



EUROPEAN CENTRAL BANK  
EUROSYSTEM

# Economic Bulletin

Issue 4 / 2022



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# Economic, financial and monetary developments

## Overview

High inflation is a major challenge for everyone. The Governing Council will make sure that inflation returns to its 2% target over the medium term.

In May inflation again rose significantly, mainly because of surging energy and food prices, including due to the impact of the war in Ukraine. But inflation pressures have broadened and intensified, with prices for many goods and services increasing strongly. Eurosystem staff have revised their baseline inflation projections up significantly. These projections indicate that inflation will remain undesirably elevated for some time. However, moderating energy costs, the easing of supply disruptions related to the pandemic and the normalisation of monetary policy are expected to lead to a decline in inflation. The June 2022 Eurosystem staff macroeconomic projections for the euro area foresee annual inflation at 6.8% in 2022, before it is projected to decline to 3.5% in 2023 and 2.1% in 2024 – higher than in the March projections. This means that headline inflation at the end of the projection horizon is projected to be slightly above the ECB's target. Inflation excluding energy and food is projected to average 3.3% in 2022, 2.8% in 2023 and 2.3% in 2024 – also above the March projections.

Russia's unjustified aggression towards Ukraine continues to weigh on the economy in Europe and beyond. It is disrupting trade, leading to shortages of materials and contributing to high energy and commodity prices. These factors will continue to weigh on confidence and dampen growth, especially in the near term. However, the conditions are in place for the economy to continue to grow on account of the ongoing reopening of the economy, a strong labour market, fiscal support and savings built up during the pandemic. Once current headwinds abate, economic activity is expected to pick up again. This outlook is broadly reflected in the Eurosystem staff macroeconomic projections, which foresee annual real GDP growth at 2.8% in 2022, 2.1% in 2023 and 2.1% in 2024. Compared with the March projections, the outlook has been revised down significantly for 2022 and 2023, while for 2024 it has been revised up.

On the basis of the updated assessment, the Governing Council decided to take further steps in normalising its monetary policy. Throughout this process, the Governing Council will maintain optionality, data-dependence, gradualism and flexibility in the conduct of monetary policy.

First, the Governing Council decided to end net asset purchases under its asset purchase programme (APP) as of 1 July 2022. The Governing Council intends to continue reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it starts

raising the key ECB interest rates and, in any case, for as long as necessary to maintain ample liquidity conditions and an appropriate monetary policy stance.

Second, the Governing Council undertook a careful review of the conditions which, according to its forward guidance, should be satisfied before it starts raising the key ECB interest rates. As a result of this assessment, the Governing Council concluded that those conditions have been satisfied. Accordingly, and in line with its policy sequencing, the Governing Council intends to raise the key ECB interest rates by 25 basis points at its July monetary policy meeting. Looking further ahead, it expects to raise the key ECB interest rates again in September. The calibration of this rate increase will depend on the updated medium-term inflation outlook. If the medium-term inflation outlook persists or deteriorates, a larger increment will be appropriate at the September meeting.

Third, beyond September, based on its current assessment, the Governing Council anticipates that a gradual but sustained path of further increases in interest rates will be appropriate. In line with the commitment to its 2% medium-term target, the pace at which the Governing Council adjusts its monetary policy will depend on the incoming data and how it assesses inflation will develop in the medium term.

Within the Governing Council's mandate, under stressed conditions, flexibility will remain an element of monetary policy whenever threats to monetary policy transmission jeopardise the attainment of price stability.

## Economic activity

The economic fallout from the Russian invasion of Ukraine and the new lockdowns in China represent two key headwinds to global growth in the near term. Survey indicators confirm that global activity is moderating. Disrupted economic activity in Asia and the war in Ukraine are putting pressure on global supply chains, following a brief period of easing earlier this year. Supply chain and commodity market disruptions are stoking inflation amid growing evidence that inflationary pressures are intensifying and broadening. Increasing inflationary pressures are also evident from the rising export prices of the euro area's competitors. Commodity prices remain volatile and subject to supply risks, whereas financial conditions have tightened. Global financial conditions tightened, reflecting monetary policy normalisation, falling prices of risky assets and rising yields. Against this background, the June 2022 Eurosystem staff macroeconomic projections indicate that global real GDP – excluding the euro area – will grow at 3.0% in 2022, 3.4% in 2023 and 3.6% in 2024 – a weaker growth trajectory than foreseen in the March projections. The two key headwinds are projected to weigh significantly on trade in the near term, but their impact is expected to dissipate thereafter. The projected growth in euro area foreign demand is more subdued and has undergone more significant downward revisions than growth in world imports, as European countries outside the euro area with tighter economic links to Russia and Ukraine are more affected by the economic shocks triggered by the invasion. In an environment of elevated uncertainty, the

balance of risks around the baseline projections is firmly tilted to the downside for growth and to the upside for inflation.

The Russia-Ukraine war is severely affecting the euro area economy and the outlook is still surrounded by high uncertainty. But the conditions are in place for the economy to continue to grow and to recover further over the medium term. In the near term, the Governing Council expects activity to be dampened by high energy costs, the deterioration in the terms of trade, greater uncertainty and the adverse impact of high inflation on disposable income. The war in Ukraine and renewed pandemic restrictions in China have made supply bottlenecks worse again. As a result, firms face higher costs and disruptions in their supply chains, and the outlook for their future output has deteriorated.

Despite a better than expected outcome in 2021, the outlook for the euro area budget balance has deteriorated significantly since the finalisation of the March 2022 ECB staff macroeconomic projections. The more adverse outlook is related to a worsening of the economic cycle, increased expected interest payments and additional discretionary government spending. Fiscal support measures have been aimed in particular at countering the rising cost of living for consumers, but also at financing defence capacities and supporting refugees from the war in Ukraine. Nonetheless, according to the June 2022 Eurosystem staff macroeconomic projections, the euro area government budget deficit is expected to continue falling – from 5.1% of GDP in 2021 to 3.8% in 2022 and further to 2.4% by the end of the forecast horizon. After the strong loosening during the coronavirus crisis in 2020, the fiscal stance tightened last year and is projected to continue to tighten gradually in 2022 and 2023. The projected slight tightening in 2022 is mainly due to the reversal of a significant part of the pandemic emergency support, which will be only partially compensated by additional stimulus measures in response to the energy price shock and other spending related to the Russia-Ukraine war. The fiscal tightening is projected to be somewhat stronger in 2023, when many of the recent support measures compensating for the impact of high energy prices are projected to expire. In 2024 a more neutral stance is expected, although, compared to the pre-pandemic period, significant fiscal support to the economy is projected to remain in place.

In a context of heightened uncertainty and downside risks to the economic outlook in the light of the war in Ukraine, as well as energy price increases and continued supply chain disturbances, the European Commission recommended on 23 May 2022 the extension of the general escape clause of the Stability and Growth Pact (SGP) to the end of 2023. This would allow fiscal policies to adjust to changing circumstances if necessary. At the same time, with fiscal imbalances still exceeding their pre-pandemic levels and inflation exceptionally high, fiscal policy needs to be increasingly selective and targeted in order not to add to medium-term inflationary pressures, while ensuring fiscal sustainability over the medium term.

Fiscal policy is helping to cushion the impact of the war. Targeted and temporary budgetary measures protect those people bearing the brunt of higher energy prices while limiting the risk of adding to inflationary pressures. The swift implementation of the investment and structural reform plans under the Next Generation EU programme, the “Fit for 55” package and the REPowerEU plan would also help the

euro area economy to grow faster in a sustainable manner and become more resilient to global shocks.

There are also factors supporting economic activity and these are expected to strengthen over the months to come. The reopening of those sectors most affected by the pandemic and a strong labour market, with more people in jobs, will continue to support incomes and consumption. In addition, savings accumulated during the pandemic are a buffer. The baseline projections of the June 2022 Eurosystem staff macroeconomic projections are built on the assumptions that the current sanctions against Russia will remain in place over the full projection horizon (including the EU's oil embargo); the intense phase of the war will continue until the end of this year with no further escalation; disruptions to energy supplies will not lead to rationing in euro area countries; and supply bottlenecks will gradually be resolved by the end of 2023. All this implies much weaker (though still positive) near-term growth prospects, with headwinds fading after 2022 and growth in the medium term standing somewhat above historical average rates, reflecting a gradual recovery from the economic fallout from the pandemic and the fading of the negative impact of the war amid overall robust labour markets. According to the June 2022 Eurosystem staff macroeconomic projections, euro area real GDP is expected to grow by 2.8% on average in 2022 (of which 2.0 percentage points relates to carry-over from 2021) and by 2.1% in both 2023 and 2024. Compared with the March 2022 ECB staff projections, the outlook for growth has been revised down by 0.9 percentage points for 2022 and by 0.7 percentage points for 2023, mainly owing to the economic impact of the war in Ukraine, while growth in 2024 has been revised up by 0.5 percentage points, reflecting a rebound in activity as headwinds fade.

## Inflation

Inflation rose further to 8.1% in May. Although governments have intervened and have helped slow energy inflation, energy prices stand 39.2% above their levels one year ago. Market-based indicators suggest that global energy prices will stay high in the near term but will then moderate to some extent. Food prices rose 7.5% in May, in part reflecting the importance of Ukraine and Russia among the main global producers of agricultural goods. Prices have also gone up more strongly because of renewed supply bottlenecks and because of recovering domestic demand, especially in the services sector, as the euro area economy reopens. Price rises are becoming more widespread across sectors. Accordingly, measures of underlying inflation have been rising further. The labour market continues to improve, with unemployment remaining at its historical low of 6.8% in April. Job vacancies across many sectors show that there is robust demand for labour. Wage growth, including in forward-looking indicators, has started to pick up. Over time, the strengthening of the economy and some catch-up effects should support faster growth in wages. While most measures of longer-term inflation expectations derived from financial markets and from expert surveys stand at around 2%, initial signs of above-target revisions in those measures warrant close monitoring.

Following the surge in inflation in early 2022, the outlook is for higher and more persistent inflation. Headline HICP inflation is expected to remain very high for most of 2022, averaging 6.8%, before abating gradually from 2023 and converging to the ECB's inflation target in the second half of 2024. Price pressures will remain exceptionally high in the near term owing to elevated oil and gas prices and increases in food commodity prices, which have been strongly affected by the war in Ukraine, as well as the effects of the reopening of the economy and global supply shortages. The expected decline in inflation to 3.5% in 2023 and 2.1% in 2024 mainly reflects an assumed moderation in energy and food commodity prices in the absence of additional shocks, as embedded in futures prices. In addition, the ongoing normalisation of monetary policy, to the extent that it is reflected in higher interest rate assumptions (in line with market expectations), will contribute to the moderation in inflation, with the usual transmission lags. HICP inflation excluding energy and food will remain very elevated until the end of 2022, but thereafter it is expected to decline as the upward pressures from the reopening of the economy subside and as supply bottlenecks and energy input cost pressures ease. The ongoing economic recovery, tightening labour markets and some effects from compensation for higher inflation on wages – which are expected to grow at rates well above historical averages – imply elevated underlying inflation until the end of the projection horizon, although the baseline assumes that longer-term inflation expectations will remain well anchored. Compared with the March 2022 ECB staff projections, inflation has been revised up substantially. This reflects recent data surprises, higher energy and food commodity prices, more persistent upward pressures from supply disruptions, stronger wage growth and the depreciation of the euro exchange rate. These effects more than offset the downward impact of the increase in the interest rate assumptions and the weaker growth outlook.

## Risk assessment

The Governing Council judges that the risks relating to the pandemic have declined, but the war in Ukraine continues to be a significant downside risk to growth. In particular, a major risk would be a further disruption in the energy supply to the euro area, as reflected in the downside scenario included in the staff projections. Furthermore, if the war were to escalate, economic sentiment could worsen, supply-side constraints could increase, and energy and food costs could remain persistently higher than expected. The risks surrounding inflation are primarily on the upside. The risks to the medium-term inflation outlook include a durable worsening of the production capacity of the euro area economy, persistently high energy and food prices, inflation expectations rising above the ECB's target and higher than anticipated wage rises. However, if demand were to weaken over the medium term, it would lower pressures on prices.

## Financial and monetary conditions

Market interest rates have increased in response to the changing outlook for inflation and monetary policy. With benchmark interest rates rising, bank funding costs have increased, and this has fed into higher bank lending rates, in particular for households. Nevertheless, lending to firms picked up in March. This was because of the continued need to finance investment and working capital against the backdrop of increasing production costs, persisting supply bottlenecks and lower reliance on market funding. Lending to households also increased, reflecting continued robust demand for mortgages.

In line with its monetary policy strategy, the Governing Council has undertaken its biannual in-depth assessment of the interrelation between monetary policy and financial stability. The environment for financial stability has worsened since the last review in December 2021, especially over the short term. In particular, lower growth and increasing cost pressures, as well as rising risk-free rates and sovereign bond yields, could lead to a further deterioration in the financing conditions faced by borrowers. At the same time, tighter financing conditions could reduce some existing financial stability vulnerabilities over the medium term. Banks, which started the year with solid capital positions and improving asset quality, are now facing greater credit risk. The Governing Council will watch these factors closely. In any case, macroprudential policy remains the first line of defence in preserving financial stability and addressing medium-term vulnerabilities.

## Monetary policy decisions

Based on its updated assessment, the Governing Council decided to end net asset purchases under the APP as of 1 July 2022. The Governing Council intends to continue reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it starts raising the key ECB interest rates and, in any case, for as long as necessary to maintain ample liquidity conditions and an appropriate monetary policy stance.

As regards the pandemic emergency purchase programme (PEPP), the Governing Council intends to reinvest the principal payments from maturing securities purchased under the programme until at least the end of 2024. In any case, the future roll-off of the PEPP portfolio will be managed to avoid interference with the appropriate monetary policy stance.

In the event of renewed market fragmentation related to the pandemic, PEPP reinvestments can be adjusted flexibly across time, asset classes and jurisdictions at any time. This could include purchasing bonds issued by the Hellenic Republic over and above rollovers of redemptions in order to avoid an interruption of purchases in that jurisdiction, which could impair the transmission of monetary policy to the Greek economy while it is still recovering from the fallout from the pandemic. Net purchases under the PEPP could also be resumed, if necessary, to counter negative shocks related to the pandemic.

The Governing Council undertook a careful review of the conditions which, according to its forward guidance, should be satisfied before it starts raising the key ECB interest rates. As a result of this assessment, the Governing Council concluded that those conditions have been satisfied.

Accordingly, and in line with its policy sequencing, the Governing Council intends to raise the key ECB interest rates by 25 basis points at its July monetary policy meeting. In the meantime, the Governing Council decided to leave the interest rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility unchanged at 0.00%, 0.25% and -0.50% respectively.

Looking further ahead, the Governing Council expects to raise the key ECB interest rates again in September. The calibration of this rate increase will depend on the updated medium-term inflation outlook. If the medium-term inflation outlook persists or deteriorates, a larger increment will be appropriate at the September meeting.

Beyond September, based on its current assessment, the Governing Council anticipates that a gradual but sustained path of further increases in interest rates will be appropriate. In line with the Governing Council's commitment to its 2% medium-term target, the pace at which the Governing Council adjusts its monetary policy will depend on the incoming data and how it assesses inflation will develop in the medium term.

The Governing Council will continue to monitor bank funding conditions and ensure that the maturing of operations under the third series of targeted longer-term refinancing operations (TLTRO III) does not hamper the smooth transmission of its monetary policy. The Governing Council will also regularly assess how targeted lending operations are contributing to its monetary policy stance. As announced previously, the special conditions applicable under TLTRO III will end on 23 June 2022.

The Governing Council stands ready to adjust all of its instruments, incorporating flexibility if warranted, to ensure that inflation stabilises at its 2% target over the medium term. The pandemic has shown that, under stressed conditions, flexibility in the design and conduct of asset purchases has helped to counter the impaired transmission of monetary policy and made the Governing Council's efforts to achieve its goal more effective. Within the ECB's mandate, under stressed conditions, flexibility will remain an element of monetary policy whenever threats to monetary policy transmission jeopardise the attainment of price stability.

Following an ad hoc meeting on 15 June the Governing Council further communicated that it will apply flexibility in reinvesting redemptions coming due in the PEPP portfolio, with a view to preserving the functioning of the monetary policy transmission mechanism, a precondition for the ECB to be able to deliver on its price stability mandate. In addition, the Governing Council decided to mandate the relevant Eurosystem Committees together with the ECB services to accelerate the completion of the design of a new anti-fragmentation instrument for consideration by the Governing Council.

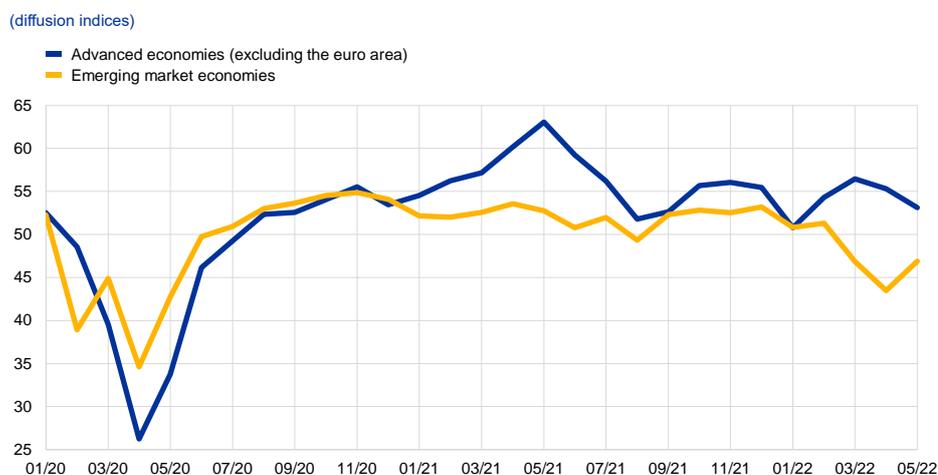
## 1 External environment

*The economic fallout from the Russian invasion of Ukraine and the new lockdowns in China represent headwinds to global growth in the near term. Against this background, the June 2022 Eurosystem staff macroeconomic projections expect that global real GDP – excluding the euro area – will grow at 3.0% in 2022, 3.4% in 2023 and 3.6% in 2024, a weaker growth trajectory compared with the March projections. The implications of the Russian invasion and the pandemic measures in China are projected to weigh significantly on trade in the near term, but their impact is expected to dissipate thereafter. The projected growth of euro area foreign demand is more subdued and has undergone more significant downward revisions compared with world imports, reflecting a worse outlook for Russia and for European countries outside the euro area with tighter economic links to Russia and Ukraine. In an environment of elevated uncertainty, the balance of risks around the baseline projections is firmly tilted to the downside for growth and to the upside for inflation.*

**The economic fallout from the war and the new lockdowns in China represent headwinds to global growth in the near term.** Through commodity prices, supply chains and uncertainty, the consequences of the war in Ukraine are reaching well beyond the countries and regions closely associated with Russia and Ukraine via trade and financial linkages. While the war is weighing on growth, it is also adding to already heightened inflationary pressures, particularly in emerging market economies (EMEs), where spending on energy and food constitutes a particularly large share of private consumption. In addition, the resurgence of the coronavirus (COVID-19) pandemic in Asia and the associated tightening of containment measures, particularly in economically important Chinese provinces, are adding pressure to global supply chains following a brief period of easing earlier this year. The implications of the Russian invasion and the pandemic measures in China are operating in an environment of high inflationary pressures, which has prompted central banks across the globe to adjust their monetary policies, thereby contributing to tighter financial conditions.

**Survey indicators signal that global activity is moderating.** The Purchasing Managers' Index (PMI) surveys for May suggest that economic activity remained resilient across advanced economies in spite of the ongoing invasion, and that the services sector continued to outpace the manufacturing sector. In contrast, more muted economic activity in EMEs reflects developments in China and Russia (Chart 1). The global activity tracker, based on a broader range of indicators, confirms the trends shown in surveys. Overall, estimated global real GDP growth – excluding the euro area – slowed significantly to 0.5% in the first quarter of 2022, in line with the March 2022 ECB staff macroeconomic projections.

**Chart 1**  
PMI composite output by region



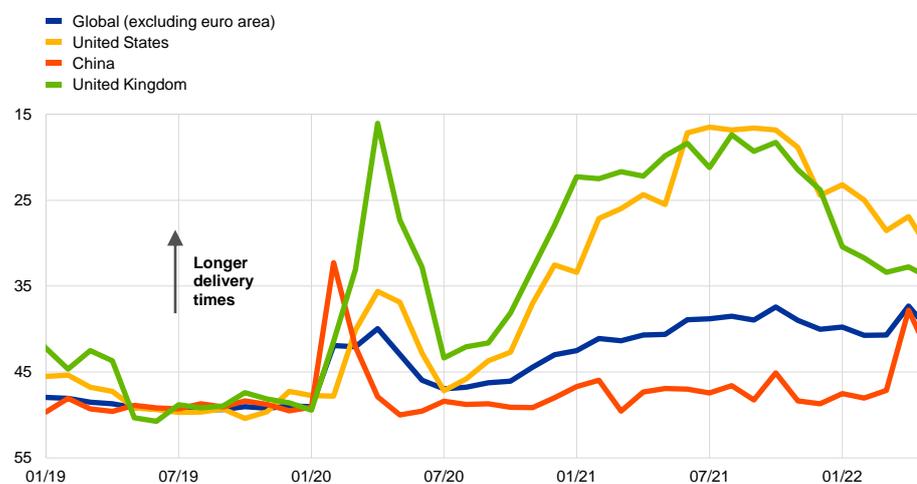
Sources: Markit and ECB staff calculations.  
Note: The latest observations are for May 2022.

**Disrupted economic activity in Asia and the war in Ukraine are putting pressure on global supply chains, following a brief period of easing earlier this year.** The PMI suppliers' delivery times had been improving throughout March, especially in the United States and United Kingdom (though the indicator was still pointing to long delivery times, remaining below the neutral threshold of 50). This positive trend was interrupted in April, when suppliers reported lengthening delivery times. In the case of the United States, however, a model-based analysis suggests that this development was a result of stronger demand rather than supply factors. At the same time, a marked lengthening of suppliers' delivery times in China – largely on account of lockdown-related supply factors – has brought the global composite measure back to the levels recorded in late 2021 when supply bottlenecks were most acute. More recently suppliers' delivery times have shortened again as the improving situation in China meant strict measures were eased in May. Delivery times in the United States and the United Kingdom have improved but are still far from normalisation (Chart 2).

## Chart 2

### PMI suppliers' delivery times

(diffusion indices, inverted scale)



Sources: Markit and ECB staff calculations.  
Note: The latest observations are for May 2022.

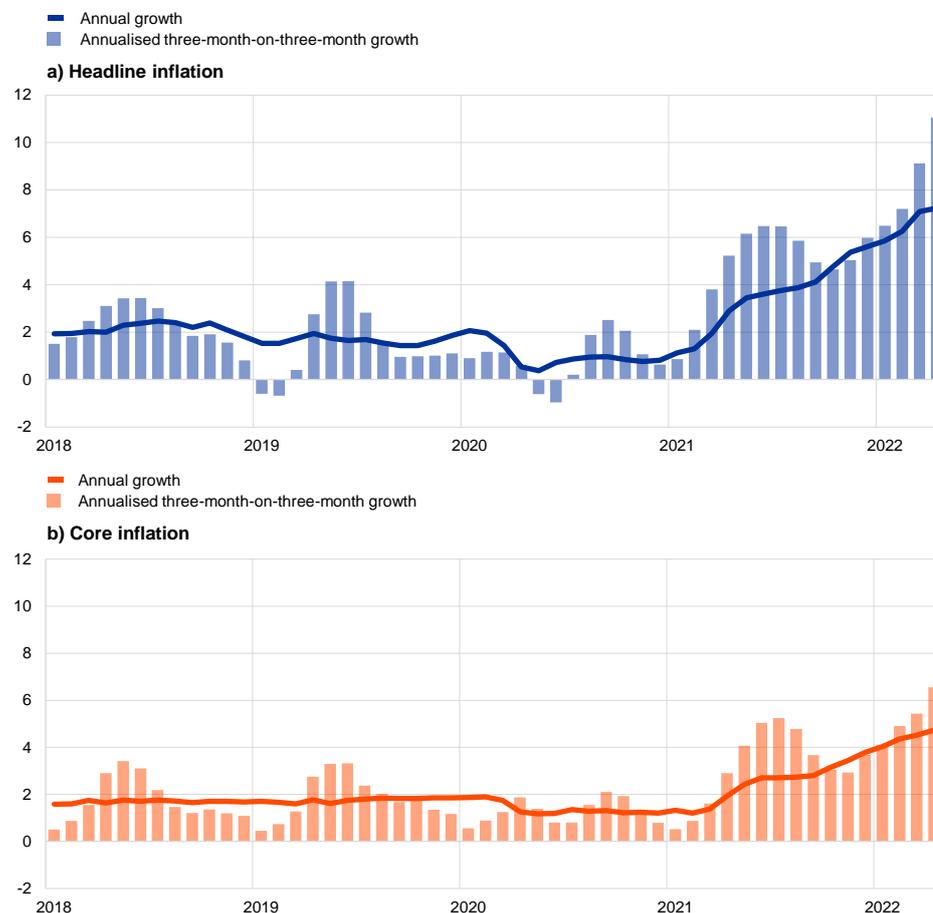
### Supply chain and commodity market disruptions are contributing to inflation amid growing evidence that price pressures are intensifying and broadening.

Annual headline CPI inflation across OECD countries – excluding Turkey – rose to 7.2% in April, reaching its highest rate in over three decades. Annual inflation excluding energy and food increased to 4.7%. In addition, the momentum in both headline and core inflation in the OECD area has picked up again and moved close to levels recorded in mid-2021, when demand recovered as economies reopened (Chart 3). Survey data for input and output prices in the manufacturing sector confirm the elevated inflationary pressures for producers and consumers, and prices in the services sector are rising gradually. The general increase in global commodity prices observed this year is expected to add to already heightened inflation pressures in the near term, especially across EMEs, where energy and food account for a larger share of consumer expenditure than in advanced economies. Under the latest conditioning assumptions, global consumer price inflation is expected to peak around the middle of this year and decline gradually over the rest of the projection horizon.

**Increasing inflationary pressures are also evident from the rising export prices of the euro area's competitors.** Compared with the March 2022 ECB staff macroeconomic projections, euro area competitors' export prices were revised significantly upwards for this year and the next, as higher oil and non-oil commodity prices interact with rising domestic and global pipeline pressures.

### Chart 3 OECD consumer price inflation

(year-on-year percentage changes and three-month-on-three-month annualised percentage changes)



Sources: OECD and ECB calculations.

Notes: OECD aggregates are calculated excluding Turkey. In Turkey, annual headline and core inflation stood at 70% and 54.6% respectively. Annual headline and core inflation for OECD countries including Turkey (not reported in the charts) was 9.2% and 6.3% respectively. Core inflation excludes energy and food. The latest observations are for April 2022.

**Commodity prices remain volatile and subject to supply risks.** While volatility in commodity markets has declined somewhat compared with the weeks directly following Russia's invasion of Ukraine, substantial supply-side risks persist, affecting energy commodities in particular. Global oil prices have increased since the April 2022 Governing Council meeting, on the back of the EU oil embargo and supply risks materialising. This follows a short period of declining prices, as the global oil market was calmed by the release of strategic oil reserves by the United States and other countries, as well as by falling demand due to lockdowns in China. European gas prices, however, declined as markets took comfort from rising inventories which outweighed intensifying supply-side concerns and the usual summer seasonality in Europe. Meanwhile, Russia halted gas deliveries to Bulgaria, Finland and Poland, and – after the cut-off date for Eurosystem staff projections – also to Denmark and the Netherlands, as they refused to comply with Russian demands to settle gas payments in roubles. Overall, the risk of broader gas supply disruptions in Europe continues to be elevated. Composite food prices remained broadly stable at elevated levels, whereas metal prices declined sharply amid lower demand from China.

**Global financial conditions tightened, reflecting monetary policy**

**normalisation, falling prices of risky assets and rising yields.** The United States saw financial conditions tighten more than in other advanced economies. Financial conditions in EMEs have tightened markedly since the Russian invasion of Ukraine, adding to previous trends that mainly reflect domestic monetary policy tightening. Capital outflows from EMEs have increased since the invasion, which signals that further risks and uncertainties lie ahead.

**In the United States, economic activity contracted in the first quarter of 2022.**

Real GDP declined by 0.4%, but while this weak outturn generally surprised observers, it showed that domestic demand remained relatively solid, while activity was dragged down by negative contributions from net exports and the change in inventories. Looking ahead, a return to positive, albeit moderate growth rates is expected over the near to medium term amid high inflation, substantial monetary policy tightening and a smaller fiscal impulse. Annual headline consumer price inflation decreased to 8.3% in April as energy prices moderated, while core inflation fell to 6.2%. Nevertheless, core month-on-month inflation jumped to 0.6% as underlying pressures remain high. In particular, services prices are continuing to increase at an elevated pace amid the ongoing rise in rents and transportation costs.

**In China, real GDP growth held up in the first quarter of 2022 despite the strongest resurgence in coronavirus cases since the beginning of the pandemic.**

However, the sweeping mobility restrictions implemented in the context of the zero-COVID strategy and the related changes in consumer behaviour are expected to impinge on activity in the second quarter of 2022. More accommodative policy is being implemented to mitigate the negative impact of lockdowns on economic growth.

**In Japan, economic recovery halted at the start of 2022 amid the spread of the Omicron variant and persistent supply constraints.**

A firmer recovery is expected, supported by pent-up demand and policy support, as well as a pick-up in global demand and gradually declining pressures on supply chains. Economic growth is expected to moderate in the longer term and gradually return to the trend rate. Annual CPI inflation is projected to rise in the near term, supported by higher food and energy prices, as well as the declining effects from special factors such as cuts to mobile phone charges.

**In the United Kingdom, economic activity has rebounded from the Omicron wave more strongly than previously anticipated.**

However, the outlook is expected to remain rather subdued as the war in Ukraine exacerbates already elevated price pressures and supply bottlenecks. Consumer confidence has fallen sharply in response to the squeeze on real household disposable income. The tightening in the labour market has persisted, with the unemployment rate continuing to decline despite the ending of the furlough scheme in September 2021. Supply-side bottlenecks and rising commodity prices are projected to push up consumer price inflation to substantially higher levels than in the March 2022 ECB staff projections until at least the second quarter of 2022.

**The Russian economy is expected to fall into a deep recession this year.** This outlook reflects the more severe economic sanctions imposed since the March projections, including an embargo on energy commodity imports from Russia by the United Kingdom and the United States, as well as a commitment by all G7 countries to phase out or ban Russian oil as soon as possible. Following its embargo on coal imports from Russia, the EU has also agreed to ban oil imports. Although this embargo had not yet been agreed by the time of the cut-off date for the June 2022 Eurosystem staff projections, the baseline assumes that either the initially proposed embargo or a modified version excluding certain countries will be gradually implemented over the projection horizon. The impact of the sanctions on activity in Russia is further amplified by broader private sector boycotts disrupting production and logistics, whereas rising inflation and tight financing conditions are weighing on domestic demand. The expected pattern of a deep recession followed by a subdued recovery reflects an assumption that the economic sanctions imposed to date will remain in place for the rest of the projection horizon.

## 2 Economic activity

The second paragraph and the last paragraph of section 2 were corrected.

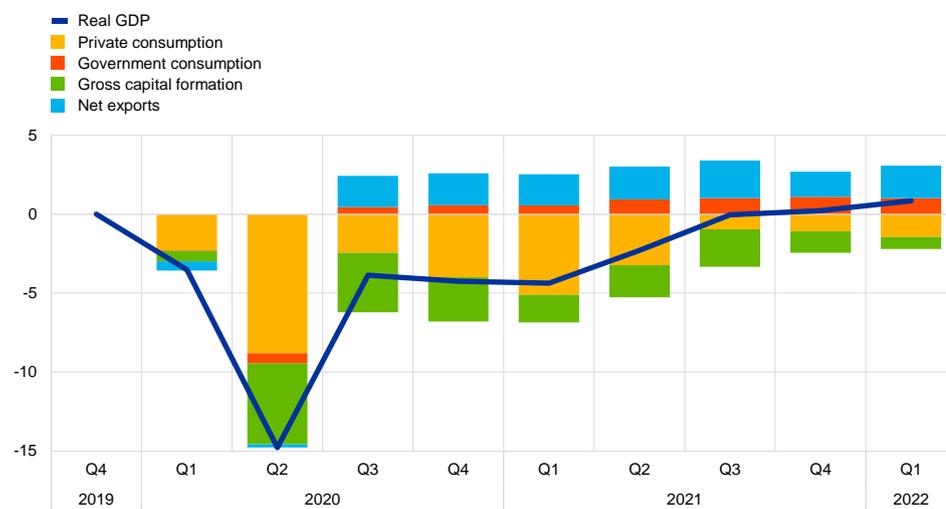
*The euro area economy grew by 0.6% in the first quarter of 2022, thus standing 0.8% above its pre-pandemic level. This stronger than expected outcome was driven by a double-digit quarterly GDP increase in Ireland. On average, the rest of the euro area economy grew by 0.3%. Modest positive growth is expected in the second quarter, as the favourable impact from lifting pandemic-related restrictions on euro area activity is counteracted by adverse factors caused or amplified by the war in Ukraine, as well as by new pandemic-related measures in China. Despite the recovery in consumption of contact-intensive services, higher energy and food prices have dampened consumer sentiment and household spending. Persisting or even intensified supply chain disruptions, including in the aftermath of the lockdowns in China and the war in Ukraine, are constraining manufacturing activity and trade. Elevated uncertainty, rising costs and tightening financing conditions are also expected to weigh on both business and housing investment in the coming quarters. Nevertheless, looking beyond these weaker near-term growth prospects, the conditions are in place for the economic activity in the euro area to regain momentum in the second half of the year.*

*This assessment is broadly reflected in the June 2022 Eurosystem staff macroeconomic projections for the euro area, which foresee annual real GDP growth at 2.8% in 2022 and 2.1% in both 2023 and 2024. Compared with the March 2022 ECB staff macroeconomic projections, this outlook was revised downwards significantly for 2022 and 2023 but revised upwards for 2024. Risks to the economic outlook are assessed to be tilted to the downside, notably as a result of the possibility of a severe disruption to European energy supplies, leading to further increases in energy prices and production cuts.*

**Euro area domestic demand contracted in the first quarter of 2022.** While GDP increased by 0.6% quarter on quarter in the first quarter of the year, the contribution from domestic demand stood at -0.4 percentage points, signalling an overall weakness in domestic sources of growth. By contrast, net trade and changes in inventories made a positive contribution to growth. GDP growth was 0.3 percentage points higher than Eurostat's flash estimate, reflecting the inclusion of volatile data from Ireland, which showed double-digit growth in the first quarter owing to developments in its multinational sector, thereby boosting its net trade contribution to growth. The level of GDP in the euro area stands 0.8% above its pre-pandemic level observed in the final quarter of 2019 (Chart 4). On the production side, total value added displayed a broadly based increase across the main sectors of the economy.

**Chart 4****Euro area real GDP and its components**

(percentage changes since the fourth quarter of 2019; percentage point contributions)



Sources: Eurostat and ECB calculations.

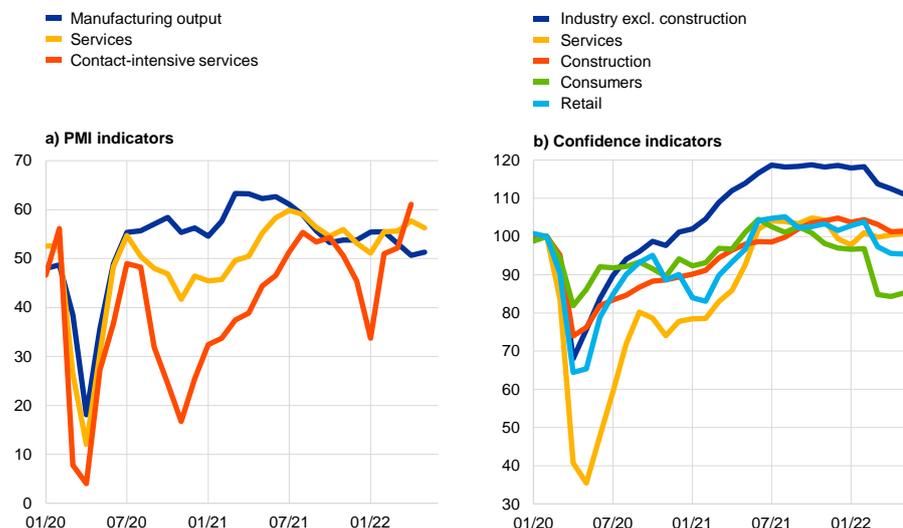
Note: The latest observations are for the first quarter of 2022.

**Economic activity is expected to be somewhat weaker in the second quarter of 2022, negatively affected by the consequences of the war in Ukraine but still supported by the recovery in contact-intensive services.** Incoming survey data point to continued positive, albeit slow, growth in the second quarter of 2022. The composite output PMI indicator decreased in May but remains in expansionary territory and well above its long-term average. However, there are signs of weakening activity in the manufacturing sector, particularly affected by intensified supply chain disruptions and higher commodity prices due to Russia's invasion of Ukraine, as well as the rise in overall uncertainty (Box 2). In May 2022, new orders in manufacturing decreased for the first time since June 2020 and 12-month-ahead business expectations were among the weakest seen over the past two years. This contrasts with the further solid growth of new business inflows into the services sector, reflecting stronger activity in contact-intensive services once the pandemic-related restrictions were lifted (Chart 5a). The different developments in confidence indicators across sectors corroborate this contrasted picture (Chart 5b). The improvement in business confidence in May was mostly driven by the services sector, while sentiment deteriorated further in the industrial and retail sectors. Consumer confidence edged up in May but remains well below its long-term average, pointing to risks to future demand against the background of higher energy and food costs (Box 1; Box 6). Overall, while this combination of factors is likely to dampen growth in the near term, the prospects for a strengthening of the recovery still remain, given the reopening of the economy, a strong labour market, fiscal support measures and the continued high level of savings. Therefore, this outlook clearly does not point to a stagflation scenario, understood as a protracted period of low or even negative growth with persistently high or even accelerating inflation, as witnessed in the main advanced economies in the 1970s (Box 5).

## Chart 5

### Survey indicators across sectors of the economy

(left-hand panel: percentage balances; right-hand panel: percentage balances, February 2020 = 100)



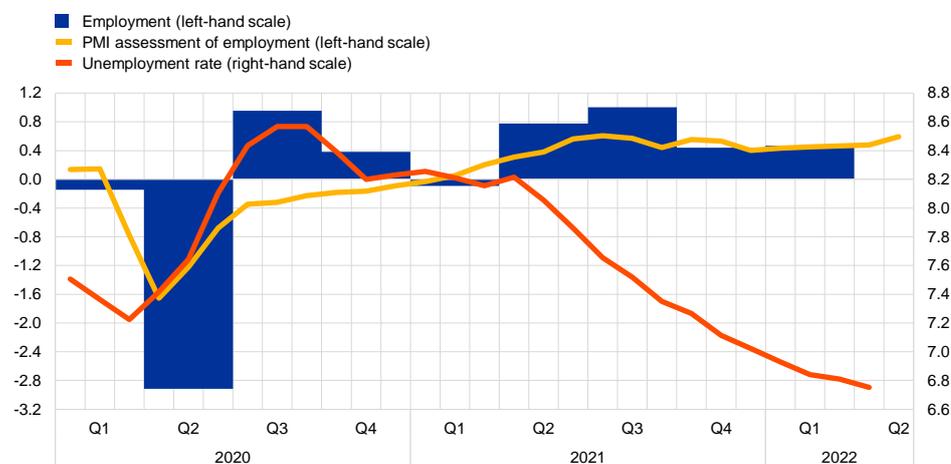
Sources: Standard & Poor's Global Ratings (left-hand panel), European Commission and ECB calculations (right-hand panel). Notes: "Contact-intensive services" refers to accommodation, food and beverage service activities. The latest observations are for May 2022, except for contact-intensive services for which the latest observation is for April 2022.

**The labour market in the euro area continues to improve despite the economic impact of the war in Ukraine.** The unemployment rate stood at 6.8% in April 2022, broadly unchanged since March and around 0.6 percentage points lower than the pre-pandemic level observed in February 2020 (Chart 6). This is also the lowest level recorded since the inception of the euro area, albeit with continuing, though progressively lower, recourse to job retention schemes in some countries. Total employment grew by 0.6% quarter on quarter in the first quarter of 2022, after standing at 0.4% in the fourth quarter of 2021. As a result of the economic recovery following the relaxation of pandemic-related containment measures, workers covered by job retention schemes accounted for 1.1% of the labour force in March 2022, down from around 1.6% in December 2021. Likewise, the available national accounts data indicate that in the first quarter of 2022, the total hours worked remained below pre-pandemic levels, particularly in the industrial and market services sectors.

## Chart 6

### Euro area employment, the PMI employment indicator and the unemployment rate

(left-hand scale: quarter-on-quarter percentage changes, diffusion index; right-hand scale: percentages of the labour force)



Sources: Eurostat, Standard & Poor's Global Ratings and ECB calculations.

Notes: The two lines indicate monthly developments; the bars show quarterly data. The PMI is expressed as a deviation from 50 divided by 10. The latest observations are for the first quarter of 2022 for employment, May 2022 for the PMI and April 2022 for the unemployment rate.

**Short-term labour market indicators continue to develop favourably, indicating an overall resilient labour market in the euro area so far.** The monthly composite PMI employment indicator reached 55.9 in May, 1.2 points higher than in April, thus remaining above the threshold level of 50 that indicates an expansion in employment. The PMI employment indicator has recovered strongly following its all-time low in April 2020 and has now been in expansionary territory since February 2021. Looking at developments across different sectors, the PMI employment indicator points to robust employment growth in all three key sectors, i.e. services, manufacturing and construction.

**After contracting for two consecutive quarters, private consumption should be supported by spending on services as pandemic restrictions are eased, notwithstanding significant headwinds.** Following a weak start to the year due to the pandemic, households' consumption of goods signals unfolding effects from the war in Ukraine and persistent bottlenecks in goods' production and distribution. This is suggested by recent developments in retail sales, which stood at -1.3% month on month in April, after -0.5% quarter on quarter in the first quarter of 2022, and new car registrations, which, in April, remained some 7% below their first quarter average, despite a small month-on-month increase from the lows seen in March 2022. Consumer confidence remained well below its long-term average in May, reflecting households' ongoing concerns about the impact of the war in Ukraine. Households and retail companies also became less optimistic about future spending on major (goods) purchases, as flagged by the European Commission's latest Consumer Survey in May. Their downbeat expectations about the future financial and economic situation, despite a small improvement in May, indicate that higher inflation and increased uncertainty are likely to weigh on their spending decisions (Box 2). Nevertheless, consumer spending on services is expected to strongly rebound amid easing pandemic restrictions. This assessment is confirmed by the European

Commission's latest Consumer Survey suggesting that, in anticipation of a restriction-free summer, expected demand for accommodation, food and travel services has strengthened despite the ongoing war and falling real disposable income. Savings accumulated during the pandemic might only cushion the impact of the energy price shock to a limited extent, as it is concentrated among higher-income households with lower overall exposure to high energy costs. On the other hand, lower-income households – which spend a larger share of their income on energy – should be able to benefit from fiscal income support measures.

**Business investment contracted in the first quarter of 2022, driven by developments in Ireland.** Non-construction investment declined by 2.9% quarter on quarter in the first quarter, reflecting a strong contraction in intellectual property investment in Ireland which offset the strong surge seen in the final quarter of 2021. Excluding Ireland, euro area investment grew by 0.8% quarter on quarter, against a backdrop of record-level equipment shortages reported by respondents to ECOFIN's quarterly business surveys. All four of the largest euro area countries recorded ongoing growth in non-construction investment, particularly Spain and, to a lesser extent, Italy, potentially reflecting reopening effects and early disbursements of Next Generation EU (NGEU) funds. Looking ahead, business investment is expected to be adversely affected by elevated uncertainty related to the war in Ukraine, high energy prices, ongoing supply bottlenecks and tightening financial conditions. Incoming survey data at the start of the second quarter suggest lower business confidence, reflecting downgraded output and order book assessments among capital goods' producers, while lower expected turnover in manufacturing points to a quarter-on-quarter contraction of business investment in the second quarter of 2022. At the same time, an improving outlook for services activity, reflecting the lifting of pandemic-related restrictions, and broader support from NGEU funds are expected to support a return to growth later in the year.<sup>1</sup>

**Housing investment increased significantly in the first quarter of 2022 but is likely to weaken in the near term.** Housing construction investment increased by 4.5% in the first quarter of 2022 compared with the previous quarter. As for the second quarter, the European Commission's indicator of recent trends in construction activity declined significantly in April and May, on average, compared with the first quarter. The PMI for residential construction also declined significantly, moving into negative growth territory in May. On the demand side, according to the European Commission's latest survey data, households' near-term intentions to renovate and to buy or build a house fell significantly in the second quarter. On the supply side, firms' order books weakened and insufficient demand as a limit to production increased in April and May, albeit remaining well below its long-term average. Moreover, firms' production continued to be constrained by significant bottlenecks in the supply of labour and materials (e.g. steel, lumber), which worsened after the outbreak of the war in Ukraine and led to a sharp rise in construction prices. This rise in construction costs, combined with less favourable

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<sup>1</sup> See the European Commission's Biannual survey of investment intentions, conducted in March/April 2022, which shows a decline in manufacturers' investment plans for 2022 compared with plans made late last year but improvements in services.

financing conditions, is likely to weigh on housing demand and, together with ongoing supply-side constraints, dampen growth in housing investment.

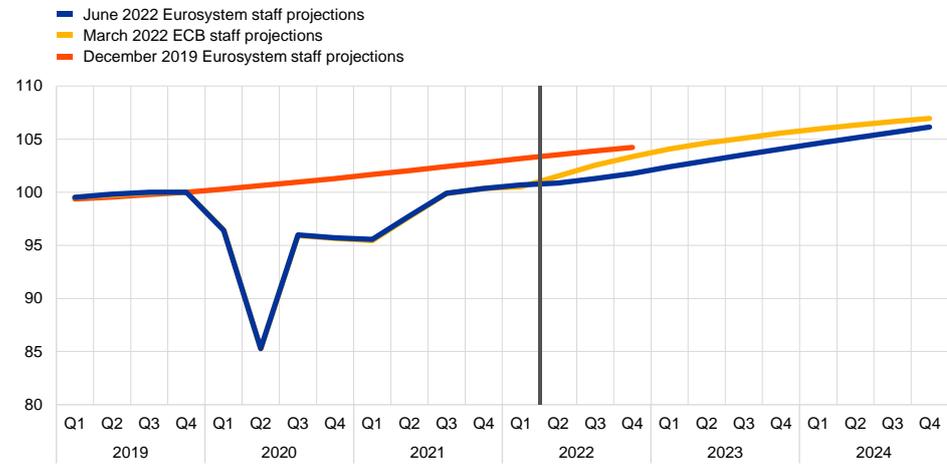
**Euro area trade lost momentum as extra-euro area exports weakened, and the outlook points to subdued trade, particularly in manufacturing.** In February and March 2022, nominal extra-euro area goods exports weakened, while extra-euro area goods imports continued to increase. The goods trade balance shifted further into deficit owing to the higher cost of energy imports and subdued export performance. Exports to China decreased due to the pandemic-related restrictions, while exports to Russia halved due to sanctions and the unsanctioned behaviour of market participants. Short-term shipping and survey indicators suggest that supply bottlenecks may have re-intensified, as illustrated, for example, by an increase in the amount of goods blocked in key ports in May 2022 due to pandemic-related lockdowns in China and the war in Ukraine. The weakening in external demand related to these events is reflected in forward-looking PMI manufacturing export orders that declined somewhat further into contractionary territory in May. By contrast, the PMI for export orders in the services sector has moved into expansionary territory due to the relaxation of pandemic-related restrictions in Europe. In particular, survey indicators and travel bookings point to a strong recovery in trade in tourism this summer.

