



Roberto Tamborini\*

# Beware of Pitfalls in the European Central Bank's Review of Monetary Policy Strategy

<https://doi.org/10.1515/ev-2021-0024>

Received October 2, 2021; accepted February 14, 2022

**Abstract:** The long-awaited Review of Monetary Policy Strategy of the European Central Bank has been released. According to the Governing Council, “price stability is best maintained by aiming for 2% inflation over the medium term”, with “symmetric commitment” to this target. “Symmetry means that the Governing Council considers negative and positive deviations from this target as equally undesirable”. This orientation seems contrarian to the view, expressed by some dissenting scholars, that 2% should be set as a ceiling, and that persistent inflation below 2% observed over the last decade was to be adopted as the “new normal”. The aim of this paper is not to examine and assess the new policy strategy of the ECB *per se*, but to warn about pitfalls in detecting undesirable (expectation-driven) deviations of inflation from target versus permanent changes in the output-inflation relationship.

**Keywords:** European Central Bank, monetary policy strategy review, Phillips Curve

**JEL Classification:** E3, E5

## 1 Introduction

After taking office on November 1, 2019, the President of the European Central Bank (ECB) Christine Lagarde announced the long-awaited official Review of the policy strategy (the last one dates back to 2003). After suspension due to the pandemic emergency, in July 2021 the ECB released an early statement outlining the new policy strategy (ECB 2021a) together with a background paper (ECB 2021b).

The kernel of the revised strategy in the Governing Council's early statement of last July (ECB 2021a) can be summarised in two points:

---

I wish to thank two anonymous reviewers of this Journal for their valuable comments. I remain fully responsible for this paper.

---

**\*Corresponding author: Roberto Tamborini**, Department of Economics and Management, University of Trento, Trento, Italy, E-mail: roberto.tamborini@unitn.it

- “the Harmonised Index of Consumer Prices (HICP) remains the appropriate price measure for assessing the achievement of the price stability objective” (p. 1), with the intention to recalibrate the index with the inclusion of the costs of the owner-occupied housing, and to downgrade the weight of the most volatile components such as energy prices
- “price stability is best maintained by aiming for 2% inflation over the medium term” (p. 2), with “symmetric commitment” to this target. “Symmetry means that the Governing Council considers negative and positive deviations from this target as equally undesirable” (p. 2).

The latter point clarifies that the inflation target will be 2% sharp, but such target will be pursued in a technical framework resembling a symmetric target zone (Demertzis 2021).<sup>1</sup>

It is worth recalling the main lines in the debate that preceded the ECB adoption of the new policy strategy. The Monetary Dialogue of the European Parliament in December 2019 gathered some authoritative advisory papers spanning the scope, means and ends of the Review (European Parliament 2019), ranging from technical aspects up to an institutional overhaul of the ECB role and mandate. The revision of the strategy was deemed “urgent”. All the assessments included the “two pillar strategy”, the definition of “price stability”, and the means to pursue it, among the priorities. Hence, as correctly argued by Bini Smaghi (2020), the Review was expected to focus on the fact that “over the past eight years the ECB has systematically failed to achieve its primary objective of price stability, defined as a rate of inflation ‘below but close to 2%” (p. 2).

As far as this specific issue is concerned, independent experts themselves seemed divided into two main camps. On one side, those arguing that inflation “below but close to 2%”, was correct (if not too low) as a medium term target, and that the Review should rethink the policy strategy for a new world of secular stagnation, low inflation and low interest rates, and possibly recurrent financial bubbles. On the other side, those arguing that the Review should make it clear that the 2% inflation was to be meant as a ceiling, not as a medium-term average, so that the past decade tendency of the Euro Zone (EZ) to dwell around 1% was to be seen as a (welcome) “new normal”. Consequently, the expansionary mode of the

---

<sup>1</sup> In a symmetric target zone, the target variable, which is typically subject to random shocks, is kept within a band determined by a “floor” and a “ceiling” with a central value. The policymaker is committed to intervening when the target variable deviates *both* below *and* above the central value of the band.

