

SPEECH

The future of inflation (forecast) targeting

Keynote speech by Isabel Schnabel, Member of the Executive Board of the ECB, at the thirteenth conference organised by the International Research Forum on Monetary Policy, “Monetary Policy Challenges during Uncertain Times”, at the Federal Reserve Board, Washington, D.C.

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Since the early 1990s, many central banks worldwide have adopted a framework for monetary policy known as “inflation targeting”.^[1] In this framework, central banks announce a target rate or range for medium-term inflation, typically 2%, and adjust short-term interest rates to steer actual inflation towards the target.^[2]

The rise of inflation targeting was a response to the turbulent inflation episodes of the 1970s and 1980s when most central banks were only loosely committed to price stability. Inflation targeting was an acknowledgement that monetary policy was most effective when it was given a clear mandate.

Inflation targeting went hand-in-hand with a discernible increase in central bank independence and transparency. Central banks operating outside the influence of political election cycles played a critical role in making inflation targeting credible and feasible. Political independence, in turn, required central bank officials to publicly explain and justify their actions as a manifestation of democratic accountability.

Greater transparency was also needed to operationalise inflation targeting. The reason is that, given the lags in monetary policy transmission, central banks can only affect future inflation. As such, inflation targeting has typically been formulated in terms of inflation *forecast* targeting where the central bank adjusts policy to offset deviations of its projection of medium-term inflation from the target.^[3]

Inflation forecast targeting requires the central bank to provide a coherent narrative to the public that links its current decisions to the way it expects economic activity and inflation to evolve over the policy-relevant horizon, typically over the next two to three years.

Inflation forecast targeting has been implemented differently across the central banking community.

The Reserve Bank of New Zealand, Norges Bank and Sveriges Riksbank, for example, publish inflation forecasts that are conditional on a policy rate path consistent with delivering inflation in line with the target over the policy-relevant horizon. Similarly, the US Federal Reserve System provides policy rate forecasts through its Summary of Economic Projections.

While these interest rate paths do not constitute a formal commitment on the part of policymakers, they do provide forward guidance, which potentially raises the ability of central banks to manage

interest rate and inflation expectations.^[4]

Other central banks, including the ECB and the Bank of England, publish inflation projections based on financial market participants' expected path for short-term interest rates.^[5] In this case, the public typically expects policy to deviate from the market-implied path if the medium-term inflation forecast is inconsistent with the target.

At the ECB, the link between policy decisions and inflation projections was deliberately diluted, as projections are "owned" by staff and not the Governing Council.^[6] In practice, however, inflation projections, whether owned by the committee or not, have over time become the main communication vehicle for most central banks worldwide, including the ECB.

Inflation forecast targeting and the surge in inflation

Inflation targeting has generally been a success.

Before the pandemic, inflation had been low and stable over three decades (Slide 2). And by providing a clear yardstick for the public to measure the central bank's success in delivering on its mandate, inflation targeting has made monetary policy more transparent and accountable.

Yet, while changes to monetary policy frameworks had been important in bringing about benign inflation outcomes since the late 1980s, there is broad agreement that during that period, central banks benefited from a decline in macroeconomic volatility and globally subdued price pressures.^[7]

In this environment, even systematic forecast errors by central banks had only limited impact on their credibility.^[8] In the euro area, for example, HICP inflation excluding energy and food was persistently over-projected between 2013 and 2019 (Slide 3, left-hand side).^[9]

But since these forecast errors were small in absolute terms, and the public was not concerned about a limited undershooting of inflation targets, the appropriateness of central banks' broader policy frameworks was not questioned, and neither was their ability to maintain price stability.

However, the pandemic changed all of this.

Inflation forecast errors rose measurably and remained persistent.^[10] This was not because central banks were particularly bad at projecting inflation. After all, significant forecast errors were made by professional forecasters and international institutions alike (Slide 3, right-hand side).

Rather, it was because the size of the shocks hitting our economies increased sharply, with some of them entailing fundamental structural changes to the economy, making inflation forecasting an extremely difficult undertaking. These forecast errors, in turn, arguably contributed to central banks' delayed reaction to the surge in inflation.

