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EDITORIAL

Monetary policy tightening to bring inflation down to target – Managing energy crisis takes key role

29 Sep 2022 – Bank of Finland Bulletin 3/2022 – Monetary policy, International economy

Russia's war in Ukraine is stifling the economy's promising recovery following two years of the COVID-19 pandemic. The war has not only shaken the foundations of Europe's security order but has also considerably weakened the economic outlook. Inflation has soared to exceptional levels.



Energy has been the biggest factor driving inflation: in the euro area it has accounted directly for half of the headline inflation rate of roughly 9%, and indirectly for an even higher proportion. Inflationary pressures expanded during the summer, and the prices of many goods and services have risen significantly.

Bringing inflation to its targeted level is the job of monetary policy, but movements in the general price level are the sum of many different factors. Typically, inflation rises when there is excess demand in the economy, causing it to overheat. Rising inflation may also occur when there is upward pressure on costs. Cost pressures can be generated by energy price shocks or by wages rising at too high a pace. If monetary or fiscal policy is too accommodative in relation to cyclical conditions, it may also push up inflation.

While the ability of monetary policy to influence energy prices directly is very limited,

monetary policy measures are deployed to respond to a surge in the general level of prices. Since inflation is already far too high and is likely to stay above target for an extended period, the ECB Governing Council began a tightening cycle in July 2022. In September, we raised the policy rates by an additional 0.75 percentage points, and we can assume further rises going forward. We will be making decisions meeting by meeting on the basis of incoming data, guided by the Governing Council's current monetary policy strategy.

The energy crisis and swings in the economy are now affecting everyday life for all of us, and the outlook is unclear. In Europe, natural gas and electricity in particular have risen sharply in price and there is an energy shortage as well. The European Commission has published its proposals on exceptional measures that seek to alleviate the situation in the gas and electricity markets. The EU must bring order to its ranks so that this energy crisis can be resolved.

The impact of the energy crisis on inflation may recede gradually once energy prices have peaked. A key question is whether there are signs that demand-side factors are also starting to generate further upward pressure on prices.

Looking further ahead, wage inflation will have a key role to play. If inflation is leaving a dent in people's wallets at the petrol pump and the supermarket till, it is understandable that a loss of purchasing power among employees will lead to calls for higher pay rises across Europe. However, wage costs work their way back to prices, creating the risk of an inflation-fuelling wage-price spiral.

To avoid such an inflationary spiral it is essential to keep near-term inflation expectations anchored. Wage rises negotiated in various euro countries in recent months have been slightly higher than before, but wages are nevertheless not rising as fast in the euro area as in the United States.

Frequent crises over the past 15 years have challenged public finances across Europe and in Finland too, and the current energy crisis is no exception. Public finances at the euro area level have over the years generally been in deficit, but differences between euro area countries have been moderately large.

According to the most recent fiscal sustainability report, for 2021, the sustainability risks to the public finances of nine of the euro area countries are high for the coming 10–15-year period. Over a longer timespan of decades, the fiscal sustainability risks were high in seven euro area countries. The main factor driving the sustainability risks over the interval of decades is the additional costs brought by the ageing of the population – this applies to Finland too.

The report's assessments of debt sustainability are based on the economic situation in late October 2021 and the forecasts available at that time. This is why the report's scenarios and assumptions appear significantly more positive than the current economic

circumstances would suggest. A major shift has also occurred in interest rates, increasing debt-servicing costs.

In the prevailing economic circumstances, monetary and fiscal policy should proceed hand in hand so that the battle against inflation being presently waged by monetary policy is not thwarted by fiscal policy that is too accommodative, or loose. Fiscal policy should in any case accentuate the importance of debt sustainability.

This is also relevant for managing the energy crisis. The efforts of EU countries to identify ways to limit household energy bills are understandable, but a large-scale and indiscriminate increase in expenditure would not be, and would not help in the fight against inflation. It would instead be right to balance out the effects of the rise in prices through tailored, temporary, precision measures carefully targeted at the most vulnerable households. In Finland the situation is eased by the fact that many social benefits are increased automatically in line with the cost of living.

Bringing inflation down to its 2% target over the medium term will require avoiding a detrimental wage-price spiral, keeping inflation expectations anchored and improving the debt sustainability of countries in the euro area. In the face of substantial challenges, resilience, resolve and unity are greatly needed throughout Europe in these present times.

Helsinki, 29 September 2022

Olli Rehn
Governor of the Bank of Finland

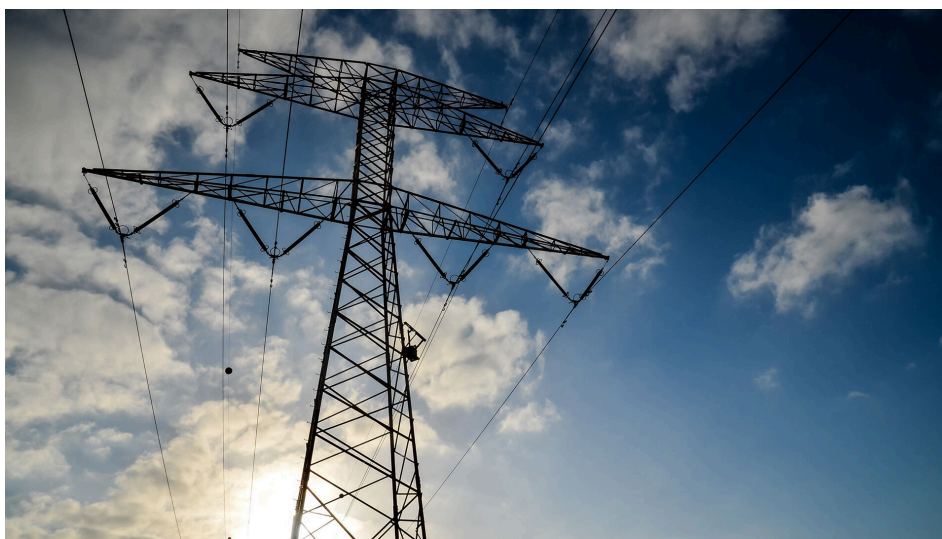
Tags

[euro area](#), [Ukraine](#), [energy](#), [energy crisis](#), [inflation](#), [monetary policy](#)

Energy will dominate euro area's economic outlook for a long time yet

Today – Bank of Finland Bulletin 3/2022 – International economy, Monetary policy

The euro area has been drawn into an energy crisis that could have a long-term impact on the area's economy. The escalating price of energy is increasing euro area import prices, weakening the current account and further adding to business and household costs as well as public expenditures. The effects are already visible in inflation, but forecasts indicate that the growth impact of the energy crisis on the euro area economy is yet to come. Growth in the rest of the global economy beyond the euro area also appears to be slowing, especially on account of the situation in the economies of the United States and China. There is considerable uncertainty surrounding the future availability and price of energy and the ability of the euro area economy to adjust to the transformation of the energy market, and this is darkening the economic outlook for the immediate years ahead. Since inflation is already too high and could stay above target for an extended period, the ECB Governing Council has begun a cycle of monetary policy tightening, making two successive increases in policy rates, in July and September.



The energy crisis is threatening to increase the euro area's energy bill many times over

The growth outlook for the euro area economy deteriorated markedly towards the end of the summer. Imports of natural gas from Russia have all but ceased, which has pushed up energy prices even further.^[1] Driven notably by energy prices, inflation is now rising

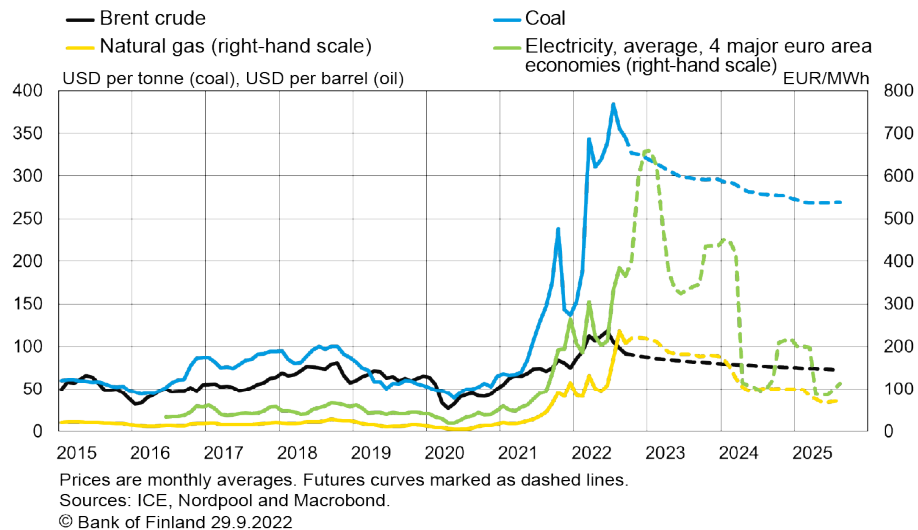
1. Energy production has been hampered not only by the decoupling from Russian energy supplies but also by exceptional weather conditions.

rapidly, which has prompted the European Central Bank (ECB) to tighten its monetary policy. On top of this, the detrimental growth impact of the energy crisis is only just beginning. The euro area finds itself on the brink of a recession.

A major share of the energy consumed in the euro area is imported from outside the area. Europe is therefore affected very powerfully by the soaring energy prices: the price of natural gas has risen by almost a factor of ten, and that of coal and of Central European electricity by roughly a factor of five in relation to early 2021 prices (Chart 1). The elevated demand for liquefied natural gas (LNG) has meant an increase in the price of natural gas outside Europe, too, but this has been noticeably more moderate than within Europe. For example, the price of natural gas in Europe is five to ten times higher than the Henry Hub reference price for natural gas in the United States.

Chart 1.

The rise in energy prices has been steep, and the markets expect prices to remain high

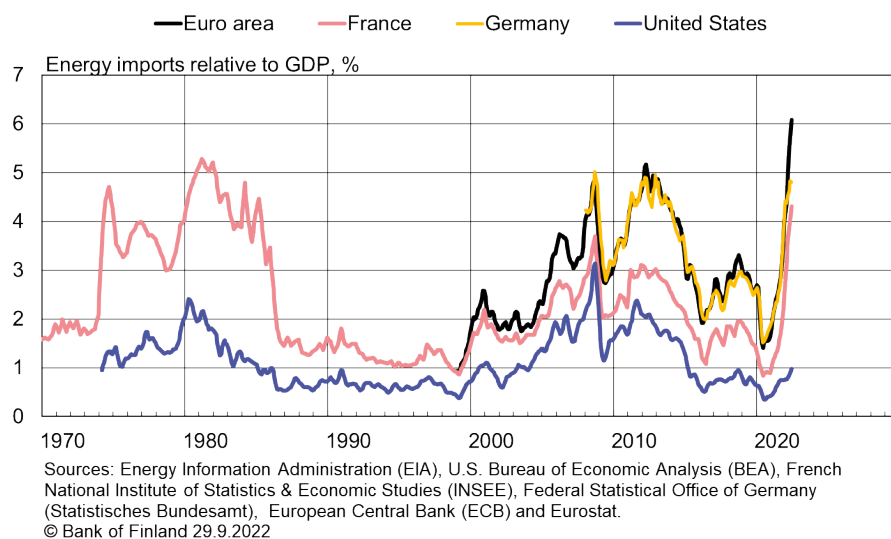


The energy crisis is threatening to increase the euro area’s energy bill many times over. The euro area’s imports of energy in 2019 amounted in value to EUR 328 billion, corresponding to about 3% of GDP. In 2022, this figure was already surpassed in the first six months (EUR 351 billion in January–June 2022). During the second quarter of 2022, energy imports rose to as high as about 6% of GDP, on a seasonally adjusted basis (Chart 2). By comparison, expenditure on energy imports in the United States only increased to 1% of GDP. In addition, the United States has been a net energy exporter since 2019, so the rise in energy prices has had less of an impact there than in the euro area.

The rise in costs of imported energy has been steeper and much more rapid than at any time since the 1970s and 1980s. Costs have increased greatly in all the major euro area economies. The magnitude of the resulting economic effects on the euro area’s constituent economies will hinge ultimately on each economy’s ability to adapt to the situation. Structural changes and technological progress may have altered the ability of economies to adapt compared with the 1970s.

Chart 2.

The euro area is dependent on energy imports



The price of natural gas, which is all-important for central Europe, has remained high during the latter half of 2022, in spite of a slight decline over recent weeks; the risk of extremely high energy prices is now becoming a reality this winter at least. Higher energy import prices are detrimental to the euro area's terms of trade, as only a part of the rise in import prices can be carried over to export prices.

The bill will be met by consumers, businesses and the government sector, with the government also softening the impact through support measures. There is also a risk that the particularly sharp rise in energy prices in Europe will diminish the global competitiveness of European companies and erode the output potential of the EU countries.

