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NBB Economic Review

2022 / #10

Towards a normalisation of monetary policy

by S. El Joueidi, E. Vincent



Towards a normalisation of monetary policy

A tale of two central banks, the European Central Bank and the Federal Reserve

S. El Joueidi

E. Vincent*

Introduction

For more than a decade, central banks around the world have been implementing extraordinary measures to mitigate the economic impact of the global financial crisis (GFC) and the COVID-19 pandemic. During the pandemic, central banks once again deployed a wide array of conventional and unconventional tools, building on the toolkit that was used during the GFC (and the sovereign debt crisis in Europe). As a result, central banks today face policy rates near the lower bound and very large balance sheets. The ongoing recovery with signs of some economies overheating as well as high price pressures have galvanised central banks into starting the journey down the path of normalisation.

As the normalisation process is dictated by the macroeconomic context, disparities in terms of the economic situation and outlook – and, in particular, material differences in the severity and persistence of inflation – among regions imply significant differences in the pace of this process. Moreover, the multitude of interrelated and largely exogenous shocks hitting the global economy – such as the war in Ukraine, further COVID-19 waves and supply bottlenecks – are causing great uncertainty about the economic outlook and are impacting areas to a different extent.

The current article focuses on two central banks: the European Central Bank (ECB) and the Federal Reserve (Fed)¹. It aims at analysing and comparing the ongoing normalisation process in the euro area and the US. It explores why the ECB and the Fed are following a different pace in their normalisation process. It also discusses some of the challenges faced by central banks while normalising, with respect to the economic outlook and financial stability.

This article is structured as follows. Section 1 presents central banks' policy stance as it emerged from the GFC, the sovereign debt crisis in Europe and the pandemic crisis. Section 2 analyses the process of monetary policy normalisation in a fairly theoretical way. Section 3 presents and compares the current macroeconomic situation and

* The authors would like to thank Paul Butzen and Bruno De Backer for their valuable comments.

¹ For simplicity, this article uses the term “ECB”, even if actually referring to the Eurosystem or the ECB's Governing Council, while noting that the Eurosystem comprises the ECB and the national central banks of the euro area countries and monetary policy decisions are taken by the Governing Council (consisting of the six members of the ECB's Executive Board and the governors of the euro area's nineteen national central banks) and implemented at the level of the Eurosystem. Similarly, the term “Federal Reserve” or “Fed” is used, even if actually referring to the Federal Open Market Committee or FOMC, which makes the monetary policy decisions.

outlook in the euro area and the US, implying important differences in the pace of their projected normalisation process. Section 4 discusses the challenges faced by central banks. Finally, the last section concludes.

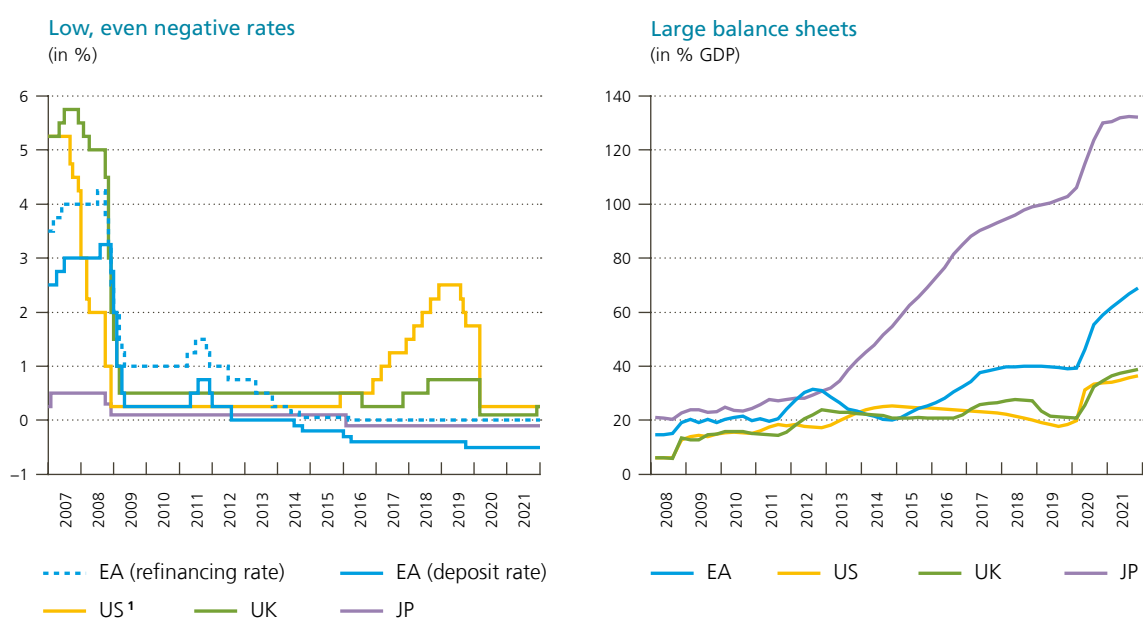
1. An unusual starting point

Throughout the COVID-19 pandemic, central banks deployed a wide array of instruments to mitigate the economic impact of the crisis. The scope, size and speed of the policy response have been exceptional. Moreover, more than a decade after the GFC, the monetary policy stance at the start of the pandemic was still very accommodative and many central banks were applying low, even negative policy rates (as illustrated in the left-hand panel of chart 1), which were then close to their lower bounds in several countries still facing low growth and low inflation. As the proximity of the lower bound reduced the possibility of using conventional (interest rate) tools to stimulate economic activity, these central banks were still relying on unconventional monetary policy tools, most notably large-scale asset purchases (also known as “quantitative easing” or QE).

In 2001, when faced with persistent extremely low inflation, the Bank of Japan was the first major central bank to resort to QE and purchase longer-term financial assets on a considerable scale. This tool was also adopted by the Fed and the Bank of England in response to the global financial crisis in 2008-2009 as well as by the ECB during the sovereign debt crisis in Europe. During the pandemic, quantitative easing was also resorted to in advanced economies as shown in the right-hand panel of chart 1. It effectively played a role in stabilising financial markets and supporting the economy by keeping borrowing costs low. For fiscal authorities, the lower borrowing costs were a windfall as they facilitated the deployment of important fiscal stimulus packages.

Chart 1

Central banks globally started normalising monetary policy from an unusual starting point



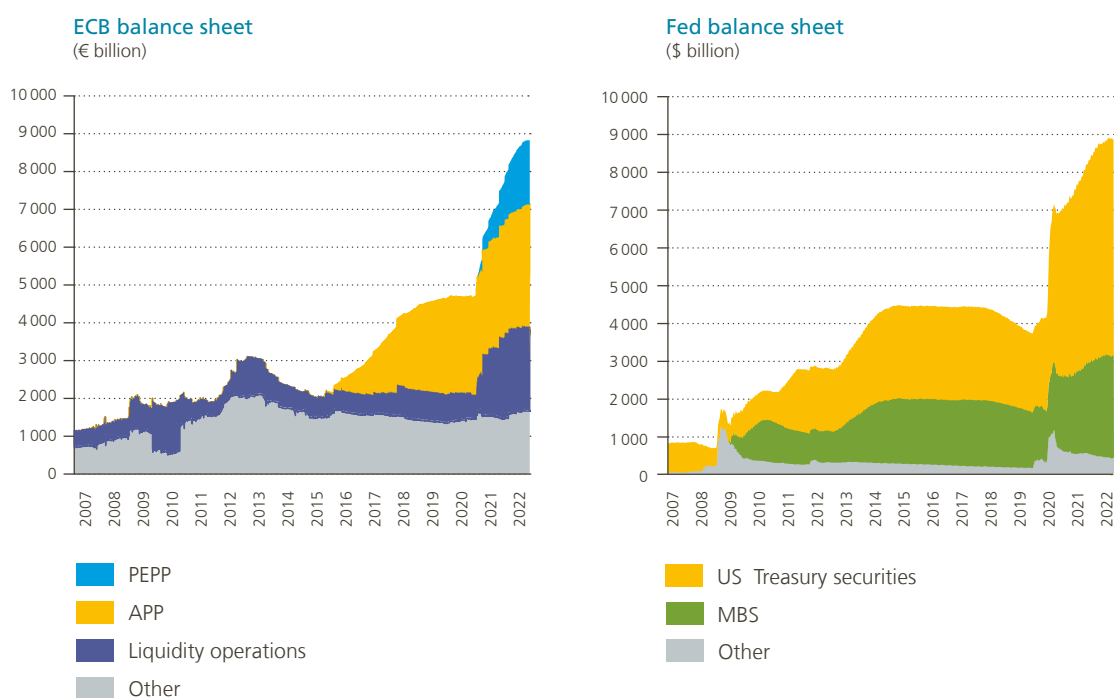
Sources: Bank of England, BIS, Eurostat, OECD, ONS, Refinitiv.

