MIMS – Research Area

Macro Research Team

Report – December 2021

The European Central Bank (ECB) has introduced a new monetary policy on the 8th of July 2021. The ECB adopted the monetary strategy in 1998 and reviewed it in 2003. There were three key aspects in the 2003 review. There was a double-key formulation on the price stability objective. A quantitative definition of price stability was given by a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) of below two per cent. Inside that definition, the aim was to maintain inflation rates for the euro area "below, but close to, two per cent". There was a medium-term orientation, considering the time delays in terms of the effectiveness of the monetary policy on inflation. There was a two-pillar analysis of the risks to price stability (economic analysis and monetary analysis) where the information was crosschecked to establish a unified general judgement. The economic analysis was focused on risks to price stability in terms of current financial and economic developments, while the monetary analysis focused on the risks in term of growth and inflation.

Old Monetary Strategy - Economic Outcomes

There have been positive economic outcomes with this strategy. Medium-term orientation has served well during the economic shocks. For instance, it has provided flexibility for the Governing Council to consider employment in regards to these economic shocks, therefore needless volatility has been avoided in activity and employment.

Adding onto this, at the time of the introduction of the euro, where the primary worry was high inflation, the double-key formulation for price stability succeeded at keeping inflation levels in harmony with the ones set by the Governing Council. However, as time passed the double-key formulation may have lead to the vagueness and asymmetry of the inflation level aim and may have played a part in inflation levels below the target.

Old Monetary Strategy - Drawbacks

The inflation target of "below, but close to, two per cent" may have been too vague. This has lead to an asymmetric inflation aim and potentially caused inflation to be lower than needed overall.

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Since the 2003 review, the ECB faced many challenges. The real equilibrium interest rate has been lowered due to structural developments. Increased demand for safe assets due to the Global Financial Crisis, reduction in productivity growth, and demographic factors may have also contributed to this. This decline in equilibrium interest rates has decreased the opportunities for monetary easing with interest rate policy when faced with disinflationary shocks. This along with persistent low inflation (below ECB's inflation aim) has lead to the need for revision of ECB's monetary policy.

New Monetary Strategy

The shift in the monetary strategy resulted in two key changes. Firstly, a specific inflation target of two per

cent has replaced the old double-key formulation (an inflation target of "below, but close to, two per cent"). This new symmetric target is clearer and easier to understand which may contribute to maintaining long term inflation expectations. It also gives a sufficient safety margin that protects against deflation risks and shocks. It means that negative and positive divergences are equally unwanted. However, inflation is hardly ever at exactly 2% so this could potentially mean that the price objective can rarely be achieved. Some scholars have argued that this objective can be counterproductive. With some extra factors, it has been made clear that a sufficient inflation buffer is needed. An inflation buffer unites euro zone countries with macroeconomic differences, decreases the risk of macroeconomic downturns, and allows for the existence of measurement bias in the HICP.

The headline HCP has remained the suitable index to measure euro area inflation for monetary policy purposes. However, to improve the accuracy and cross-country comparability of HICP, ECB has made the decision to include owner-occupied housing (OOH) when calculating the HICP. Before the review, HICP only included a part of the housing service costs of homeowners. The OOH will be included with the net acquisition approach. Due to the fact that the OOH measured with the net acquisition contains an element of investment, the ECB is reinforcing research on optimal measurement methods. During the transition period to add OOH to the HICP, the current HICP will remain as the main reference index.

Fed's Review

There has been a big season of change of monetary policies. The US Federal Reserve has also reviewed its monetary policy strategy. This happened a year ago, in 2020. One of the main changes was the alteration to assess performance of the labour market in the economic cycle by looking at how long the full employment level is being maintained, rather than concerning about inflationary pressures while at the full expansion level. Also, the inflation target has been adjusted to an average of 2% over time, meaning that the Fed will allow times where the inflation rate is above 2% to compensate for the times where it was below this level. This is similar to ECB's review of the inflation rate in the sense that both values below and above 2% are equally tolerated.

