

Too little too late: ECB's normalisation path was model- rather than data-driven



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The ECB has fallen behind the curve. Despite accelerating inflation, including core inflation, it stuck to an extremely expansionary stance based on forecasts that inflation would return to slightly below its 2% target within two years. This was based on models which yield a forecast that inflation will return to below 2% whatever current inflation invite endless procrastination. In this sense, ECB policy is 'model-driven' – and the assertion of the ECB that its normalisation path will be 'data-driven' is meaningless unless the ECB abandons the old models with their hardwired low-inflation end point.

This raises two questions:

- Could this continuing increase in inflation have been anticipated?*
- Was the ECB justified, at least ex ante, in arguing that the spike in inflation would be temporary?*

¹ Centre for European Policy Studies, CEPS, Belgium. This Policy Brief is based on a contribution of the authors for the ECON Committee of the European Parliament for its preparation for the Dialogue with the ECB, Gros and Shamsfakhr (2022).

Hardwired models?

With the benefit of hindsight, it is easy to criticise the ECB for the very large under-prediction of inflation in the first quarter of 2022. As of end-2021, it was not possible to anticipate the continuing increase (even acceleration) of energy prices in early 2022.

However, one can criticise the ECB for basing its monetary policy decisions on models that seem hardwired to produce, under almost any circumstance, inflation forecasts slightly below the ECB's target of 2%. With its own forecasts always ending with inflation below target, the ECB acquired a dovish bias.

The models used by the ECB imply that even if energy prices drive headline inflation up to 8%, at the end of the forecast horizon inflation would return back 'automatically' anyway (i.e. without any policy change) to slightly below 2%. How is this possible? Inflation would return to the status quo ante, naturally only if the 'temporary' spike in inflation does not lead to higher prices for other goods and in particular if wages remain at the same level.

Both conditions are highly unlikely. An energy shock can be expected to have an impact on core inflation through increasing the input costs of many goods and services related to non-food and non-energy sectors. This has happened regularly in the past. Our estimates show a long-term 'pass-through' factor of 0.05 from domestic energy prices into core inflation in the euro area (see below). The pass-through is thus rather low, but it became relevant with the unprecedented increase in energy prices observed over the last year. A factor of only 1/20 implies that an increase of 40 percentage points of the energy (component of HICP) inflation translates into 2 percentage point increase in core inflation. The ECB should thus have expected a substantial increase in core inflation, which is known to be stickier than headline inflation.

The implicit assumption that wages would not move strains credulity. European workers are highly unlikely to accept a loss of purchasing power of 7-10% without demanding any compensation. Wage demands have recently crept up considerably across all of the euro area, including double-digit increases in minimum wages in several countries and an initial wage demand of an 8% increase by the influential metal workers union IG Metall in Germany. This could have been anticipated.

The slowly mounting militancy of trade unions is understandable given the fact that Europe's industry enjoys high profits because euro area producers were able to offset two thirds of the increase in energy and commodity prices in export markets by increasing the prices of their own products, thus protecting their profit margins. It is unlikely that workers will acquiesce to this distribution of income.

The models used by the ECB imply that any wage pressure would be neutralised because the models assume explicitly that the ECB has an inflation target of 1.9% and that this will be reached because rational agents assume that it will be reached.²

Calibrating the long-run inflation mean at 1.9% is in line with the New Area-Wide Model in which, prior to the adoption of the ECB's new inflation target of 2%, the central bank's long-run inflation objective was set to 1.9 % per annum.

This suggests that the ECB set itself a trap when it increased its inflation target to 2% in 2021 but failed to change the terminal rate from 1.9% to 2% in its models. If it had done so, its models would have signalled inflation right on (the new) target and it would have had a reason to start normalising earlier.

² See also below, the footnote to the ECB Economic Bulletin 8/2021.

We conclude that after almost 20 years of 'lowflation' the models used by the ECB have been hardwired to deliver inflation forecasts a bit below 2% two years out. Since the ECB is setting its policy on the basis of its own forecasts of inflation for this time horizon, this has created a strong bias to keep an expansionary policy even as inflation tops 7%.