¹ Upper limit of the target range.

Just like central banks in most other advanced economies, the ECB was able to build on the experience gained during past crises to fight the economic and financial impact of the pandemic. As the euro area had struggled with low growth and inflation throughout the 2010s, it backed up or enlarged the tools it still had in place when the coronavirus spread across Europe¹. First, the ECB's policy rates were kept close to their effective lower bounds during the COVID-19 crisis. Then, by adapting its forward guidance in the context of the conclusion of its strategy review in July 2021, the ECB confirmed its intention to keep policy rates at low levels until inflation robustly converges to the 2 % target². Regarding asset purchases, an envelope of € 120 billion was added to the ECB's Asset Purchase Programme (APP) to top up the then monthly asset purchases of € 20 billion, which further inflated the ECB's balance sheet, as shown on the left-hand panel of chart 2. However, as it quickly became clear that the crisis would cause more severe damage to the economy than previously anticipated, a new programme for asset purchases, the Pandemic Emergency Purchase Programme (PEPP), was introduced. The envelope for purchases under the PEPP was scaled up several times, to a total of € 1 850 billion, while purchases could be conducted more flexibly than under the APP, by spreading them over time, asset classes and jurisdictions. In addition, the ECB significantly eased the conditions of the third series of targeted longer-term refinancing operations that had been launched in the autumn of 2019. As a result, euro area banks could borrow ECB funds at a rate as low as –1 % during the pandemic.

Chart 2

The ECB and Fed balance sheets expanded considerably during the pandemic



Sources: ECB, Federal Reserve.

1 For more details on the measures the ECB put in place during the pandemic crisis, see Boeckx J., M. Deroose and E. Vincent “*The ECB’s monetary policy response to COVID-19*”, NBB Economic Review, September 2020.

2 More particularly, the ECB’s forward guidance was modified in the following sense: interest rates would not be raised until inflation reaches 2 % well ahead of the end of the ECB’s projection horizon and durably for the rest of the projection horizon, and until the ECB judges that realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at 2 % over the medium term. This may also imply a transitory period in which inflation is moderately above target. For more details on the ECB’s strategy review, see the *NBB Annual Report 2021*, pp. 75-78.

In the US, the Fed also supported the economy and financial markets using conventional and unconventional monetary policy tools. In March 2020, the target for the federal funds rate was cut by a total of 1.5 percentage points to a range of 0 - 0.25 %. The Fed also provided forward guidance on the future path of interest rates by stating that rates would remain low until the dual mandate's objectives have been met, namely "until labour market conditions have reached levels consistent with the [Fed's Federal Open Market] Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time"¹. The Fed also massively resumed the purchase of debt securities (see the right-hand panel of chart 2). After the outbreak of COVID-19, quantitative easing was initially aimed at restoring the smooth functioning of the markets for Treasuries and mortgage-backed securities (MBS)². These two markets play an important role in the flow of credit to the economy as benchmarks and sources of liquidity. The initial objective was rapidly extended to supporting the economy more broadly. On 23 March 2020, the Fed authorised purchases of the volumes of US Treasury securities and MBS needed to support effective transmission of monetary policy to broader financial conditions. As a consequence, between 18 March and 22 April 2020, the Fed had already expanded its US Treasury portfolio by approximately 50 % and its MBS holdings by nearly 18 %. In June 2020, it set its monthly pace of purchases to at least \$ 80 billion for Treasuries and \$ 40 billion for mortgage-backed securities "until further notice". The Fed had also adopted different measures to support financial markets (Primary Dealer Credit Facility, Money Market Mutual Fund Liquidity Facility, swap and repo lines, etc.), corporations and businesses (direct lending) and households and consumers (Term Asset-Backed Securities Loan Facility).

2. What is normalisation? – A theoretical view

2.1 What is a "normal" monetary policy stance?

In the current context, monetary policy normalisation refers to a situation where central banks are adjusting their policy stance from one that is supportive of inflation to a stance that aims to fix inflation at the target. The notion of the natural or equilibrium rate of interest – the so-called r^* ("r-star") – is crucial in this regard. This r-star is the (real) interest rate level at which the economy is in equilibrium: output is at its potential and inflation is stable. When the economy is running below (above) potential and inflation is below (above) the central bank's target, activity and inflation can be stimulated (curbed) by moving real rates – policy rates corrected for inflation – below (above) r-star, this is a so-called easing (tightening) of the monetary policy stance. When output is in line with potential and inflation is close to target, real rates should be in line with r-star. Against a background of the post-pandemic recovery and with inflation expected to move towards target over the medium term, central banks around the world have started *normalising* their extremely accommodative monetary policies: they are moving towards a more neutral policy stance, by pushing real rates towards levels more in line with r-star. Such a process would need to be followed by a *tightening* strategy to the extent that the economy would start to be running above potential and inflation would be expected to exceed the target in the medium term. Rates would then need to be raised even further, over and above the level of the equilibrium rate.

But since the global financial crisis, policy rates have no longer been the only instrument at central banks' disposal. As explained above, asset purchase programmes were used to reinforce the accommodative impact of policy rates on inflation. Winding down central banks' inflated balance sheets is therefore also part of the normalisation process and determining the right mix between interest rate rises and balance sheet reductions adds to the complexity of it.

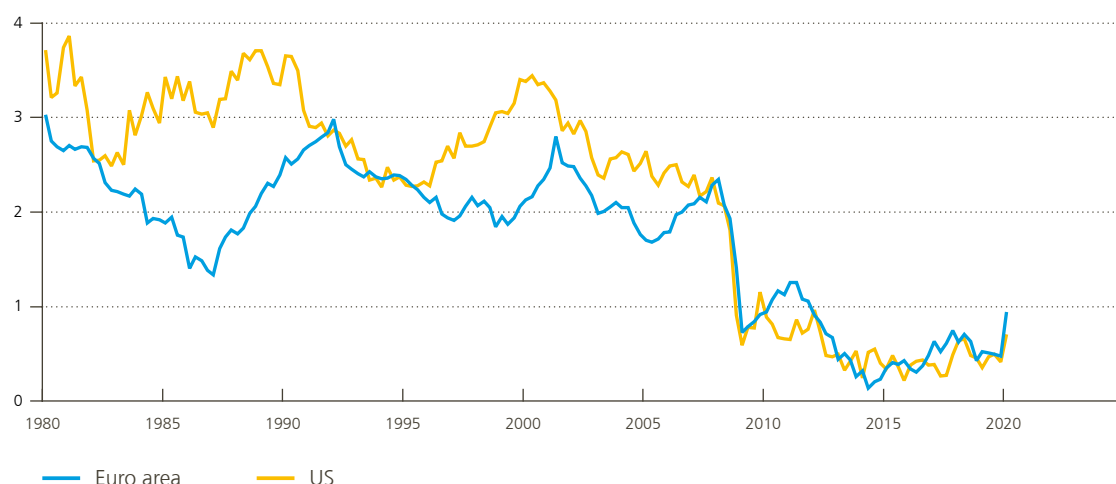
¹ For more details on the outcome of the Fed's strategy review, see the [NBB Annual Report 2020](#), pp. 102-104.

² The Fed defines mortgage-backed securities as securities that are collateralised by a discrete pool of mortgage loans and that make payments that are based primarily on the performance of those loans.

Chart 3

The equilibrium interest rate has declined over the last few decades

(in %)



Source: Holston K., Th. Laubach and J. Williams (2017), "Measuring the Natural Rate of Interest: International Trends and Determinants", Journal of International Economics, 108, Supplement 1 (May): S39–S75.

On the assumption that central banks will be moving towards a *neutral* policy stance, where would this whole process be heading? In other words, what would be the terminal policy rate and balance sheet size under such a scenario? As for the policy rate, it is important to have an idea about the level of r^* as it is the level where policy rates should in principle be at the end of the normalisation process. As r^* is not observed, it has to be estimated based on models, something which is subject to important caveats and has become even more difficult since the pandemic because of the sharp output swings and the lasting changes to the economic fabric the crisis involved¹. But what is very likely is that r^* has declined considerably over the last few decades (see chart 3). Several structural trends such as the slowdown in productivity growth or population ageing – a detailed analysis of which is outside the scope of this article² – have weighed on potential growth in developed countries and, consequently, on the equilibrium rate, too. All in all, this suggests that policy rates in advanced economies will be quite low at the end of the normalisation process.