Swift action has been taken to increase Europe's natural gas reserves from the low levels of early 2022, and by the end of August the EU had already reached its minimum joint target of filling reserves to 80% of capacity by the beginning of November. At the end of September, Europe's gas reserves were filled to an average of 87% of their full capacity. According to a rough estimate^[2], the reserves when full to capacity would last for 2.5–3 months at best, so there is a looming risk of central Europe experiencing gas rationing this winter.

In 2021, Russian natural gas still met about 40% of Europe's natural gas demand. By summer 2022 this share had fallen to only 20%. According to estimates by McWilliams and Zachmann (2022), Europe will have to reduce its gas consumption by about 15% in the period up to spring 2023 if the halting of Russian gas imports is permanent. There

2. The combined capacity of EU Member States' gas reserves is about 1,111 TWh, and the EU's total inland consumption of natural gas was about 4,400 TWh in 2021. Ignoring seasonal variation and assuming that the gas would be readily available at the point of consumption, the reserves would last about three months. In actuality, demand is higher during the winter than it is during the summer, and the difficulty of natural gas transportation may limit its availability, especially to end-users inland. Sources: Eurostat and the European Commission.

are major differences between countries, however, and the estimate is based on a variety of assumptions, such as the weather this winter.^[3] In July, the EU countries agreed to reduce their natural gas consumption by 15% this winter relative to their average consumption for 2017–2021. The reduction is intended to be implemented by countries on a voluntary basis, but in emergency situations it can be enforced.

If the cessation of Russian gas imports is permanent, this will have a significant impact on the outlook for the euro area economy over the immediate years ahead. The magnitude of the impact will be determined by, among other things, the weather this coming winter, the adaptability of consumers and businesses, the extent to which pipeline gas can be replaced by liquefied natural gas, and the success of energy policy coordination between EU Member States. According to published estimates, the EU economy may contract by about 0.5%–3.0%.^[4] Estimates of the impact on the German economy are of a similar magnitude, at about 0.5–3.0 percentage points over the near term.^[5] The Bundesbank (2022) has published impact assessments that are even more severe than this.^[6]

The price of crude oil has fallen recently on the back of recession concerns and an appreciating US dollar. Brent crude was still trading at about USD 100 per barrel at the end of August, but its price has since slipped below pre-war levels, to less than USD 90 per barrel. Yet there are several risk factors explaining why oil prices may remain high. In early September, OPEC+, the alliance that combines the OPEC oil-producing countries and allies such as Russia, agreed to cut oil production as from October, in its first cut since the height of the COVID-19 pandemic. Although the production cut was small, it does signal that OPEC+ wishes to maintain a high oil price. The release of oil from the United States' Strategic Petroleum Reserve will bolster supply until October, but the oil supply outlook may be weakened by what could be a potentially significant contraction in Russian oil production due to international sanctions. On the other hand, the weakening of global demand is applying downward pressure on oil prices. Shale oil production in the United States has picked up somewhat, though slowly.

The prices of other raw materials have fallen over the spring and summer as global growth prospects have weakened. Raw material prices (excluding energy) were about 10% lower at the end of September compared with the beginning of the year, matching the same level as in early 2021. Prices of food raw materials have also receded from peak levels, but less so than for other raw materials. At the end of September they were over

3. See McWilliams, B. & Zachmann, G. (2022) *European Union demand reduction needs to cope with Russian gas cuts*, Bruegel: <https://www.bruegel.org/2022/07/european-union-demand-reduction-needs-to-cope-with-russian-gas-cuts>. Retrieved: 24 August 2022.

4. See Flanagan, M., Kammer, A., Pescatori, A. & Stuermer, M. (2022) *How a Russian Natural Gas Cutoff Could Weigh on Europe's Economies*, IMF Blog: <https://blogs.imf.org/2022/07/19/how-a-russian-natural-gas-cutoff-could-weigh-on-europes-economies/>. Retrieved: 24 August 2022.

5. See Bachmann, R., Baqaee, D., Bayer, C., Kuhn, M., Löscher, A., Moll, B., Peichl, A., Pittel, K. & Schularick, M. (2022) *What if? The economic effects for Germany of a stop of energy imports from Russia*, EconPol Policy Report 36, and Bachmann, R., Baqaee, D., Bayer, C., Löscher, A., Kuhn, M., McWilliams, B., Peichl, A., Pittel, K., Schularick, M. & Zachmann, G. (2022) *How it can be done*, ECONtribute Policy Brief No. 034. See also: German Council of Economic Experts (2022) *Effects of a possible end to energy supplies from Russia on energy security and economic output*, March 2022.

6. See Deutsche Bundesbank (2022) *Monthly Report*, June 2022.

25% higher than at the beginning of 2021 and about 5% higher than in early 2022.

Energy crisis will have delayed impact on growth

Growth projections for the euro area economy for 2023 have been revised downwards across a broad front due to the energy crisis (Table 1). According to the European Central Bank's projections, the euro area economy is forecast to grow by 3.1% over the full year 2022 and by 0.9% in 2023. In its December 2021 projections, the ECB was still forecasting euro area growth to be 4.2% in 2022 and 2.9% in 2023.

In September, Consensus Economics revised its Consensus forecast for 2023 downwards to just 0.2%, from 0.9% in August. This is an aggregate of forecasts from professional forecasters and investment banks. The economic outlook has thus deteriorated further, and the risk of recession in the euro area has grown. The ECB's macroeconomic projections also include an alternative scenario under which the euro area's real GDP contracts by -0.9% in 2023.

Table 1.

Forecasts for the euro area economy in 2023 are modest					
Euro area real GDP, % change	Publication date (month/year)	2021	2022	2023	2024
ECB	09/2022 (06/2022)	5.2 (5.4)	3.1 (2.8)	0.9 (2.1)	1.9 (2.1)
European Commission	07/2022 (05/2022)	5.3 (5.4)	2.6 (2.7)	1.4 (2.3)	-
IMF	07/2022 (04/2022)	5.4 (5.3)	2.6 (2.8)	1.2 (2.3)	(1.8)
OECD	09/2022 (06/2022)	5.2 (5.3)	3.1 (2.6)	0.3 (1.6)	-
Consensus	09/2022 (08/2022)	5.2 (5.3)	2.9 (2.8)	0.2 (0.9)	-

Previous forecast in brackets.

Sources: Consensus Economics, IMF, OECD, ECB/Eurosystem and European Commission.

A considerable share of the EU's energy use is met by imports. Consequently, the global rise in energy prices has made euro area imports more expensive and weakened the terms of trade. It is estimated that a rise in import prices as experienced in early 2022 could shrink euro area real GDP by about 2% over a one-year period and by even more in the longer term (see feature article 'Rising import prices are hitting the real economy').

This is in line with the downside revisions made to growth projections published by major economic forecasters this year.

The strongest adverse growth impact of the energy crisis is likely to appear after a time lag, and will only be visible in real GDP figures in the coming quarters. Real GDP growth in the euro area is set to be weak in 2023.

Euro area will not return to pre-pandemic growth trend

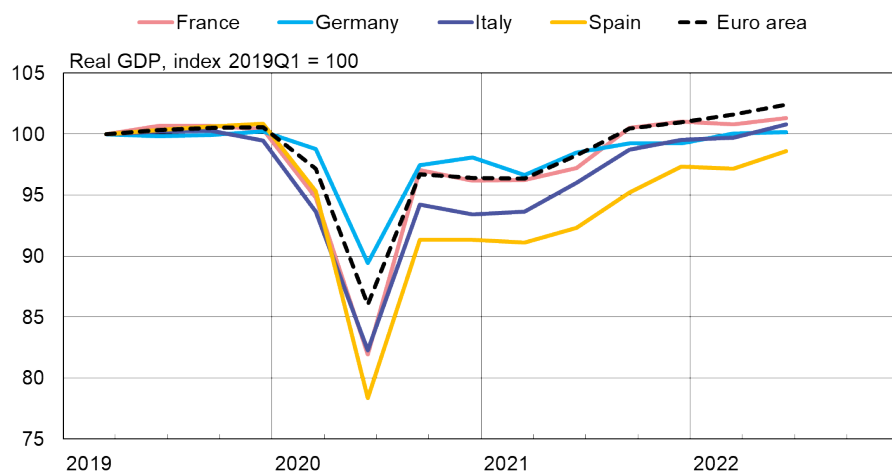
The euro area economy had been recovering well from the COVID-19 crisis, and the recovery was still continuing in the second quarter of 2022. Growth in the second quarter turned out to be higher than anticipated, due to both the easing of pandemic-related supply chain disruptions and the rebound in services demand caused by an increasing demand for leisure services. However, this growth spurt is expected to fade in the second half of 2022, when the adverse growth impact of higher energy raw material prices will begin to impede euro area growth ever more forcefully.

Real GDP in the euro area returned to its pre-pandemic level in late 2021 and exceeded this in the first half of 2022 (Chart 3). Nevertheless, the euro area's GDP growth is unlikely to reach the pre-pandemic growth trend.

Among the largest euro area economies, Germany and Italy have seen their GDP rebounding to the levels recorded at the end of 2019, while Spain's GDP is still about 3% lower than before the pandemic. France is the only large euro area economy whose GDP has surpassed the end-2019 level by a notable margin.

Chart 3.

Euro area real GDP exceeded the pre-pandemic level



Source: Eurostat.
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The impact of rising import prices in the euro area was first seen in early 2022, when there was a sharp increase in euro area imports measured by value. The value of euro

area exports has also increased, though by substantially less than that of imports. Consequently, the considerable surplus in the euro area current account began to shrink during the spring.

In 2021, the euro area current account still recorded a surplus of about EUR 300 billion, corresponding to approximately 2.5% of GDP. In March–May 2022, the euro area seasonally adjusted current account ran a deficit for the first time since 2012, and only a slight surplus was recorded for June. The most dramatic deterioration was seen in Germany where the current account has traditionally posted very large surpluses.

Confidence indicators point to a marked economic slowdown

The notable deterioration in confidence indicators during the summer provided support for the view that economic growth was starting to dwindle. Higher prices and elevated uncertainty are reflected most clearly in the level of consumer confidence, which plummeted in the euro area in March, and over recent months has been at historically weak levels – below even the lowest point seen at the onset of the COVID-19 crisis.

Consumers' expectations about their own financial situation and the economy are particularly weak. The rise in costs is also reflected in lower expectations about savings. These adverse developments may, however, be mitigated by the fact that wealthier households, in particular, accumulated considerable savings during the pandemic.

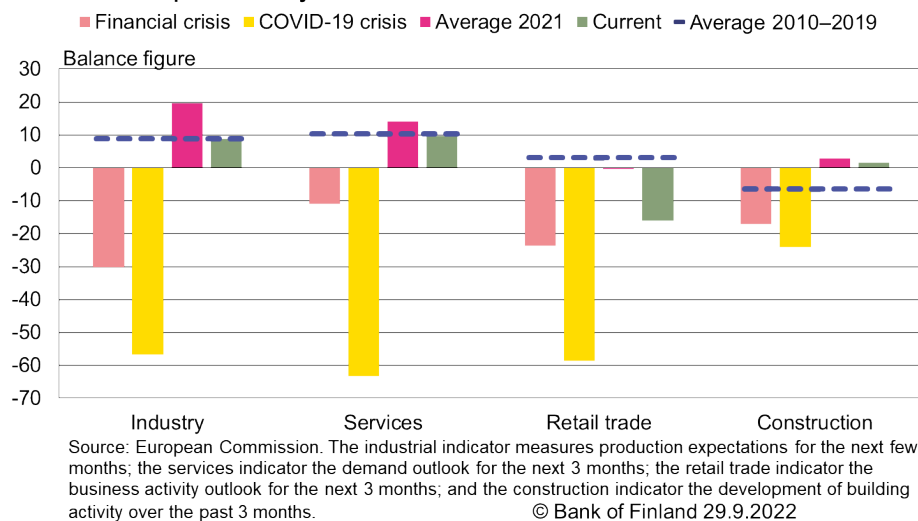
The subdued consumer outlook and deteriorating purchasing power have also been strongly reflected in retail confidence, which has fallen well below its historical average and has now sunk fairly close to the levels seen during the global financial crisis. Compared with last year, the outlook has also deteriorated for manufacturing, services and construction. However, the prospects for firms operating in these sectors remain close to the historical average and are considerably more positive than during the global financial crisis or the pandemic (Chart 4). Confidence across the services sector has so far been underpinned particularly by the recovery of tourism and accommodation services.

Although the gradual easing of supply chain disruptions will support the situation for manufacturing, there are large differences between its subsectors. In May and June, industrial production was still growing at a good pace and expectations were strong, but the outlook deteriorated towards the end of the summer, particularly for oil refining, the wood products industry and the chemical industry. Survey data also suggest that the level of stocks has normalised and order backlogs have been reduced.

