Analysis

What is monetary policy normalisation?

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Surging inflation has triggered moves to normalise monetary policy. This means a tightening of financing conditions by raising key interest rates, among other things. Central banks are shifting from unconventional monetary policy measures towards conventional interest rate policy. The steps to tighten monetary policy are therefore visible as an increase in the general level of interest rates. There is, however, great uncertainty concerning the future level of interest rates and their long-term equilibrium level, where the economy's resources are at full capacity and inflation is consistent with the central bank's objective. Going forward, the ECB Governing Council will be making its monetary policy decisions meeting by meeting on the basis of incoming data on inflation and economic activity.



Monetary policy has responded to changes in the inflation outlook

Euro area interest rates started rising at the end of 2021 as the European Central Bank (ECB) responded gradually to the changes in the outlook for inflation and economic activity. The rise in interest rates brought to an end the era of declining and exceptionally low interest rates, which lasted for 11 years.[1]

Interest rates had declined to exceptionally low levels compared to previous decades. This was due to the inflation outlook, which had remained persistently below the ECB's inflation target.[2] The economic outlook deteriorated sharply in early 2020 as the COVID-19 pandemic caused a global economic crisis, increasing the risk of deflation. There was a risk that expectations concerning economic growth and inflation would become anchored at a low level for a prolonged period.[3] Due to the pandemic and the related movement restrictions, euro area inflation averaged -0.3% in 2020, its lowest since the establishment of the euro area. Central banks responded to the economic crisis by introducing a very accommodative monetary policy stance and, at the lower bound of interest rates, stimulating the economy through asset purchases and longer-term refinancing operations.

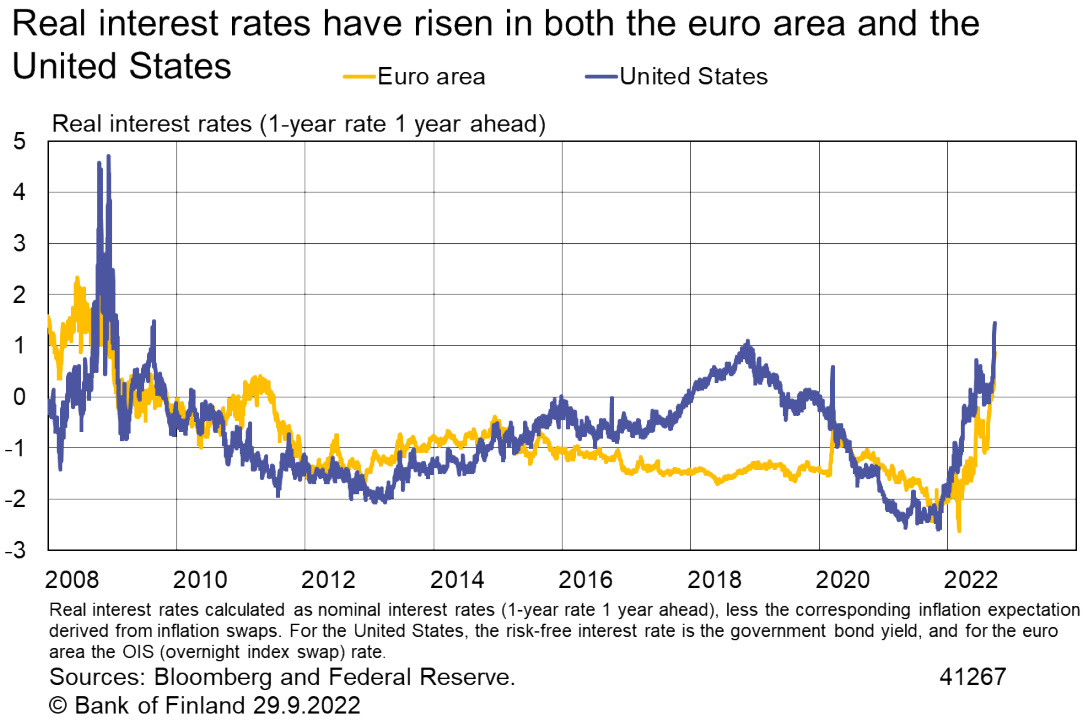
The impact of the economic crisis caused by the pandemic turned out to be less severe than the worst case projections. Strong fiscal and monetary policy measures helped households and businesses through the crisis. The pandemic nevertheless caused prolonged disruptions in supply chains and in the supply of labour. Moreover, general government debt has increased, and the rise

in inflation has been stronger and more persistent than was projected.

Russia's invasion of Ukraine significantly altered the landscape in which monetary policy operates. As with the pandemic, the war has considerably increased uncertainty over the outlook for the economy. In addition, the war has increased drastically the already elevated prices of raw materials and energy, driving up inflation even further.

Inflation has also accelerated globally: in the United States, annual inflation in August was 8.3%, in the United Kingdom 9.9% and in the euro area as high as 9.1%. The last time euro area inflation was below 2% was in May 2021. Central banks have responded to the high level of inflation by tightening their monetary policy. Real interest rates one year ahead have risen in both the euro area and the United States (Chart 1).