Data dependence challenges inflation forecast targeting

Central banks are currently trying to draw the right lessons from recent experience.

Perhaps the most important one is that the post-pandemic surge in inflation has validated rather than refuted the inflation targeting framework. Despite inflation often reaching double-digit levels, long-term

inflation expectations have remained broadly anchored around 2% across advanced economies (Slide 4).

This is a strong vote of confidence in the central bank's determination and ability to restore price stability. By keeping inflation expectations anchored, central banks managed to significantly reduce the persistence of inflation, thereby helping avoid the output losses that had been necessary in the 1980s to bring inflation down from elevated levels.

A second area of reflection relates to the role central bank projections should play in calibrating and communicating monetary policy.

In response to the outbreak of the pandemic in 2020, and the Russian invasion of Ukraine in 2022, the ECB adjusted the way it presented and used economic forecasts in its decision-making process. Alternative scenarios and extensive sensitivity analyses complemented the baseline and helped to convey the considerable increase in uncertainty regarding the future path of the economy.

In addition, in early 2023, when interest rates had already been raised considerably, we clarified that the large prevailing uncertainty about the medium-term inflation outlook required a data-dependent approach to monetary policy, where the observed dynamics of underlying inflation and the strength of monetary transmission would serve to cross-check the inflation projections.^[11]

These measures effectively marked a departure from "textbook" inflation forecast targeting. As projection errors, even over short horizons, rose to unprecedented levels in the wake of the recent energy crisis, the baseline scenario was no longer a sufficient summary indicator for calibrating and communicating monetary policy actions.

Breaking this link was not entirely new. Already in 2019, following a long period of subdued price pressures, the ECB adopted rate forward guidance that conditioned its future actions not only on the inflation outlook but also on the actual progress in underlying inflation dynamics. This was also intended to ease financing conditions further.

But in the high-inflation period, the stakes were arguably higher. Consider the June 2022 Eurosystem staff projections as an example. These projections were the first opportunity to fully reflect on the impact of the war in Ukraine on activity and prices in the euro area. They foresaw inflation to average 3.5% in 2023, almost two percentage points below the actual outcome of 5.4%, with interest rates being markedly higher than expected in 2022.

Should we return to strict inflation forecast targeting?

The question we are facing today is whether, in view of the recent normalisation of forecast errors, central banks should return to the strict inflation forecast targeting that prevailed most of the time before the pandemic.

This question is not about whether central banks should use model-based forecasts or not. Good policymaking will always have to rely on models about how the economy works and how our policy decisions affect central macroeconomic variables. In other words, models are indispensable.

It is not about whether central banks should be forward-looking, either. Again, there is no question that a central bank must focus on medium-term inflation. It should not form its decisions by looking only in

the rear-view mirror.

Instead, the question is whether we should give the baseline projections a weight in policy calibration and communication, so that deviations of projected medium-term inflation from the target would almost mechanically trigger expectations of policy adjustments.

Clarity on how central banks intend to conduct policy over the medium term is certainly important for predictability and hence transmission. During the past few months, financial markets have repeatedly repriced the future expected path of short-term interest rates in different directions, thereby affecting actual financing conditions (Slide 5).^[12]

These swings do not necessarily imply a lack of understanding of central banks' reaction functions, as there was often a wedge between the medium-term inflation outlook expected by investors and central banks.

But they do suggest that investors expect policymakers, at least for now, to continue to pay more attention to actual inflation outcomes, or to the tails of the forecast distribution, than what a typical inflation forecast targeting central bank would do.

Putting less weight on the baseline forecast in the decision-making process has two drawbacks.

First, it may lead to excessive volatility if financial markets overreact to individual data prints. The sensitivity of short-term interest rates to surprises in the most relevant macroeconomic indicators is currently at elevated levels (Slide 6).

Second, it could increase the risk that, should the central scenario materialise, monetary policymakers may have waited too long to adjust the stance in their search for "sufficient confidence". In the current context, being behind the curve can be costly in terms of lost output.

At the same time, despite the reduction in forecasting errors, there are a number of reasons suggesting that it could be prudent to continue to consider the baseline forecast as just one input to policy decisions, or to consider other changes to the framework, including in communication, even as inflation continues to fall.