**Despite the weak near-term prospects, euro area economic activity is expected to regain momentum later this year and expand at a relatively solid pace.** This outlook is, however, surrounded by considerable uncertainty. The June 2022 Eurosystem staff macroeconomic projections foresee annual real GDP growth at 2.8% in 2022 and 2.1% in both 2023 and 2024 (Chart 7). Compared with the March 2022 ECB staff macroeconomic projections, the outlook has been revised downwards significantly for 2022 and 2023, mainly owing to the economic impact of the war in Ukraine, while for 2024 it has been revised upwards, reflecting a rebound in activity as headwinds fade.

## Chart 7

### Euro area real GDP (including projections)

(index; fourth quarter of 2019 = 100; seasonally and working day-adjusted quarterly data)



Sources: Eurostat and the article entitled "Eurosystem staff macroeconomic projections for the euro area, June 2022" published on the ECB's website on 9 June 2022.

Note: The vertical line indicates the start of the June 2022 Eurosystem staff macroeconomic projections and follows the last observation for euro area real GDP, which relates to the first quarter of 2022.

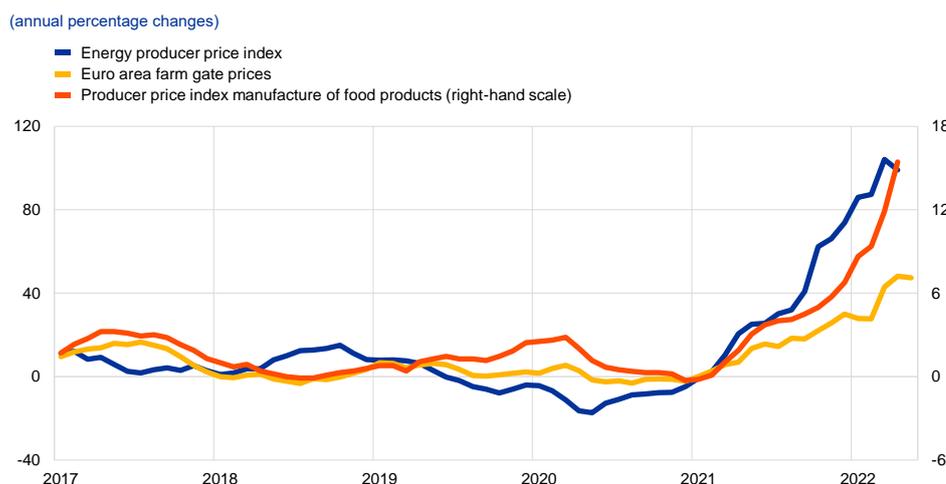
**The risks to the economic outlook continue to be tilted to the downside.** One key risk is the possibility of a severe disruption to European energy supplies from Russia following the implementation of the EU sanctions, leading to further increases in energy prices and production cuts.

### 3 Prices and costs

According to Eurostat's flash estimate inflation rose further to 8.1% in May, mainly because of surging energy and food prices, including due to the impact of the war. Prices have also gone up more strongly because of renewed supply bottlenecks and recovering domestic demand as the economy reopens, especially in the services sector. Overall, inflationary pressure has broadened and intensified, and wage growth has started to pick up. While most measures of longer-term inflation expectations derived from financial markets and expert surveys stand at around 2%, initial signs of above-target revisions in those measures warrant close monitoring. Eurosystem staff have revised up their baseline for inflation in the June 2022 projections significantly compared to the March ECB staff projections. The new staff projections foresee annual inflation at 6.8% in 2022, 3.5% in 2023 and 2.1% in 2024.

**According to Eurostat's flash estimate for May, HICP inflation rose to a record high unprecedented in the history of the euro.** The increase from 7.4% in April to 8.1% in May reflects higher inflation rates for all main components, but most notably for energy and food. Consumer energy prices, which remain the primary contributor to headline inflation, edged up again after a slight moderation in April. High wholesale prices for gas, oil and electricity, as well as elevated refining and distribution margins for transport fuel (particularly diesel oil) offset a downward effect of the compensatory measures adopted by euro area countries. Food inflation also rose substantially, pushed up by global food commodity prices and domestic producer prices. This reflected cost factors such as those related to energy and fertilisers (Chart 8).

**Chart 8**  
Energy and food input cost pressure



Source: Eurostat.  
Note: The latest observations are for May for euro area farm gate prices and for April for the other data.

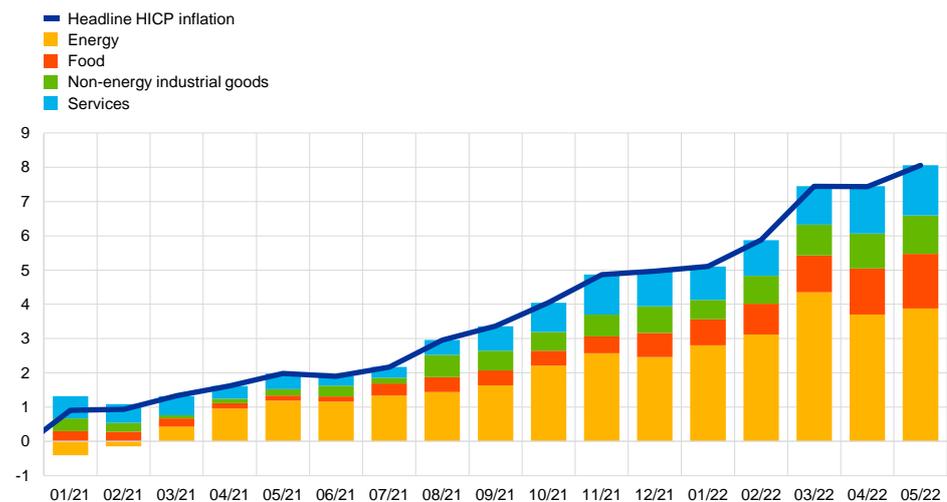
**HICP excluding energy and food (HICPX) increased to 3.8%, reflecting a further build-up in both non-energy industrial goods (NEIG) and services inflation (Chart 9).** Here, too, higher input costs as a result of the surge in energy prices remain a prominent driver. NEIG inflation is also still affected by global supply

disruptions, which have intensified as a result of the war in Ukraine and the aftermath of pandemic-related developments in China. Services inflation reflects some of the effects arising from the reopening of the economy once pandemic-related restrictions were lifted, as evidenced by the relatively buoyant contributions from accommodation and recreation services in April 2022.

### Chart 9

#### Headline inflation and its main components

(annual percentage changes; percentage point contributions)



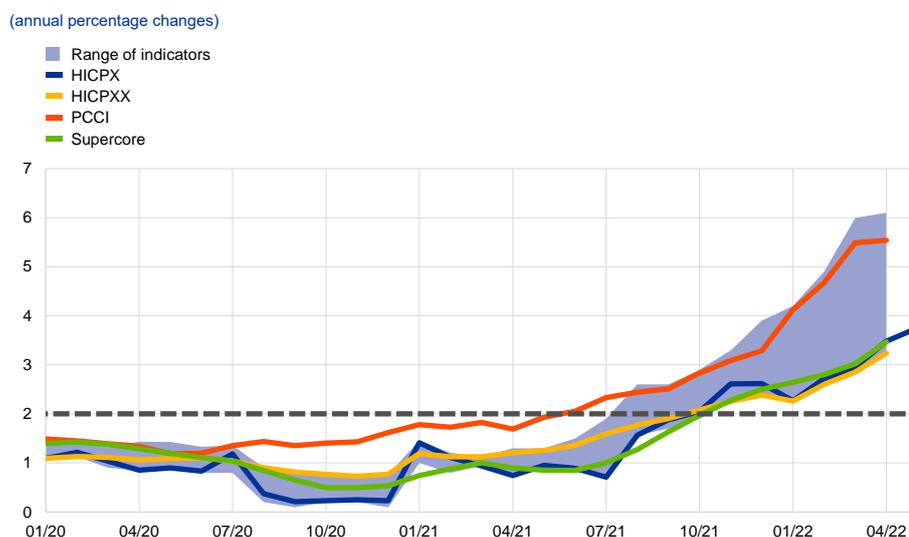
Sources: Eurostat and ECB calculations.

Note: The latest observations are for May 2022 (flash estimate).

#### A wide range of measures of underlying inflation surpassed 3% (Chart 10).

Exclusion-based indicators of underlying inflation have increased further in recent months, as high inflation rates become more prevalent across a wider range of HICP items. HICPX inflation rose to 3.8% in May 2022, after 3.5% in April. Other indicators of underlying inflation are only available up to April, at which time HICPXX inflation (which excludes travel-related items, clothing and footwear, as well as energy and food) increased to 3.2%. The upward movement of exclusion-based indicators is illustrated by the distribution of the sub-components that make up the HICP basket. In April, almost 80% of these sub-components recorded annual growth rates of above 2%. Meanwhile, the model-based Persistent and Common Component of Inflation (PCCI) stood at 5.5% in April and the Supercore indicator, which comprises cyclically-sensitive HICP items, edged up to 3.5%, from 3.0% in March. At the same time, it remains uncertain how persistent these increases will be. A large part of the upward push in underlying inflation dynamics can be attributed to indirect effects from the surge in energy and food prices and from exceptional developments in the balance between supply and demand related to the pandemic and the Russian invasion of Ukraine. Looking ahead, developments in wages will be a key factor for the future dynamics of underlying inflation.

**Chart 10**  
Indicators of underlying inflation



Sources: Eurostat and ECB calculations.

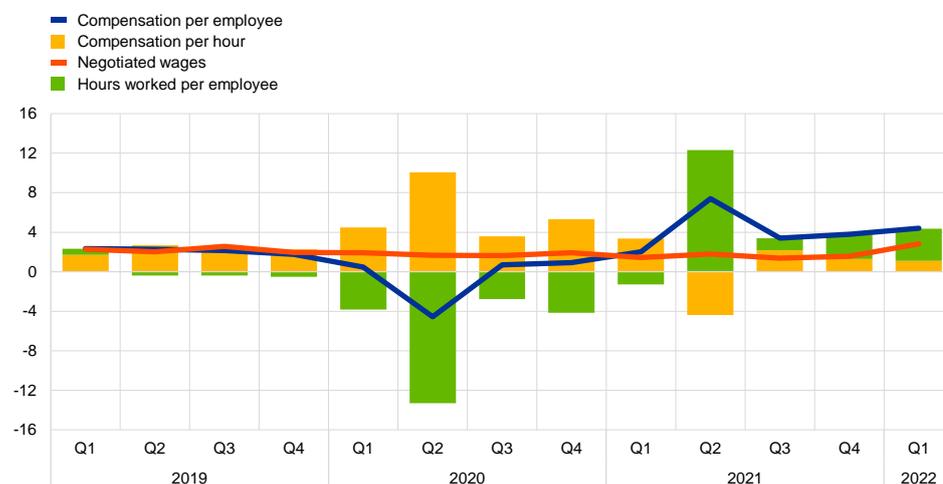
Notes: The range of indicators of underlying inflation includes HICP excluding energy, HICP excluding energy and unprocessed food, HICPX (HICP excluding energy and food), HICPXX (HICP excluding energy, food, travel-related items, clothing and footwear), the 10% and 30% trimmed means, and the weighted median. The latest observations are for April 2022, with the sole exception of the HICPX, which was obtained from the May 2022 flash estimate.

**The latest data on negotiated wages signal a strengthening in wage dynamics, but this remains moderate when taking into account one-off payments (Chart 11).** Growth in negotiated wages increased to 2.8% in the first quarter of 2022, compared with 1.6% in the previous quarter. The upward movement is not fully indicative of the growth in base wages, as the underlying wage agreements generally comprise one-off payments to compensate workers for the exceptional developments that occurred during the pandemic. More recent information on those wage agreements that were concluded since the start of 2022 confirm some strengthening in wage dynamics, although wage growth remains contained compared with the current inflation rates. Wage developments measured by compensation per employee (CPE) also strengthened further in the first quarter of 2022, increasing to 4.4% compared with 3.8% in the previous quarter. However, this increase mainly reflected an increase in the average hours worked, while the increase in compensation per hour (CPH) remained far more contained at an annual growth rate of 1.1%. Pandemic-related distortions to these indicators are declining as the impacts of government measures related to job retention schemes have continued to decrease.

## Chart 11

### Breakdown of compensation per employee into compensation per hour and hours worked

(annual percentage changes)



Sources: Eurostat and ECB calculations.

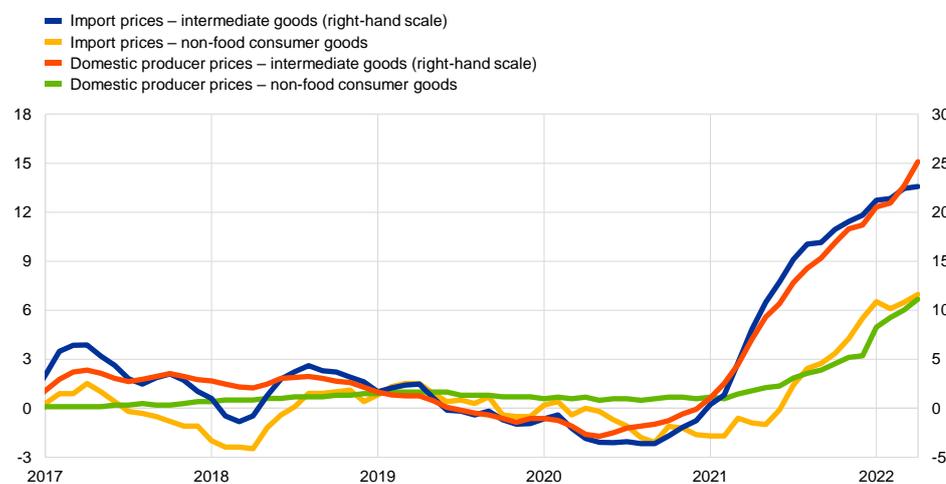
Note: The latest observations are for the first quarter of 2022.

**Pipeline pressures on consumer prices for NEIG have continued to build up further at all stages of the pricing chain. (Chart 12).** Cost pressures rose further to new all-time highs on the back of supply chain disruptions and global commodity prices, particularly for energy but also for some metals. At the early stages of the pricing chain for HICP NEIG inflation, the annual growth rate of producer prices for domestic sales of intermediate goods jumped to 25.1% in April 2022, up from 22.7% in the previous month. Import prices for intermediate goods also continued to grow at a strong pace (22.6% in April compared with 22.4% in the previous month). Input cost pressures also feature more prominently at later stages of the pricing chain, with producer price inflation for domestic sales of non-food consumer goods increasing from 6.0% in March to 6.7% in April, which is exceptionally high when compared with the average annual rate of 0.6% over the 2001-19 period. Import price inflation for non-food consumer goods edged up as well to 7.0% in April, after a small decline between February and March. Overall, these developments in import and producer prices for non-food consumer goods imply that pressure on NEIG inflation in the HICP is likely to remain elevated in the near term. This is also reflected in the data on selling-price expectations in the manufacturing sector.

## Chart 12

### Indicators of pipeline pressures

(annual percentage changes)



Sources: Eurostat and ECB calculations.  
Note: The latest observations are for April 2022.

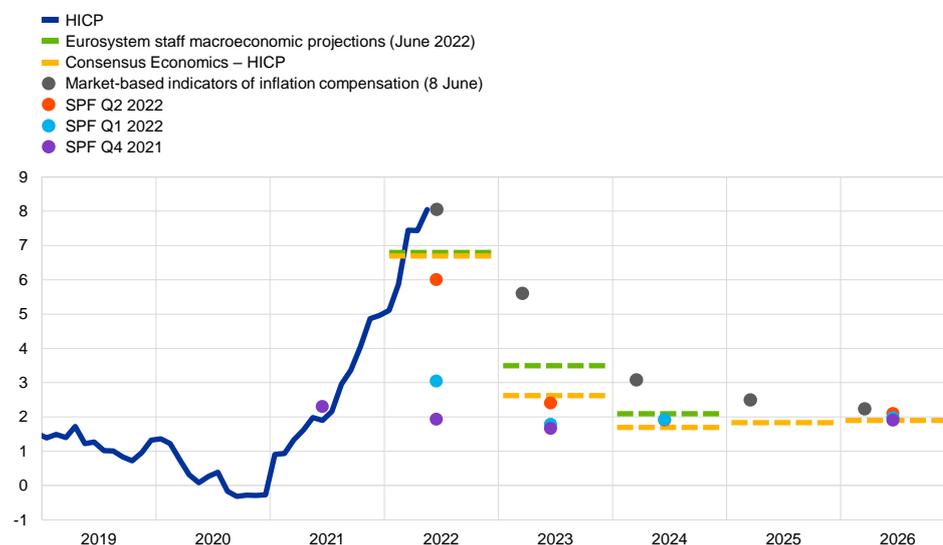
### Market-based measures of euro area inflation compensation increased markedly for the very near term but declined somewhat for longer horizons amid intensifying supply-side constraints and a worsening economic outlook (Chart 13).

Market-based measures of inflation compensation (based on HICP excluding tobacco) now suggest euro area inflation will peak at almost 9% during the third quarter of 2022. These measures of inflation compensation remain close to 8% until the end of 2022, around 3 percentage points higher than at the time of the March Governing Council meeting, before declining to levels slightly above 2.5% in mid-2024. At the same time, longer-term measures of inflation compensation have recently declined somewhat once again, after increasing strongly in the first half of the review period. The five-year forward inflation-linked swap rate five years ahead temporarily reached 2.49% at the beginning of May, before falling back to 2.28% at the end of the review period. Importantly, market-based measures of inflation compensation are not a direct measure of market participants' actual inflation expectations, since they contain inflation risk premia to compensate for inflation uncertainty. Currently, these premia are assessed to be positive, implying that actual inflation expectations are estimated to be lower than the simple readings of market-based longer-term measures of inflation compensation and thus closer to the ECB's symmetric 2% inflation target. According to the ECB's Survey of Professional Forecasters (SPF) for the second quarter of 2022, longer-term inflation expectations (for 2026) rose further to 2.1%, while those of Consensus Economics stood at 1.9%.

### Chart 13

#### Survey-based indicators of inflation expectations and market-based indicators of inflation compensation

(annual percentage changes)



Sources: Eurostat, Refinitiv, Consensus Economics, Survey of Professional Forecasters, [Eurosystem staff macroeconomic projections for the euro area](#) and ECB calculations.

Notes: The market-based indicators of inflation compensation series is based on the one-year spot inflation rate, the one-year forward rate one year ahead, the one-year forward rate two years ahead, the one-year forward rate three years ahead and the one-year forward rate four years ahead. The latest observations for market-based indicators of inflation compensation are for 8 June 2022. The Survey of Professional Forecasters for the second quarter of 2022 was conducted between 1 and 4 April 2022. In the Consensus Economics forecasts, the cut-off date for 2024, 2025 and 2026 was April 2022, and the cut-off date for 2022 and 2023 was May 2022. The cut-off date for data included in the Eurosystem staff macroeconomic projections was 24 May 2022.

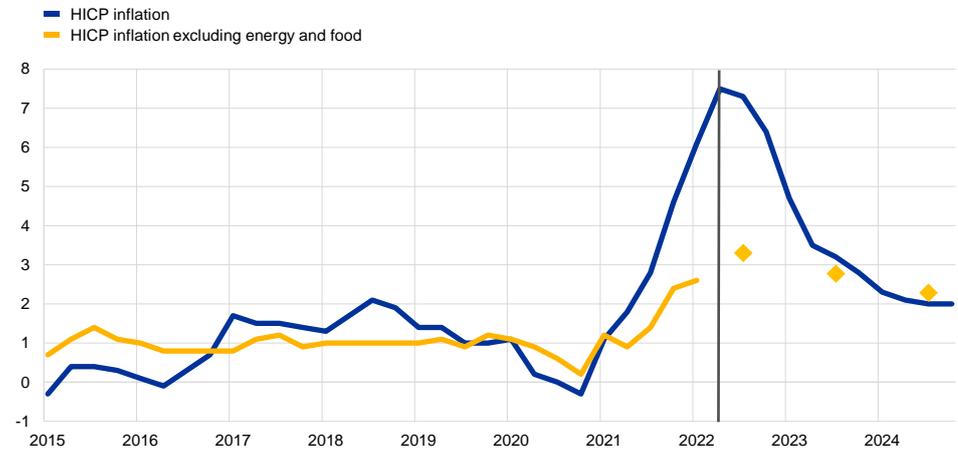
#### The June 2022 Eurosystem staff macroeconomic projections for the euro area foresee headline inflation to remain elevated in the near term, before coming down to 3.5% in 2023 and 2.1% in 2024.

Following the surge in inflation, the outlook is for higher and more persistent inflation, with headline inflation expected to remain very high in 2022, averaging 6.8%. This reflects elevated oil and gas prices, increases in prices of food commodities that have been strongly affected by the war in Ukraine, effects related to the reopening of the economy, and global supply shortages. Further ahead, exceptional developments in food and energy commodity prices are expected to moderate. This, together with the ongoing monetary policy normalisation embedded in interest rate assumptions, is expected to bring down headline inflation to 3.5% in 2023 and 2.1% in 2024. HICP inflation excluding energy and food is also expected to remain elevated in the near term on the back of supply bottlenecks, energy input costs and reopening effects. Towards the end of the projection horizon HICPX inflation declines as these pressures subside, but remains elevated due to wage growth well above the historical average in a context of tight labour markets, economic recovery and some effects from compensation for higher inflation. Compared with the March 2022 Eurosystem staff projections, the inflation outlook was revised up by 1.7 percentage points for 2022, 1.4 percentage points for 2023 and 0.2 percentage points for 2024.

### Chart 14

#### Euro area HICP inflation and HICP inflation excluding energy and food (including projections)

(annual percentage changes)



Sources: Eurostat and the [Eurosystem staff macroeconomic projections for the euro area \(June 2022\)](#).

Notes: The vertical line indicates the start of the projection horizon. The latest observations are for the first quarter of 2022 (data) and the fourth quarter of 2024 (projections). The cut-off date for data included in the projections was 24 May 2022. Historical data for HICP inflation and HICP inflation excluding energy and food are at quarterly frequency. Forecast data are at quarterly frequency for HICP inflation and annual frequency for HICP inflation excluding energy and food.

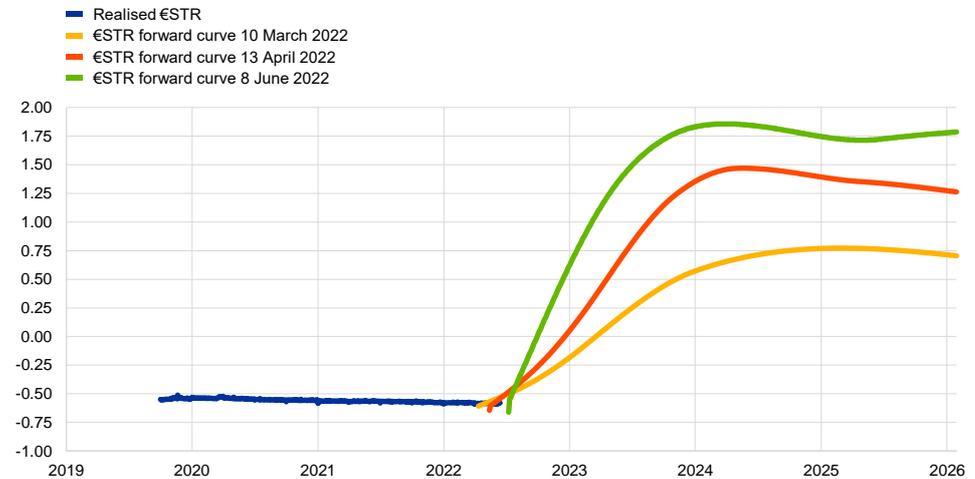
## 4 Financial market developments

*Over the review period (10 March to 8 June 2022), euro area risk-free rates increased significantly as market participants revised their expectations towards a more imminent tightening of monetary policy. As a result, the euro short-term rate (€STR) forward curve steepened markedly, with markets pricing in the first 25 basis point policy rate increase for the July meeting of the ECB's Governing Council. Long-term bond yields rose globally as inflationary pressures fuelled expectations of faster monetary policy normalisation; at the same time, euro area sovereign bond yields generally increased in lockstep with risk-free rates, although spreads widened somewhat across countries. European equity and corporate bond markets went through two distinct phases: first, a recovery from war-induced losses, and then a weakening amid lower long-term earnings expectations and higher risk-free rates. Overall, the euro continued to depreciate in trade-weighted terms against a backdrop of mixed bilateral exchange rate developments.*

**Since the March Governing Council meeting, euro area risk-free rates have increased significantly as market participants have revised their expectations towards a more imminent tightening of monetary policy, with the first 25 basis point rate hike being priced in for the July Governing Council meeting.** Over the review period the €STR averaged -58 basis points and excess liquidity increased by approximately €136 billion to €4,613 billion. At the same time, the overnight index swap (OIS) forward curve based on the benchmark €STR steepened following the April Governing Council meeting (Chart 15). This suggests that market participants revised their monetary policy expectations in light of the growing inflationary pressures and the Governing Council's announcement to conclude net purchases under the asset purchase programme (APP) in the third quarter. As a result, the date implied by the market for a first 25 basis point policy rate increase was brought forward significantly to July 2022, with three more 25 basis point policy rate hikes priced in for 2022.

**Chart 15**  
**€STR forward rates**

(percentages per annum)



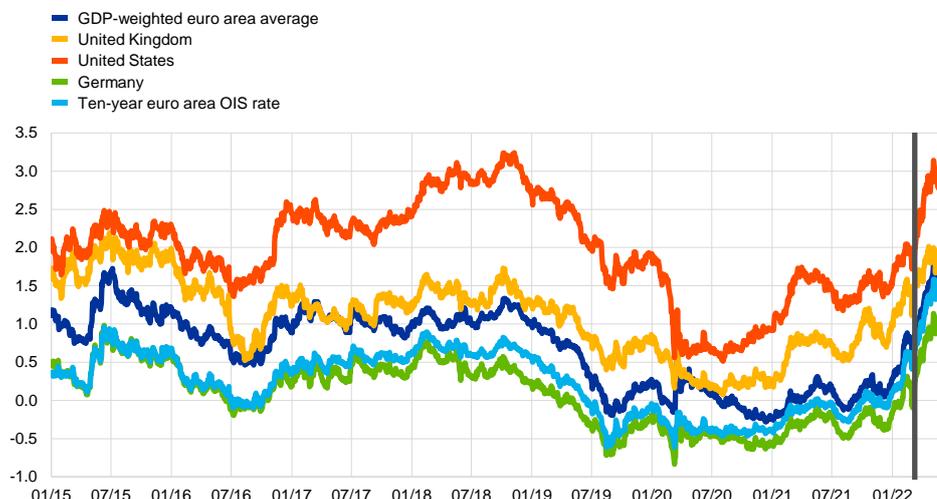
Sources: Thomson Reuters and ECB calculations.  
 Note: The forward curve is estimated using spot OIS (€STR) rates.

**Long-term bond yields have increased globally as inflationary pressures have fuelled expectations of faster monetary policy normalisation (Chart 16).** During the review period, bond yields surged globally in anticipation of increases in central bank policy rates despite increasing downside risks to the economic outlook. In the euro area, the GDP-weighted average ten-year sovereign bond yield rose by 118 basis points to stand at 2.05%, a level last seen in mid-2015. Despite declining somewhat at the beginning of May, ten-year US sovereign bond yields increased by 102 basis points over the review period to reach 3.03%, broadly in line with movements in euro area rates. Similarly, yields on ten-year UK and German government bonds rose by 72 and 108 basis points to 2.25% and 1.36% respectively.

### Chart 16

#### Ten-year sovereign bond yields and the ten-year OIS rate based on the €STR

(percentages per annum)



Sources: Refinitiv and ECB calculations.

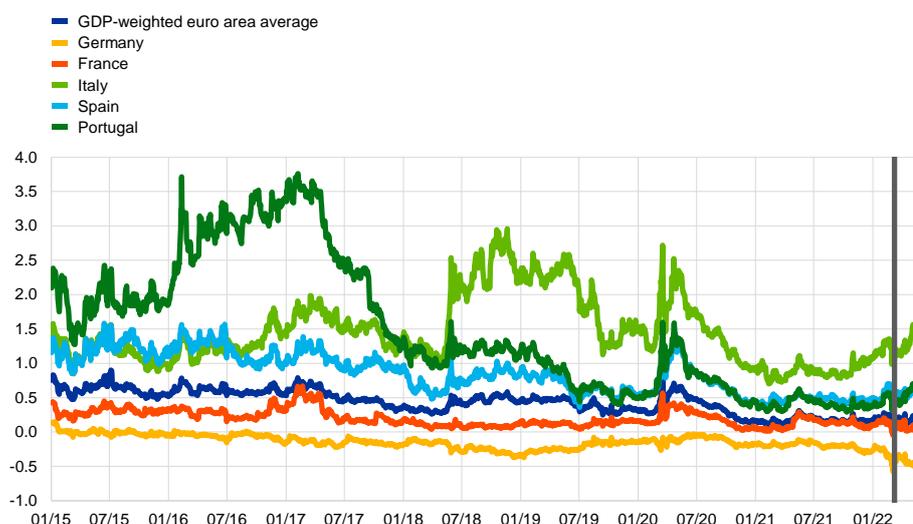
Notes: The vertical grey line denotes the start of the review period on 10 March 2022. The latest observations are for 8 June 2022.

**Overall, euro area sovereign bond yields increased in lockstep with risk-free rates, although spreads widened somewhat across countries (Chart 17).** The ten-year GDP-weighted euro area sovereign spread over the OIS rate remained stable during the review period, increasing by a modest 9 basis points. A slightly stronger repricing occurred for high-debt countries with, for instance, the Italian and Portuguese ten-year sovereign bond spreads increasing by 44 and 27 basis points respectively over the review period, while the German ten-year Bund spread became more negative by 2 basis points.

### Chart 17

#### Ten-year euro area sovereign bond spreads vis-à-vis the ten-year €STR OIS rate

(percentages per annum)



Sources: Refinitiv and ECB calculations.

Notes: The vertical grey line denotes the start of the review period on 10 March 2022. The latest observations are for 8 June 2022.

**In the first half of the review period, corporate bond spreads declined on the back of improved risk sentiment but increased thereafter amid growing downside risks to the economic outlook and higher risk-free rates.** After an initially strong decline on the back of improved risk sentiment, corporate bond spreads in the euro area increased markedly following the April meeting of the ECB’s Governing Council, with signs of an increasing differentiation between investment-grade and high-yield bonds. Over the review period, spreads on investment-grade non-financial corporate bonds fell by 2 basis points to 67 basis points, while spreads on financial corporate bonds fell by 5 basis points. As a result, spreads are close to their pre-pandemic averages and, at the moment, appear resilient in the face of the expected normalisation of monetary policy.

**European equity markets, buoyed by improved sentiment, recovered at first from war-induced losses, before declining in the second half of the review period amid downside risks to the economic outlook, lower earnings expectations and higher risk-free rates (Chart 18).** Following a decline related to the Russian invasion of Ukraine, European equity markets initially recovered on the back of stronger risk sentiment thanks to signs that the impact of the conflict might be contained and a surprisingly strong earnings season for the first quarter of the year. In the second part of the reporting period, however, equity prices declined somewhat on account of a more pessimistic economic outlook as new lockdown measures in China added to the uncertainty. As a result, longer-term earnings growth expectations started to decline, albeit from elevated levels. Over the review period, equity prices of euro area non-financial corporations (NFCs) and banks increased by 4.1% and 7.1% respectively, despite significantly higher risk-free rates. In the United States, the sell-off of risky assets on the back of growing fears of a recession led to overall declines of 3.7% and 7.5% in the equity prices of NFCs and banks respectively.

**Chart 18**  
Euro area and US equity price indices

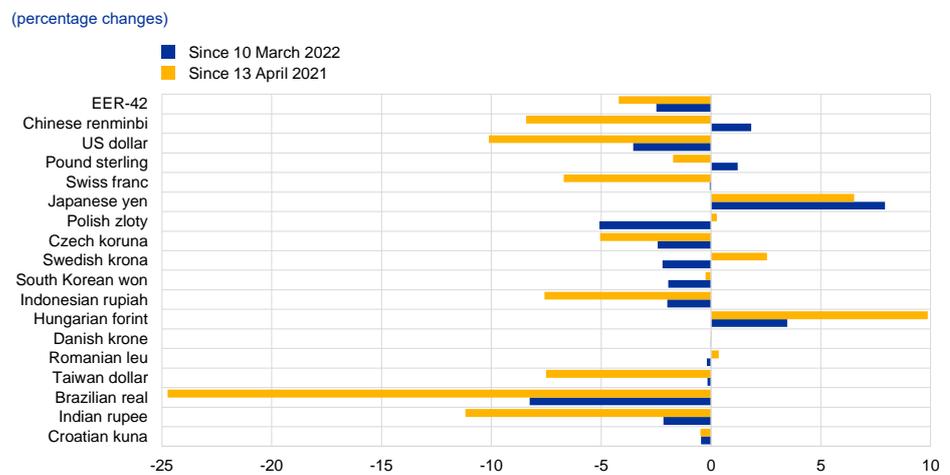


Sources: Refinitiv and ECB calculations.  
Notes: The vertical grey line denotes the start of the review period on 10 March 2022. The latest observations are for 8 June 2022.

**In foreign exchange markets, the euro continued to depreciate against the US dollar and in trade-weighted terms, amid otherwise mixed bilateral exchange rate developments (Chart 19).** Over the review period the nominal effective exchange rate of the euro, as measured against the currencies of 42 of the euro area’s most important trading partners, weakened by 2.5%. This reflected a depreciation of the euro against the US dollar (by 3.5%), amid expectations of a faster pace of monetary tightening by the Federal Reserve System. The euro also depreciated against the currencies of a number of emerging market economies but, at the same time, appreciated against the Japanese yen (by 7.9%), the pound sterling (by 1.2%) and the Chinese renminbi (by 1.8%).

**Chart 19**

Changes in the exchange rate of the euro vis-à-vis selected currencies



Source: ECB.

Notes: EER-42 is the nominal effective exchange rate of the euro against the currencies of 42 of the euro area’s most important trading partners. A positive (negative) change corresponds to an appreciation (depreciation) of the euro. All changes have been calculated using the foreign exchange rates prevailing on 8 June 2022.

## 5 Financing conditions and credit developments

*Bank funding and lending conditions continued to tighten in April and May, in the context of increased uncertainty regarding the economic outlook and firming expectations of normalisation of monetary policy. Bank lending rates for firms and households have started to reflect the overall increases in risk-free market rates. Over the review period the cost of market-based debt financing for firms increased substantially, while the cost of equity declined. Lending to firms and households remains robust. However, survey-based data show that firms of all sizes perceive that financing conditions have deteriorated. Money creation has continued to normalise, as the pace of deposit accumulation by firms and households has decreased further from the high levels recorded during the pandemic.*

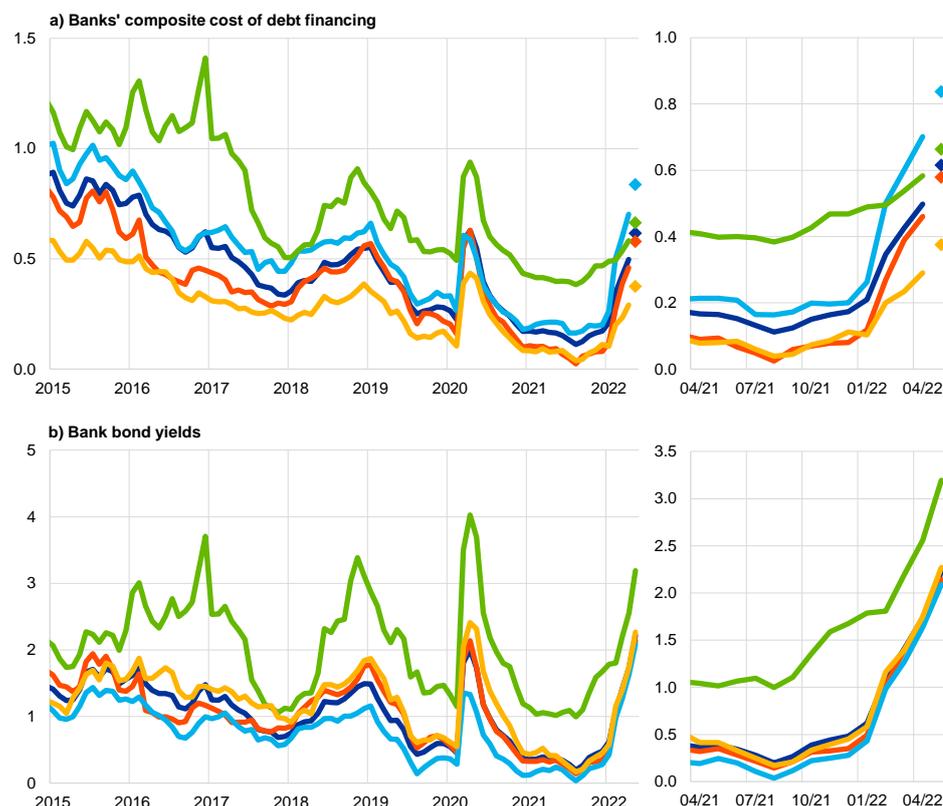
**The funding costs of euro area banks have continued to rise amid firming expectations of monetary policy normalisation.** In May, as shown by the nowcast, the composite cost of euro area banks' debt financing continued the upward trend that started in August 2021 (Chart 20, panel a). This was mainly attributable to rising yields on bank bonds (Chart 20, panel b) and these, in turn, reflected the increase in risk-free rates. Such upward pressure on overall bank funding costs has so far been contained by two factors. First, rates on deposits, which account for a large share of euro area banks' funding, have remained stable and close to their historical lows. Second, targeted longer-term refinancing operations (TLTROs) have provided banks with liquidity at favourable conditions. Nonetheless, this cushioning effect is likely to wane in the coming quarters as deposit rates are expected to increasingly reflect the increase in market rates and TLTROs are repaid.

## Chart 20

### Composite bank funding rates in selected euro area countries

(annual percentages)

■ Euro area  
■ Germany  
■ France  
■ Italy  
■ Spain



Sources: ECB, IHS Markit iBoxx indices and ECB calculations.

Notes: Composite bank funding rates are a weighted average of the composite cost of deposits and unsecured market-based debt financing. The composite cost of deposits is calculated as an average of new business rates on overnight deposits, deposits with an agreed maturity and deposits redeemable at notice, weighted by their respective outstanding amounts. Bank bond yields are monthly averages for senior-tranche bonds. The diamonds indicate nowcasts for banks' composite cost of debt financing in May 2022, assuming that the composite cost of deposits and the respective outstanding amounts used as weights remained unchanged at their April 2022 level. The latest observations are for 31 May 2022 for bank bond yields and April 2022 for the composite cost of deposits.

### Bank lending rates for firms and households have started to reflect the increases seen in risk-free market rates, but remain at low levels (Chart 21).

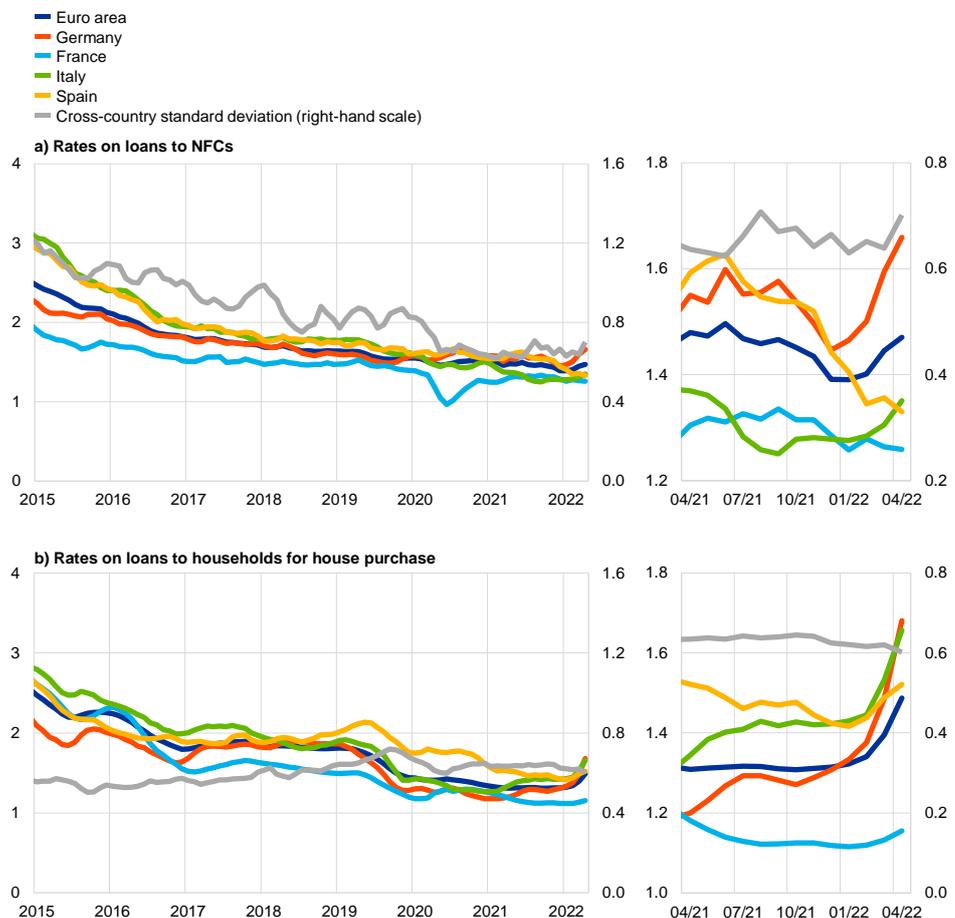
The recent sharp increase in euro area government bond yields has started to pass through to lending rates, although financing conditions for firms and households remain favourable and dispersion of lending rates is contained, as measured by the cross-country standard deviation (Chart 21). In April the composite bank lending rate for loans to households for house purchase increased sharply by 14 basis points, to stand at 1.61%, while the equivalent rate for loans to non-financial corporations (NFCs) increased marginally to 1.51%. The spread between bank lending rates on very small loans and large loans increased considerably, reaching pre-pandemic levels. The increase in mortgage rates was broadly based across the larger euro area countries. Banks are also tightening their credit standards on loans to firms and households, which signals a forthcoming contraction in credit supply that may coincide with higher lending rates in the coming months. After a long period during

which these remained compressed, loan-deposit margins on new business, defined as the difference between average interest rates on loans and average interest rates on deposits, have significantly increased. While the margins on outstanding amounts have still continued to decline, as loans tend to have longer durations than deposits and therefore take longer to reprice, over time the higher interest rate environment and a lower level of non-performing loans are expected to support bank profitability, provided that the economic outlook remains robust enough to avoid higher credit risk.<sup>2</sup>

### Chart 21

#### Composite bank lending rates for NFCs and households in selected countries

(annual percentages, three-month moving averages; standard deviation)



Source: ECB.

Notes: Composite bank lending rates are calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observations are for April 2022.

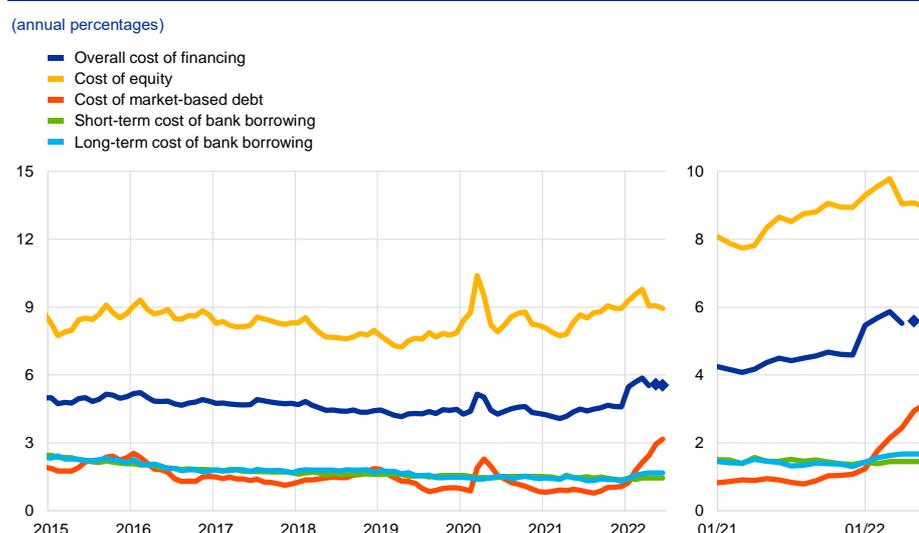
**Over the period 10 March to 8 June 2022 the cost of market-based debt issuance for firms increased substantially, while the cost of equity financing for NFCs recorded a decline.** The increase in the cost of market-based debt is accounted for by a significant increase in the risk-free rates, while corporate bond spreads declined marginally. The decline in the cost of equity can be attributed to a

<sup>2</sup> See the ECB's [Financial Stability Review](#), May 2022.

decline in the equity risk premium, as the uncertainty priced into equity markets fell notwithstanding the deterioration in long-term earnings growth expectations (see Section 4). The increase in the discount rate pushed the cost of equity upwards, but was not sufficient to compensate for the dampening impact of the decline in the equity risk premium. Assuming that the cost of bank borrowing has remained unchanged at the level recorded in April, the overall cost of external financing is estimated to have declined to 5.6% on 8 June 2022, down from 5.9% on 10 March (Chart 22). Since the beginning of 2022 the overall cost of financing has however recorded significantly higher values relative to the levels seen in 2020 and 2021.

### Chart 22

#### Nominal cost of external financing for euro area NFCs, broken down by components



Sources: ECB and ECB estimates, Eurostat, Dealogic, Merrill Lynch, Bloomberg and Thomson Reuters.

Notes: The overall cost of financing for NFCs is calculated as a weighted average of the cost of borrowing from banks, market-based debt and equity, based on their respective outstanding amounts. The dark blue diamonds indicate the nowcast for the overall cost of financing in May and June 2022 (including data up to 8 June 2022), assuming that the cost of borrowing from banks remains unchanged at the level recorded in April 2022. The latest observations are for 8 June 2022 for the cost of market-based debt (monthly average of daily data), 3 June 2022 for the cost of equity (weekly data) and April 2022 for the cost of borrowing from banks (monthly data).

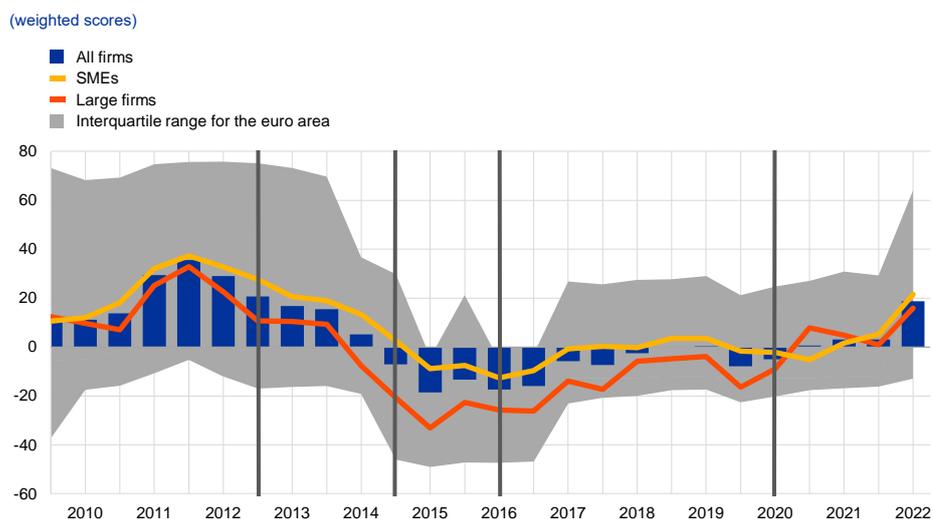
### Firms also signalled a tightening of financing conditions in the April 2022

**Survey on the Access to Finance of Enterprises (SAFE).** A significantly higher percentage of firms reported increases in bank interest rates (34% of firms, up from 5% in the previous survey round), with similar developments across firm sizes and countries. At the same time, the net percentage of firms signalling increases in other costs of financing (i.e. charges, fees and commissions) continued to increase (reaching 37% from 29%) and stricter collateral requirements were also reported. Euro area firms regarded the macroeconomic environment as having adversely affected the availability of external financing (-29% in net terms, from 8%) and perceived that banks' willingness to provide credit had still improved, but to a lesser extent than in the previous survey round. A synthetic indicator of how firms perceive the financing conditions that they face corroborates a deterioration across all firm size classes: about 20% of both large firms and small and medium-sized enterprises (SMEs) signalled a deterioration in the indicator, taking account of firms'

characteristics and the willingness of banks to provide credit (Chart 23).<sup>3</sup> Such elevated percentages have not been seen since mid-2014 and are consistent with available information from the banking sector.