Determining the optimal size of the balance sheet is not an exact science either. From an operational point of view, there is no clear need to scale down central banks' balance sheets: it is possible to effectively tighten financial conditions by raising policy rates while leaving balance sheets unchanged, as the Fed's experience in the post-GFC period has shown. However, the reason why central banks conducted asset purchases in the first place, and thus enlarged their balance sheets, was to exert downward pressure on longer-term interest rates and, in turn, stimulate activity and inflation. This happens when the purchases are actually implemented – the so-called "flow" effect – but also as a result of the "stock" effect of the outstanding amount of assets purchased which continues to exercise downward pressure on longer-term bond yields. Evidence suggests that this latter effect is larger and likely to last longer. Flow effects, on the other hand, are usually smaller and short-lived, as they reflect improvements in liquidity conditions and market functioning more generally during periods of high financial

1 This also explains why estimates of r^* in chart 3 only run up to the first quarter of 2020. More recent estimates of r^* assess the equilibrium rate to be between –2 and 0 % in the euro area and between 0 and 1 % in the US. Such estimates can be derived from long-term market- and survey-based expectations or from models such as those in Brand, Goy and Lemke (2020) and Brand and Mazelis (2019), for example.

2 For more information, see De Backer B., J. Wauters, "The cyclical and structural determinants of the low interest rate environment", NBB Economic Review, September 2017.

market stress¹. Large balance sheets, in other words, keep providing monetary stimulus. So, if the goal is to move to a more neutral stance of monetary policy, it is probably more efficient to also reduce the balance sheet while raising policy rates. If not, rates might have to be raised disproportionately to achieve similar results.

But there are other reasons to keep central banks' balance sheets no larger than what is strictly necessary for the conduct of monetary policy. First, a sustained expansion of its balance sheet means that a central bank becomes more exposed to market risks with a potentially large impact on its profits. Even if central banks only wound down their balance sheets by ceasing to reinvest the proceeds from maturing assets, the rising interest rate paid on commercial banks' reserves (a liability) would still cause a fall in their income. Furthermore, the large holdings of bonds on central banks' balance sheets may create shortages of eligible assets in circulation, distorting the efficient functioning of markets and complicating possible future asset purchases. Finally, larger balance sheets may also put central banks' independence at risk. Governments' debt ratios rose considerably during the pandemic, with a large part of this debt featuring on central banks' balance sheets. Such a situation, if sustained, might raise issues of fiscal dominance, were central banks to be expected to keep governments' borrowing costs low, even if their price stability objective required tightening the monetary policy stance.

That being said, just as policy rates might still end up being quite low at the end of the normalisation process, the optimal size of central banks' balance sheets might also be higher than before the start of their asset purchase programmes. One of the reasons is that regulatory requirements have changed since the global financial crisis, increasing banks' demand for safe and liquid assets, including in particular central bank reserves.

So how does this all translate into the ECB and the Fed's normalisation plans? The Fed has been more explicit on this, providing some clarity through its statements and "policy normalisation principles and plans"². More specifically, the Fed has said that it is guided by the principle that its balance sheet should be no larger than what is needed to implement monetary policy efficiently and effectively. While signalling that the balance sheet run-off will cease when reserve balances are judged to be at an ample level, it does not specify what actual size would be consistent with such a level. Moreover, the Fed is also keeping its options open, noting that it is prepared to adjust its strategy in light of economic and financial developments. Furthermore, in the longer run, the Fed intends to hold primarily US Treasury securities on its balance sheet so as to minimise the effect of its holdings on the allocation of credit across sectors of the economy³.

At the time of writing, the ECB was not discussing the run-down of its balance sheet yet and had not provided any concrete guidance as to how this would be done in practice or what the final size of its balance sheet would be. Overall, the ECB's monetary policy follows a principle of proportionality, which requires it to carefully assess the necessity and suitability of policy action to deliver on the mandate, while also considering whether this policy action is less intrusive compared with other options to achieve the same goal⁴. This suggests it would strive for a balance sheet that is no larger than what is strictly needed for the conduct of monetary policy.

2.2 Determining the right sequencing of the normalisation strategy

Experience with normalising monetary policy in a situation where central banks are combining policy rate rises and a run-off of their balance sheets has been limited. The Fed was the only major central bank to start reducing the size of its balance sheet before the COVID-crisis. The Fed had first ended net asset purchases before it started

1 See for example D'Amico S., T. B. King, "Flow and Stock Effects of Large-Scale Treasury Purchases: Evidence on the Importance of Local Supply", *Journal of Financial Economics* 108 (2): 425–48, 2013.

2 For more details, see the Federal Reserve Board – Policy Normalization: <https://www.federalreserve.gov/monetarypolicy/policy-normalization.htm>

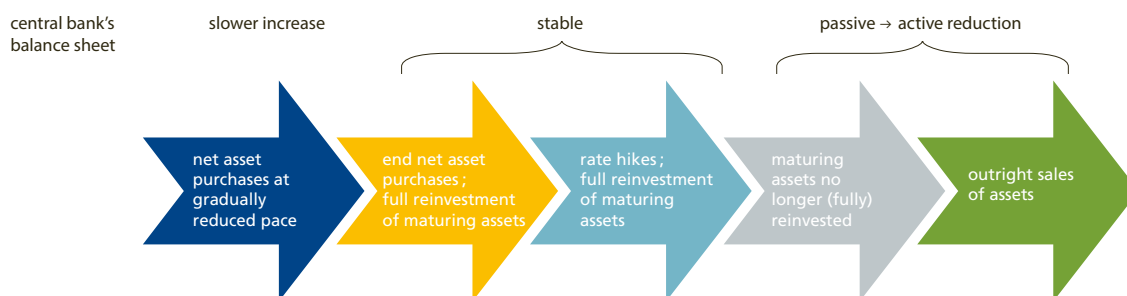
3 The Fed's MBS purchases may affect credit allocation by changing the prices of various securities. Purchasing MBS raises the price of those securities directly which reduces mortgage interest rates and thus supports the flow of mortgage credit to households. It might also indirectly affect the prices of other securities if private investors reallocate their portfolios toward MBS. Thus, changing relative prices may influence the private allocation of credit across sectors.

4 See for example Elderson F., "Proportioning policy action to the evidence: making the monetary policy strategy of the ECB concrete", speech at the Institute of International & European Affairs webinar, March 24, 2022.

rising policy rates. When policy rates were raised, maturing assets on the Fed's balance sheet were initially still fully reinvested. Only when the normalisation of the federal funds rate was well under way, it started to cut back its balance sheet by no longer fully reinvesting the proceeds of assets that came to maturity. Active sales of assets on its balance sheet could have accelerated the reduction of asset holdings, but the Fed never resorted to this before the pandemic.

Chart 4

"Textbook" normalisation cycle



The Fed's previous experience reveals a kind of "textbook" for monetary policy normalisation (see chart 4) which also looks to be followed by the Fed and the ECB in the current post-COVID period. One of the reasons why central banks prefer to end net asset purchases before they start to raise rates is that it provides clarity on the intended monetary policy stance instead of sending conflicting signals from different instruments. The opposite option of carrying on expanding the balance sheet while raising rates might distort the central bank's policy message. Furthermore, central banks would typically prefer to start raising rates before reducing the size of their balance sheets as they are keen on regaining conventional monetary policy space and relying on their experience with adjusting the level of interest rates. Interest rate changes are also quicker to implement than modifying asset purchases. Finally, asset purchases tend to benefit wealthier households more by weighing on longer-term rates and encouraging risk-taking, which contributes to boosting equity and real estate prices for example¹.

Once a central bank has started its rate-rising cycle, the question is at what pace its balance sheet can be wound down. In other words, how fast should the central bank hike rates and how quickly should it get its balance sheet back to normal? On the one hand, raising policy rates quickly opens up some distance from rates' effective lower bounds, thereby regaining conventional policy space faster for potential future crisis action. Admittedly, this kind of insurance argument in favour of a slower pace of quantitative tightening becomes less important in the current high inflation environment, which reduces the probability of having to bring rates down again towards the lower bound. Moreover, raising interest rates quickly may lead to a flattening or even inversion of the yield curve, as short-term interest rates rise while long-term rates remain depressed by the outstanding stock of purchased assets, which may weigh on the profitability of financial intermediaries (maturity transformation) and more generally give investors the impression that a recession is imminent². All in all, the normalisation process involves a careful balancing act.

1 The literature is not conclusive on this. While low interest rates mitigate *income* inequality, their impact on asset prices may have the effect of increasing *wealth* inequality. The latter essentially depends on who owns assets like equities and houses. If these are owned mainly by the wealthiest segments of the population, wealth inequality will tend to rise as a result of lower interest rates. See, for example, BIS Annual Economic Report, June 2021 and Schnabel I., speech on "*Monetary policy and inequality*", November 2021.

2 Historically, inverted yield curves have tended to precede recessions, with few cases of false alarms. The relation between the yield curve and recessions is most pronounced in the US where inverted yield curves preceded virtually all post-WWII recessions. But the relation is also present in the euro area (German historical data). Today, the signal from the yield curve is less straightforward to interpret given the influence of QE on longer-term rates.

