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After taking office on November 1, 2019, the most important announcement from the new President of the European Central Bank (ECB) Christine Lagarde has been an official Review of the policy strategy. The last one dates back to 2003, hence Lagarde has a reason to say that it “is nothing unusual or extraordinary”. However, there are also reasons to foresee that the Review will be neither usual nor ordinary.

Lorenzo Bini Smaghi (2020) and Lorenzo Codogno and Mara Monti (2020) in two recent SEP Policy Briefs offer an overall view of the hot issues at stake. The last Monetary Dialogue of the European Parliament in December 2019 gathered some authoritative advisory papers spanning the scope, means and ends of the Review (EU Parliament 2019). There seems to be general agreement that the Review is necessary or even “urgent”. The scope varies from technical aspects up to an institutional overhaul of the ECB role and mandate, but all the Review proposals include the “two pillar strategy”, the definition of “price stability”, and the means to pursue it, among the priorities. Hence, as argued by Bini Smaghi, the Review is likely 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). In straight words, the Review may be twisted into a prosecution of Mario Draghi’s presidency.

In their Monetary Dialogue paper, Gros and Capolongo (2019) recommend that the Review be “entrusted to independent experts. Otherwise, it is likely to result in the finding that only marginal changes to the existing strategy are needed and that larger doses of the present policy will be sufficient to achieve the inflation target”. However, as also testified by Bini Smaghi, independent experts themselves seem divided on the point into two main camps. On one side, those who think that the 2% inflation target, as a medium-term average, is correct (if not too low) and the Review should rethink the monetary 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 who think that the Review should make it clear that the 2% inflation has to be meant as a ceiling, not as a medium-term average, so that the present tendency of the Euro Zone to dwell around 1% has to be seen as a (welcome) “new normal”, implying that the expansionary mode of the ECB should be (should have been much earlier) reversed to a “normal” mode with interest rates firmly in positive territory. This position is epitomized by the “Memorandum on ECB Monetary Policy” ([Bloomberg News](#), October 4, 2019) signed by six former members, or presidents, of boards of central banks.¹ Clearly, the two camps point 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.

Most of the controversy is going to be played on empirical grounds across three strands of literature. One concerns “conducting monetary policy at very low short-term interest rates” (Bernanke and Reinhart 2014), while output and inflation tend to drift away from their targets. Another focuses on the so-called “deanchoring of inflation expectations” from the central bank’s target as the main driver of the deflationary drift (Draghi 2016). Yet another investigates the “flattening of the Phillips Curve” 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, is transitory or structural (Gros 2019). Findings on each of these issues may push the Review in one direction or another. As an example, let us consider one of the key statements in the “Memorandum on ECB Monetary Policy”:

The ECB essentially justified in 2014 its ultra-loose policy by the threat of deflation. However, there has never been any danger of a deflationary spiral and the ECB itself has seen less and less of a threat for some time. This weakens its logic in aiming for a higher inflation rate. The ECB’s monetary policy is therefore based on a wrong diagnosis (p. 1)

Clearly, this view, and the associated claim that the ECB should regard the current low inflation as the “new normal”, presuppose evidence that the zero policy rate is unwarranted (bringing it back to positive territory will not depress economic activity and the price level), that there is no deanchoring and deflationary drift, and that the flattening of the Phillips Curve is structural. By contrast, the above-mentioned Policy Brief by Bini Smaghi (2020) exemplifies that evidence can be brought in support of the opposite view. Of some value may therefore be an attempt at clarifying some conceptual issues through which the evidence should be interpreted.

¹ Herve Hannoun, Otmar Issing, Klaus Liebscher, Helmut Schlesinger, Juergen Stark, Nout Wellink.

Let us start from the estimated Phillips Curve (PC), which, according to the standard methodology, is obtained by regressing the observed inflation rate (π_t) on its expected value (π_t^e) and a measure of the business cycle (\hat{y}_t) – e. g. the deviation of GDP from trend or from its estimated potential level.²

$$(1) \quad \pi_t = \alpha_0 + \alpha_1 \pi_t^e + \alpha_2 \hat{y}_t + u_t$$

where α_0 may capture an autonomous drift in inflation, $0 < \alpha_1 < 1$ is the expectational drift, and u_t are exogenous random shocks. The parameter α_2 is meant to estimate the structural slope of the (PC). Note that this formulation of the inflation process is consistently within the framework of inflation targeting as commonly understood by central banks. The target, say π^* , 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 say³