### Chart 23

#### Financing conditions as perceived by euro area firms



Source: ECB Survey on the Access to Finance of Enterprises.

Notes: The indicator is obtained by factor analysis. Positive values indicate a deterioration in firms' financing conditions. For details, see the box entitled "Financing conditions through the lens of euro area companies", *Economic Bulletin*, Issue 8, ECB, 2021. The individual scores are weighted by firm size class, economic activity and country to reflect the economic structure of the underlying population of firms. The individual scores are standardised, so they have a range of between -1 and 1 and are multiplied by 100 to obtain weighted balances in percentages. The first vertical grey line denotes the announcement of the Outright Monetary Transactions; the second vertical grey line denotes the start of the first series of targeted longer-term refinancing operations (TLTRO I) and the ECB's negative interest rate policy; the third vertical grey line denotes the start of TLTRO II and the corporate sector purchase programme; and the last vertical grey line denotes the start of the pandemic emergency purchase programme and TLTRO III, coinciding with the beginning of the COVID-19 pandemic. The latest observations are for October 2021-March 2022.

**At the same time, euro area firms anticipate a decline in their access to external financing, especially financing from banks.** In particular, firms anticipate a deterioration in their access to bank loans and credit lines (-15% and -10% respectively) in the period April-September 2022. The expectation of a deterioration was common to most countries and firm size classes. In this survey round, a significant net percentage of euro area firms reported that changes in the general economic outlook had had a negative impact on their access to finance (in net terms, -29%, down from 8%), with a similar negative impact across SMEs and large firms, although the availability of external funds had still continued to improve, albeit at a slower pace. Overall, small improvements in firms' access to external funds had broadly compensated for the moderate increases in their financing needs, so the external financing gap – the difference between the change in demand for external financing and the change in its supply – reached 1% (up from -4% in the previous round).

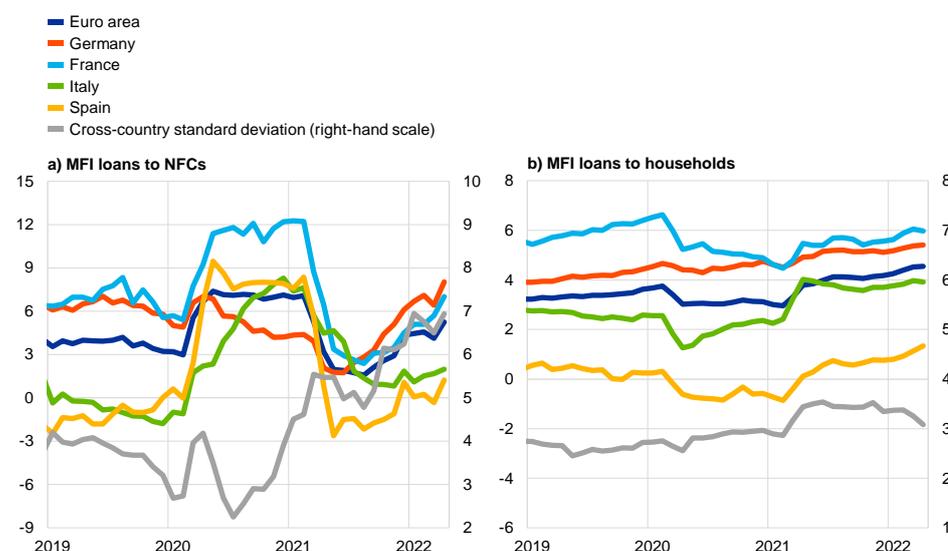
<sup>3</sup> The indicator is one of the three principal components derived from a factor analysis using firm-level survey replies since 2009 and is interpreted as relating to price terms and conditions on loans, the other two components being related to the financial positions of firms (in terms of profits and turnover) and to non-price terms and conditions (collateral requirements and other guarantees). For a detailed description of the indicator, see the box entitled "Financing conditions through the lens of euro area companies", *Economic Bulletin*, Issue 8, ECB, 2021.

**The annual growth of loans to NFCs and to households remained robust in April 2022.** The annual growth rate of loans to NFCs accelerated to 5.2% in April, after standing at 4.1% in March and 4.6% in February (Chart 24, panel a). The recent increase in lending to firms largely reflects a base effect. Shorter-term loans made a strong contribution, given the persistence of supply chain bottlenecks and higher input costs, both of which contribute to higher working capital needs of firms. Conversely, longer-term loans made a smaller contribution, as the prevailing uncertainty is weighing on firms' need to finance fixed investment. The annual growth rate of loans to households remained unchanged at 4.5% in April (Chart 24, panel b), supported by robust lending for house purchase, while consumer loans held up despite falling consumer confidence. As indicated by the ECB's [Consumer Expectations Survey](#), this could be related to households' expectations of tighter access to credit and higher nominal borrowing costs next year. Aggregate developments at the euro area level mask increasing differences across countries, reflecting, among other things, the uneven impact of the pandemic and the fact that countries have made differing amounts of progress in terms of their economic recoveries.<sup>4</sup>

### Chart 24

#### MFI loans in selected euro area countries

(annual percentage changes; standard deviation)



Source: ECB.

Notes: Loans from monetary financial institutions (MFIs) are adjusted for loan sales and securitisation; in the case of NFCs, loans are also adjusted for notional cash pooling. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observations are for April 2022.

**The total volume of external financing for firms moderated in the first quarter of 2022.** The annual growth rate of external financing decreased from 2.9% in January to 2.5% in March, despite greater firm financing needs and the still low cost of debt financing. The moderation was most notable in the first two months of the year, following the high flows at the end of 2021 (Chart 25). In March external

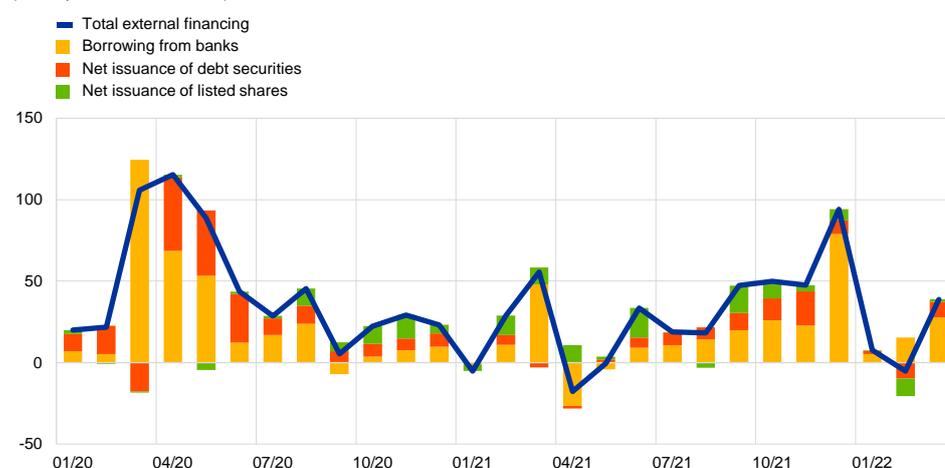
<sup>4</sup> See the box entitled “[The heterogeneous economic impact of the pandemic across euro area countries](#)”, *Economic Bulletin*, Issue 5, ECB, 2021.

financing flows were supported by higher volumes of bank loans to firms, amid higher input costs, and by working capital spending, which was related to persistent supply bottlenecks. In addition, while net issuance of debt securities recovered towards the end of the quarter, the increase in the relative cost of market-based debt financing has induced firms to substitute debt securities issuance with bank borrowing. The issuance of listed shares was subdued in the first quarter, dampened by unusually large share buybacks and the higher cost of equity financing relative to other financing instruments.

### Chart 25

#### Net external financing flows for euro area NFCs

(monthly flows in EUR billions)



Sources: ECB, Eurostat, Dealogic and ECB calculations.

Notes: Net external financing is the sum of borrowing from banks (MFI loans), net issuance of debt securities and net issuance of listed shares. MFI loans are adjusted for loan sales, securitisation and cash-pooling activities. The latest observations are for March 2022.

#### The pace of deposit accumulation by firms and households has decreased further from the high levels seen during the pandemic (Chart 26).

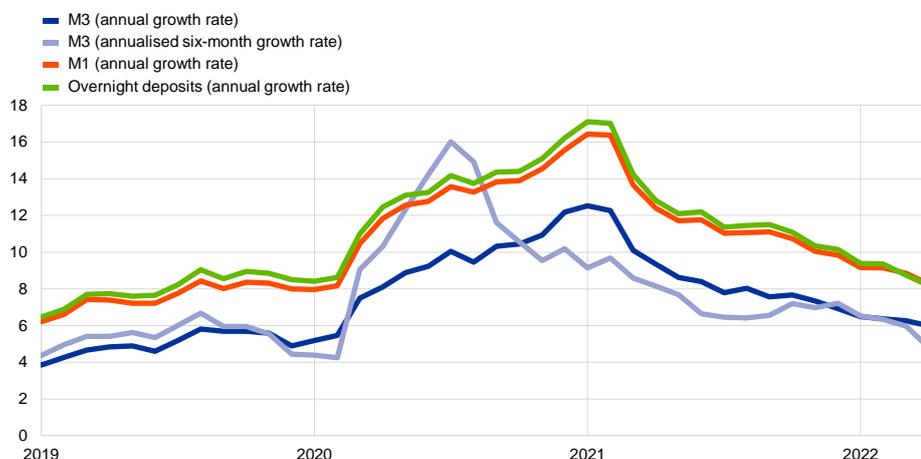
In April the annual growth rate of overnight deposits continued to moderate, standing at 8.2%, down from 8.7% in March. The slowdown was observed for the overnight deposits of both firms and households, as higher costs for food and energy have reduced firms' cash buffers and limited the capacity of households to accumulate savings. At the same time, higher uncertainty related to the economic impact of the war in Ukraine is still affecting deposit dynamics. As highlighted by the outbreak of the pandemic, firms and households respond to higher uncertainty with a change in their liquidity preferences, implying sizeable inflows into overnight deposits.<sup>5</sup> Growth in the deposit holdings of firms and households continues to vary across countries, reflecting differences in their liquidity needs and national fiscal support measures.

<sup>5</sup> See the box entitled "COVID-19 and the increase in household savings: an update", *Economic Bulletin*, Issue 5, ECB, 2021.

## Chart 26

### M3, M1 and overnight deposits

(annual growth rate; annualised six-month growth rate; adjusted for seasonal and calendar effects)



Source: ECB.

Note: The latest observations are for April 2022.

#### **Broad money (M3) growth continued to move back towards its long-term**

**average.** In April the annual growth rate of M3 declined to 6.0%, down from 6.3% in March, thus bringing the (six-month annualised) growth rate below its long-term average for the first time since the outbreak of the pandemic (Chart 26). On the components side, the main driver of M3 growth continued to be the narrow aggregate M1, reflecting strong growth in overnight deposits. On the counterparts side, credit to the private sector continued to make the largest contribution to annual M3 growth, as the contributions of other components dwindled. The contribution of the Eurosystem's net purchases of government securities under the asset purchase programme and the pandemic emergency purchase programme has been declining as purchases under these programmes are gradually being phased out. At the same time, money creation is being dampened by higher net monetary outflows to the rest of the world, largely reflecting the negative impact of higher energy prices on the euro area trade balance.

## 6 Fiscal developments

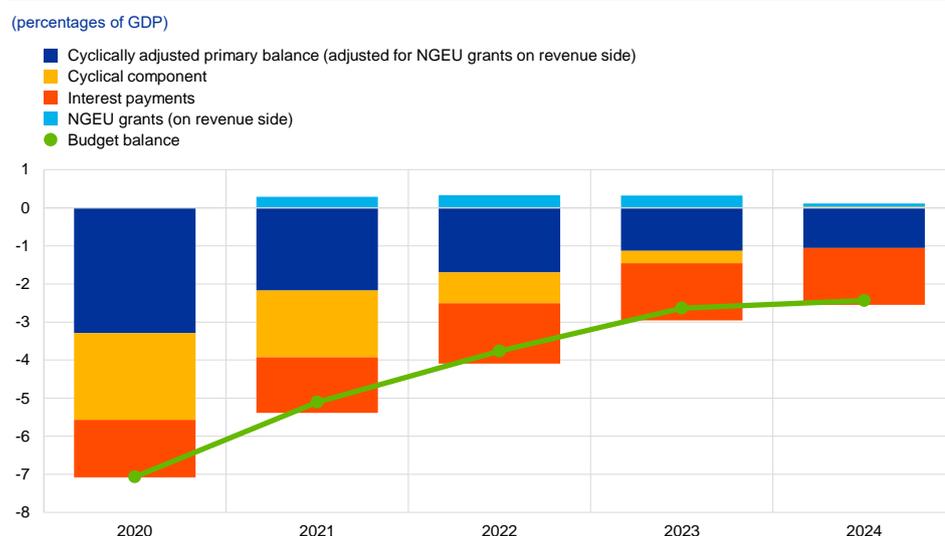
*The euro area budget balance is projected to improve steadily in the period up to 2024, although by significantly less than foreseen in the March 2022 ECB staff macroeconomic projections and despite a better than expected outcome in 2021. The more adverse outlook is related to a worsening of the economic cycle, increased expected interest payments and additional discretionary government spending. Fiscal support measures have been aimed in particular at countering the rising cost of living for consumers, but also at financing defence capacities and supporting refugees from Russia's war in Ukraine. Nonetheless, according to the June 2022 Eurosystem staff macroeconomic projections, the euro area government budget deficit is expected to continue falling – from 5.1% of GDP in 2021 to 3.8% in 2022 and further to 2.4% by the end of the forecast horizon. After the strong loosening during the coronavirus (COVID-19) crisis in 2020, the fiscal stance tightened last year and is projected to continue to tighten gradually in 2022 and 2023. The projected slight tightening in 2022 is mainly due to the reversal of a significant part of the COVID-19 pandemic emergency support, which will be only partially compensated by additional stimulus measures in response to the energy price shock and other spending related to the Russia-Ukraine war. The fiscal tightening is projected to be somewhat stronger in 2023, when many of the recent support measures compensating for the impact of high energy prices are projected to expire. In 2024 a more neutral stance is expected, although significant fiscal support to the economy is projected to remain in place compared to the pre-pandemic period. In a context of heightened uncertainty and downside risks to the economic outlook in the light of the war in Ukraine, as well as energy price increases and continued supply chain disturbances, the European Commission recommended on 23 May 2022 the extension of the general escape clause of the Stability and Growth Pact (SGP) to the end of 2023. This would allow fiscal policies to adjust to changing circumstances if necessary. At the same time, with fiscal imbalances still exceeding their pre-pandemic levels and inflation exceptionally high, fiscal policy needs to be increasingly selective and targeted in order not to add to medium-term inflationary pressures, while ensuring fiscal sustainability over the medium term.*

**According to the June 2022 Eurosystem staff macroeconomic projections, the euro area general government budget balance will continue to improve over the forecast horizon.**<sup>6</sup> The general government deficit-to-GDP ratio for the euro area declined to 5.1% of GDP in 2021, after having reached an unprecedented 7.1% in 2020. It is projected to fall further to 3.8% of GDP in 2022 and then to 2.6% and 2.4%, respectively, in 2023 and 2024 (Chart 27). Following economic support measures amounting to around 3.9% of GDP in response to the COVID-19 pandemic in 2020, crisis and recovery support in the euro area is estimated to have increased to about 4.2% of GDP in 2021. This reflects the fact that governments prolonged and gradually expanded the scale of pandemic emergency measures and/or adopted new measures to support the recovery, including measures set out in their national recovery and resilience plans under the Next Generation EU (NGEU)

<sup>6</sup> See “Eurosystem staff macroeconomic projections for the euro area, June 2022”, published on the ECB's website on 9 June 2021.

package.<sup>7</sup> The large negative cyclical component, which contributed to the large increase in the government deficit in 2020, was moderately smaller in 2021. From 2022 onwards, the continued improvement in the budget balance is projected to be driven primarily by the economic cycle but also by a higher cyclically adjusted primary balance, as a large share of the emergency measures have started to expire and new measures are less sizeable. Over the whole forecast horizon, interest payments are now expected to contribute significantly more to the budget balance than previously expected. However, interest payments as a ratio of GDP will still be broadly in line with what has been observed between 2019 and 2021. This reflects the fact that, although interest rates on new issuances of sovereign debt have risen significantly, these are close to the average rate of interest paid on the existing stock of debt.

**Chart 27**  
Budget balance and its components



Sources: ECB and June 2022 Eurosystem staff macroeconomic projections.  
Note: The data refer to the aggregate general government sector of euro area countries.

**The euro area fiscal stance tightened significantly in 2021, but should do so to a lesser extent in 2022 as governments adopt measures in response to the effects of the Russia-Ukraine war.<sup>8</sup>** The tightening of the fiscal stance adjusted for NGEU grants in 2021 largely reflects non-discretionary factors, whereas discretionary fiscal measures remained supportive for the economy. In 2022 the fiscal stance is projected to tighten slightly, mainly owing to a continued withdrawal of a significant part of the pandemic emergency support, which will be only partly

<sup>7</sup> NGEU grants amount to around 0.5% of GDP, on average, over the projection horizon, declining gradually after 2023. Together with a limited amount of loans, they are assumed to finance budget spending of 2.7% of GDP. The fiscal developments described in this section do not include the European supranational deficit and debt related to NGEU transfers.

<sup>8</sup> The fiscal stance reflects the direction and size of the stimulus from fiscal policies to the economy beyond the automatic reaction of public finances to the business cycle. It is measured here as the change in the cyclically adjusted primary balance ratio net of government support to the financial sector. Given that the higher budget revenues related to NGEU grants from the EU budget do not have a contractionary impact on demand, the cyclically adjusted primary balance is in this context adjusted to exclude those revenues. For more details on the concept of the euro area fiscal stance, see the article entitled “The euro area fiscal stance”, *Economic Bulletin*, Issue 4, ECB, 2016.

compensated by additional expansionary measures. These measures are aimed at countering the rising cost of living for consumers, but also at financing defence capacity and supporting refugees from the war in Ukraine. The fiscal tightening is projected to continue in 2023 when most of these measures are expected to have expired. At the end of the forecast horizon, a broadly neutral stance is expected, although significant support to the economy will remain in place.<sup>9</sup>

**Despite the better than expected outcome in 2021, the euro area budget balance has been revised downwards over the whole forecast horizon.**

Compared with the March 2022 ECB staff macroeconomic projections, the euro area budget balance-to-GDP ratio in 2021 was 0.4 percentage points higher than expected, mainly on account of better than projected revenues. Despite this positive base effect, the budget balance has been revised down by 0.7, 0.5 and 0.4 percentage points per annum in 2022, 2023 and 2024 respectively. Cumulatively over the forecast horizon, these downward revisions are mainly due to a deterioration in the cyclical component and significantly higher interest payments, but additional discretionary stimulus measures also contribute to a downward revision of the primary balance by 0.3 percentage points in 2022.<sup>10</sup>

**Following a large increase in 2020, the euro area government debt-to-GDP ratio fell slightly in 2021 and is expected to shrink slowly to just below 90% by 2024, well above its pre-crisis level.**

After the debt ratio increased by about 13 percentage points to 97% in 2020, a falling but still high primary deficit in 2021 is estimated to have been more than offset by a significant debt-reducing contribution from a favourable interest rate-growth differential. Throughout the period 2022-24, the debt ratio is projected to continue declining slowly but steadily as debt-increasing primary deficits are outweighed by still favourable contributions from interest rate-growth differentials and, to a limited extent in the first two years, from deficit-debt adjustments (Chart 28). At the end of the projection horizon in 2024, the debt-to-GDP ratio is expected to stabilise at just below 90%, i.e. 12 percentage points above its pre-crisis level in 2019.

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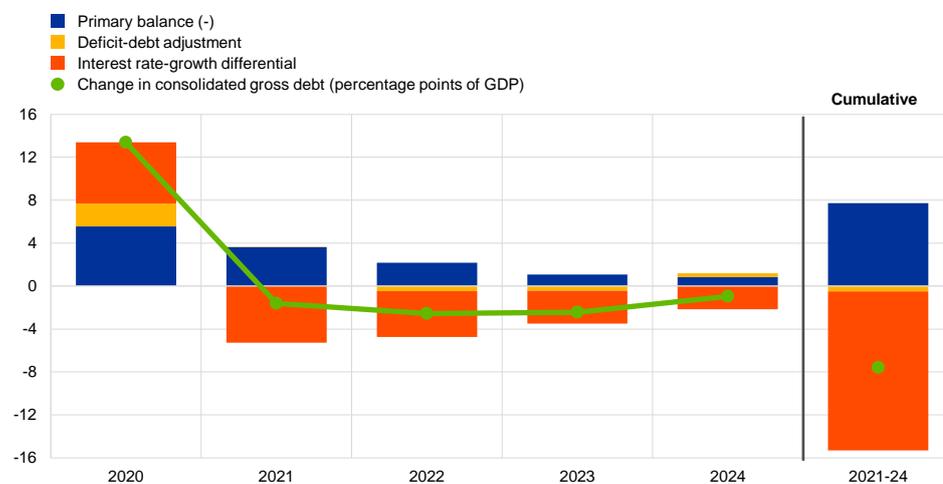
<sup>9</sup> The euro area aggregate fiscal stance was -4.0 percentage points of GDP in 2020 and is estimated to have been +1.0 percentage points of GDP in 2021. It is projected to stand at +0.2, +0.6 and +0.1 percentage points of GDP in 2022, 2023 and 2024 respectively, after adjustment for revenues related to NGEU grants. Compared to the March 2022 projections, it has been revised down by 0.8 percentage points for 2022 and up by 0.3 percentage points for 2023.

<sup>10</sup> Additional government support to compensate for higher energy prices and other spending in response to the war in Ukraine is estimated to amount to 0.9% of GDP in 2022.

## Chart 28

### Drivers of change in euro area government debt

(percentages of GDP, unless otherwise indicated)



Sources: ECB and June 2022 Eurosystem staff macroeconomic projections.

Note: The data refer to the aggregate general government sector of euro area countries.

### The baseline fiscal assumptions and projections continue to be surrounded by high uncertainty, mainly related to the war in Ukraine.

In terms of fiscal assumptions, risks to the current baseline are tilted towards additional fiscal stimulus in the near term. Such risks are assessed as being concentrated in 2022 and relate to further compensatory energy measures and other spending related to the effects of the war. Risks to fiscal developments over the remainder of the forecast horizon are assessed as broadly balanced.

### Targeted and temporary budgetary measures protect those people bearing the brunt of higher energy prices while limiting the risk of adding to inflationary pressures.

In a context of heightened uncertainty and downside risks to the economic outlook in the light of the Russia-Ukraine war, energy price rises and continued supply chain disturbances, on 23 May 2022 the Commission recommended the extension of the SGP's general escape clause to the end of 2023.<sup>11</sup> This would allow fiscal policies to adjust to changing circumstances if necessary. In the medium term, a decisive shift towards a more growth-friendly composition of public finances and structural reforms that raise the growth potential of euro area economies would create additional fiscal room for manoeuvre if needed, while also helping to reduce budgetary imbalances.

<sup>11</sup> See [Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank: 2022 European Semester – Spring Package, COM\(2022\) 600 final](#), European Commission, 23 May 2022.

# Boxes

## 1 The impact of the war in Ukraine on euro area energy markets

Prepared by Jakob Feveile Adolfsen, Friderike Kuik, Eliza Magdalena Lis and Tobias Schuler

**The war in Ukraine has generated a sharp increase in energy prices and significant volatility in energy markets.** Amid fears of disruptions to energy supplies and increasingly strict sanctions on the Russian energy sector, prices have fluctuated, in particular as markets have tried to assess the potential implications for global energy supplies. Given their heavy reliance on Russian supplies before the invasion, euro area energy markets have been especially affected. This box provides an overview of the impact that the war in Ukraine has had on euro area energy markets so far. It outlines Russia's role in the euro area's energy supply and looks at measures that have influenced prices. In this context, it also discusses the implications for euro area energy commodity and consumer prices.

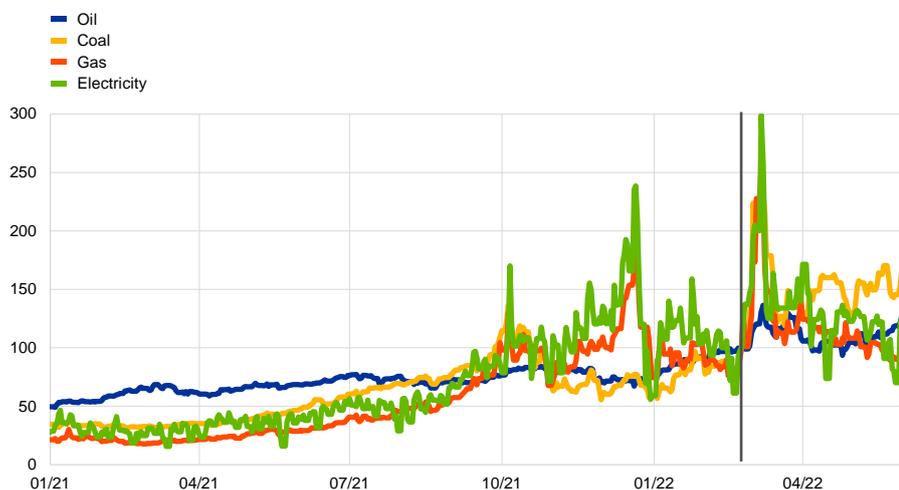
**Oil, coal and gas prices spiked in the immediate aftermath of Russia's invasion of Ukraine and have been volatile ever since.** Energy commodity price volatility began mounting in December 2021 when reports of a potential Russian invasion of Ukraine increased. In the first two weeks after the invasion, the prices of oil, coal and gas went up by around 40%, 130% and 180% respectively (Chart A). Gas prices also drove up wholesale electricity prices in the euro area. Since then energy commodity prices have moderated, with oil and coal prices standing 27% and 50% respectively above their levels before the invasion, while gas prices are 11% lower than before the invasion. Oil prices have recently started to increase again, reflecting the EU's agreement to embargo most Russian oil imports and the higher global demand for oil owing to China's easing of COVID-19 restrictions. Wholesale electricity prices are 8% higher than before the invasion but have remained very volatile, affected in particular by policy measures taken in response to the price increases.

## Chart A

### Energy prices before and after the invasion of Ukraine

#### Energy prices

(index: 23 February 2022 = 100)



Sources: Refinitiv, Bloomberg and ECB staff calculations.

Notes: Oil prices are Brent crude oil prices, gas prices are the Dutch Title Transfer Facility day-ahead prices and coal prices are the nearby Rotterdam Coal Futures prices. Wholesale electricity prices for the euro area were calculated as a weighted average (applying net electricity generation as weights) of prices observed in the five biggest markets. The vertical line marks the start of the Russian invasion of Ukraine. The latest observations are for 7 June 2022.

#### Strains on energy supplies from Russia may affect the euro area via both world market prices and direct supplies.

In 2019 Russia's energy production accounted for 12% of the global supply of oil, 5% of coal and 16% of gas. In 2021 the country was the largest supplier of energy commodities to the euro area, constituting 23% of total energy imports (Chart B, panel a). Russia accounted for 23% and 43% of euro area crude oil and coal imports respectively in 2020, which represented 9% and 2% of the euro area's primary energy consumption. However, the euro area is particularly dependent on natural gas imports from Russia, which in 2020 amounted to 35% of euro area gas imports and represented 11% of the euro area's primary energy consumption (Chart B, panel b).<sup>1</sup> Germany and Italy have the highest dependence on Russian gas among the large euro area countries. The degree of substitutability of these energy sources is relevant to any analysis of the economic implications of the war for energy prices and euro area supplies.

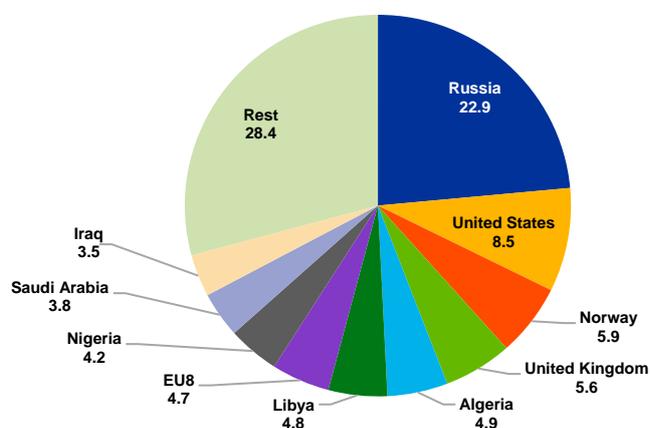
<sup>1</sup> Natural gas is the second most important primary energy resource in the euro area, after petroleum-based products (see the box entitled "Natural gas dependence and risks to euro area activity", *Economic Bulletin*, Issue 1, ECB, 2022).

## Chart B

### Russia's share in euro area energy and gas imports

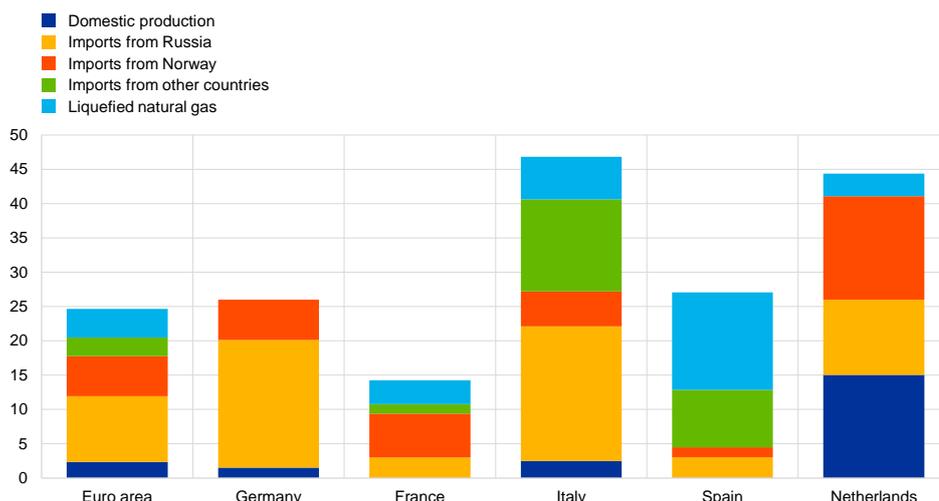
#### a) Energy imports by source country

(percentages)



#### b) Share of gas imports in primary energy consumption\*

(percentages)



Sources: Eurostat and ECB calculations.

Notes: Imports from other countries include imports from Algeria, Libya and Azerbaijan. EU8 refers to the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovenia and Slovakia. Liquefied natural gas excludes imports from Russia, Norway and other countries. \*adjusted for re-exports. The latest observations are for 2021 for panel a) and 2020 for panel b).

### The European Union introduced economic sanctions targeting the Russian energy industry, most notably the coal and oil sectors.

The sanctions also include a ban on EU exports of goods and cutting-edge technology used to develop the Russian oil and gas sectors. Moreover, the EU has prohibited the import of Russian coal as of August 2022. At the special meeting of the European Council at the end of May, it was decided to stop most Russian oil imports. The agreements foresee a ban on all seaborne oil shipments from Russia by the end of the year, with a temporary exemption for crude oil delivered via pipeline. While seaborne oil accounts for around two-thirds of total imports of oil from Russia, the embargo is expected to effectively encompass around 90% of oil imports from Russia, as

Germany and Poland are reported to have pledged to stop importing pipeline oil.<sup>2</sup> Immediately after Russia's invasion of Ukraine, European companies started "self-sanctioning"; energy, shipping and insurance companies cut ties with the Russian energy sector, leading to a 23% drop in shipments of Russian oil to Europe in March. Russia has been able to redirect oil exports to other destinations such as India, but signs of significant, persistent reductions in Russian oil production are emerging, with the Russian oil supply projected to fall by 25% in the second half of 2022 relative to the beginning of the year (Chart C, panel a).<sup>3</sup> Continued low Russian production levels are pointing to increased tightness in the global oil market, unless other main producers speed up production.<sup>4</sup> This would result in downward revisions to global oil supply forecasts for the rest of the year of around 3% since the start of the invasion (Chart C, panel b).

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<sup>2</sup> After the invasion of Ukraine, the United States, the United Kingdom and Canada banned all imports of oil and gas from Russia. However, the EU is a significantly larger importer of Russian energy and its sanctions will have a greater effect on the Russian energy sector.

<sup>3</sup> Production of crude oil dropped by around 1 million barrels per day to 10 million barrels per day in April.

<sup>4</sup> On 2 June the OPEC+ group of oil-producing countries decided to accelerate oil production in July and August by almost 0.65 million barrels per day, up from planned increases of around 0.4 million barrels per day. This production increase is not large enough to compensate fully for Russian supply shortfalls.

## Chart C

### Downward revisions to oil supply forecasts

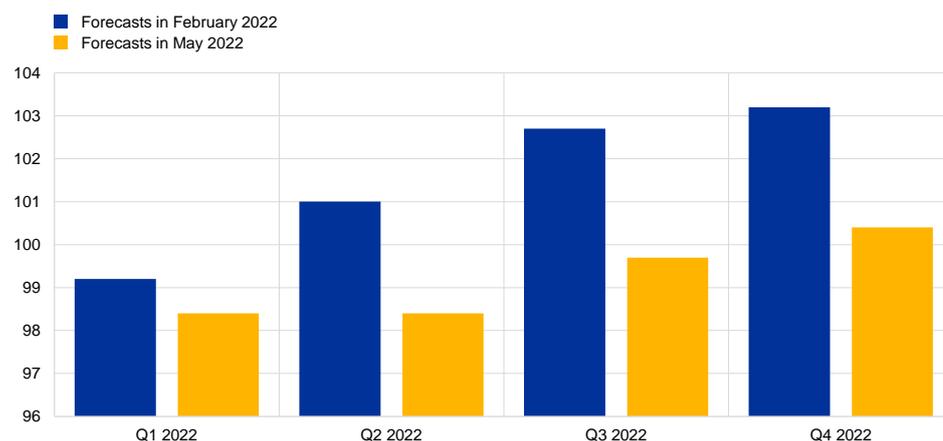
#### a) Russian oil supply

(million barrels per day)



#### b) Global oil supply

(million barrels per day)



Source: International Energy Agency (IEA).  
Note: Estimates are from the IEA's monthly Oil Market Reports.

**The EU has taken steps towards independence from Russian gas.** While the EU's sanctions targeting Russian gas exports have been limited, the launch of the recently constructed Nord Stream 2 gas pipeline between Russia and Germany has been put off. The war in Ukraine appears to have had a relatively low impact on flows of Russian gas into the euro area thus far, but there are signs of higher risks to the euro area's gas supply. The EU therefore aims to reduce dependence on Russian gas by nearly two-thirds by the end of 2022 (the "REPowerEU" plan<sup>5</sup>). It intends to substitute around one-third of Russian gas by stepping up liquefied natural gas imports from other suppliers such as the United States and Qatar. Another 6% of gas should come by pipeline from countries such as Norway. Compared with oil and coal, gas is the source of energy that is most difficult for some euro area countries to substitute, as the infrastructure required to access other suppliers is not yet in place. Countries such as Germany and Italy have therefore been working on establishing

<sup>5</sup> The intention is for the EU to become completely independent of Russian fossil fuels well before 2030 by following a set of initiatives such as diversifying fossil fuel supplies, saving energy, expediting the roll-out of renewable energy and replacing fossil fuels in heating and power generation.

the necessary infrastructure by expanding regasification capacity, and have also secured gas deals with other substitute suppliers.<sup>6</sup> The efforts of EU countries to substitute Russian gas, combined with low demand owing to mild weather conditions, led to a sharp increase in European gas inventories, which helped to reduce prices. As an act of retaliation, through April and May 2022 Russia stopped delivering gas to Poland, Bulgaria, Finland, Denmark and the Netherlands, as they refused to comply with Russia's demands for payments for gas deliveries to be made in roubles. In May 2022 Russia imposed sanctions on the Polish part of the Yamal-Europe pipeline, which transports gas to Germany, as well as on a German Gazprom unit, which the country's energy network regulator took control of in April.

**Other factors have also helped to rein in energy commodity prices somewhat.**

To mitigate the high risks that the war in Ukraine is posing to the global energy supply, the International Energy Agency (IEA) has announced plans for the largest releases of strategic oil reserves in its history.<sup>7</sup> Furthermore, China's reintroduction of COVID-19 lockdowns at the start of 2022 initially put downward pressure on energy demand. However, more recently COVID-19 infection rates in the country have fallen significantly, and there are signs that economic activity improved in May, with global demand for oil increasing again.

**Higher energy commodity prices intensified the pressure on consumer energy prices in February and March 2022.** HICP energy inflation rose to 32% in February and further to 44% in March, before dropping somewhat to 38% in April and 39% in May (Chart D, panel a).<sup>8</sup> The increases up to March reflected the strong month-on-month rise in all main energy components (liquid fuels, electricity and gas) on the back of the upsurge in global commodity markets and rising refining margins.<sup>9</sup>

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<sup>6</sup> Since Russia's invasion of Ukraine, a small fraction of gas imports has been substituted by increased imports from other suppliers such as Norway. Germany has reduced its gas imports from Russia, down from 55% to 45%, and aims to become almost independent by 2024. Italy has announced it will phase out Russian imports completely by the end of 2024, buying from other suppliers such as Algeria. Estonia, Latvia and Lithuania have also stopped importing Russian gas as part of European efforts to curb reliance on Russian energy.

<sup>7</sup> In March the IEA announced a strategic release of 60 million barrels in total from their reserves, with the United States supplying 50% of the release. This was followed by a second announcement in April that 1.3 million barrels per day would be released over six months, with 1 million barrels per day coming from the United States.

<sup>8</sup> The contribution of liquid fuels, electricity and gas was 22, 12 and 10 percentage points respectively in March and 17, 9 and 10 percentage points in April.

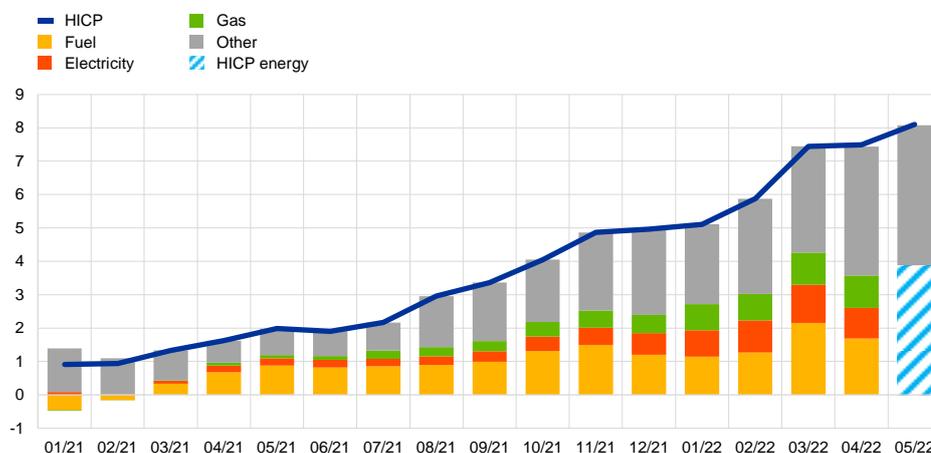
<sup>9</sup> Wholesale electricity prices in Europe are strongly influenced by the price of natural gas, with gas-fired electricity generation often being the marginal technology that sets wholesale electricity prices. See also the article entitled "[Energy price developments in and out of the COVID-19 pandemic – from commodity prices to consumer prices](#)" in this issue of the Economic Bulletin.

## Chart D

### Rising HICP energy inflation curbed by government tax measures

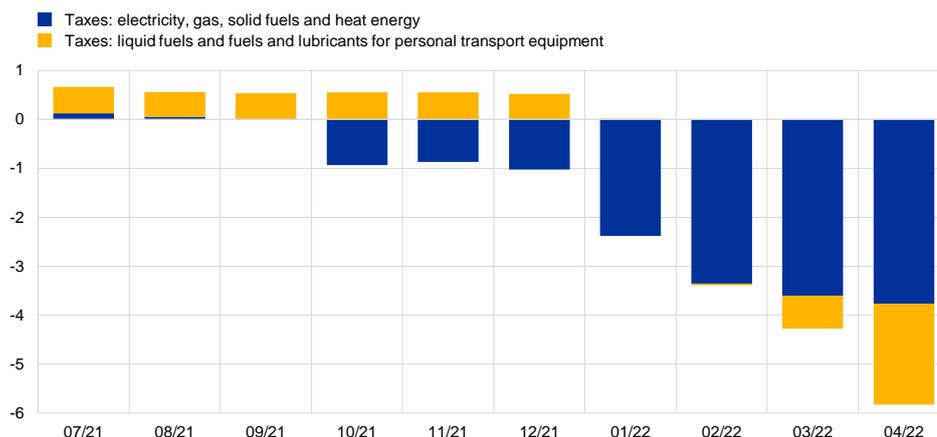
#### a) Contribution of HICP energy components to overall developments in the HICP

(percentages; percentage point contributions)



#### b) Contribution of tax measures to reducing HICP energy inflation

(percentage points)



Sources: Eurostat and ECB calculations.

Notes: The impact of changes in indirect taxes is calculated as the difference between HICP energy inflation and HICP energy inflation at constant tax rates, assuming full and immediate pass-through of indirect taxes. The latest observations are for May 2022 for HICP energy inflation and fuel, and April 2022 for all other items.

**HICP energy inflation remained high in April and May 2022, although pressures eased owing not only to the aforementioned developments in energy commodity prices, but also to governments' mitigation measures.** Many euro area governments have provided support to compensate households for high energy prices. Most of them also reduced excise duties and value added tax rates, which had a direct downward impact on consumer prices.<sup>10</sup> As a result of the changes to indirect taxes made in several countries from autumn 2021 alone, energy inflation

<sup>10</sup> Other measures implemented include transfers (e.g. for low income households) or price caps on the wholesale market. These are not directly reflected in the HICP.

was dampened by around 4.3 percentage points in March and 5.8 percentage points in April 2022 (Chart D, panel b).<sup>11</sup>

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<sup>11</sup> For an illustration of how taxes and levies contribute to overall energy price levels please see the article entitled [“Energy price developments in and out of the COVID-19 pandemic – from commodity prices to consumer prices”](#) in this issue of the Economic Bulletin.

## 2 The impact of the Russian invasion of Ukraine on euro area activity via the uncertainty channel

Prepared by Alina Bobasu and Roberto A. De Santis

**Russia's invasion of Ukraine has significantly increased uncertainty in the euro area.** While the very high energy prices and renewed supply shortages resulting from the war are key observable factors affecting economic activity, a third unobservable factor – the associated rise in uncertainty – is also playing a major role. The economic literature defines an uncertainty shock as an outcome of a random event (such as a war) that makes the economic outlook less predictable.<sup>1</sup> As a result of such an increase in uncertainty, economic confidence declines, leading to cuts in the expected spending of households and businesses. This box aims to study the macroeconomic implications of the heightened uncertainty in the euro area that has been triggered by the invasion of Ukraine, focusing on GDP, domestic demand (such as business investment and consumption) and developments in major individual sectors (such as manufacturing and services, and durable and non-durable goods).

**Uncertainty affects the economy via a number of different channels.** One channel frequently cited in the literature relates to the “irreversibility of investment”.<sup>2</sup> Investment is often very difficult to reverse, given the associated fixed costs. Rising uncertainty can therefore lead firms to delay and/or forgo investment, with a view to making better-informed investment decisions once the economic outlook is clearer. A second channel is associated with “precautionary savings”.<sup>3</sup> In response to an uncertainty shock (which can negatively affect future income), households seek to save more and consume less. A third channel relates to the interplay between heightened uncertainty and financial “frictions” (such as borrowing constraints), which can have powerful effects on economic activity, with financial conditions for firms and households typically tending to deteriorate after an uncertainty shock.<sup>4</sup>

**A Structural Vector Autoregression (SVAR) model with sign and narrative restrictions is used to identify uncertainty shocks (Chart A).** Various approaches have been used to identify such shocks in the literature. It is typically assumed that sudden changes in variables other than uncertainty do not affect uncertainty

<sup>1</sup> See Jurado, K., Ludvigson, S.C. and Ng, S., “[Measuring uncertainty](#)”, *American Economic Review*, Vol. 105, No 3, 2015, pp. 1177-1216; and Scotti, C., “[Surprise and uncertainty indexes: Real-time aggregation of real-activity macro-surprises](#)”, *Journal of Monetary Economics*, Vol. 82, 2016, pp. 1-19.

<sup>2</sup> See Bloom, N., “[The impact of uncertainty shocks](#)”, *Econometrica*, Vol. 77, No 3, 2009.

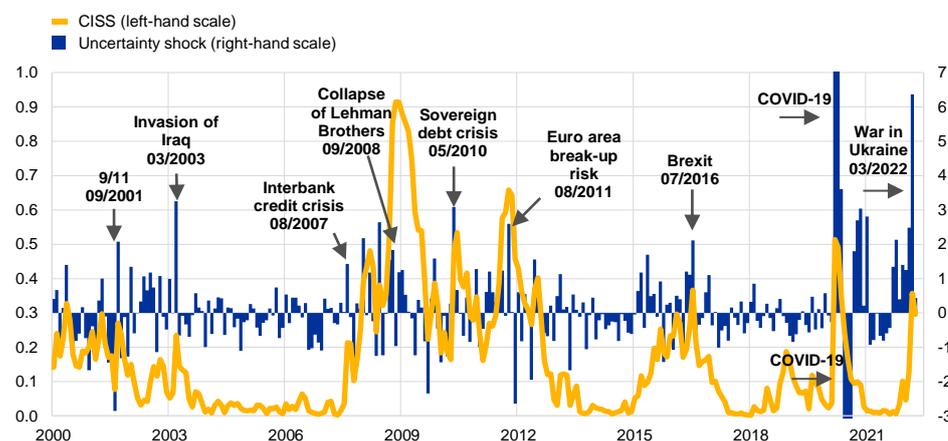
<sup>3</sup> See Basu, S. and Bundick, B., “[Uncertainty shocks in a model of effective demand](#)”, *Econometrica*, Vol. 85, No 3, 2017.

