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The ECB's new inflation target from a short- and long-term perspective*

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Abstract. The ECB's target was recently revised, specifying that the 2%-inflation-rate threshold must be applied symmetrically and with a medium-term orientation. In the current phase, characterized by high inflation rates and a growing risk of stagnation in the euro area, this revision of the monetary policy strategy is crucial for explaining the recent decisions of the ECB and forecasting their possible evolution. However, monetary policy can only become one of many policy tools in the euro area. Therefore, there is room for a compelling policy mix necessary to control excessive inflation and support the European economy's medium-term sustainable growth.

Keywords: European Central Bank, inflation expectations, stagflation, policy mix.

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1. Introduction

“The December 2022 Eurosystem staff projections foresee that inflation will drop sharply, from 8.4% in 2022 to 3.6% by the end of 2023, mainly reflecting lower energy prices. But it will then stay at around 3.4% in 2024 and will reach 2% only in the third quarter of 2025.” (Fabio Panetta, Member of the Executive Board of the ECB. 2023)

The European Central Bank (ECB) has recently fixed the inflation target at 2%, revising its strategy (cf. ECB, 2021a and 2021b). In 1999, the primary goal of the ECB was fixed in terms of price stability. The quantitative definition of this stability, given by an inflation rate of “below 2%,” became the ECB’s target. The 2003 strategy review changed the target to “below but close to 2%.” According to the new revision of the ECB’s strategy performed in 2021, 2% has become the reference point; therefore, the medium-term inflation rate should neither exceed nor remain below this symmetric threshold.

This paper aims to examine the principal strength and weaknesses of the ECB’s new quantitative target in the pandemic and post-pandemic frameworks and to discuss how the revised strategy is likely to shape policy going forward, considering the side effects and interaction with the ECB’s secondary goals (e.g., financial stability, growth, and employment). Our approach offers a fresh assessment of the effectiveness of the ECB’s recent decisions in dismissing non-conventional instruments and increasing policy interest rates. In the current business cycle phase, characterized by high inflation rates and a growing stagnation risk in the euro area (EA), a revision of the monetary policy strategy is crucial for explaining the ECB’s recent decisions and forecasting the possible evolution of the monetary policy.

It is well known that the unexpected persistence of the supply bottlenecks due to the pandemic shock and the consequent break-ups in the international value chains triggered an inflation process and ‘real’ disequilibria in the European Union (EU) and – specifically – in the EA in the second half of 2021. At the end of February 2022, Russia’s invasion of Ukraine worsened the European quantity and price constraints on the supply side, putting inflation rates out of control and increasing the risk of an economic recession. In this situation, the monetary policy in the EA has gradually assumed a restrictive stance. In March and June 2022, the ECB ended public and private net asset purchases based on the Pandemic Emergency Purchase Programme (PEPP) and the Asset Purchase Programme (APP). Then, according to the so-called appropriate sequence,¹ the ECB started to increase policy

¹ Lane (2022) states that the ECB has followed a precise sequencing since September 2019: “the end date for net asset purchases is naturally earlier than the date at which it would be appropriate to raise the key policy interest rates.” And

interest rates in July 2022, reaching a policy reference rate of 2.5%, at the end of 2022, through two increases of 50 bps and two of 75 bps. Finally, in the October 2022 meeting (with the related implementation of November 23rd), the ECB started a quantity tightening by increasing the interest rates on the TLTRO III refinancing contracts in place and offering banks the possibility of early repayment dates. Furthermore, in the last meeting of December 2022, the ECB announced a severe reduction (roughly 50% of the average full replacement starting in March 2023) in reinvesting principal payments from the APP portfolio.

The remaining part of the paper is organized as follows. Section 2 discusses the price stability goal and the central bank's inflation target from a general perspective; then, it specifies the process leading to the ECB's strategy review. Section 3 compares the ECB's and the Federal Reserve's (Fed's) parallel choices in implementing the new strategies. Sections 4 and 5 discuss the theoretical and empirical rationale behind revising the ECB's inflation target. Section 6 places the strategy review in the EA's current monetary policy context; it focuses on the interplay between the new strategy and the policy for relaunching the eurozone economy (2023-26) under the current stagflation risk. Section 7 provides some concluding remarks.

2. The price stability goal and the central bank inflation target

The evolution in the ECB's strategy has implied changes in its target, not in its primary goal (price stability). This paper examines the principal strength and weaknesses of the ECB's new quantitative target. However, to assess the impact of the new target to pursue price stability, it is worthwhile to focus on the primary goal's analytical meaning.

As specified by great economists of the past, the value of money is conceived as the "purchasing power of the income unit," where "the concept of purchasing power is based on the concept of price" and "the numerical measurement of the price level" refers the value of money not

Lagarde (2022) restates: "a rate hike will not occur before our net asset purchases finish." Here we will not discuss the effectiveness of this sequence (for a critical assessment, see Canofari *et al.*, 2022). It is sufficient to emphasize that the choice of the sequence has often been accompanied by an interpretation of EA inflation as a temporary phenomenon. In February 2022, Schnabel (2022a) still maintained that the ECB's sequencing "reduces the uncertainty about how our actions will affect financing conditions and the broader economy" because the EA price dynamics is not implying a "significant risk of inflation markedly above target over the medium term." Six months later (August), Schnabel (2022b) changed her mind and affirmed that the policy interest rates should be increased until price stability (i.e., an inflation rate equal to 2%) is restored, independently of the growing probability of a recession in the EA.

to individual commodities but to all commodities, thus defining the “general purchasing power of money” (Schumpeter, 1917-18; Engl. transl. 1956, pp. 162, 165, and 166).

In this respect, Wicksell (1898; Engl. transl., 1936, p. 4) maintains that “[...] if it were in our power to regulate completely the price system of the future, the ideal position, affording common advantage to the overwhelming majority of the various groups of interests, would undoubtedly be one in which [...] the general average level of money prices [...] would be perfectly invariable and stable.” Then, Wicksell (*ivi*, pp. 119-21) states that the central bank determines the monetary interest rate; and the equality between this rate and the varying natural rate of interest (here to be assimilated to the rate of return on capital) is the condition for price stability.