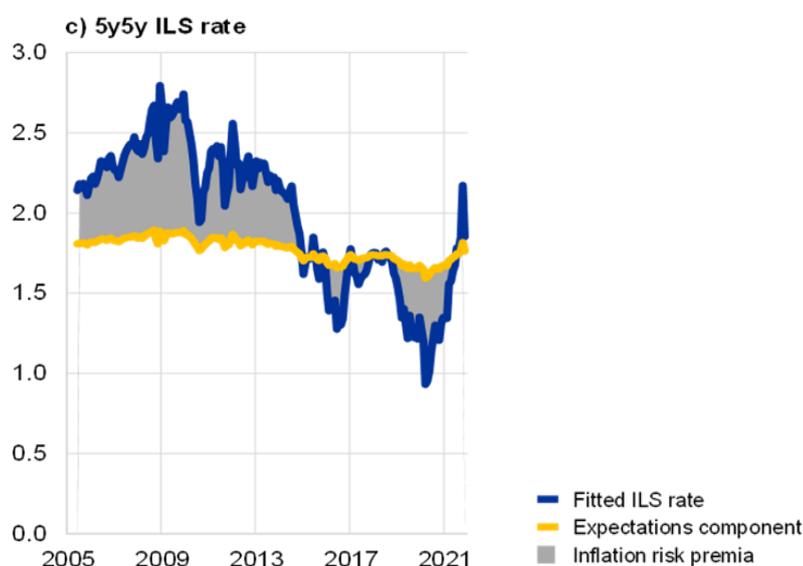
Another example how the approach of the ECB is guaranteed to yield inflation forecast slightly below the (new) target level concerns the interpretation of inflation-linked swaps (ILS). In 2014 the ECB used the 5/5 forward inflation swaps (i.e. the 5-year inflation rate expected 5 years in the future) to justify QE (when oil prices were falling strongly). This indicator has hovered above 2% since mid-2021. At first sight this level would have supported starting normalisation already during the second half of 2021.

Today the ECB argues that a long-term asset like the 5/5-year ILS also contains a risk premium and that the 5/5 inflation swap rate is determined not only by future expected inflation, represents the sum of expected inflation and a risk premium. Expected future inflation could be much lower than the 5/5 inflation swap rate if this risk premium is high. Unfortunately, the risk premium cannot be observed directly. It must be estimated indirectly, making assumptions about market structure, and in particular making an assumption concerning the end point for inflation. The ECB uses two slightly different models, but both imply that the short-term ILS rate converges on a fixed number over the long run, as will any stationary term structure model. As this endpoint is hard to pin down empirically, the ECB has calibrated it to 1.9% - i.e. its old target (see also the quote above).

This seemingly technical assumption is key, as it implies that the ECB has hardwired the expectations of future 5/5 inflation to be below 1.9 % under almost any circumstance.

Figure 1 from ECB (2021) below shows the results of this approach. The blue lines show the raw market values whereas the yellow lines show the expectations component derived from the market values by subtracting the risk premia as calculated by the ECB. The risk adjustment of the 5/5 year inflation swap results in a very stable expectations component around 1.9%³ - rendering this market based indicator useless.

Figure 1: Market-based inflation measures – inflation-linked swap rates



Source: ECB (2021).

³ Perhaps not coincidentally this corresponds exactly to the old formulation of 'below, but close to 2%'.

Given this assumption that the endpoint of the model describing the inflation swaps is slightly below 2%, the 'risk-premium-adjusted' inflation swaps presented by the ECB thus almost always show that expectations remain solidly anchored.⁴

Other market-based indications of inflation expectations, like the break-even rates calculated from inflation protected and non-inflation protected bonds of the same maturity are less affected by the end-point problem that arises from the risk adjustment to inflation swaps because the two bonds whose yield is compared should share the same risk premium. Alcidi et al. (2022) discuss different market-based and other indicators of inflation expectations. The most widely used alternative market-based measure is the one based on French bonds, 'OATs', which as of late May indicate an average expected inflation rate until 2030 of about 3% (Alcidi et al., 2022)⁵.