<sup>4</sup> See Christiano, L.J., Motto, R. and Rostagno, M., “[Risk shocks](#)”, *American Economic Review*, Vol. 104, No 1, 2014; and Gilchrist, S., Sim, J.W. and Zakrajšek, E., “[Uncertainty, financial frictions, and investment dynamics](#)”, *NBER Working Papers*, No 20038, 2014.

contemporaneously.<sup>5</sup> However, causality can operate in both directions: for example, uncertainty shocks affect economic activity, but adverse shocks to output (i.e. negative demand shocks) are also likely to increase uncertainty. This box identifies uncertainty shocks using a SVAR model with sign and narrative restrictions, which considers this contemporaneous relationship between variables. Specifically, the model incorporates the Harmonised Index of Consumer Prices (HICP), monthly interpolated GDP, the ten-year overnight index swap (OIS) rate, corporate bond spreads and the Composite Indicator of Systemic Stress (CISS).<sup>6</sup> The latter is used to identify uncertainty shocks through narrative restrictions, by assuming that the uncertainty shock explains most of the dynamics of the CISS in September 2001 (the terrorist attack on the World Trade Center in New York) and August 2007 (the interbank credit crisis).<sup>7</sup>

### Chart A The CISS and uncertainty shocks

(left-hand scale: CISS index (0 = lowest level of financial stress; 1 = highest level); right-hand scale: standard deviation)



Sources: ECB and ECB calculations.

Notes: The SVAR model was estimated for the period from January 1999 to December 2019, identifying cost-push, demand, interest rate, financial and uncertainty shocks. The variables incorporated in the model are the HICP, monthly interpolated GDP, the ten-year OIS rate, corporate bond spreads and the CISS. Sign and narrative restrictions are in line with the approach adopted in Antolín-Díaz, J. and Rubio-Ramírez, J.F., "Narrative Sign Restrictions for SVARs", *American Economic Review*, Vol. 108, No 10, 2018, pp. 2802-2829. The latest observations are for April 2022.

The model is estimated for the period from January 1999 to December 2019 (i.e. excluding the coronavirus crisis, as macroeconomic time series have seen major structural breaks following the onset of the pandemic). The estimated elasticities are

- <sup>5</sup> For the United States, see Bloom (2009, op. cit.), Jurado et al. (2015, op. cit.) and Scotti (2016, op. cit.). For the euro area, a Choleski approach is used in the box entitled "The impact of the recent spike in uncertainty on economic activity in the euro area", *Economic Bulletin*, Issue 6, ECB, 2020. For a detailed comparison of the standard Choleski framework and a proxy structural vector autoregression (SVAR) approach, see Bobasu, A., Geis, A., Quaglietti, L. and Ricci, M., "Tracking global economic uncertainty: implications for the euro area", *Working Paper Series*, No 2541, ECB, 2021.
- <sup>6</sup> For more information on this index, see Holló, D., Kremer, M. and Lo Duca, M., "CISS – a composite indicator of systemic stress in the financial system", *Working Paper Series*, No 1426, ECB, 2012.
- <sup>7</sup> Bloom (2009, op. cit.) refers to the terrorist attack of 11 September 2001 as a key uncertainty event. In the interbank credit crisis of August 2007 severe liquidity issues affected financial markets following the decision by BNP Paribas on 9 August 2007 to freeze three funds exposed to the US subprime mortgage market. At that point investors recognised the need – and their inability – to assess which intermediaries holding mortgage-related instruments were stuck with the toxic components. The same challenge applied to the market for repurchase agreements (repos), where economic agents were using these instruments as collateral for short-term loans. The interbank market, which provides liquidity to banks around the world, dried up largely owing to fear of the unknown.

then used to quantify uncertainty shocks in the period up to April 2022. The model is able to capture major events which led to a rise in uncertainty, such as the invasion of Iraq in March 2003 and the collapse of Lehman Brothers in September 2008, as well as episodes from the euro area sovereign debt crisis. The estimated uncertainty shocks line up well with past political, geopolitical and economic events that would typically be associated with high levels of uncertainty and, likewise, the recent intensification of uncertainty coincides with the ongoing war in Ukraine. The uncertainty shock in March 2022 following the Russian invasion of Ukraine has an estimated size of around six standard deviations, making it the second-largest shock on record (after the episode in March and April 2020 on account of the pandemic).

**Uncertainty shocks negatively affect GDP and domestic demand, with a larger impact on business investment than on consumption.** Once uncertainty shocks have been identified using the SVAR model, a “local” projection framework can be used to estimate the impact that those shocks have on euro area GDP and its demand components, the household saving rate and value added in the manufacturing and services sectors.<sup>8</sup> The local projection approach is typically used when shocks are assessed as being exogenous to the variables of interest. The estimated uncertainty shock in the period from February to April 2022 is expected to reduce euro area GDP relative to the level projected by the model in the absence of any shocks (the “trend” level), reaching a trough of about 0.7% in the fourth quarter of 2022 (Chart B, panel a). The increase in uncertainty is expected to weigh on the spending decisions of households and firms, with the household saving rate rising by about 0.4 percentage points in the third quarter of 2022. The elevated uncertainty is expected to have a stronger impact on business investment than consumption, with the two demand components being reduced by 1.1% and 0.5% respectively in the fourth quarter of 2022 relative to their trend levels.

**At a sectoral level, the uncertainty shock is expected to affect manufacturing more than services and to have a stronger impact on sectors producing goods with longer lifespans (Chart B, panel b).** The larger impact on manufacturing could stem from the fact that manufacturing output has, historically, been more prone to cyclical swings and is more dependent on energy inputs (which also exhibit significant volatility across cycles). Looking at the composition of consumption, durable goods are more affected by uncertainty shocks than non-durables, consistent with the fact that spending on durables can be postponed in response to adverse shocks, as existing stocks of durable goods can still provide utility given their longer lifespans.<sup>9</sup> Indeed, the effect on durable goods is three times the size of

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<sup>8</sup> The technique involves regressing contemporaneous information on variables of interest in successive periods ahead, see Jordà, O., “Estimation and Inference of Impulse Responses by Local Projections”, *American Economic Review*, Vol. 95, No. 1, 2005, pp. 161–182.

<sup>9</sup> See Browning, M. and Crossley, T.F., “[Shocks, stocks, and socks: smoothing consumption over a temporary income loss](#)”, *Journal of the European Economic Association*, Vol. 7, No 6, 2009, which shows that, in the short run, households can cut their total expenditure without a significant fall in welfare if they concentrate on reducing their purchases of durables.

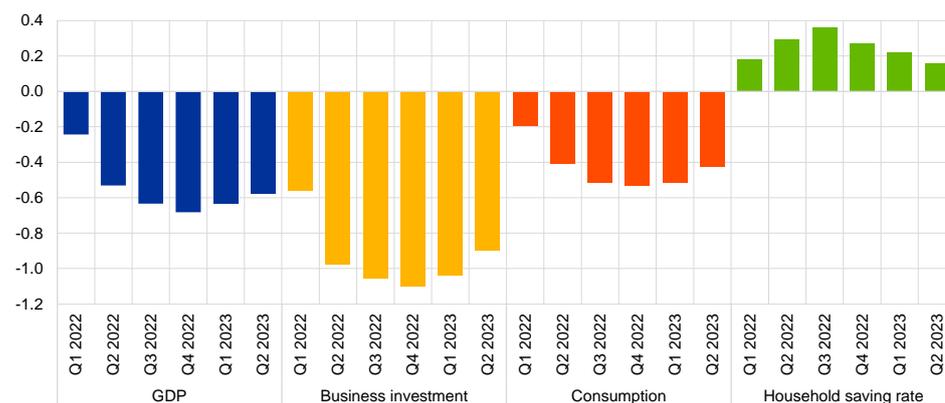
the impact on non-durables.<sup>10</sup> Overall, the war and the rise in energy prices have made the economic outlook more uncertain, especially in energy-dependent sectors and in sectors producing goods with longer lifespans.

### Chart B

#### Macroeconomic impact of the uncertainty shock associated with Russia's invasion of Ukraine

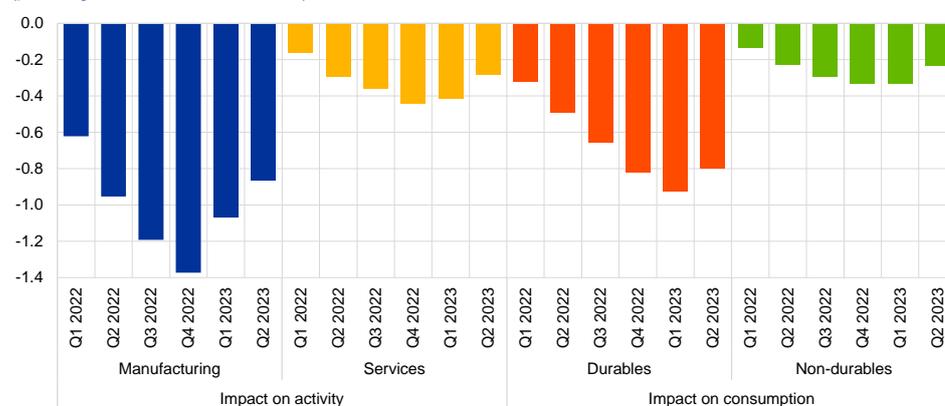
##### a) Impact on GDP, business investment, consumption and the household saving rate

(percentages and percentage points; deviation from trend levels)



##### b) Impact on manufacturing, services, and durable and non-durable goods

(percentages; deviation from trend levels)



Sources: Eurostat and ECB calculations.

Notes: The impact has been estimated by means of a local projection framework, using the uncertainty shock identified by the SVAR model and controlling for all the variables included in that model. The elasticities estimated over the period from the first quarter of 2000 to the fourth quarter of 2019 and the size of the estimated uncertainty shock between February and April 2022 have been used to derive the overall impact on economic activity. Output and prices were expressed using quarter-on-quarter growth rates, while financial variables were expressed using quarterly first differences.

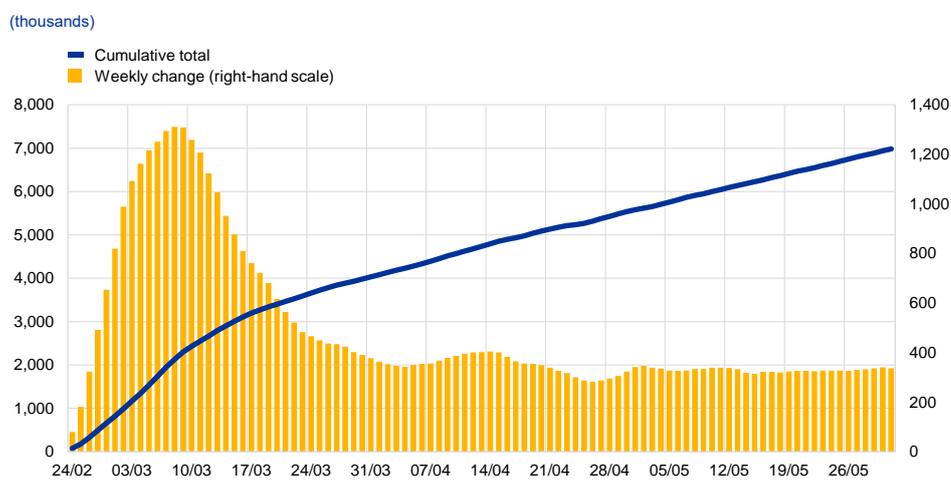
<sup>10</sup> **The European Commission survey on uncertainty corroborates qualitatively the econometric results.** The survey asks managers and consumers to indicate how difficult it is to make predictions about their business situation and household finances. Since the war started in February 2022, uncertainty has increased more in industry than services. The most affected sectors have been construction and manufacturing. Consistent with the findings from the empirical model, uncertainty in the durable goods subsector has been more affected than uncertainty in the non-durable goods subsector.

### 3 The impact of the influx of Ukrainian refugees on the euro area labour force

Prepared by Vasco Botelho

**The war in Ukraine has triggered the largest displacement of European citizens since the Second World War, with women and children accounting for the vast majority of refugees.**<sup>1</sup> According to the United Nations High Commissioner for Refugees (UNHCR), around seven million people have already crossed Ukraine's borders (Chart A).<sup>2</sup> As Chart A shows, an average of around 330,000 refugees are currently leaving Ukraine for neighbouring countries each week. The UNHCR estimates that a total of up to 8.3 million refugees could have fled Ukraine by the end of the year and that up to 25 million people could be displaced and require humanitarian aid as a result of the war.<sup>3</sup> On the basis of this estimate, the total number of Ukrainian refugees is expected to keep growing in the coming weeks, but this is highly dependent on the duration and severity of the war. While the total number of Ukrainian refugees is increasing, a significant number of people – around 2.1 million – have temporarily re-entered Ukraine. The UNHCR indicates that such cross-border movements may be pendular and should not be regarded as permanent returns, so they have not been deducted from the gross figure.

**Chart A**  
Number of Ukrainian refugees leaving the country



Sources: UNHCR and ECB calculations.

Notes: The number of Ukrainian refugees corresponds to gross refugee inflows and does not account for temporary cross-border movements. Neither does it try to capture internally displaced Ukrainian citizens. The latest observations are for 31 May 2022.

**A significant percentage of the total number of Ukrainian refugees is expected to reach the euro area (Table A).** During the Syrian refugee crisis in 2015, around

- <sup>1</sup> See <https://www.pewresearch.org/fact-tank/2022/03/25/after-a-month-of-war-ukrainian-refugee-crisis-ranks-among-the-worlds-worst-in-recent-history> for an international comparison over the last 60 years.
- <sup>2</sup> Total as at 1 June 2022; see <https://data2.unhcr.org/en/situations/ukraine> for daily updates. The gross figure of seven million represents 15.9% of Ukraine's pre-war population of 44 million.
- <sup>3</sup> For further details and updates, see <https://www.unhcr.org/refugeebrief/latest-issues>.

75% of all the refugees who reached Europe ended up in euro area countries. However, it is likely that refugee flows will be different in 2022, as Ukraine is an eastern European country with strong ties to its neighbours. Many refugees are expected to stay in countries bordering Ukraine in the first instance, given their geographical proximity, before gradually moving on to other places. Their final destination will be influenced by the general ability of countries to welcome and accommodate refugees, as well as by existing Ukrainian communities that could ease the process of integration. In the years leading up to the war, Ukrainian migrants tended to settle in Poland (53%), the Czech Republic (9%), Germany (8%) and Hungary (8%), with 24% settling in the euro area. However, 75% of the overall stock of Ukrainian migrants currently live in the euro area, with particularly large numbers in Italy (30%), Germany (18%) and Spain (13%). In addition, euro area countries have demonstrated an ability to accommodate significant numbers of refugees in recent year, accounting for 86% of all first-instance asylum requests made by non-EU citizens.<sup>4</sup> Thus, there is a significant Ukrainian community already living in the euro area, and the recent experiences of other refugees coupled with the fact that euro area countries have the economic means to receive refugees could encourage even more Ukrainian refugees to settle in the euro area over time.

**Table A**  
Past Ukrainian migration patterns and asylum requests by non-EU27 citizens

Area	Ukrainian migration flows into:	Stock of Ukrainian migrants in:	Asylum requests by non-EU27 citizens	Normalised average
European Union (EU25)	96%	95%	92%	92%
Euro area (EA19)	24%	75%	86%	55%

Sources: Eurostat, OECD and ECB calculations.

Notes: The figures reported in the table are calculated as percentages of total flows into, stocks in and requests received by the EU25 (with the two missing countries being Bulgaria and Croatia, for which no data are available), Iceland, Norway, Switzerland, Turkey and the United Kingdom. The figures for Ukrainian migration flows are averages for the period from 2017 to 2019; the figures for stocks of Ukrainian migrants are averages for the period from 2017 to 2020; and the figures for the shares of asylum requests made by non-EU27 citizens are averages for the period from 2017 to 2020. The normalised averages take account of differences in the availability of data at country level, normalising the weights of the various regions to make them comparable across measures.

**The proportion of Ukrainian refugees who remain in the euro area in the medium term will depend on the duration and the severity of the war.** If the fighting becomes more protracted or more intense, the number of refugees will rise. On the basis of current numbers and the point estimate made by the UNHCR, the calculations in this box assume a figure of between five and ten million. A longer and more severe war will probably also reduce the share of refugees who return to Ukraine in the medium term. Accordingly, the scenario with ten million refugees corresponds to a longer and more severe war which raises the total number of refugees and increases the likelihood of them remaining in their host countries in the medium term.

<sup>4</sup> This is as a percentage of all first-instance asylum requests made by non-EU27 citizens to EU25 countries (with the two missing countries being Bulgaria and Croatia for data availability reasons), Iceland, Norway, Switzerland, Turkey and the United Kingdom. The recipient of the most asylum requests is Germany (around 38%), followed by France (15%) and Italy (11%). As a result of the influx of refugees in 2015, first-instance asylum requests increased dramatically in 2016 and 2017. More than half of those refugees (55%) settled in Germany, although large numbers also headed for Sweden, Italy and France (8% each).

**The share of refugees who are of working age will be crucial in terms of establishing the impact on the euro area labour force.** Ukraine imposed martial law across the country when Russia launched its offensive on 24 February, preventing men between the ages of 18 and 60 from leaving the country. Consequently, the first waves of refugees have comprised the elderly, children and women of working age. However, it is expected that future waves will also include men of working age once martial law has been lifted, gradually increasing the percentage of refugees who are of working age. This box assumes that, in the medium term, between 50% and 75% of the refugees who arrive in the euro area will be of working age. This assumption is anchored by the fact that women currently account for roughly 80% of all refugees interviewed and that 80% of female refugees are travelling with at least one child.<sup>5</sup> The proportion of refugees who are of working age is expected to be higher if the war is more protracted and more severe, with some working-age men eventually relocating to join their families abroad and moving to the euro area at a later stage.<sup>6</sup> Thus, back-of-an-envelope calculations assume a positive correlation between the share of refugees who are of working age and the duration and severity of the war.

**Despite the swift policy action taken by European authorities, barriers to the labour market and other frictions remain significant impediments to refugees, making it difficult for them to integrate into host countries' labour markets, especially in the short term.** For refugees, the process of accessing the host country's labour market is generally a lengthy one. Refugees may need to be granted asylum (and, in some cases, a work permit), acquire language skills and have their professional qualifications recognised. In order to ease the barriers to integration that Ukrainian refugees face, the EU has agreed to grant temporary protection to people fleeing the war in Ukraine, providing immediate assistance and giving them the right to access the labour market. By the beginning of May, over 3.5 million Ukrainian refugees had entered Poland, while more than 400,000 had registered in Germany, 200,000 in the Czech Republic and 100,000 in Italy.<sup>7</sup> However, skill mismatches, insufficient language skills, a lack of childcare facilities and problems with the recognition of qualifications can all present obstacles to the integration of refugees. For example, German data on the large influx of refugees

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<sup>5</sup> These figures are based on two surveys resulting from a partnership between UN Women and the International Organization for Migration. The results of the first survey can be found [here](#), and the key messages from the follow-up survey can be found [here](#). Those findings were corroborated by a survey conducted in Germany between 24 and 29 March on behalf of the Federal Ministry of the Interior, which found that 84% of Ukrainian refugees were women and that 58% of refugee women had left Ukraine accompanied by children. The main results of that survey can be found [here](#). The dependency ratio of the Ukrainian population stood at 49% in 2020, and this was also used to fine-tune those figures, as it implies that people between the ages of 15 and 64 make up more than 67% of the total population.

<sup>6</sup> A longer and more severe war would also imply that working-age men would remain in Ukraine for longer, reducing the number of people who might move abroad. This effect is taken into account in the parameterisation. That said, it is considered that, in this case, families would have more time to relocate and integrate into another country in a more permanent way.

<sup>7</sup> Figures for Poland reflect only entries into the country and not registrations, as in other EU countries. Registration implies eligibility for income support and eventual access to the euro area labour market. See <https://cream-migration.org/ukraine-detail.htm?article=3573> for further details and updates. Some [news articles](#) have reported higher figures, estimating that around 610,000 refugees have already entered Germany. Furthermore, both Eurostat and the UNHCR have recently started reporting on the number of refugees entering European countries and registering for temporary protection. By the beginning of June, over 4.7 million individual refugees from Ukraine had been recorded across Europe and more than 2.9 million refugees from Ukraine registered for temporary protection.

observed between 2014 and 2016 show very gradual integration into the labour market over time, with only 17% of working-age refugees being in employment after two years in the country and less than 50% after five years. Those employment rates were considerably lower for women (reflecting, to some extent, cultural barriers in the refugees' countries of origin).<sup>8</sup> The combination of Ukraine's geographical and cultural proximity to western Europe and the temporary protection that the EU has granted to Ukrainian citizens is expected to help reduce the severity of institutional and skill mismatches, increasing Ukrainian refugees' participation in the labour force in the short run.<sup>9</sup>

**Thus, taking evidence on the integration of previous waves of refugees and adapting it to the current situation, we envisage a medium-term labour force participation rate of between 25% and 55% for working-age refugees.** The lower end of that range (25%) is based on the level of integration seen for previous refugees after two years in the host country, with an upward adjustment to reflect Ukraine's cultural proximity and the impact of the EU's swift policy action. The upper end of the range (55%) reflects recent estimates for the participation rate of working-age women who have migrated to the euro area from outside the EU27.<sup>10</sup>

**Overall, the influx of Ukrainian refugees is expected to lead to a gradual increase in the size of the euro area labour force.** Under all of the assumptions detailed thus far, back-of-an-envelope calculations point to a median increase of between 0.2% and 0.8% in the euro area labour force in the medium term (Chart B). This corresponds to an increase of between 0.3 and 1.3 million in the size of the euro area labour force as a result of the Ukrainian refugee crisis.<sup>11</sup>

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<sup>8</sup> See <https://doku.iab.de/kurzber/2020/kb0420.pdf> (in German) for more details. The eight most common countries of origin for asylum-seekers entering Germany between 2014 and 2016 were Afghanistan, Eritrea, Iran, Iraq, Nigeria, Pakistan, Somalia and Syria.

<sup>9</sup> Around 18% of the Ukrainian population speaks English at some level, with the country being ranked 40th in 2021 in terms of the EF English Proficiency Index with a moderate English proficiency level. See the [EF EPI 2021 report](#) for further details. Regarding qualifications, [World Bank data for 2014](#) show that over 80% of the Ukrainian population were enrolled in tertiary education, than in Germany (74% in 2019), France (68% in 2019) or Italy (66% in 2019).

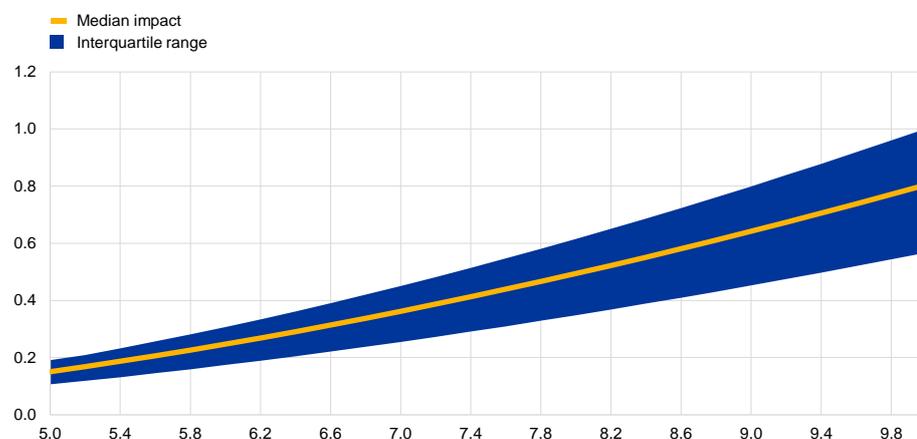
<sup>10</sup> This parameterisation range lies within the range of observed employment rates for refugees over time, accounting for the probability of integration being faster than in previous waves of refugees owing to Ukraine's closer geographical and cultural proximity to the euro area and the EU's swift policy action, but still reflecting the high levels of uncertainty regarding Ukrainian refugees' integration into the euro area labour market in the medium term. Consequently, it is applied to all scenarios, regardless of the severity of the war.

<sup>11</sup> These median figures assume that 55% of the total number of refugees settle in the euro area. Chart B shows how the estimated range is affected by changes in the percentage of refugees settling in the euro area, indicating both the median and the interquartile range for the 936 parameterisations that we used in the calculations.

## Chart B

### Potential medium-term impact of Ukrainian refugees on the euro area labour force

(x-axis: number of Ukrainian refugees in millions; y-axis: Ukrainian refugees as a percentage of the labour force)



Sources: UN, Eurostat, OECD, World Bank and ECB calculations.

Notes: Ukrainian refugees' share of the labour force is based on the euro area's active population between the ages of 15 and 74 in 2019. The interquartile range accounts for different parameterisations of the back-of-an-envelope calculation, based on feasible ranges for the percentage of Ukrainian refugees that settle in the euro area (as identified in Table A) and the labour force participation of working-age refugees (which stands at between 25% and 55% and caters for differences between refugees' integration rates in the euro area labour market). These estimates also take account of differences in terms of the share of working-age refugees in total refugees and reflect the fact that the percentage of refugees who return to Ukraine in the medium term will be negatively correlated with the duration and the severity of the war.

**The increase in labour supply that results from the influx of Ukrainian refugees could slightly ease the tightness observed in the euro area labour market.** If they can find jobs without a lengthy integration process, Ukrainian refugees could help the market to respond to the currently buoyant demand for labour and address worsening skill shortages. However, the high levels of uncertainty surrounding the future course of the war makes it harder to accurately assess and quantify the eventual impact. Outside the narrowly defined scope of this box, there are also other important implications of the influx of Ukrainian refugees for the fiscal resources, housing and the provision of public services in euro area countries.

## 4 The impact of climate change on activity and prices – insights from a survey of leading firms

Prepared by Friderike Kuik, Richard Morris and Yiqiao Sun

**This box summarises the findings from a recent ECB survey of leading firms on the impact of climate change on economic activity and prices.** The survey was structured in three parts and covered questions related to the impact on businesses of climate change and related measures and policies. The first part invited firms to identify in their own words (i) the main impact of climate change and related adaptation and mitigation measures on their business, (ii) the main challenges they face in transitioning to a net-zero economy, and (iii) which climate-related policies they expect to have the biggest impact – and which ones could help their company tackle the transition.<sup>1</sup> The second part of the survey asked firms whether they agreed or disagreed with various statements on how climate change and related adaptation and mitigation measures would affect their business. The third part asked them to assess in qualitative terms the impact of climate change on their investment, employment, productivity, costs and prices, distinguishing between the impact “until now” and the impact “during” and “after” the transition to a net-zero economy. The survey was carried out in early 2022, and responses were received from 90 large and mostly multinational companies with which the ECB maintains contact as part of its regular gathering of business intelligence.<sup>2</sup> A breakdown of the survey sample by sector of activity is provided in Table A.

**When asked about the main impact of climate change on their business, around two-thirds of respondents described risks associated with the transition to net zero, while half of them also pointed to risks stemming from a changing climate.** Transition risks were emphasised particularly by companies operating in high-carbon emission sectors, whether by virtue of their own production, that of their suppliers or the users of their products.<sup>3</sup> Such risks related in particular to the cost and technological challenges inherent in shifting to cleaner modes of production. However, around 40% of respondents also described opportunities that could arise for their business, either because the firms have already invested in alternative, low-carbon products, or because the goods and services they provide help other companies to reduce their emissions. The physical risks mentioned range from risks related to the sourcing of raw materials to the integrity of production facilities, infrastructure, supply chains, logistics and the well-being of employees.<sup>4</sup> Given the potential for damage to physical assets and infrastructure, such physical

<sup>1</sup> Adaptation measures refer to actions taken by firms to adapt to climate change and its effects. Mitigation measures refer to actions taken to reduce emissions with the aim of containing climate change.

<sup>2</sup> The survey of leading firms took place in the context of the ECB’s dialogue with non-financial companies as a special survey in addition to the regular survey rounds. The regular survey is described in “The ECB’s dialogue with non-financial companies”, *Economic Bulletin*, Issue 1, ECB, Frankfurt am Main, 2021.

<sup>3</sup> Transition risks refer to risks associated with mitigating climate change, for example through climate policies, technological changes or changes in preferences and behaviour.

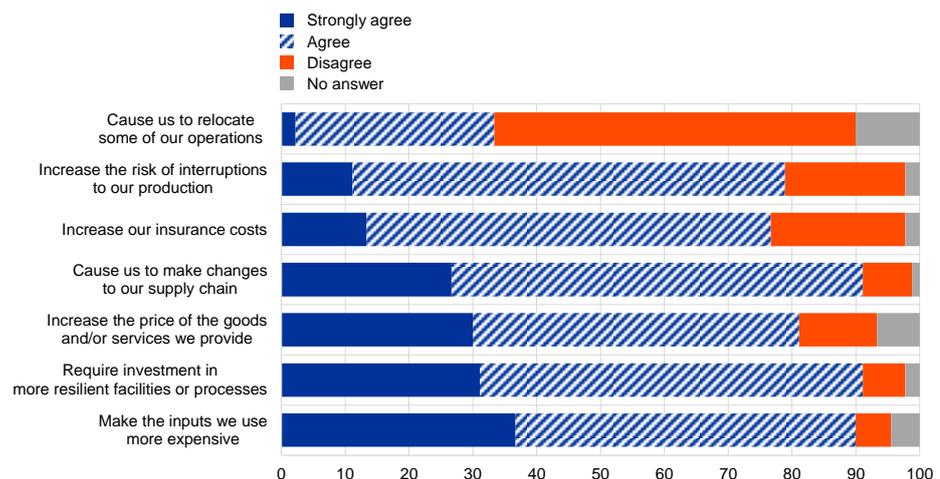
<sup>4</sup> Physical risks refer to risks associated with a changing climate, both through gradual changes in climate and an increasing frequency and intensity of extreme events.

risks are particularly relevant for firms dependent on or operating in the agricultural sector, firms in the manufacturing sector with potentially vulnerable (global) supply chains, construction companies and businesses in the transport sector.

**Respondents expect climate change and their firm’s adaptation to it to increase different types of cost pressure (Chart A).** The survey tested this using a set of statements with which firms could agree or disagree. More than 90% of respondents agreed that climate change and their firm’s adaptation to it would require investment in new facilities or processes and changes to their supply chain, as well as make inputs more expensive. More than three-quarters of firms agreed that their insurance costs would rise because of climate change and that there was an increased risk of interruptions to production. One-third of the companies in the sample agreed when asked if climate change would cause their firm to relocate some operations.

**Chart A**  
Selected impacts on firms of climate change and related adaptation measures

(percentages of responses)



Source: ECB.

Notes: Firms were asked whether they strongly agreed, agreed or disagreed that “Climate change and/or our adaptation to it will [+ statement]”. “More resilient” facilities or processes means facilities or processes that are less exposed to climate change-related risks, such as extreme weather events.

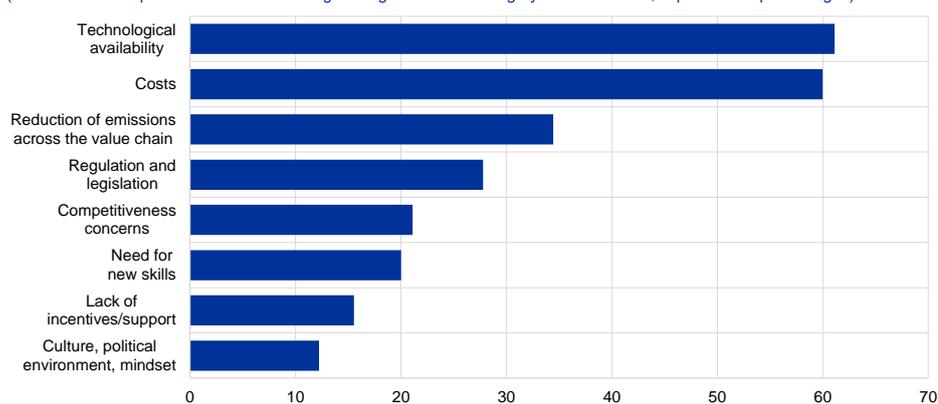
**The main challenges arising from the transition to a net-zero economy mentioned by respondents include the availability of new technologies and inputs, followed by costs.** Chart B categorises the issues and challenges mentioned by respondents in relation to the transition. Around 60% cited challenges related to “availability”, stressing in particular the need for large scale deployment of renewable electricity generation, transmission lines and electric vehicle-charging infrastructure. They also mentioned development and innovation needs, for example related to green hydrogen, carbon capture and storage technologies. In addition, many firms saw the sourcing and recycling of raw materials and low-carbon processed materials as a challenge, given increasing demand and still-underdeveloped low-carbon alternatives. A similar number cited challenges related to costs. In this regard, firms frequently highlighted that low-carbon alternatives involve higher costs or are less profitable than their conventional alternatives. The next

largest concern related to cost pressures caused by rising prices of raw materials, necessary investment and the purchasing of clean energy. Many respondents also cited challenges related to greening the value chain or measuring emissions across the value chain, regulatory and reporting challenges, global competitiveness concerns, acquiring the necessary workforce skills, the lack of sufficient incentives, and customers' or employees' mindset and willingness to transition.

### Chart B

#### Categorisation of the main challenges in transitioning to net zero cited by firms

(shares of total responses in which a challenge falling within each category was mentioned, expressed as percentages)



Source: ECB.

Notes: The categorisation is based on the authors' interpretation of written responses. The percentage shares of total responses are indicated for all types of challenge mentioned by 10% or more responding firms.

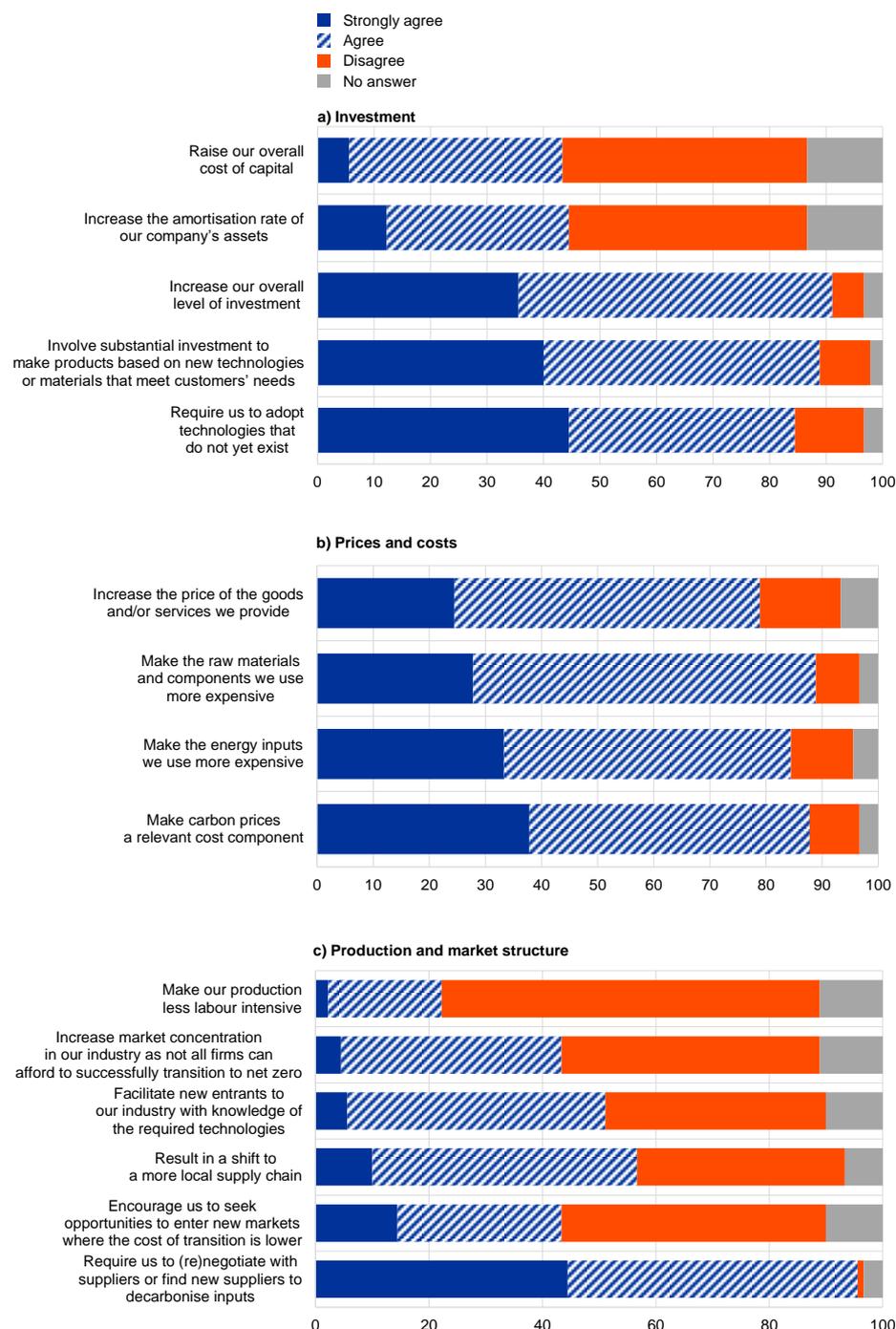
**A majority of respondents agreed that transitioning to a net-zero economy would require higher investment, raise costs and increase their firm's selling prices (Chart C).** 80% or more agreed that mitigating climate change would require their firms to adopt technologies that did not yet exist, that substantial investment was needed to make products based on new technologies or materials to meet customers' needs and that the overall level of investment would increase due to efforts to mitigate climate change. A somewhat lower share, however, thought that climate change would increase the cost of capital or raise the amortisation rate on their company's assets. 80% or more of respondents agreed that mitigating climate change would make the raw materials and components they use more expensive, carbon prices into a relevant cost component and the energy they use more expensive. Almost as many agreed that this would increase the price of the goods and/or services their company provides.

**Views were more mixed regarding the extent to which climate change would be a catalyst for changes to production and market structures (Chart C).** Almost all firms said that mitigating climate change required them to renegotiate with suppliers or find new suppliers to decarbonise inputs. Slightly more than half of respondents thought that mitigating climate change would result in a shift to a more local supply chain. Around half said that the transition to net zero would encourage their firm to enter new markets, encourage new entrants and/or increase market concentration in their industry.

## Chart C

### Selected impacts on firms of the transition to net zero

(percentages of responses)



Source: ECB.

Note: Firms were asked whether they strongly agreed, agreed or disagreed that "Mitigating climate change (transitioning to net zero) will [+ statement]".

**Respondents broadly recognised the importance of the European Union's climate policies (including the EU Green Deal and Fit for 55), while often raising specific issues related to design and implementation at industry level.**

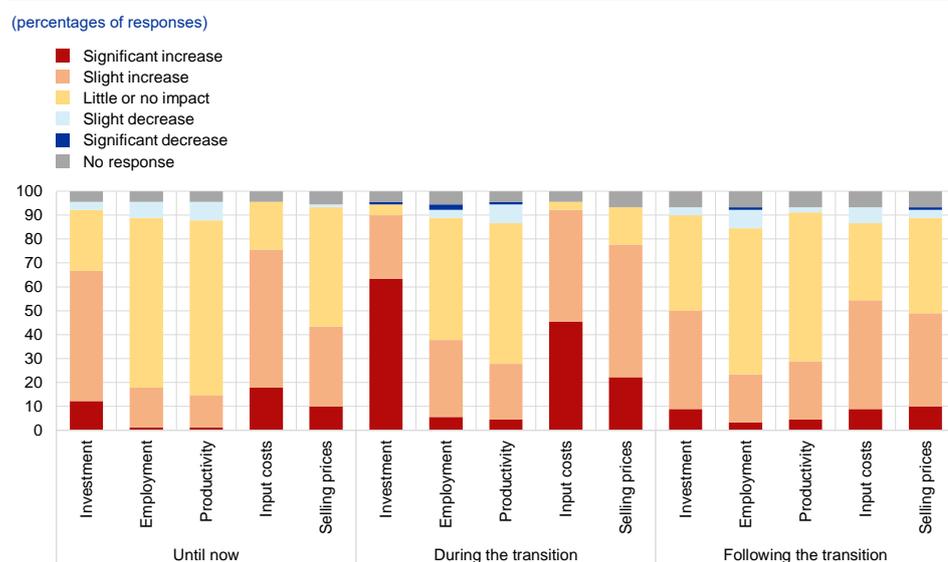
Many emphasised the importance of a stable regulatory framework and the need for consistency across sectors and geographic regions. Some expressed concerns that the way in which different regulations interacted could have unintended negative effects. The importance of the proposed EU Carbon Border Adjustment Mechanism was highlighted by a number of respondents, although views were divided on whether it would be sufficient to ensure a level playing field and contain the risk of carbon leakage.<sup>5</sup> Many respondents raised the issue of carbon pricing: some saw a higher carbon price as a cost pressure, while others emphasised the importance of generating appropriate incentives through higher carbon prices.

**Responses indicate that the overall impact of climate change and related policies will be to increase investment, costs and prices, especially during the transition phase (Chart D).**

70% of respondents said that their firm’s investment was already higher than it would have been because of climate change, although only 10% said it was significantly higher. More than 90% anticipated higher investment during the transition phase and more than two-thirds expected the increase to be significant. A similar pattern of responses is observed for input costs and prices. Nearly 80% of respondents said that their input costs had already increased. Nearly half responded that their selling prices had already increased as a result of climate change or climate policies, but only a small proportion said that these increases were already significant. The effect on input costs and selling prices was expected to intensify during the transition.

**Chart D**

Overall impact of climate change on investment, employment, productivity, costs and prices until now, during and after the transition to net zero



Source: ECB.  
 Note: Respondents were asked to assess the overall impact of climate change on different aspects against a hypothetical baseline without any climate change or climate-related policies.

<sup>5</sup> Carbon leakage occurs when a strict climate policy aimed at reducing emissions in one country causes firms to relocate production to other countries with less strict climate policies, leading to a corresponding increase in emissions.

**Only a small share of respondents expected a significant increase in investment, costs and prices due to climate change after the transition (Chart D).** This suggests firms anticipate that much – but not all – of the impact on investment, costs and prices will be limited to the transition period itself. Specifically, more than half of respondents thought that investment, costs and prices would be structurally higher after the transition, but only a small share (around 10%) expected them to be significantly higher. Furthermore, the results suggest that the overall upward impact on investment and costs after the transition is expected, on average, to be slightly lower than it has been until now. By contrast, the upward impact on selling prices is expected to be slightly higher.

**Table A**

Composition of the survey sample by firms' main activity

Activities based on NACE Rev. 2 definitions

Sector of activity	NACE Rev. 2 Divisions	Number of firms
Mining and quarrying	5-9	2
Manufacture of food products, beverages and tobacco products	10-12	6
Manufacture of textiles, wearing apparel and leather produces	14-16	2
Manufacture of wood and paper products, and printing	16-18	3
Manufacture of chemicals, chemical products and pharmaceuticals	20-21	7
Manufacture of rubber, plastic and other non-metallic mineral products	22-23	7
Manufacture of basic metals and fabricated metal products	24-25	7
Manufacture of computer, electronic and optical products and equipment	26-27	7
Manufacture of machinery and equipment	28	6
Manufacture of transport equipment	29-30	5
Other manufacturing	32	1
Electricity, gas, steam and air conditioning supply	35	3
Construction	41-43	4
Wholesale and retail trade	45-47	11
Transportation and storage	49-53	8
Information and communication	58-61	6
Professional and administrative services	69-82	5

Source: ECB.

## 5 Does the private sector foresee a stagflation episode?

Prepared by Malin Andersson, Niccolò Battistini, Roberto De Santis and Aidan Meyler

**Does the private sector currently expect a period of stagflation in the euro area?** Before the war in Ukraine the reopening of the economy in 2021 was facing headwinds related to lingering supply-chain disruptions, and goods inflation had already picked up.<sup>1</sup> The war that broke out in February 2022 has exacerbated inflation dynamics due to its effects on energy prices and has increased concerns about the outlook for economic activity. This is inevitably associated with stagflationary forces in the short term. Their occurrence has triggered a debate among economic commentators about whether a protracted period of stagflation is plausible.<sup>2</sup> “Stagflation” has no unique definition but is associated with stagnating output and persistently high inflation occurring simultaneously. For the purposes of this box an expected stagflationary episode fulfils three conditions: (1) inflation expectations are high or increasing to levels that are inconsistent with the ECB’s price stability objective of two per cent, (2) the economy is expected to be in stagnation or recession, and (3) both conditions are expected to continue for at least a two-year period (in this case until the end of 2023). Stagflation expectations thus can be seen to relate to medium-term developments in real GDP growth and inflation, rather than the short-term dynamics of economic activity and inflation in the quarters immediately following the Russian invasion of Ukraine.

**At present the euro area is facing a supply shock, similar to the 1970s oil supply shock, which has affected households’ expectations of economic growth and inflation.** Faced with the additional adverse supply shock due to the war, consumers have markedly revised their expectations of the general economic outlook for the year ahead. This is evidenced in households’ opinions from the European Commission consumer survey between February and May 2022. The survey shows that consumers in the euro area have adjusted their expectations up for inflation and down for the economic situation (Chart A). How does this compare with national surveys from the well-known stagflation episode in the 1970s? That episode was triggered by the OPEC countries proclaiming an oil embargo in October 1973. Recent revisions to households’ expectations in some euro area countries are comparable to the revisions experienced in France and the United States shortly after the oil embargo. However, caution is warranted when assessing the quantitative implications of the impact of the shock across countries and over time, as household surveys only provide qualitative information.

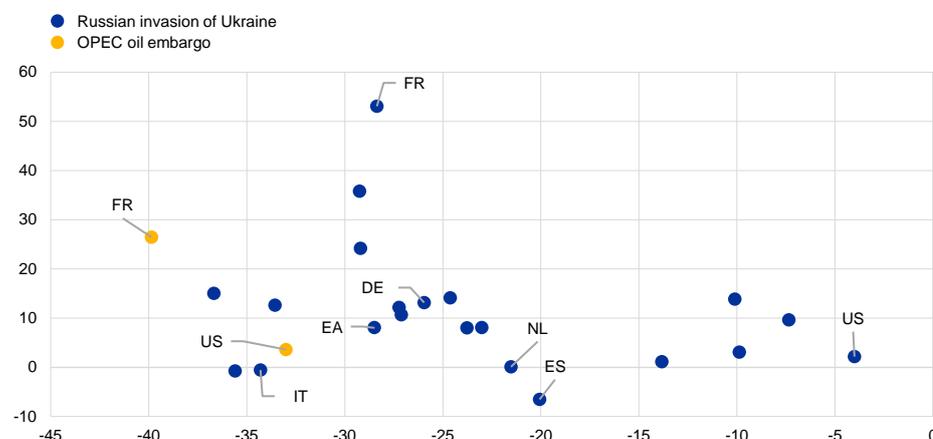
<sup>1</sup> See Box 7 entitled “Sources of supply chain disruptions and their impact on euro area manufacturing”, *Economic Bulletin*, Issue 8, ECB, 2021, and Box 1 entitled “Supply chain bottlenecks in the euro area and the United States: where do we stand?”, Issue 2, ECB, 2022.

<sup>2</sup> See for example Blanchard, O., “Why I worry about inflation, interest rates, and unemployment”, *Real Time Economic Issues Watch*, Peterson Institute for International Economics, March 2022, and Kilian, L., and Plante, M., “The Russian Oil Supply Shock of 2022”, *Dallas Fed Economic*, Federal Reserve Bank of Dallas, March 2022.

## Chart A

### Revisions to consumers' expectations of consumer prices and the economic situation

(revisions to expectations 12 months ahead; differences in percentage balances; x-axis: economic situation; y-axis: consumer prices)



Sources: European Commission's Directorate-General for Economic and Financial Affairs, University of Michigan, Institut national de la statistique et des études économiques (INSEE), ECB calculations.

Notes: The revisions for the Russian invasion of Ukraine are from February to May 2022 (to April 2022 for the United States) and for the Organization of the Petroleum Exporting Countries (OPEC) oil embargo from October 1973 (from November 1973 for the United States) to February 1974. Only for France and the United States are survey data available from the 1970s.

### In contrast to today, the early 1970s were characterised by persistently high price and cost inflation, amid declining growth and rising unemployment.