The uncertainty caused by the energy crisis and the rise in prices and financing costs are having an adverse impact on the near-term investment outlook for businesses. Over the longer term, corporate fixed investment may be boosted by investment required for the green transition and by Next Generation EU grants for new private investment.

Chart 4.

Production and demand expectations for the next few months down from previous year but still far short of crisis-time levels



Euro area economic growth has been underpinned by the strong employment situation. The unemployment rate has declined in the current year both in the euro area on average (stood at 6.6% in July) and in all the major euro area economies. The number of people in employment is already considerably higher than before the pandemic.

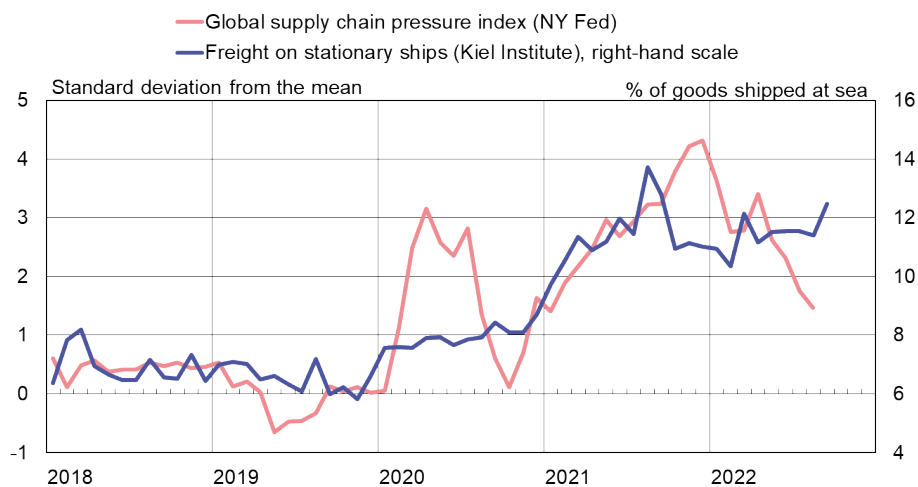
Hours worked in the euro area recovered at a slower pace than employment, reaching the pre-pandemic level in the second quarter of 2022. According to the European Commission's business surveys, there are still labour shortages, especially in the services sector but also in manufacturing. However, as there is typically a time lag between cyclical changes and the reaction in the labour market, the slowdown in the economy could begin to be reflected in employment during the autumn or winter.

No boost to be expected from global economy

Despite the gloomier economic outlook, the trend in international trade remained favourable in early summer. Even though supply chain disruptions are still noticeably more common than before the pandemic, they did ease slightly in the summer with, among other things, the opening of Chinese ports and better availability of semiconductors (Chart 5). However, container shipping in the North Sea continues to suffer from congestion and delays. Sea freight rates have decreased from the extremely high levels seen in the summer, especially in container and dry cargo transportation, but remain higher than in previous years.

Chart 5.

Supply chain disruptions have partially eased



Sources: Federal Reserve Bank of New York and Kiel Institute.
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Despite these developments, the global growth outlook has deteriorated markedly since the spring. For example, in the September 2022 ECB staff projections, global growth for 2023 outside the euro area was revised downwards by 0.4 percentage points (Table 2), mainly on account of slower growth in the United States and China. The slowdown in growth is also reflected in export orders placed with euro area manufacturers, which began to decline in the summer.

In July, the IMF made a significant downward revision to its growth forecasts for the United States in comparison with its January projections: growth for 2022 was revised downwards by 1.7 percentage points, to 2.3%, and for 2023 by 1.6 percentage points, to just 1.0%. The Consensus Economics September forecast for the US economy was even weaker than this: growth of only 1.7% in 2022 and 0.5% in 2023. In its July projections the IMF also downgraded its growth forecast for China from its January projections, reducing the 2022 and 2023 forecasts by 1.5 and 0.6 percentage points to 3.3% and 4.6%, respectively.

In the United States, economic growth has already contracted for two consecutive quarters, and consumer confidence is weak. Growth is being curbed by lower real wages, a fading of the fiscal stimulus effects, the depletion of savings accumulated during the pandemic, and higher interest rates.

In China, strict lockdown measures and problems in the real estate sector pushed the official annual GDP growth down to close to 0% in the second quarter of 2022.^[7] In July, China signalled that it was no longer pursuing its GDP growth target of about 5.5%. This is the first time that China has abandoned a declared growth target.

Global economic growth is also strained by monetary policy tightening across the world.

7. When calculated using the alternative GDP model developed by the Bank of Finland Institute for Emerging Economies (BOFIT), China's annual economic growth was negative in the second quarter of 2022.

Inflation has risen worldwide, and central banks need to address this trend. Central banks' interest rate hikes will rein in both economic growth and inflation.

Table 2.

Downward revisions to global growth forecasts					
World real GDP growth, %	Publication date (month/year)	2021	2022	2023	2024
ECB*	09/2022	6.4	2.9	3.0	3.4
	(06/2022)	(6.4)	(3.0)	(3.4)	(3.6)
IMF	07/2022	6.1	3.2	2.9	
	(04/2022)	(6.1)	(3.6)	(3.6)	(3.4)
OECD	09/2022	5.8	3.0	2.2	-
	(06/2022)	(5.8)	(3.0)	(2.8)	
European Commission	05/2022	5.8	3.2	3.5	-
	(11/2021)	(5.7)	(4.5)	(3.5)	
Consensus	09/2022	5.8	2.6	1.9	-
	(08/2022)	(5.8)	(2.6)	(2.3)	

* World GDP excl. euro area.

Previous forecast in brackets.

Sources: Consensus Economics, IMF, OECD, ECB/Eurosystem and European Commission.

Energy crisis increases sustainability concerns over countries that already had a high debt burden

The recovery of the euro area and the global economy from the COVID-19 pandemic has been cut short, and so the euro area now faces an energy crisis while being burdened with substantially more debt than before. At the same time, a variety of policy measures have become necessary to soften the impact of the crisis (see information box 'Variety of policy measures in response to energy crisis'). In the ECB's projections published in September, euro area aggregate government debt in 2022 is expected to reach over 92% of GDP, some 8 percentage points above its 2019 pre-pandemic level. The general government deficits of euro area countries are also still significantly larger than before the pandemic.

Under the EU fiscal rules valid before the pandemic, the upper limit for the debt-to-GDP ratio was 60%, but compliance with the rule was low. Due to the pandemic and the war in Ukraine, the rules have been suspended until the end of 2023, and the plan is to reform them before that. In October 2022, the European Commission will publish its proposals for new fiscal rules.

i Variety of policy measures in response to energy crisis

EU countries have had to rapidly find ways of coping with the energy crisis and have sought replacement energy sources particularly for Russian natural gas. The key priority has been to increase imports of liquefied natural gas (LNG). However, the lack of transportation capacity and storage capacity has proved to be a problem. New LNG terminals have been completed recently, such as in the Baltic countries, and a number of terminals are under construction around Europe.

Energy saving is one of the key means of getting through the acute crisis. In the spring, the European Commission in its REPowerEU plan proposed that the binding energy efficiency target be increased from 9% to 13%, and also presented concrete responses to achieve the target.

As the year has progressed, individual euro area countries have been providing support to consumers for covering their increasing energy expenses. The forms of support have included direct income support to households, income tax reductions and increases in the lowest pensions. Minimum wages have also been raised. Authorities have also altered consumer prices of energy via measures such as reductions in indirect energy taxes, setting price ceilings and placing upper limits on price increases.

The EU has in recent years been active in climate issues (e.g. the Fit for 55 package) and has sought to promote a green transition from fossil fuels to renewable energy (InvestEU), but it has not had an actual common energy policy. Individual EU countries have arrived at national energy solutions, which has led to differences in the degree of dependence on Russian energy. In recent months, the EU has, however, launched a number of initiatives concerning energy markets.

The Commission's proposal of 14 September 2022 includes a Member State-specific obligation to reduce electricity consumption during selected peak price hours, and a windfall tax to redirect the excess revenues of electricity producers and producers of fossil fuels to Member States to prevent the most adverse impacts of the crisis.

Even before the current energy crisis, the EU aimed to be carbon neutral by 2050. The EU's climate investment^[8] in 2011–2020 totalled some EUR 700 billion per year (approx. 5% of GDP), and to reach the climate target this should rise to more than EUR 1,000 billion (7% of GDP) by 2030, and to even higher levels beyond that.^[9] The energy crisis has now created an even more urgent need for investment. The Commission's REPowerEU plan estimated that additional investment in renewable energy of about EUR 210 billion across the EU is needed

over the next five years.

The public measures to cushion the impacts of the energy crisis and the public investment to speed up the energy transition will increase fiscal deficits. To ease the pressures on public expenditure, windfall taxes on the substantial profits of energy companies have been proposed. The use of the Next Generation EU recovery package for enhancing the green transition and increasing energy self-sufficiency may partly contribute to decreasing the cost impact in individual Member States and accelerate the implementation of energy investments.

The fiscal sustainability of EU Member States has been assessed regularly following the global financial crisis, as part of the monitoring and coordination of Member States' fiscal policies.^[10] The fiscal sustainability of each Member State is assessed across the short term, over a timeframe of 10–15 years and over decades. The risks are classified as low, medium or high.^[11]

8. Climate investment also includes non-energy investments, and decoupling from Russian energy will increase these figures until at least 2027.

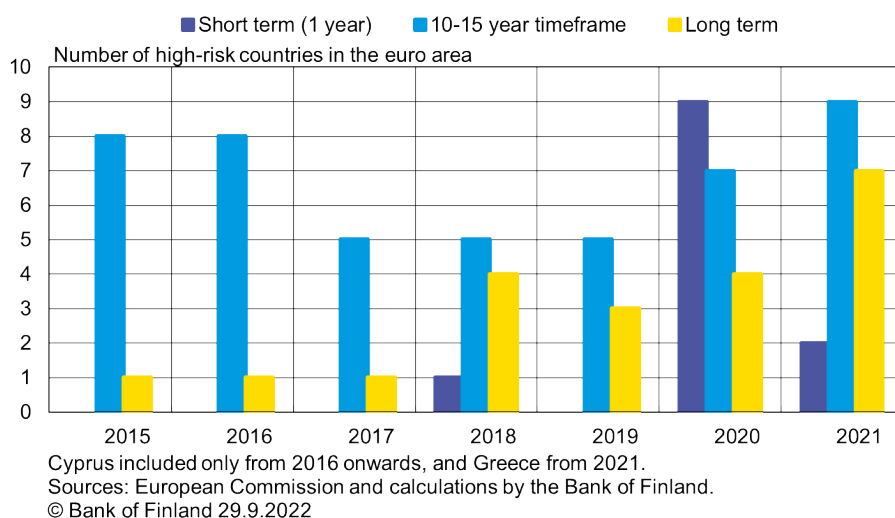
9. See Darvas, Z. & Wolff, G. (2021) A green fiscal pact: climate investment in times of budget consolidation, Bruegel, Policy Contribution Issue no. 18/21, September 2021. https://www.bruegel.org/sites/default/files/wp_attachments/PC-2021-18-0909.pdf.

10. Monitoring is performed as part of the European Semester. The data used in this analysis is based on the Fiscal Sustainability Report published every three years and the annual Debt Sustainability Monitor. The analysis covers the years 2015–2021. The latest report was published in spring 2022.

11. European Commission, Fiscal Sustainability Report 2021, Volume 1, April 2022. For more on the methodology, see the [latest report](#), p. 34.

Chart 6.

Fiscal sustainability risks had already increased significantly before the energy crisis



The picture provided by the reports on the fiscal sustainability of euro area countries over the years shows that the positive trend was lost in 2018 and reversed significantly as a result of the pandemic. The number of euro area countries falling into the high-risk group in terms of their fiscal sustainability over a timeframe of 10–15 years and longer started to grow in 2020, and continued to grow in 2021 (Chart 6).

According to the most recent Fiscal Sustainability Report, for 2021, the fiscal sustainability risks of nine of the euro area countries are high for the coming 10–15-year period. Over a longer timespan of decades, the fiscal sustainability risks were high in seven euro area countries. The main factor driving the sustainability risks over the interval of decades is the additional costs brought by population ageing.

The Fiscal Sustainability Report’s debt sustainability outcomes are based on the economic situation in late October 2021 and forecasts published at that time. This is why the report’s scenarios and assumptions are significantly more positive than the current economic circumstances would suggest. A major shift has also occurred in interest rates, increasing debt-servicing costs.

The fiscal policies of euro area countries are thus subject to increasingly strong pressure regarding fiscal sustainability. Inflation is increasing public sector expenditure, and measures to resolve the energy crisis are widening general government deficits, and this may continue in the years to come.^[12] The energy crisis has made the achieving of fiscal balance over the medium term in an environment of rising interest rates even more important – and challenging.