$$(2) \quad \pi^* = \frac{\alpha_0}{1 - \alpha_1}$$

A weak point of this standard approach is that inflation expectations are considered as an **independent variable**. Is this correct? Now we shall see that this does not, and the estimation of the PC, and in particular of the structural parameter α_2 , intersect with the issue of deanchoring of expectations. Let us define the "inflation gap", i.e. the difference between the actual inflation and its target, as $\hat{\pi}_t \equiv \pi_t - \pi^*$, and let us assume that inflation expectations are formed rationally by taking the expected value of the inflation process (1) $E(\pi_t)$. Then it can be shown that, first, the expected value of the inflation process is tracked by the expected value of the output gaps across the business cycle $E(\hat{y}_t)$, and second, the inflation gap is determined as follows:

$$(3) \quad \hat{\pi}_t = \frac{\alpha_2}{1 - \alpha_1} \hat{y}_t - \frac{\alpha_1 \alpha_2}{1 - \alpha_1} v_t + u_t$$

where $v_t = \hat{y}_t - E(\hat{y}_t)$ is the forecast error of the output gaps. Therefore, the inflation gap is driven by the output gaps **and their forecast errors**, in addition to random shocks. Forecast errors play a crucial role that is usually disregarded as they interfere with the relationship between output and inflation gap.

² The estimation equation may also include lagged values of inflation. See e.g. Blanchard et al. (2015)

³ This result offers a possible explanation why the inflation target is normally greater than zero.

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.⁴ Hence agents have reason to expect with full confidence that output gaps are on average nil, i.e. $E(\hat{y}_t) = 0$. Consequently, they are going to commit random forecast errors $\mathbf{v}_t = \hat{y}_t$, which will allow the econometrician to estimate correctly the structural parameter \mathbf{a}_2 in the inflation gap process (3).

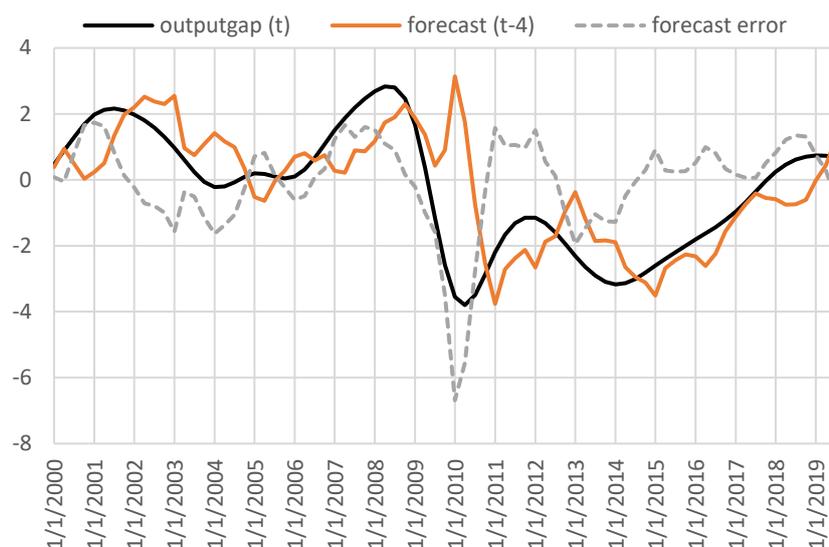
What if the central bank fails to keep the economy on track to such an extent that agents lose confidence in the inflation target? The consequence may be the deanchoring of expectations, and the transition into a "**deflationary regime**". In the literature, the deanchoring of expectations is defined as excess responsiveness of forecasts to the current observed state of the relevant variable (e.g. Gürkaynak et al. 2010). Suppose then that the agents observe a sequence of negative output and inflation gaps, and hence revise their output-gap forecasts from zero to negative. This may well improve their forecasts – errors \mathbf{v}_t become smaller than \hat{y}_t – but at the same time, as shown by (3), the relationship between inflation gap and output gap is modified **endogenously** owing to two effects: a **slope effect** (the coefficient of the output gap becomes larger than the structural \mathbf{a}_2) and an **intercept effect** related to the forecast errors. To the extent that the output-gap forecasts track observed output gaps, the effect of the latter on the inflation gaps is **magnified** with respect to their structural component. In other words, if the central bank fails to counteract the inception of a deflationary regime, this becomes a self-sustained, or self-fulfilling, process.