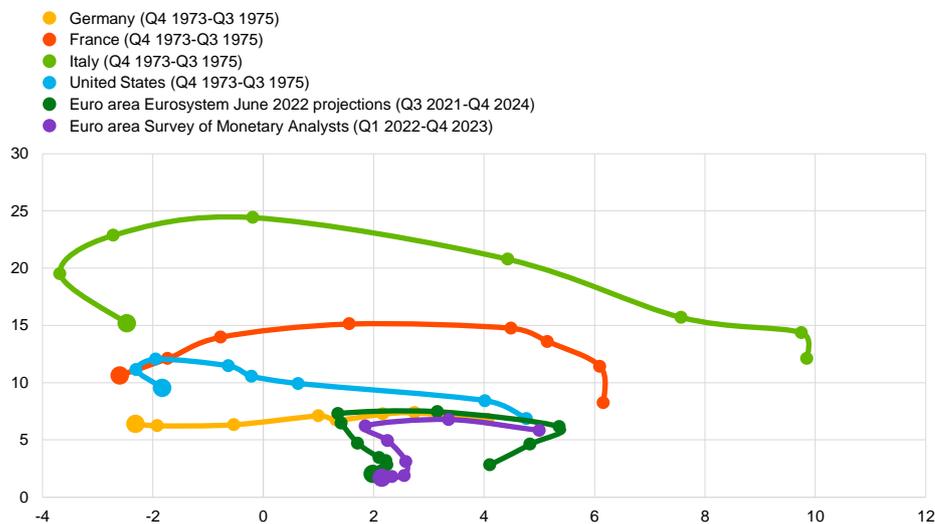
Following the oil embargo in October 1973, most of the larger euro area countries and the United States saw a significant rise in inflation followed by a fall in real output (Chart B). In Germany, the path of inflation was more muted as the Deutsche Bundesbank introduced a quantitative money growth target to help control inflation after the collapse of the Bretton Woods system.<sup>3</sup> In contrast to expectations in the current period, the supply-side shock in the 1970s also triggered rising unemployment and unit labour cost growth in some of the largest euro area countries, although in Germany and the United States unit labour cost growth remained more contained (Chart C).

<sup>3</sup> See for example Issing, O., "Why Did the Great Inflation Not Happen in Germany?", *Federal Reserve Bank of St. Louis Review*, March/April 2005, 87(2, Part 2), pp. 329-35, and "The 'great inflation': lessons for monetary policy", *Monthly Bulletin*, ECB, Frankfurt am Main, 2010.

## Chart B

### Inflation and real GDP growth in 1973 and now

(year-on-year percentage change, by quarter; x-axis: GDP growth; y-axis: inflation)



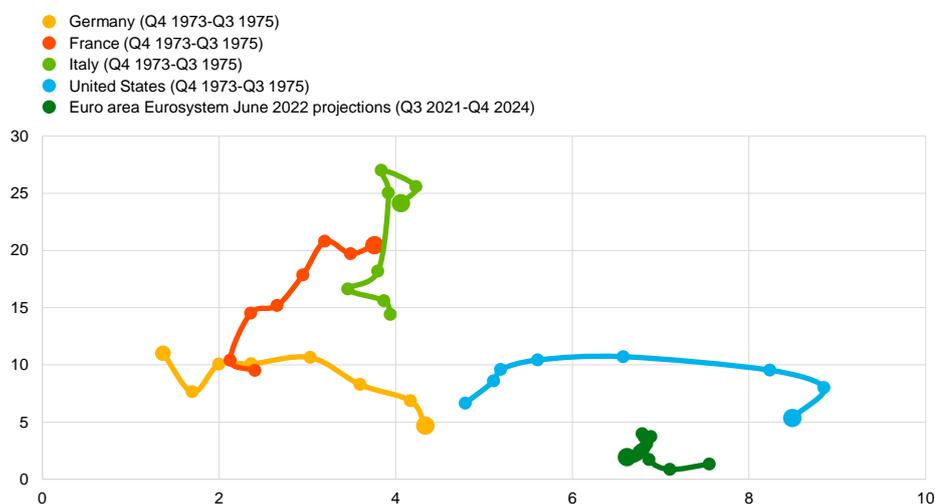
Sources: Deutsche Bundesbank, Institut national de la statistique et des études économiques (INSEE), Istituto Nazionale di Statistica (ISTAT), US Bureau of Labor Statistics, Organisation for Economic Co-operation and Development, ECB, ECB projection database and ECB staff calculations.

Note: The last observation for each region is shown with a larger marker to distinguish it from the preceding ones.

## Chart C

### Unemployment and unit labour costs after the oil price shock in 1973 and now

(x-axis: unemployment as a percentage of labour force; y-axis: unit labour cost; year-on-year percentage change, by quarter)



Sources: Haver, ECB projection database and ECB staff calculations..

Note: The last observation for each region is shown with a larger marker to distinguish it from the preceding ones.

**Current expert forecasts remain far from a stagflation scenario.** This is despite the fact that the most recent surveys of professional forecasters from April and May 2022, e.g. Consensus Economics, the Eurozone Barometer, the ECB Survey of Monetary Analysts and the ECB Survey of Professional Forecasters, feature higher forecasts for inflation and lower real growth forecasts for both 2022 and 2023 compared with earlier this year. The forecast revisions are sharper for 2022 than for 2023 (Chart D). For 2023, nevertheless, the Consensus Economics real GDP growth

forecast remains above 2% and only three forecasters expect growth below 1%.<sup>4</sup> While inflation forecasts since the outbreak of the war are for inflation to be above 2% on average in 2023, most forecasters expect inflation to drop below 2% in the second half of 2023. However, uncertainty has increased, and the dispersion of forecasts has risen. The coefficients of variation for both inflation and growth forecasts have increased by more than 30% and 50% respectively since the start of the war.

### Chart D

#### Inflation and GDP growth expectations of private sector forecasters for 2022 and 2023

(annual percentage change)



Source: Consensus Economics.

Notes: The lines represent Replacement Basis Continuous Consensus Forecasts which are calculated each business day between monthly survey dates on a Replacement Basis (prior monthly survey panel with subsequent new or revised forecasts replacing old). The squares and diamonds indicate the average Consensus Forecast in the regular monthly Consensus Economics surveys. The vertical line in each chart refers to the date of the Russian invasion of Ukraine on 24 February 2022. The latest observation is for 6 June 2022.

**Several differences between the current economic situation and that in the 1970s make it less likely that stagflation will develop now.** First, oil dependence has decreased substantially, reducing the potential economic impact of oil price shocks. At the same time, gas dependence has increased substantially so external shocks to gas prices now play a more prominent role. Second, the risk of large second-round effects on inflation has diminished despite the very tight labour market, as formal wage indexation schemes are less common and workers have become less unionised.<sup>5</sup> Third, current real GDP growth projections still partly reflect a recovery in demand following the pandemic. This is being driven not only by the easing of restrictions and the reopening of the economy but also by policy support (e.g. the Next Generation EU and national implementation plans). Finally, compared with the strategies implemented by the various national monetary authorities in the

<sup>4</sup> It is also worth noting that no forecaster foresees a so-called technical recession (i.e. two consecutive quarters of negative quarter-on-quarter GDP growth) in the course of 2022 and 2023.

<sup>5</sup> See Box 7 entitled “The prevalence of private sector wage indexation in the euro area and its potential role for the impact of inflation on wages”, *Economic Bulletin*, Issue 7, ECB, 2021.

1970s, today's euro area monetary policy strategy is more clearly aimed at anchoring inflation expectations and bringing inflation to 2% over the medium term.<sup>6</sup>

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<sup>6</sup> On the anchoring of inflation expectations in the euro area see, for instance, Ehrmann, M., Fratzscher, M., Gürkaynak, R. S. and Swanson, E. T., "[Convergence and Anchoring of Yield Curves in the Euro Area](#)," *The Review of Economics and Statistics*, MIT Press, Vol. 93(1), February 2011, pp. 350-364. For a comparison with the United States, see Beechey, M. J., Johannsen, B. K., and Levin, A. T., "[Are Long-Run Inflation Expectations Anchored More Firmly in the Euro Area Than in the United States?](#)" *American Economic Journal: Macroeconomics*, American Economic Association, Vol. 3, No 2, April 2011, pp. 104-129. For a broader comparison with other advanced economies, see Gürkaynak, R. S., Levin, A. T., Marder, A. N., and Swanson, E. T., "[Inflation targeting and the anchoring of inflation expectations in the western hemisphere](#)," *Economic Review*, Federal Reserve Bank of San Francisco, 2007, pp. 25-47. On the link between monetary policy and wage indexation, see Hofmann, B., Peersman, G., and Straub, R., "[Time variation in U.S. wage dynamics](#)", *Journal of Monetary Economics*, Vol. 59, No 8, 2012, pp. 769-783.

## 6 The surge in euro area food inflation and the impact of the Russia-Ukraine war

Prepared by Katalin Bodnár and Tobias Schuler

**Euro area HICP food inflation reached a new historical high in May 2022 as already existing price pressures in the food sector intensified following the Russian invasion of Ukraine.** The war and its repercussions are hindering imports of energy and food commodities in the euro area and contributing to higher global prices. The situation is exacerbating already existing pressures in both global and euro area food markets. This box examines recent developments in euro area food inflation and the channels through which it is affected by the Russia-Ukraine war.

**HICP food inflation was already rising before the Russian invasion of Ukraine (Chart A).** Food prices can be an important driver of euro area headline HICP inflation, given the high weight of food in the consumption basket (slightly above 20%) and the strong volatility of food inflation.<sup>1</sup> Annual food price inflation edged up during the first wave of the coronavirus (COVID-19) pandemic owing to supply constraints, but subsequently declined. Food price inflation then accelerated from the fourth quarter of 2021, reaching 3.5% in January 2022 and 7.5% in May 2022, the highest level since the beginning of monetary union. Previous peaks in annual food price inflation were seen in early 2002 (5.6%), when health concerns associated with animal diseases put upward pressure on unprocessed food prices,<sup>2</sup> and in 2008 (6.1%), which reflected a rise in global food commodity and fertiliser prices.<sup>3</sup> In April 2022 food inflation stood at 9.4% in the United States and 6.7% in the United Kingdom; thus in both of those countries it was higher than in the euro area. However, in the last three months, annual food inflation has accelerated more in the euro area (by 2.8 percentage points since January 2022) than in the other two economies (2.4 percentage points in both the United States and the United Kingdom over the same period).

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<sup>1</sup> See the box entitled “Recent developments in euro area food prices”, *Economic Bulletin*, Issue 5, ECB, 2020.

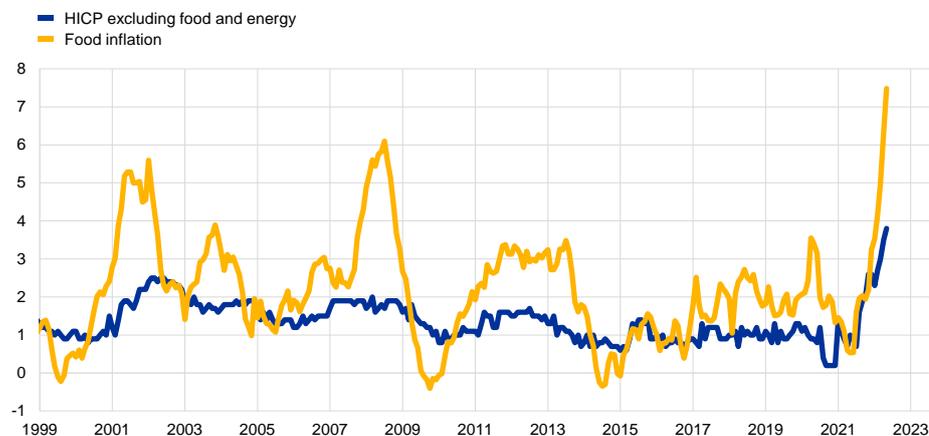
<sup>2</sup> See the box entitled “Recent developments in unprocessed food prices”, *Monthly Bulletin*, Issue 9, ECB, 2013.

<sup>3</sup> See the box entitled “Agricultural commodities and euro area HICP food prices”, *Monthly Bulletin*, ECB, June 2010.

## Chart A

### Euro area HICP and food inflation

(annual percentage changes)



Sources: Eurostat and ECB calculations.

Note: Latest observation: May 2022.

**The large increase in euro area food inflation seen since mid-2021 has been driven primarily by the rise in international food commodity and energy prices, which accelerated following the Russian invasion of Ukraine (Chart B).**

International food commodity prices rose considerably in the second half of 2021, driven mainly by higher energy prices, especially for natural gas.<sup>4</sup> High energy prices affect food inflation via three channels. First, agricultural production and food processing is energy intensive; for instance, crop production relies heavily on fuel for agricultural machinery, so higher energy prices tend to be transmitted quickly to higher production costs. Second, natural gas is an input in fertiliser production; thus higher gas prices increase fertiliser prices, adding to agricultural input costs. Third, rising transportation costs affect food prices, also making the replacement of commodities with those from more distant sources more costly.<sup>5</sup> International food commodity prices also rose as a result of adverse weather conditions in some areas. Moreover, a rise in shipping costs related to bottlenecks in global supply chains added to the price pressures. With the Russian invasion of Ukraine, the prices of some food and energy commodities jumped considerably, reflecting the global role of the affected countries as major suppliers of specific food commodities.<sup>6</sup> Prices for wheat and maize in particular increased sharply. Global fertiliser prices also

<sup>4</sup> See the box entitled “Developments in energy commodity prices and their implications for HICP energy price projections”, *Eurosystem staff macroeconomic projections for the euro area*, ECB, December 2021.

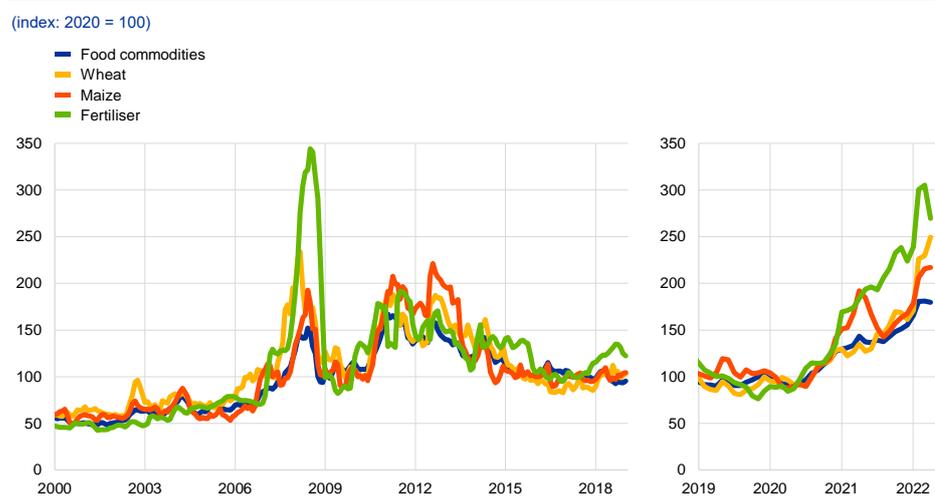
<sup>5</sup> See Monforti-Ferrario, F., Dallemand, J., Pinedo Pascua, I., Motola, V., Banja, M., Scarlet, N., Medarac, H., Castellazzi, L., Labanca, N., Bertoldi, P., Pennington, D., Goralczyk, M., Schau, E., Saouter, E., Sala, S., Notarnicola, B., Tassielli, G. and Renzulli, P., “Energy use in the EU food sector: State of play and opportunities for improvement”, *JRC Science and Policy Report*, Publications Office of the European Union, Luxembourg, 2015.

<sup>6</sup> For energy commodities, see the box entitled “The impact of the war in Ukraine on euro area energy markets” in this issue of the Economic Bulletin.

increased from already elevated levels, resulting in prices almost 200% higher than two years ago.<sup>7</sup>

### Chart B

#### Global food commodity and fertiliser prices



Sources: Hamburg Institute of International Economics (HWWI), Refinitiv and World Bank.  
Notes: Latest observation: May 2022. Food commodities include cocoa, coffee, maize, soybean and wheat. Fertiliser prices refer to diammonium phosphate fertiliser.

**The strong repercussions of the war for the euro area food sector are explained by its direct impact on production and export capacity in Ukraine and by trade restrictions and increased uncertainty in Ukraine, Russia and Belarus.** First, Ukraine introduced a ban on exports of certain food products.<sup>8</sup> The country's production capacity will also be negatively affected over the longer term as crops cannot be planted or harvested in areas directly affected by the war, workers are not available for production, and production and transport infrastructure is being damaged. Second, the transport of food commodities from Russia has become more expensive owing to increased insurance costs.<sup>9</sup> Supplies of oil and natural gas from Russia have also become uncertain, adding to the upward pressure on the input costs of EU agricultural and food processing sectors. Russia has also banned exports of fertilisers – of which it is the largest global exporter – until August 2022.<sup>10</sup> Third, the EU has adopted further sanctions against Belarus, fully banning the import of potash and fuels, among other products.<sup>11</sup> These restrictions on the international fertiliser trade will result in further price increases both globally and in the euro area, while the reduced supply may also affect global crop yields going forward.

<sup>7</sup> Restrictions on fertiliser exports by China may add to these price pressures. See Bown, C.P. and Wang, Y., "China's recent trade moves create outside problems for everyone else", *RealTime Economic Issues Watch*, Peterson Institute for International Economics, 25 April 2022.

<sup>8</sup> These include rye, barley, buckwheat, millet, sugar, salt and meat.

<sup>9</sup> See "The importance of Ukraine and the Russian Federation for global agricultural markets and the risks associated with the current conflict", *Information Note*, Food and Agriculture Organization of the United Nations, 25 March 2022.

<sup>10</sup> See Weil, P. and Zachmann, G., "The impact of the war in Ukraine on food security", *blog post*, Bruegel, 21 March 2022.

<sup>11</sup> See Guarascio, F., "EU bans 70% of Belarus exports to bloc with new sanctions over Ukraine invasion", *Reuters*, 2 March 2022.

**While the overall exposure of the euro area to Russia, Ukraine and Belarus is limited, for certain food commodities there are significant direct exposures to the region involved in the war.** The EU is largely self-sufficient in agricultural products, producing more than it consumes.<sup>12</sup> With regard to euro area trade in agricultural products and fertilisers, the largest share is traded within the euro area (57%), while Russia, Ukraine and Belarus together account for only 2% of total euro area imports (Chart C, panel a).<sup>13</sup> Breaking the imports down by product, the euro area imports a large share of maize from the affected region (primarily from Ukraine), which is mainly used in animal feed (Chart C, panel b). Oil seed, wheat and sugar imports, mainly from Ukraine, are also significant.<sup>14</sup> These imports influence HICP food inflation via the value chain, and, as the supply of these specific goods in global markets is tight, additional delivery constraints may drive prices significantly upwards. For example, households may substitute sunflower seed oil with other vegetable or animal oils and fats, but it is also used in a number of processed food products, so the reduced supply has a large impact. The reduced supply of animal feed may also affect meat supplies and prices. Furthermore, the euro area imports more than a quarter of its fertiliser from the affected region, which is difficult to replace from other sources.

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<sup>12</sup> See [Short-term outlook for EU agricultural markets in 2022](#), No 32, European Commission, Spring 2022.

<sup>13</sup> With respect to extra-euro area imports of agricultural products, Russia accounts for 1.7%, Ukraine for 2.6% and Belarus for 0.1%.

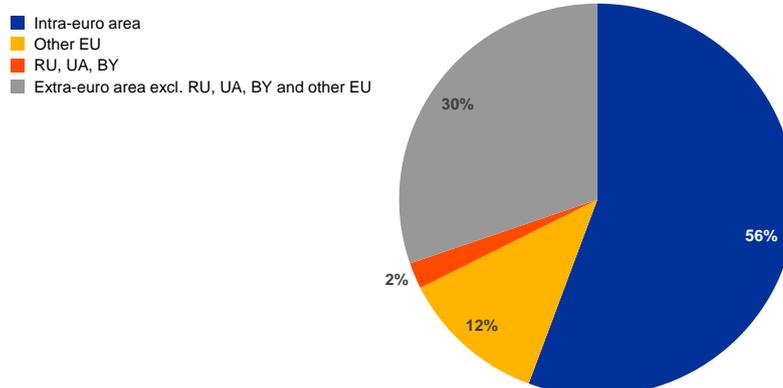
<sup>14</sup> Cyprus, Portugal and the Netherlands are the euro area countries most exposed to Ukrainian wheat imports.

### Chart C

#### Euro area exposure to imports of agricultural products and fertiliser from Russia, Ukraine and Belarus

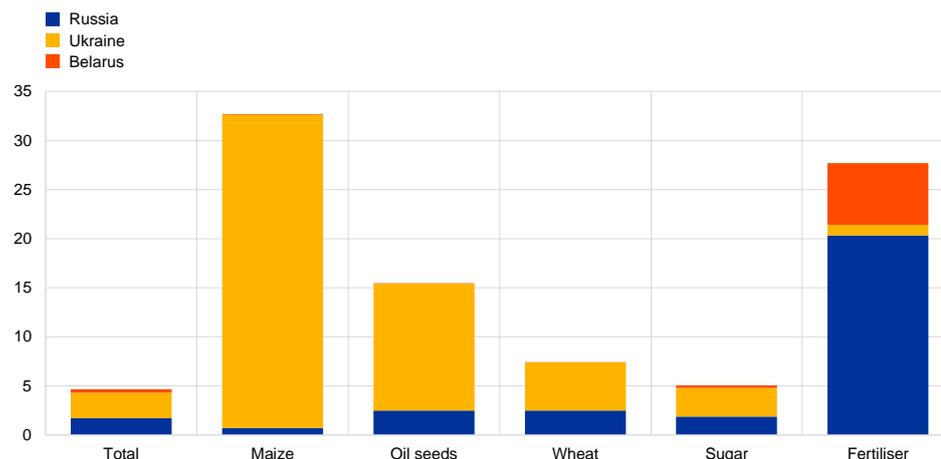
##### a) Composition of euro area food and fertiliser imports

(percentages of total imports)



##### b) Euro area exposure to agricultural and fertiliser imports as a share of total extra-euro area imports

(percentages of extra-euro area imports)



Sources: European Commission and ECB calculations.

Note: Data refer to 2020.

**Food inflation has increased more strongly in euro area countries that are more exposed to agricultural imports from Russia, Ukraine and Belarus.** The Baltic States and Finland are the euro area countries that are the most dependent on imports of agricultural products and fertiliser from Russia, Ukraine and Belarus (Chart D), which account for between 8% (Finland) and 13% (Estonia) of total imports of these products.<sup>15</sup> In the Baltic States, food inflation has generally been higher and more volatile than in other euro area countries, reflecting the fact that these are small open economies and, hence, are more exposed to fluctuations in international commodity markets. Recent food inflation rates in these countries were

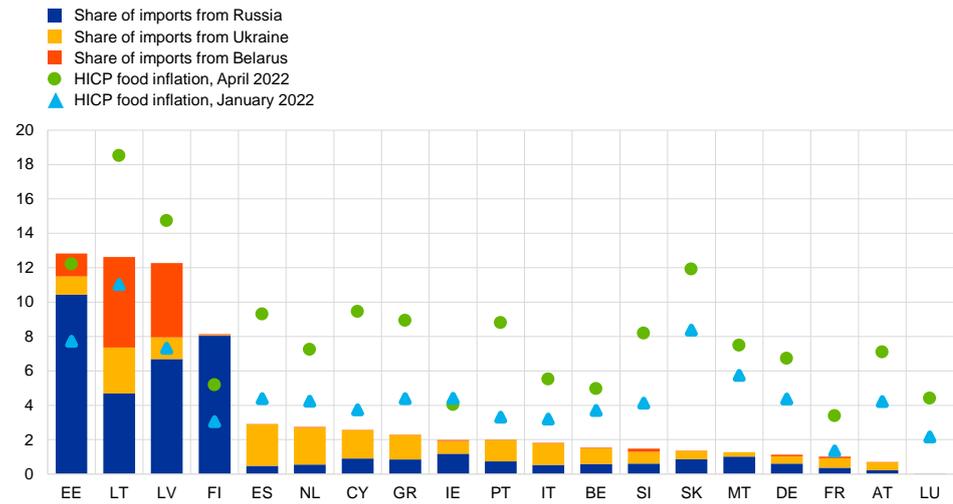
<sup>15</sup> The Baltic States are important transit countries for products from Russia and Belarus. With respect to fertiliser, the figures have been adjusted for re-exports.

the highest within the euro area, ranging from 12% to 19% year-on-year. Differences in HICP food inflation among euro area countries may widen further going forward.

### Chart D

#### Euro area countries' exposure to agricultural and fertiliser imports from Russia, Ukraine and Belarus and HICP food inflation

(percentages of total imports; annual percentage changes)



Sources: European Commission, Eurostat and ECB calculations.  
Note: Data on imports refer to 2020, on HICP food inflation to April 2022.

#### Price pressures in the euro area food sector have further strengthened since the Russian invasion of Ukraine, suggesting that food inflation may stay high (Chart E).

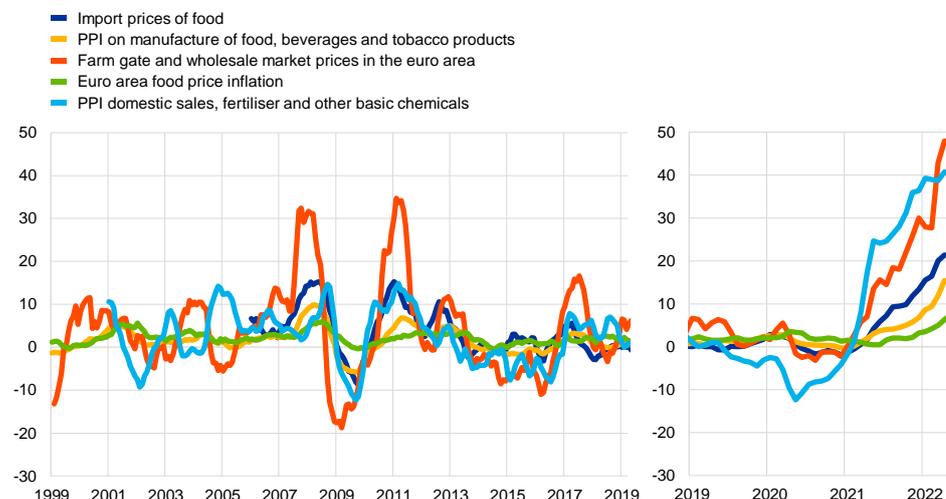
Import prices of food were already growing strongly in the euro area, but accelerated further after the invasion, with the annual growth rate rising to 21.4% in April from 16.4% in February. Farm gate and wholesale prices<sup>16</sup> in the euro area also rose considerably, by 47.9% in April after 27.7% in February, driven mainly by prices of cereals. Further along the production chain, producer prices on food products also accelerated after the invasion from already elevated levels. In particular, producer prices of vegetable and animal oils and fats and of animal feed rose considerably in April, by 39.7% and 32.2%, respectively, in annual terms, after 27.4% and 19.3% respectively in February. These price pressures will affect euro area consumer food prices through the pricing chain in the coming months.

<sup>16</sup> Euro area farm gate and wholesale prices are collected by the European Commission (Directorate-General Agriculture and Rural Development). Farm gate prices refer to the prices of products at the farm where they are produced and exclude any separately billed transport or delivery charges.

## Chart E

### Pipeline pressures on food and fertiliser prices

(annual percentage changes)



Sources: Eurostat and European Commission.

Notes: Latest observations: May 2022 for euro area food inflation and April 2022 for the rest.

**Overall, the euro area's direct dependence on the region involved in the war is limited apart from specific commodities, but food prices are strongly affected, given the developments in global commodity prices.** The euro area's imports of grains, oil seeds and fertilisers are being hampered owing to the war. Food price inflation is also strongly affected via higher world market prices of these inputs for agricultural production, along with the strong increase in energy prices. Previous episodes of rising food prices were followed by economic adjustments, and food price inflation tended to moderate in the medium term. This time inflation can be expected to stay high in the coming months, despite some counterbalancing factors. Some of the supplies affected by the war could be substituted by supplies from the rest of the world, but at high prices. There is also the possibility of increasing crop production in the euro area (by bringing "ecological focus areas" into cultivation and re-prioritising the maize produced), which would help moderate the impact of the war on grain markets, at least in terms of quantity.<sup>17</sup> Reduced supply of animal feed from Russia and Ukraine can partly be compensated by more supply from other regions (e.g. Latin America), but most likely at higher prices. These counterbalancing measures are unlikely to limit food price increases very much in the short term, as several inputs are difficult to substitute at short notice and are expected to be the main drivers of future food inflation developments.<sup>18</sup> For example, owing to the reduced supply and high price of fertiliser, some pipeline pressures are expected to persist in 2023.

<sup>17</sup> "Supply shock caused by Russian invasion of Ukraine puts strain on various EU agri-food sectors", *European Commission*, 5 April 2022.

<sup>18</sup> There are some additional factors that may affect food supply and prices in the euro area, such as global food commodity supplies, export restrictions introduced in some countries after the Russian invasion of Ukraine and stockpiling by euro area households.

## A new indicator of domestic inflation for the euro area

Prepared by Annette Fröhling<sup>1</sup>, Derry O’Brien and Stefan Schaefer<sup>2</sup>

**In this box, we present a new measure of domestic inflation for the euro area that takes into account the import intensity of HICP items.** For this new indicator, the import intensities of HICP items are derived using information from national accounts and input-output tables. The HICP items with a relatively low import intensity are subsequently aggregated to what is referred to as a “Low IMport Intensity” (LIMI) inflation indicator.<sup>3</sup> The threshold for the import intensities, below which an HICP item is included in the indicator, is determined on the basis of empirical criteria. While the ECB’s inflation target is formulated in terms of headline inflation, the concept of domestic inflation is of analytical relevance to monetary policy, as it features prominently in the monetary policy transmission mechanism.<sup>4</sup> The GDP deflator is a commonly used indicator of domestic inflation, but while it discounts for imported inflation it captures price developments beyond consumer prices, such as prices for investment goods or exports that may not be very closely linked to domestically-driven consumer price inflation. In addition, standard exclusion-based indicators of core inflation may still include items that may have a high import intensity. The newly developed LIMI inflation indicator can complement some of these other indicators. It suggests that, although the sharp rise in headline inflation is mainly explained by imported inflation, domestic inflationary pressures have also increased over the past year.<sup>5</sup>

**The import intensity of each HICP item is computed as the after-tax direct and indirect import content of private consumption.** The higher the import content of a private consumption item, the more its price should react to international factors, given that the after-tax import content of consumption is approximately equal to the long-run elasticity of consumer price inflation to import price changes.<sup>6</sup> The total

<sup>1</sup> Deutsche Bundesbank.

<sup>2</sup> Deutsche Bundesbank.

<sup>3</sup> In general, HICPs are designed according to the domestic concept, i.e. the HICP refers to products that are bought in a given country. By contrast, the idea behind the indicator of “domestic” inflation means that some parts of HICP components are produced in a foreign country, such that price developments in those “non-domestic” parts should mainly be driven by foreign market conditions.

<sup>4</sup> The concept of domestic inflation, as used in this box, is closely related to the concept of non-tradable inflation. The difference is that the concept of non-tradable inflation considers the export intensity and the import intensity of different goods and services for all uses, while domestic inflation refers to goods and services produced for domestic consumption with a low import intensity.

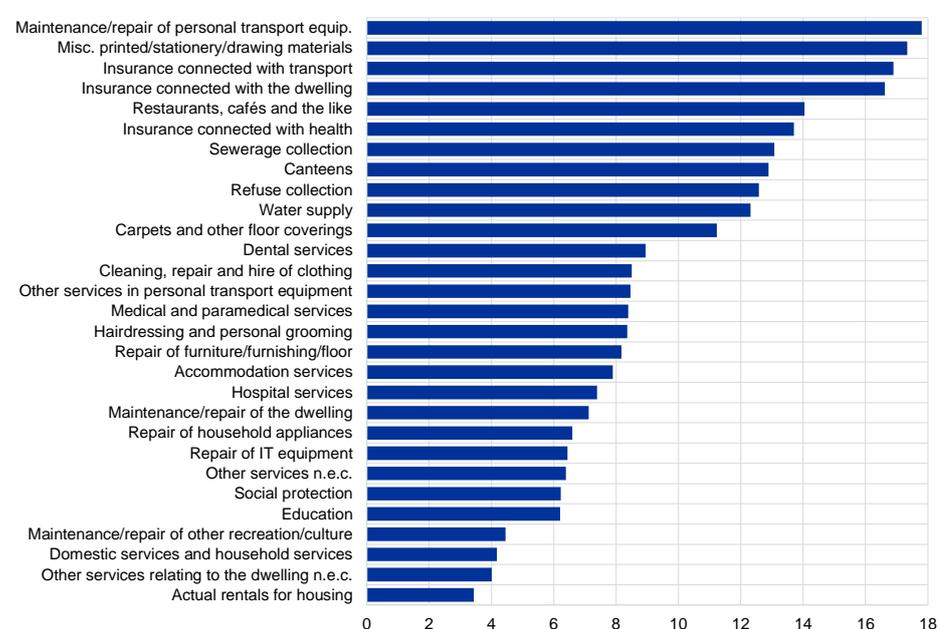
<sup>5</sup> See F. Panetta, “[Small steps in a dark room: guiding policy on the path out of the pandemic](#)”, speech at the European University Institute, 28 February 2022, and F. Panetta “[Patient monetary policy amid a rocky recovery](#)”, speech at Sciences Po, 24 November 2021. Note that the LIMI inflation indicator referred to in these speeches is based on the [World Input-Output Database \(WIOD\)](#), which was subsequently revised using a mapping system based on Eurostat’s FIGARO (Full International and Global Accounts for Research in Input-Output analysis) database.

<sup>6</sup> One caveat here is that the degree of substitutability with imports could also affect prices and this is not taken fully into account. For example, even for an item with zero import intensity, domestic firms may keep the price equal to the international price to avoid losing market share to imported alternatives. Furthermore, going beyond our largely statistical approach, domestic inflation could also be defined according to the sources of the economic shocks. For example, if the price of a good – even with a high import intensity – were to be strongly influenced by euro area demand, then this imported inflation could still be described as “domestic” in the sense that it may come under the control of domestic monetary policy.

import content comprises the direct import content of private consumption (i.e. extra-euro area imports of goods that are directly consumed by households) and the indirect import content of private consumption (i.e. extra-euro area imports of intermediate goods that are used in the euro area production of final consumption goods). The total import content of an HICP item is derived first by using information from input-output tables to estimate the import content of consumption products classified by activity and then by mapping those products to the 94 HICP items.<sup>7</sup> According to this approach, in 2017, the import intensity ranged from 19% to 32% for HICP energy items, was close to 22% for HICP food items, ranged between 3% and 68% for HICP services items and between 11% and 44% for HICP non-energy industrial goods items (Chart A).<sup>8</sup>

### Chart A

HICP items with an import intensity of less than 18% in 2017



Sources: Eurostat, authors' calculations.

Note: Due to space constraints, the bars only show HICP items (at the 4-digit COICOP level) with an import intensity of less than 18%, which is the threshold determined on the basis of the empirical assessment.

<sup>7</sup> The main data sources used to derive the import intensity for individual HICP items are the FIGARO database, as well as the corresponding supply and use tables. FIGARO data are provided at an annual frequency and for sufficient sectors; they cover the period 2010 to 2017 (the calculations for 2000-09 are instead based on WIOD data). The computation of the correspondence tables between the 64 final Classification of Products by Activity (CPA) in the FIGARO database and the 94 HICP items at the 4-digit COICOP level is based on a [Eurostat correspondence list](#) (COICOP stands for the classification of individual consumption by purpose). In addition, Eurostat data on wholesale and retail trade, final consumption expenditure at purchaser's prices, as well as the COICOP weights of the individual HICP items, are used as auxiliary data to conduct the mapping. The import intensities change each year from 2000 to 2017 and are fixed at 2017 values thereafter until the next release of FIGARO data. The mapping is based on publicly available information and it is only an approximation of the import intensity.

<sup>8</sup> The two HICP services items entitled passenger transport by air and passenger transport by the sea and inland water way show very high import intensities. The reason is that it is not possible to compute the import intensity for transport services of passengers and goods separately, as the corresponding CPA items, water and air transport, do not discriminate between the two. The item with the third highest import intensity is package holidays, at 35%.

**The ability to track headline inflation over the medium term is the main criterion used to determine an optimal threshold for the import intensity, with HICP items falling below that threshold being assigned to the LIMI inflation indicator.** The threshold for our LIMI inflation indicator is determined according to empirical criteria. These include the historical bias and overall precision, as measured by the mean squared error (MSE), in tracking developments in headline inflation over the medium term.<sup>9</sup> For the post-global financial crisis (GFC) period, the bias tends to be larger for low import intensity threshold values (Chart B).<sup>10</sup> This may reflect the fact that it is to a large extent services items that tend to have a low import intensity, but at the same time also a relatively high average inflation rate. As the threshold rises, the bias tends to decrease as more non-energy industrial good items – which tend to have, on average, lower inflation rates – are covered by the LIMI inflation indicator. The indicator, based on a threshold of 18%, appears to provide the highest predictive accuracy, as well as a relatively modest bias.<sup>11</sup> Among standard exclusion-based indicators of underlying inflation, HICP inflation excluding energy, food, travel-related items and clothing and footwear (HICPXX) has the lowest MSE and is broadly comparable to that of the LIMI inflation indicator with a set threshold of 18%.

<sup>9</sup> An estimate of the persistent component of inflation, which is unobservable, is needed to serve as a benchmark. The main benchmark in month  $t$  is defined as the annualised HICP growth rate over the subsequent two years, i.e.  $1,200 \cdot (p_{t+h} - p_t)/h$  where  $p_t$  is the price level at time  $t$  and  $h$  is 24 months. The results are robust to the use of alternative proxies for the persistent component of inflation, such as a corresponding benchmark based on inflation three years ahead. The post-GFC sample period runs from September 2008 to December 2017. Data from January 2018 to December 2019 are needed to calculate the two-year ahead benchmark. Data from the pandemic period are not used.

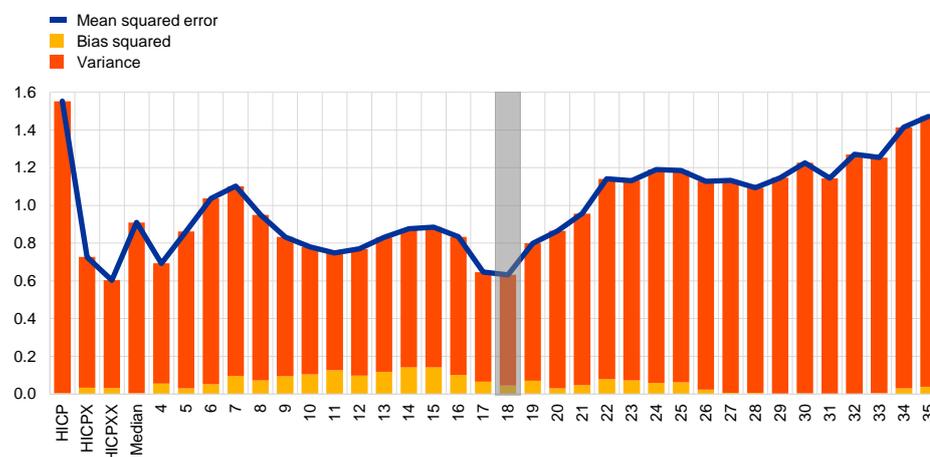
<sup>10</sup> Over the pre-GFC sample period, there is no clear optimum threshold for the import intensity. Much of the strong positive bias in the headline HICP during the pre-GFC sample period is accounted for by high average inflation rates for very oil-intensive items such as liquid fuels. These items have a high import intensity and tend to be excluded from the range of thresholds considered.

<sup>11</sup> The pre-GFC period was characterised by persistently high commodity price inflation. If a commodity super-cycle were to reoccur, then LIMI inflation indicators with a low import intensity threshold that excludes many energy and food items would again likely show a large bias. For this reason, the LIMI inflation indicator with a threshold of 18% should only be used as a complementary indicator in a broader assessment of developments in underlying inflation.

## Chart B

### Accuracy of candidate LIMI inflation indicators and common indicators of underlying inflation during the post-global financial crisis/pre-pandemic period

(x-axis: maximum import intensity in percentages)



Sources: Eurostat, authors' calculations.

Notes: The metrics, i.e. the bias, variance and mean squared error, are calculated for candidate LIMI inflation indicators with import intensity thresholds ranging from 4% to 35% over the period from September 2008 to December 2019, with the preferred 18% threshold being shaded. The benchmark is defined as the annualised HICP growth rate over the subsequent two years. HICPX refers to HICP inflation excluding energy and food, while HICPXX refers to HICP inflation excluding travel-related items and clothing and footwear.

**The LIMI inflation indicators generally show a strong link to business cycle conditions.** The LIMI inflation indicator should, in principle, have a relatively high sensitivity to domestic slack. In a reduced-form Phillips curve regression based on the output gap, the short-run slope is highly significant in all regressions except in the cases of LIMI inflation indicators with import threshold values of 8% or lower.<sup>12</sup> The long-run slopes that are significant lie in the range from around 0.24 to 0.48. When using the unemployment gap as the measure of slack, the slopes are generally significant for an import threshold of between 17% and 23%. Taken together, a relatively low MSE points to a threshold of 18% for the LIMI inflation indicator. This choice is supported by a strongly significant Phillips curve slope for both the output gap and unemployment gap for this indicator.<sup>13</sup>

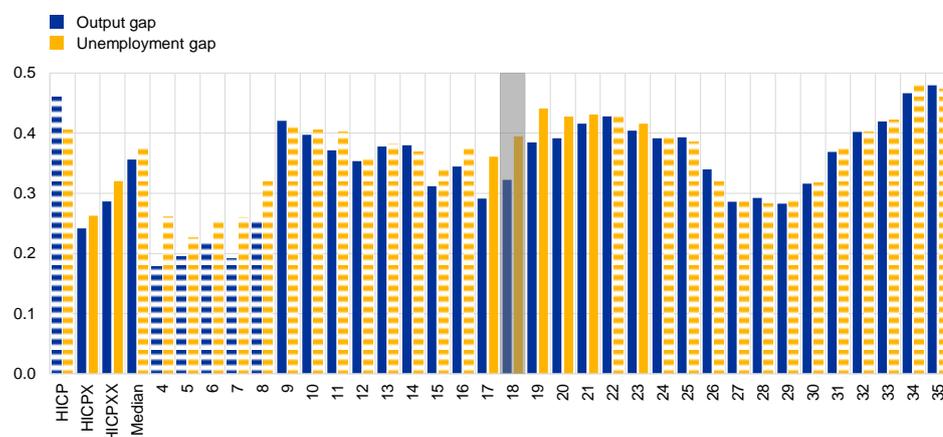
<sup>12</sup> The Phillips curve specification is as follows:  $y_i(t) = \alpha + \rho * y_i(t-1) + \beta_i * \text{slack}(t-1) + \varepsilon(t)$  where  $y_i(t)$  is the annualised seasonally-adjusted quarter-on-quarter growth rate of the indicator of domestic inflation  $i$  (associated with a given import intensity threshold) at time  $t$  and the slack is either the output gap or the unemployment gap.

<sup>13</sup> In addition, over the post-GFC to pre-pandemic period, the only LIMI inflation indicator that shows a significant slope for the unemployment gap is the one with the 18% threshold.

## Chart C

### Long-run slope in Phillips curve regression of LIMI inflation indicators and common indicators of underlying inflation

(x-axis: maximum import intensity in percentages)



Sources: Eurostat, authors' calculations.

Notes: HICPX refers to HICP inflation excluding energy and food, while HICPXX refers to HICPX inflation excluding travel-related items and clothing and footwear. The median is weighted. The sign of the slope for the unemployment gap is inverted. Corresponding short-run slopes that are not significant at the 1% level are shown in a horizontal striped pattern. The sample period is the second quarter of 2003 to the fourth quarter of 2019.

**The LIMI inflation indicator, based on an import intensity threshold of 18%, comprises predominantly items in HICP services.** From a total of 94 items in the HICP at the 4-digit COICOP level of disaggregation, the LIMI inflation indicator contained 29 items in 2017, down from 34 in 2010, accounting for 35% and 40% of the total by weight, respectively. This decline may partly reflect some increased prevalence of global supply chains over that period. Since food and energy items typically have an import intensity that is higher than the threshold of 18%, they tend not to be included in the LIMI inflation indicator. Most non-energy industrial goods items are also excluded.<sup>14</sup> Services items are included, with some exceptions such as transport-related services, package holidays, postal services and cultural services. Given that this indicator comprises predominantly services items, it also tends to have a higher average level of inflation than that of the HICP inflation excluding energy and food.<sup>15</sup>

**The LIMI inflation indicator suggests that, although the sharp rise in headline inflation is mainly explained by imported inflation, domestic inflationary pressures have also increased over the past year.** The LIMI inflation indicator points to some increase in underlying inflationary pressures in the years immediately preceding the coronavirus (COVID-19) pandemic (Chart D). Subsequently, after a steep decline following the onset of the pandemic, the LIMI inflation indicator started on an upward trajectory in mid-2021.<sup>16</sup> This signal is broadly corroborated by the

<sup>14</sup> The following non-energy industrial goods items are included from 2017 onwards: carpets and other floor coverings; water supply; and miscellaneous printed matter, stationery and drawing materials.

<sup>15</sup> See the box entitled “[What is behind the change in the gap between services price inflation and goods price inflation?](#)”, *Economic Bulletin*, Issue 5, ECB, 2019.

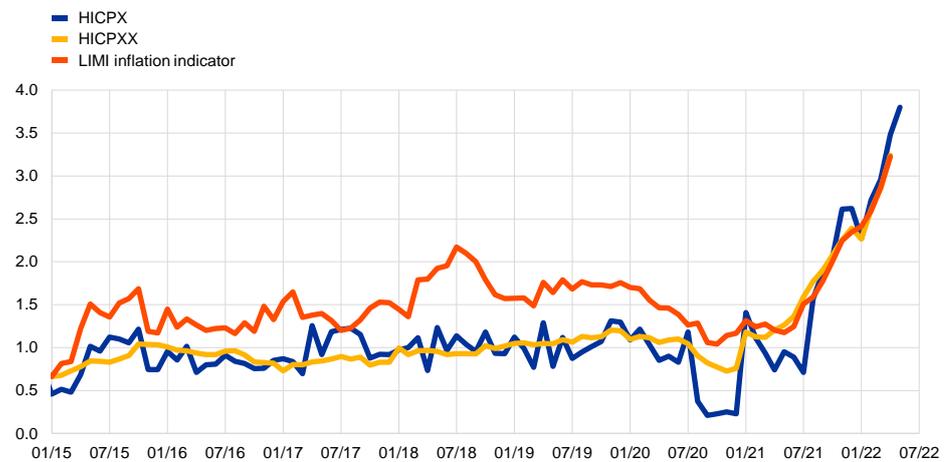
<sup>16</sup> This upward trajectory could be partly accounted for by the indirect effects of higher international commodity prices on the HICP items in the LIMI inflation indicator. However, the magnitude of these effects is difficult to quantify.

HICPXX. The LIMl inflation indicator, as well as the HICPXX, has been less affected than the HICPX by the strong volatility in travel-related services during the pandemic, as some of these items have an import content higher than the threshold of 18%. The LIMl inflation indicator also suggests that recent high levels of inflation are mainly imported, reflecting global shocks to supply and demand that are increasingly spilling over to the euro area economy through import prices (Chart E).