Rise in energy prices spilling over ever more widely

12. On the other hand, high inflation may partly support the debt sustainability of euro area countries, as the real value of the debt burden declines.

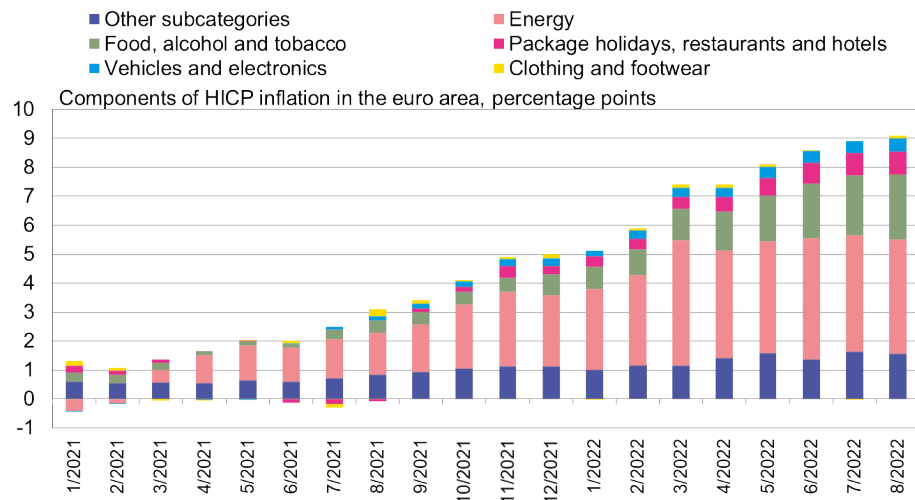
to consumer prices

Inflation in the euro area and many other economic regions has increased dramatically this year. In August the annual inflation rate in the euro area was 9.1%. The increase was especially sharp in the Baltic countries. The energy crisis has meant that inflation differentials within the euro area have never been wider. Key factors explaining these include the different extent to which countries are exposed to energy price rises and differences in the proportion of the consumer basket that is accounted for by energy.

Inflation already began to rise in 2021, particularly as a result of the post-pandemic recovery and disruptions to supply chains. The war in Ukraine and the related imposition of economic sanctions then brought new problems, especially concerning the availability of energy and certain other raw materials and manufacturing components. This pushed up the prices of raw materials and, in particular, energy prices, which spilled over to consumer prices (Chart 7) and, with a time lag, to the price of food in particular. This year the energy and raw material price increases have started to be reflected in the prices of a growing number of products (dark blue bars in the chart).

Chart 7.

Energy prices not the only cause of higher inflation



Sources: Eurostat and calculations by the Bank of Finland.
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The rise in prices has steadily become more widespread during 2022. In August, the year-on-year increase in prices was above 3% in 61 of the 94 subcategories of the consumer basket used in the Harmonised Index of Consumer Prices (HICP). Thus, inflation is not linked only to the rise in food and energy prices. In August, the underlying rate of inflation, which excludes energy and food, was 4.3%.

A further indication of strong inflationary pressures is that the HICP-CT (HICP adjusted for tax changes, i.e. measured at constant taxes) has in recent months risen faster than the standard HICP index. The VAT cuts made and other support measures taken by countries on account of the energy crisis have therefore significantly lowered prices, for energy products especially.

The depreciation of the euro against other currencies has also stoked inflation. Since the start of the year, the euro has weakened against the US dollar by around 15%, and by some 4% against the nominal effective exchange rate (NEER). The research literature suggests, however, that the pass-through effect of the exchange rate is comparatively small, with a 1% weakening of the exchange rate (NEER) accelerating inflation by just under 0.1 percentage points.^[13] Of course, in the context of the current dramatic cost shock, even this impact may be greater than conventional elasticities. Against the pound sterling, the euro has strengthened by around 6% this year.^[14]

Production costs up as inflation pressures grow

The recent rapid rise in inflation worldwide surprised nearly all economic forecasters. Factors contributing to this inflation surge include not only the rise in raw material prices, the supply bottlenecks and a weakening currency, but also the indirect impact of energy prices on other consumer prices.^[15] Higher prices for energy push up companies' production costs and ultimately the prices of their end products.

The rise in the price of energy has been reflected fastest and most evidently in the increase in food production costs and food prices. Historically, an unexpected increase in the price of oil has also affected underlying inflation after a time lag, even though changes in oil prices are excluded from the measures of underlying inflation.^[16]

The spillover of energy-related inflationary pressures to other prices may be far greater than normal in present conditions.^[17] When inflation is already rising fast, factors that increase costs might push the inflation rate up more rapidly than when inflation was slow to begin with.

The most crucial consideration from the standpoint of monetary policy is how expectations regarding future inflation develop. To achieve price stability, it is essential that people have confidence in the idea that inflation will be brought down to a level that is in line with the price stability objective. When inflation expectations are anchored to this objective, there is less uncertainty about future inflation, and businesses, employees and households do not have to plan for an extended period of continued high inflation

13. The estimate is based on a meta-analysis of several studies that was conducted at the Bank of Finland. See e.g. Comunale, M. & Kunovac, D. (2017) Exchange rate pass-through in the euro area, Working Paper Series 2003, European Central Bank, and Dieppe, A., Pandiella, A. G., Hall, S. & Willman, A. (2013) Limited information minimal state variable learning in a medium-scale multi-country model, *Economic Modelling*, Vol. 33, Issue C, (2013), pp. 808–825.

14. The pound sterling has weakened against the euro since the end of summer. The end of September also saw a rapid weakening of the pound, when the United Kingdom announced a fiscal stimulus package. UK government bond yields have also risen sharply.

15. See Box 3 ECB's Monthly Bulletin for December 2014: https://www.ecb.europa.eu/pub/pdf/other/mb201412_focus03.en.pdf. See also the ECB Monthly Bulletin for August 2010: [Monthly Bulletin August 2010](https://www.ecb.europa.eu/press/pr/mb20100801.en.pdf) (europa.eu).

16. See Baba, C. & Lee, J. (2022) Second-Round Effects of Oil Price Shocks – Implications for Europe's Inflation Outlook, *IMF working paper*, No. 2022/173.

17. See Harding, M., Linde, J. & Trabandt, M. (2022) Understanding Post-Covid Inflation Dynamics, unpublished paper, and Borio, C., Disyatat, P., Xia, D. & Zakrajsek, E. (2022) Second-round effects feature less prominently in inflation dynamics, *BIS Quarterly Review*, pp. 23–24.

when they make their decisions (on product pricing or in wage negotiations, for example).

A period of rapid inflation in the wake of energy-related inflationary pressures has commonly been seen to influence inflation expectations, especially in emerging economies, where monetary policy is not necessarily so closely tied to a price stability objective.^[18] By contrast, assessments have shown that in developed economies with a central bank committed to keeping inflation moderate, the effects of an energy price rise on underlying inflation, on inflation expectations and on wages have been less marked, at least in recent decades.^[19]

How is inflation reflected in wages and inflation expectations?

Wage inflation in the euro area has been relatively moderate, and there have so far been no clear signs in wage negotiations of any considerable pay increases that could trigger a major wage-price spiral (Chart 8). The rate of annual wage growth in negotiated settlements rose to around 2.5% in the first half of this year, having been 1.5% in 2021. This is close to the rate for the period 2018–2019. The rate of wage growth is expected to increase further in the latter part of this year. In the ECB’s September forecast, wage growth per employee is projected to rise in 2023 to 4.8% from this year’s 4.0%, and then to slow to about 4.0% in 2024.^[20]

Chart 8.

Annual wage growth in negotiated settlements has so far remained fairly moderate



Source: ECB.
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18. See Baba, C. & Lee, J. (2022) Second-Round Effects of Oil Price Shocks – Implications for Europe’s Inflation Outlook, *IMF working paper*, No. 2022/173.

19. These conclusions are based on data for the period Q1 2000 – Q4 2019. See *ibid.* Chart 19, p. 21.

20. Wages per employee differ from the indicator of negotiated wages in that they include ‘wage drift’, i.e. pay in addition to what has been agreed, and are also affected by changes in the number of hours worked per employee.

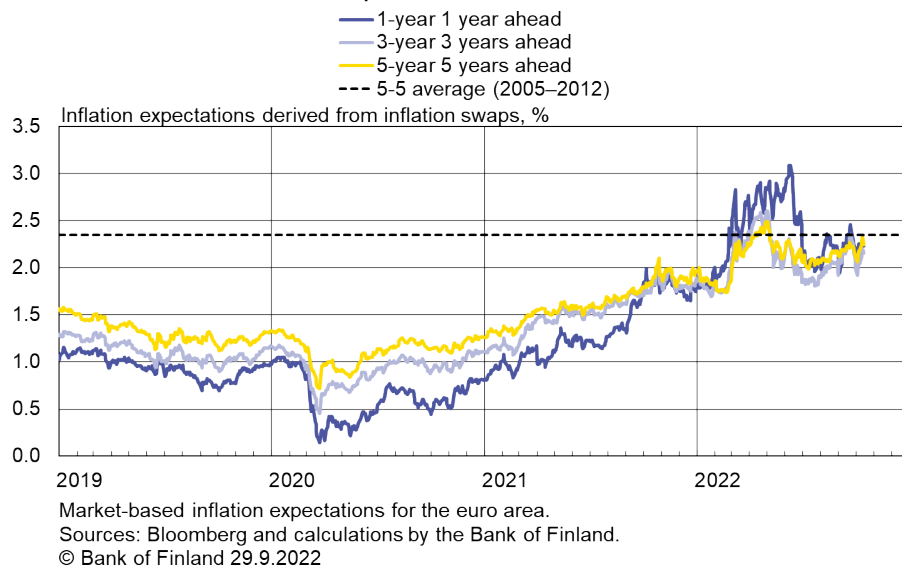
Historically, especially during the oil crisis in the 1970s, an unexpected rise in energy prices has also pushed up wages. This effect has been less significant in the past few decades, however, which is explained by the greater independence of the central banks and their commitment to an inflation target.^[21] Furthermore, labour market structures have changed and wage indexation has declined. Similarly, energy consumption accounts for a smaller proportion of GDP compared to the 1970s.^[22]

Medium-term and long-term inflation expectations have also remained moderate in the euro area (Chart 9). The market-based inflation expectation for a five-year period starting five years ahead has, despite a clear rise, remained all year very close to, or even below, the average for 2005–2012.

There are, therefore, no signs of a powerful longer term surge in inflation. Inflation expectations have moderated slightly since the summer, when progress with the normalisation of monetary policy made it clearer than ever that the ECB was reacting vigorously to changes in the inflation outlook. Furthermore, growing concerns about a recession have caused medium-term inflation expectations to level off.

Chart 9.

Market-based inflation expectations close to 2%



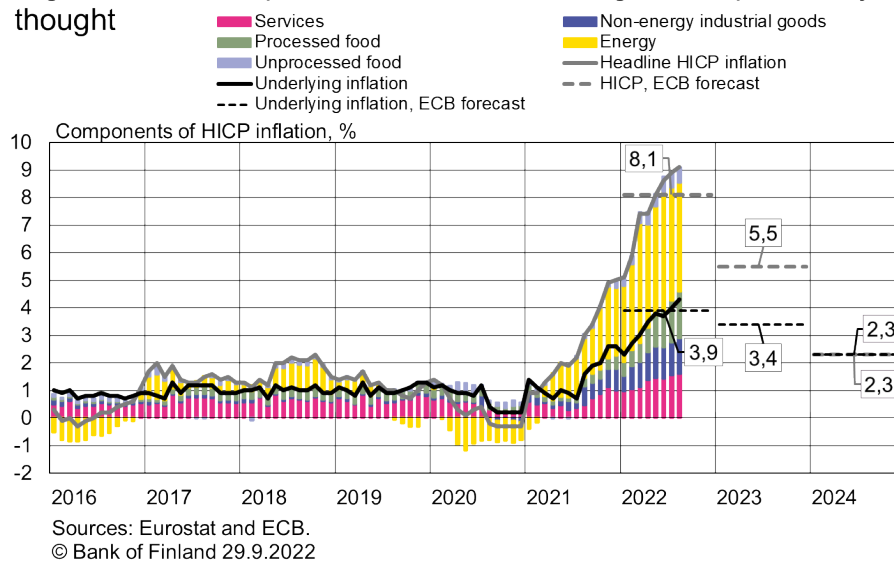
In September, the ECB forecast that inflation would remain high over the next few quarters, but would slow down significantly after that, because the futures curves for different energy prices are falling (Chart 10). Energy excepted, the prices of many raw materials have now fallen from their peak level in the spring. According to the ECB’s September forecast, euro area inflation will be 8.1% in 2022, approximately 5.5% in 2023 and 2.3% in 2024.