Overview

According to Article 127(1) of the Treaty on the Functioning of the European Union, ECB's primary mandate is to maintain price stability. However, since the Treaty does not provide a precise definition of what is meant by maintaining price stability, it is the ECB's monetary policy strategy that defines how the Governing Council implements this mandate, including the choice of the price index, and how price stability is quantified.

Based on four criteria: timeliness; reliability (e.g. infrequent revisions); comparability (over time and across countries); and credibility, the headline HICP remains the appropriate index for quantifying the price stability objective for the euro area and will be retained as the price index used to measure euro area inflation for monetary policy purposes.

HICP - Expenditure weights, breakdown by purpose of consumption 2021

Category	Weights
Food and Non-alcoholic Beverages	172.64
Alcoholic Beverages, Tobacco	45.00
Clothing and Footwear	53.04
Housing, Water, Electricity, Gas And Other Fuels	177.47
Furnishings, Household Equipment And Routine House Maintenance	67.61
Health	50.02
Transport	137.33
Communication	31.97
Recreation And Culture	79.57
Education	10.43
Restaurants And Hotels	75.16
Miscellaneous Goods And Services	99.76

Source: ECB

Necessary change is needed

However, despite headline HICP's timeliness, reliability, comparability and credibility, given that 66% of euro area households are owner-occupiers, specific costs related to housing ownership are neglected and not reflected in the measurement of euro area household living costs (the HICP currently only partially includes the housing service costs of homeowners associated with owning, maintaining and living in their own home).

Implications: what changes?

Following the 2021 Strategy Review, the Governing Council recommended that home-ownership costs be included in the Harmonised Index of Consumer Prices to better reflect people's experiences of rising prices.

As such, to further enhance the representativeness of the HICP and its cross-country comparability, the Governing Council has decided to recommend a roadmap to include owner-occupied housing (OOH) in the HICP.

The roadmap will be constructed upon the net acquisition approach which is based on the transaction prices that households pay for the acquisition of homes, better reflecting the real expenditure spent on shelters. Since the new approach anchors the market price, it can better project the monetary policy transmission mechanism from market indicators such as mortgage loan interest rate and other risk taking behavior.

Owing to the fact that the new index development entails tremendous extra efforts by the European Statistical System, the inclusion will be undertaken in four stages:

1. Analytic index for internal uses
2. Experimental quarterly HICP including OOH costs, likely in 2023
3. Official quarterly HICP index, likely by 2026
4. Monthly and timely HICP

During the transition period the quarterly standalone OOH index will play an important supplementary role in assessing the impact of housing costs on inflation and will thus inform the Governing Council's monetary policy assessments.

The implication of a new index might create several damages to interpretations if the correct approach is not implemented. ECB also notes that if three important conditions are not met, the average inflation targeting would bring fewer benefits to simple inflation targeting.

The strategy is credible and well understood by the private sector.

Private sector expectations are forward-looking and stable, and the economic behaviour of the private sector is consistent.

For the EU, since housing costs account for a larger part of household expenditures, lack of a more representative basket of products and services poses one of the biggest challenges as the comparability among different members would be compromised. Due to the methodology of HICP, every country has the same categories of goods and services in their baskets, which portrays the consumer behavior in the EU, while the weights assigned to specific goods or services vary according to different consumption habits. In the end, they sum up the consumer price of all nations by a certain weight.

Implications of including OOH in the price index can be discussed once its exact contribution to the index is defined. It is not perfectly clear; whether it's another indicator to capture price changes of the basket purchased by households (cost-of-goods index, like Eurostat's HICP and the US CPI) or its goal is to further capture the cost of living (like US Personal Consumption Expenditure Price Index, PCEPI).

Since PCEPI is different in terms of weights and since it includes indirect contributions too, the two indices deviate. "On average, CPI grew by 0.4 percentage points per year faster than PCEPI in the United States from 1990 to 2020. This implies that a 2% target for the PCEPI by the Federal Reserve is equivalent to a 2.4% target for the CPI."