In the same vein, Keynes (1930, p. 137) affirms: “the conditions for the equilibrium of the purchasing power of money require that the banking system should so regulate its rate of lending that the value of investment is equal to savings.” Finally, even if Keynes (1936, p. 207) emphasizes that “there are certain limitations on the ability of the monetary authority to establish any given complex of rates of interest [...],” he recognizes that central banks aim at determining these rates to stabilize the general level of prices.

The previous references stress two critical points. First, the three great quoted economists agree that central banks play an essential role in determining the value of money based on prices. It is worth stressing that, in this case, “essential” has a specific meaning: it is impossible to determine the value of money in an economic system based on fiat money without the intervention of the central bank’s policy tools. In fact, in such a system, the central bank’s liabilities define what a currency is, and which is its value. Second, in so doing, these three authors recognize that one of the main goals of the central bank is price stability. Hence, different ‘monetary doctrines’ are compatible with the primary goal attributed to the ECB by the European Treaties.² Keynes (1936) would add that a central bank should also contribute to selecting the full employment equilibrium in multiple equilibria mainly characterized by involuntary unemployment. Schumpeter (1912) emphasizes that a central bank should also grant liquidity to commercial banks, financing innovators (and imitators). Nevertheless, their different monetary theories do not substantially question price stability as (one of) the ECB’s main aim(s).

² The reference is to the theories of Wicksell (1898) or Schumpeter (1912), based on banks’ credit, as well as to that of Keynes (1936), based on an exogenous supply of money and the ‘liquidity preference.’ More recently, the same result has been expounded by the new Keynesian/neo-Wicksellian literature (see Woodford, 2003).

The Statute of the European system of central banks and the ECB emphasizes that “in accordance with article 127(1) and article 282(2) of the Treaty on the Functioning of the European Union”, the main objective of the European System of Central Banks (ESCB) “shall be to maintain price stability” (see Article 2). The ESCB is defined separately from the ECB: the former represents the central banks of the member states belonging to the EU, whereas the latter has a legal personality as a communitarian institution. However, in what follows, we will neglect this distinction. In fact, according to Article 9(2) of the Statute, the ECB is responsible for ensuring that the ESCB pursues its objective and tasks. Hence, from an economic point of view, we can state that the ECB aims at price stability. The problem is that the Treaty and the Statute do not offer a quantitative or qualitative definition of price stability. This definition is a task implicitly attributed to the ECB’s Governing Council. As clarified by Article 12(1) of the Statute, “the Governing Council shall adopt the guidelines and take the decisions necessary to ensure the performance of the tasks entrusted to the ESCB [...]”

In one of its first meetings (October 13th, 1998), the ECB’s Governing Council announced that price stability should be defined as “a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) for the euro area of below 2%,” and it added that this maximum threshold of the inflation rate should be met over the medium term. Hence, the Governing Council opted to determine the ECB’s target quantitatively. Then, the meeting of May 8th, 2003 specified that, in the medium term, price stability should require an inflation rate not only below but also “close to 2%.”³ Several factors justified this moderate change in the monetary strategy pursuing price stability. According to the same Governing Council, the experience of the past monetary policy and the analytical results obtained in the economic literature suggested having recourse to an adequate “safety margin” to put “the risks of deflation” under control, to adjust for “the possible presence of a measurement bias in the HICP,” and to consider “inflation differentials within the euro area.”

The justifications sounded reasonable. Hence, at the beginning of the new millennium, the ECB had good theoretical reasons to avoid inflation rates that could have systematically been too high or too low. The impact of the international financial and ‘real’ crises (2007-2009) and the EA’s ‘doom-loop’ between the sovereign debt crisis and the liquidity and insolvency crisis of the banking sector empirically supported the decisions taken by the ECB’s Governing Council in May 2003. In 2013 and 2014, the EA was characterized by a risk of deflation.

³ The Governing Council emphasized the continuity between the two definitions: the new definition was still based on the original one that had worked ‘satisfactorily’ in the previous four years and more of the euro life.

According to the new 2021 quantitative definition approved by the Governing Council, “price stability is best maintained by aiming at a 2% inflation target over the medium term.” This means that the 2% target ceases to be the maximum threshold and becomes a symmetric reference for inflation, in the sense that “negative and positive deviations of inflation from the target are equally undesirable.” The concept of symmetry in the conduct of monetary policy was not new. Draghi (2016) already specified that “it is equally important that we pursue our objective symmetrically.”

There is a continuity between the new definition and the 2003 one. However, at least three reasons state that the ECB’s new target incentivizes a more expansionary monetary policy stance in the EA and can, thus, reduce the probability of a sudden reverse toward a restriction. The first reason is quite apparent: symmetry means that the quantitative inflation target is 2% and not below (even if close to) 2%. The second reason depends on changes introduced in the calculation of the HICP and does not need to be addressed here. The third reason is the most interesting from our point of view. Despite the symmetric reference to 2%, the new strategy allows for a critical asymmetry justified by specific economic conditions. The asymmetry applies to an economy “operating close to the lower bound on nominal interest rates,” facing a negative cyclical phase or a negative trend. In this case, it is conceivable to design a monetary policy stance tolerating “a transitory period in which inflation is moderately above target,” that is, a period in which the inflation rate is above 2% even in the medium term. The most significant risk is an entrenchment of the “negative deviations from the inflation target.” This risk can be avoided if an “especially forceful and persistent monetary policy action” is implemented.

The critical asymmetry argument matters significantly in the recent decisions of the ECB’s monetary policy (see Section 6 below.) To appreciate its impact, it would be helpful to compare the new strategy adopted in the EA with the parallel decisions taken by the Fed, which revised its inflation targets a few years ago.

3. The implementation: Fed vs. ECB

The Fed moved earlier (August 2020), and the ECB followed (July 2021). Although the picture appears to be broadly the same at first sight, the responses of the two central banks cannot be treated identically. There are common points but also significant differences.