ECB should be (should have been much earlier) reversed to a “normal” mode with interest rates firmly in positive territory.<sup>2</sup>

Clearly, the two camps pointed out different criticalities of the past ECB strategy: to the former, the strategy was ineffective with respect to achieving the inflation target of 2%; to the latter, aiming at the 2% target was wrong, leading to unduly stimulative strategy. The announcement of the new strategy by the ECB seems contrarian to the view that the persistent inflation rate below 2% observed up to that moment was to be adopted as the “new normal” (Reichlin et al. 2021).

Arguments about whether or not low inflation was the “new normal”, and whether or not central banks were able to bring inflation back on target, were developed across two strands of literature centred on estimated Phillips Curves (PC). One focused on the so-called “deanchoring of inflation expectations” from the central bank’s target as the main driver of the deflationary drift (e.g. Draghi 2016). Another was concerned with the “flattening of the PC”, trying to understand to what extent the fall in the inflation trend, and its missing responsiveness to monetary stimuli, or even to tense labour markets, was transitory or structural (e.g. Gros 2019).

The second half of 2021 witnessed the acceleration of inflation across advanced economies, quickly approaching or overshooting reference values in the range of 2%, as a consequence of faster than expected recovery from the COVID-19 pandemic, bottlenecks in supply chains, first and foremost in energy (e.g. Bonatti et al. 2021). This sudden scenario reversal will soon challenge the new ECB policy strategy in the opposite and symmetric sense with respect to how the past decade of low inflation challenged the previous policy strategy: Is the run-up due to temporary or permanent factors? Is the Phillips Curve becoming steeper? Is inflation higher than 2% the “new normal”?

The aim of this paper is not to examine and assess the new policy strategy of the ECB *per se*, but, drawing on a recent paper by Passamani, Sardone, and Tamborini (2022) to warn about pitfalls in detecting undesirable (expectation-driven) deviations of inflation from target versus permanent changes in the inflation-output relationship.<sup>3</sup> To this end, I will make a straightforward use of the workhorse of macro-analysis and forecast of inflation, namely the (New Keynesian) expectation-augmented PC, and will show that once the term of the expected inflation is derived from the PC itself, inflation comes to depend on

---

<sup>2</sup> This position is epitomised by the “Memorandum on ECB Monetary Policy” (Bloomberg News, October 4, 2019) signed by six former members, or presidents, of boards of central banks: Herve Hannoun, Otmar Issing, Klaus Liebscher, Helmut Schlesinger, Juergen Stark, Nout Wellink.

<sup>3</sup> Here I address this point with reference to the ECB and the EZ, but it is obviously also relevant to other central banks in general.

current output gaps *as well as their expectations*, and how ignoring this component may lead to erroneous assessments of changes in the slope of the PC.

## 2 Inflation, Expected Inflation and the Slope of the Phillips Curve

Let us start from the empirical PC, which, according to the current standard methodology (e.g. Hooper, Mishkin, and Sufi 2019), is obtained by regressing the observed inflation rate ( $\pi_t$ ) on its expected value ( $\pi_t^e$ ) and a measure of the business cycle – e.g. the deviation of GDP from trend or from its estimated potential level ( $\hat{y}_t$ ).<sup>4</sup>

$$\pi_t = a_0 + a_1\pi_t^e + a_2\hat{y}_t + u_t \quad (1)$$

where  $a_0$  may capture an autonomous drift in inflation,  $0 < a_1 < 1$  measures the impact of inflation expectations, and  $u_t$  are exogenous random shocks. The parameter  $a_2$  gauges the structural slope of the PC. The central bank's inflation target, say  $\pi^*$ , has to be consistent with the equilibrium solution of the inflation process with  $\hat{y}_t = 0$ , anchored expectations  $\pi_t^e = \pi^*$  and zero shocks  $u_t = 0$ . That is to say<sup>5</sup>

$$\pi^* = \frac{a_0}{1 - a_1} \quad (2)$$

Now we shall see how this specification of the PC intersects with the issue of deanchoring of expectations.