When implementing the new index for Europe, the rental approach used by the US can result in being ineffective, due to lack of capturing to the same extent in each EU country. ECB mentioned that as: "A fairly harmonised approach exists in national accounts. However, this approach is not granular enough to fully capture the changes in housing costs within the different locations in each country". Some euro area countries also use the rental equivalence approach to include OOH in their national CPI (not in the HICP).

While this is an important issue, there is even bigger concern: separation of investment and consumption purposes for the new house purchases. ECB also raises this issue, it "might blur the lines between macroprudential and monetary policy and imply some trade-off between having a more representative inflation measure and its informational content for the conduct of monetary policy".

To have a better outlook on the concern, if we compare the current inflation development analysis tools, housing related costs in the US are higher than the HICP, keeping in mind that the EU does not yet include OOH in the measures. In case of inclusion, it indicates a possible increase and surpass of the housing portion in US distribution. Also note that OOH inflation and rental inflation are different for the US, which means there are adjustments on the way. It is interesting that even though the US and EU have the same average inflation of non-housing items in the past 20 years, the inclusion of housing costs in the US results in a higher inflation indicator. If this was the case in the EU, meaning housing costs growing faster than non-housing costs, inclusion would have resulted in a right shift of HICP.

Central Banks comparision

	ECB (2021)	Fed (2020)	BoE	BoJ (2013)
Numerical target	2%	2%	2%	2%
Type of targeting	Symmetry	Averaging	Symmetry with bands	No explicit reference to symmetry
Time horizon	Medium term	Lond term	Earliest possible time	Earliest possible time
Main measure	HICP	PCEPI	CPI	CPI
Inflation measure includes OOH	In the future	Yes	No	Yes
Concept for measuring inflation	Cost of goods index	Cost of living index	Cost of goods index	Cost of goods index

Source: ECON

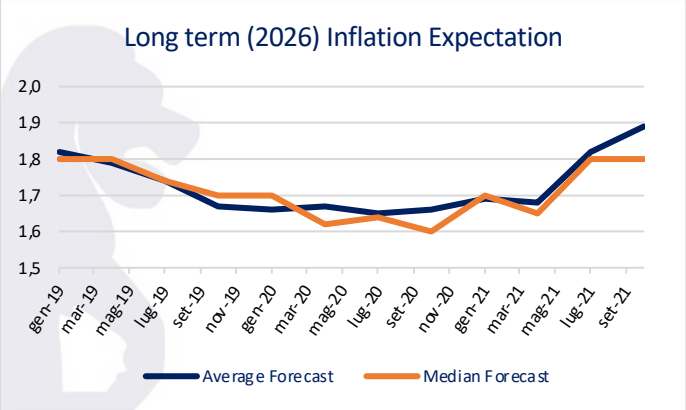
What does the market say?

Based on ECB's analysis, factoring into housing costs measured by OOH price index into 2011-2020 HICP, the augmented index becomes closer to the target. Following the roadmap, private agents' inflation expectations are justified to swing up and the expectations play their part in monetary policy function.

Private agents' inflation expectations serve two main purposes in the conduct of monetary policy. First, inflation expectations are relevant in their own right in that they influence private agents' economic decisions in areas such as consumption and investment, as well as wage and price setting, and thus euro area inflation. Similarly, financial market participants' inflation expectations are relevant in the pricing of other financial instruments, such as bonds, and can thus directly affect the transmission of monetary policy to the real economy. Secondly, they serve as a valuable cross-check on the inflation outlook in the Eurosystem/ECB staff macroeconomic projections, which in turn inform the ECB's monetary policy decisions. We have two ways to monitor the inflation expectation: survey-based expectation and market-based expectation.

Survey-based Expectations

Survey of Professional Forecasters (SPF), a quarterly survey of experts affiliated with financial and non-financial institutions based in the European Union, shows that longer term inflation expectations have been significantly revised up after the second quarter of 2021 having remained in the narrow range of 1.64-1.69%. In the SPF rounds between the fourth quarter of 2019 and the second quarter of 2021, average longer-term inflation expectations for 2026 hit 1.82% and 1.89%, respectively in the last two quarters of 2021. One-third of respondents of SPF noted that they revised their expectations as a result of the new strategy.