Let us start with some common points. Both institutions pointed out the downward shift in real interest rates required to stabilize the economy and the consequent high risk of hitting the (effective) ZLB during downturns. As a result, both central banks argued in favor of higher inflation

rates and expectations as a preventive remedy against the risk of being constrained by the ZLB. This position is based on descriptive evidence: apart from the last two years (2021 and 2022), inflation was systematically below 2% after the financial crisis in the US and the EA.⁴ Consequently, the inflation target has been fixed in both strategy revisions at 2%.

Despite some common points, the specific strategies adopted by the Fed and ECB differ in their general objective, as well as in the perimeter and the tools used.

The Fed reiterated its firm commitment to carrying out its statutory mandate obtained from Congress, that is, the mandate of promoting maximum employment, stable prices, and moderate long-term interest rates. However, it did not just revise its inflation target; it also revised the other components of its monetary policy framework, mainly the policy tools and the communication practices.

The Fed motivated its strategy review with the growing awareness about the structural transformations of the economy and, more specifically, the observed structural decline in the natural rate of interest and the diminished sensitivity of inflation to slack in productive resources (see also Powell 2021). Hence, on August 27th 2020, the Federal Open Market Committee (FOMC) introduced a new regime of inflation targeting, which can be labeled as ‘flexible average inflation targeting’ (FAIT). According to the FOMC, “longer-term inflation expectations that are well anchored at 2 percent foster price stability [...] and enhance the Committee’s ability to promote maximum employment in the face of significant economic disturbances. In order to anchor longer-term inflation expectations at this level, the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time.”

In describing its new strategy, the FOMC highlights the importance of employment (and financial stability) at least on par with the goal of price stability, thus confirming its dual mandate.⁵

⁴ Even considering data from 1999, the average inflation rate remains below 2%. The average inflation rate of the United States was 1.4% in the pre-strategy review period (2013-2020), while it was 1.8% for the whole sample. Analogously, the average inflation rate of the EA was equal to 1.6% from 2003 to the first half of 2021, when this rate should have been “close to but below 2%.” Moreover, it became equal to 1.2% after the global financial crisis and before the strategy review (2009-2021); again, the figure is below, but not close to, 2%.

⁵ “The Committee judges that the federal funds rate level consistent with maximum employment and price stability over the long run has declined relative to its historical average. Therefore, the federal funds rate is likely to be constrained by its effective lower bound more frequently than in the past. Due partly to the proximity of interest rates to the effective

The FOMC also underlines that the medium-term employment objective cannot be precisely specified in quantitative terms; therefore, there is a certain degree of discretion in the conduct of monetary policy. It states: “the maximum level of employment is a broad-based and inclusive goal that is not directly measurable and changes over time owing largely to nonmonetary factors that affect the structure and dynamics of the labor market. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee’s policy decisions must be informed by assessments of the shortfalls of employment from its maximum level, recognizing that such assessments are necessarily uncertain and subject to revision.”

The ECB’s 2021 strategy review did not question the unitary mandate of the monetary policy. As we already stressed, the ECB’s new strategy implies an inflation target strictly equal to 2%. The main difference from the previous target (“below but close to 2%”) is marked by the emphasis on symmetry: the ECB’s new strategy implements “the price stability objective in terms of an unambiguous and symmetric target.” The 2003 formulation of the target tended to lead “[...] to possible ambiguity about the level of the inflation aim and a perception of the aim being asymmetric, which – in proximity to the effective lower bound – may have contributed to the low-inflation environment.” Symmetry in the inflation target means that negative and positive deviations of inflation from the target are equally costly and undesirable. Therefore, the ECB would be ready to act with the same strength in case of an inflation rate either higher or lower than 2%.

It is important to stress that the setting of the ECB’s new target is accompanied by two further concepts: medium-term and proportionality. The first concept already played a significant role in the older strategies. It is underlined that the orientation to the medium term “[...] allows the Governing Council to cater in its monetary policy decisions for other considerations relevant to the pursuit of price stability.” The second concept mentioned with insistence in the review, i.e. the principle of proportionality, allows for a combination of the commitment to a symmetric inflation target with some discretion margins in implementing monetary policy. It is emphasized “that faced with large adverse shocks, the ECB’s policy response will, as appropriate and based on a careful proportionality analysis, include an especially forceful use of its monetary policy instruments. In addition, closer to the effective lower bound, it may also call for a more persistent use of these instruments. This may also imply a transitory period in which inflation is moderately above target.”

lower bound, the Committee judges that downward risks to employment and inflation have increased. The Committee is prepared to use its full range of tools to achieve its maximum employment and price stability goals.”

The final part of the last quotation suggests that these two concepts, which are ancillary to the 2% symmetric target, can offer the ECB some degrees of freedom in approaching the 2% target (Bini Smaghi, 2021). As explicitly argued in the new strategy review, “the medium-term orientation provides flexibility to take account of employment in response to economic shocks, giving rise to a temporary trade-off between short-term employment and inflation stabilisation without endangering medium-term price stability. It also allows the ECB to take account of financial stability, where appropriate, in view of the interdependence of price stability and financial stability. The use of such flexibility could also be the result of a careful proportionality assessment of the appropriate policy measures.”

The above quotation has at least two implications. First, the definition of medium-term refers to a time window to achieve the inflation target, which is different from that imposed by the lags of monetary policy. Second, the reference to proportionality confirms that, in exceptional circumstances, the ECB is likely to tolerate an inflation rate above the 2% target for longer than the medium term.

The definitions of the medium term and proportionality go the same way as the Fed’s claim that it would not be appropriate to specify a quantitative goal for active monetary policies, recognizing that assessments of the shortfalls of employment are uncertain and subject to revision. Other significant similarities strengthen this common implication. Both central banks stress the downward shift in the natural rate of interest and the consequent growing risks of hitting the (effective) ZLBs during downturns.⁶ Consequently, in some way, the institutions also emphasize the need for the inflation rate to be higher on average than in the past.

Despite this convergence, the new inflation strategies designed by the Fed and the ECB cannot be assimilated. The differences do not only depend on the two institutional specificities of the EA: the ECB’s mandate is narrower than the Fed’s; the ECB should consider the additional constraints due to the lack of a political union. It is also worth stressing that, differently from the ECB, the Fed explicitly refers to a target defined on an average 2% inflation rate through time. Hence, if the inflation rate was below the target and the unemployment rate was too high for a given number of periods, the Fed should pursue an expansionary monetary policy to compensate for these disequilibria for an equivalent period. This means crucial differences concerning the ECB’s symmetric target and possible tolerance of a higher inflation rate when the economy hits the ZLB.

