedman & M. Woodford (Eds.), *Handbook of monetary economics* (Vol. 3B, pp. 1237–1302). Elsevier. <https://doi.org/10.1016/B978-0-444-53454-5.00010-4>
- Swiss National Bank. (2024). *Monetary policy strategy*. SNB website, section Monetary policy. <https://www.snb.ch/en/the-snb/mandates-goals/monetary-policy/strategy>
- Weber, M., D’Acunto, F., Gorodnichenko, Y., & Coibion, O. (2022). The subjective inflation expectations of households and firms: Measurement, determinants, and implications. *Journal of Economic Perspectives*, 36(3), 157–184. <https://doi.org/10.1257/jep.36.3.157>
- Woodford, M. (2012). Methods of policy accommodation at the interest-rate lower bound. In *The changing policy landscape: 2012 jackson hole symposium* (pp. 185–288). Federal Reserve Bank of Kansas City.