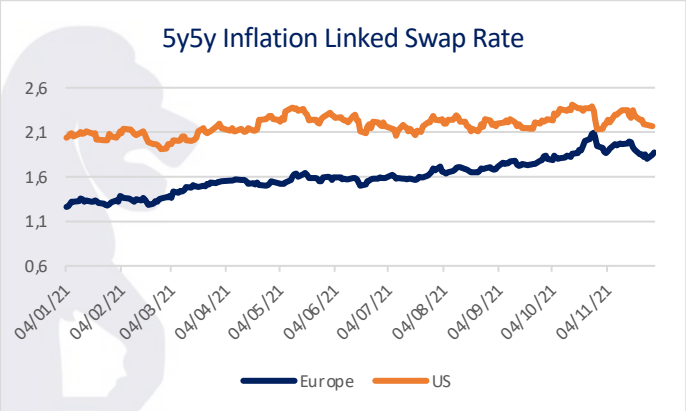


Source: Bloomberg

Market-based Expectations

A widely used measure of longer-term market-based inflation expectations is the "5y5y ILS rate", i.e. the average inflation rate over a five-year period starting in five years' time, as implied by ILS rates. Compared to bond-derived break-even inflation rates (BEIRs), inflation-linked swap rates are not influenced by significant time-varying liquidity effects and country-specific risk premia.

From the long-term market inflation expectations YTD time series below, we can observe that the long-term inflation expectation has edged higher overall throughout the year and the gap between market inflation expectations of US and Europe is narrowing. Although we cannot derive from the fact that the new index roadmap has pushed higher the market inflation expectations straightaway, the market, at least, has braced for an inflation level closer to the target (2%), with the expectation even exceeding the target once.



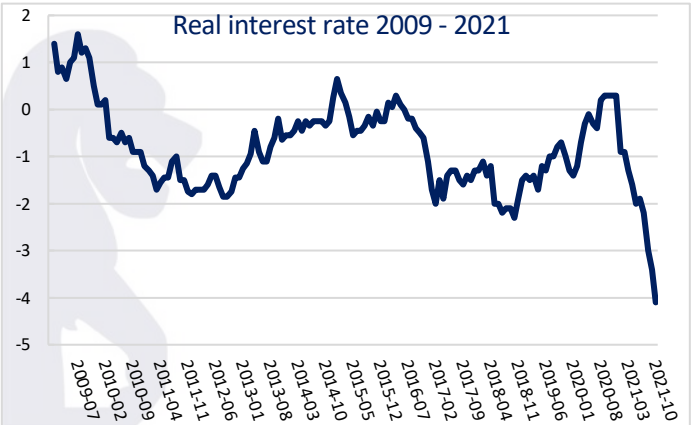
Source: Bloomberg

In conclusion, following the timetable set by the new strategy, the market and other private agents have been poised for an inflation rise in Europe. After years' deflationary pressure and sluggish economic growth, the market has become confident again about the inflation prospect. However, in order to enable the monetary policy to function as expected, the asymmetry expectation should still be given more attention.

A new target

Since the ECB's previous review of its monetary policy strategy in 2003, the world has seen major changes that represent new challenges for central banks. A decline in productivity growth, demographic factors, in combination with persistently higher demand for safe and liquid assets in the wake of the global financial crisis have contributed to lowering the equilibrium of the real interest rate in the euro area, as well as globally.

Combined with persistently low rates of inflation, the fall in the equilibrium real interest rate has increased the incidence and duration of episodes in which nominal policy interest rates are close to the effective lower bound, with the current episode lasting more than ten years. This situation provides a very different starting point compared with 2003, when the equilibrium real rate of interest was estimated to be significantly higher than today. It has reduced the possibility for monetary easing through conventional interest rate policy in the face of disinflationary shocks. This reinforces the value of maintaining an inflation buffer over the medium term, so that the equilibrium nominal interest rate is sufficiently beyond and above the effective lower bound to permit the active use of interest rate policy in response to adverse developments. In proximity to the effective lower bound, interest rate policy is unlikely to be sufficient to preserve price stability if disinflationary shocks occur, requiring the deployment of additional policy instruments.