⁶ It should be noted that, differently from the Fed, the ECB introduced policy interest rates with negative values. Hence, the effective lower bound can be lower than the ZLB. In the following, we will not insist on this difference.

Let us emphasize these differences by leaving aside that real economy and employment conditions are prominent in the Fed's dual mandate, whereas they are subordinated goals in the ECB's mandate. Instead, we focus on the last three years (2020-2022). The US economy was characterized by inflation rates below 2% from March 2020 to February 2021, whereas these rates have been mainly above this target since March 2021. By roughly comparing the monthly (negative and positive) gaps of these rates from the 2% target, the application of the average inflation rate should have implied a restrictive stance in the Fed's monetary policy since June 2021, at least. On the contrary, in the EA's economy, the inflation rates were lower than 2% from November 2018 to June 2021 (with a deflation in the last five months of 2020), and they have become higher than 2% since July 2021. Hence, according to its symmetric target, the ECB should have switched to a restrictive monetary policy since August 2021; however, the persistence of the negative pandemic impact and the closeness to the effective lower bound could justify a postponement of monetary policy adjustments until two quarters.

As we will specify in Section 6, in 2021, the actual stance of monetary policy was more compliant with the relative strategy in the EA than in the United States. However, it would be inappropriate to conclude that the ECB's new strategy is more effective than the Fed's for at least two reasons. The prominent role of employment and economic stability in the Fed's primary goals would kick-in appropriately, trading off past inflation with the overly high current unemployment. Moreover, due to its average 2% target over a given horizon, the Fed accounts for history dependence: periods of above-target inflation are preceded by periods of below-target inflation. Therefore, the Fed is in the condition to make credible commitments to its future monetary policy and to influence agents' expectations. Conversely, the ECB's monetary policy cannot get comparable commitments because it cannot be based on historical dependence.⁷

4. The economics behind the review strategy: the fall in the natural interest rate

Since the 2003 strategy review, substantial factors have challenged the world economy and the EA's economic system: the strengthening of globalization, the 2007-2008 international financial crisis, the European sovereign-debt crisis, and most recently, the Covid-19 pandemic. All these factors have

⁷ It should be noted, however, that, in the United States, the 2% target of the average inflation rate can be overcome by the other component of the dual mandate; if this possibility becomes common knowledge, the credibility of future monetary policy commitments will essentially vanish. The conclusion is that, even if for different reasons, both central banks need help making commitments about their future monetary policies.

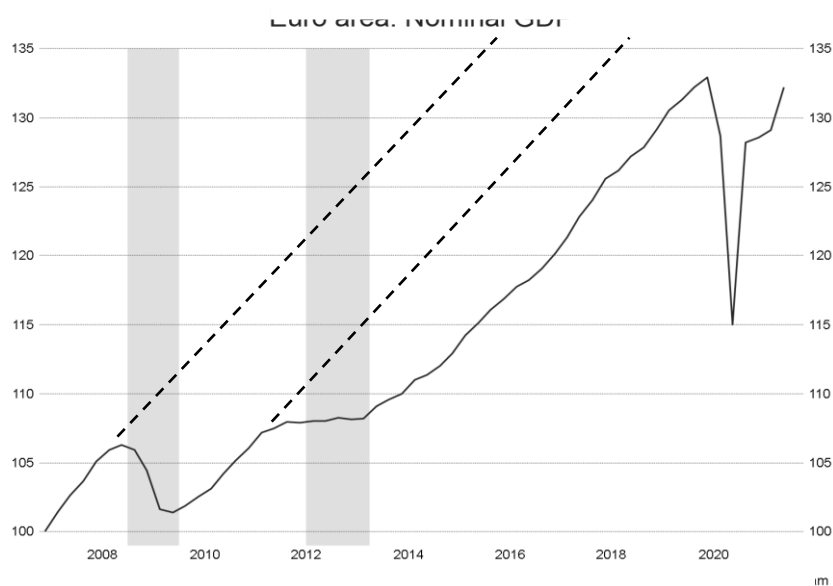
concurrent with the changes that largely justify the ECB's 2021 strategy review. Moreover, they have significantly contributed to a critical macro-fact related to an unobservable but key policy variable: the fall in the natural interest rate. In its turn, this fall is understood to have been at the root of two other macro-facts relating to observable variables: namely, a subdued inflation rate which has averaged 1.6% in the EA from 2007 to mid-2021 (see Figure 1) and an extended stay (from mid-2014 to June 2022) of policy rates at the (effective) ZLB.

Figure 1: Eurozone Annual HICP Inflation Rate



Source: Datastream.

Figure 2: Eurozone nominal GDP



Source: Datastream.

Let us first address the second macro-fact (the subdued inflation rate), which is more empirical. We refer to Figure 2, which plots the nominal GDP of the EA since 2007. The 2007-2008 crisis produced a significant contraction in nominal GDP, which recovered at the end of 2009. However, the GDP trend remained below the one it would have followed before the crisis. Similarly, the recovery after the 2011-2012 sovereign-debt crisis took a trend below the pre-crisis one. Bygones are bygones. The optimal response would have been to reflate the economy to reconnect its nominal GDP path to the pre-crisis trend. However, this reflation did not happen, and the inflation rate remained below the target during 2008-2019, averaging only 1.5% (see Figure 1). Similarly, following the depression of the first semester of 2020 due to Covid-19, the nominal and real GDPs picked up without achieving a full recovery. Differently from the ECB's new strategy, a direction in terms of nominal GDP or average inflation targeting would have provided the magnitude of the reflation needed for a complete recovery.