21. See Baba, C. & Lee, J. (2022) Second-Round Effects of Oil Price Shocks – Implications for Europe’s Inflation Outlook, *IMF working paper*, No. 2022/173, and Blanchard, O. J. & Gali, J. (2007) The Macroeconomic Effects of Oil Shocks: Why are the 2000s so different from the 1970s?

22. See Ukraine war already reflected in euro area’s confidence measures and energy prices – Is there a threat of low growth and high inflation? (in Finnish) *Euro & talous*, 7 April 2022.

Chart 10.

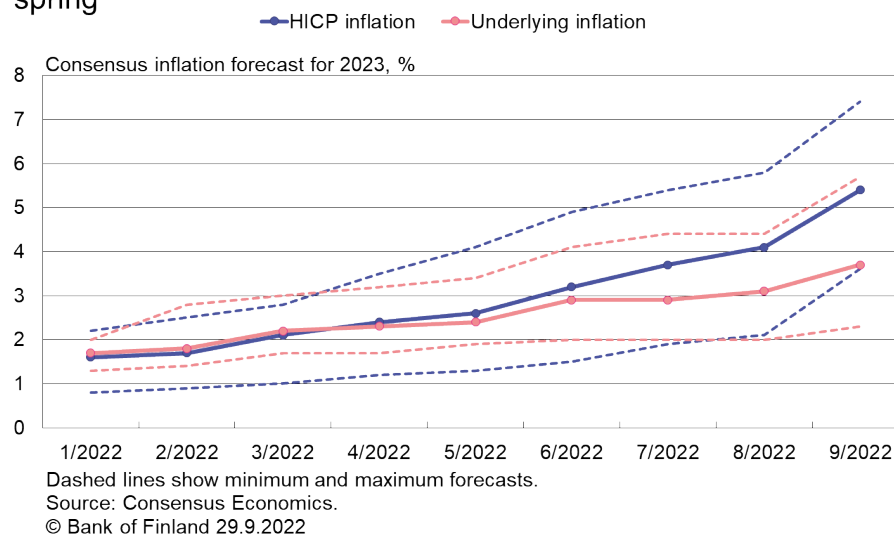
High inflation is expected to continue for longer than previously thought



The uncertainty surrounding inflation forecasts is illustrated in Chart 11. This shows the minimum and maximum values for forecasts of headline HICP inflation and underlying inflation made by different research institutes and investment banks in the Consensus Economics forecast for 2023, plus the average values for the forecasts. The dispersion of forecasts for 2023 has clearly grown since April, and forecasts of higher inflation in particular have become more likely than previously. A similar widening of the distribution is also apparent in the market-based distributions for inflation expectations derived from inflation options.

Chart 11.

Uncertainty over the inflation rate for 2023 has grown since the spring



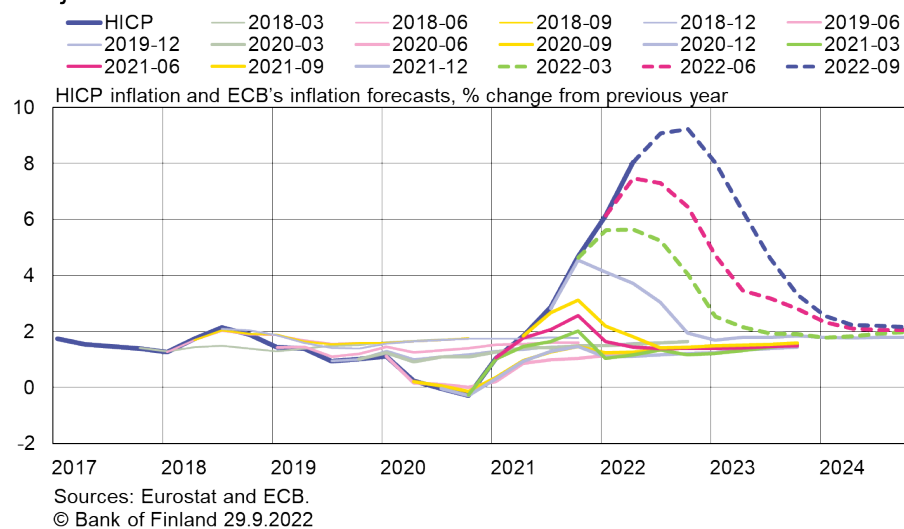
Uncertainty over the outlook for inflation and

growth is exceptionally high

The ECB's inflation forecasts, like those of many other forecasters, have been underestimating the rate of inflation since the first quarter of 2021.^[23] By the third quarter of 2021, the extent of the forecast errors was already significant. The forecast error concerning the second quarter of 2022 was the greatest ever: euro area inflation was underestimated by 2.4 percentage points.

Chart 12.

Unexpected developments in the economy have been evident as major forecast errors in recent forecasts



The main reason for the ECB's recent forecast errors is the unexpectedly huge rise in energy prices. The ECB's projections assume that energy prices will reflect the trend in futures prices.^[24] However, since the start of the energy crisis, these futures curves have continuously underestimated price trends in energy commodities. Other factors underestimated in the forecasts include the duration of supply disruptions, the pace of society's post-pandemic reopening and recovery, and the indirect effects of energy price increases on other prices.

There is now exceptional uncertainty attached to these factors and more generally to the global economy, which would suggest that significant forecast errors could also occur in the future. Investment in energy production also has implications for the inflation outlook. This investment and the speed at which new production capacity is made available will have a crucial impact on energy prices and, ultimately, inflation. Furthermore, the impact of inflation on wage growth and, in turn, on further price rises, may not follow the expected pattern, as the inflation rate has been exceptional.

23. See the ECB's [Economic Bulletin 3/2022, Box 5](#).

24. The so-called risk-neutral assumption made in connection with the market expectations implied by futures means that the price of a futures contract is assumed directly to reflect the expected price of an energy commodity. In reality, investors are risk-averse, and some of the fluctuation in the prices of futures is explained by changes to risk premia. See e.g. Hamilton, J. D. & Wu, J. C. (2014) Risk premia in crude oil futures prices, *Journal of International Money and Finance*, 42, 9–37.

The same uncertainty factors that are associated with inflation also dominate the risk outlook for the real economy. For example, the downside scenario of the ECB's September forecast foresees negative growth in 2023. That scenario assumes that the cessation of Russian energy supplies is not followed by their successful replacement with other sources. Unexpected adverse changes to the economic outlook could result not only from twists and turns in the energy crisis and altered prospects for growth in the global economy, but also from elevated geopolitical tensions globally. The risks to growth are on the downside.

In recent years the global economy, and the euro area in particular, have faced exceptional changes. Factors causing the inflation outlook to fluctuate, both in the short and long term, include especially the need for increased defence expenditure as a consequence of Russia's war in Ukraine, the quickening pace of the energy transition, and the problems with global supply chains and potential changes in these. There are new risk factors associated with the output potential in the euro area.

How well the euro area comes through the energy transition will be of critical importance. Failure would threaten the euro area's international competitiveness and might reduce the output potential. Success, on the other hand, could brighten the economic outlook for the euro area. But this will require successful action from different policymakers and adaptability on the part of the private sector. Whatever the case, the turmoil faced by the euro area may have unforeseen implications for the inflation outlook. In particular, price-pressure risks affecting the inflation outlook have grown.

Continuation of monetary policy tightening to safeguard price stability

In response to increased inflationary pressures, the ECB began the normalisation of monetary policy in December 2021. The ECB Governing Council also announced that a reduction in net asset purchases under the pandemic emergency purchase programme (PEPP) would take place in the first quarter of 2022 and that net asset purchases would be discontinued at the end of March.^[25]

Net purchases under the asset purchase programme (APP) were ended at the start of July. Prior to this, the ECB had announced that key central bank interest rates would be raised after the net asset purchases had ended.^[26] For a more detailed discussion of the effects of monetary policy normalisation, see the feature article 'What is monetary policy normalisation?'

In July 2022, the ECB Governing Council decided to increase key ECB interest rates by half a percentage point. At the time, it also decided to introduce a new monetary policy instrument to support the effective transmission of monetary policy: the Transmission Protection Instrument (TPI).^[27] The instrument may be activated if unwarranted or

25. The mechanisms of different monetary policy tools are discussed in more detail in e.g. Nelimarkka, J. & Laine, O.-M. (2021) The effects of the ECB's pandemic-related monetary policy measures, BoF Economics Review, 4.

26. The ECB issued forward guidance, stating that key interest rates would be raised after the net asset purchases had ceased. In March 2022, the ECB removed reference to a possible fall in interest rates.

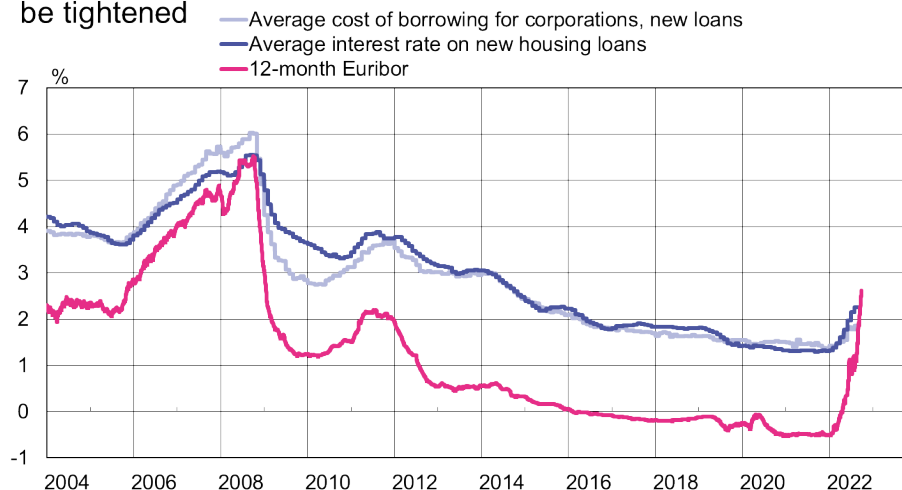
disorderly market dynamics pose a serious threat to the transmission of monetary policy across the different countries of the euro area.

At its meeting in September 2022, the ECB Governing Council raised its key interest rates by an additional 0.75 percentage points. It expects to raise rates further at subsequent meetings. Decisions on interest rates will be taken on a meeting-by-meeting basis with reference to the economic outlook.

Market interest rates have risen in the euro area as the ECB has tightened its monetary policy. Rates on government and corporate bonds have risen due to a number of factors. The ending of net asset purchases and the expectations around purchase programmes mainly affect long-maturity rates. By contrast, the rise in policy rates and expectations of further increases in the future mainly serve to push up short-maturity rates, though long-term rates may rise, too. For example, the 12-month Euribor interest rate, which typically represents the reference rate for housing loans, has risen to about 2.6% (Chart 13).

Chart 13.

Bank lending rates have increased since monetary policy began to be tightened



Source: ECB.
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At the same time, the differences in interest rates between different countries have nevertheless remained moderate. This is partly explained by the existence of the ECB's new instrument, the TPI, which allows it to intervene if it considers the differences in interest rates to be unwarranted. The difference in the cost of borrowing for corporations compared with the government has broadened slightly.

Interest rates are affected not only by the normalisation of monetary policy but also by inflation expectations. With the inflation outlook in the euro area having deteriorated following the outbreak of the war in Ukraine and the energy crisis, fixed-income investors are looking to counteract the impact of rapidly rising inflation. This is now apparent in the form of higher nominal interest rates.

27. See the ECB's [press release 21 July 2022](#).

Owing to the tightening of monetary policy and changes in the macroeconomic environment, bank lending rates have also started to increase (Chart 13). Despite this, bank loan portfolios have grown, and loans to businesses have even accelerated. The euro has weakened substantially against the US dollar over several months, partly due to the more robust tightening of monetary policy in the United States compared with the euro area.

Summary: energy crisis is at the heart of the economic outlook

The present energy crisis is affecting the euro area in particular, as it imports a considerable proportion of the energy it uses. The rise in energy prices has already led to a rapid increase in the inflation rate and this has gradually broadened to encompass other goods and services. The growth impact of the energy crisis will emerge more slowly than its effects on prices, but in the summer the outlook for growth was already weakening significantly. In the future, the growth and inflation outlook will depend very much on how well and by what means the energy crisis is managed. The possibility of a recession cannot be ruled out.

The ECB has reacted to the surge in inflation by tightening monetary policy. Future monetary policy decisions will depend on how the economy develops and what the inflation data looks like. If inflation is to be brought down in the immediate years ahead, a detrimental wage-price spiral must be avoided and inflation expectations must be stable. The objective of monetary policy in this situation must be to stabilise inflation at 2% over the medium term.