Source: ECB

The level of the equilibrium real interest rate and of the inflation target jointly determine the available operative policy in terms of nominal interest rates. All else being equal, a decline in the equilibrium real interest rate reduces this possibility.

An inflation target of two per cent has good properties in terms of stabilising the average level of inflation over the long run at the target, keeping the variance of inflation contained and limiting the frequency of hitting the lower bound. At the same time, a two per cent target seeks to mitigate the welfare costs of higher inflation, which increase non-linearly with the level of the target. This explains the choice of an objective that is only slightly higher than the inflation aim set in 2003. Three additional factors, which were already present in 2003 and have remained broadly unchanged since then, call for a sufficient inflation buffer. Firstly, an inflation buffer allows for a smoother adjustment of macroeconomic imbalances across the euro area countries, avoiding inflation in individual countries persistently falling into negative territory. Secondly, by taking downward nominal wage rigidities into account, an inflation buffer reduces the risk of macroeconomic downturns represented by an excessive rise of unemployment. Thirdly, such a buffer allows for the presence of measurement bias in the HICP, with a positive measurement bias implying that the "true" rate of inflation is lower than the measured level.

Why a new target was needed?

1. The economic model used by the ECB and other central banks give rise to a welfare function W(π) that stipulates how economic welfare W depends on the average inflation rate π targeted by the central bank. The optimal inflation objective π* is the inflation rate that maximizes economic welfare. It is a number, not a range, and so there is no zone of indifference. Even though the monetary authority was uncertain about the economic model that best described the economy, it would be optimal to target the inflation rate maximising the expected welfare comparing different models.

2. The asymmetry embedded in the ECB's earlier formulation is inconsistent according to economic theory. The price stability objective is at the upper boundary of the price stability range, which suggests that inflation deviations above the objective inconsistent with the definition of price stability might be counteracted more strongly than deviations below it. This asymmetric behaviour is not consistent with

economic theory. Close to the optimal target π*, the social welfare functions W(·), coming from monetary policy models can be approximated by a quadratic function. This implies that deviations above and below target would generate equal losses, and that there should be no asymmetries close to the objective. As a result, in a medium-term horizon, the ECB will treat (local) deviations nearby the stated target with a symmetric approach.

3. Ambiguity about the numerical value of the price stability objective is not helpful. The new target is simple, clear, and easy to communicate, and is thus expected to contribute to a more solid anchoring of longer-term inflation expectations.

When rates will be raised?

According to Philip R. Lane, member of the ECB's Executive Board, three key conditions should be met before interest rates are raised:

The first condition, '*Interest rates will remain at their present or lower levels until we see inflation reaching two per cent well ahead of the end of our projection horizon*', provides reassurance that the convergence of inflation towards the new target should be sufficiently advanced and mature at the time of the policy rate lift-off. Moreover, requiring the inflation target to be reached '*well ahead of the end of the projection horizon*' helps to hedge monetary policy against the risk of reacting to forecast errors, which tend to be larger at longer horizons.

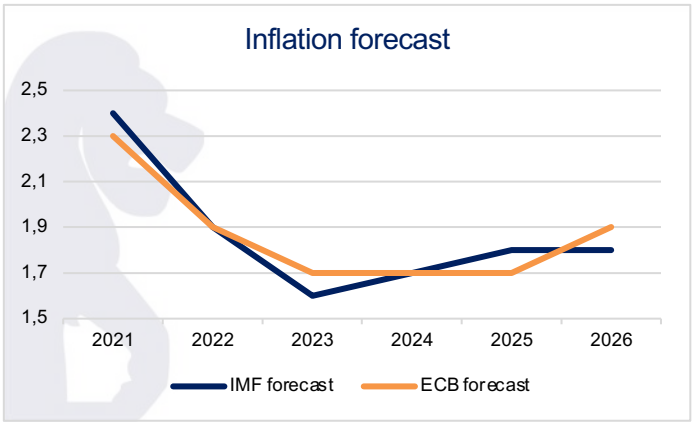
The second condition is that we expect inflation to reach two per cent '*not only well ahead but also durably for the rest of the projection horizon*' and suggests that reaching the inflation target should last and not just be the result of short-life forces that leading to one-time increases in prices unlikely to bring forth persistently higher year-over-year inflation.