Chart 1.



In the euro area, the sharp rise in inflation cannot, for the most part, be attributed to an economic upswing set in motion by growth in aggregate domestic demand. Instead, the surge in inflation is attributable to a combination of increased global demand, a strong upward trend in import prices and the pandemic-related supply disruptions. Inflation has been driven up particularly by the increase in energy prices caused by Russia's war in Ukraine. In this situation, it is not possible or even appropriate to use monetary policy to bring inflation down quickly to the medium-term target.[4] However, monetary policy can be used for controlling the medium-term outlook for

inflation and for managing how the supply-side cost-push shock spills over to wages and inflation expectations.

Policy rates are an essential tool in monetary policy normalisation

In monetary policy normalisation, key interest rates – or policy rates – are once again becoming key instruments of monetary policy. At the same time, the central bank is gradually withdrawing from asset purchases and other unconventional measures. Monetary policy normalisation may also involve adjustments to forward guidance.[5] Normalisation leads to a tightening of financing conditions, helping the central bank reduce the inflationary pressures in the economy.

Both the US Federal Reserve System and the ECB sequenced their monetary policy normalisation, first raising the key policy rate and then later reducing securities holdings on their balance sheets.[6] The rate hikes affect mainly short-term and medium-term interest rates, but also, via the expected path, long-term rates. Monetary policy can therefore be used to effectively influence market interest rates, expectations and hence also economic activity. In addition, the effects of policy rate decisions are better known than those which follow a reduction of central banks' balance sheets.[7]

In the euro area, the process of monetary policy normalisation started in December 2021. The ECB Governing Council judged that the economic outlook had become more stable, the return of inflation was a more permanent phenomenon and the immediate risk of deflation had disappeared. The Governing Council also decided on the principles for monetary policy tightening in the euro area. Net asset purchases would be reduced gradually.[8] The ECB communicated cautiousness over monetary policy, because euro area interest rates had persistently been exceptionally close to the effective lower bound, and the aim was to avoid a premature tightening of monetary policy after the pandemic. In accordance with the ECB's forward guidance, interest rates were increased only after the termination of net asset purchases.

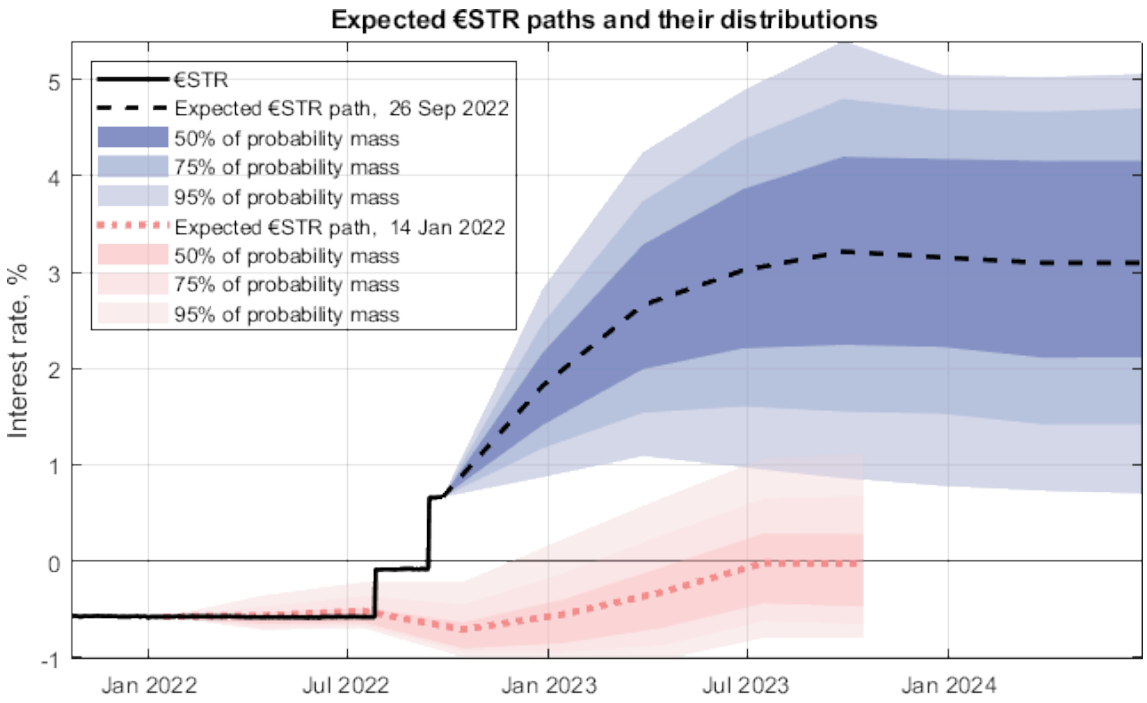
With inflation rising faster and more persistently than expected, the ECB Governing Council decided in its September 2022 meeting to raise the overnight rate on the deposit facility by 0.75 percentage points. The deposit rate had already been raised by 0.5 percentage points in July. The Governing Council also communicated that it expects to raise interest rates further in upcoming meetings. In the press conference of 8 September 2022 following the latest monetary policy decisions, ECB President Christine Lagarde noted that future policy rate decisions will be data-dependent and follow a meeting-by-meeting approach. The interest rate increases ended a seven-year period of negative interest rates in the euro area.