Central forecasts create a false sense of precision

First, while central forecasts are easy to communicate, they convey a false sense of precision.

At the ECB, significant resources are constantly devoted to improving the set of models used for forecasting.^[13] After the global financial crisis, for example, credit and banking gained prominence in our workhorse models. More recently, we made important changes to the assumptions about the pass-through of energy prices to consumer prices in the presence of large cost-push shocks.^[14]

But no matter how much we improve our models, projections will always be surrounded by a significant degree of uncertainty.

Take energy inflation as an example.

During the recent inflation surge, errors in the conditioning assumptions for energy prices – based on market futures prices – explained, on average, about three-quarters of the Eurosystem and ECB staff projection errors for inflation four quarters ahead (Slide 7).

While other forecasting techniques, such as using random walk assumptions, may sometimes yield superior outcomes, there is no one method that consistently outperforms the others.

Uncertainty is even greater when estimating and forecasting unobservable variables, such as the output gap or the natural rate of interest. While being of first-order importance for assessing inflationary pressures or the restrictiveness of monetary policy, neither concept can be pinned down in real time with any reasonable degree of precision.

In addition, forecasts of models estimated on historical time series tend to revert to the mean towards the end of the projection horizon.

This mean reversion is an integral part of inflation targeting, based on the assumption that long-term inflation expectations are firmly anchored at target. This approach is reasonable for as long as this assumption is confirmed by surveys and market prices.

But when shocks are large and persistent, and inflation expectations are at risk of de-anchoring, mean reversion can make monetary policy procyclical.

Consequently, there is a risk that policymakers react too late when the economy is hit by a more persistent inflation shock, and that policy is loosened too early when inflation falls again. In other words, mean reversion introduces an easing bias during inflation shocks and a tightening bias during disinflation shocks.

Biases may also occur due to the incremental approach typically used in forecasting when new projections start from the most recent vintage. This may lead to an excessive degree of inertia, especially at turning points, which models typically have a hard time anticipating given the lack of tools to identify changes in the trajectory of key economic variables in real time.

The use of judgement can partly compensate for such shortcomings. However, the line between technical and policy judgement is often blurred. And in a large monetary policy committee, such as the Eurosystem, where the projection process has deliberately been delegated to staff, policy judgement should ideally be the outcome of deliberations rather than an input to the baseline scenario.

Supply-side shocks make inflation forecasting more difficult

Second, inflation forecast targeting typically relies on the assumption that supply side shocks are transitory, meaning changes in economic activity result predominately from changes in aggregate demand along a balanced steady-state growth path.

As monetary policy works mainly on the demand side, it can be optimally adjusted to offset the impact of expected changes in activity on prices and wages, taking into account the lags in policy transmission. This is the “divine coincidence” at work.

However, these might not be the kind of conditions facing central banks in the foreseeable future.^[15]

Last year, in her speech at the Jackson Hole symposium, ECB President Christine Lagarde laid out the significant potential for pervasive and persistent shocks to affect the supply side and hence wages, inflation and interest rates.^[16] Examples are climate change, the rapid ageing of our population and the rise of generative artificial intelligence.

In addition, the nature of globalisation is changing fundamentally. Not only are firms reconsidering the robustness of their value chains in the light of significant geopolitical uncertainties, they are also facing fiercer global competition in many areas.

China, in particular, is transitioning away from being the world's manufacturing base towards becoming a major player in high-tech industries, such as electric vehicles. Over the past few years, Chinese firms have rapidly gained global market shares (Slide 8, left-hand side).

These developments are unfolding alongside the persistent effects of the recent shocks to our economies. It is becoming increasingly clear that the COVID-19 pandemic and Russia's war on Ukraine are having long-lasting, if not permanent, effects on the euro area economy.

For example, despite the significant drop in energy prices, the output of energy-intensive industries, such as chemicals and basic metals, has dropped considerably more than that of other sectors over the past two years (Slide 8, right-hand side).

The pandemic, meanwhile, has exacerbated the secular decline in hours worked per person employed. Today, people are working on average 2% fewer hours compared with the five-year average before the pandemic, contributing to labour shortages (Slide 9, left-hand side).