### Chart D

#### LIMl inflation indicator in comparison with common indicators of underlying inflation

(annual percentage changes)



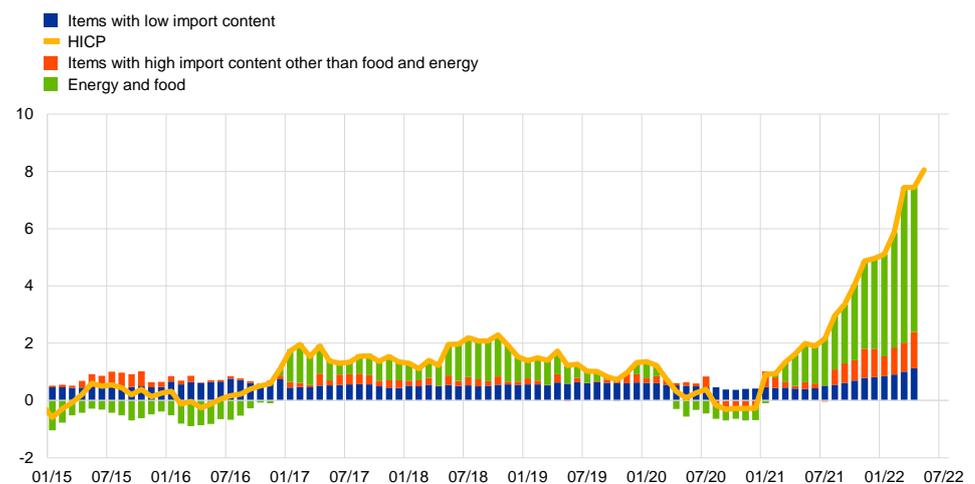
Sources: Eurostat, authors' calculations.

Notes: The LIMl inflation indicator is based on an import content threshold of 18%. HICPX refers to HICP inflation excluding energy and food, while HICPXX refers to HICP inflation excluding travel-related items and clothing and footwear. The latest observations are for May 2022 for the HICPX (flash estimate) and April 2022 for the remaining HICP items.

### Chart E

#### Decomposition of HICP inflation

(annual percentage changes; percentage points)



Sources: Eurostat, authors' calculations.

Notes: The items with a lower import content correlate with those in the indicator of domestic inflation based on an import content threshold of 18%. The latest observations are for May 2022 for the HICP (flash estimate) and April 2022 for the remaining HICP items.

**The LIMl inflation indicator can provide supplementary information for an assessment of underlying inflationary pressures.** Particularly at times of large

swings in international commodity prices or movements in euro exchange rates, this domestic inflation indicator can help to gauge the persistence of underlying inflation developments.<sup>17</sup> Still, as is the case with other indicators of underlying inflation, the accuracy of the LIMI inflation indicator can be episodic.<sup>18</sup> Also, since import intensities can change over time, the composition of the HICP items in the domestic inflation indicator can also shift.<sup>19</sup> Generally, it would be helpful to have more detailed information available about the import intensity of HICP components at a higher level of disaggregation. Overall, the LIMI inflation indicator should be used as a supplementary indicator within a broader set of indicators of underlying inflation. Furthermore, an assessment based on these indicators should be complemented by a more structural analysis of the driving forces to better understand the inflation process.

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<sup>17</sup> This is assuming that such commodity price and exchange rate movements have one-off level effects.

<sup>18</sup> See Chapter 6 in [“Inflation measurement and its assessment in the ECB’s monetary policy strategy review”](#), Work stream on inflation measurement, *ECB Occasional Paper Series*, No 265, September 2021.

<sup>19</sup> While these changes in composition tend to be infrequent, this could potentially be a factor that influences the trajectory of the LIMI inflation indicator and this will need to be monitored.

## 8 Liquidity conditions and monetary policy operations from 9 February to 19 April 2022

Prepared by Joonas Koukkunen and Anne van der Graaf

**This box describes the ECB’s monetary policy operations and liquidity developments during the first and second reserve maintenance periods of 2022.** Together, these two maintenance periods ran from 9 February 2022 to 19 April 2022 (the “review period”).

**Average excess liquidity in the euro area banking system rose by €77.1 billion during the review period, reaching a record level of €4,490.6 billion.** This was due to asset purchases conducted under the pandemic emergency purchase programme (PEPP) and the asset purchase programme (APP). The effect of asset purchases on excess liquidity was partially offset by a seasonal increase in net autonomous factors and a slight decrease of around €4.5 billion in outstanding credit operations.

### Liquidity needs

**The average daily liquidity needs of the banking system, defined as the sum of net autonomous factors and reserve requirements, increased by €81.1 billion to €2,575.9 billion during the review period.** Compared with the previous review period, the increase was due almost entirely to a rise of €81.2 billion in net autonomous factors, up to €2422.1 billion (see the section of Table A entitled “Other liquidity-based information”), while minimum reserve requirements rose only marginally by €0.6 billion to €155.4 billion.

**Liquidity-absorbing autonomous factors increased during the review period by €149.9 billion to €3,321.9 billion, owing mainly to rises in other autonomous factors and government deposits.** Other autonomous factors (see Table A below for further information) rose during the review period by €67.7 billion to €1,103.5 billion. Banknotes in circulation increased strongly by €32.2 billion to €1,563.2 billion. Reportedly, this was due in part to the elevated but temporary precautionary demand in some jurisdictions as a consequence of Russia’s invasion of Ukraine, and also to households in some euro area countries making cash withdrawals of ad-hoc government support payments. Government deposits followed the typical seasonal pattern, rising by €50.0 billion to €655.2 billion.

**Liquidity-providing autonomous factors rose by €68.7 billion to €900.1 billion.** This was due to an increase of €26.9 billion in net assets denominated in euro and of €41.8 billion in net foreign assets.

Table A provides an overview of the autonomous factors<sup>1</sup> discussed above and their changes.

**Table A**  
Eurosystem liquidity conditions

**Liabilities**

(averages; EUR billions)

	Current review period: 9 February 2022 to 19 April 2022						Previous review period: 3 November 2021 to 8 February 2022	
	First and second maintenance periods		First maintenance period: 9 February to 15 March		Second maintenance period: 16 March to 19 April		Seventh and eighth maintenance periods	
<b>Autonomous liquidity factors</b>	3,321.9	(+149.9)	3,288.2	(+90.7)	3,355.5	(+67.3)	3,172.0	(+55.3)
Banknotes in circulation	1,563.2	(+32.2)	1,550.6	(+10.0)	1,575.9	(+25.3)	1,531.0	(+27.3)
Government deposits	655.2	(+50.0)	642.6	(+60.5)	667.8	(+25.2)	605.2	(-48.3)
Other autonomous factors (net) <sup>1)</sup>	1,103.5	(+67.7)	1,095.1	(+20.2)	1,111.8	(+16.7)	1,035.8	(+76.4)
<b>Current accounts above minimum reserve requirements</b>	<b>3,758.7</b>	<b>(+85.7)</b>	<b>3,746.8</b>	<b>(+89.9)</b>	<b>3,770.5</b>	<b>(+23.7)</b>	<b>3,673.0</b>	<b>(+58.5)</b>
of which exempted excess reserves under the two-tier system	923.0	(+0.4)	915.7	(-10.2)	930.4	(+14.8)	922.7	(+18.5)
of which non-exempted excess reserves under the two-tier system	2,835.6	(+85.3)	2,831.2	(+100.1)	2,840.1	(+8.9)	2,750.3	(+40.8)
<b>Minimum reserve requirements<sup>2)</sup></b>	<b>155.4</b>	<b>(+0.6)</b>	<b>154.0</b>	<b>(-1.4)</b>	<b>156.8</b>	<b>(+2.8)</b>	<b>154.8</b>	<b>(+2.9)</b>
<b>Exemption allowance<sup>3)</sup></b>	<b>932.3</b>	<b>(+3.3)</b>	<b>923.8</b>	<b>(-8.7)</b>	<b>940.8</b>	<b>(+17.0)</b>	<b>928.9</b>	<b>(+17.7)</b>
<b>Deposit facility</b>	<b>730.4</b>	<b>(-9.2)</b>	<b>746.0</b>	<b>(+11.8)</b>	<b>714.9</b>	<b>(-31.1)</b>	<b>739.6</b>	<b>(-12.9)</b>
<b>Liquidity-absorbing fine-tuning operations</b>	<b>0.0</b>	<b>(+0.0)</b>	<b>0.0</b>	<b>(+0.0)</b>	<b>0.0</b>	<b>(+0.0)</b>	<b>0.0</b>	<b>(+0.0)</b>

Source: ECB.

Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in brackets denote the change from the previous review or maintenance period.

1) Computed as the sum of the revaluation accounts, other claims and liabilities of euro area residents, capital and reserves.

2) Memo item that does not appear on the Eurosystem balance sheet and therefore should not be included in the calculation of total liabilities.

3) Exempted and non-exempted excess reserves are explained on the ECB's [website](#).

<sup>1</sup> For further details on autonomous factors, see the article entitled "The liquidity management of the ECB", *Monthly Bulletin*, ECB, May 2002.

## Assets

(averages; EUR billions)

	Current review period: 9 February 2022 to 19 April 2022						Previous review period: 3 November 2021 to 8 February 2022	
	First and second maintenance periods		First maintenance period: 9 February to 15 March		Second maintenance period: 16 March to 19 April		Seventh and eighth maintenance periods	
<b>Autonomous liquidity factors</b>	<b>900.1</b>	<b>(+68.7)</b>	<b>891.5</b>	<b>(+99.2)</b>	<b>908.6</b>	<b>(+17.1)</b>	<b>831.4</b>	<b>(-147.2)</b>
Net foreign assets	900.2	(+41.8)	887.2	(+9.6)	913.2	(+25.9)	858.4	(+27.5)
Net assets denominated in euro	-0.1	(+26.9)	4.3	(+89.7)	-4.5	(-8.8)	-27.0	(-174.7)
<b>Monetary policy instruments</b>	<b>7,066.4</b>	<b>(+158.1)</b>	<b>7,043.6</b>	<b>(+91.6)</b>	<b>7,089.3</b>	<b>(+45.7)</b>	<b>6,908.3</b>	<b>(+251.0)</b>
Open market operations	7,066.4	(+158.1)	7,043.6	(+91.6)	7,089.3	(+45.7)	6,908.3	(+251.0)
Credit operations	2,200.8	(-4.5)	2,201.6	(-0.2)	2,200.1	(-1.5)	2,205.4	(-6.3)
MROs	0.3	(+0.1)	0.3	(-0.0)	0.3	(+0.0)	0.2	(+0.1)
Three-month LTROs	0.1	(+0.0)	0.0	(-0.0)	0.1	(+0.0)	0.1	(-0.0)
TLTRO III operations	2,197.2	(-5.0)	2,197.9	(-0.2)	2,196.5	(-1.3)	2,202.2	(+7.2)
PELTROs	3.2	(+0.4)	3.4	(+0.0)	3.1	(-0.2)	2.9	(-13.5)
Outright portfolios	4,865.6	(+162.7)	4,842.0	(+91.9)	4,889.2	(+47.2)	4,702.9	(+257.3)
First covered bond purchase programme	0.0	(-0.4)	0.0	(-0.3)	0.0	(-0.0)	0.4	(-0.0)
Second covered bond purchase programme	1.0	(-1.2)	1.1	(-0.7)	0.9	(-0.2)	2.1	(-0.3)
Third covered bond purchase programme	296.3	(-1.4)	296.0	(-1.4)	296.6	(+0.6)	297.7	(+1.8)
Securities Markets Programme	4.2	(-2.3)	5.1	(-1.4)	3.3	(-1.8)	6.5	(-3.0)
Asset-backed securities purchase programme	27.0	(-1.4)	26.9	(-1.1)	27.1	(+0.2)	28.3	(+1.3)
Public sector purchase programme	2,525.6	(+37.9)	2,517.7	(+21.5)	2,533.5	(+15.8)	2,487.7	(+39.8)
Corporate sector purchase programme	326.5	(+16.4)	322.5	(+9.3)	330.6	(+8.1)	310.2	(+15.4)
Pandemic emergency purchase programme	1,685.1	(+115.1)	1,672.8	(+66.0)	1,697.3	(+24.5)	1,570.0	(+202.4)
Marginal lending facility	0.0	(+0.0)	0.0	(+0.0)	0.0	(+0.0)	0.0	(-0.0)

Source: ECB.

Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in brackets denote the change from the previous review or maintenance period.

## Other liquidity-based information

(averages; EUR billions)

	Current review period: 9 February 2022 to 19 April 2022						Previous review period: 3 November 2021 to 8 February 2022	
	First and second maintenance periods		First maintenance period: 9 February to 15 March		Second maintenance period: 16 March to 19 April		Seventh and eighth maintenance periods	
Aggregate liquidity needs <sup>1)</sup>	2,575.9	(+81.1)	2,551.1	(-8.2)	2,600.7	(+49.7)	2,494.8	(+202.5)
Net autonomous factors <sup>2)</sup>	2,422.1	(+81.2)	2,396.9	(-8.5)	2,447.2	(+50.2)	2,340.8	(+202.5)
Excess liquidity <sup>3)</sup>	4,490.6	(+77.1)	4,492.6	(+99.9)	4,488.6	(-4.0)	4,413.5	(+48.5)

Source: ECB.

Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in brackets denote the change from the previous review or maintenance period.

1) Computed as the sum of net autonomous factors and minimum reserve requirements.

2) Computed as the difference between autonomous liquidity factors on the liability side and autonomous liquidity factors on the asset side. For the purposes of this table, items in the course of settlement are also added to net autonomous factors.

3) Computed as the sum of current accounts above minimum reserve requirements and the recourse to the deposit facility minus the recourse to the marginal lending facility.

## Interest rate developments

(averages; percentages)

	Current review period: 9 February 2022 to 19 April 2022						Previous review period: 3 November 2021 to 8 February 2022	
	First and second maintenance periods		First maintenance period: 9 February to 15 March		Second maintenance period: 16 March to 19 April		Seventh and eighth maintenance periods	
MROs	0.00	(+0.00)	0.00	(+0.00)	0.00	(+0.00)	0.00	(+0.00)
Marginal lending facility	0.25	(+0.00)	0.25	(+0.00)	0.25	(+0.00)	0.25	(+0.00)
Deposit facility	-0.50	(+0.00)	-0.50	(+0.00)	-0.50	(+0.00)	-0.50	(+0.00)
€STR	-0.580	(-0.003)	-0.577	(+0.002)	-0.582	(-0.005)	-0.576	(-0.007)
RepoFunds Rate Euro Index	-0.638	(+0.108)	-0.633	(+0.245)	-0.644	(-0.011)	-0.746	(-0.156)

Source: ECB.

Notes: Figures in brackets denote the change from the previous review or maintenance period.

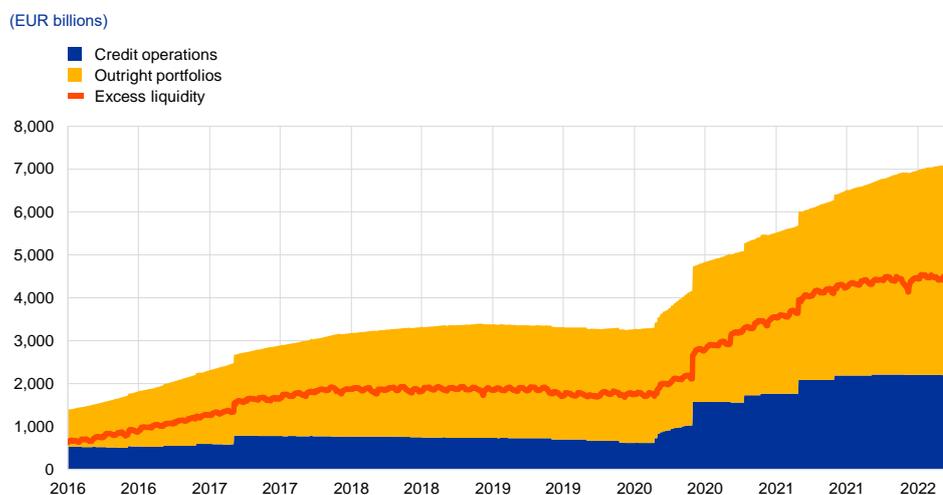
## Liquidity provided through monetary policy instruments

### The average amount of liquidity provided through monetary policy instruments increased by €158.1 billion to €7,066.4 billion during the review period (Chart A).

This was the result of ongoing net purchases under the asset purchase programmes, primarily the PEPP, in the first maintenance period of 2022. Net asset purchases under the PEPP were halted in the course of the second maintenance period at the end of the first quarter, thereby limiting the purchase programmes' overall contribution to the increase in liquidity provision. Maturing credit operations and TLTRO III repayments resulted in a very moderate drain of liquidity over the review period.

## Chart A

### Evolution of liquidity provided through open market operations and excess liquidity



Source: ECB.

Note: The latest observations are for 19 April 2022.

**The average amount of liquidity provided through credit operations decreased by €4.5 billion during the review period.** The decrease resulted from TLTRO III repayments during the second maintenance period. The main refinancing operations (MROs) and three-month longer-term refinancing operations (LTROs) continued to play only a marginal role, with the average recourse to LTROs remaining broadly stable and to MROs increasing slightly, by €0.1 billion compared with the previous review period.

**At the same time, outright portfolios rose by €162.7 billion to €4,865.6 billion, owing to net purchases under the PEPP and the APP.** Average holdings in the PEPP increased by €115.1 billion to €1,685.1 billion compared with the average for the previous review period. Across the ECB's asset purchase programmes, the largest increase in purchases was under the PEPP, followed by the public sector purchase programme (PSPP) and the corporate sector purchase programme (CSPP), with average increases of €37.9 billion to €2,525.6 billion and €16.4 billion to €326.5 billion respectively. The maturing of securities held in non-active programmes reduced the size of outright portfolios by €3.8 billion.

## Excess liquidity

**Average excess liquidity increased by €77.1 billion, reaching a new record high of €4,490.6 billion (Chart A).** Excess liquidity is the sum of banks' reserves above the reserve requirements and the recourse to the deposit facility net of any recourse to the marginal lending facility. It reflects the difference between the total liquidity provided to the banking system and banks' liquidity needs. Banks' current account holdings in excess of minimum reserve requirements grew by €85.7 billion to €3,758.7 billion, while the average recourse to the deposit facility decreased by €9.2 billion to €730.4 billion.

**Excess reserves exempt from the negative deposit facility rate under the two-tier system<sup>2</sup> rose by €0.4 billion to €923.0 billion. Non-exempt excess liquidity, which includes the deposit facility, increased by €76.1 billion, reaching €3,566.1 billion.** The aggregate utilisation rate of the maximum exemption allowance, i.e. the ratio of exempted reserves to the maximum exempted amount<sup>3</sup>, has remained above 98% since the third maintenance period of 2020 and remained stable at 99.0% since the previous review period. The share of exempted excess reserves in total excess liquidity stood at 20.6%, compared with 20.9% in the previous review period.

## Interest rate developments

**The average €STR remained broadly unchanged at -58.0 basis points during the review period.** Owing to the high level of excess liquidity, the €STR continues to be relatively unresponsive, even to substantial fluctuations in liquidity. The ECB policy rates – the rates on the deposit facility, MROs and the marginal lending facility – were left unchanged during the review period.

**The average euro area repo rate, measured by the RepoFunds Rate Euro Index, rose by 10.8 basis points to -0.64% during the review period.** The increase can be attributed to the normalisation after the record low observed around the year-end, which weighed heavily on the average RepoFunds Rate Euro Index figure in the previous review period. Despite the rise in the average level, the end-of-quarter pattern was particularly pronounced at the end of March, when the RepoFunds Rate Euro Index recorded a level of -0.904%, which is its lowest level, excluding year-ends, since the quarter-end of March 2017.

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<sup>2</sup> More information about the two-tier system for remunerating excess reserve holdings is available on the ECB's [website](#).

<sup>3</sup> The maximum exempted amount is measured as the sum of the minimum reserves and the exemption allowance, which is equal to six times the minimum reserves amount.

# Articles

## 1 Energy price developments in and out of the COVID-19 pandemic – from commodity prices to consumer prices

Prepared by Friderike Kuik, Jakob Feveile Adolfsen, Eliza Magdalena Lis, Aidan Meyler

### 1 Introduction

**Record-high energy price increases at the end of 2021 and beginning of 2022 put significant pressures on the purchasing power of consumers.**<sup>1</sup> These

increases followed a marked decline in energy prices at the onset of the coronavirus (COVID-19) pandemic. While the initial rise in energy prices was mainly driven by the recovery in energy demand following the easing of lockdown measures after the first wave of the pandemic, the subsequent price rally during 2021 was also significantly affected by supply-side issues. This development was aggravated in early 2022 by the Russian invasion of Ukraine. The increase in European gas prices since the summer of 2021 has been particularly sharp, reflecting a combination of supply and demand factors that left European gas inventories at historically low levels ahead of the winter season and the gas market vulnerable to supply and demand uncertainty, including from escalating geopolitical tensions. As a result, consumer gas and electricity prices – both driven by natural gas prices – played an increasingly important role in developments in HICP energy and were accompanied by unprecedented cross-country heterogeneity in energy price developments.

### 2 Energy market developments

**Energy commodity prices dropped considerably at the onset of the pandemic, followed by a recovery period and a subsequent surge, particularly in gas prices.**

The immediate decline in the oil price was particularly pronounced. For instance, the Brent crude oil price dropped by 75% between February and April 2020, while the Dutch TTF gas price<sup>2</sup> fell by 44%. Since then, oil and gas prices have increased sharply, with gas prices already reaching pre-pandemic levels in September 2020 and oil prices doing so around February 2021. This is in contrast to the last episode of rapidly increasing energy commodity prices during the recovery from the 2008 financial crisis, when oil and gas prices stabilised at below pre-crisis levels. The rise in gas prices was particularly strong in the second half of 2021 and intensified even further in the first half of 2022, with European gas prices increasing

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<sup>1</sup> See the article entitled “[Energy prices and private consumption: what are the channels?](#)”, *Economic Bulletin*, Issue 3, ECB, 2022.

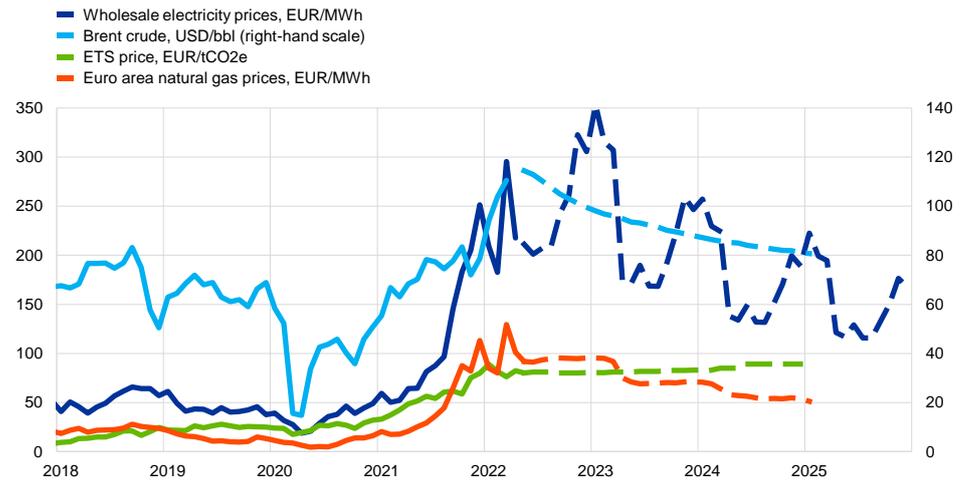
<sup>2</sup> The Title Transfer Facility (TTF) is the Dutch trading hub for gas and the main reference hub for gas trading in Europe.

by 145% since July 2021, while oil prices have increased by 46% over the same period. Both oil and gas prices have risen to well above pre-pandemic levels, with the European gas price reaching an all-time high, contributing in turn to record-high wholesale electricity prices (Chart 1).

### Chart 1

#### Pandemic-related drop in energy prices followed by substantial price increases

(left-hand scale: EUR per unit; right-hand scale: USD per unit, monthly average values)



Sources: Eurostat, Refinitiv and ECB staff calculations.

Notes: Wholesale electricity prices for the euro area are calculated as a weighted average (weighted by net electricity generation) of prices observed in the five biggest euro area economies. Futures curves from 29 April 2022 are represented by broken lines. "ETS" is the EU Emissions Trading System, Latest observations: May 2022.

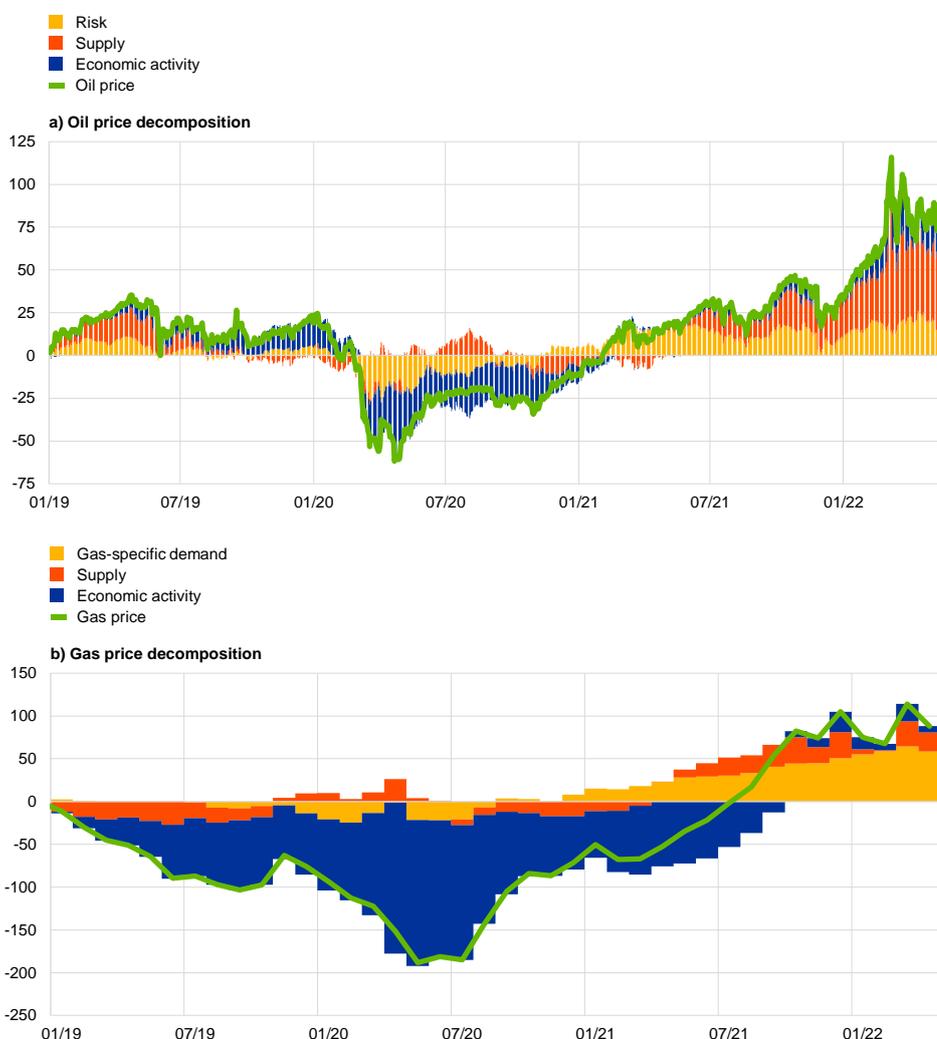
### Drivers of oil and gas prices

**The large drop in energy commodity prices in early 2020 mainly stemmed from the negative impact of the pandemic on the demand for energy.** According to model estimates, most of the drop in oil and gas prices at the onset of the pandemic could be explained by changes in demand as economic activity slowed as a result of COVID-19-related restrictions (Chart 2).

## Chart 2

Oil and gas prices dropped at the onset of the pandemic owing to lower demand, while subsequent price increases have been driven by a combination of factors

(daily cumulated percentage changes, since 1 January 2019)



Sources: Refinitiv, Bloomberg, International Energy Agency (IEA) and ECB staff calculations.

Notes: Daily oil model from Venditti, F. and Veronese, G., "Global financial markets and oil price shocks in real time", *Working Paper Series*, No 2472, ECB, September 2020. Structural shocks are estimated using the spot price, the futures to spot spread, market expectations on oil price volatility and the stock price index. The risk component identifies shocks to risks to future oil demand, whereas the economic activity component identifies shocks to current demand from changes in economic activity. Monthly gas model: the decomposition is based on a three-variable Bayesian vector autoregression (BVAR) where shocks are identified with sign restrictions, including euro area gas quantity (defined as imports + domestic production - exports - change in inventories), euro area gas price and euro area industrial production. The gas-specific demand component identifies shocks to gas demand in Europe that are not driven by economic activity, e.g. changes in heating demand owing to changing weather conditions. The last two months for gas quantity and industrial production are nowcasted. Latest observations: 20 May 2022 (oil); April 2022 (gas).

**The subsequent rise in global energy commodity prices was partly a reflection of a rebound in demand for energy.** The gradual resumption of economic activity and travel was accompanied by an ongoing recovery in demand for oil. According to model estimates, a third of the oil price increase since the trough reached at the end of April 2020 can be explained by a recovery in oil demand. While global demand for gas has also been driven by the economic recovery, especially in China, demand for gas in Europe was also high, owing to a period of colder than usual weather at the end of 2020 and in the first half of 2021. Thereafter, low winds during the summer

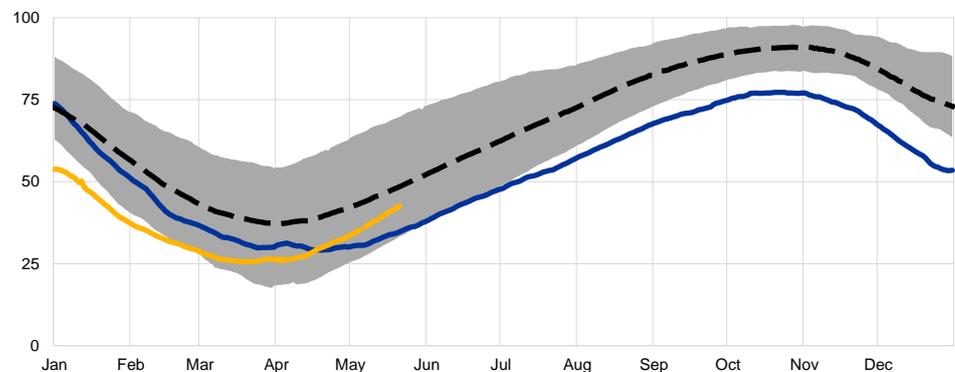
months led to the substitution of wind-generated energy with gas. The result was that stores of gas were not fully replenished over the summer of 2021 (Chart 3, panel a). As gas prices started to rally from the summer of 2021, this also caused spillovers to demand for other energy sources, including oil and coal, as substitutes for gas in electricity production and heating.<sup>3</sup>

### Chart 3

#### Low gas storage levels in Europe and slow reaction of US oil supply to rising oil prices

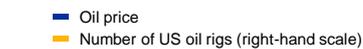
##### a) Gas storage utilisation rate in the EU

(percentages of total capacity)



##### b) Oil price and US oil rig count

(left-hand scale: USD/bbl; right-hand scale: number)



Sources: Gas Infrastructure Europe and ECB staff calculations.

Note: Latest observations: gas storage utilisation rate in the EU: 21 May 2022; oil price: 20 May 2022; US oil rigs: 20 May 2022.

**Supply-side issues have also had an upward impact on oil prices, in particular since the summer of 2021 (Chart 2).** The OPEC+ group decided to reduce oil supply by 9.7 million barrels per day in reaction to the large drop in oil demand in March and April 2020. In July 2021 OPEC+ agreed to gradually restore production by adding 400,000 barrels per day to production each month. However, some

<sup>3</sup> See *Oil Market Report – October 2021*, IEA, 14 October 2021.

OPEC+ members continually failed to reach their targets, which constrained global supply. Meanwhile, US shale oil production reacted more slowly to oil price increases than it has done in the past due to a combination of persistent effects from the pandemic on the US shale oil industry and funding constraints on US shale oil producers (Chart 3, panel b). According to model estimates, around 40% of the oil price increase since April 2020 can be explained by supply factors.

**Supply constraints were also an important contributor to the European gas price rally.** Supply from Norway was low in the first half of 2021 owing to maintenance work on pipelines, and since the summer of 2021 supply of gas from Russia to the EU has dropped significantly, contributing to the slow replenishment of gas inventories in Europe ahead of the winter season. Towards the end of 2021 European gas prices eased somewhat amid higher imports of liquified natural gas (LNG) as a result of the positive gas price spread between Europe and Asia, highlighting the fact that the European gas market has gradually become more dependent on the global supply of and demand for gas, whereas previously it closely followed the oil market. This development stemmed from the emergence of a global market for LNG and the change in the indexation of European gas contracts (Box 1).

**The Russian invasion of Ukraine led to renewed volatility in energy commodity prices, accelerated by the low level of inventories.** Oil and gas price volatility spiked as a result of the Russian invasion of Ukraine in February 2022 and the associated policy responses as uncertainty about energy supply mounted.<sup>4</sup> Volatility in oil and gas prices was amplified by the low levels of inventories, which made prices more sensitive to changes in the outlook for energy supply and demand.

**Subdued investment in oil and gas production since 2014 is likely to have constrained the elasticity of supply to rising demand, thereby contributing to the rise in energy commodity prices (Chart 4).** Years of low investment is constraining the response of supply to rising demand. Weaker investment may reflect, on one hand, the impact of low energy prices after the price drop in 2014, and, on the other hand, uncertainty about the future mix of energy demand following the green transition.

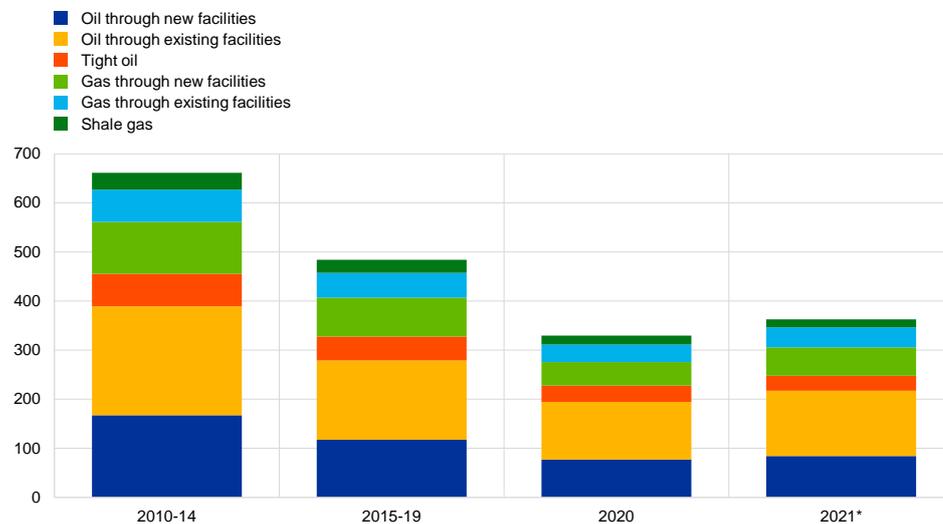
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<sup>4</sup> See the box entitled “[The impact of the war in Ukraine on euro area energy markets](#)” in this issue of the Economic Bulletin.

## Chart 4

### Declining investment in oil and gas since 2014

(USD billions, 2019 values)



Sources: IEA and ECB staff calculations.

Notes: Annual averages, inflation-adjusted to 2019 US dollars. \* Figures for 2021 are estimated.

## Box 1

### Decoupling of gas and oil prices

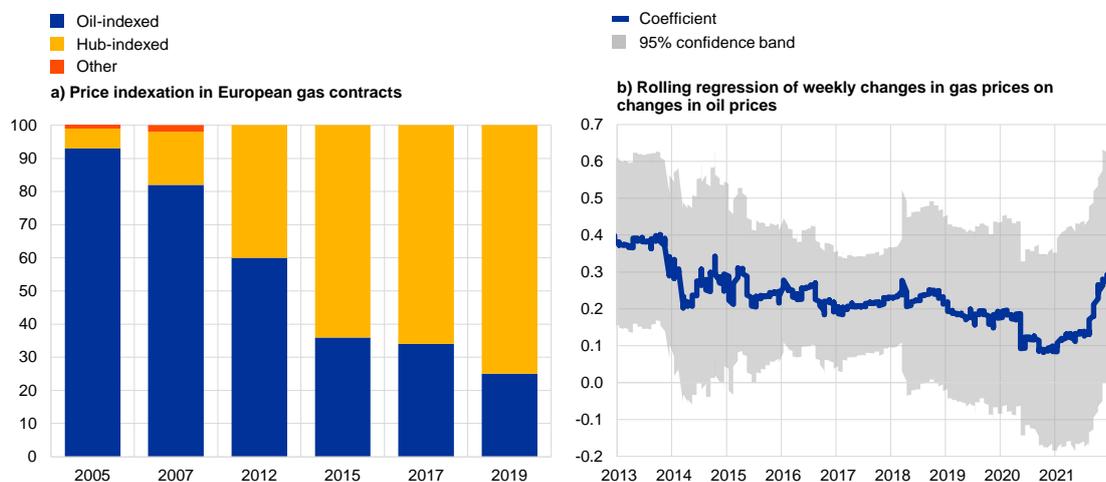
Prepared by Jakob Feveile Adolfsen

Recent gas price developments have highlighted ongoing structural changes that have shaped the gas market in recent years – in particular the gradual decoupling of gas and oil prices. Before 2015, the majority of gas contracts in Europe were indexed to oil prices. Consequently, the oil price usually provided a reasonable guide to developments in energy prices. Since 2015 the majority of European gas contracts have been linked to spot and futures prices in the European trading hubs for gas (Chart A, panel a), with the Dutch TTF being the main reference hub. This change was to some extent a result of the rise in the global supply of LNG, which created a globalised market for gas, and the associated development and deepening of natural gas hubs and spot markets. While the automatic link between oil and gas prices has diminished, European gas and oil prices remain correlated, as these are driven by common shocks to global economic activity and are also substitutes to some extent. Nonetheless, the responsiveness of European gas prices to changes in oil prices has gradually decreased over the last decade (Chart A, panel b).

## Chart A

### European gas prices have become less closely linked to oil prices over time

(panel a: percentages; panel b: beta coefficient)



Sources: IEA, Bloomberg, Haver and ECB staff calculations.

Notes: Panel a shows the price indexation mechanisms in European gas contracts. Panel b shows five-year rolling regressions of weekly changes in the TTF gas spot price on weekly changes in the oil spot price in the period 2013-21 when controlling for oil demand shocks from a daily BVAR model for oil prices, the Citi economic surprise index for the EU and the VIX index (all include up to three-week lags).

The emergence of a global market for LNG also means that European gas prices are increasingly affected by external developments. This could be observed both in the upward pressure on prices from high Asian demand for LNG during the economic recovery and, towards the end of 2021, when rising LNG imports relieved market tightness in Europe somewhat as investors took advantage of higher prices in Europe relative to the Asian gas market.

## Drivers of wholesale electricity prices in Europe

### Wholesale electricity prices in the euro area mirrored developments in gas and oil prices, with declines in the first half of 2020 and a surge throughout 2021.

After low electricity prices of around €35/MWh on average<sup>5</sup> in 2020, electricity prices followed the rise in natural gas prices (Chart 1). Monthly average euro area wholesale electricity prices peaked at around €250/MWh in December 2021, a rise of more than 400% compared to December 2020 prices. On the back of the Russian invasion of Ukraine these climbed further to a monthly average of close to €300/MWh in March 2022, with the daily average price peaking above €500/MWh at the beginning of March 2022, but subsequently declined in April 2022 to an average of around €215/MWh.<sup>6</sup>

### Under the marginal pricing method underlying wholesale electricity prices in Europe, the most expensive technology needed to meet demand within a given

<sup>5</sup> Averages referred to in the text are calculated as the consumption-weighted mean across electricity markets of the five biggest euro area economies – Germany, France, Italy, Spain and the Netherlands.

<sup>6</sup> See the box entitled “The impact of the war in Ukraine on euro area energy markets” in this issue of the Economic Bulletin.

**time period sets the price.** This is known as the “pay-as-clear” market, in which each electricity provider bids their cost of electricity, which depends on the energy sources they use to generate the electricity. The final price of electricity within the market is then determined by the most expensive technology needed to fully meet electricity demand (Chart 5, panel a). In recent years, wholesale electricity prices in the EU have largely been driven by gas prices. However, there are differences in the gas dependency of European electricity markets, with electricity prices in Spain, Ireland, Italy and Portugal being particularly dependent on gas prices.<sup>7</sup>

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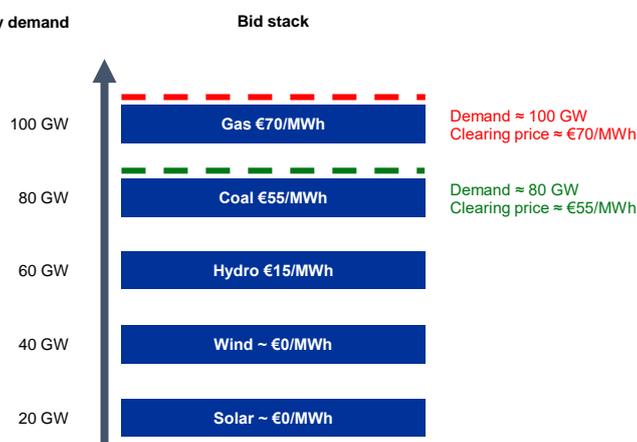
<sup>7</sup> See [ACER's Preliminary Assessment of Europe's high energy prices and the current wholesale electricity market design](#), European Union Agency for the Cooperation of Energy Regulators (ACER), November 2021.

## Chart 5

Electricity pricing in Europe is based on marginal cost, often driven by gas prices

### a) Marginal pricing of electricity

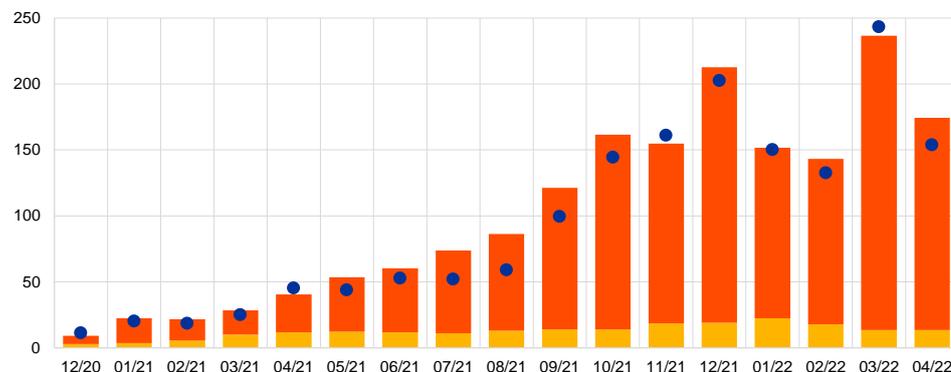
(GW and EUR/MWh)



### b) Maximum contribution of gas and ETS price increases to electricity price increases

(EUR/MWh)

- Changes in average wholesale electricity prices (year-on-year)
- Maximum contribution of the ETS price
- Maximum contribution of the natural gas price



Sources: ACER, Refinitiv and ECB calculations

Notes: Panel a shows how the clearing price of electricity rises as demand rises, depending on the type of generation required to meet demand. Panel b shows the contribution of gas and ETS price increases to increases in the price of gas-fired electricity generation. This estimate is based on the assumption that the price of electricity produced from gas can be mechanically calculated from the price of gas (assuming a thermal efficiency of 50%, i.e. 2 MWh of gas is needed to produce 1 MWh of electricity) and the price of carbon emissions under the EU ETS (assuming an emission intensity of 0.4 tCO<sub>2</sub>e/MWh). The price of gas-fired electricity differs from wholesale electricity prices as the latter are not always determined by gas.

**During the first wave of the pandemic, electricity demand could often be met from renewables alone, which pushed down electricity prices.** Once installed, renewable energy sources have low marginal costs and therefore contribute to electricity supply whenever they are available.<sup>8</sup> When renewable supply is high – which depends on weather conditions – and demand for electricity is particularly low, existing renewable capacity is at times already sufficient to cover demand. This was often the case during the early months of the pandemic, which were characterised by lockdowns. Overall, favourable weather conditions and low electricity demand led to

<sup>8</sup> The largest share of costs of renewable energy relates to the cost of manufacturing and installing renewable energy generation capacity.

a high share of electricity generation from renewables, which, together with low gas prices, led to low electricity prices in 2020 (Chart 1).<sup>9</sup>

**In the first months of 2021, rising gas and – to a lesser extent – carbon prices both contributed to rising wholesale electricity prices.** Once electricity demand picked up, more gas-fired electricity was needed to meet peak demand. As carbon dioxide (CO<sub>2</sub>) is emitted during the production of gas-fired electricity, wholesale electricity prices were affected not only by the price of natural gas but also by the price of carbon emissions under the EU ETS. In the first phase of the recovery, both the price of gas and the price of carbon started to increase (Chart 1). On average, we estimate contributions from year-on-year increases in monthly average ETS prices to increases in the price of gas-fired electricity of between around 16% and 35% in the first six months of 2021 (Chart 5, panel b).

**In the second half of 2021, the increase in gas prices was the dominant factor behind the electricity price increases and undermined the fuel-switching incentive of carbon pricing.** While carbon prices under the EU ETS continued to increase moderately, strong year-on-year increases in the price of gas in the last six months of 2021 and the first months of 2022 clearly dominated annual changes in wholesale electricity prices. It is estimated that the monthly average contribution of gas price increases to the increase in the price of gas-fired electricity was at least 85% from July 2021 to April 2022 (Chart 5, panel b). The considerable increase in gas prices also led to a situation in which coal-fired electricity – despite having a much higher emissions intensity and higher related emissions costs – increasingly replaced gas-fired electricity during 2021. This stands in stark contrast with the usual situation in which rising carbon prices under the EU ETS would normally incentivise a switch from coal-fired electricity production to cleaner sources of electricity.

### 3 Consumer energy price developments in the euro area

#### HICP energy price developments in and out of the pandemic

**The main components of consumer energy prices are liquid fuels, electricity and gas, with smaller contributions from heat energy and solid fuels (Chart 6).** Overall, the weight of HICP energy in the euro area HICP was 9.8% in 2020, 9.5% in 2021 and 10.9% in 2022. Liquid fuels contribute 46% to overall energy consumption in the euro area, while electricity and gas contribute 28% and 20% respectively, based on 2022 weights. The euro area aggregate masks some differences at the country level (Chart 6 and Box 2).

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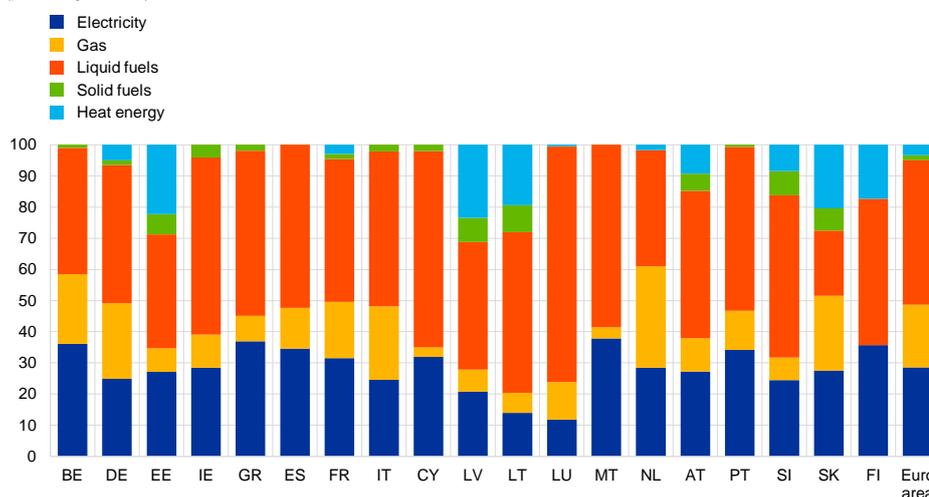
<sup>9</sup> See [Quarterly Report on European Electricity Markets](#), Vol. 13, Issue 2, second quarter of 2020, European Commission, 2020.