Finally, the average maturity of a central bank's asset holdings matters too. Central banks holding assets with a relatively short maturity can probably rely heavily on passive balance sheet reductions during the normalisation process, by no longer reinvesting the proceeds from maturing assets. This is how the Fed is currently proceeding as it has bought up a large amount of short-term Treasury securities. In order to retain control over this process, caps have been put in place to determine the maximum monthly amount of run-offs. It also explains why the Bank of England, for example, intends to proceed more quickly to outright sales of UK government bonds, since the average maturity of its asset holdings is quite high and definitely above that of the Fed and ECB. While the ECB has not provided any details yet on how quantitative tightening would proceed, it has always stressed that this process would be gradual.

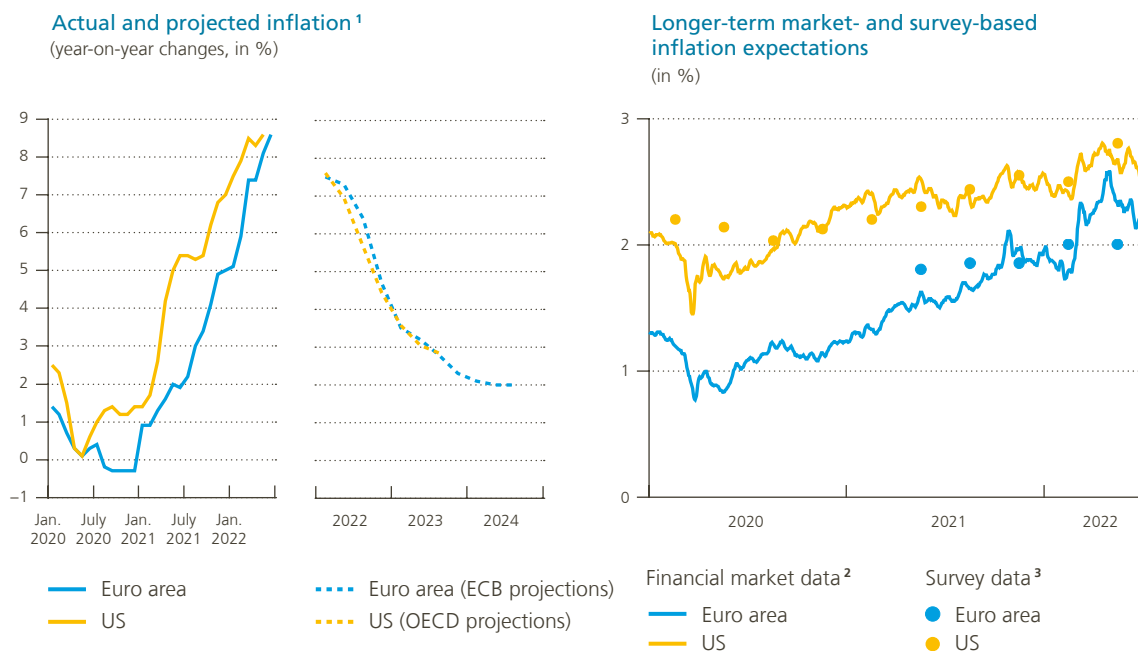
3. Normalisation in practice: the case of the euro area and the US

3.1 The pace of normalisation is dictated by the macroeconomic context

Above all, the pace of the normalisation process is dictated by the macroeconomic context. What makes the current situation so exceptional – in addition to the low interest rate environment and high balance sheets – is the particularly large degree of uncertainty surrounding the macroeconomic outlook. The global economy has recently been hit by a multitude of shocks (the war in Ukraine, COVID-19 and supply bottlenecks) that are often interrelated and largely exogenous to monetary policy-setting.

Chart 5

Inflation is at record-high levels with expectations above target



Sources: ECB, Eurostat, Federal Reserve Bank of Philadelphia, OECD, Refinitiv, US Bureau of Labor Statistics.

¹ Harmonised Index of Consumer Prices (HICP) for the euro area and Consumer Price Index (CPI) for the US.

² Five-year forward inflation-linked swap rates five years ahead.

³ Ten-year inflation expectations based on the ECB's Survey of Monetary Analysts and the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters.

One of the most striking features of the post-pandemic recovery in both the euro area and US is undoubtedly the strength of price increases that have accompanied it. The speed and force of inflation developments took policy-makers by surprise and, as we discuss below, sped up the normalisation process. In the euro area, inflation started accelerating during the summer of last year, surging from 2.2 % to 8.6 % between July 2021 and June 2022. In the US, this process not only started earlier, but price rises were (initially) also more pronounced, with inflation going up from 1.4 % in January 2021 to 8.6 % in May 2022.

But what matters even more for monetary policy is where inflation is likely to be in the medium term. If inflationary forces are only expected to be temporary and inflation were therefore to subside relatively quickly, central bankers should look through the high inflation numbers and not change policy course. Inflation projections and expectations can give an indication of where inflation is heading.

According to the June Eurosystem staff macroeconomic projections, inflation in the euro area is expected to remain at high levels in 2022 (6.8 %), on account of soaring energy and food prices, as well as post-pandemic re-opening effects and global supply shortages. With the impact of these factors gradually dissipating over time, inflation would also be gradually going down however, reverting towards target in the course of 2024 (with inflation at 3.5 % in 2023 and 2.1 % in 2024). In the US, inflation is also expected to peak this year (at 7.0 %) – on account of the same factors as in the euro area – and to remain above target next year (at 3.5 % in 2023, according to the June OECD projections, see chart 5, left-hand panel).

Long-term inflation expectations matter particularly for monetary policy as it is important that they do not get de-anchored from the central bank's inflation target and do not fall prey to self-fulfilling spirals. Even if inflationary forces were in themselves only temporary, a longer period of higher inflation could start to feed into higher inflation expectations over the longer term and trigger mechanisms pushing price rises out of control. One such mechanism is the wage-price spiral according to which workers' unions demand higher wages in view of the higher expected inflation. Market-based measures of inflation compensation have been showing a clear upward trend from the troughs reached at the beginning of the pandemic (chart 5, right-hand panel). They have been consistently higher in the US than in the euro area throughout this whole period. This gap has narrowed since the beginning of the year, as Russia's invasion of Ukraine pushed inflation compensation up significantly more in the euro area than in the US. Against this background, longer-term market-based measures of inflation compensation have exceeded targets in both areas.

The information derived from market-based measures of inflation compensation should nevertheless be treated with some caution as they contain inflation risk premia. This makes it harder to interpret them as an indication of inflation expectations, especially given the current high inflation uncertainty. Inflation expectations drawn from surveys of professional forecasters do not have this complication (though they are less frequently available). Survey-based inflation expectations for the euro area have risen since 2021 to come back closer to 2 %. Survey-based expectations in the US, on the other hand, have been higher and clearly moving further away from target.

The underlying drivers of inflation in the euro area and US are multiple and analysed in detail in a recent NBB Economic Review article¹. Apart from strong upward base effects (in 2021), elevated inflation also relates to the post-pandemic recovery and the inability of the supply side to respond sufficiently to the ensuing increase in demand, against the background of lingering effects of past coronavirus restrictions and exacerbated by the war in Ukraine and new lockdowns in China. Such supply-demand mismatches equally played a role in the surge in energy and other commodity prices. Whereas these factors have all played a role in the rise in inflation in the euro area and the US, their contribution differed between the two economic areas. More particularly, while the main contributor to headline inflation in the euro area is energy, the main culprit in the US is core inflation. This could explain why inflation in the US is expected to be more persistent than in the euro area according to market- and survey-based measures. Price increases in the US are, to a larger extent, demand-driven,

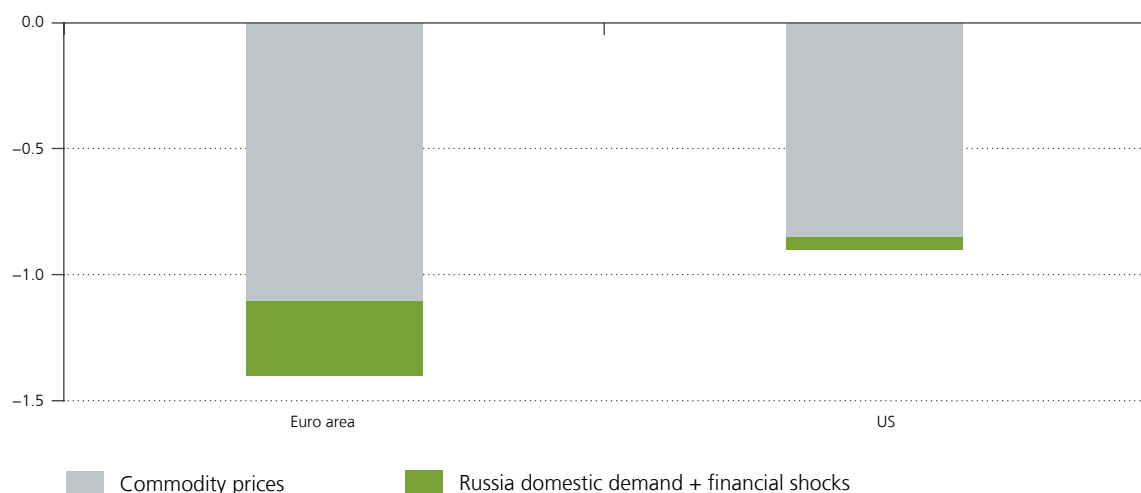
¹ For more details, see De Sloover F., J. Jonckheere and A. Stevens, "The return of inflation: what are its causes and will it persist?", NBB Economic Review, May 2022.

related to the overheating of the economy. The euro area on the other hand, as a large net importer of energy and with closer economic and financial ties to Ukraine and Russia, is importing higher prices. On top of that, the tight labour market in the US has already led to rising wages, while wage pressures in the euro area have been more moderate so far. All in all, the risk of persistently higher inflation seems larger in the US than in the euro area.