The pace of monetary policy tightening is thus determined according to the inflation outlook and inflation expectations, with the objective of bringing inflation down to the target of 2% over the medium term. The question concerning the pace at which monetary policy adjustments should be made has been examined in the research literature. If the central bank responds swiftly to changes in inflation expectations, this will enable inflation to be brought onto a more stable path.[9] This is also a way of reducing uncertainty about how long inflation is likely to persist at an elevated level.[10] Based on the Taylor rule, short-term interest rates should respond aggressively to inflation, and it has been argued that too small a response to inflation in the United States in the 1960s and 1970s led to large swings in inflation and increased macroeconomic instability.[11]

On the other hand, some research findings suggest that the central bank should respond to the inflation outlook with caution and with a time lag. This is because there is often uncertainty about the state of the economy and the effect of monetary policy, and therefore a gradual response will provide the central bank with useful additional information on these.[12] Furthermore, smooth but extended adjustments in interest rates may have a stronger effect on long-term rates. The general public may then consider the monetary policy decisions to be more credible and predictable.[13] In addition, it may be optimal for the central bank to increase the policy rate on a slow and gradual basis if there is an increased risk of the economy entering a state where interest rates are at the lower bound and inflation is too low.[14]

The ECB's transition from issuing forward guidance to taking decisions on policy rates meeting by meeting on the basis of incoming data has affected interest rate expectations (Chart 2). In January 2022, the markets still expected short-term rates to rise very moderately, and these expectations were subject to a very low level of uncertainty. This is shown in the chart as a narrower band width in the distribution of interest rate expectations. At that time, the short-term risk-free overnight interest rate (€STR, euro short-term rate) was expected to stand at around 0%, and with a probability of 50% to edge up from -0.5% to -0.25% in mid-2023. Interest rate expectations have shifted notably upwards amid rising energy prices and a more broad-based rise in inflation. The markets generally expect interest rates to rise to 3% in mid-2023. At the same time, uncertainty about the level of interest rates has increased markedly, echoing the uncertainty over the economic outlook and also reflecting the start of monetary policy normalisation.

Chart 2.

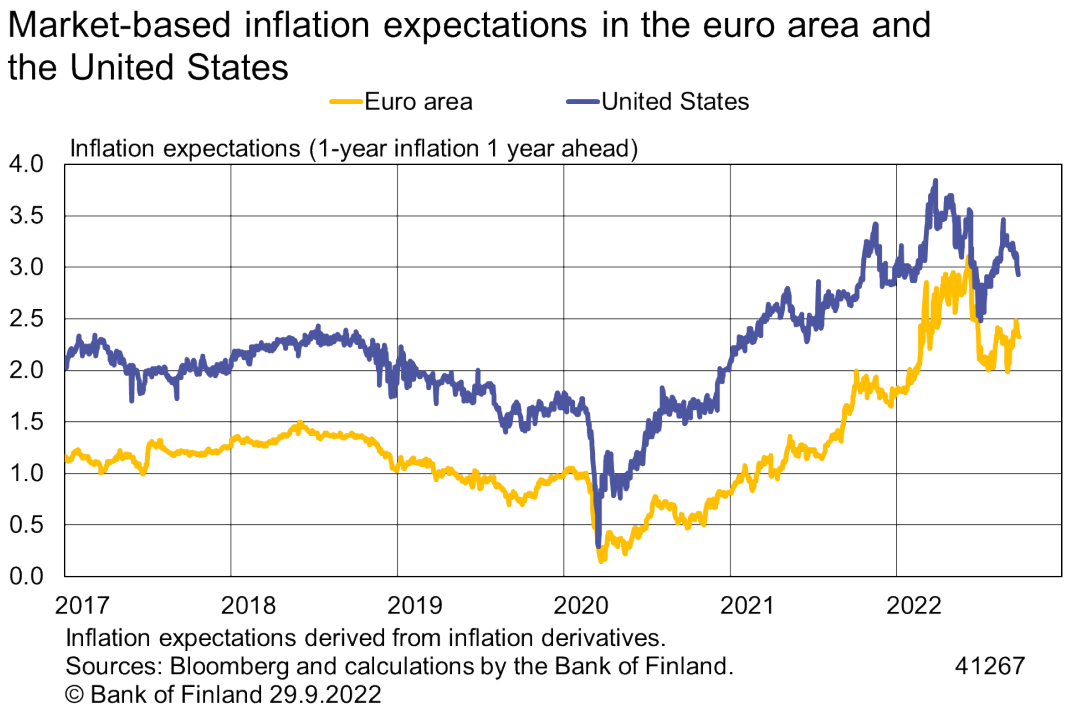


Following the discontinuation of net asset purchases and longer-term refinancing operations, the ECB's balance sheet has no longer been growing. The balance sheet is currently equivalent to around 70% of GDP (approx. EUR 7 trillion, or EUR 7,000 billion). The asset purchase programmes account for about EUR 5,000 billion of the balance sheet. Since maturing bonds will continue to be reinvested, the amount of securities obtained under the purchase programmes on the ECB's balance sheet will remain unchanged.