Tags

[euro area](#), [energy](#), [inflation](#), [monetary policy](#)

What is monetary policy normalisation?

Today – Bank of Finland Bulletin 3/2022 – Monetary policy



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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 14).

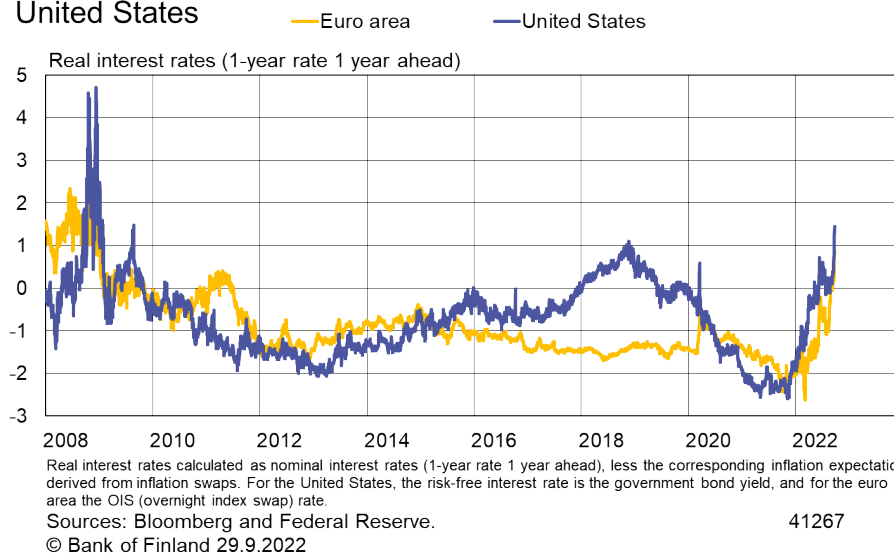
1. The last time the ECB raised its key interest rates was in July 2011.

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.

Chart 14.

Real interest rates have risen in both the euro area and the United States



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

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.

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

6. Normalisation measures could also take place in a different way: start with selling securities and increase 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).

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 15). 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.

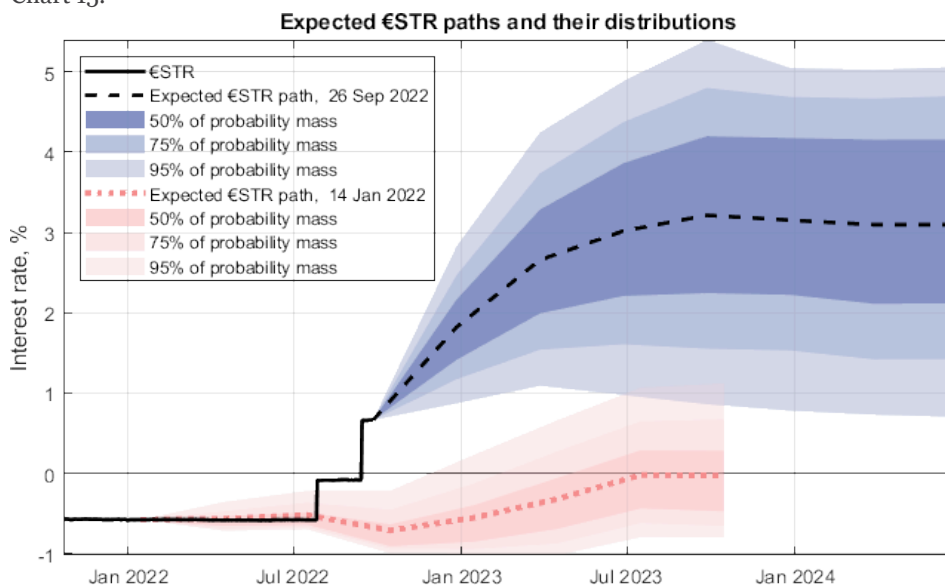
11. Taylor (1999).

12. Sack (2008) and Söderström (2002).

13. Woodford (2003).

14. Nakata & Schmidt (2019).

Chart 15.



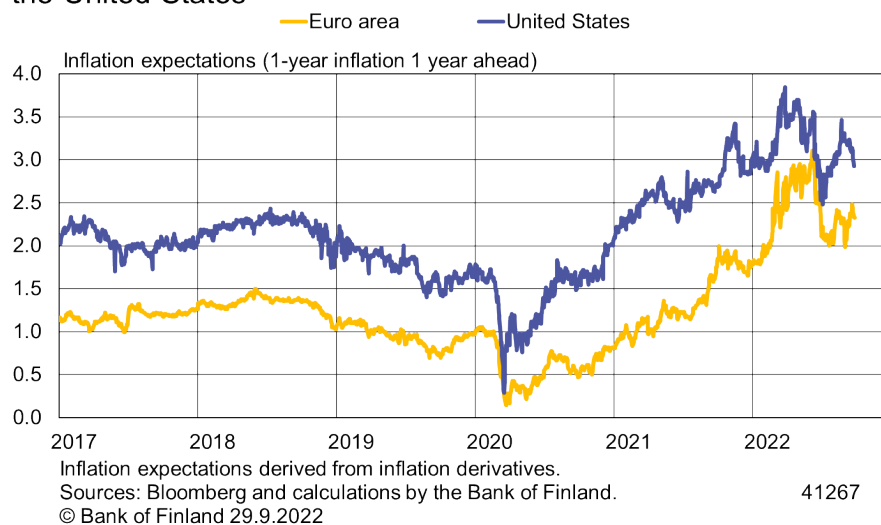
Following the discontinuation of net asset purchases and longer-term refinancing operations, the ECB's balance sheet has no longer been growing. The balance sheet is currently equivalent to around 70% of GDP (approx. EUR 7 trillion, or EUR 7,000 billion). The asset purchase programmes account for about 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 16). 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 16).

Chart 16.

Market-based inflation expectations in the euro area and the United States



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 17). 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.

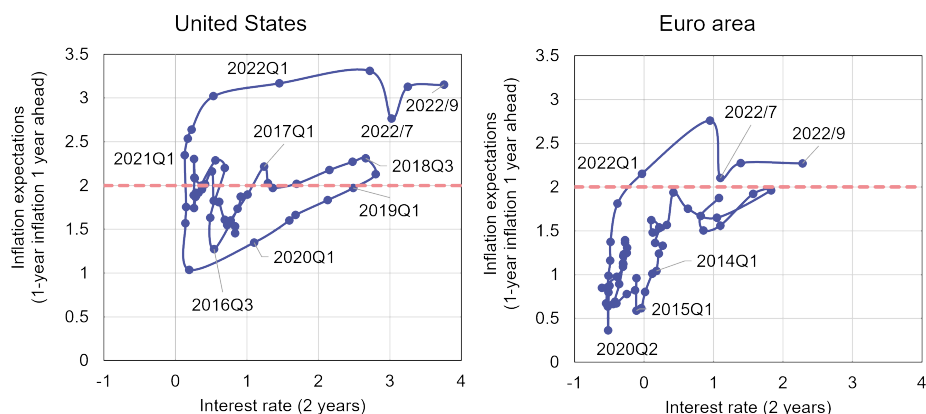
In the United States, the market began to expect monetary policy tightening in the second half of 2021, when the two-year rate trended upwards and both interest rate expectations and inflation expectations began to rise (Chart 17). The Federal Reserve started to raise policy rates fairly slowly relative 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]

15. Gertler & Karadi (2015).

16. For more details, see the [Federal Reserve's press release of 27 August 2020](#).

Chart 17.

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. © Bank of Finland 29.9.2022

The United States' two-year interest rate has risen markedly in 2022 as a reaction to higher inflation expectations (Chart 17). 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 17). 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

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.

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 18) 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 18). 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.

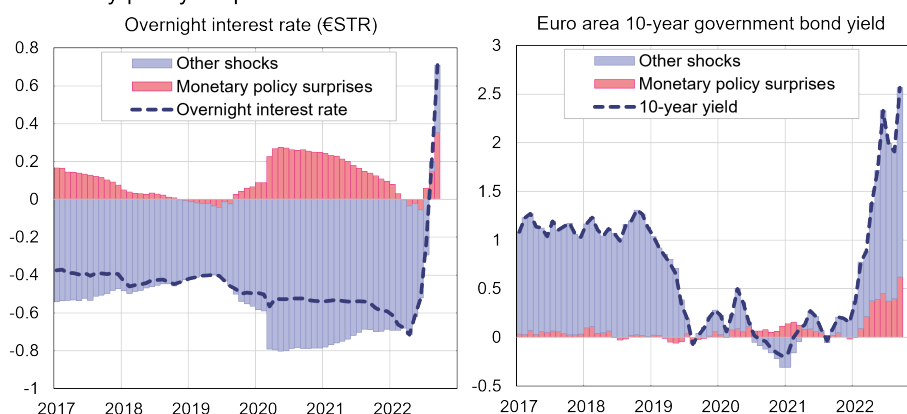
18. The stance of monetary policy could also be analysed by looking at policy actions in relation to the Taylor (1993) rule. However, here we focus on the variations in interest rates that cannot be explained by the central bank's reaction function. In addition, the model also considers the effects of 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.

Chart 18.

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. © Bank of Finland 29.9.2022

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 16).

As seen in Chart 17, 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.

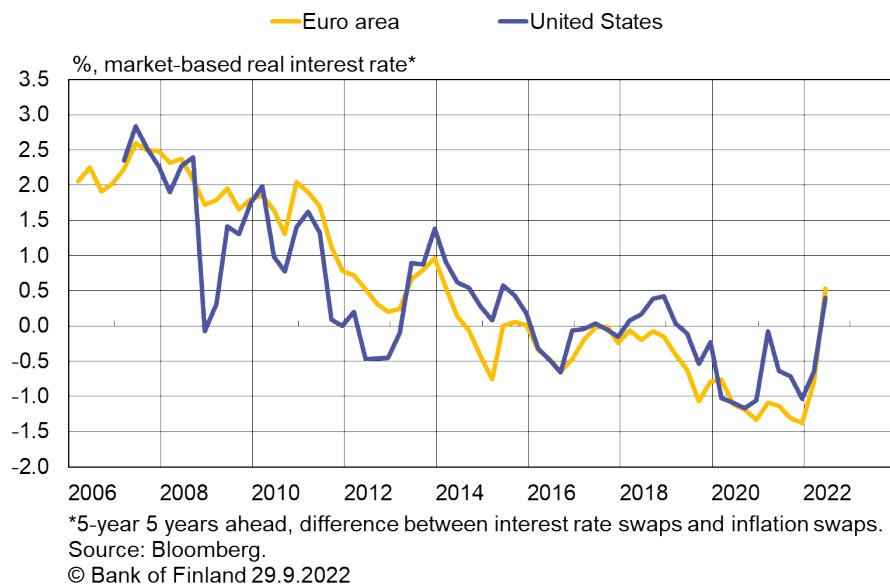
21. The conclusions could be different under e.g. the Taylor rule. For instance, in some estimates, the monetary policy stance in the United States is considered light under the Taylor rule. See e.g. speech by James Bullard, CEO of Federal Reserve Bank of St. Louis, 6 May 2022.

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 19.

Long-term real interest rates have increased in 2022 both in the euro area and the United States



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

22. See also Vilmi (2016).

for several years (Chart 19). 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.

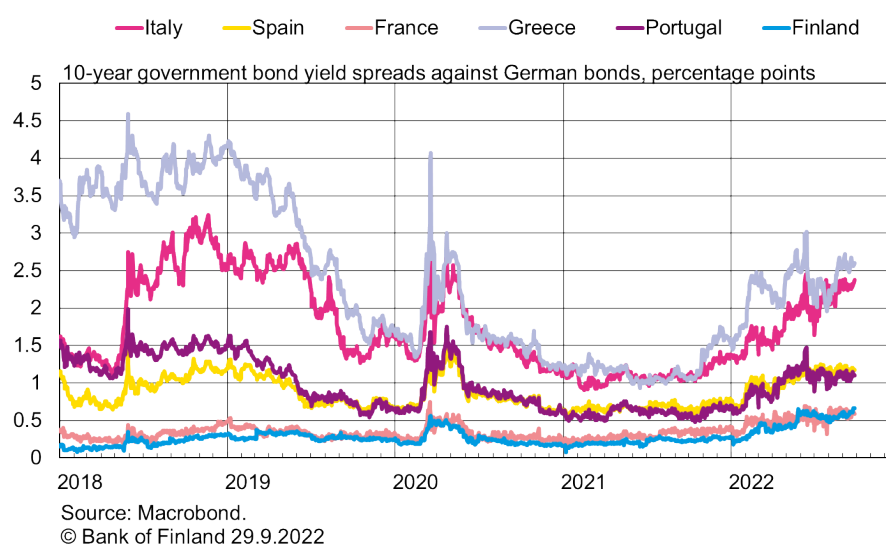
Fiscal sustainability is essential for the monetary policy environment

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 20). 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 20). The cause of rising risk premia is the general uncertainty associated with the economic situation and with the sustainability of general government debt.