Missing alarm bells?

The model(s) used by the ECB assumed an 'automatic' return of inflation towards the end point of 1.9 because the ECB could only assume that its policy was credible. But this set-up was clearly out of touch with the real world if one combines the abundant evidence that energy prices tend to spill-over into core inflation and the extreme increase in energy prices.⁶

We thus first estimated the empirical relationship between the energy component of the HICP and core inflation. We found higher that each percentage point increase in the energy component of the HIC leads to a an increase in core inflation of 0.05. The size is small, but statistically very robust, which is in line with the literature. It is not surprising to find that higher energy prices increase core inflation because energy enters the production of many goods and services. This is thus not just a purely statistical relationship.

Moreover, we estimated the impact of the international price of oil (and gas) in euro on the sub-index 'energy' of the HICP. The energy component of the HICP can naturally be well explained by oil and gas prices.

⁴ This mechanism might be behind the observation that market participants have been expecting monetary policy to be more patient (expecting less of an interest rate increase for a given increase in inflation). See the speech by Isabel Schnabel, '[Asset purchases: from crisis to recovery](#)', Annual Conference of Latvijas Banka, Frankfurt am Main, 20 September 2021.

The reason why this phenomenon is relatively recent is that the risk premium adjustment to recover inflation expectations from inflation swaps is also relatively recent.

⁵ The latest data are available here: <https://www.aft.gouv.fr/en/oateuroi-key-figures>.

⁶ The ECB employs the 'technical assumption' that future oil and gas prices can be read from the quotes of the market for future deliveries. These future markets are thin, and their prices have not been found to be good predictors of prices a few years down the road. But lower future prices cannot constitute the full explanation for why inflation is supposed to come back down on its own because, at least for oil, over the last few months future prices have been only modestly below today's prices. For example, at the end of 2021 the spot price for Brent crude oil was already USD 80 per barrel and the forward price shown in the ECB's own publication was around USD 78 per barrel.

A correct reading of forward prices would thus have suggested only very slowly declining energy prices for quite some time. Why would this not translate into higher inflation? It can only be possible if none of the transitory (past) inflation translates into higher prices and wages in the future (i.e. if inflation dynamics are driven by expected, not past inflation). Even if energy prices remain at a very high level, they would no longer contribute to inflation approximately one year after they stabilise.

These two relationships allowed us to conduct two simulation exercises with two scenarios, concerning the international gas and oil prices: constant at the level of a) 2021m12, and b) 2022m3-m5⁷.

The first one reflects the information available to the ECB as of end 2021. Based on the estimated relationship between the energy component of the HICP and global gas and oil prices, one can simulate the development of the energy component of the HICP under this scenario. The scenario of constant oil prices also gives us a forecast for core inflation. We could thus build up a simulation of the full HICP using the weights assigned to energy in the HICP.

As depicted in the charts below, the results imply that at with the information available at the end of 2021, one could foresee an inflation rate of 2.8% and 2.2% for 2022 and 2023, respectively. There was thus a strong case for starting the normalisation of policy already at the end of 2021.