Monetary policy has responded to increasing interest rate expectations

Inflation expectations play a key role in that they affect the path taken by inflation and the achievement of the price stability objective. Inflation expectations can be measured by, for example, extracting the expectations associated with inflation derivatives. These market-based inflation expectations fell following the outbreak of the pandemic in early 2020, but have since risen significantly in the United States and the euro area (Chart 3). In the United States, inflation expectations were already increasing in early 2021, rising well above the 2% medium-term inflation target, while in the euro area inflation expectations remained low until the end of 2021 (Chart 3).

Chart 3.



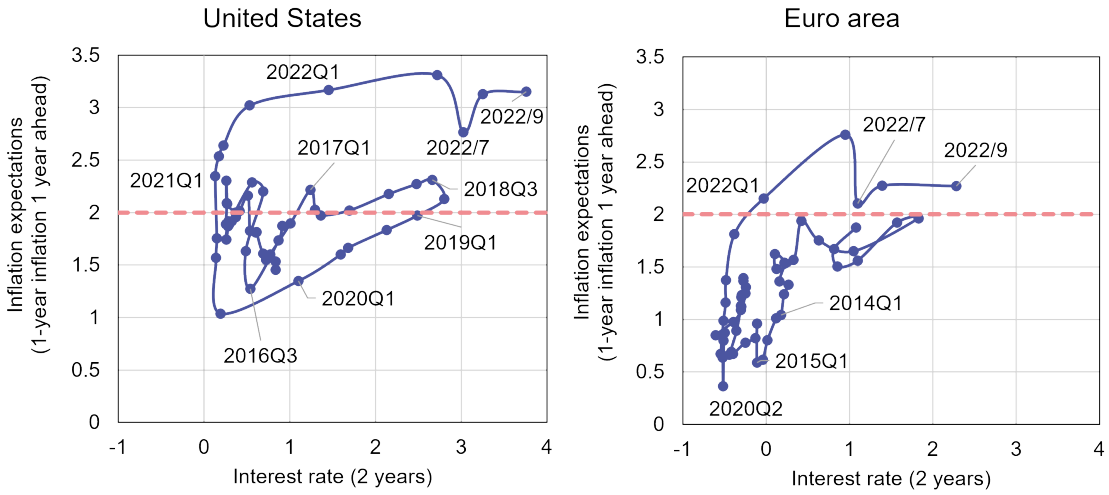
Higher inflation expectations and anticipation of monetary policy tightening have pushed up risk-free interest rates of varying maturities. The chart below examines the relationship between interest rate expectations and inflation expectations in the United States and the euro area (Chart 4). Inflation expectations are measured in the chart by the medium-term (i.e. two-year) interest rate, which the central bank can influence via interest rate policy and forward guidance.[15] The y-axis of the chart shows rising inflation expectations, and the x-axis rising interest rate expectations. When moving towards the top right corner, the central bank is expected to react to increasing inflation by monetary policy tightening. When moving towards the bottom left corner, interest rate expectations decline concurrently with inflation expectations. Central banks strive to maintain a monetary policy stance that promotes convergence of the inflation outlook towards the inflation target over the medium term. The inflation target is shown in the chart with a dashed red line.

In the United States, the market began to expect monetary policy tightening in the second half of 2021, when the two-year rate trended upwards and both interest rate expectations and inflation expectations began to rise (Chart 4). The Federal Reserve started to raise policy rates fairly slowly relative to the increase in inflation expectations. Inflation was long anticipated to remain a transitory phenomenon. The slow response of the Federal Reserve may also have been due to its strategy review of 2020. Namely, in its updated statement on monetary policy strategy, it

announced that, following periods when inflation has been running persistently below 2%, appropriate monetary policy will likely aim to achieve inflation moderately above 2% for some time.[16]

Chart 4.