The third condition, *'realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at two per cent over the medium term'* signals that policy rates should not be lifted unless underlying inflation is also judged to have made satisfactory progress towards the target. This condition is based on the achieved data and provides an extra safeguard against a policy tightening in the face of cost-push shocks that might elevate headline inflation temporarily but fade quickly.

Implications of the new target

Fears of national lockdowns in Europe are trumping inflation concerns as traders rush to offload forecasts that the European Central Bank will tighten its policy next year. Traders are now contemplating a scenario of no rate hikes, just a week after betting on a 20-basis-point hike by December 2022. This comes right after Austria communicated that it would enter a nationwide lockdown from November 22, while Germany is considering a similar move as Europe struggles to get a handle on the pandemic with cases raising across the continent.

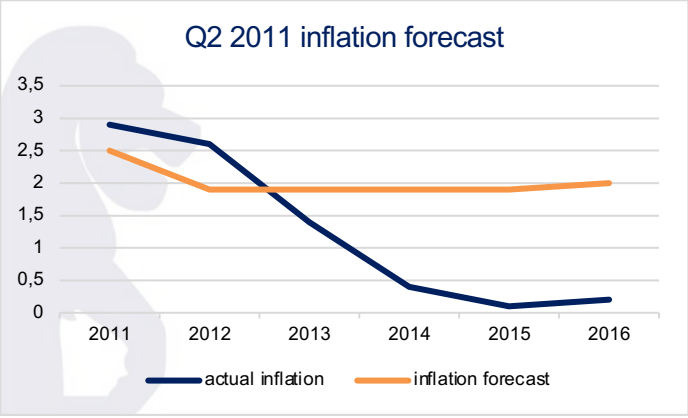
The pullback also follows comments from ECB President Christine Lagarde, who said the central bank shouldn't tighten monetary policy too soon. 'We must not rush into a premature tightening when faced with passing or supply-driven inflation shocks', Lagarde said. 'At a time when purchasing power is already being squeezed by higher energy and fuel bills, an undue tightening would represent an unwarranted headwind for the recovery.' The ECB is also likely to tread carefully in tightening policy so as not to trigger any rise in borrowing costs for more indebted eurozone members such as Italy, Spain, Greece, and Portugal. According to ECB's projections HICP inflation is expected to rise until the end of this year, to decline in the first half of 2022 and to gradually strengthen thereafter. Headline inflation is projected to average 2.3% in 2021, 1.9% in 2022 and 1.7% in 2023. The spike in headline inflation in 2021 reflects upward effects from largely temporary factors, such as the rebound in the energy inflation rate amid strong base effects and the reversal of the German VAT rate cut. Increases in input costs related to supply disruptions and one-off re-opening effects on services prices, as COVID-19-related restrictions eased in the summer, have added to the upward pressure on inflation.