In the first place, how is expected inflation determined? Common practice is recourse to surveys of forecasts, whether professional or from categories of subjects. Since consistent estimation of equation (1) requires orthogonality across explanatory variables, this practice amounts to the implausible assumption that inflation expectations are independent from the state of the economy measured by  $\hat{y}_t$ . Yet, if the PC is generally regarded as a good predictor of inflation, it is also reasonable to think that it is consistently used to elaborate inflation forecasts.<sup>6</sup>

---

<sup>4</sup> Depending on how expected inflation is specified, the estimation equation may also include lagged values of inflation. See e.g. Blanchard, Cerutti, and Summers (2015).

<sup>5</sup> This results offers a possible explanation why the inflation target is normally greater than zero.

<sup>6</sup> Several studies show that the inflation forecasts collected in available surveys are consistently explained by means of a standard formulation of the PC (Draeger et al. 2016; Fendel, Lis, and Rülke 2011).

Let us assume that inflation expectations are formed rationally in the strict sense, i.e. by taking the expected value of the inflation process (1)  $E(\pi_t)$ . This results to be determined by the expected value of the output gaps along the business cycle, i.e.  $E(\hat{y}_t)$ , and the expected value of shocks, which is zero under the standard random-walk assumption. Now let us define the “inflation gap”, i.e. the difference between actual inflation and its target, as  $\hat{\pi}_t \equiv \pi_t - \pi^*$ , where  $\pi^*$  satisfies (2). Substituting  $E(\pi_t)$  back into (1), we obtain:

$$\hat{\pi}_t = a_2 \hat{y}_t + \frac{a_1 a_2}{1 - a_1} E(\hat{y}_t) + u_t \quad (3)$$

and we find that the determinant of the inflation gap, beside the current output gap and unanticipated shocks, is the *expected value of the output gap itself*. For any given observed output gap, the inflation gap may be larger or smaller than  $a_2 \hat{y}_t$  depending on whether *output* expectations are optimistic  $E(\hat{y}_t) > 0$  or pessimistic  $E(\hat{y}_t) < 0$ .

It is therefore natural and convenient to reformulate the inflation-gap equation (3) in a way that highlights the relationship between the output gap and its expectations. This can be done in terms of *forecast errors*,  $v_t = E(\hat{y}_t) - \hat{y}_t$ , which yield the following expression:

$$\hat{\pi}_t = \frac{a_2}{1 - a_1} \hat{y}_t + \frac{a_1 a_2}{1 - a_1} v_t + u_t \quad (4)$$

Hence the inflation gap can also be traced back to output gaps *and their forecast errors*, in addition to random shocks.<sup>7</sup> One vantage point of specification (4) is that forecast errors may be taken as an indicator of the anchoring of inflation expectations to the central bank’s target, or in other words, of the state of confidence in the central bank’s ability to achieve the target.

In fact, let us first consider a “normal regime”, where the central bank succeeds in keeping inflation on target on average over the business cycle.<sup>8</sup> Hence agents have statistical evidence to expect that output gaps, too, are on average nil, i.e.  $E(\hat{y}_t) = 0$ , up to unanticipated shocks. Consequently, they are going to commit random forecast errors  $v_t = -\hat{y}_t$ , so that the inflation gap is driven by output gaps according to the structural slope  $a_2$  of the PC.

<sup>7</sup> If we stick to the rational-expectation method, output-gap forecast errors may well be possible (RE do admit forecast errors in the face of stochastic variables) provided that  $(u_t, v_t)$  are orthogonal. This would imply that output gaps, too, display random shocks.

<sup>8</sup> Recall that the core of the New Keynesian theory of monetary policy consists of the demonstration that this result is provided by a feedback rule of the policy interest rate epitomized by the Taylor rule (Woodford 2003).