## Chart 6

The relevance of different energy components varies among euro area countries

### Weights of HICP energy components in overall HICP energy

(percentages, 2022)



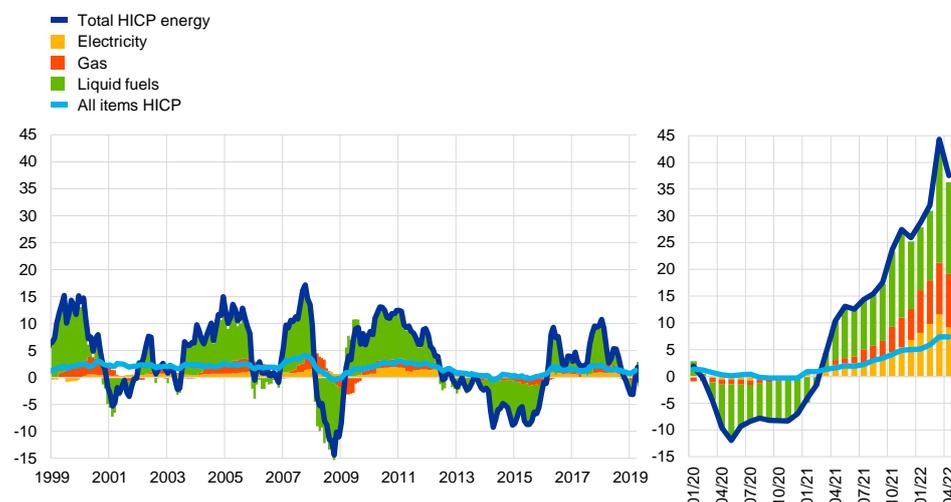
Sources: Eurostat and ECB staff calculations.

**HICP energy inflation contributed negatively to headline inflation during most of 2020.** Historically, energy inflation has contributed on average 0.3 percentage points to headline HICP inflation in the euro area. At the onset of the pandemic, when oil prices fell sharply, the annual rate of change of HICP energy declined markedly, reaching a trough in May 2020 at -11.9%, levels last observed in 2009 (Chart 7). In this initial phase of the pandemic, energy prices were mainly driven by developments in the fuel component, which is linked to oil prices. Later, from the summer of 2020, the temporary cut in the German VAT rate also dampened energy price dynamics.

## Chart 7

After turning negative for most of 2020, euro area energy inflation surged at an unprecedented rate in 2021 and 2022

(percentages and percentage point contributions)



Sources: Eurostat and ECB staff calculations.  
Note: Latest observations: April 2022.

### Energy price developments caused a pronounced pick-up in euro area headline HICP inflation in the course of 2021 and at the beginning of 2022.

Since February 2021 energy inflation has been pushed up by base effects as oil prices recovered. Cumulatively, base effects contributed about 10 percentage points to HICP energy inflation between December 2020 and December 2021.<sup>10</sup> In addition, since mid-2021 the unprecedented increases in wholesale gas and electricity prices lifted HICP energy inflation to new record highs at the end of 2021 and in early 2022. The Russian invasion of Ukraine further added to pressures on consumer energy prices. The spike in energy inflation points to a massive energy shock even from a historical perspective (Chart 8). While liquid fuel price developments are usually the main driver of HICP energy price pressures, consumer gas and electricity prices have played an increasingly important role, with gas and electricity prices contributing about half of energy price inflation in the last few months (Chart 7).

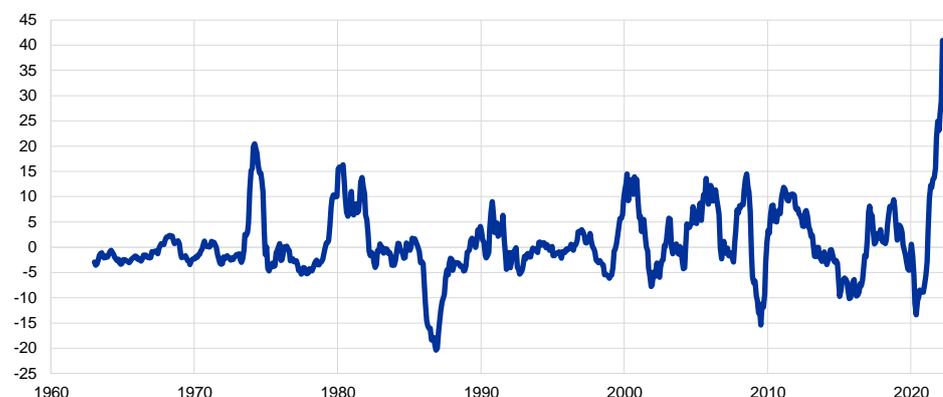
<sup>10</sup> A base effect is the effect on the year-on-year rate of inflation when an unusually large month-on-month change from 12 months earlier drops out of the index. See the box entitled “Recent dynamics in energy inflation: the role of base effects and taxes”, *Economic Bulletin*, Issue 3, ECB, 2021.

## Chart 8

The current spike in energy inflation is large even from a historical perspective

### Difference between euro area HICP energy and HICP excluding energy

(percentage points)



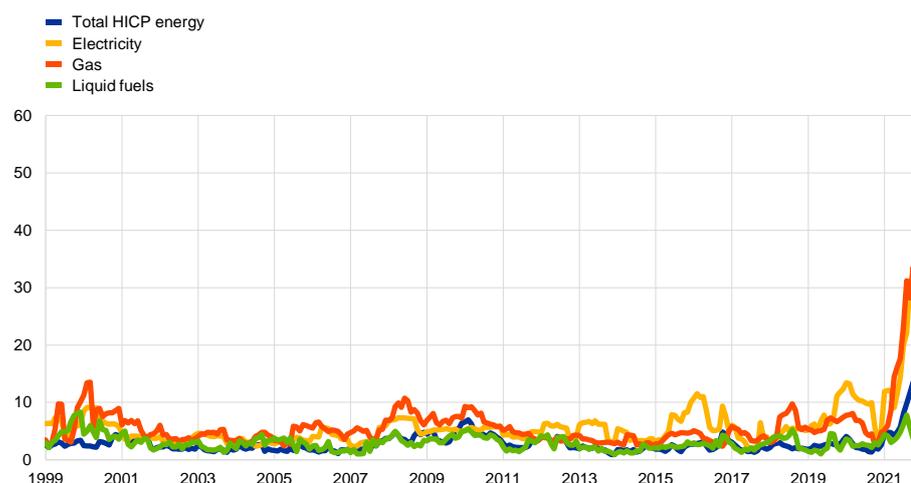
Sources: Eurostat and ECB calculations.  
Latest observation: April 2022.

**Developments in consumer energy prices differ substantially across euro area countries.** For fuel prices, annual percentage changes varied between 19.5% and 46% in the largest euro area countries in April 2022, while there was far greater and unprecedented heterogeneity in price developments for gas (23% to 140.8%) and electricity (7% to 156%) (Chart 9). Overall, this means cross-country energy price developments are less aligned now than when they are mostly dominated by common oil price developments (Box 2).

## Chart 9

Cross-country dispersion of annual rates of change in HICP energy and its components reached a historical high in April 2022

(weighted standard deviation, percentage points)



Sources: Eurostat and ECB calculations.

Notes: The weighted standard deviation expresses the standard deviation of the sum of HICP country-weighted deviations between euro area country annual rates of change in HICP gas, electricity, liquid fuels and total energy and euro area averages using HICP country weights. Latest observations: April 2022.

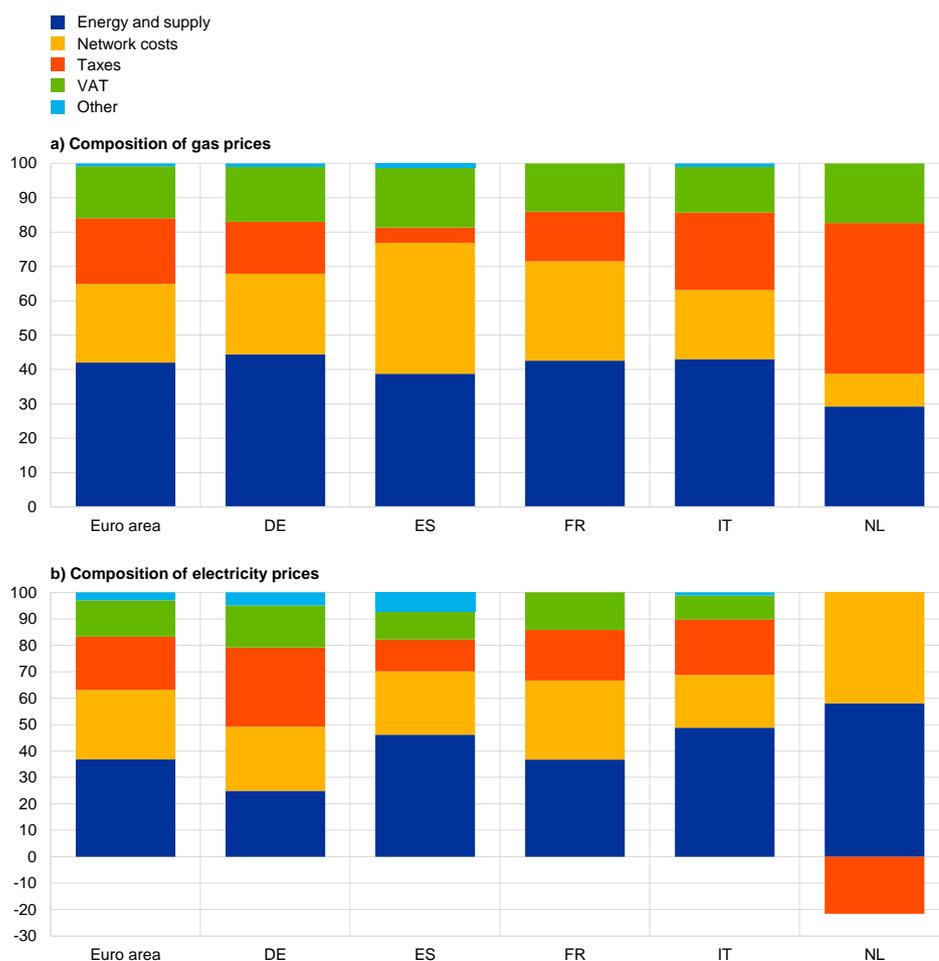
## The impact of energy commodity prices on consumer energy inflation

The components of HICP energy can be broken down into a wholesale energy component, network costs and charges, and a tax component (Chart 10, and Boxes 2 and 3). On average in the euro area, the contribution of the wholesale component (including energy supply) to consumer gas and electricity prices was 42% and 37% respectively in 2021. This varies with the level of commodity prices and between euro area countries. For example, in the Netherlands in 2021 taxes reduced the total price of electricity by 21% owing to a tax credit on electricity consumption. Besides the cost of crude oil, consumer prices of liquid fuels are also influenced by refining margins and costs, distribution and retail margins and costs, and value added tax (VAT) and excise duties (Box 3).

### Chart 10

Wholesale energy and supply made up about 42% of euro area consumer gas prices and about 37% of euro area consumer electricity prices in 2021

(percentages, 2021)



Sources: Eurostat and ECB calculations.

Notes: "Energy and supply" includes the wholesale component and the charges for the supply of energy to consumers. "Taxes" includes taxes, fees, levies and charges, renewable taxes, capacity taxes and environmental taxes, but does not include VAT. The compositions of gas and electricity prices are displayed for consumption classes representing median annual consumption (gas: band DC, 20 to 199 GJ; electricity: band DC, 2,500 to 4,999 kWh).

**The pass-through of crude and refined oil prices to consumer prices is generally complete and quick, usually within 3-5 weeks.**

However, the impact of commodity price changes on consumer energy price changes is less than one to one, owing to the price composition. To quantify the impact, the relation between commodity prices and the respective HICP component is modelled using internal ECB models. Two approaches are taken: (i) a set of bi-variate BVARs for fuel, gas and electricity prices, and (ii) a set of error correction models for refined and retail fuel prices and a model for gas with seasonality and an error correction term.<sup>11</sup> Estimates suggest that about 31-34% of the change in crude oil prices is passed on to liquid fuel prices after one year. It should be noted, however, that elasticities can be a function of the crude oil price level, owing to the relatively constant refining and distribution costs and margins, and hence increase with the level of the oil price. Therefore, when commodity prices are rising, the share of the wholesale component increases relative to taxes and charges. As a result, the impact on consumer energy prices is larger.<sup>12</sup>

**The reaction of consumer gas and electricity prices to changes in wholesale prices for gas and electricity is slower than the pass-through of crude oil prices to liquid fuel prices.**

The estimated pass-through of wholesale gas prices to consumer gas prices takes about three to six months. For electricity prices, the pace depends very much on country characteristics. Price composition and setting play an important role in explaining why the immediate impact on consumer gas and electricity prices of changes in the corresponding wholesale prices is often limited and lagged (Chart 10 and Box 2). Based on the estimates from the models described above, on average about 10-12% of the increase in natural gas prices is passed on to consumer gas prices in the euro area after one year, while for electricity the elasticity is lower, at around 4%. These estimates are subject to the important caveat that they are largely based on past data characterised by low levels and volatility of wholesale prices. The pass-through in an environment of high and volatile wholesale prices may deviate from the figures indicated here.

## Box 2

### Drivers of cross-country heterogeneity in the pass-through of commodity prices to consumer prices

Prepared by Friderike Kuik

The growing importance of the gas and electricity components of HICP during the pandemic led to greater cross-country heterogeneity in energy price developments (Chart A). Cross-country heterogeneity in consumer gas and electricity price developments are linked to differences in the pass-through of wholesale prices, depending on the price composition, the price-setting mechanism, and the energy mix used to produce electricity. The cross-country heterogeneity in consumer gas and electricity price developments is more pronounced than the heterogeneity in

<sup>11</sup> The BVAR uses monthly data and month-on month rates of change. It is assumed that there is no contemporaneous feedback effect from the HICP energy component to the respective commodity price series.

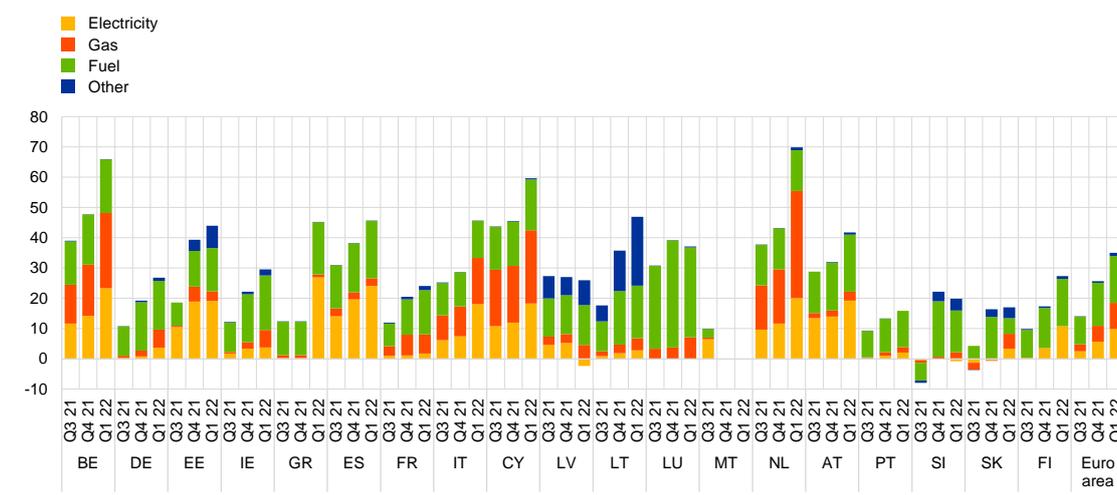
<sup>12</sup> The pass-through of crude oil prices at a level of €100/bbl (€50/bbl) is 47% (31%) to petrol, 54% (37%) to diesel and 76% (62%) to heating fuel, according to analyses published in “Energy markets and the euro area macroeconomy”, *Occasional Paper Series*, No 113, ECB, June 2010.

liquid fuel price developments, which is linked to a faster and more uniform pass-through of oil prices (Box 3).

### Chart A

Annual price changes of HICP energy and its components were heterogeneous during the second half of 2021 and beginning of 2022

(percentage point contributions)



Sources: Eurostat and ECB staff calculations.

Notes: Malta had zero annual percentage change in prices in Q4 2021 and Q1 2022. Latest observation: Q1 2022.

The price composition determines the extent to which consumer prices are affected by wholesale price changes, and price setting determines the speed and timing of the pass-through. The impact of wholesale price changes on consumer prices depends on whether tariffs are flexible and adjust rapidly or are set to change at pre-determined intervals, including through regulated prices.<sup>13</sup> In recent months consumer prices have also been affected by government measures to cushion the impact of rising energy prices on consumers. For example, some governments have reduced taxes and charges to offset increases in wholesale prices. Other measures implemented take the form of transfers (e.g. for low income households) and therefore do not have a direct impact on prices.

There is strong heterogeneity in the energy mix for electricity production across euro area countries. On average in the euro area around 36% of electricity was produced from renewable sources (including biofuels) in 2021, 36% from fossil fuels (including gas and coal) and 27% from nuclear power, but these averages conceal large differences across countries (Chart B). For example, in France the largest share of electricity is produced from nuclear power (68% in 2021). In Germany, the contribution of coal to total electricity production amounted to around 29% in 2021. Renewables contributed 22% in France, 33% in the Netherlands, 36% in Italy, 39% in Germany and 48% in Spain in 2021.

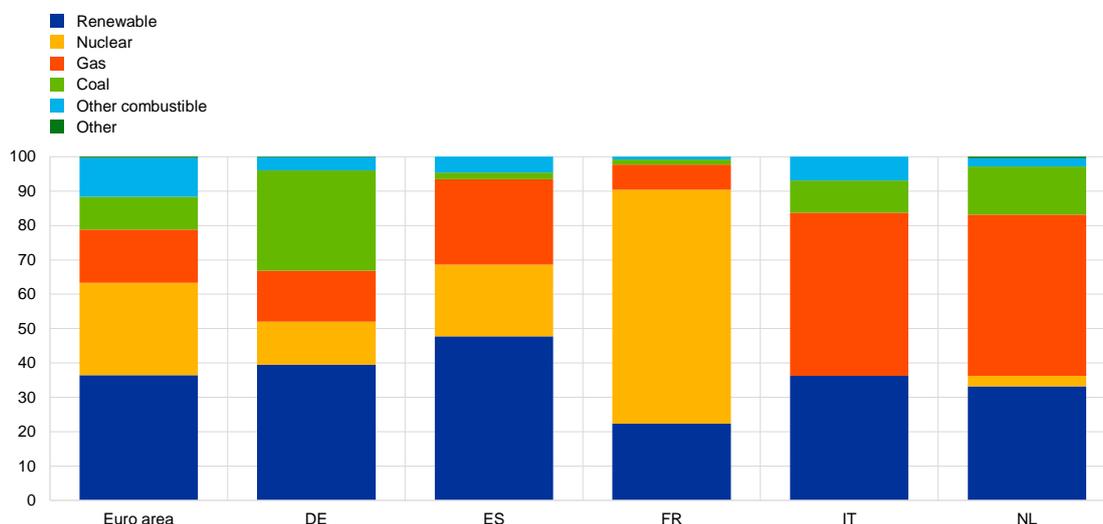
<sup>13</sup> As of 2022 gas prices are “mainly administered” in Estonia, France, Italy, Latvia, Lithuania, the Netherlands and Slovakia and “fully administered” in Spain. Electricity prices are “mainly administered” in Estonia, Greece, France, Cyprus, Lithuania, the Netherlands, Slovakia and Finland and “fully administered” in Malta (Eurostat, HICP – administered prices (dataset), 2022).

## Chart B

The energy mix used to produce electricity varies between euro area countries

### Energy sources contributing to net electricity production

(percentages, 2021)



Sources: Eurostat, IEA and ECB staff calculations.

Notes: The chart shows total net electricity production in 2021, i.e. "the total amount of electrical energy produced by transforming other forms of energy, for example nuclear or wind power" (gross electricity production) minus "the consumption of power stations' auxiliary services" (Eurostat). "Renewable" includes wind, solar, hydro, geothermal energy and biofuels. Values for Italy are for 2019 from the IEA, as a detailed breakdown for combustible fuels is not available from Eurostat.

The energy mix also has an impact on developments in electricity prices. The countries with the highest wholesale electricity prices in 2021 were those in which electricity demand was more frequently covered by gas-fired electricity generation.<sup>14</sup> Conversely, a high share of renewables or nuclear energy can shield countries from higher electricity prices to some extent, but only persistently so if electricity produced using these technologies can cover baseload demand consistently.

Overall, the unusually high cross-country heterogeneity in energy price developments could continue to play a larger role going forward. As the energy transition is aimed at replacing fossil energy sources with renewable energy, starting with the dirtiest fuels (like coal), the roles of gas – particularly during the transition – and, especially, electricity are likely to increase in the near and medium term. Therefore, the drivers of cross-country heterogeneity in the pass-through of wholesale prices to consumer electricity and gas prices are also expected to remain of relevance going forward. Heterogeneity in consumer energy prices could be reduced to some extent through further energy market integration and through more coordinated responses to higher energy prices, including as a consequence of the Russian invasion of Ukraine.<sup>15</sup>

<sup>14</sup> See [ACER's Preliminary Assessment of Europe's high energy prices and the current wholesale electricity market design](#), European Union Agency for the Cooperation of Energy Regulators (ACER), November 2021.

<sup>15</sup> See the box entitled "The impact of the war in Ukraine on euro area energy markets" in this issue of the Economic Bulletin.

### Box 3

#### Developments in consumer liquid fuel prices

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Prepared by Aidan Meyler

Liquid fuels, particularly for automotive transport, are the largest portion of the HICP energy component and the component that fluctuates the most. Liquid fuels account for 4.2% of the overall HICP, of which fuel for transport is the largest element (3.6%, compared with 0.6% for home heating). Although they make up less than 5% of the overall HICP, liquid fuels account for a substantial portion of the volatility of overall inflation – the standard deviation of year-on-year changes in the HICP excluding liquid fuels is 30% lower than that of the overall HICP.

There are three main components in consumer liquid fuel prices: (i) crude oil prices, (ii) refining and distribution costs and margins, and (iii) taxes (excise duties and VAT), but the main driver of consumer liquid fuel prices over the pandemic period has been the evolution of crude oil prices (Chart A).<sup>16</sup> Generally, the pass-through from crude and refined oil prices to consumer prices is complete and quite quick.<sup>17</sup> Owing to their nature, the two main tax components (excise duties and VAT) have evolved differently. Excise duties are levied as a nominal amount per litre and had not changed much over the past two years – at, on average, around 66 euro cent per litre for petrol, 51 euro cent per litre for diesel and 14 euro cent per litre for gasoil (used for home heating). However, a number of countries have recently reduced excise rates on transport fuels and average euro area excise duties have fallen to around 58 euro cent per litre for petrol and to 45 euro cent per litre for diesel. VAT, however, is levied as a percentage of the pre-tax consumer price and excise duties. Thus, movements in the pre-tax price result in movements in the nominal amount of VAT. Therefore, although VAT rates have not changed much over the past two years (at around 20-21% for petrol, diesel and gasoil), the nominal amount (i.e. in terms of euro cent per litre) accounted for by VAT has moved in line with oil prices (i.e. declining between January and April 2020 and increasing again thereafter).

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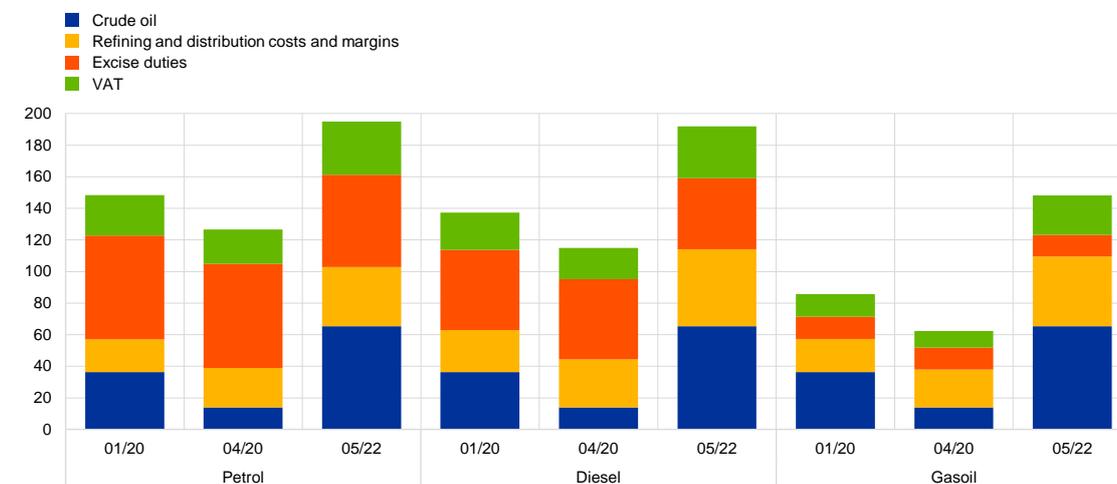
<sup>16</sup> Refining and distribution costs and margins are estimated by calculating (i) the difference between the price of refined fuel and the price of crude oil (refining costs and margins), and (ii) the difference between the pre-tax consumer price and the price of refined fuel (distribution costs and margins). These are approximations, as crude oil and refined fuel prices can vary by specification and location.

<sup>17</sup> The pass-through of the oil price to euro area consumer prices occurs quickly, with 90% occurring within three to five weeks. See Meyler, A., "The pass through of oil prices into euro area consumer liquid fuel prices in an environment of high and volatile oil prices", *Energy Economics*, Vol. 31, No 6, November 2009, pp. 867-881.

## Chart A

### The most variable contribution to liquid fuel prices comes from crude oil prices

(euro cent per litre)



Sources: Refinitiv, European Commission (Weekly Oil Bulletin) and ECB staff calculations.

Notes: Refining and distribution costs and margins are calculated as the difference between crude oil prices and pre-tax consumer prices. Latest observations: May 2022 (average until 16 May).

Both the refining industry and the transport fuels retail distribution sector were significantly affected by the coronavirus pandemic. Between January and April 2020, retail fuel sales (in real or volume terms) declined by close to 50% (Chart B, panel a).<sup>18</sup> Sales then recovered significantly up to August 2020, although they remained below pre-pandemic levels. During 2021 there was a further recovery in retail sales, although they still remained below pre-pandemic levels, and an impact from the emergence of the Omicron variant of COVID-19 was visible between November 2021 and January 2022. The extraordinary oscillations in levels of travel also had ramifications for the refining industry.<sup>19</sup> Refining margins for both petrol and diesel/gasoil declined in the first half of 2020 and remained subdued until early to mid-2021. Subsequently (prior to the conflict in Ukraine) margins more or less returned to the levels that prevailed in the years prior to the pandemic.

There has been an increase in estimated distribution costs and margins for petrol, diesel and gasoil since the onset of the pandemic (Chart B, panel b). This may reflect a need to buffer revenues and service overall costs in response to lower refining costs and margins and reduced sales volumes. Although distribution costs and margins have tended to increase gradually over longer periods of time (based on data from the European Commission's Weekly Oil Bulletin dating back to 1994), developments since 2020 have been above trend. A normalisation of travel once the pandemic is over may lead to some reduction in distribution margins. Further changes in excise duties or carbon taxes would have a direct impact on price levels, but would probably have less impact on their volatility over longer periods of time.

<sup>18</sup> The impact on aviation fuel sales was even more dramatic, with declines of over 90%.

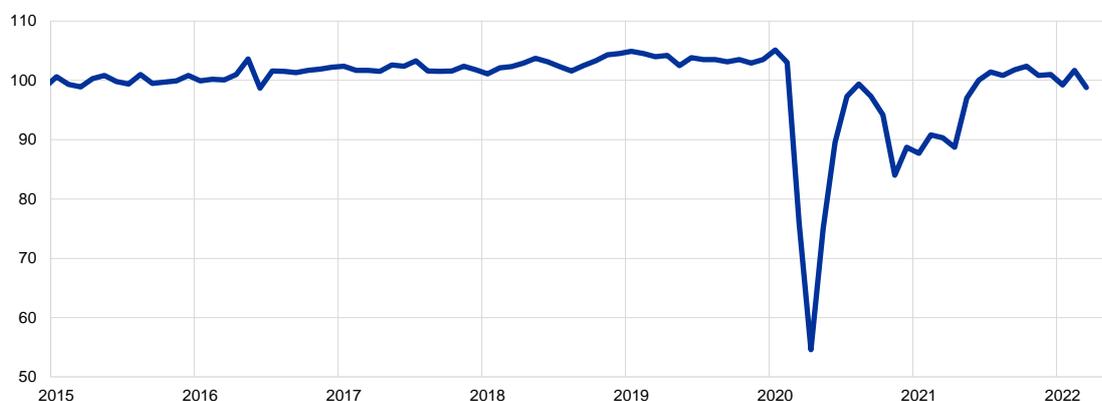
<sup>19</sup> In early 2020, given the dramatic decline in travel, there were concerns regarding the capacity to store the build-up of crude and refined oil inventories. See "Virtual fireside chat with Fatih Birol: COVID-19 and the future of the energy system", Atlantic Council, 26 March 2020.

## Chart B

As retail sales declined during the pandemic, distribution costs and margins were on the rise

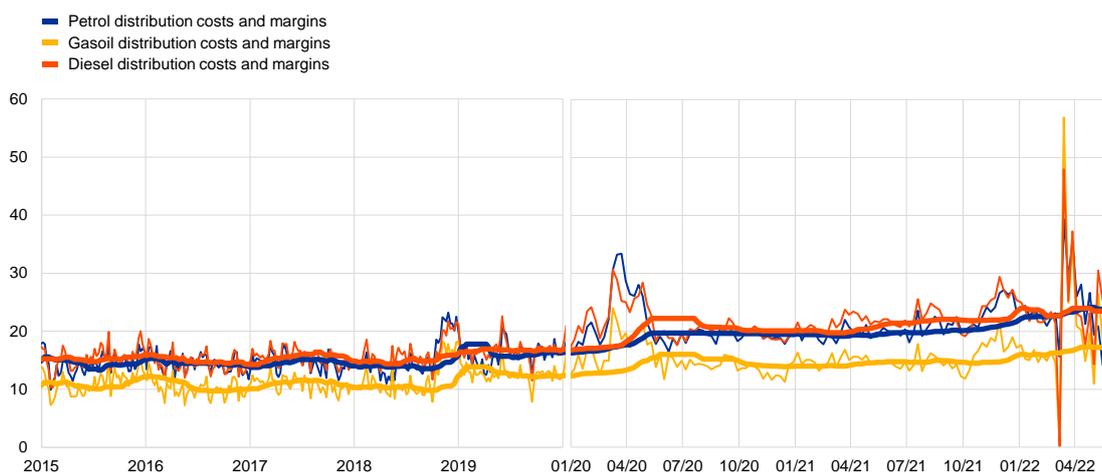
### a) Evolution of retail sales of fuel (in real/volume terms)

(index: 2015 = 100)



### b) Distribution costs and margins

(euro cent per litre)



Sources: Eurostat and European Commission (Weekly Oil Bulletin).

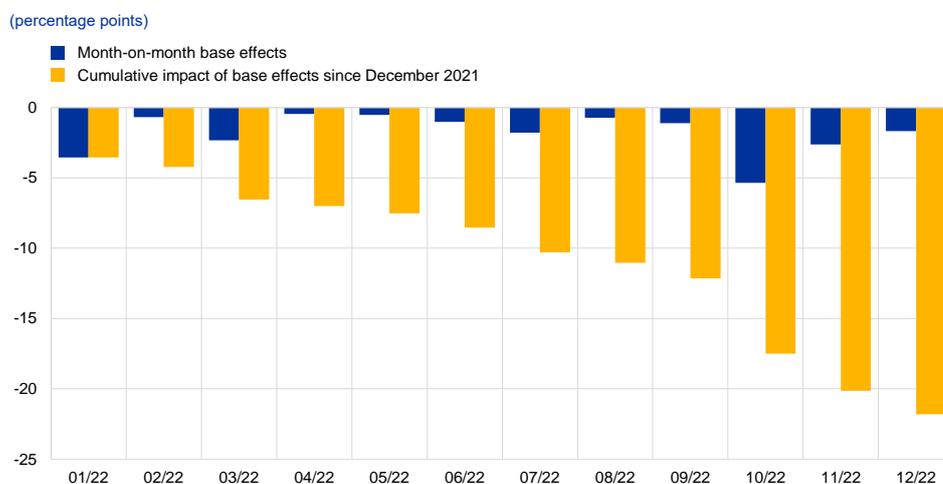
Notes: In panel b, thicker solid lines denote 26-week moving averages of weekly data. Latest observations: panel a, March 2022; panel b, 16 May 2022.

## Implications of energy price developments for energy inflation projections

**Given the strong volatility, movements in energy prices in one year can have implications for year-on-year inflation rates in the subsequent year.** Negative base effects will influence the profile of HICP energy in the course of 2022. The substantial increase in oil prices in 2021 will have a significant downward impact on monthly year-on-year inflation rates for energy in January, March, July, October and November 2022. Cumulatively, downward base effects will take more than 20 percentage points off energy inflation by December 2022 compared with December 2021 (Chart 11). Of course, inflation outcomes will also depend on developments in actual energy prices in 2022; so far the downward base effects in 2022 have been offset by marked month-on-month increases in energy prices.

**Chart 11**

**Negative base effects will influence the profile of HICP energy in 2022**



Sources: Eurostat and ECB staff calculations.

Notes: Month-on-month base effects show the contribution of the base effect to the change in the annual energy inflation rate from one month to the next. The cumulative impact of base effects is calculated by summing month-on-month base effects and is always shown relative to a specific reference month. For example, around 10 percentage points of the decrease in energy inflation in July 2022 compared with the inflation rate in December 2021 is due to base effects.

**HICP energy inflation projections for the euro area include information from oil and gas price futures.**

In Eurosystem/ECB staff macroeconomic projection exercises, the inflation projections are based on the assumption that oil and gas prices will evolve in line with average futures prices observed over a two-week period prior to the projection cut-off date.<sup>20</sup> Since December 2021, given the observed delinking of gas contracts from oil prices, the assumptions regarding oil price futures have been complemented with futures for gas and electricity prices (Box 1).<sup>21</sup> Currently, futures curves are pointing to a drop in oil and gas prices in the course of 2022 and 2023, implying that HICP energy inflation should decline in 2023.<sup>22</sup> However, recent energy price developments and the related volatility of futures curves are a reminder of the uncertainty regarding their predictive capacity, and hence regarding energy inflation projections (Chart 1).

## 4 Conclusion

**Developments in consumer energy prices during the COVID-19 pandemic have reflected commodity price developments, with some differences across euro area countries.** While the recovery in oil and gas prices during 2020 was driven

<sup>20</sup> See the box entitled “The mechanical impact of changes in oil price assumptions on projections for euro area HICP energy inflation”, *Economic Bulletin*, Issue 1, ECB, 2019.

<sup>21</sup> See the box entitled “Developments in energy commodity prices and their implications for HICP energy price projections”, *Eurosystem staff macroeconomic projections for the euro area*, ECB, December 2021.

<sup>22</sup> The downward-sloping nature of the oil futures curve (“backwardation”) is often the result of a tightening oil market, as oil carries a “convenience yield” which captures the benefits of holding inventories, but it may also reflect market expectations of balancing demand and supply. When futures curves are downward sloping, their use as technical assumptions in the projections has a dampening impact on the inflation outlook. Therefore, the projections regularly include a sensitivity analysis to key technical assumptions. See, for example, the box entitled “Sensitivity analysis”, *Eurosystem staff macroeconomic projections for the euro area*, ECB, December 2021.

mainly by the rebound in economic activity and energy demand after the first wave of the pandemic, the subsequent rally in energy commodity prices accelerated as supply-side constraints and risks to supply from geopolitical developments kicked in amid continuously strong demand. From very low levels in 2020, consumer energy price inflation has surged since mid-2021. Gas and electricity price developments have increasingly contributed to energy inflation, but with more cross-country heterogeneity than is the case with liquid fuels. As a result, energy price developments are less aligned across countries than they would be if they were dominated mostly by oil price developments. Moreover, in some countries, the impact of recent very high natural gas prices may only be reflected in consumer gas and electricity prices with a lag.

**Geopolitical developments continue to imply high unpredictability in energy markets.** This is reinforced by ongoing endeavours to make European energy markets independent of Russian energy supplies. In addition, the green transition may affect energy prices and contribute to periods of higher price volatility. If investment in oil and gas production is aligned with net zero emissions targets, but energy supply from renewables cannot consistently meet demand, the result could be recurring periods of high and volatile energy prices. Increases in EU carbon taxes could add to upward pressures on energy prices. However, an increasing decarbonisation of the energy system and increasing energy efficiency also imply reduced dependence of euro area consumer energy prices on global commodity prices and increased dependence on cheaper renewable energy, which in the long run could have a downward impact on consumer energy prices.

**The assessment of energy price developments depends on the source of the shock, which can be challenging to identify.**<sup>23</sup> The energy mix is evolving and this article points to a less prominent role for crude oil (a commodity not produced in the euro area) and an increasing role for gas and electricity, for which price developments are more closely linked to domestic supply and demand than is the case with oil. This implies that it can be more difficult to unambiguously ascribe energy price developments to external shocks. If the energy mix evolves differently across euro area countries, there may be more dispersion in energy price inflation across countries than in a world in which global oil price developments imply common shocks to all countries.

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<sup>23</sup> See also Schnabel, I., “A new age of energy inflation: climateflation, fossilflation and greenflation”, speech at a panel on “Monetary Policy and Climate Change” at The ECB and its Watchers XXII Conference, 17 March 2022.

## 2 Firm debt financing structures and the transmission of shocks in the euro area

Prepared by **Fédéric Holm-Hadulla, Alberto Musso, Giulio Nicoletti and Mika Tujala**

### 1 Introduction

**The debt financing structure of euro area firms has broadened since the introduction of the euro as the common currency.** While bank loans still account for a major share of corporate debt, euro area firms have increasingly resorted to bond financing, especially following the global financial crisis (GFC) of 2008-09.<sup>1</sup> As a result, the outstanding volume of bonds relative to bank borrowing by euro area firms has risen to around 30%, up from roughly 15% in mid-2008.<sup>2</sup> Corporate bond markets have therefore emerged as an increasingly significant determinant of euro area credit conditions over the past decade and a half.

**The rise in bond financing has continued during the coronavirus (COVID-19) pandemic, albeit reflecting different drivers than during the GFC and its aftermath.** Amid acute vulnerabilities across the banking sector, loan supply contracted in the wake of the GFC (Section 2). This forced firms to turn to bond markets as a substitute source of credit, despite the higher relative cost at that time.<sup>3</sup> During the pandemic, firms instead benefited from more favourable loan supply conditions than during the GFC. This was because (1) banks entered the pandemic with significantly stronger balance sheets, in part owing to the regulatory overhaul of the preceding decade, and (2) bank intermediation capacity was underpinned by a swift and extensive fiscal, supervisory and monetary policy response.<sup>4</sup> As these factors supported large loan flows at favourable conditions throughout the pandemic, the concurrent expansion of bond finance has complemented, rather than replaced, bank lending. In this regard, bond finance has also benefited from both the monetary

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<sup>1</sup> Throughout this article, we refer to corporate bond finance as also including shorter-term debt securities, such as commercial paper. In the euro area, the outstanding amounts of short-term debt securities reached around €120 billion at the end of 2021, corresponding to roughly 7% of the overall outstanding amount of corporate debt securities.

<sup>2</sup> See, for example, Cappiello, L., Holm-Hadulla, F., Maddaloni, A., Mayordomo, S., Unger, R. et al., “Non-bank financial intermediation in the euro area: implications for monetary policy transmission and key vulnerabilities”, *Occasional Paper Series*, No 270, ECB, Frankfurt am Main, December 2021. The relative role of bond financing has also risen in other major economies over this period. In the United States, for instance, the outstanding volume of bonds relative to bank borrowing by firms has increased to around 65%, from roughly 50% in mid-2008.

<sup>3</sup> See De Fiore, F. and Uhlig, H., “Corporate debt structure and the financial crisis”, *Journal of Money, Credit and Banking*, Vol. 47, No 8, pp. 1571-1598.

<sup>4</sup> The ECB’s targeted longer-term refinancing operations are a prominent constituent of the monetary policy measures supporting bank-based transmission. See, for example, Barbiero, F., Boucinha, M. and Burlon, L., “TLTRO III and bank lending conditions”, *Economic Bulletin*, Issue 6, ECB, 2021. Further support for bank-based transmission came from the ECB’s pandemic emergency purchase programme, which counteracted the fragmentation pressures that emerged in the early phases of the crisis. See, for example, Lane, P., “The market stabilisation role of the pandemic emergency purchase programme”, *The ECB Blog*, 22 June 2020.

policy support directed at bond markets over recent years (Section 3) and the supply of credit from non-bank financial intermediaries (Boxes 1 and 2).

**The evidence presented in this article indicates that firms' debt financing structures also matter for the transmission of shocks to the economy.** Patterns derived from an econometric model suggest that loans and bonds in the euro area both expand in response to an exogenous increase in business investment, which may materialise, for instance, if the recovery were to unexpectedly speed up (Section 4). On the other hand, when the euro area economy experiences adverse aggregate supply shocks, historical regularities indicate that corporate bond issuance tends to cushion the resulting credit contraction, in turn supporting economic resilience.

**Moreover, the increased role of bond financing also shapes the transmission of monetary policy.** The aforementioned econometric model suggests that bond finance in the euro area partly counteracts the bank lending channel while reinforcing other channels that operate via broader financial market conditions (Section 4). The transmission of monetary policy measures primarily affecting short-term interest rates is therefore stronger in euro area countries with a lower share of bond finance. By contrast, measures that chiefly affect long-term interest rates, and are thus concentrated in maturity segments that carry the bulk of corporate bond issuance, are subject to stronger transmission in countries with a higher share of bond finance. A given set of policy measures may therefore have diverse economic effects in different parts of the euro area.

**In addition to the shift in aggregate debt structures, the changing composition of corporate bond markets may affect transmission and firms' resilience to shocks.** The increased dependence of euro area firms on bond markets has not been limited to the historically largest issuers; it has also been driven by firms that have recently entered the bond market for the first time. This has led to a shift in the composition of bond issuers towards smaller and riskier firms (Box 1). The resulting diversification away from a predominantly bank-based debt structure may strengthen firms' resilience to crises that chiefly affect this part of the financial sector. Moreover, access to bond markets does not seem to systematically induce firms to increase their leverage (Box 2). This is reassuring in terms of firms' financial resilience, as debt overhang problems in the corporate sector may depress investment, employment and GDP. At the same time, the increased presence of more vulnerable firms in bond markets may expose the corporate sector to broader financial market turmoil, thus posing potential challenges for monetary policy transmission.

## 2 A tale of two crises

**Since the onset of the pandemic, corporate bond markets have acted as a major complement to bank-based borrowing by euro area firms.** Corporate bond market conditions deteriorated sharply during the financial turmoil in late February and early March 2020, triggered by the rapid increase in COVID-19 cases in Europe. After the adoption of the ECB's pandemic emergency purchase programme (PEPP)

on 18 March 2020, euro area corporate bond prices and issuance recovered (see below). By the end of 2021 the outstanding amount of euro area corporate bonds stood more than €200 billion above its pre-pandemic level (Chart 1, panel a). This expansion has been broad-based across the larger euro area countries. While France, with its historically high share of bond finance, accounted for the bulk of the increased issuance, Spain, Germany and Italy also recorded strong positive flows. In the latter three countries, the proportion of bond finance in the additional debt taken up by firms during the pandemic actually exceeded by a considerable margin the amount needed to stabilise the bond share in the stock of debt at pre-crisis levels (Chart 1, panel b). As such, the secular rise in bond finance as a share of corporate debt has persisted during the pandemic crisis and added to its relevance for overall credit conditions in the euro area.<sup>5</sup>

**The complementary role of market and bank-based debt during the pandemic stands in contrast to the patterns observed during the GFC, when bond finance acted as a substitute for bank loans.**

While both crises were followed by similar upward trends in bond financing volumes, the bank lending dynamics pointed in opposite directions. In contrast to their record expansion during the pandemic crisis, corporate loans overall contracted in the one-and-a-half years following the collapse of Lehman Brothers (Chart 1, panel a). This contrasting picture is consistent with the different loan supply conditions that prevailed in the respective crises. Amidst an urgent need for bank balance sheet repair and subsequent regulatory tightening, loan supply contracted sharply during the GFC (Chart 2).<sup>6</sup> This in turn forced firms with access to bond markets to resort to this alternative source of debt finance, notwithstanding its high relative cost at the time (Chart 3 panel a). Moreover, the reduction in loan supply led many of the entirely bank-dependent firms to be shut off from external financing, which reinforced the contractionary impact of the GFC on their business activity. However, during the pandemic crisis banks benefited from their previous efforts to repair their balance sheets, accompanied by a strengthening of the euro area regulatory and supervisory framework, and from the broad-based policy response to protect credit supply. This enabled them to deploy their lending capacity as a backstop to the corporate sector, resulting in much more benign loan supply conditions (Chart 3, panel b). Therefore, the expansion of corporate bond finance during the pandemic crisis has not resulted from necessity, but from firms choosing to capitalise on the favourable cost of corporate bond finance over that period (Chart 3, panel b).<sup>7</sup>

<sup>5</sup> Outstanding euro area corporate bond issuance and bank-based borrowing amounted to €1,662 billion and €4,995 billion respectively at end-2021.

<sup>6</sup> The loan supply indicator is based on Altavilla, C., Darracq Pariès, M. and Nicoletti, G., “[Loan supply, credit markets and the euro area financial crisis](#)”, *Journal of Banking & Finance*, Vol. 109, 2019.

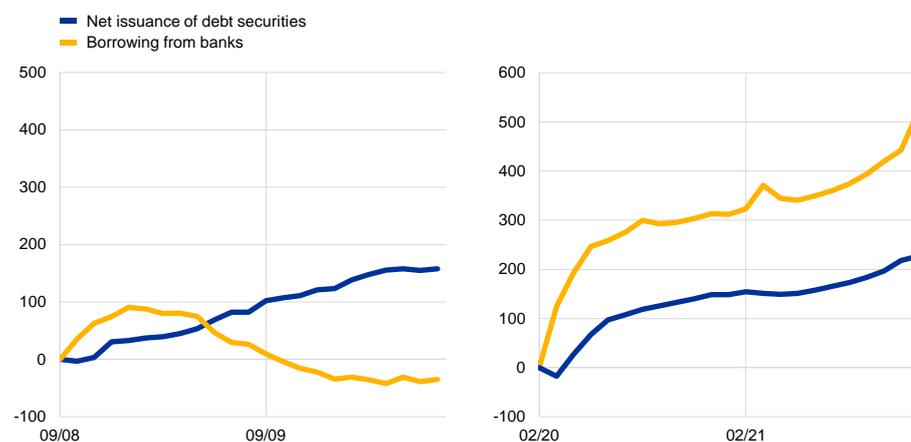
<sup>7</sup> Boxes 1 and 2 document two important additional facts that set apart corporate bond market conditions during the two crises. First, many first-time issuers entering this market during the crises were on average riskier than existing issuers. Second, and possibly related to this, the size of non-bank financial intermediaries – the main holders of corporate bonds – has grown since the GFC. This might have provided additional credit supply to firms, thus exerting downward pressure on the cost of bond finance. In contrast to these divergent patterns in debt financing flows during the GFC and the pandemic, the net issuance of equities was similar across the two crises.