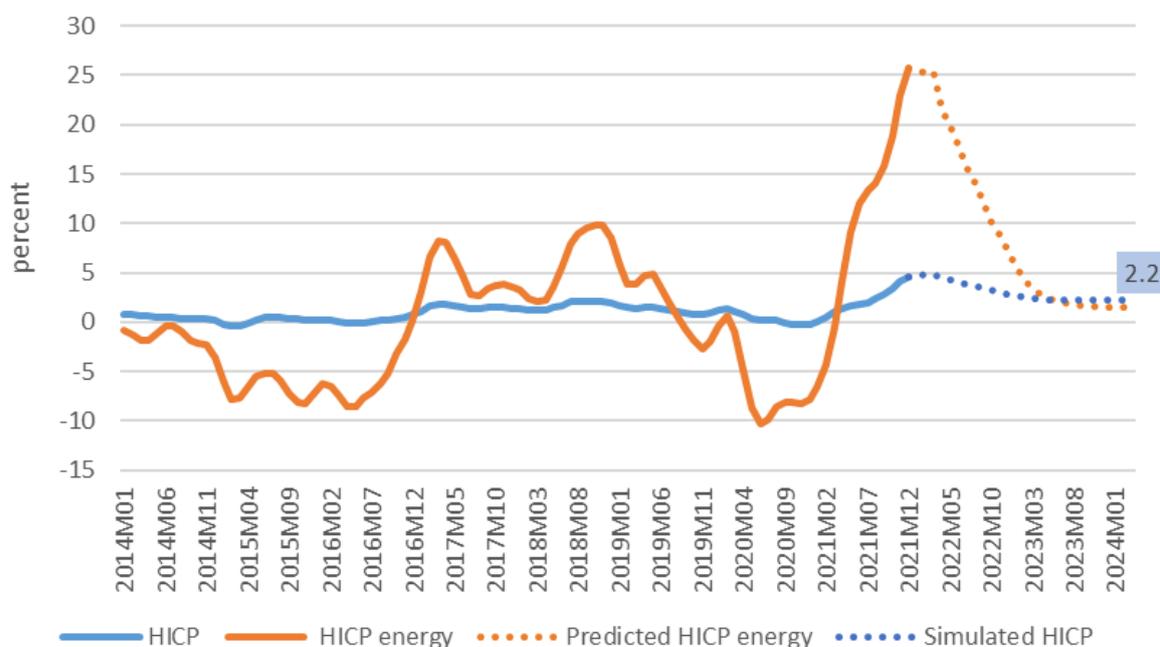
The case for tightening policy became of course much stronger in early 2022.

Using the data for global gas and oil prices, as of the third and fifth month of 2022 respectively, our approach predicts inflation persisting above 6% through the end of 2022, and moderating only to 3.5% at the end of 2023, even assuming that energy prices remain constant. This contrasts with the 2.1 % the ECB continues to see for the end of its forecast horizon.

The simple statistical model employed here can only be suggestive of a trend. But it shows that if the ECB would have had a reason to start normalisation earlier and to act more decisively now if it did not rely on its models which are hard wired to produce low inflation at the end of the forecasting period.