What if the central bank fails to keep the economy on track to such an extent that agents lose confidence in the inflation target? The consequence may be the deanchoring of expectations. In the literature, the deanchoring of expectations is defined as excess responsiveness of forecasts to the current observed state of the relevant variable (e.g. Gürkaynak, Levin, and Swanson Eric 2010).<sup>9</sup>

Suppose then that agents observe a sequence of negative output and inflation gaps, and hence revise their (average) output-gap forecasts from zero to negative. This may well improve their forecasts – errors  $v_t$  become smaller – but equation (4) says that the closer the output-gap forecasts track the actual output gaps ( $v_t \rightarrow 0$ ), the more the effect of the latter on the inflation gaps is *magnified* with respect to the structural parameter  $a_2$ . In other words, if the central bank fails to counteract the inception of a contractionary (expansionary) process, this becomes a self-sustained, or self-fulfilling, process, which may be (mis)perceived as a *steepening* of the structural PC. Note that in order to avoid this, the anchorage of *output* expectations is as important as those of inflation (indeed, they are the two sides of the same coin).

Passamani, Sardone, and Tamborini (2022) have estimated the relationship (4) for the EZ from 1999 to 2019 with various techniques finding an output-gap coefficient around 0.25, and a forecast-error coefficient of about the same magnitude, both statistically significant. A rolling window estimation also reveals that the output-gap coefficient has not remained constant, but that it significantly *increased* after the crisis up to 0.36 *vis-à-vis* a forecast-error coefficient of 0.22. Output forecast errors, therefore, play a significant role, that is usually disregarded, in the relationship between output and inflation gaps.

Looking at the EZ data from this angle, the symptoms of this mechanism are quite visible in the aftermath of the Great Recession. Excluding the large swings between 2009 and 2010 due to the unprecedented global shock, the average absolute forecast error of output gaps was reduced from 0.86% prior to the crisis to 0.76% afterwards.<sup>10</sup> The correlation coefficient of the one-year forecast with the observed gap in the same quarter rose from 0.73 in 1999–2008 to 0.94 in 2009–19. As for inflation, the correlation increased from 0.48 to 0.90. As explained above, the deanchoring of (output) expectations should result in a steeper PC. This is in fact found in a number of studies of the EZ, based on the standard specification (1),

---

<sup>9</sup> If statistical evidence tells agents that output gaps are drifting away from zero, it becomes rational for them to track the drift. This is the conjunction point with the class of models with “endogenous” expectation formation, learning, etc., where the confidence in the central bank’s inflation target evolves according to the observed state of the economy (e.g. Evans and McGough 2018; García-Schmidt and Woodford 2019; Gobbi, Mazzocchi, and Tamborini 2019).

<sup>10</sup> Based on the ECB’s survey of professional forecasters.

in contrast to widespread evidence of flattening of the PC elsewhere (Bank of Ireland 2014; Oinonen and Paloviita 2014; Riggi and Venditti 2014).<sup>11</sup>

The same mechanism may work in the opposite direction, namely the seeming *flattening* of the PC and the so-called “missing inflation puzzle” after the massive post-crisis policy stimuli. As long as the below-target inflation remains entrenched in the (output) expectations formation, also the reflationary process is affected. Again by means of equation (4), suppose that policy stimuli start closing the negative output gap. The impact on the inflation gap depends on how expectations (confidence in recovery) react. A form of hysteresis may take place. To the extent that the actual recovery takes time to be translated into expectations (and the time may be longer, the longer low inflation has persisted), output gaps will improve faster than expectations generating negative forecast errors  $v_t$ . Consequently, the impact of the output-gap recovery on the inflation gap will be slackened. The cause of the unresponsiveness of inflation to policy stimuli is not that the structural PC is flat, but the hysteresis effect of sticky expectations anchored to the below-target inflation.