Expectations of monetary policy tightening emerged earlier in the United States than in the euro area



Each dot in the chart represents the average expectations of interest rates and inflation for one quarter. The data for the latest quarter (2022Q3) is shown at the monthly level. For the United States, the risk-free interest rate corresponds to the yield on government bonds, and for the euro area the OIS (overnight index swap) rate.
Sources: Bloomberg, Federal Reserve and calculations by the Bank of Finland.
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The United States' two-year interest rate has risen markedly in 2022 as a reaction to higher inflation expectations (Chart 4). In November 2021, Federal Reserve Chair Jerome Powell noted that high inflation was more persistent than previously anticipated.[17] In December 2021, the Federal Reserve began to signal a faster pace of monetary policy normalisation than had been expected earlier. In February 2022, the federal funds rate was raised, and the Federal Reserve ended its net asset purchases as announced previously. From June onwards it has been reducing its securities holdings. Interest rate hikes have continued over the year, and following the September meeting the federal funds rate was set in a target range of 3.0%–3.25%. The Federal Reserve has also communicated that further interest rate increases are to be expected.

In the euro area, interest rate expectations began to rise only in late 2021, after which the two-year risk-free interest rate has risen to just over 2% (Chart 4). At the same time, inflation expectations have remained above the 2% target. Before these developments, the euro area had long operated in an environment of low inflation and low interest rates, as shown in the bottom left corner of the chart. The two-year rate has risen further in 2022 amid market expectations that

the ECB will react to the surge in inflation and elevated inflation expectations. Market-based expectations are that inflation will remain close to the 2% inflation target over the medium term.

Monetary policy stance consistent with economic outlook and historical developments

Has monetary policy been consistent with developments in the euro area economy, i.e. have the interest rate adjustments been as anticipated, and in line with monetary policy conducted in the past? This question is examined here using a Bayesian vector autoregressive (BVAR) model that takes into account the evolution of prices, output, yield curve, risk premia and share prices in the euro area.[18]

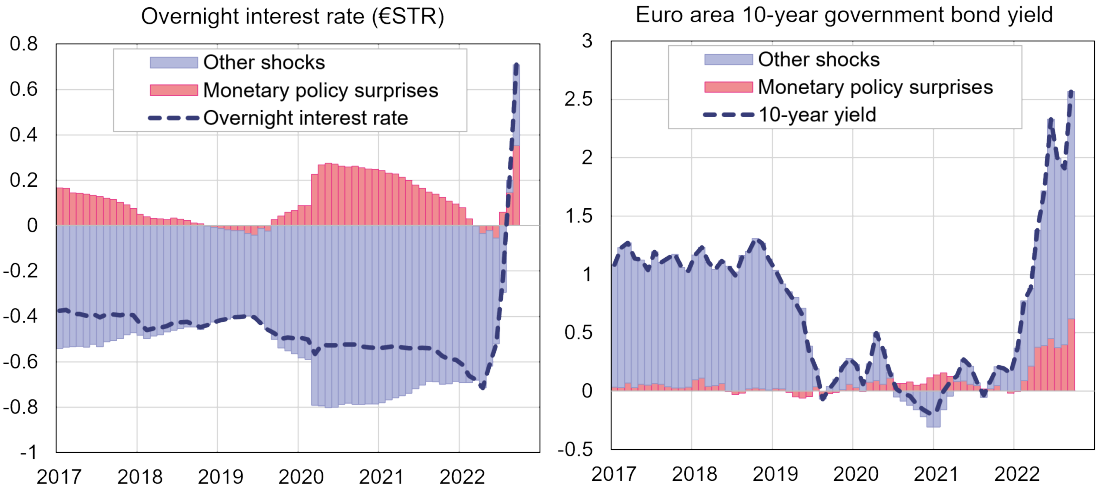
The model enables an assessment, based on past developments, of the extent to which the various conventional and unconventional monetary policy measures have come as a surprise to the market.[19] If, for example, the observed rise in interest rates has been faster or slower than in the model forecast, which is based on the historical relationship between interest rates and the economic situation, the model determines that the deviation is due either to a monetary policy surprise or some other shock occurring independent of monetary policy. A monetary policy surprise is where the central bank has caused interest rates to move in a manner which households, businesses and the financial market did not expect, given the state of the economy and the price outlook. If, for example, the central bank's monetary policy has been tighter than expected, the effect on interest rates will come as a contractionary surprise.

The chart below (Chart 5) illustrates shock decomposition, showing how much of the euro area short-term interest rate level and long-term government bond yield level is accounted for by monetary policy surprises (red bars), and how much by other shocks occurring independent of monetary policy (blue bars).[20] Regarding these other shocks, monetary policy has responded in line with the policy rule, i.e. endogenously, whereas monetary policy surprises have arisen because the central bank has responded unconventionally relative to its historical actions.

According to the model, changes in the short-term interest rate are predominantly attributable to factors other than monetary policy surprises. However, in 2020, when the risk of deflation increased in the euro area substantially as the pandemic pushed the economy into recession, the short-term rate was slightly above the level suggested by the model forecast. This is attributable to the fact that interest rates were approaching their lower bound (Chart 5). At the same time, monetary policy supported the economy through unconventional measures, which pushed down the long-term government bond yields, in particular. Thus, based on the model, the overall monetary policy stance was consistent with the economic outlook in 2020.

Chart 5.