Chart 20.

Government bond risk premia have increased compared with Germany



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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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 country 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.

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Tags

[euro area](#), [monetary policy normalisation](#), [natural rate of interest](#)

Rising import prices are hitting the real economy

Today – Bank of Finland Bulletin 3/2022 – International economy



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The euro area is a net energy importer. In 2020 slightly over 60% of the euro area's gross available energy was imported from elsewhere. Soaring energy prices have pushed up import prices for euro area countries. This article examines some of the effects of rising import prices on the euro area economy. Empirical analysis suggests that positive import price shocks, or sudden and unexpected rises in import prices, are passed on to consumer prices quickly but have a slower impact on the real economy. Nevertheless, Member States are likely to experience differences in the size and transmission of these effects.



The euro area imports a significant share of the energy it uses

A substantial rise in energy and other commodity prices has been triggered by the demand growth and supply chain disruptions following the recovery of the economy from the COVID-19 pandemic, and by the economic fallout of Russia's invasion of Ukraine. The rise in energy prices has been especially strong. Energy raw materials in the euro area were about twice as expensive at the end of September 2022 than a year earlier as measured by the Commodity Price Index^[1] compiled by HWWI, a German think tank.

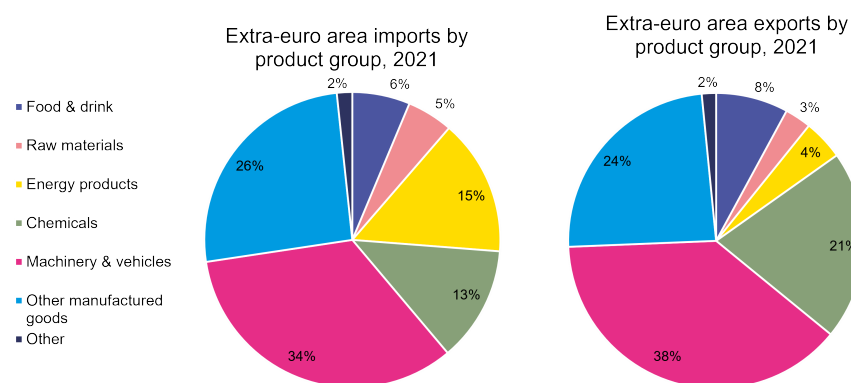
The rise in energy prices has passed through to euro area consumer price inflation, which has accelerated to record highs during the past year. Price pressures are being stoked by restrictions on Russian gas imports to Europe, as well as an agreed ban on Russian crude oil imports due to enter into force later on^[2].

Because fossil fuels such as oil, natural gas and coal continue to be important energy sources for electricity production, the price of electricity has surged on the back of rising energy commodity prices. Higher energy and electricity prices have an immediate bearing on the economic behaviour of businesses and households. Businesses may see their production costs rise, and if they are unable to pass this on to the prices of their final products, their profitability will decline. Households are confronted with higher energy bills, which reduces the economic resources at their disposal for spending on other consumption. What follows is a decline in aggregate demand in the economy.

A majority of energy supplies are imported in Europe and the euro area. In 2020, for example, net energy imports accounted for over 60% of all available energy ('gross available energy') in the euro area.^[3] As a result, energy imports make up a substantial share of the euro area's total imports by value. In 2021 energy products accounted for 15% of the value of imports from outside the euro area ('extra-euro area imports'). By contrast, energy products accounted for only 4% of the euro area's total exports (Chart 21). Because the euro area is a net energy importer, the recent surge in energy prices might be viewed as an import price shock, which has the effect of weakening the euro area's terms of trade.^[4] By comparison, the United States has been a net energy exporter since 2019, according to the Energy Information Administration, a US government statistical agency. In 2021 energy products accounted for less than 6% of US imports by value.

Chart 21.

Extra-euro area imports and exports by product group, 2021



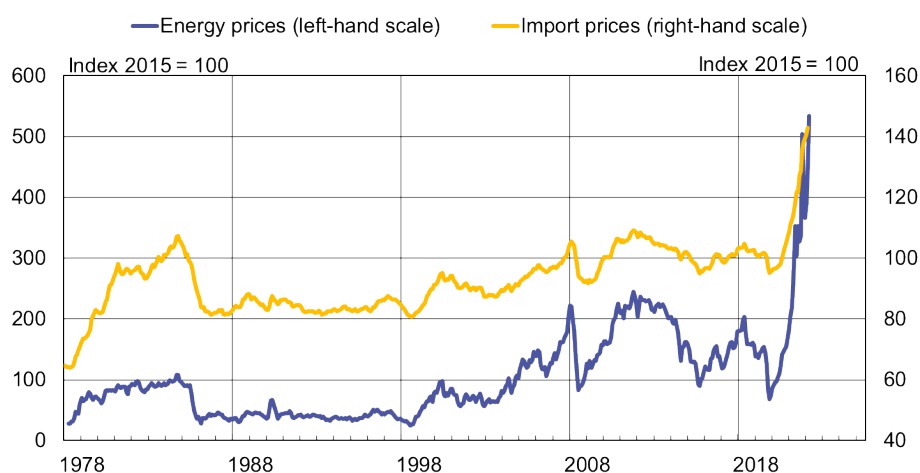
Sources: Eurostat and calculations by the Bank of Finland.
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1. The energy raw materials included in the index are crude oil, natural gas and coal.
2. An embargo on Russian crude oil will enter into force in December 2022 and an embargo on refined oil products in February 2023.
3. Source: [Energy balances - Energy - Eurostat \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1).
4. The terms of trade are defined as the ratio between a country's (or economic area's) export prices and its import prices. A decline in the terms of trade means that a country is able to purchase fewer imports in exchange for one unit of exports.

Chart 22 plots the long-term time series of energy prices and import prices in Germany. These have largely moved in step with each other since the late 1970s. This is especially apparent where the two curves mark the current energy crisis, but similar patterns can also be observed at the end of the 1970s and start of the 1980s and also in the early 2000s. The correlation between the two time series is in fact strongly positive, at 0.89.

Chart 22.

Import prices and energy prices in Germany



Sources: Deutsche Bundesbank and Federal Statistical Office of Germany.
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As Chart 22 illustrates, energy price surges are nothing new. In 2008, the price of Brent crude reached as much as about USD 145 per barrel. In the current energy crisis, the price of crude oil peaked in early March 2022 at about USD 130 per barrel, but by September 2022 had fallen back roughly to the pre-war level. The price of natural gas, in contrast, has seen an unprecedented rise during the current crisis. ICE Dutch TTF natural gas futures reached as much as EUR 226 per megawatt hour in early 2022. As summer approached, the price returned to pre-war levels, before rebounding during late summer on account of the uncertainties surrounding Russian gas deliveries. During the early autumn the price of natural gas fluctuated sharply.

In addition to energy products, the prices of other commodities also rose after Russia began its invasion, but they have since steadied. What sets the current situation apart from earlier episodes of price rises is the severity of the rise in import prices and especially the surge in natural gas and coal prices. In the run up to the global financial crisis, euro area import prices^[5] rose by about 8% between the first quarter of 2007 and third quarter of 2008. Now, import prices rose by about 23% between the first quarter of 2021 and the second quarter of the current year.

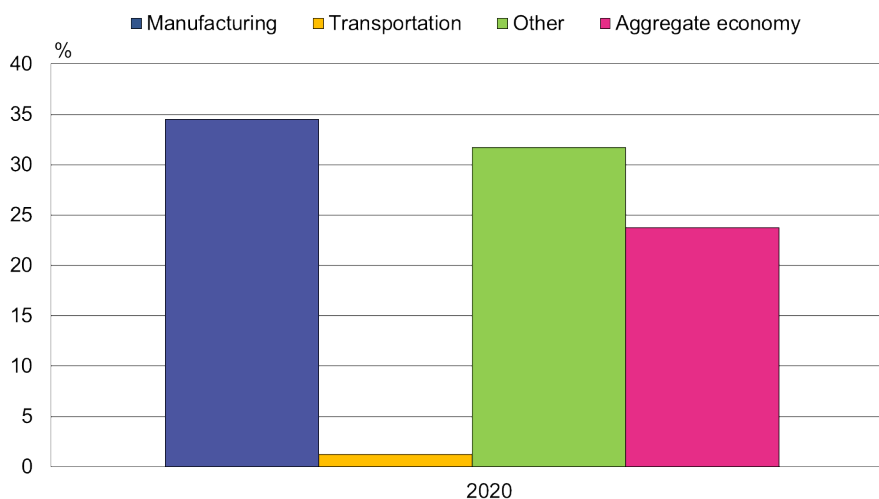
Higher natural gas prices have an immediate impact on European households as gas is used for heating homes in many countries. In 2020, natural gas accounted for about 35%

5. In this article a rise (or a decline) in import prices is measured in terms of a rise (or a decline) in the import deflator. The import deflator is an index that is used when expressing a change in the nominal value of imports as a change in the real value of imports. It is thus a measure of the extent of inflation in import prices.

of the euro area household sector's final energy consumption. In addition, natural gas is an important input in the euro area's manufacturing industry, as Chart 23 illustrates. Natural gas accounted for slightly below 25% of the aggregate economy's final energy consumption in 2020, and in the manufacturing industry the corresponding share was about 35%.

Chart 23.

Share of natural gas in final energy consumption, 2020



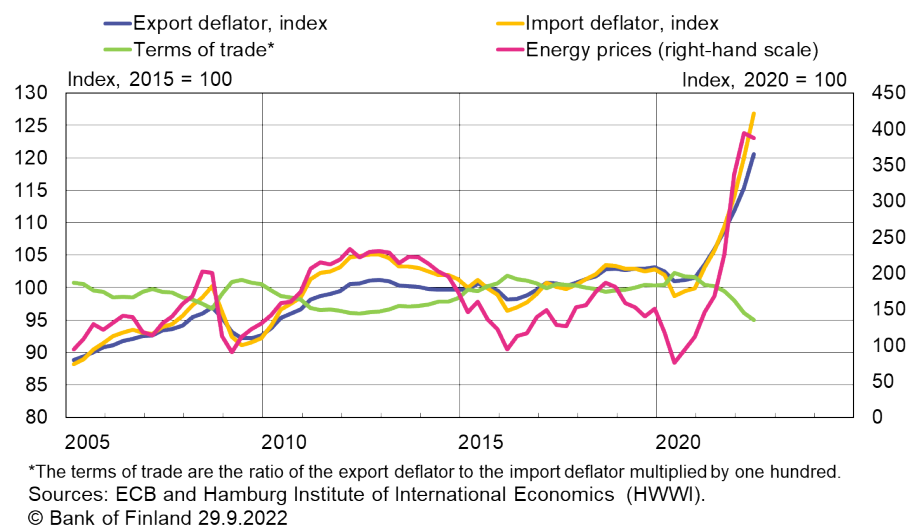
Sources: Eurostat and calculations by the Bank of Finland.
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Terms of trade weakened by import price shock

The rise in energy prices, originating from outside the euro area and covering different energy sources, has passed through to euro area consumer price inflation, which is now at record highs. Both import and export prices have increased on the back of more expensive energy imports, but import prices have risen the fastest. Consequently, the euro area's terms of trade have deteriorated, as is illustrated in Chart 24.

Chart 24.

Higher energy import prices have eroded the euro area's terms of trade



A deterioration in the terms of trade diminishes the euro area's purchasing power, as a smaller number of imports can be purchased with a given number of exports compared with before. Therefore, the terms of trade – whose fluctuations are driven by import prices – may well play a significant role in shaping the business cycle.

Terms of trade shocks are commonly considered to be a significant driver of the business cycle especially in emerging and developing economies. However, the research literature on the topic is somewhat inconclusive. Slightly older research, based on theoretical business cycle models, finds that terms of trade shocks explain a significant proportion of fluctuations in real GDP (Mendoza, 1995; Kose, 2002). On the other hand, recent empirical research draws a different conclusion, with terms of trade shocks only having a limited ability to explain fluctuations in real GDP (Schmitt-Grohe and Uribe, 2018). In one study, Gulan et al. (2021) look at the role played in Finland's 1990s recession by the collapse of Finnish-Soviet trade following the dissolution of the Soviet Union, and find that the decline in Finland's terms of trade did not play a major role in the contraction of Finnish real GDP; rather, the decline in real GDP is better explained by the collapse of Soviet demand. Furthermore, the collapse of Finland's trade with its eastern neighbour does not alone explain the 1990s recession, as financial market shocks also played a crucial role.

What are the macroeconomic effects of rising import prices?