Chart 6

The war in Ukraine is weighing on growth, especially in the euro area

(OECD simulations of the impact of the war in Ukraine on GDP during the first full year, %)



Source: OECD.

Besides the recent economic shocks being inflationary, they are also having an adverse effect on growth, with the euro area expected to be more severely affected than the US. For instance, the war in Ukraine has not only brought about a negative energy supply shock (among other things), but it has also dented confidence and hence resulted in a negative demand shock, with both types of shocks contributing to reducing output. While this is true for both the euro area and US, negative growth effects are expected to be larger in the euro area given its tighter linkages with the conflict area (chart 6). Growth projections have been adjusted accordingly. Likewise, possible new COVID-infection waves – like the recent one in China – and the likely subsequent restrictive measures represent downside risks to growth for both the euro area and US economies.

This constellation of factors calls for a careful balancing act in terms of monetary policy. While high inflation and inflation expectations as well as tight labour markets at or near full employment call for monetary policy normalisation, the adverse impact that the war in Ukraine or new lockdowns in China could have on growth caution against too fast a monetary policy normalisation that could jeopardise the recovery. In addition, the different macroeconomic outlook in the euro area and US implies a different normalisation pace. The normalisation process in both areas is described in the next subsections.

3.2 Gradualism, flexibility and optionality are key in the ECB's normalisation process

The ECB kick-started its normalisation process in December 2021, when it made the first announcements about how it would wind down its extremely accommodative monetary policy. At the time, while inflation had already risen sharply and was expected to remain elevated in the near term, it was expected to ease in the course

of 2022. Growth had moderated, but activity was expected to pick up again strongly in the course of the next year. As many people had been vaccinated and booster campaigns accelerated, the ECB judged that the euro area economy would be able to better cope with pandemic waves and any resulting restrictions.

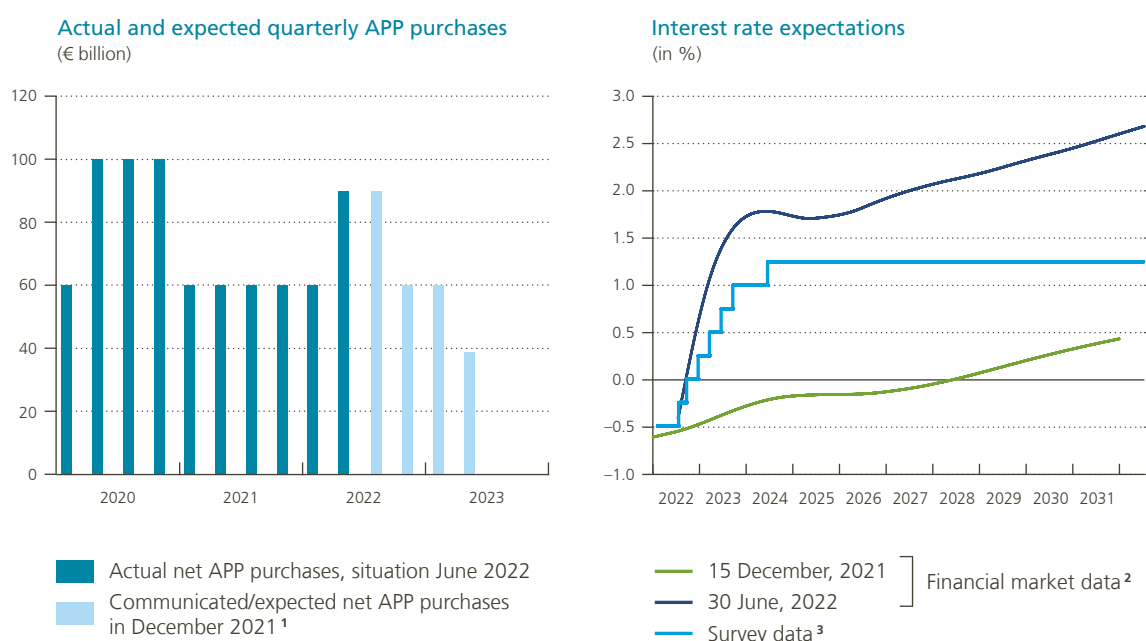
Gradualism, optionality and flexibility have been the key words in the ECB's communication on its normalisation strategy. Given the large uncertainty clouding the macroeconomic outlook, the ECB has opted for a gradual, step-by-step approach. Optionality refers to the need to keep all policy options open given the uncertain outlook for growth and inflation, depending on which the ECB might either speed up or slow down the normalisation process. Flexibility should help to ensure the smooth transmission of monetary policy across euro area countries as normalisation proceeds, through reinvestment of the PEPP portfolio (see below).

First of all, in December, the ECB decided to schedule no further TLTRO III operations after 2021. So, the special conditions applicable under TLTRO III ended in June 2022. To ensure that this would not hinder the smooth transmission of monetary policy, the ECB nevertheless continues to closely monitor banks' funding conditions.

Furthermore, the ECB decided that purchases under the PEPP, which was designed as a temporary crisis instrument in the first place, would be gradually reduced during the first quarter of 2022 and, finally, be halted by the end of March. By then, some € 1 700 billion of the overall PEPP envelope of € 1 850 billion had ultimately been spent. In order to retain some of the flexibility that the PEPP had offered during the pandemic years, the ECB decided to retain some latitude in the way the PEPP portfolio would be reinvested. In the event of any new pandemic-related fragmentation risks and to ensure the smooth transmission of monetary policy, reinvestment of acquired bonds under the PEPP can therefore be spread over time, asset classes and between euro area countries.

Chart 7

The surge in inflation has brought forward expectations about the normalisation process in the euro area



Sources: ECB, Refinitiv.

1 Net APP purchases as communicated by the ECB in December 2021 for the final two quarters of 2022 and expected net APP purchases according to the respondents to the December 2021 Survey of Monetary Analysts as from 2023.

2 €STR forward curves for the euro short-term rate.

3 According to the June 2022 Survey of Monetary Analysts.

This could include purchasing Greek government bonds over and above rollovers of redemptions. Moreover, while net purchases under the PEPP were terminated in March 2022, these can be relaunched if there is any renewed market fragmentation related to the pandemic.

Once the additional envelope of € 120 billion under the ECB's APP had been spent in 2020, the pace of purchases under that programme had dropped back to € 20 billion per month. The Governing Council judged that the macroeconomic outlook at the time required such large purchases in order to reinforce the accommodative impact of its policy rates and stabilise inflation at its target over the medium term. To ensure a smooth transition after the PEPP was terminated, purchases under the APP would be temporarily topped up: securities under the APP would be purchased at a rhythm of € 40 and 30 billion per month respectively in the second and third quarters of 2022. The total monthly amount of asset purchases would then be brought down to its pre-crisis level of € 20 billion as of October 2022 and purchases would end shortly before the first rise in policy rates. In December, respondents to the ECB Survey of Monetary Analysts (SMA) expected APP net purchases to continue until the second quarter of 2023.

With regard to its policy interest rates, the ECB confirmed its forward guidance according to which it expected the key interest rates to remain at their present or lower levels until it sees inflation reaching 2 % well ahead of the end of its projection horizon and durably for the rest of the projection horizon, and it judges that actual progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at 2 % over the medium term. At that time, markets priced in that policy rates would be lifted somewhere in the first half of 2023 only. Respondents to the December 2021 SMA expected a first rate rise towards the end of 2023.