Changes in the short-term interest rate and the expected 10-year government bond yield are primarily explained by economic shocks other than the ECB's monetary policy surprises



BVAR model-based shock decomposition for the €STR and the average euro area 10-year government bond yield.
Sources: Bloomberg, ECB and calculations by the Bank of Finland.
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During 2022, the rise in interest rates and the monetary policy responses have been mainly associated with economic disruptions unrelated to monetary policy. These disruptions have led especially to surging inflation and have affected the post-pandemic economic recovery. Short and long-term interest rates have increased broadly in line with the model forecasts. During 2022, long-term interest rates in particular have increased slightly faster than projected by the model. This tightening of monetary policy has been conducted on the grounds of increased inflation risks and the rise in inflation expectations above 2%. Medium-term inflation expectations have recently returned to around 2% (Chart 3).

As seen in Chart 4, the results of the BVAR model suggest that during the current phase of monetary policy tightening, interest rates in the euro area have increased in line with developments in inflation and the economy.[21]

Return to normal or to a 'new normal'?

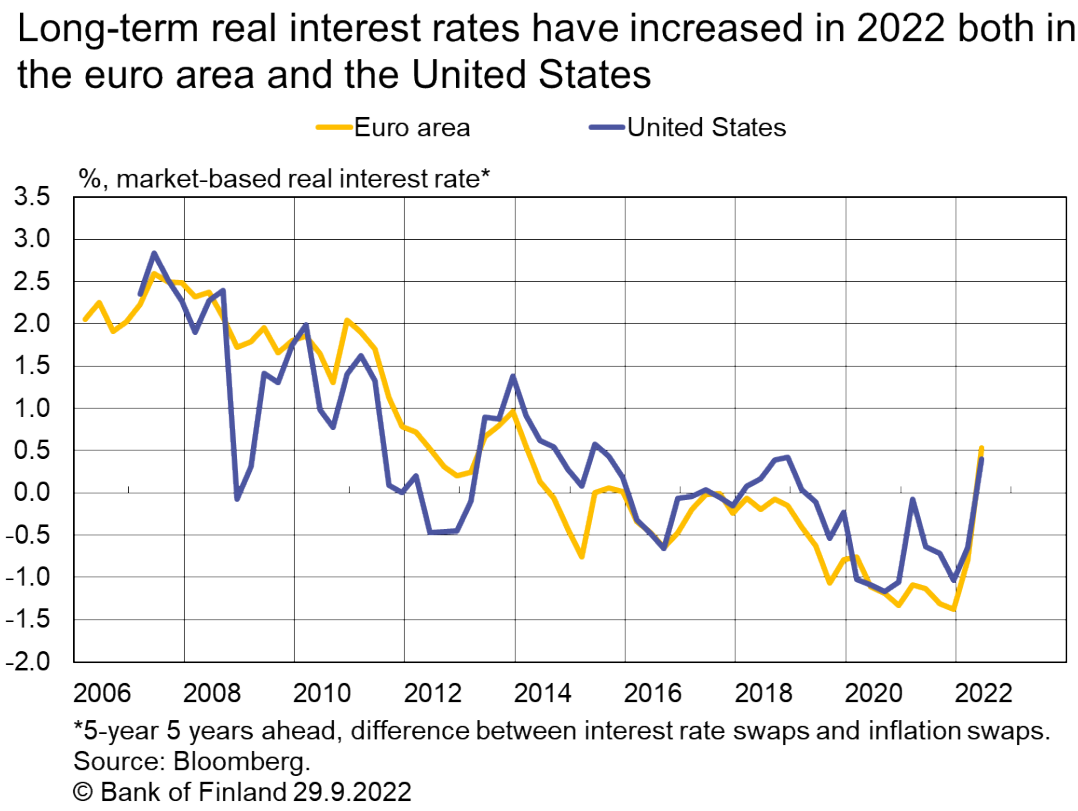
At what level will interest rates settle in the future? The normalisation of monetary policy does not mean that the central bank is attempting to restore its balance sheet and interest rates to a past level, such as that preceding the 2008 global financial crisis. Rather, the aim of monetary policy normalisation is that the inflation rate should accord with the price stability objective. In the absence of further economic shocks, interest rates should, in the longer term, settle at a level

where economic resources are in full use and inflation is at its target, i.e. at the equilibrium real interest rate, also known as the natural rate of interest. However, the level of the equilibrium real interest rate is affected by a number of factors unrelated to monetary policy.

Before the pandemic, the natural rate of interest was estimated to have dropped even below zero, especially in the euro area.[22] This decline in the natural rate of interest was attributed to various factors. These include declining growth in the economy due to slower population and productivity growth, and changes in the saving and investment behaviour of households and businesses.

Due to the energy crisis and the pandemic, the long-term equilibrium real interest rate may actually have risen. Factors that could push up the natural rate of interest and also affect the level of potential output include acceleration of the energy transition and the associated changes in investment needs, as well as possible restructuring of international supply chains. On the other hand, previously prevailing longer term trends in economic fundamentals have not changed significantly and continue to put downward pressure on the long-term equilibrium real interest rate. Euro area interest rates will also be markedly affected by the extent of success with the energy transition, now accelerated by Russia's invasion of Ukraine. Uncertainty concerning the level of natural interest rates is now exceptionally high compared to before the pandemic.