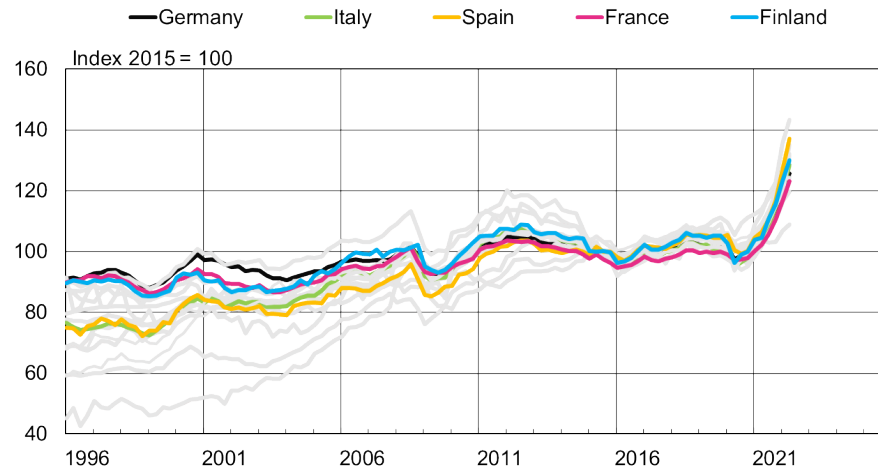
Import prices have behaved very similarly across almost all of the euro area Member States in recent years (Chart 25). In the 1990s and early 2000s, import price movements still exhibited even large differences between countries, but price movements have been broadly similar in the years following the euro area sovereign debt crisis.

The effects of import price fluctuations on the economy can be evaluated empirically. In

the following, an econometric model is introduced to estimate the effects of a positive import price shock in the euro area.^[6] The model estimates the degree to which a given import price shock affects euro area real GDP and consumer price inflation and also the time it takes for the effects to materialise.

Chart 25.

Import prices in the euro area



*Finland and the four largest economies in the euro area are highlighted in colour.

Source: OECD.

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6. The results are obtained from a vector autoregressive model, a standard methodology for modelling the dynamics of and causal relationships between macroeconomic variables. The modelling is based on quarterly data for the period Q2 1999 to Q4 2019. All variables are in first differences except for the trade balance, which is expressed as a ratio relative to GDP. Import and export prices are expressed in terms of import and export deflators. The variables are set in the following order: world GDP, import prices, export prices, trade balance (relative to GDP), GDP, private consumption, investment, real effective exchange rate, and consumer price inflation. The model's shocks are identified recursively based on a Cholesky decomposition.

Chart 26.

Estimation results of the impact of an import price shock on euro area real GDP

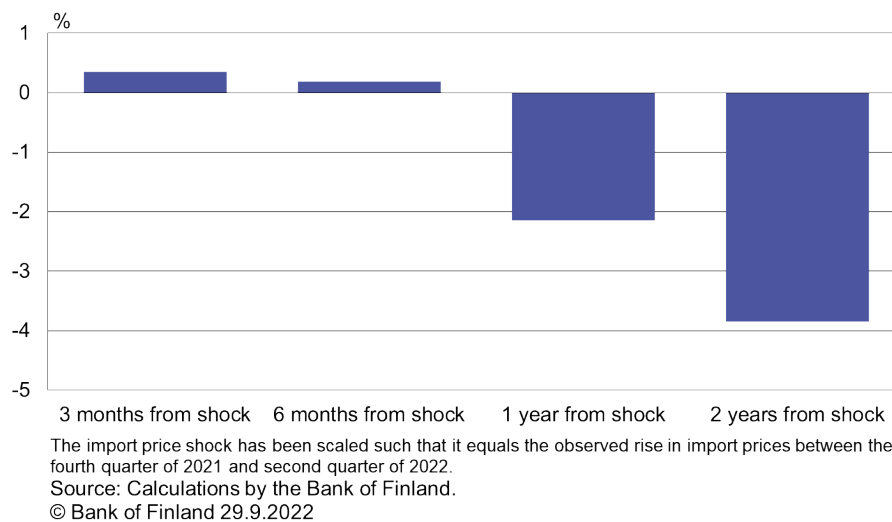


Chart 26 presents the estimated impulse responses of real GDP to a sudden rise in import prices in the euro area.^[7] The latest available observation in the time series for the euro area import deflator is from the second quarter of 2022. Between the fourth quarter of 2021 and the second quarter of 2022, the import deflator rose by about 11%. The real GDP effects presented in Chart 26 are therefore responses to an import price shock scaled at about 11%. The model predicts that a rise in import prices pushes down real GDP, but this effect materialises after a lag of about one year following the price shock.

Chart 27, in turn, presents the estimated impulse responses of consumer price inflation^[8] to a positive import price shock in the euro area. The shock is again scaled such that it corresponds with the recent surge in import prices in the euro area. In contrast with the impact on real GDP, a rise in import prices appears to pass through to inflation very quickly. The model has no mechanism whereby high inflation could be passed on to wages and inflation expectations, so the results may well underestimate the duration of the inflationary episode.

The import price shock appears to have a permanent impact on the other variables. Based on the estimation results, real GDP and consumer prices remain shifted from their starting level even a full decade after the shock. On the other hand, estimates of long-term effects are subject to significant uncertainty.

Impact assessments are subject to uncertainty

The estimation results outlined above are only indicative, and the actual effects may

7. It should be stressed that the results presented here are only point estimates. As such, the size and direction of the effects are subject to uncertainty.

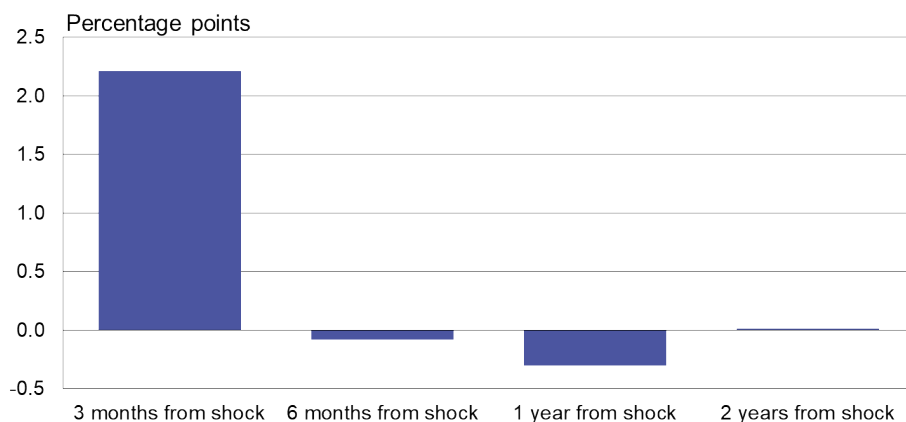
8. Here, consumer price inflation is defined as the quarterly change in the euro area's Harmonised Index of Consumer Prices (HICP).

differ substantially from those presented here. The applied model is highly simplified and is not able to take into account all of the channels through which an import price shock might be passed on to consumer prices and the real economy. In addition, the model assumes linearity, and it is not at all clear how well a linear model can capture the effects of a price shock of the magnitude recently seen in the euro area. By way of comparison, the ECB, in its September interim forecast, revised downwards its estimate for euro area real GDP growth for 2022 by 1.1 percentage points from its December 2021 macroeconomic projections, published before Russia’s war in Ukraine. Similarly, the estimate for real GDP growth in 2023 was revised downwards by 2 percentage points. The ECB revised its projections of consumer price inflation upwards by 4.9 and 3.7 percentage points for 2022 and 2023, respectively. Shocks comparable to the current one have only occurred rarely in Europe, which makes estimating the effects even harder. For example, the rise in the price of natural gas – an all-important commodity for Europe – has been unusually strong.

The estimation results are also subject to other uncertainties. Among these, the exceptional nature of the shock increases the risk of financial market disturbances, which, if they materialise, could result in a sharper contraction in real GDP than estimated. Such second-round effects are not captured by the model. Neither are policy measures that are able to mitigate the impact of the shock.

Chart 27.

Estimation results of the impact of an import price shock on euro area consumer price inflation



The import price shock has been scaled such that it equals the observed rise in import prices between the fourth quarter of 2021 and second quarter of 2022.

Source: Calculations by the Bank of Finland.

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Energy import dependency varies among euro area countries

The modelled inflation and growth effects presented in this article are based only on a surge in import prices. However, in the current environment, adverse economic effects may also stem from energy availability constraints if Europe’s import embargoes or action by Russia result in Europe’s energy requirements not being met at current consumption levels. This might lead to energy rationing. In addition, fluctuations in

import prices may affect different countries differently.

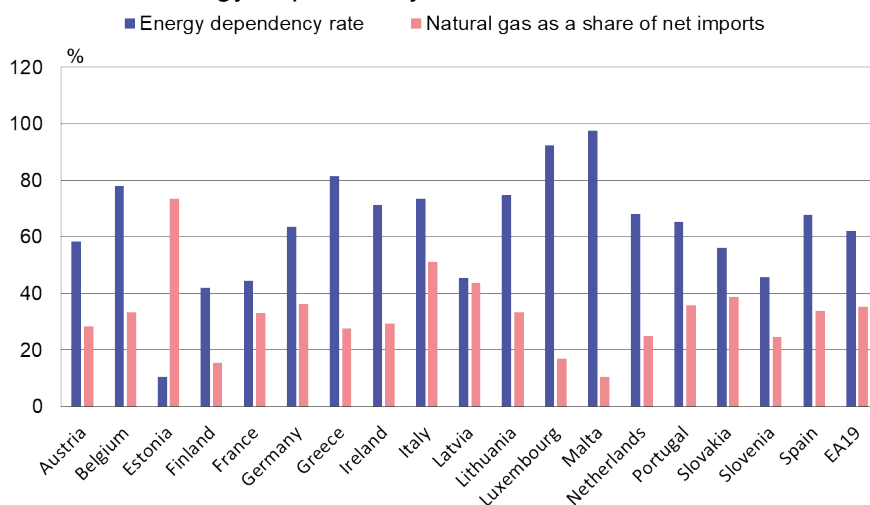
When Russia invaded Ukraine, many economic analysts and institutions began publishing assessments of the war's economic effects in Europe. The most significant economic consequence has to do with the cessation of Russian energy imports and the subsequent sharp rise in energy prices and, by extension, import prices. The spotlight in the political and academic debate has especially been fixed on Germany, where natural gas is a particularly important source of energy.

According to Bachmann et al. (2022a), abandoning Russian energy imports could result in a 0.5%–3.0% shortfall in German real GDP over the short term. Similar estimates were also obtained in a revised assessment by the same authors (Bachmann et al., 2022b). The Deutsche Bundesbank, Germany's central bank, estimates that the impact could even be significantly larger. It notes that energy rationing resulting from a full embargo on Russian energy imports, together with the other economic effects of the war, would cause a loss of 1.5% in German real GDP in 2022 and 6.75% in 2023 relative to its baseline forecast without the embargo (Deutsche Bundesbank, 2022). In a recent assessment, the International Monetary Fund (IMF) estimates that the ending of natural gas imports could result in a loss of 0.4%–2.8% in German real GDP over the course of a year depending on the model and assumptions used (Di Bella et al., 2022).

The magnitude of the effects will largely be determined by how effectively and how quickly Russian energy imports can be substituted with alternative supplies and energy sources. There could be significant differences in this regard between different countries in the euro area. What is key here is the degree to which a country is energy independent. The euro area's overall energy dependency rate, defined as net energy imports divided by gross available energy, exceeded 60% in 2020, but there are significant differences in energy dependency rates between countries (Chart 28). In Estonia, net energy imports accounted for only 10% of the country's gross available energy in 2020, whereas in Luxembourg the dependency rate stood at over 90%. Among the major euro area economies, Germany, Italy and Spain all had a dependency rate of over 60%, and natural gas accounted for the greatest share of net energy imports in Italy (51%) and Germany (37%). Finland ranked as one of the most energy independent economies in the euro area in 2020, together with France.

Chart 28.

Euro area energy dependency, 2020



Source: Eurostat.
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The surge in import prices caused by the energy crisis is diminishing the purchasing power of households and affecting households unequally. Generally speaking, low income households are the hardest hit by the price rises, as their energy bills take up a larger share of their income than is the case for higher earners. The IMF has estimated^[9] that for the poorest 20% of households in euro area countries, the biggest relative rise in living costs will be in Estonia and the smallest in France.

Higher prices will themselves influence consumer behaviour and act as an incentive to reduce energy consumption, but it remains likely that fiscal policies will be needed in the euro area to protect the livelihoods of those most vulnerable in society. This will set new challenges for the sustainability of public finances in euro area Member States.

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9. See [How Europe Can Protect the Poor from Surging Energy Prices – IMF Blog](#).

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