Now let us analyze the other two macro-facts pointing to the main theoretical and empirical problems. In an abstract sense, the natural interest rate is the real interest rate that the economy would reach absent frictions were employment at the potential level and stable inflation. In other words, the natural rate represents the real interest rate the central bank should achieve to stabilize the inflation rate and output at their targets. Before the 2007-2009 financial crisis, the natural interest rate was around 2% annually. With a 2% inflation target, the nominal interest rate – the policy interest rate – could thus be settled at 4%.⁸

If the economy hits the ZLB at the policy interest rate, a natural interest rate lower than 2% will create significant economic problems. Suppose that this natural rate settles at – 3%. With a 2% inflation target, the nominal policy interest rate stabilizing the economy should be fixed at – 1%. However, the latter level is not feasible in economic systems where cash (coins and banknotes) circulates. A lack of arbitrage opportunities would prevent agents from borrowing at negative rates and investing in cash.⁹ Therefore, the ZLB constraint implies that the actual real interest rate should be settled, at least, at – 2% in our economic systems because of the zero-nominal interest rate minus the 2% of inflation. Consequently, the actual real interest rate would be above the ideal value of – 3%

⁸ This computation considers valid the Fisher equation, for which the nominal interest rate is the sum of the real interest rate and the inflation rate. See Fisher (1930) and Sun and Phillips (2004).

⁹ We know that, since mid-2014 and – *a fortiori* – since April 2016 and March 2020, the ECB has utilized various monetary tools to create arbitrage opportunities even at negative interest rates. However, from a theoretical point of view, it is possible to neglect this point. Our analysis would remain valid if the ZLB were replaced with an ELB characterized by negative policy interest rates. The validity of our reasoning only requires the existence of an ELB. In the following, to simplify the matter, we will refer to the ZLB as the minimum ELB.

dictated by the natural interest rate, and it will thus prevent the desired stabilization of inflation and economic activity. The economic system would experience an overly high real interest rate with contractionary effects, which could reduce economic activity and likely bring inflation below its 2% target.

It should be emphasized that these effects can trigger a dangerous spiral, which tends to lead to a disinflationary and eventually to a deflationary trap. A lower inflation rate with a zero-nominal interest rate would further raise the real interest rate, once more bringing down the inflation rate, and so forth, up to the point of deflation. At this stage, the economy would experience positive real interest rates regardless of the central bank's zero-interest-rate policy, in contrast to the ideal negative natural interest rate. The risk of this spiral became quite likely in 2014 and 2020. Estimates for several advanced economies and the EA show a steady decline of the natural interest rate, starting from values above 4% in the 1970s to around 2% in the 1980s. After the international financial crisis, this decline has led to figures below zero for the EA.

Theoretical literature underlines several factors responsible for the fall in the natural interest rate: the slowdown in productivity growth, demographic factors, and debt deleveraging processes.

In a high-growth economy, the equilibrium between savings and investment is compatible with high real interest rates. However, with slow economic growth, the real interest rate should fall to satisfy the macroeconomic stability conditions. In advanced economies, there is a decline in the potential output growth rate mainly due to a decline in the total factor productivity growth rate (Lane, 2019). Hence, the natural interest rate decreases, and the real interest rate should also decrease to stabilize the inflation rate and the economy.

The second factor influencing the natural rate of interest is demographic. During the last decades, advanced economies have been experiencing a demographic transition towards low fertility and mortality: individuals have fewer children and live longer. Thus, the number of older people in the working-age population is increasing. The macroeconomic consequence of these structural changes points to a reduction in the natural interest rate (see Brand *et al.*, 2018). On the one hand, a decrease in the labor force and labor supply raises the capital-to-labor ratio even without additional net investment; on the other hand, everything else being equal, an increase in life expectancy raises the savings rate. These trends reduce the natural interest rate and, thus, the real interest rate required to stabilize the economy. One could maintain that the increase in the savings rate is partly offset by the increasing incidence of older people prone to dissave (see Modigliani, 1976). However, the empirical evidence shows that, in the EA, the elderly (65-74) own financial wealth mainly above the average of the other age categories (Eurostat 2020).

The 2007-2009 international financial crisis and the related deleveraging processes have further led to a substantial fall of the natural rate of interest, reaching even negative values (e.g., Hong and Shell, 2019: 1). The loss of opportunities in financial markets because of the debt overhang has created incentives for borrowers to repay their debt and reduce their leverage. These decisions have likely had the effect of limiting disequilibria and bankruptcies in some sections of these markets. However, generally speaking, implementing debt reduction by some agents leads to higher savings at given interest rates. Hence, to meet an aggregate balance, it is necessary to reduce savings in other parts of the economy; this reduction can only be triggered by a fall in the natural interest rate. This third factor also requires a fall in the real interest rate to stabilize the inflation rate and the economy.

It is worth noting that other factors are responsible for a decline in the natural interest rate. For example, let us recall the increasing wealth and income distribution inequality and the impact of globalization on capital markets. Both factors contribute to excess net savings in various advanced economic areas (the EA included). We cannot analyze these factors in detail here. However, it is sufficient to stress that a low level of the natural interest rate, combined with the (effective) ZLB, represents a severe drag on economic activity and could put downward pressure on inflation and constrain the economy at low nominal interest rates.

5. New inflation target and inflation buffer

Our analysis of the likely trend in the natural interest rate supports the ECB's 2021 strategy review aimed at fixing the target symmetrically at 2% rather than below but close to this threshold and allowing upward elasticity to handle adverse shocks. A higher inflation target is the appropriate policy response to the fall in the natural interest rate for at least two reasons. First, under normal conditions, a higher inflation rate requires a higher nominal interest rate for a given stabilizing real interest rate; therefore, a higher inflation rate leaves more room for action for the policymakers in the case adverse shocks require a fall in the policy interest rate, and hitting the ZLB becomes less likely. Moreover, a higher inflation target can have stimulating effects when the economy is at the ZLB. If embedded appropriately in inflation expectations, this target can reduce short and long-term real interest rates, stimulating the economy and shortening the duration of the trap at zero interest rates.

These two reasons are sufficient to show the importance of an inflation buffer. Nevertheless, they are strengthened by other arguments, such as downward nominal rigidities in the economy, euro-area cross-country inflation differentials, and measurement errors.