At the same time, we are seeing a strong rebound in the labour force, owing largely to the contribution from foreign workers (Slide 9, right-hand side).^[17] However, over time this increase in the labour force may be countered, and possibly more than offset, by the projected decline in the domestic working-age population.

Overall, these supply-side shocks are difficult to anticipate and can have very different effects on wages and inflation than shocks triggered by changes in aggregate demand, making inflation forecast targeting considerably more challenging.

State-dependent monetary policy transmission complicates policy calibration

Finally, inflation forecast targeting relies on a stable and effective transmission of monetary policy, so that changes in the monetary policy stance have the desired and predicted effects on projected inflation.

The experience over the past ten years, however, has challenged our understanding of the way changes in short- and long-term interest rates affect output and inflation.

Before the pandemic, record low, and even negative, interest rates failed to provide sufficient stimulus to lift the economy out of a low-growth, low-inflation environment.

Evidence is pointing increasingly towards monetary policy transmission to activity and prices being highly non-linear, with diminishing returns when financing conditions are very loose.^[18]

Today, researchers are trying to reconcile the surprising resilience shown by parts of the economy with the sharpest tightening cycle in decades.

This resilience is most evident in the United States where growth remains surprisingly buoyant. But questions about the strength and lags of policy transmission have emerged across a broad range of economies.

Evidence from the euro area, for example, is increasingly consistent with the view that monetary policy transmission is highly state-dependent.

During the current tightening cycle, large cash positions held by firms, a rotation of spending from goods to services, a high share of fixed-rate mortgages, comparatively healthy borrower balance sheets and resilient employment amid persistently tight labour markets may all have dampened policy transmission.

Even though a considerable amount of effort is made to understand all these channels, anticipating them in real time is inherently difficult. They typically only become visible once transmission is at a more advanced stage, making policy calibration based narrowly on projections a difficult exercise. This is even more the case if structural shocks also affect the natural rate of interest, creating uncertainty about the degree of restrictiveness of current monetary policy.^[19]

Dot plots and alternative scenarios could offer solutions

The question, then, is how policy frameworks can be adjusted to deal with these challenges for calibrating policy and communicating decisions to the public.

Last week, Ben Bernanke presented possible solutions in his review of the Bank of England's forecasting framework.^[20] Some of the points he raised could also be of relevance to the ECB.

One area of reflection relates to whether policymakers' views on their expected future path of short-term interest rates should be made more transparent, akin to the "dot plot" used by the Federal Reserve System.^[21]

The distribution of these paths could help signal the risks members of the committee attach to the baseline scenario built by staff. The narrower the distribution, the stronger the implied endorsement by policymakers, and vice versa.^[22]

A dot plot can therefore help convey the uncertainty about the future path of the economy and simultaneously provide greater clarity about where policymakers see interest rates moving in the future, potentially working against excessive market volatility.

A downside to the publication of interest rate paths is that they may overly condition market pricing, thereby de facto reducing its informational content. Recent research shows that the dot plots may have lowered US real long-term bond yields by around 130 basis points over the last decade.^[23]

A second, and complementary, option is to systematically include alternative scenarios to communicate the uncertainty around central bank projections more directly. By looking at different and potentially equally realistic paths for growth and inflation, there may no longer be a central scenario.

The ECB conducts scenario analyses frequently. The most recent projection report looked at how an escalation of disruptions in the Red Sea could affect output and inflation in the euro area.^[24]

Our technical assumptions are also subject to regular sensitivity analysis. At present, for example, the option-implied gas price distribution indicates pronounced upside risks to the March 2024 baseline scenario.

These alternative scenarios and sensitivity analyses, however, are currently not receiving the weight and attention they deserve among central bank watchers, with most focusing narrowly on the point forecast of inflation two to three years ahead.

One reason for this might be that the scenarios we consider are, in most cases, partial rather than general equilibrium, or restricted to tail events, meaning that they do not seriously challenge the main narrative underlying the baseline scenario.

To signal more clearly the significant uncertainty surrounding the baseline, realistic alternative scenarios – possibly presenting the range of views within the committee – could test some of the main assumptions feeding the baseline.