As inflationary forces gained more strength than anticipated in the months following these decisions, not least because of the Russian invasion of Ukraine, the ECB decided to adjust its policy path at its meeting in March 2022. Monthly net purchases under the APP would still be temporarily topped up following the end of PEPP but over a shorter period, at a pace of € 40 billion in April and € 30 billion in May before dropping back to € 20 billion in June. Finally, in June 2022, the ECB announced that net APP purchases would end altogether on 1 July 2022. APP proceeds would still be reinvested "for an extended period of time past the date when the ECB starts raising its key interest rates". This was also reflected in the expectations of SMA participants, who had already brought forward their expectations of the end of net APP purchases in the course of 2022 and were no longer projecting any such purchases after June 2022. The ECB also changed communication on its interest rate policy in June, judging that the conditions of its forward guidance had been met. Accordingly, the ECB signalled its intention to raise its key interest rates by 25 basis points at its July monetary policy meeting, with a further rate hike expected in September, depending on the inflation outlook at that time and leaving the door open for a larger increase than 25 basis points should the medium-term inflation outlook persist or deteriorate. Beyond September, further rate rises would follow a "gradual but sustained path". Based on the latest forward curve for the euro short-term rate (30 June 2022), markets are now expecting a terminal level for the key ECB interest rate at around 2.5 %. This compares with the 1.25 % terminal rate expected by SMA participants in June.

3.3 The normalisation process in the US has been discussed by the Fed since 2014

As mentioned before, the Federal Reserve was the only major central bank that had already started normalising its monetary policy before the pandemic. While the euro area was still struggling with the consequences of the sovereign debt crisis, the improving economic situation in the US in 2014 enabled the Fed to start discussing the normalisation of its monetary policy, including both a gradual raising of its target range for the federal funds rate to more normal levels and the gradual reduction of the Fed's securities holdings.

In 2015, the Fed announced that the dual mandate's objectives had been met and raised the federal funds rate for the first time since the GFC. Next, in October 2017, it started to gradually reduce its securities holdings. In autumn 2019, a liquidity shortage caused some turmoil on the repo market, prompting the Fed to begin purchasing US Treasury securities again to keep the federal funds rate in a target range of 1.75 - 2 %.

In response to the COVID-19 pandemic during spring 2020, the Fed again eased its monetary policy stance. Among other things, it lowered the target range for the federal funds rate to near zero and began purchasing sizeable quantities of Treasury securities and agency mortgage-backed securities.

At the conclusion of its November 2021 meeting, the Federal Reserve announced that, in light of the progress the economy had made towards its goals, it would begin to taper its large-scale asset purchases by \$ 15 billion each month – \$ 10 billion in US Treasuries and \$ 5 billion in MBS – from \$ 120 billion a month. At that time, economic data started to show that inflation was steaming ahead, demand for workers was growing and job growth was at much higher levels than reported earlier in the year. Shortly after that, inflation was well above the Fed's 2 % target and the labour market was nearing its “maximum employment” target, so it decided to double the monthly reduction in purchases from January 2022 onwards. At the turn of the year, the Fed announced that purchases would end in March 2022, at which point its balance sheet stopped growing.

With the economy facing an extremely tight labour market and high inflation, the Fed raised in March 2022 its policy rate for the first time since 2019 by 25 basis points, followed by two more rate hikes in May and June and bringing the federal funds target range to 1.5 - 1.75 %. These latter two increases were more forceful, raising policy rates by respectively 50 and 75 basis points, the largest rise since 1994. The right-hand panel of chart 8 shows that markets expect the policy rate to continue to rise to around 2.5 % by the end of 2022 while survey expectations lie somewhere below that.

As inflationary forces gained more strength than anticipated, the Fed released a statement early May to signal its plans for reducing the size of its balance sheet. It announced that the process would start from 1 June. At the time of writing, the Fed is reducing its securities holdings by not reinvesting all the proceeds from maturing securities. In order to have a predictable and smooth reduction in its balance sheet, it is imposing redemption caps on the amount of securities being run off the Fed's portfolio in any given month. For US Treasury securities, the cap was initially set at \$ 30 billion per month which after three months, hence from September, will be increased to \$ 60 billion per month. For agency securities, the cap was initially set at \$ 17.5 billion per month and after three months will be raised to \$ 35 billion per month.

The Fed intends to slow down and then stop the decline in the size of its balance sheet when reserve balances are somewhat above the level it judges to be consistent with ample reserves. It has confirmed that it intends to implement monetary policy in a regime in which an ample supply of reserves ensures that control over the level of the federal funds rate and other short-term interest rates is exercised primarily through the setting of its policy rates, and in which active management of the supply of reserves is not required. The Fed has also highlighted that it is prepared to adjust any of the details of its approach to reducing the size of the balance sheet in light of economic and financial developments.

In June 2022, the Federal Reserve Bank of New York released projections to illustrate a possible path of the Federal Reserve System Open Market Account (SOMA) portfolio according to the announced Fed's plan for scaling down its balance sheet and assumptions about the terminal size¹. As shown in chart 8, according to these projections, the Fed's portfolio would decline until mid-2025 to one composed by roughly 68 % of US Treasury securities and 32 % agency MBS. In mid-2025, after a reduction of about \$ 2.5 trillion from the peak size, the portfolio stops shrinking and is held constant for one year at \$ 5.9 trillion. The portfolio resumes growth in mid-2026 to match the assumed growth in demand for Fed liabilities in accordance with the growth of the economy². From mid-2025, the projection assumes that all principal payments from agency MBS are reinvested into US Treasury securities – which is consistent with the Committee's intention to return to a portfolio composed primarily of US Treasury securities, in order to minimise the effect of Federal Reserve holdings on the allocation of credit across sectors of the economy – and principal payments from US Treasury securities are reinvested at auction. Moreover, new reserve

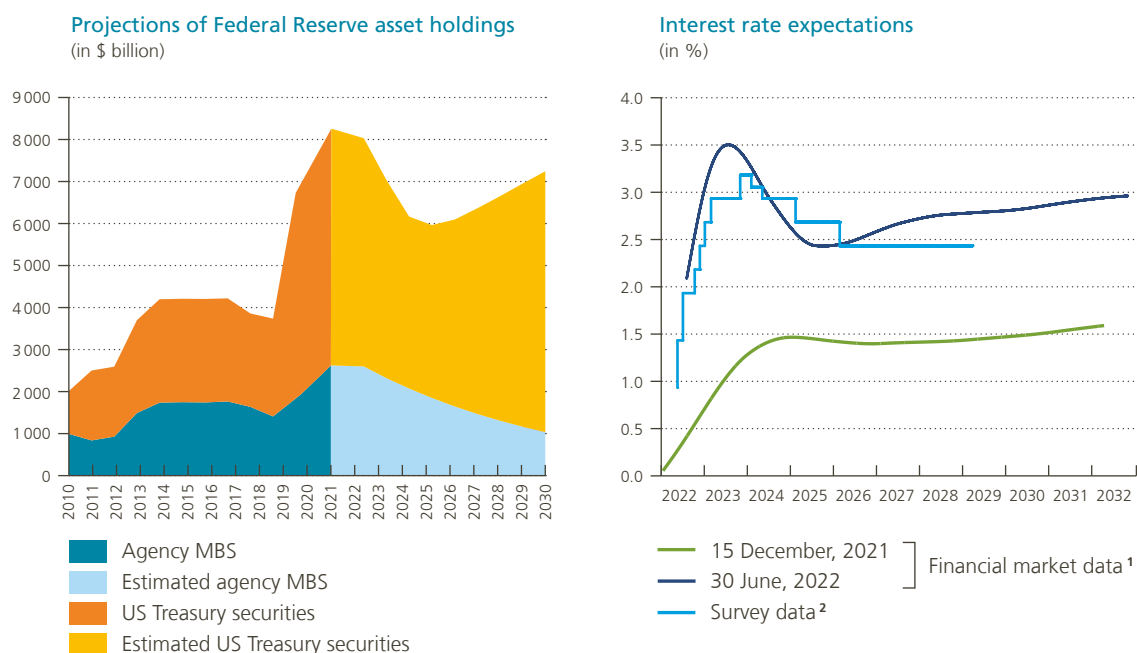
1 The Federal Reserve System Open Market Account (SOMA) contains dollar-denominated assets acquired through open market operations.

2 The Fed's liabilities are assumed to grow in line with GDP growth. For more information about the assumptions used in this projection, see annex 4 of the Open Market Operations during 2021, Federal Reserve Bank of New York (2022).

management purchases are assumed to be conducted in US Treasury securities. As a result, by 2030, asset holdings are estimated at \$ 7.2 trillion composed by 86 % of Treasury securities and 14 % of agency MBS. This final level of the portfolio should be considered as the result of a simulation exercise obtained under several assumptions and not as a firm communicated commitment made on this subject by the Fed to this day.

Chart 8

In the US, expectations about the normalisation process were brought forward too



Sources: Federal Reserve Bank of New York, Refinitiv.

1 Federal Funds rate forward curves for the US.

2 According to the May 2022 Survey of Primary Dealers.

4. Challenges ahead

Central banks in advanced economies are about to find out how to wean the economy and financial markets off unprecedented stimulus without disrupting the flow of capital and leading economies into a severe recession. In the current context of high uncertainty, it is particularly important for central banks to monitor the impact of monetary policy normalisation on the economy. Is the pace appropriate to avoid jeopardising the recovery while at the same time keeping inflation in check? How resilient are the real economy and financial markets to a change in central banks' policies? Are there pockets of vulnerability in financial stability?