The presence of downward nominal rigidities justifies a positive inflation rate. Let us assume that, following a shock that decreases demand, nominal wages are constrained to adjust downward. If nominal wages did not fall, real wages would be too high concerning what is required to absorb the disequilibrium, causing a fall in employment and economic activity. A higher inflation rate would make it less likely for the downward rigidity constraint to become binding. In the situation described, this rate “greases the wheels,” allowing for a fall in real wages, even if nominal wages do not decrease, thereby absorbing the adverse effects of the contractionary shock.¹⁰ As discussed by Bobeica and Sokol (2019), nominal wage rigidities were still persistent in the EA immediately before the pandemic shock.

For the non-homogeneous characteristics of the national economic systems, the EA is subject to essential variations in the inflation rates across member states. Each national economy faces different structural costs, handles different degrees of market competition and innovative imitation, and can implement adjustments to either common or country-specific shocks. A positive inflation rate is required to minimize the impact of these peculiarities and different adjustments. When the inflation target for the overall area is at zero percent, countries experiencing a business cycle expansion will record positive inflation rates; in contrast, countries in recessions will face costly deflation. Targeting a positive inflation rate for the area avoids that countries facing adverse shocks must adjust through a fall in prices. Finally, as recalled in Section 2 concerning adopting new technology, measurement errors are also a reason for a positive inflation rate. These errors imply a positive inflation bias.

All these arguments support the establishment of an optimistic inflation target as a buffer. By moving the target from a range between zero to 2%, as in the original 1998 framework, to close to 2% in the 2003 revision, and to the focal point of 2% in the last revision, the ECB has been able to account for all the above elements in an appropriate way. The most significant part of these elements was discussed and incorporated in the 2003 revision. However, the new 2021 strategy review has been justified *ex-post* by the unfortunate events that have characterized the last fifteen years and have strengthened the need for an inflation buffer.

The last statements need further qualifications. The interaction between the ZLB and the inflation rate does not simply justify a buffer on inflation; it also requires an appropriate dynamic adjustment. The 2021 review of the ECB’s Governing Council highlights this crucial point when it endorses some of the achievements reached by the theoretical literature on the topic. Point six of the ECB’s new monetary policy strategy says that the “Governing Council recognizes the importance of

¹⁰ This result would be achieved more effectively and with minor social costs if the purchasing power of low nominal wages was protected using adequate social mechanisms.

considering the implications of the effective lower bound. When the economy is close to the lower bound, this requires especially forceful or persistent monetary policy measures to avoid negative deviations from the inflation target becoming entrenched. This may imply a transitory period in which inflation is moderately above target.” Hence, the ECB’s 2021 review does not only re-establish a symmetric target. As we already stated, this review also goes in the direction of justifying deviations of the inflation rate from the target upward, and – as stressed in the last quotation – these deviations matter from a dynamic perspective.

The literature on the ZLB has characterized the optimal exit from shocks that bring the economy to the ZLB by underlining three peculiar features of the adjustment: a prolonged period of monetary policy accommodation, inflation overshooting at the time of exiting the ZLB, history dependence (see among others: Krugman, 1998; Eggertsson and Woodford, 2003). These three features lead to three related implications.

The first implication is that monetary policy should be very accommodative, with the degree of accommodation being measured by the stay at the ZLB, which should still be longer than the duration of the shock. This means that, even if the natural rate of interest reverted to normal values so that the lift-off of the policy interest rate from zero became feasible, the central bank should instead remain committed to keeping this policy rate at the ZLB for some additional quarters. The second implication is that the inflation rate should simultaneously exceed the inflation target in which the natural interest rate returns to normal conditions. The third peculiar implication is that policy should be history dependent. The ECB should undo the negative gaps experienced during the trap with positive gaps at the exit to make up for output and inflation losses.

These three implications can be intuited. First, the ZLB is a constraint that prevents the optimal adjustment because, under significant perturbations to the economy, this adjustment would require the policy interest rate to go negative. Second, a prolonged accommodative policy is justified because it can make up for the “overly” restrictive policies the central bank is constrained to follow due to the ZLB. Third, the zero-interest-rate policy should last longer because it must compensate for the periods in which rates should have gone negative.

Inflation overshooting reduces the costs of the ZLB when a recessionary shock adversely hits the economy. An economy in a liquidity trap has an overly high level of savings concerning what would be optimal (that is, net savings equal to zero). In this situation, the effective real interest rate exceeds the natural interest rate. Given that the nominal interest rate is prevented from falling beyond the ZLB (see above), the real interest rate can be lowered thanks to the expectations that the price level will be sufficiently higher in the future. Therefore, inflation expectations should sufficiently rise

to the lower long-run real interest rate. Analogously to the requirement of a more extended stay at the zero bounds, the higher inflation rate at the exit can also compensate for the periods in which the ZLB has constrained the policy interest rate. All these monetary policies stimulate a faster recovery and reduce the trap's duration and related costs.

History dependence is a vital adjustment feature to avoid “bygones are bygones.” The economy should not only recover but also follow a path that makes up for the losses and negative gaps experienced during the stay at the ZLB. It is likely that during this period, the economy has experienced both a recession and below-target inflation, and both these factors have usually produced a departure of nominal GDP from the before-crisis trend (see also Section 4). The optimal response to such a shock is reconnecting the nominal GDP path to the pre-crisis trend. Such an objective can only be achieved if future gains appropriately compensate for the gaps built in the past; inflation should overshoot the target; otherwise, the previous trend would never be reached.

An additional essential aspect is common to these three implications but raises a sensitive issue. Each of these implications involves commitments to future actions that, once implemented, will no longer be optimal and, therefore, will unlikely be pursued. Given that expectations of economic agents are critical for the recovery, the lack of credibility regarding the future implementation of such accommodative monetary policies could undermine the recovery by nullifying the effects of any policy announcement. This problem is strengthened by another failure in the ECB's 2021 strategy. We acknowledge that this strategy partially accounts for the desiderata emphasized by the literature because the ECB allows for “a transitory period in which inflation is moderately above target.” This specification underlines the ECB's commitment to enabling the inflation rate to overshoot the target. However, the 2021 strategy leaves completely undetermined the direction and the magnitude that these deviations should have concerning the losses faced during the period the economy was at the ZLB. Moreover, there is no history dependence on the ECB's policy implementation. Hence, this policy could be insufficient for shaping expectations in the right direction, for it opens the quantification of what transitorily and moderately mean, leading to the risk that agents will expect a policy to contract at the first inflation scare.