The challenges currently facing the euro area demonstrate how this could be done.

In one scenario, monetary policy is expected to succeed in creating conditions such that firms will absorb large parts of current high unit labour cost growth in their profit margins alongside a recovery in labour productivity growth. In this case, underlying price pressures would gradually abate, and inflation would return to, or even undershoot, the target over the projection horizon.

This is broadly the narrative underlying the current ECB and Eurosystem staff projections. Such a scenario could be augmented with additional sensitivity analysis, examining, for instance, by how much inflation could undershoot the target if the effects of monetary policy were stronger than usually.

In an alternative scenario, productivity growth would remain depressed over the projection horizon and demand for less interest-rate sensitive services could remain sufficiently strong to allow firms to pass a larger share of the increase in labour costs on to consumers. This scenario would take into account that the capacity of firms in the services sector to absorb rising input costs is more limited than in other sectors, such as industry or agriculture, where profits have been rising much more forcefully over the past years and where falling input prices have created space to absorb other cost increases. Overall, in this scenario, underlying price pressures could be stickier and the return of inflation to the 2% target delayed.

The regular and consistent use of such scenarios could better convey the uncertainty facing central banks and contribute to making policy decisions more robust by considering a range of plausible outcomes.

Conclusion

All this suggests, and with this I would like to conclude, that returning to the pre-pandemic policy framework, which relied heavily on central banks adjusting and communicating policy around a central inflation forecast, may come with risks. This framework may thus require a deeper re-think, even if inflation is getting closer to levels consistent with price stability.

As part of this re-think, central banks will need to carefully evaluate the role the central forecast should play in an environment characterised by higher macroeconomic volatility and persistent supply-side shocks, and how projections could be made more robust in order to place policymaking on a firmer footing, while allowing for clear and transparent communication about the inherent uncertainty.

Thank you.

Annexes

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[The future of inflation \(forecast\) targeting](#)

 **ENGLISH**

1.

To date, 35 of the 36 OECD members have adopted some form of inflation targeting. See Rose, A. (2020), “iPhones, iCrises and iTargets: inflation targeting is eradicating international financial crises in the iPhone era”, CEPR Policy Insight No 100.

2.

See, for example, Bernanke, B. and Mishkin, F. (1997), “Inflation Targeting: A New Framework for Monetary Policy?”, *Journal of Economic Perspectives*, Vol. 11, No 2, pp. 97-116.

3.

Svensson, L. (1997), “Inflation forecast targeting: Implementing and monitoring inflation targets”, *European Economic Review*, Vol. 41(6), pp. 1111-1146.

4.

Svensson, L. and Woodford, M. (2005), “Implementing optimal policy through inflation-forecast targeting”, in Bernanke, B.S. and Woodford, M. (eds.), *The Inflation-Targeting Debate*, University of Chicago Press, pp. 19-83; Rudebusch, G.D. and Williams, J. (2008), “Revealing the secrets of the temple: the value of publishing central bank interest rate projections”, in Campbel J.Y. (ed.), *Asset Prices and Monetary Policy*, pp. 247-289; and Eusepi, S. and Preston, B. (2010), “Central bank communication and expectations stabilization”, *American Economic Journal*, Vol. 2, pp. 235-271.

5.

Some central banks, including the Bank of England, also publish inflation projections based on the assumption of constant interest rates.

6.

The projections are published four times a year: March and September projections are produced by ECB staff, while June and December projections are produced jointly by Eurosystem and ECB staff.

7.

In the academic literature, this distinction is known as the “good policy” versus “good luck” hypothesis. See Bernanke, B. (2004), “The Great Moderation”, remarks at the meetings of the Eastern Economic

Association, Washington, DC, 20 February; Perez-Quiros, G. and McConnell, M. (2000), "Output Fluctuations in the United States: What Has Changed since the Early 1980's?", *American Economic Review*, Vol. 90, No 5, American Economic Association, pp. 1464-1476; Stock, J. and Watson, M. (2002), "Has the Business Cycle Changed and Why?", *NBER Macroeconomics Annual*, Vol. 17.

8.