Some academics and policy-makers are warning that fighting inflation might impact the post-COVID-19 recovery process. Recently, the Federal Reserve Chairman Jerome Powell admitted that the Fed's aggressive interest rate hikes could spark a recession, insisting the Fed would do whatever it takes to curb price growth¹. This statement clearly illustrates where central banks' priorities lie, even for the Fed with a double mandate. History has shown

¹ Semiannual Monetary Policy Report to the Congress, before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, Washington, D.C., 22 June 2022. For more details see <https://www.federalreserve.gov/newsevents/testimony/powell20220622a.htm>.

the value of price stability for economic development and the importance of central banks' commitment and credibility in this respect. The cost of restoring price stability after a long period of derailing inflation greatly surpasses that of a normal tightening cycle.

This section discusses some of the challenges faced by central banks, with respect to the economic outlook and financial stability. It focuses on public debt, equity and housing markets since these markets are relatively sensitive to changes in interest rates. An extensive assessment of stability and sustainability risks is beyond the scope of this article, though.

4.1 Governments' borrowing costs increase while debt is at historically high levels

The GFC, the sovereign debt crisis in the euro area as well as the global pandemic have urged governments to implement stimulus packages to support floundering economies. The adoption of stimulus measures has driven public debt in the euro area and US to historical highs.

Even if the relationship between interest rates and public debt is complex and may be influenced by other factors, the low interest rate environment has undoubtedly facilitated the accumulation of debt by governments. Buysse *et al.* (2021) even show that there is a negative correlation between the level of nominal long-term market interest rates (sovereign bond yields) and public debt ratios in advanced economies. Since the GFC, sustained low policy rates and central banks' asset purchase programmes have pushed down long-term interest rates and thus, reduced public borrowing costs significantly. According to the IMF (2021), low market interest rates reduced government interest bills as a percentage of GDP from 2.6 % in 2007 to 2.0 % in 2020 on average in advanced economies. As shown in chart 9, the euro area and US public debt ratios have reached, respectively, around 100 % and 135 % of their GDP in 2020. During that year, public debt jumped by 13.8 % of GDP in the euro area and by 25.4 % in the US, while 10-year government bond yields were close to 0 % in both economic areas.

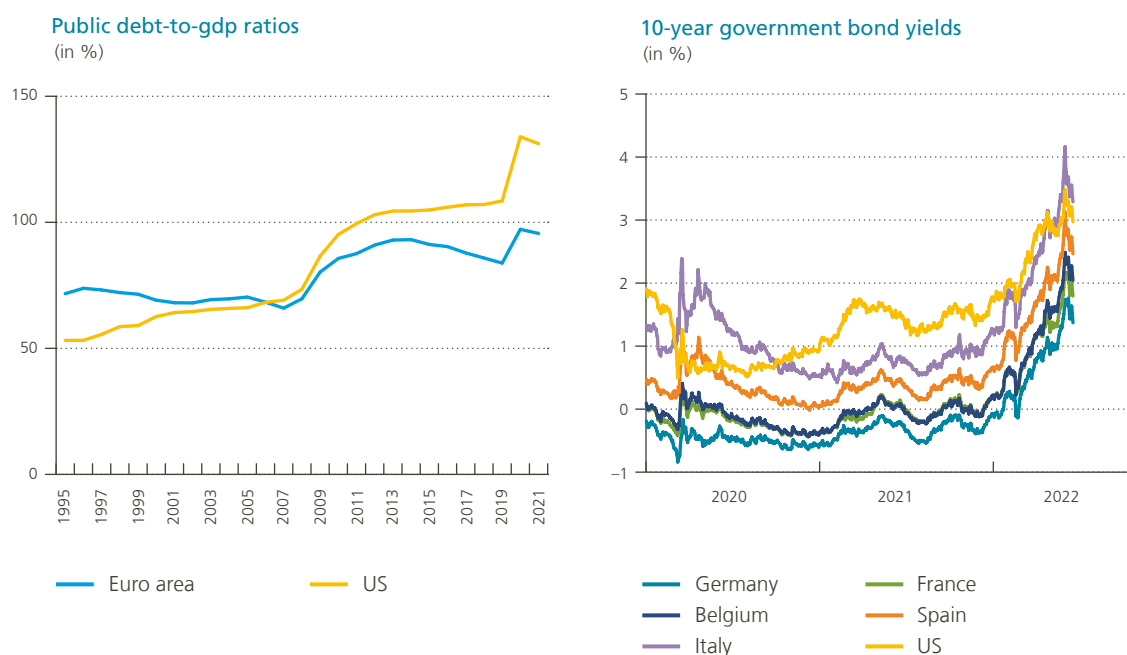
Public debt in both areas declined slightly in 2021 and, according to the IMF (2022), will continue to do so over the medium term as a result of a more neutral fiscal stance and the expansion of activity. However, the latter further reduction is subject to high uncertainty given the war in Ukraine, high inflation and downward revisions to economic growth. As central banks will continue normalising monetary policy to counteract inflationary pressures, sovereign bond yields will likely continue to rise also, worsening debt vulnerabilities. As illustrated in chart 9, increases in government bond yields have been already observed in both economic areas in 2022, reaching 2 % on average in the euro area and around 3 % in the US.

An additional issue arises in the euro area, as bond yields of different euro area countries might react to varying degrees to monetary policy normalisation. At the beginning of the pandemic, certain countries with a higher initial debt burden or which were hit harder by the crisis, like Italy or Spain for example, saw their bond yields rise more than other countries, like Germany. More recently, as the ECB is moving away from its highly accommodative stance, spreads in countries with higher debt levels, like Italy and Spain, have widened again. The PEPP had been designed specifically with such concerns in mind: as fragmentation might distort the smooth transmission of monetary policy – hindering an easing of financing conditions for *all* euro area countries – purchases of assets under the PEPP can be spread flexibly over the different euro area countries to counter any unwanted pandemic-related widening of bond spreads. As mentioned above, with PEPP purchases having been phased out, such flexibility is now available under the PEPP reinvestment phase. In fact, given the further widening of spreads following the Governing Council's June meeting, the ECB decided to trigger this flexibility as from July. Furthermore, it decided to accelerate the completion of the design of a new anti-fragmentation instrument.

As pointed out by the ECB's 2022 Financial Stability Review (FSR), rising interest rates could present challenges not only for governments but also for highly indebted firms. For more indebted firms, the impact of higher

Chart 9

While debt is at historically high levels, governments' borrowing costs are up



Sources: ECB, IMF, Refinitiv.

financing costs on earnings due to interest rate rises is mechanically larger, which implies that, all else equal, their debt sustainability may deteriorate relatively more rapidly than for less indebted firms. In addition, the sharp rise in input prices and costs will likely squeeze profit margins, notably for firms that have weaker pricing power and cannot easily pass on price increases. This could create cash flow challenges in the short run and undermine the debt sustainability and investment capacity in the medium term as suggested by this report.

In conclusion, the ECB's FSR (2022) warns that "interest rate increases may entail risks, especially if underlying growth dynamics are muted". In fact, a tighter monetary policy stance generally leads to higher interest rates and an attenuation of (expected) growth, which can drive a wedge between interest rates and growth, and thus have consequences for debt sustainability. However, increases in market rates slowly impact average interest rates paid, as existing fixed-rate debt matures, and new debt is issued. Thus, borrowers with variable-rate or inflation-linked debt instruments are more directly exposed.

4.2 A long period of ultra-low interest rates has led to stretched asset valuations

Central banks' interventions during past crises have weighed on long-term interest rates, encouraging markets to more risky behaviour in a search for yield and, therefore, contributing to a possible under-pricing of risks and high increases in asset prices.