6. The rise in inflation, the policy response, and the ECB's new target

The narrative of recent macroeconomic events in the EA with consequent policy adjustments can be understood only by stressing that the ECB should follow a state-contingent approach to monetary policy, within the adopted strategy, rather than a mechanical rule. Assuming that policy interest rates are at the ZLB (as happened in the EA until a few months ago), the transitory upward deviations of

inflation are allowed conditional on the shock that has brought the economy to that situation. Let us assume that, at some point in time, the economy is hit by another type of shock, as happened in the EA at the beginning of 2022. In this case, monetary policy should reformulate its plan conditional on the new information but still consider the commitment undertaken without it. This state-contingent approach would then explain deviations from the original plan without losing credibility on previous commitments.

These considerations are crucial for explaining the decisions taken by the ECB since July 2021, when the EA's inflation rate overcame the 2% threshold and followed a rapid growth path.¹¹ The combination between the new target and the assumption that increasing policy interest rates would have been inappropriate before closing the unconventional monetary programs (see Section 1 and n. 1 above) pushed the ECB to continue the expansionary monetary policy. However, the average inflation rate in the EA went from slightly more than 2% in July 2021 to almost 5% in the following December. The members of the ECB's Governing Council agreed that the trigger of the increases in EA inflation was not the standard excess in aggregate demand but the unexpected persistence of the supply bottlenecks caused by the breaks in the international value chains during the peak of the pandemic. Hence, most of them maintained that a restrictive monetary policy would have been unable to weaken these bottlenecks and that the deviations of the inflation rate from the target upward were temporary and effective in leaving the pandemic crisis definitively behind a situation of ZLB.

This means that the specificity of the EA's inflation process triggered by the supply-side constraints and the consequences of the 2021 monetary strategy analyzed above formally legitimize the ECB's actual choice, i.e., leaving the stance of the monetary supply in the EA unaltered until mid-December 2021. As proved by the later statements of Lagarde (2022) and Schnabel (2022a), at the time, the most authoritative members of the ECB's Executive Committee still believed that the EA's excessive inflation was a temporary phenomenon. However, the Fed's parallel announcement of a launch of restrictive monetary initiatives in the first months of 2022 signaled to the ECB the high probability of significant upward shifts in the curve of market interest rates in the main financial markets and its consequent high risk of remaining "behind the curve." As a result, in the meeting of mid-December 2021, the ECB announced the end of the PEPP emergency program by March 2022 as a first step for a gradual absorption of the expansionary monetary policy in the EA.

Russia's invasion of Ukraine at the end of February 2022 and the related energy crisis worsened the supply-side bottlenecks and removed any illusion of the temporary nature of excessive

¹¹ It is sufficient to recall that the EA's inflation rate was still slightly below 2% in June 2021, whereas it almost hit 11% in October 2022.

inflation rates in the EA. The analysis in the two previous sections proves that, given this dramatic reversal in the European medium-term perspective, the ECB's new monetary strategy did not allow for the continuation of an upward elasticity in the inflation target but forced the central bank to pursue its medium-term threshold, that is, a 2% inflation rate. The March-July 2022 U-turn in the stance of the ECB's monetary policy¹² was further implemented by increased policy interest rates, the fall announcement, and the first steps of a quantitative monetary tightening.

Here, it is unnecessary to enter into details on each of the various initiatives taken by the ECB since March 2022. However, it is sufficient to emphasize two points. First, there is a clear contrast between the monetary policy pursued by the ECB until December 2021 and that implemented in March-July 2022. Second, this contrast is not sufficient to prove that the ECB reacted too late to the excessive inflation rates characterizing the EA from the second half of 2021 and then that the ECB itself put too much pressure on monetary restrictions since July 2022.¹³ The content of the two previous sections shows that even if the current monetary policy in the EA can appear to "come and go," the ECB's decisions comply with its monetary strategy defined in 2021.

This compliance does not mean that the ECB's current policy is efficient and is without alternatives. Given that the EA's excessive inflation has been triggered by supply-side bottlenecks and the consequent gradual decreases of aggregate supply, a restrictive monetary policy cannot directly put the price dynamics under control. Monetary policy can only act through the demand side. That is, it can offset the impact on prices of the decreasing aggregate supply by causing an equivalent decrease in aggregate demand. Hence, if the monetary policy effectively eliminated the EA's current inflationary excess, it would generate a new European recession following the four recessions or depressions already suffered since the international financial crisis (Stiglitz and Regmi, 2022; Buti and Messori, 2022a). This scenario appears unrealistic in the short term. Despite the end of the unconventional programs and the repeated increases in its policy interest rates, the ECB pursued a prudent monetary policy restriction in 2022. If the ECB's decisions remained moderately restrictive in 2023, the result would be a slight decrease in the EA's aggregate demand and the persistence of excessive, even if lower, inflation rates. In this picture, stagnation and excessive inflation would

¹² The U-turn was outlined in the Governing Council meeting of February 2022 and started in the meetings of March and June 2022 with the end of any active unconventional monetary program. Then, in July, the ECB increased the policy interest rates.

¹³ As we suggested, this statement can be partially applied to the Fed, which responds to a different strategy. However, three aspects should mitigate our judgment of the Fed's decisions: first, the dual objective pursued by the US central bank; second, our preliminary examination of these decisions; finally, the fact that the US monetary policy process is still in progress, and we do not know the end of the story. Note that the last aspect applies to the EA too.

coexist. Hence, the more likely macroeconomic impact of the ECB's current policy is stagflation (Messori, 2022).

In principle, the ECB would have had the opportunity to increase policy interest rates in the second half of 2021 without increasing real interest rates (due to the growing inflation rates) and to commit itself to continue the expansionary unconventional monetary policies. Canofari *et al.* (2022) maintain that this alternative solution would have had the possibility to stimulate national fiscal policies and leave room for centralized fiscal policies aimed at supporting the supply side of the EA economy. However, the effectiveness of unconventional monetary policies is poorly tested outside a ZLB situation. Hence, the ECB's Governing Council pursued the most traditional sequence.