Figure 2: Development of the HICP and HICP energy inflation

Simulation based on the data until the end of 2021

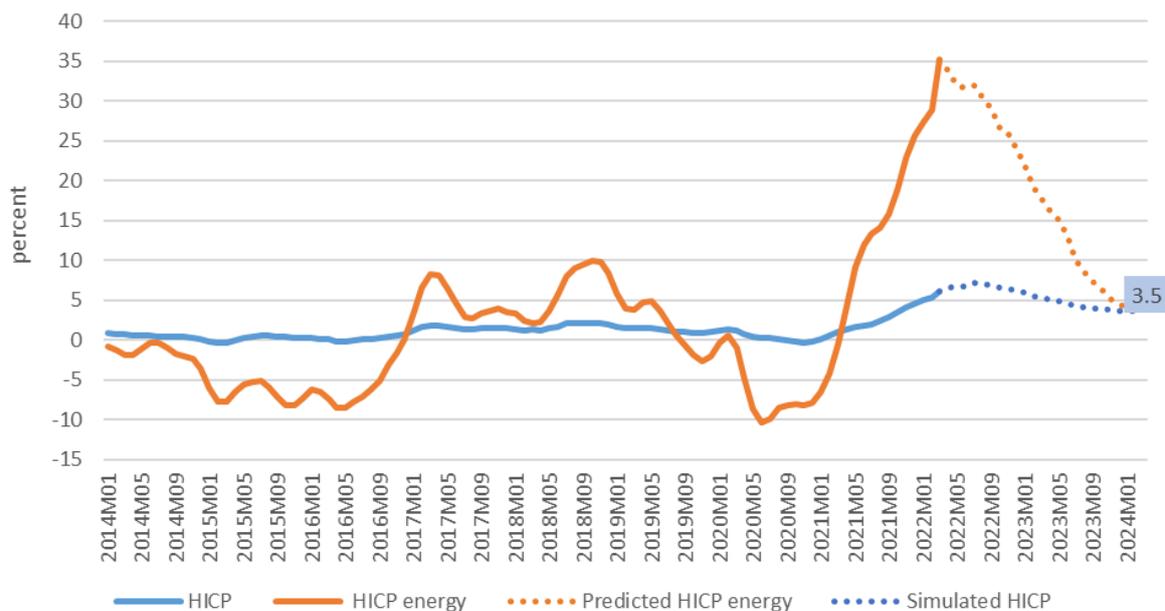


Source: authors' calculations based on IMF and Eurostat data.

Note: the numbers represent the 3-months rolling average of annual rate of change. In this simulation it is assumed that core inflation stays constant at its level of 2021m12.

⁷ Global price of natural gas in EUR is available until 2022m03.

Simulation based on the data until 2022m03-m05



Source: authors' calculations based on IMF and Eurostat data.

Note: the numbers represent the 3-months rolling average of annual rate of change. In this simulation it is assumed that core inflation stays constant at its level of 2022m03-m05.

Conclusion

A key corollary of the ECB model-based policy setting with a predetermined endpoint is that new information about inflation or the economy has little impact on the policy setting, since this new information would be unlikely to change the inflation rate at the end of the forecast horizon. These models were possibly effective in the past, in a prolonged period of too-low inflation, but in the current situation and in the presence of large shocks the current policy setting would thus appear to remain adequate unless important input into the model is changed. ■

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Daniel Gros is the Director of the Centre for European Policy Studies (CEPS) in Brussels. Originally from Germany, he attended university in Italy, where he obtained a Laurea in Economia e Commercio. He also studied in the United States, where he earned his PhD (University of Chicago, 1984). His first job was at the International Monetary Fund, in the European and Research Departments (1983-1986), then he became an Economic Advisor to the Directorate General II of the European Commission (1988-1990). He has taught at various universities across Europe, including the Catholic University of Leuven, the University of Frankfurt, the University of Basel, Bocconi University, the Kiel Institute of World Studies and the Central European University in Prague. He started at CEPS first in 1986, and has worked there continuously since 1990, becoming director in 1999.

His current research concentrates on the interplay between monetary policy and financial market structure, as well as on the international role of the euro. He has advised the European institutions (Commission and Parliament) and a number of governments on these issues, at the highest political level. He was a member of the Conseil Economique de la Nation (2003-2005) and of the Conseil d'Analyse Economique, 2001 to 2003 (advisory bodies to the French Prime Minister and Finance Minister). He is also a member of the Euro50 Groups of eminent economists. He is currently an Adviser to the European Parliament (also from 1998 to 2005) and a member of the Advisory Scientific Committee of the European Systemic Risk Board. He is Editor of *Economie Internationale* and of *International Finance*. He has published widely in international academic and policy-oriented journals, and has authored numerous monographs and four books.

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She was part of the research team at the Chair of Public Finance and Economic Policy at RUB, conducting an empirical study on multinational profit shifting from less developed countries. At the Chair of Microeconomics at RUB, she provided research assistance to the team in projects focused on the consequences of violent conflict on labour supply, migration, and psychological well-being.

During her Ph.D. Farzaneh focused on quantitative macroeconomic modelling, developing and estimating DSGE models. Her research projects involved business cycle analysis, economic and labor market outcomes of health shocks. She has extensive experience in data analysis, economic modelling, and econometrics. She has worked with both microeconomic and macroeconomic techniques. She has also experience with survey methods.

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