Housing markets in the euro area and the US were on solid ground before the COVID-19 pandemic. Housing prices in both areas were on an upward trend, supported by robust income developments and bank lending rates for house purchases at historical lows (see chart 10). Given the phase in which the housing cycle stood, an economic shock like the COVID-19 crisis might have been expected to turn the cycle. However, the reaction to the COVID-19 crisis differed from that in previous crises. As suggested by Battistini *et al.* (2021), this is

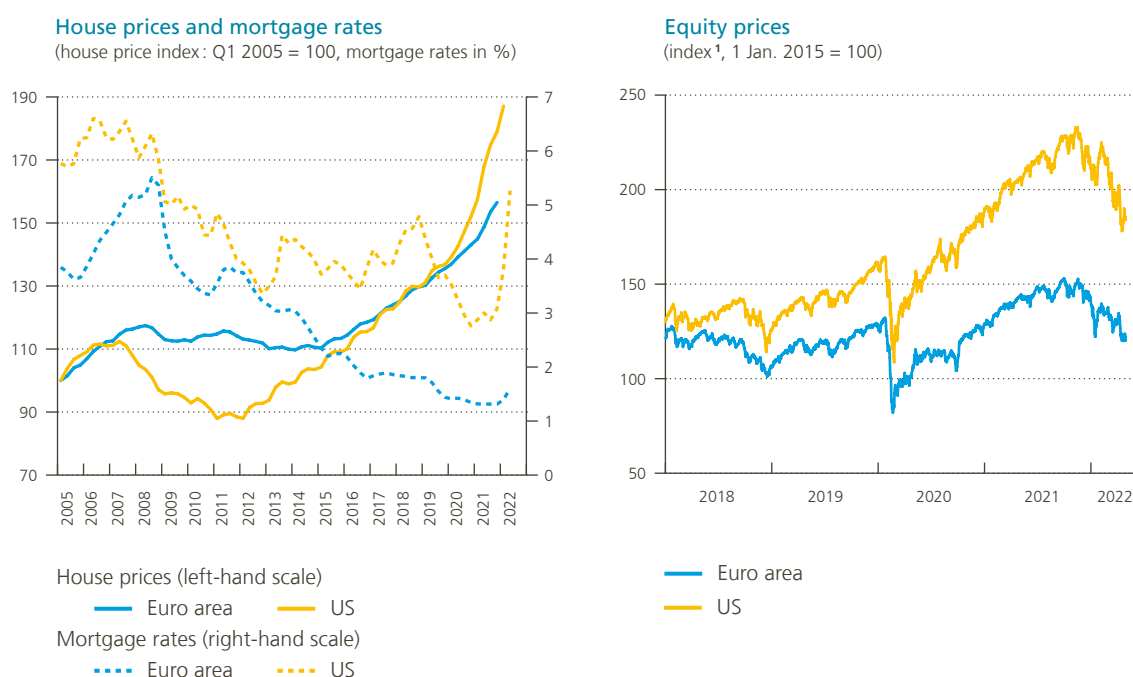
explained by the different nature of the underlying shock. Indeed, the shock caused by the COVID-19 pandemic was unrelated to economic fundamentals. It was not the result of the build-up of unsustainable imbalances and the consequent bursting of asset bubbles. Moreover, several factors also supported the housing sector throughout the pandemic and have contributed to the significant rise in property prices by almost 10 % in the euro area and 17 % in the US in 2021. Upward pressure on house prices has been exerted by fiscal, monetary and macroprudential policy measures, continuously favourable financing conditions, the increased attractiveness of housing for investment purposes as well as the use of the large stock of accumulated savings.

However, monetary policy normalisation could be a game-changer for housing markets. Indeed, it will result in higher borrowing costs, affecting households' purchasing power already constrained by inflation. Consequently, housing demand might cool down which in turn will affect housing prices. In the FSR (2022), the ECB warns that euro area house prices might even incur a correction as interest rates start to rise, posing greater risks for low-income households. The current low level of interest rates makes substantial house price reversals more likely. This same report estimates that housing prices could fall between 0.83 % and 1.17 % for every 0.1 percentage point increase in mortgage lending rates, after adjusting for inflation. Mortgage rates in the euro area have already been rising since the start of the year, from a low of 1.3 % last year to 1.6 % in April 2022. The report concludes that euro area households could face the triple challenge of possible corrections in residential real estate markets, higher interest rates and a squeeze on their real income. Thus, a reversal in the euro area's housing markets has been identified as one of the main stability risks.

In the United States, the Fed's Financial Stability Report (2022) similarly argues that adverse surprises in inflation and interest rates, particularly if accompanied by a decline in economic activity, could negatively affect the financial system. In particular, households could be affected by job losses, higher interest payments, and a reduction in house prices caused by higher mortgage rates and lower housing demand. The resulting stresses

Chart 10

A long period of ultra-low interest rates has led to stretched asset valuations



Sources: ECB, Eurostat, Federal Housing Finance Agency, Federal Reserve, Refinitiv.

¹ Euro Stoxx Total Market index for the euro area and S&P 500 Composite index for the US.

may be especially pronounced for homeowners currently in mortgage forbearance or in the sub-prime and near-prime risk categories. However, it tempers its message by arguing that a negative shock to house prices is unlikely to be amplified by the financial system.

In conclusion, following the big increase in house prices which have been propelled to new highs, a calmer outlook for the market should be welcome news. However, central banks should remain cautious so this price correction does not become a meltdown.

As shown in chart 10, equity markets in both economic areas have also experienced high price rises during the recovery from the pandemic. But since the beginning of 2022, equity markets have been coming to grips with the central banks' policy changes, in the context of geopolitical factors complicating the outlook for the global economy. This correction is even more strongly observed in higher-duration equities, such as those in the technology sector, and more speculative asset classes.

This might be due to the economy and markets having become accustomed to extremely low interest rates of recent years so investors now face a lot of uncertainty as central banks are pulling back and trying to slow the economy, and this could challenge in particular risky asset valuations. Indeed, as shown in the ECB's FSR in November 2021, equity markets have become increasingly sensitive to interest rates increases in recent years. The results of a theoretical exercise undertaken in the ECB's FSR (2022) show that equity valuations could decline significantly for a relatively limited increase in risk-free real interest rates.

Conclusion

Against a background of rising inflation, central banks across the globe have started normalising their extremely accommodative monetary policies. Given the significant strength and speed of price increases, this is happening at a faster pace than would have been expected at the start of the post-pandemic recovery cycle. Differences in the relative importance and persistence of the underlying drivers of inflation in the euro area and the US nevertheless imply that the normalisation process in both areas is proceeding at a different pace. Whereas the Fed has already started hiking policy rates and reducing the size of its balance sheet, the ECB is adopting a more gradual approach, with rates expected to take off only in the summer and with no concrete plans yet as regards the possible run-off of its balance sheet.

While high inflation implies that the question for central banks is, hence, no longer whether to start normalising their monetary policies but rather how quickly they should proceed, the pace of the whole process needs to be carefully calibrated. If central banks move too quickly, the fast tightening of financial conditions might impair economic activity excessively and choke the recovery. Such considerations are particularly acute in the euro area, where the impact from the war in Ukraine, given closer economic and financial ties with the conflict area, is expected to be stronger.

Financial stability considerations may further complicate the normalisation process. Whereas vulnerabilities have arisen in a context of very low interest rates over an extended period, the risks of a possible unwinding of certain imbalances – in terms of stretched asset valuations or high government debt levels for example – when interest rates are rising again should remind policy-makers that the road ahead may be bumpy.

Overall, there are two possible broad scenarios materialising in future. Ideally, strong, sustained growth enables central banks to normalise steadily and steer inflation towards its target, with financial markets gradually adapting to less favourable financing conditions. The demand boost induced by the post-pandemic recovery might provide sufficient margin to weather the adverse hit from higher inflation and the ensuing monetary policy response. In a less benign scenario, inflationary forces intensify, imposing a more aggressive monetary policy tightening,

at a significant cost in terms of growth. In a similar vein, a disorderly unwinding of financial imbalances could also derail central banks from their predetermined policy path and force them to adjust the pace of their normalisation process.

All in all, the normalisation process requires a careful balancing act for central banks. Given the high uncertainty regarding the outlook for growth and inflation, clear and effective communication regarding the projected future path for monetary policy will be crucial. But here too, central banks need to strike a balance between, on the one hand, designing medium-term policy plans in order to steer expectations and, on the other hand, being sufficiently flexible to adapt their stance if the macroeconomic outlook so requires. Given current highly uncertain circumstances, the latter situation is all but unlikely. Moreover, while effective communication can prevent financial stability concerns from materialising, central banks need to remain faithful to their mandate by steering inflation towards target, which in the current circumstances inevitably entails less favourable financing conditions going forward. However, monetary policy is essentially a demand-side policy and cannot provide structural support to the supply side of the economy. Fiscal authorities are responsible for building the necessary buffers and paving the way for growth-enhancing structural reforms, so as to enhance the resilience of the economy along the normalisation path.

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Conventional signs

€	euro
\$	US dollar

List of abbreviations

Countries or regions

EA	euro area
UK	United Kingdom
US	United States

Abbreviations

APP	Asset Purchase Programme
BIS	Bank for International Settlements
COVID	coronavirus disease
ECB	European Central Bank
€STR	euro short-term rate
Fed	Federal Reserve
FOMC	Federal Open Market Committee
FSR	Financial Stability Review
GDP	gross domestic product
GFC	global financial crisis
ILS	inflation-linked swap
IMF	International Monetary Fund
MBS	mortgage-backed security
NBB	National Bank of Belgium
OECD	Organisation for Economic Cooperation and Development
OIS	overnight-indexed swap
PEPP	Pandemic Emergency Purchase Programme

SOMA	system open market account
SMA	survey of monetary analysts
TLTRO	targeted longer-term refinancing operations
QE	quantitative easing

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