Of course, the swing from seemingly flat to seemingly steep structural PC may well take place during a reflationary process. This *may* be the case with the inflationary spikes we are currently observing across the world. If, as some central bankers and scholars argue (hope), the cause is contingent cost-push and demand-pull factors, these may nonetheless be magnified by recovery forecasts running faster than the actual improvement of output gaps, i.e. positive forecast errors  $v_t$ . The problem then is not the structural slope of the PC but the control over the formation of inflation expectations.

### 3 Concluding Remark

The announcement of the new strategy by the ECB, with the commitment to correcting deviations of inflation above as well as below 2% symmetrically, sounds contrarian to the view that 2% should be set as a ceiling, and that persistent inflation below 2% observed over the last decade was to be adopted as the “new normal”.

At first sight, the advice of realigning the inflation target to the “new normal” of low inflation “dictated by the economy” may appear sound. Yet we have seen that a seemingly flatter PC may be the result of deanchoring of output-inflation

---

<sup>11</sup> The symptoms of deanchoring of expectations in the EZ are detected by several in-depth investigations (Buono and Formai 2016; Fracasso and Probo 2017; Miccoli and Neri 2015; Natoli and Sigalotti 2018; Nautz, Pagenhardt, and Strohsal 2017).

expectations from the central bank's target. Hence, that advice would turn the current foundations of monetary policy as "expectation management" (Woodford 2003) upside down, since it would be the central bank that surrenders to the market expectations instead of being their driver. Beyond that, accepting a low-inflation and stagnating environment as "new normal" would be a self-fulfilling strategy, indeed a self-defeating one, since the more the markets come to believe in the "new normal", the more difficult will be to eradicate it.

To appreciate this paradox, consider that the same result would obtain symmetrically if the central bank failed to fight excess inflation during a boom. Would a "new normal" with inflation above the target be accepted?

## References

- Bank of Ireland. 2014. "Examining the Sensitivity of Inflation to the Output Gap." *Quarterly Bulletin* 50–1.
- Bini Smaghi, L. 2020. "Is the ECB at Risk of Becoming an Underachiever?" LUISS 'Guido Carli', School of European Political Economy. Policy Brief, n. 1.
- Blanchard, O. J., E. Cerutti, and L. Summers. 2015. "Inflation and Activity. Two Explorations and their Monetary Policy Implications." IMF Working Paper, n. 15/230.
- Bonatti, L., and R. Tamborini. 2021. *Is High Inflation the New Challenge for Central Banks?* Luxembourg: Committee on Economic and Monetary Affairs, Monetary Dialogue Papers, European Parliament.
- Buono, I., and S. Formai. 2016. *The Evolution of the Anchoring of Inflation Expectations*. Bank of Italy. Occasional Papers, n. 321.
- Demertzis, M. 2021. "What to Expect from the ECB's Monetary Policy Strategy Review?" *Bruegel*, <https://www.bruegel.org/2021/06/what-to-expect-from-the-ecbs-monetary-policy-strategy-review/>.
- Dräger, L., M. J. Lamla, and D. Pfajfar. 2016. "Are Survey Expectations Theory-Consistent? The Role of Central Bank Communication and News." *European Economic Review* 85: 84–111.
- Draghi, M. 2016. "How Central Banks Meet the Challenge of Low Inflation." In *Marjolin Lecture, SUIERF Conference*. Frankfurt: Deutsche Bundesbank.
- European Central Bank. 2021a. *The ECB's Monetary Policy Strategy Statement*. Also available at [https://www.ecb.europa.eu/home/search/review/pdf/ecb.strategyreview\\_monpol\\_strategy\\_statement.en.pdf](https://www.ecb.europa.eu/home/search/review/pdf/ecb.strategyreview_monpol_strategy_statement.en.pdf).
- European Central Bank. 2021b. *An Overview of the ECB's Monetary Policy Strategy*. Also available at [https://www.ecb.europa.eu/home/search/review/pdf/ecb.strategyreview\\_monpol\\_strategy\\_overview.en.pdf](https://www.ecb.europa.eu/home/search/review/pdf/ecb.strategyreview_monpol_strategy_overview.en.pdf).
- European Parliament. 2019. *Task Ahead: Review of the ECB's Monetary Policy Strategy*. Luxembourg: Monetary Dialogue. Also available at [https://www.europarl.europa.eu/cmsdata/207644/4.%20IPOP\\_STU\(2019\)642363\\_EN-original.pdf](https://www.europarl.europa.eu/cmsdata/207644/4.%20IPOP_STU(2019)642363_EN-original.pdf).
- Evans, G. W., and B. McGough. 2018. "Interest Rate Pegs in New Keynesian Models." *Journal of Money, Credit, and Banking* 50: 939–65.