Chart 6.



Indications of the financial markets' perception of the long-term equilibrium real interest rate can be found in long-term interest rates and inflation expectations. Since early 2022, there has been a clear increase in the yield curve for risk-free interest rates in the euro area. In the first half of 2022, the 10-year yields were only slightly positive, but now stand already at over 2%. The long-term real interest rate that accounts for inflation expectations (5-year rate 5 years ahead) has also increased to 0.4% after being below zero for several years (Chart 6). However, strong fluctuations in the interest rates highlight the uncertainty regarding their long-term stability. Moreover, long-term interest rates not only reflect the expected changes in risk-free interest rates but also include a so-called term premium, i.e. the risk associated with the future interest rate environment.

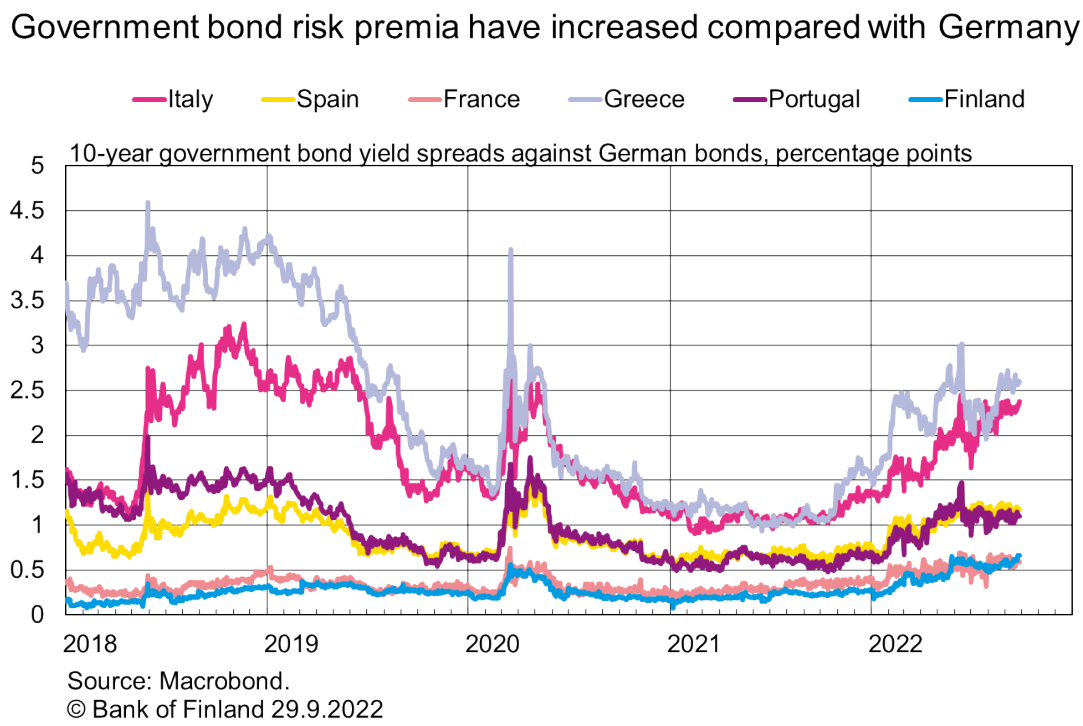
Fiscal sustainability is essential for the monetary policy environment

The normalisation of monetary policy in the euro area has progressed largely in line with the inflation outlook and has tightened financial conditions. A special characteristic of the euro area's monetary policy is the diversity of euro area national economies that the policy covers. In a worst

case situation, this could lead to a differentiation of financial markets in the euro area and prevent the appropriate transmission of the monetary policy stance to market rates and lending rates. Such fragmentation of markets could be caused by a number of factors, such as country-specific differences in levels of debt, inflation or bond market liquidity.

The ending of net asset purchases has contributed to the increase in long-term yields on euro area government bonds. In September, yields on 10-year government bonds increased to just over 2% in Germany and to around 4.5% in Italy. In addition, country risk premia between euro area countries have increased (Chart 7). For example, the risk premium for 10-year government bonds in Italy and Germany has increased by slightly more than one percentage point during 2022 (Chart 7). The cause of rising risk premia is the general uncertainty associated with the economic situation and with the sustainability of general government debt.

Chart 7.