Source: IMF, ECB

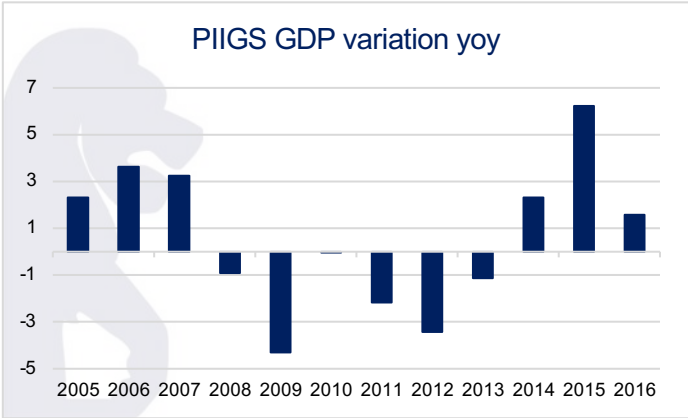
Still, Lagarde stressed that the ECB's Governing Council continues to see inflation dropping below the 2 per cent target. Despite the current inflation surge, the outlook for inflation over the medium term remains subdued, and thus the three conditions, that need to be satisfied before rates will start to rise, are very unlikely to be satisfied next year. Moreover, prospects for medium-term inflation are better now than they were before the pandemic, when the ECB struggled to bring it up to its 2% target. In the past weeks with euro-area inflation racing through 4%, markets have been betting that price gains would stick, potentially forcing the European Central Bank to act by the end of next year; by then, forecast inflation will have slowed down to about 1%. As the headline rate falls back, the narrative on monetary policy will shift. The central bank has committed not to raise rates before it stops primary bond purchases. Currency traders will be watching December's announcements closely for any signs that the ECB could end asset purchases earlier than markets anticipate, which could indicate a rate rise is nearer than expected and trigger an appreciation of the euro.

In this sense, the monetary policy adopted by the central bank seems to have learned from past mistakes. Concerned about a continued increase in inflation in 2011, hawkish European Central Bank president Jean-Claude Trichet increased the benchmark rate 25 bps in two consecutive quarters. The benchmark rate went from 1% in 1Q to a 1.5% print announced in July 2011. In March 2011 ECB projections foresaw annual HICP inflation in a range between 2.0% and 2.6% for 2011 and between 1.5% and 2.4% for 2012, which was an upward shift compared with the December 2010 projections, mainly owing to higher energy and food prices.



Source: ECB

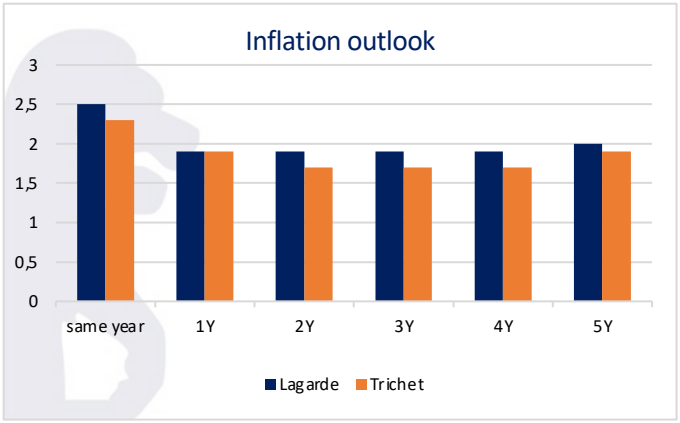
In the light of the upside risks to price stability identified in the economic analysis, and in order to ensure the firm anchoring of inflation expectations at levels consistent with price stability, the Governing Council decided to increase the key ECB interest rates by 25 basis points at its meeting on 7 April 2011. The day of the second hike, on 11 July 2011, Portuguese sovereign debt was downgraded to junk and in less than a year Greece's creditors were forced to restructure the country's sovereign debt to remain in the currency union. The PIIGS countries saw a sharp decline in PE activity and total capital transacted after the rate hike. Deal flows grounded to a halt with higher rates and uncertain financing; conditions at the trough in 3Q 2012 prompted Trichet's successor Mario Draghi to make a speech in London promising *'whatever it takes'* to improve the situation.



Source: ECB

As soon as Mario Draghi became president of the central bank, he decided to reduce the key ECB interest rates by 25 basis points at its meetings on 3 November and 8 December 2011. This was assessed to be essential to ensure a firm anchoring of inflation expectations in the euro area in line with the Governing Council's aim of maintaining inflation rates below, but close to, 2% over the medium term. The decision to increase interest rates in 2011 has been recognized as a major policy error.

We are dealing with a clear change of course on the part of the ECB. It is a more cautious attitude towards rapid change in the inflation outlook. The position expressed by Christine Lagarde is strongly influenced by fear that monetary tightening would have a disruptive impact on countries marked by high public debts. Although the forecasts for the future inflation values in the European Union are remarkably similar, Lagarde and Trichet behaved with a completely different attitude. This change in monetary policy is a sign of a shift in the school of thought of the two bankers and thus in an accommodating attitude towards rising inflation.