- Fendel, R., E. Lis, and J. C. Rülke. 2011. "Do Professional Forecasters Believe in the Phillips Curve? Evidence from the G7 Countries." *Journal of Forecasting* 30: 68–287.
- Fracasso, A., and R. Probo. 2017. "When Did Inflation Expectations in the Euro Area De-anchor?" *Applied Economics Letters* 24: 1481–5.
- García-Schmidt, M., and M. Woodford. 2019. "Are Low Interest Rates Deflationary? A Paradox of Perfect-Foresight Analysis." *American Economic Review* 109 (1): 86–120.
- Gobbi, L., R. Mazzocchi, and R. Tamborini. 2019. "Monetary Policy, De-anchoring of Inflation Expectations, and the "New Normal"." *Journal of Macroeconomics* 61: 1–15. Special Issue "Macroeconomics, Rationality and Institutions".
- Gros, D. 2019. *Global Trends in Inflation: Are Central Banks Barking up the Wrong Tree?* Luxembourg: European Parliament, Monetary Dialogue. Also available at [https://www.europarl.europa.eu/cmsdata/207644/4.%20IPOL\\_STU\(2019\)642363\\_EN-original.pdf](https://www.europarl.europa.eu/cmsdata/207644/4.%20IPOL_STU(2019)642363_EN-original.pdf).
- Gürkaynak, R. S., A. Levin, and S. Eric. 2010. "Does Inflation Targeting Anchor Long-Run Inflation Expectations? Evidence from the U.S., UK, and Sweden." *Journal of the European Economic Association* 8: 1208–42.
- Hooper, P., F. S. Mishkin, and A. Sufi. 2019. "Prospects for Inflation in a High Pressure Economy: Is the Phillips Curve Dead or is it Jus Hibernating?" NBER Working Paper Series, n. 25792.
- Miccoli, M., and S. Neri. 2015. "Inflation Surprises and Inflation Expectations in the Euro Area", Occasional Papers, Bank of Italy, n. 265.
- Natoli, F., and L. Sigalotti. 2018. "Tail Comovement in Inflation Expectations as an Indicator of Anchoring." *International Journal of Central Banking* 8: 35–71.
- Nautz, D., L. Pagenhardt, and T. Strohsal. 2017. "The (De-)Anchoring of Inflation Expectations: New Evidence from the Euro Area." *The North American Journal of Economics and Finance* 40: 103–15.
- Oinonen, S., and M. Paloviita. 2014. "Updating the Euro Area Phillips Curve: The Slope Has Increased." *Discussion Papers, Bank of Finland Research* (31).
- Passamani, G., A. Sardone, and R. Tamborini. 2022. "Inflation Puzzles, the Phillips Curve and Output Expectations: New Perspectives from the Euro Zone." *Empirica* 49: 123–53.
- Reichlin, L., K. Adam, W. J. McKibbin, M. McMahon, R. Reis, G. Ricco, and B. Weder di Mauro. 2021. *The ECB Strategy: The 2021 Review and its Future*. London: CEPR Press.
- Riggi, M., and F. Venditti. 2014. *Surprise! Euro Area Inflation Has Fallen*. Bank of Italy. Occasional Papers, n. 237.
- Woodford, M. 2003. *Interest and Prices*. Princeton: Princeton University Press.