The ECB Governing Council has made efforts to reduce the risk of market fragmentation in order to safeguard the effective transmission of monetary policy. PEPP reinvestments can be directed flexibly.[23] In addition, in July, the Governing Council decided to introduce a new Transmission Protection Instrument (TPI) to safeguard the transmission of monetary policy.[24] The TPI can be characterised as standing somewhere between PEPP reinvestments and outright monetary transactions (OMT).[25]

Effective transmission of monetary policy in all circumstances supports the normalisation of monetary policy and achievement of the inflation target over the medium term. The optimal way to stabilise inflation is through the central bank's active steering of policy rates combined with the government pursuit of fiscal policies that ensure the sustainability of public finances.[26] Under current circumstances, this requires simultaneous tightening of monetary and fiscal policy and the implementation of structural reforms (Cochrane, 2022). To achieve price stability in the euro area, as elsewhere, it is essential that the central bank operates independently in determining its monetary policy stance and that countries' debt-servicing capacity is at a sustainable level.

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Notes

1. The last time the ECB raised its key interest rates was in July 2011. ↑
2. Until July 2021, the ECB's inflation target was "below but close to 2%". ↑
3. See e.g. Corona-crisis-has-increased-the-risk-of-stagnation-in-the-euro-area. Bank of Finland Bulletin, 9 November 2020. ↑
4. See e.g. Galí (2008, Chapter 5). In this theoretical New Keynesian model, the central bank should aim to respond to a cost-push shock only in part, not fully. The central bank will generally be able to influence only aggregate demand, and therefore, in the case of inflation resulting from supply disruptions, it will focus on the consequences of inflation via the short-term equilibrium level of the goods and labour markets. ↑
5. When interest rates were at the lower bound, central banks' forward guidance promised to keep interest rates at or below their prevailing level for a certain period of time. ↑
6. Normalisation measures could also take place in a different way: start with selling securities and increas key policy rates afterwards. Since the global financial crisis, the Federal Reserve has been actively discussing monetary policy normalisation and the sequencing of policy steps, first in April 2011 in the context of discontinuing the accommodative monetary policy measures put in place during the global financial crisis, and again in December 2021. In addition, the Federal Reserve's Federal Open Market Committee (FOMC) published in May 2022 a detailed decision on plans for reducing the size of the Federal Reserve's balance sheet. See also the web page 'History of the FOMC's Policy Normalization Discussions and Communications'. ↑
7. The setting of key policy rates is also easier to communicate to the general public. ↑
8. Net purchases under the Pandemic Emergency Purchase Programme (PEPP) were discontinued in March 2022. Net purchases under the expanded Asset Purchase Programme (APP) continued until the end of the second quarter of 2022. ↑
9. Clarida, Galí & Gertler (2000). ↑
10. Söderström (2002). ↑
11. Taylor (1999). ↑
12. Sack (2008) and Söderström (2002). ↑
13. Woodford (2003). ↑
14. Nakata & Schmidt (2019). ↑

15. Gertler & Karadi (2015). ↑
16. For more details, see the Federal Reserve's press release of 27 August 2020. ↑
17. At a hearing before the US Congress on 30 November 2021, Federal Reserve Chair Powell stated that high inflation was not just a transitory phenomenon and that the tapering of asset purchase programmes should be speeded up. ↑
18. The stance of monetary policy could also be analysed by looking at policy actions in relation to the Taylor (1993) rule. However, here we focus on the variations in interest rates that cannot be explained by the central bank's reaction function. In addition, the model also considers the effects of monetary policy on the entire yield curve, while the Taylor rule only focuses on the short-term interest rate. See e.g. the Bank of Finland Bulletin article on the use of the Taylor rule: Changes in the economy challenge traditional methods of evaluating monetary policy. ↑
19. The model identifies both conventional and unconventional monetary policy measures, which affect the euro area yield curve and risk premia differently. The model has been described in more detail in an article by Nelimarkka and Laine (2021). ↑
20. The model uses as its risk-free rate the €STR and OIS rates, which reflect the expected path of the €STR. ↑
21. The conclusions could be different under e.g. the Taylor rule. For instance, in some estimates, the monetary policy stance in the United States is considered light under the Taylor rule. See e.g. speech by James Bullard, CEO of Federal Reserve Bank of St. Louis, 6 May 2022. ↑
22. See also Vilmi (2016). ↑
23. See ECB press release on monetary policy decisions 21 July 2022. ↑
24. A new monetary policy tool, the TPI, can be activated to counter unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across all euro area countries. The scale of TPI purchases would depend on the severity of the risks facing monetary policy transmission. Thus, purchase volumes are not restricted ex ante. See ECB press release on TPI. ↑
25. The ECB Governing Council will assess whether a country may conduct purchases under the TPI, requiring that the county complies with the EU fiscal framework in financial and other macroeconomic policies and fulfils the criteria regarding the sustainability of public debt. Outright monetary transactions (OMT), on the other hand, are activated when the problems of a euro country threaten to jeopardise its debt sustainability and the country is required to undertake a rigorous economic policy programme to remedy the problems. The OMT remains a part of the Eurosystem's toolkit. ↑
26. Sargent and Wallace (1981) showed that price levels can be determined through cooperation between the central bank and the fiscal authority, where one is always an active player and the other a passive player. Coordination of monetary and fiscal policies is therefore essential to controlling inflation. ↑

Keywords

euro area, monetary policy normalisation, natural rate of interest