In this situation, if the ECB is left alone to handle the excessive inflation, its only possibility will be to pursue a gradual monetary policy restriction, thus condemning the EA's economy to stagflation. However, by reducing the liquidity and the gross demand for government bonds, this restrictive monetary policy will also impose binding constraints on the balance of member states with a high stock of public debt and will, thus, worsen the stagflation. Moreover, these constraints could negatively interfere with implementing European institutions' temporary but crucial centralized initiative in response to the pandemic: Next Generation – EU (NGEU) and its main program, the 'Recovery and Resilience Facility' (RRF), 2022-26. In order to avoid these negative implications, the only possibility is to combine monetary policy with an additional fiscal central capacity going beyond the NGEU and RRF.

In the 2011-2012 and 2014-2018 phases, the EA already made the mistake of leaving monetary policy as the "only game in town," to use El Erian's successful expression, and it paid the cost of distortionary "fiscal and financial dominance" effects (Benigno *et al.* 2021). Today, a centralized fiscal policy is needed to contrast those supply-side bottlenecks that are a persistent pandemic legacy, are worsened by the war in Ukraine, and are binding the EA's aggregate supply, thus feeding excessive inflation rates. One way to overcome or weaken these bottlenecks is the implementation of a supply counter-shock capable of compensating for the decreases in the aggregate supply. Buti and Messori (2022b) show that this result can be achieved by activating the central fiscal capacity: European public goods (EPGs) production. They add that the general reference to the EPGs is not a sufficient condition because selecting that specific subset of EPGs capable of increasing the aggregate supply more than the aggregate demand, even in the short term, is necessary. This subset is limited, but it is not an empty box.

The implementation of an appropriate production of EPGs could have a positive impact on the ECB's monetary policy. It would overcome the lack of supply in the EA and, hence, the main

determinants of the European inflation process. Moreover, this result would not be based on a contingent adjustment but rather on a structural improvement. Consequently, the ECB could ease its restrictive monetary policy and eliminate the recessionary pressure.¹⁴ Nevertheless, this solution has a problem of timing. It is not easy to conceive that appropriate EPGs can be produced in a time horizon compatible with the short-term approach characterizing monetary policy. Moreover, this production constraint is strengthened by the current EU's economic governance and institutional setting and by Europe's political leadership: these factors do not offer solid support for producing EPGs in the short term.

This time inconsistency problem is essential and would require further reflection to be satisfactorily addressed. Here, we notice that the temporary creation of a central fiscal capacity to launch and implement the NGEU and the RRF represents a first step to modifying the institutional setting in the right direction. It is true that despite the massive amount of financial resources already mobilized, the RRF (covering 90% of the NGEU's endowment) cannot include the production of EPGs and, more specifically, of EPGs capable of supporting the supply side. In the final version of the RRF, almost all the resources are transferred (in the form of loans or grants) to each of the EU member states. However, the successful implementation of the 2022 and 2023 stages of the RRF (ending in 2026) could convince the European institutions and the member states that the current emergency requires a new extraordinary central initiative.

7. Concluding remarks

Nowadays, ECB's projections foresaw inflation above the 2% long-run target until mid-2025. In line with the revision of its strategy, the ECB's actions are based on two main elements. First, the ECB will react to the medium-term inflation outlook but remain above its target. Second, the ECB will prevent a de-anchoring of inflation expectations or the start of a wage-price spiral due to the possible emergence of second-round effects.

Price stability remains at the heart of the ECB's mandate, and the monetary policy strategy quantitatively determines this stability. In the most recent review (2021), the ECB clarified that a 2% inflation target should be applied symmetrically with a medium-term orientation. Symmetry towards

¹⁴ It is likely that, in the short term, the monetary policy should keep a mildly restrictive stance to avoid a chase between demand and supply that would make the complex task of producing appropriate EPGs even more difficult.

2% and a related possibility to tolerate upward deviations in specific circumstances (with a ZLB) are the main novelties of the ECB's 2021 strategy.

At first sight, these novelties can appear negligible. In this paper, we have argued instead that a 2% symmetric target can contribute to anchoring inflation expectations. From a medium to long-term perspective, an inflation target of 2% and the related upward elasticity in its implementation ensure the flexibility required to deal with the increasingly turbulent crises affecting the world and the European economy because they guarantee an operational buffer to the central bank. Moreover, the new strategy also represents an important step to improve the effectiveness of the EA's monetary policy by endorsing recent advances in the monetary policy literature.

The ECB shares the benefits of the revision with other central banks since the rationales for the monetary reviews have common roots (as well as specific but essential differences.) We have argued that a symmetric inflation target contributes to anchoring inflation expectations and limiting the risks due to the ZLB and the effective lower bound constraints in a long-term perspective. However, the EA is also characterized by specific short-term features, leading its economy towards stagflation due to supply-driven excessive inflation. It has been crucial to address these features and to analyze the monetary policy responses in the light of its target, as a relaunch of the EU economy would be compromised if the European institutions and policymakers reproduced their past mistakes. We have maintained that the current problems confirm that the EA's monetary policy cannot be left alone but should be combined with a centralized fiscal capacity to produce appropriate EPGs supporting supply more than demand.

The last argument leads to our main conclusion. The ECB's new monetary strategy is constructive, but it has flaws. Significant achievements include adopting a symmetrical target and building an inflation buffer against the fall in the natural interest rate and the higher frequency of zero-lower bound episodes. However, the ECB's new strategy does not connect the new target to history dependence and, hence, cannot put its 'forward guidance' on a more solid base (as currently shown.) A critical comparison with the new strategy implemented by the Fed in 2020 stresses that it is difficult to overcome this weakness. Even if it were possible to overcome these flaws in an ideal setting, the current high risk of the EA's stagflation would prove that monetary policy cannot be left alone, especially during critical phases. Concerning the ECB's current monetary strategy, this fact is even more evident. Hence, our main message is that the ECB's monetary policy should be combined with a coherent centralized fiscal policy based on a permanent capacity.

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