Looking at the Euro Zone data from this angle, several in-depth investigations show that the symptoms of deflationary regime in the aftermath of the Great Recession are rather tangible, contrary to the assertion that "there has never been any danger of a deflationary spiral" (Miccoli and Neri 2015, Buono and Formai 2016, Nautz et al. 2017, Fracasso and Probo 2017, Natoli and Sigalotti 2017). To give an example, Figure 1 presents quarterly output gaps, the corresponding forecasts on a year basis and the forecast errors as percent of potential GDP for the Euro Zone from 2000 to 2019. After the adjustment to the 2001-02 world shock, the output-gap forecasts tended to stabilise and revolve around zero (forecast errors tended to reflect unanticipated output changes). The picture changed dramatically after the 2008-09 shock, with an apparent linkage of forecasts with actual gaps (and errors floating around zero).

⁴ 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).

Excluding the large swings between 2009 and 2010, the average absolute forecast error was reduced from 0.86% prior to the crisis to 0.76% afterwards. 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.

Figure 1. Quarterly output gaps, corresponding forecasts on a year basis and forecast errors as percent of potential GDP for the Euro Zone from 2000 to 2019



Data Source: Output gap data are from AMECO (database); Expected Output gap is calculated on expected GDP data from ECB Survey of Professional Forecasters.

In light of our previous considerations, the deanchoring of expectations should result in a steeper estimated PC. This is in fact found in a number of studies of the Euro Zone, based on the standard specification (1), in contrast to widespread evidence of flattening of the PC elsewhere (Riggi and Venditti 2014, Bank of Ireland 2014, Oinonen and Paloviita 2014). The flattening of the PC is usually associated with the output-gap coefficient falling to 0.2 or less. The aforementioned studies point to post-crisis estimates above 0.3 up to 0.5, thus explaining why inflation fell deeper and longer than elsewhere. They also point out that, consequently, inflation forecasts based on previous "flat PC" estimations, were well above the observed deflation. Yet these findings do not necessarily mean that the Euro-Zone PC has become structurally steeper.

In a joint work with Giuliana Passamani and Alessandro Sardone (2019), we have estimated the relationship (3) 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 was not constant, but that it significantly **increased** after the crisis up to 0.36 *vis-à-vis* a forecast-error coefficient of 0.22. However, according to the correct specification (3), the presence of the forecast-error factor implies that the actual impact of output gaps on inflation is larger than the structural parameter α_2 . Hence it may well be that the structural Euro-Zone PC is flat, but nonetheless what really matters for the inflation process is the extent to which inflation expectations remain well anchored to the ECB target.

What does the claim for a "new normal" mean then? This question is addressed by Gobbi et al. (2019), who study an economy where the anchorage of inflation expectations evolves according to the observed state of the economy. The deeper and longer the depression state, the less the confidence in the central bank's target, and the stronger the dependence of expectations on the state of the economy. The paper characterises the new normal as a stationary state of the economy with the policy interest rate at the zero lower bound, and negative output and inflation gaps consistent with agents' (diminished) confidence. The essence of this result can easily be understood by means of equation (3). Consider the limit case that in the course of a recession, output-gap expectations eventually catch up with the actual ones. At that point, $\nu_t = 0$ and hence the economy settles down at an inflation rate below the central bank's target proportional to the output gap.

As long as the new normal remains entrenched in the expectations formation, also the recovery process is affected. Again, by means of expression (3), suppose that policy stimuli start closing the negative output gap. What is the impact on the inflation gap? It depends on how expectations (confidence in recovery) react. A form of hysteresis may take place. To the extent that recovery takes time to be translated into expectations (and the time may be longer, the longer the new normal has been), output gaps will improve faster than expectations generating positive forecast errors ν_t . Consequently, the impact of the recovery on the inflation gap will be slackened. The cause of the unresponsiveness of inflation to policy stimuli is not that the PC is flat, but the hysteresis effect of sticky expectations anchored to the new normal.

To conclude, several pitfalls are in the way of the Review of the ECB's policy strategy. 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 it would turn the orthodox foundations of monetary policy as "expectation management" (Woodford 2003) upside down, since in the new normal it is the central bank that surrenders to the market expectations instead of being their driver. Indeed, it is surprising that this outcome is supported by the most orthodox sectors in the Euro Zone. 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? Beyond that, accepting the current low

inflation, stagnating environment as the new normal would be a self-fulfilling strategy, indeed a self-defeating one from another point of view, since the more the markets come to believe in the new normal, the more difficult it will be to eradicate it.

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