Source: ECB

Monetary Policy Rule

In general, the aim of monetary policy is the macroeconomic stabilization. As Mario Draghi pointed out in 2016: "Central Banks do typically refrain from reacting to supply shocks, that have opposing effect on output and inflation". In fact, only a demand shock ambiguously triggers a gap in both outputs and inflation in the same direction that can be addressed through the same monetary policy reaction. With a supply shock central banks must address the tradeoff between inflation and output growth targets. When faced with such a tradeoff, the existence of a monetary rule can be very useful. The monetary policy goal of stabilization can be linked with the selected monetary policy tools using a monetary policy rule. In general, the monetary policy tools are interest rates and quantitative policies. Moreover, recently also the central bank communication (forward guidance) became a relevant instrument in the monetary policy toolkit.

The starting point is the Fisher equation that is an equilibrium condition in the long run, while in the short run it identifies just an accounting indent identity, according to which in every moment we can calculate a real rate doing the difference between the nominal rate and inflation rate. The nominal interest rate is the monetary policy rate reference, i.e. the rate under the control of the central bank.

In general, monetary policy rules are formulas that define a link between a small number of economic variables and a setting of a policy reference rate. The most common interest-rate policy rule is the Taylor rule. Given the existence of macro targets for inflation and output, the Taylor rule is based on the following assumption: in the absence of central bank action the nominal interest rates is at its neutral level, i.e it is equal to the sum of the optimal inflation and the real interest rate. The latest rate is the Wicksell's natural interest rate: the rate at which output growth reached equals its potential without inflationary or deflationary risks from a medium-term perspective, the natural rate can be considered as an exogenous variable. However aggregate shocks can occur, and actual macro-outcomes (inflation and output growth) can deviate from the targets. Notably, deviations between actual inflation and optimal inflation represent higher risk of inflation or deflation today, whilst discrepancies between actual growth and optimal growth mean higher risk of inflation or deflation tomorrow. The reason is simple: given that the optimal growth status means a full resource allocation if the actual growth is permanently greater than the optimal growth and increasing the prices is likely to occur the opposite is true if the discrepancy between actual growth and potential growth is negative.

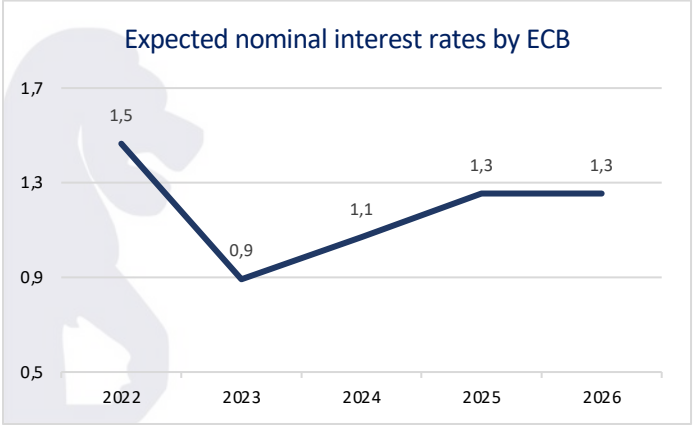
In other words, the monetary policy aim can be defined as macroeconomic (inflationary) stabilization. Therefore, the central bank actively and consistently reacts using its tool, namely the interest rate. The latter should be adjusted when either current impression deviates from the inflation targets or current output deviates from the output target .

The Taylor rule can be simply described as follows:

$$i = r^* + \pi + \alpha(\pi - \pi^*) + \beta(y - y^*)$$

We have estimated α to be equal to 0.9, while β is not statistically different from zero (for both parameters we used 0.05 confidence level).

Using our estimates for the ECB's Taylor rule and retrieving data for forecasted inflation in the EU from the IMF database, we are able to predict the future behaviour of the ECB, according to its monetary policy rule.



Source: IMF

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Bloomberg, ECB, ECON, Eurostat, FRED, IMF.

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