The advance of inflation targeting is believed to be a prime reason why the global financial crisis of 2008 merely interrupted the Great Moderation. Afterwards, macroeconomic volatility quickly dropped back to its previous low levels. See, for example, Waller, C. and Crews, J. (2016), "Was the Great Moderation Simply on Vacation?", *The Economy Blog*, Federal Reserve Bank of St. Louis; and Clark, T. (2009), "Is the Great Moderation over? An Empirical Analysis", *Economic Review*, Federal Reserve Bank of Kansas City, Vol. 94, Issue Q IV, pp. 5-42.

9.

Lambrias, K. and Page, A. (2019), "The performance of the Eurosystem/ECB staff macroeconomic projections since the financial crisis", *Economic Bulletin*, Issue 8, ECB.

10.

Chahad et al. (2022), "What explains recent errors in the inflation projections of Eurosystem and ECB staff?", *Economic Bulletin*, Issue 3, ECB; Chahad et al. (2023), "An updated assessment of short-term inflation projections by Eurosystem and ECB staff", *Economic Bulletin*, Issue 1, ECB; and Chahad et al. (2024), "An update on the accuracy of recent Eurosystem/ECB staff projections for short-term inflation", *Economic Bulletin*, Issue 2, ECB.

11.

Lagarde, C. (2024), "[Building confidence in the path ahead](#)", speech at The ECB and its Watchers XXIV Conference, organised by the Institute for Monetary and Financial Stability, Goethe University, Frankfurt am Main, 20 March.

12.

In October of last year, for example, markets priced in a high-for-longer environment before pivoting sharply to expecting significant policy easing, taking comfort from the sharp decline in observed inflation. The subsequent slowdown in the pace of disinflation contributed to a partial reversal of these moves, even though central bank forecasts were increasingly signalling that inflation was expected to fall towards the target over the medium term and to remain near that level thereafter.

13.

See, for example, Ciccarelli et al. (2024), "ECB macroeconometric models for forecasting and policy analysis", *Occasional Paper Series*, ECB, No 344.

14.

The past few years have demonstrated that firms are unlikely to change their prices at regular intervals over time, as our models typically assume. Rather, firms tend to adjust their prices more frequently when faced with large cost-push shocks, while being slower to pass cost savings on to consumers, affecting monetary policy transmission.

15.

For earlier considerations on this, see Faust, J. and Leeper, E. (2015), "The Myth of Normal: The Bumpy Story of Inflation and Monetary Policy", paper presented at the annual Economic Policy Symposium "Inflation Dynamics and Monetary Policy" organised by Federal Reserve Bank of Kansas City, Jackson Hole.

16.

Lagarde, C. (2023), "[Policymaking in an age of shifts and breaks](#)", speech at the annual Economic Policy Symposium "Structural Shifts in the Global Economy" organised by Federal Reserve Bank of Kansas City, Jackson Hole, 25 August.

17.

Consolo et al. (2023), "[The euro area labour force: recent developments and drivers](#)", *Economic Bulletin*, Issue 6, ECB.

18.

Schnabel, I. (2020), "[COVID-19 and monetary policy: Reinforcing prevailing challenges](#)", speech at The Bank of Finland Monetary Policy webinar: New Challenges to Monetary Policy Strategies, Frankfurt am Main, 24 November.

19.

Schnabel, I. (2024), "[R\(ising\) star?](#)", speech at The ECB and its Watchers XXIV Conference session on: Geopolitics and Structural Change: Implications for Real Activity, Inflation and Monetary Policy, Frankfurt am Main, 20 March.

20.

Bernanke, B. (2024), "[Forecasting for monetary policy making and communication at the Bank of England: a review](#)", Bank of England, 12 April.

21.

For the Bank of England, Ben Bernanke recommends leaving decisions on this issue to future deliberations.

22.

As individual policy paths are based on a member's own forecast of the economy, the dot plot is a summary indicator of the dispersion of views about the economy.

23.

Hillenbrand, S. (2023), “The Fed and the Secular Decline in Interest Rates” Working Paper, Harvard Business School, March.

24.

European Central Bank (2024), [ECB staff macroeconomic projections for the euro area](#), March.

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