### Chart 1

#### Euro area loans to non-financial corporations (NFCs) and corporate debt securities issuance during the GFC and the pandemic crisis

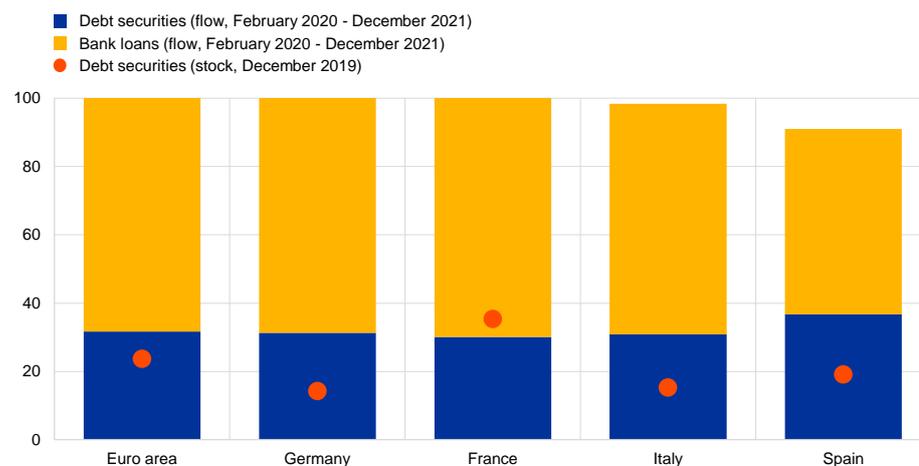
##### a) Euro area flows during the GFC (left panel) and pandemic crisis (right panel)

(cumulative monthly flows, EUR billions)



##### b) Share of corporate debt securities and loans across euro area countries during the pandemic crisis

(percentages)



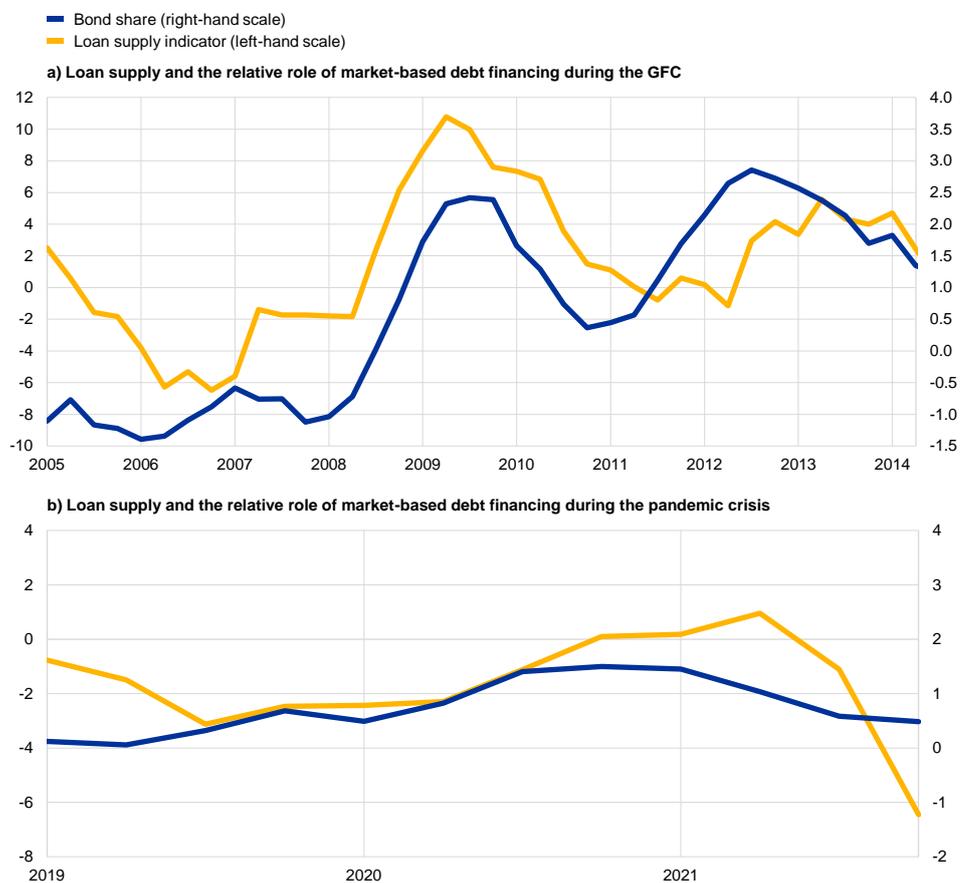
Source: ECB (BSI, SEC).

Notes: Panel b: Bars report shares of NFC bank lending and NFC bond issuance of the sum of these two sources of external finance based on cumulated monthly flows from February 2020 to December 2021. Circles refer to shares of outstanding amounts in December 2019. The latest observations are for December 2021.

## Chart 2

### Loan supply and the relative role of market-based debt financing

(left-hand scale: bond share percentage changes, right-hand scale: lagged loan supply indicator changes; an increase in the loan supply indicator (LSI) represents a tightening of loan supply)



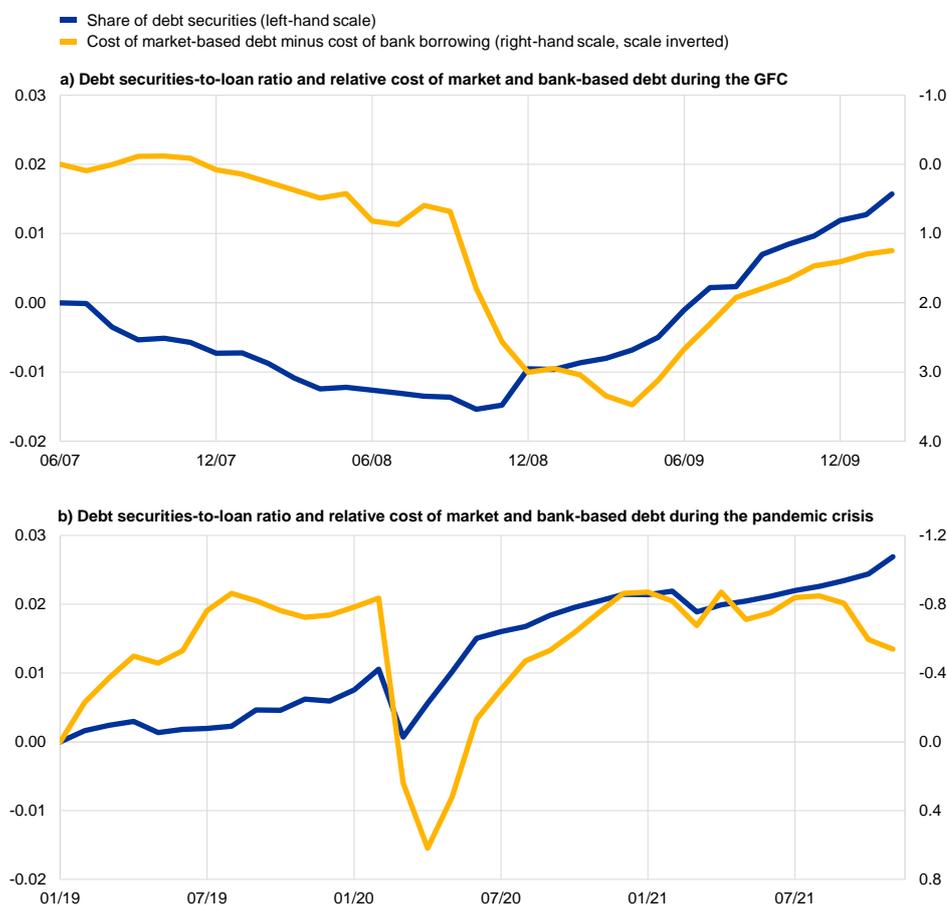
Sources: ECB (BSI, SEC), Bank Lending Survey (BLS) and ECB calculations.

Notes: Bond share is the yearly change in the ratio of bonds to loans. The LSI reflects changes in supply conditions from one quarter to the next. It is cumulated to levels and displayed as yearly changes. Its construction follows the methodology used in Altavilla, Darracq Pariès and Nicoletti (2019) to remove the effects of demand factors from BLS-based indicators on loan supply. The LSI is shifted backwards by six quarters since changes in loan supply are found to affect bond share dynamics with a six-quarter lag. The latest observations are for December 2021 for bond share and June 2020 for the LSI.

### Chart 3

#### The ratio of debt securities to loans and the relative cost of market and bank-based debt

(left-hand scale: cumulative changes; right-hand scale: ratio based on notional stocks; percentage points)



Sources: ECB (SEC, BSI, MIR), Merrill Lynch and ECB calculations.

Notes: Cumulative change in outstanding stock of debt securities as a share of debt (measured as the sum of debt securities and bank loans), based on notional stocks since June 2007 (panel a) and January 2019 (panel b); cumulative changes in the relative cost of market-based debt (cost of market-based debt minus cost of bank borrowing) in percentage points since June 2007 and January 2019. The latest observations are for February 2010 and December 2021.

#### The different motives driving the financing decisions of firms during the two crises are also reflected in firm-level data.

Both crises exerted heterogeneous effects on the performance of individual firms, as measured, for instance, by sales growth (Chart 4). While the bulk of firms suffered a contraction, some weathered the crises better or even improved their performance.<sup>8</sup> As a result, a distinction can be made between hard-hit firms whose borrowing decisions were dictated by the need to satisfy emergency liquidity needs, and less-affected firms whose borrowing decisions remained predicated on the relative attractiveness of different debt

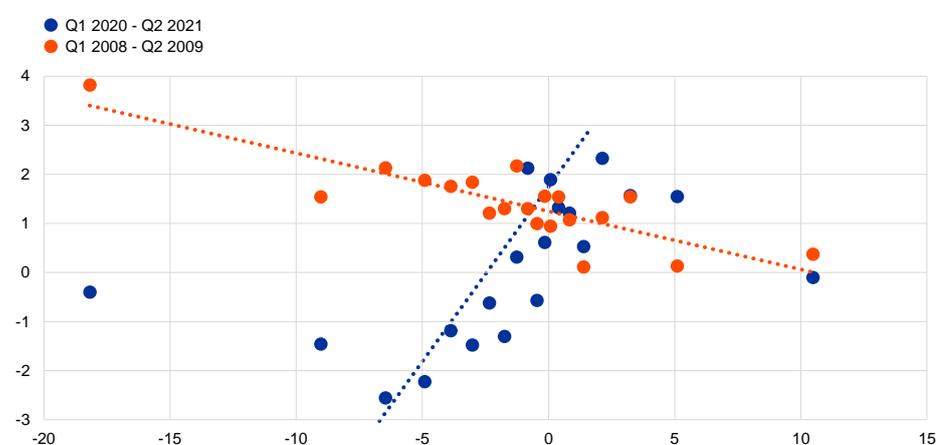
<sup>8</sup> A key feature of the pandemic crisis, which also sets it apart from the GFC, is that the economic fallout was very unevenly distributed across the corporate sector. Firms offering contact-intensive services were particularly hard-hit by the pandemic crisis, given the self-imposed and government-mandated restrictions on physical interactions. At the other end of the spectrum, the pandemic crisis in fact yielded economic benefits for many firms that were predominantly operating digitally, as both work and leisure activities increasingly moved online. Chart 4 focuses on large firms, whereas contact-intensive services are, for the most part, supplied by small companies. Therefore, this factor is unlikely to be the main driver of the patterns reported here.

instruments. This distinction subsequently manifested itself in opposing relationships between firm performance and debt financing structures during the two crises (Chart 4). During the GFC, even hard-hit firms increased their relative reliance on bond finance to sustain their emergency needs for credit against the backdrop of tight loan supply constraints (orange line in Chart 4). During the pandemic, however, hard-hit firms were able to rely on bank lending as a safety net, whereas less-affected firms could draw on bond finance to benefit from its favourable relative cost (blue line in Chart 4).

### Chart 4

#### Firm performance and financing structure during the GFC and pandemic crises

(x-axis: sales growth, percentage points; y-axis: bond share yearly changes, percentage points)



Sources: S&P Capital IQ, Refinitiv and ECB calculations.

Notes: Binned scatter plot using a sample of roughly 2,000 firms; each point is the mid-point of a bin where each bin represents a percentile of the distribution. The blue line excludes the two points at the extreme percentiles where the bond share was not reactive to crises-related developments. The latest observations are for the second quarter of 2021.

### Box 1

#### Examining the rise of bond financing in the euro area

Prepared by Melina Papoutsis<sup>9</sup>

This box examines the growth of bond financing in the euro area through the lens of a cross-section of corporate issuers. Over the past two decades several macroeconomic trends have driven the rise of bond financing in Europe. These include the fall in bank loan supply, the implementation of tighter regulation, accommodative monetary policy that compresses bond yields (including via the ECB's corporate sector purchase programme), legislation supporting the issuance of corporate bonds by

<sup>9</sup> This box is based on Darmouni, O. and Papoutsis, M., "The Rise of Bond Financing in Europe", *Working Paper Series*, No 2663, ECB, Frankfurt am Main, May 2022.

medium-sized firms in some euro area countries and bankruptcy reforms.<sup>10</sup> While the aggregate growth in bond financing is well known, the same cannot be said about its cross-sectional implications. In the past, the European bond market included only the largest firms. This box highlights new microdata that are used to examine the growth of the bond market over the past two decades and answers three questions. First, is the increase in bond financing concentrated in historical issuers or are new firms entering the market? Second, what types of issuer are driving the extensive growth margin? Third, which investors are supplying the additional credit provided via corporate bond markets?

The increase in firms' dependence on the bond market is not restricted to the largest historical issuers; it is also driven by firms that have entered the bond market for the first time in the last 15 years. Their entry has led to a shift in the composition of bond issuers towards smaller and riskier firms. Trends in credit ratings show that the volume of BBB securities has been rising fast and has outgrown the rest of the investment grade category. However, looking solely at credit ratings underestimates the underlying shift in risk for two reasons. First, coverage by rating agencies in the euro area is low, with less than 15% of new bond issuers being assigned a rating. Second, new issuers with a rating are significantly larger and more profitable than new issuers without one. Thus, it is necessary to link bond issuance with firms' characteristics to achieve a more comprehensive analysis of issuer risk in the euro area.

Compared with historical issuers that already had outstanding bonds in 2003, new issuers are significantly smaller, less profitable and have higher levels of leverage.<sup>11</sup> This is particularly pronounced for listed issuers, which have multiplied in recent years. Chart A compares the characteristics of new issuers with those of historical issuers and non-issuers over our sample period, including non-listed firms. Data on three characteristics – size, leverage and profitability – can be computed even for unrated firms. Panel a) illustrates how new issuers are noticeably smaller than historical issuers. The left-hand chart in panel b) highlights that new issuers had substantial amounts of debt throughout the sample period. According to the right-hand chart in panel b), new issuers are less profitable than historical issuers. These patterns are particularly striking for non-listed issuers, which tend to be much smaller, less profitable and have higher leverage than listed issuers.

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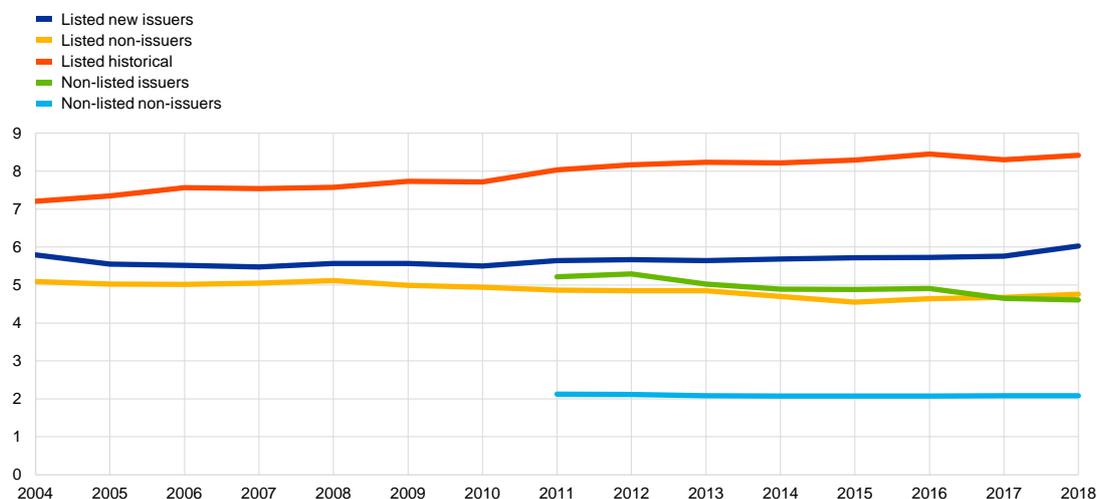
<sup>10</sup> See Altavilla, C., Pagano, M. and Simonelli, S., “Bank Exposures and Sovereign Stress Transmission”, *Review of Finance*, Vol. 21, No 6, October 2017, pp. 2103-2139; Arce, O., Mayordomo, S. and Gimeno, R., “Making Room for the Needy: The Credit-Reallocation Effects of the ECB’s Corporate QE”, *Review of Finance*, Vol. 25, No 1, February 2021, pp. 43-84; Becker, B. and Ivashina, V., “Financial Repression in the European Sovereign Debt Crisis”, *Review of Finance*, Vol. 22, No 1, February 2018, pp. 83-115; Becker, B. and Josephson, J., “Insolvency Resolution and the Missing High-Yield Bond Markets”, *The Review of Financial Studies*, Vol. 29, No 10, October 2016, pp. 2814-2849; De Santis, R. and Zaghini, A., “Unconventional monetary policy and corporate bond issuance”, *Working Paper Series*, No 2329, ECB, Frankfurt am Main, November 2019; Grosse-Rueschkamp, B., Steffen, S. and Streit, D., “A capital structure channel of monetary policy”, *Journal of Financial Economics*, Vol. 133, No 2, August 2019, pp. 357-378; Ongena, S., Pinoli, S., Rossi, P. and Scopelliti, A., “Bank credit and market-based finance for corporations: the effects of minibond issuances”, *Working Paper Series*, No 2508, ECB, Frankfurt am Main, December 2020; Todorov, K., “Quantify the quantitative easing: Impact on bonds and corporate debt issuance”, *Journal of Financial Economics*, Vol. 135, No 2, February 2020, pp. 340-358.

<sup>11</sup> Firms that entered the bond market after 2006 account for almost 15% of the total volume of bonds outstanding in 2019.

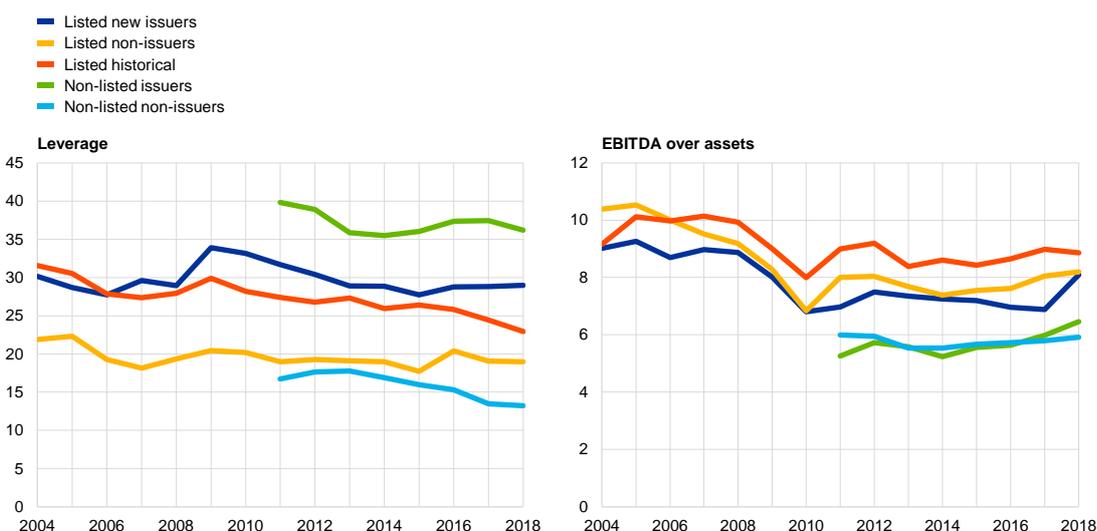
## Chart A

### Size, leverage and profitability of different types of firm

#### a) Total assets



#### b) Leverage and EBITDA over assets



Sources: S&P Capital IQ, Compustat Global and Orbis.

Notes: The plot represents the median of (a) logarithm of lagged assets, (b) lagged percentage of debt over assets, and (c) lagged percentage of EBITDA over assets for listed historical, new and non-issuers from 2004 to 2018, as well as for non-listed issuers and non-issuers from 2011 to 2018. Lagged assets are used as an indicator of the size of a firm, while the ratio of debt to assets is used as a measure of leverage and EBITDA over assets measures profitability. Listed historical issuers consist of firms with positive outstanding bonds either in 2002 or 2003. Listed new issuers are listed firms that issued bonds for the first time between 2004 and 2018. The group of listed non-issuers is made up of listed firms that never issued bonds between 2002 and 2018, as well as of listed new issuers before their first issuance. Non-listed issuers are firms with positive outstanding bonds between 2010 and 2018.

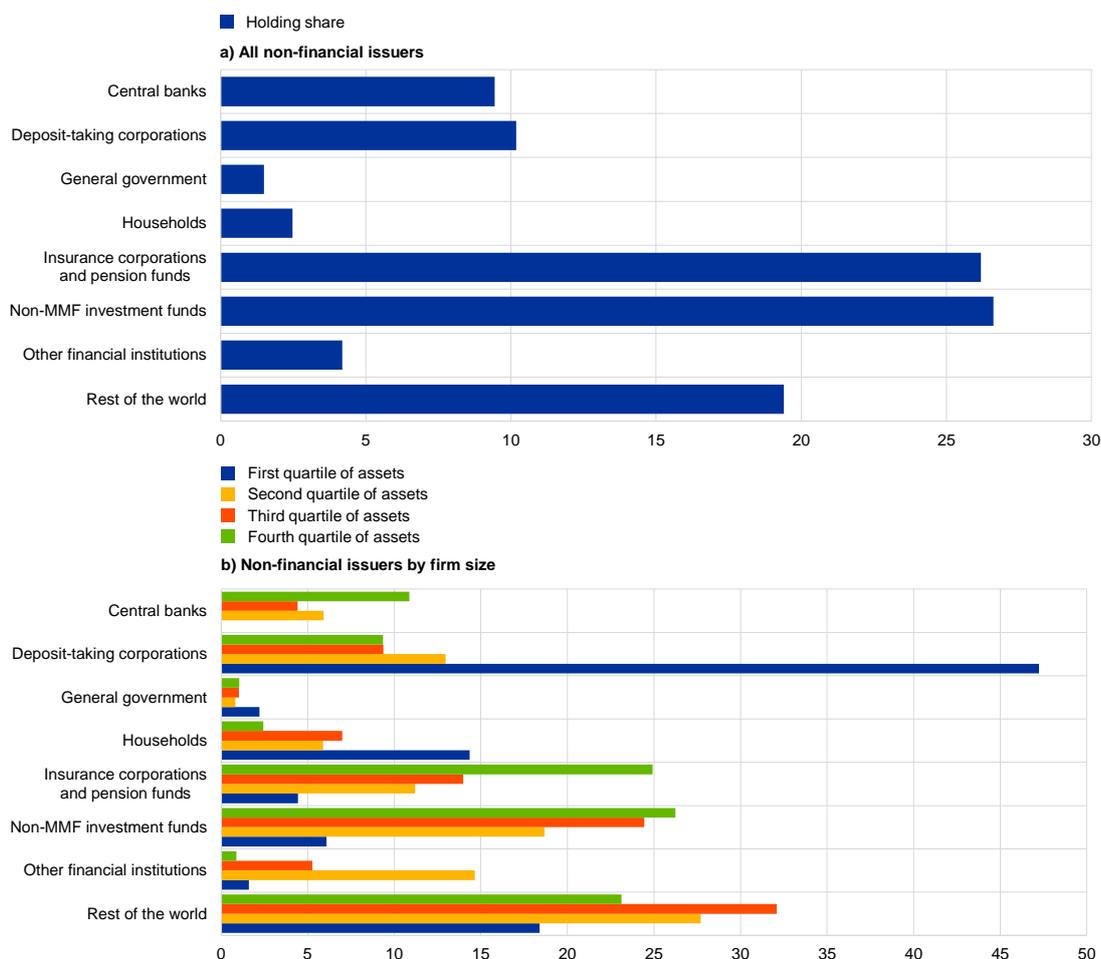
In order to determine the economic implications for bond market growth, it is necessary to ask how investor composition varies across different types of issuer. The risk of a sudden deterioration in lenders' supply of funds in times of financial hardship is of significant concern to credit markets. While traditional "buy-and-hold" bond investors (such as pension funds and insurance corporations)

look to the long term, bond funds have been growing extensively in recent decades. In times of hardship, the latter can become a source of fire sales and price dislocations.<sup>12</sup>

## Chart B

### Investor composition – non-financial issuers in 2019

(percentages)



Sources: SDW macroeconomic and sectoral statistics, CSDB, SHS-S, Compustat Global and Orbis.

Notes: Chart B presents the investor composition of the debt securities issued by euro area non-financial corporations at the end of 2019. The rest of the world is estimated as the difference between the total outstanding amount of debt securities and the amounts held by selected investors in the euro area.

Holdings by non-financial corporations are not included. Panel a) presents the investor composition for all non-financial issuers, and in panel b) the sample is divided using the firm's assets as an approximation for its size. In panel b) the firms' assets grow with each quartile (i.e. the first quartile includes firms with the lowest level of total assets in the sample, while the firms in the fourth quartile have the highest level of total assets). MMF refers to money market funds.

Holdings of stable “buy-and-hold” bond investors are large in aggregate but small for weaker issuers. Chart B presents the investor composition at the end of 2019 for all corporate bonds issued by all non-financial euro area issuers in panel a) and by non-financial euro area issuers of different size in panel b). Comparing the two reveals the following. First, the investor composition of the largest issuers is similar to the aggregate. However, the investor composition of smaller private

<sup>12</sup> See Becker, B. and Benmelech, E., “The Resilience of the U.S. Corporate Bond Market During Financial Crises”, *Working Paper Series*, No 28868, National Bureau of Economic Research, Cambridge, MA, May 2021; Goldstein, I., Jiang, H. and Ng, D.T., “Investor flows and fragility in corporate bond funds”, *Journal of Financial Economics*, Vol. 126, No 3, December 2017, pp. 592-613; Falato, A., Goldstein, I. and Hortaçsu, A., “Financial Fragility in the COVID-19 Crisis: The Case of Investment Funds in Corporate Bond Markets”, *Working Paper Series*, No 27559, National Bureau of Economic Research, Cambridge, MA, May 2021.

issuers is noticeably different. The share of “buy-and-hold” investors (for example, the Eurosystem, insurance corporations and pension funds) is only 5%, or roughly 20 percentage points lower than in aggregate. Long-term investors’ mandates limit their exposure to risk and can systematically exclude new issuers because of their bond size or rating status. Second, we see higher shares of holdings by households (14% compared with 3%) and by banks (over 40% compared with 9%). For small issuers, bond holdings are highly concentrated in the banking sector, implying a high degree of exposure to banking shocks. These facts suggest that firm-investor matching occurs.

Overall, the landscape of corporate debt financing has changed significantly over the past 15 years, with many more firms exposed to market fluctuations. Firms’ increased access to credit and their reduced reliance on the banking sector is well documented. However, the impacts of this shift on financial stability and potential interactions with regulation are yet to be fully understood. The evidence of heterogeneous bond investor composition across different types of issuer is a first step towards building a more comprehensive framework around bond credit supply and its macroeconomic implications. Further analysis is needed to better understand the welfare and policy implications of this shift in corporate debt financing.

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### 3 Monetary policy and firm financing flows

**Empirical evidence suggests that monetary policy was a key driver behind the differences in firm financing flows between the two crises.** In addition to the differing nature of the two crises, the monetary policy response differed in terms of speed and strength during the GFC compared with during the pandemic. The following analysis seeks to assess whether these differences in monetary policy have also contributed to the differential patterns in bond financing flows. The analysis is based on a medium-scale BVAR with sign restrictions to identify multiple financial, real and monetary policy shocks.<sup>13</sup> Based on a historical decomposition, this model is used to quantify the contribution of each identified shock to real NFC loan and bond growth (Chart 5). The analysis indicates that monetary policy was a key factor distinguishing the two crises. While monetary policy also supported bond financing flows during the GFC, its positive contribution was almost twice as high and markedly more persistent during the pandemic. These results are also consistent with the specific design of the policy response, which during the pandemic – unlike during the GFC – also comprised central bank asset purchases that provided more direct support to corporate bond markets than standard policy rate cuts would have done.<sup>14</sup>

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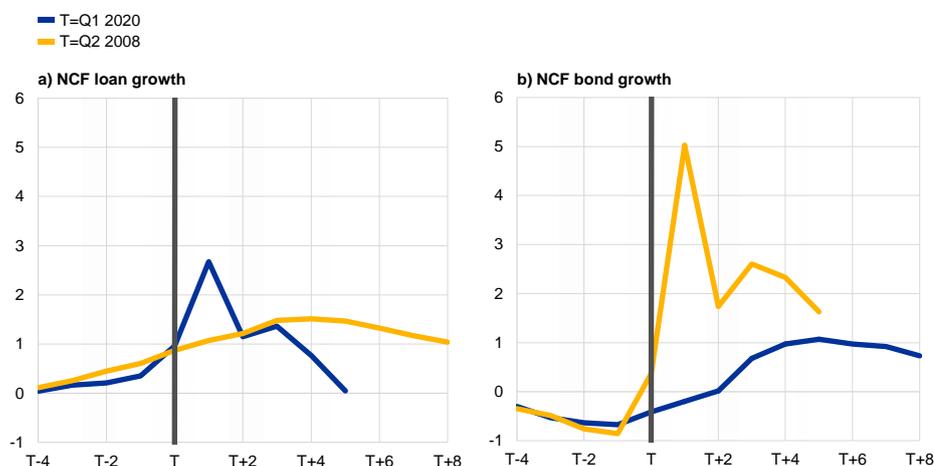
<sup>13</sup> The VAR is estimated with quarterly data from the first quarter of 1990 to the second quarter of 2021 for 16 variables (including six credit volume and price aggregates) and identifies 12 shocks (including six credit supply and credit demand shocks). Identification is achieved by imposing standard sign restrictions of the responses of variables, as well as ratios of variables. The sign restrictions to identify a monetary policy shock are imposed on a proxy shadow policy rate (derived as a principal component of available shadow rates for the euro area), implying that this shock is aimed at capturing both standard and non-standard monetary policy disturbances. See Adalid, R., Korobilis, D. and Musso, A., “Anatomy of Credit Cycles”, mimeo, ECB, 2021.

<sup>14</sup> See Holm-Hadulla, F. and Thürwächter, C., “Heterogeneity in corporate debt structures and the transmission of monetary policy”, *European Economic Review*, Vol. 136, July 2021.

## Chart 5

### Monetary policy's contribution to growth in NFC debt instruments during the two crises

(percentage points)



Sources: ECB and ECB calculations.

Notes: Monetary policy's contribution to real NFC loan growth (panel a) and real NFC bond growth (panel b) based on a medium scale BVAR model that identifies multiple financial and real shocks with sign restrictions (see Adalid, Korobilis and Musso, 2021). The contributions were recorded from four quarters before to eight quarters after the crises, the latter reflecting the start of the respective recessions (denoted by "T", i.e. one quarter after the peak as established by the CEPR Euro Area Business Cycle Dating Committee). The latest observation is for Q2 2021.

**Besides injecting additional accommodation, monetary policy also supported corporate bond markets by preventing a prolonged period of financial market turmoil.** As the pandemic reached Europe in late February 2020, the risk-off mode in financial markets triggered a sharp sell-off in the euro area corporate bond market, with spreads nearly doubling in around two weeks. With the announcement of the PEPP on 18 March 2020, the rising pressure on corporate bonds subsided quickly, while equity prices also recovered (Chart 6). The PEPP's role in safeguarding transmission was therefore instrumental in enabling corporate bond markets to complement the backstop provided by bank lending to firms.<sup>15</sup> Moreover, this stabilising effect on the market was later reinforced by further changes to monetary policy, such as the expansion of the PEPP in June 2020.<sup>16</sup>

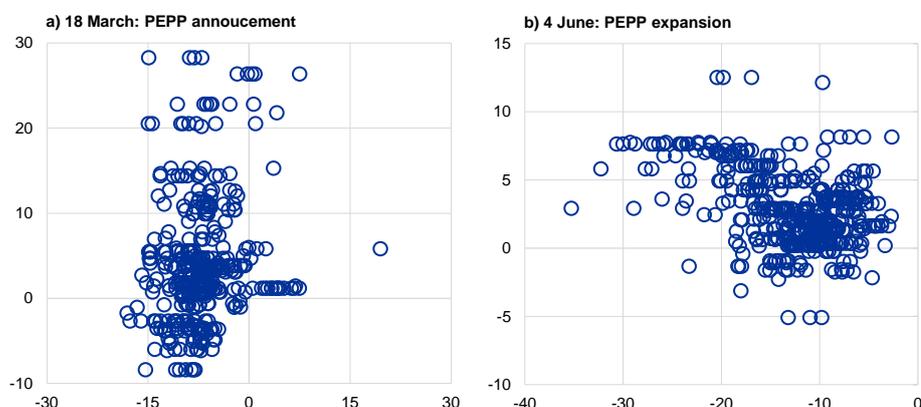
<sup>15</sup> The PEPP played a market-stabilising role also by counteracting investment fund outflows in the early stages of the pandemic crisis. Investment funds belong to the main holders of corporate debt securities, and they came under strong selling pressure as redemptions exceeded their cash holdings during the initial turmoil. After the announcement of the PEPP, fund flows then stabilised; see "Financial Stability Review", ECB, Frankfurt am Main, 2020. These patterns also concur with more systematic evidence on the link between accommodative monetary policy and investment fund flows; see Giuzio, M., Kaufmann, C., Ryan, E. and Cappiello, L., "Investment funds, risk-taking, and monetary policy in the euro area", Working Paper Series, No 2605, ECB, Frankfurt am Main, October 2021.

<sup>16</sup> In addition to its market stabilisation function, the impact of the PEPP on the monetary stance worked via compressing the bond yields of public and private-sector issuers. This ultimately supported the issuance of corporate bonds. It also helped by providing additional monetary policy accommodation, at a time when the reduction in ECB rates was constrained by their proximity to the effective lower bound.

## Chart 6

### Corporate bond spread and stock market reactions around PEPP announcements

(x-axis: changes in investment-grade bond spreads relative to the overnight index swap (OIS) rate in basis points; y-axis: percentage changes in stock prices)



Sources: IHS Markit iBoxx, Refinitiv and ECB calculations.

Notes: The charts show scatter plots of daily changes in investment grade bond spreads and daily stock market returns of corresponding companies at the time of policy announcements. Only those bonds eligible for corporate sector purchase programme purchases are considered.

## 4 Implications for the transmission of shocks

### The continued shift towards market-based finance may alter the transmission of key macroeconomic forces.

Bank loans are typically easier to adjust in response to unexpected changes in the economic landscape, whereas corporate bonds benefit from a more diversified creditor base and a longer maturity than bank lending to firms.<sup>17</sup> These differences may impinge on the direction, strength and speed with which the debt instruments respond to economic shocks. But empirical evidence testing this hypothesis is scarce, and it therefore warrants further analysis. Among the many shocks that may hit the euro area economy at any given point in time, two appear particularly relevant in the current circumstances. The first is a positive demand shock originating in firms' increased business investment activity in response to an accelerating recovery from the pandemic. The second is an adverse aggregate supply shock, which could stem, for instance, from further intensification of global supply and transport bottlenecks, as well as from commodity market fluctuations similar to those observed since the onset of the war in Ukraine.

<sup>17</sup> For instance, the share of loans to euro area firms with maturity or interest rate reset within 12 months is more than 50%, whereas for corporate bonds the share with residual maturity below one year is around 10%; for further discussion of the distinctive features of loan versus bond-financing instruments, see Crouzet, N., "Credit disintermediation and monetary policy", *IMF Economic Review*, International Monetary Fund, Vol. 69, No 1, 2021, pp. 1-67; De Fiore, F. and Uhlig, H., op. cit., pp. 1571-1598. As regards the creditor base, bond finance may differ from loans not only due to a higher degree of diversification, but also in terms of the different types of financial institutions populating the supply side of this market: it is primarily non-bank financial intermediaries that extend corporate credit via bond markets, whereas loans to euro area firms are predominantly supplied by banks. Since banks and non-banks differ fundamentally in their business models, balance sheet structures and regulatory environment, creditor composition may act as a further factor that differentiates the transmission of shocks to loan and bond markets; see Cappiello, L., Holm-Hadulla, F., Maddaloni, A., Mayordomo, S., Unger, R. et al., "Non-bank financial intermediation in the euro area – implications for monetary policy transmissions and key vulnerabilities", *Occasional Paper Series*, No 270, ECB, Frankfurt am Main, December 2021.

**Corporate bond financing complements bank lending when it comes to responding to positive business investment shocks, whereas it temporarily dampens credit contraction after adverse aggregate supply shocks.** This analysis is again centred on the empirical framework underlying Chart 5 and uses sign restrictions to distinguish between different types of shocks. It focuses on a positive demand shock arising from a pick-up in business investment and on an adverse aggregate supply shock.<sup>18</sup> The estimates show that bank lending and bond issuance both expand after positive business investment shocks, and the timing and size of the effects on both are very similar (Chart 7, panel a). By contrast, negative aggregate supply shocks initially trigger offsetting adjustments in loan and bond finance: loans immediately enter on a contractionary path, whereas bond issuance expands in the first two quarters after the shock (Chart 7, panel b).<sup>19</sup> This dampening effect of bond finance becomes insignificant after that horizon, but its subsequent downward adjustment is also moderate and statistically indistinguishable from zero. As a result, the overall contraction in credit is less pronounced in the presence of bond markets as an alternative source of finance than if firms were only able to draw on bank loans to finance their debts.<sup>20</sup> A possible interpretation of these findings is that, in response to an accelerating recovery driven by expanding business investment, firms prefer to diversify their sources of financing for new investment projects, thus resorting to both bank borrowing and bond issuance. By contrast, after an adverse supply shock, banks swiftly restrict their sources of new lending given the worsened economic outlook, forcing firms to mainly tap into broader capital markets to access external financing.<sup>21</sup>

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<sup>18</sup> Aggregate supply shocks are assumed to imply responses of real GDP growth and inflation in opposite directions, while business investment demand shocks, if expansionary (contractionary), are assumed to imply a positive (negative) response of real GDP growth, inflation, the shadow rate, and real business investment growth, as well as a stronger response of real business investment growth relative to other aggregates (such as residential investment, consumption or NFC loan growth).

<sup>19</sup> While the analysis focuses on financing flows to the euro area corporate sector as a whole, the incidence of aggregate shocks to different types of firms may differ substantially. In particular, small and medium-sized enterprises often face obstacles in accessing bond markets and therefore rely heavily on bank loans to finance their debts (Box 1). Accordingly, the cushioning impact of bond financing is likely to benefit only a subset of the sector, consisting of larger companies that do have access to this market.

<sup>20</sup> This finding adds to previous literature suggesting that economies with a higher prevalence of bond financing and more active substitution of loans with bonds in the corporate sector tend to recover more quickly from recessions; see Grjebine, T., Szczerbowicz, U. and Tripier, F., “[Corporate debt structure and economic recoveries](#)”, *European Economic Review*, Vol. 101, January 2018, pp. 77-100.

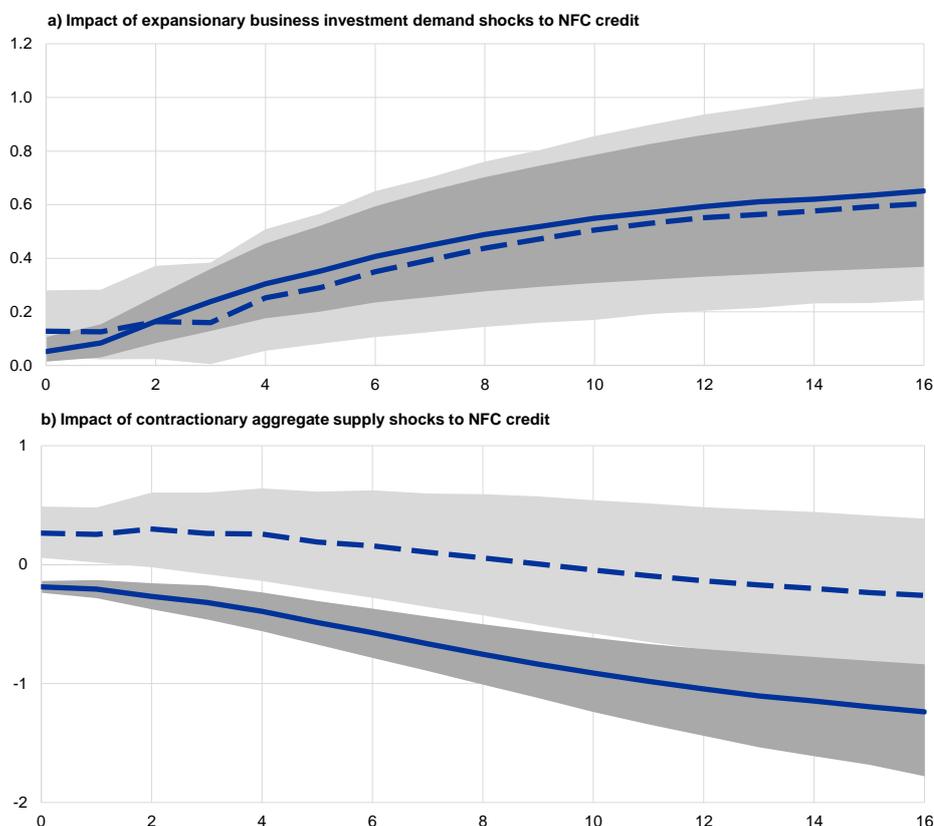
<sup>21</sup> As the econometric model is symmetric with regard to positive and negative shocks, it would point to analogous conclusions if the analysis were to consider a supply expansion or demand contraction, instead of the supply contraction and demand expansion discussed in the text.

## Chart 7

### Responses of NFC loan and bond financing flows to macroeconomic shocks

(x-axis: quarters; y-axis: percentage median and 68th confidence sets)

- Responses of real NFC loan growth
- - - Responses of real NFC bond growth



Sources: ECB and ECB calculations.

Notes: This chart shows the impulse response functions (IRFs) of real NFC loan growth (median: full line; 68th confidence band: dark grey area) and to real NFC bond growth (median: dashed line; 68th confidence band: light grey area) to an expansionary business investment demand shock (panel a) and a contractionary aggregate supply shock (panel b), based on a medium-scale BVAR model identifying multiple financial and real shocks with sign restrictions (see Adalid, Korobilis and Musso, 2021). Confidence sets are delimited by the 16th and 84th posterior percentiles, as is typical in Bayesian VAR analysis.

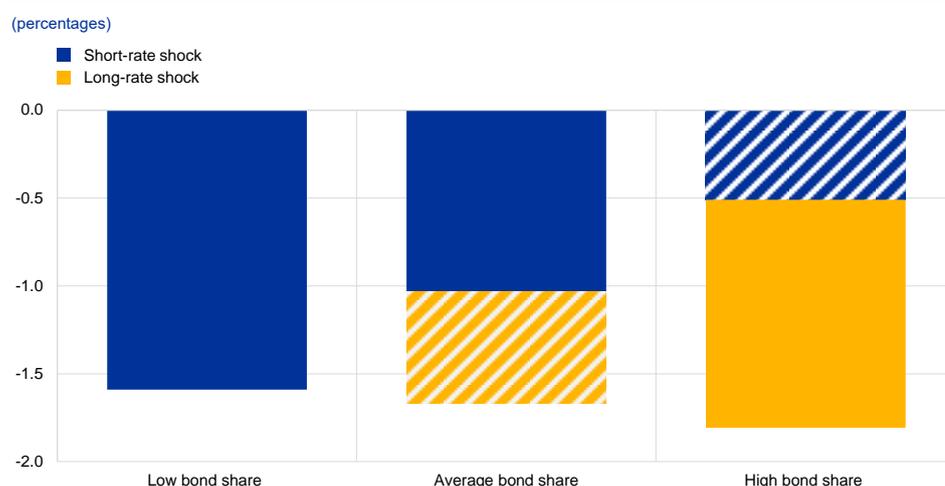
**Lastly, debt financing structures also alter the relative strength of different monetary policy transmission channels.** As corporate bond markets offer an alternative source of debt finance, they may counteract policy-induced shifts in loan supply arising from the bank lending channel of transmission. However, bond finance may be more responsive to other transmission channels, for instance owing to the impact of monetary policy on the medium to longer-term segments of the yield curve, where the bulk of corporate bond issuance takes place. Local projections based on a panel of euro area countries confirm this hypothesis.<sup>22</sup> In countries with a high bond financing share, the corporate sector responds to a standard monetary policy shock by further tilting its debt structure towards bonds, the supply of which (and hence the costs) are less responsive to the shock than those of loans. In countries with an average or lower share of bond finance, this substitution does not take place, so they also exhibit stronger transmission of short-rate shocks to the real economy (Chart 8).

<sup>22</sup> The analysis is based on Holm-Hadulla, F. and Thürwächter, C., "Heterogeneity in corporate debt structures and the transmission of monetary policy", *European Economic Review*, Vol. 136, July 2021.

The pattern is reversed for policy-induced increases in long-term rates, which are followed by a stronger relative contraction in bond finance, eventually translating into a stronger impact on GDP.<sup>23</sup>

**A given set of policies may therefore exert diverse economic effects on different parts of the euro area.** While specific monetary policy measures tend to intervene on different yield curve segments simultaneously, the impact of policy-rate changes (asset purchases) tends to concentrate in the front end (back end) of the yield curve. Hence, policy rate changes (asset purchases) are likely to exert stronger financial and real effects in euro area countries with a low (high) share of bond finance.

**Chart 8**  
Response of GDP to long-rate and short-rate monetary policy tightening shocks



Sources: ECB and ECB calculations.

Notes: This chart shows the peak effects of monetary policy tightening shocks, identified via high frequency variation in interest rates, in a panel local projections model using monthly data from euro area countries. Impacts are calibrated to a 25 basis point increase in rates. Short-rate (long-rate) shocks refer to surprises in the one-month OIS rate (five-year Bund yield). Economic activity is measured as 100 times log (GDP). Low (high) bond share refers to lower (upper) quintile of the cross-country bond share distribution and average refers to the median. The respective bond shares are 9.3% (29.0) for the lower (upper) quintile and 20.3 for the median. The striped bars denote estimates for which precision falls below conventional significance levels.

## Box 2

### Market-based finance for corporations – the demand for and supply of credit

Prepared by Margherita Giuzio and Francesca Lenoci

The rise in euro area corporate bond issuance documented in Section 1 has been driven by both demand and supply factors. On the one hand, the demand for market-based credit from firms was stimulated by the reduced cost of market-based debt relative to loan rates, the ECB's asset purchases and corporate sector purchase programme, as well as the need to diversify funding sources following the global financial crisis (GFC).<sup>24</sup> On the other hand, the growth of non-banks, which hold over 50% of outstanding euro area corporate bonds, increased the supply of credit from

<sup>23</sup> These findings add to ample literature on the effects of monetary policy, and in particular the ECB's corporate sector purchase programme, on corporate bond markets in the euro area; see, for example, De Santis, R. and Zaghini, A., op. cit.; Grosse-Rueschkamp, B. et al., op. cit.; Arce, O., Mayordomo, S. and Gimeno, R., op. cit.

<sup>24</sup> See Grosse-Rueschkamp, B. et al., op. cit.; Todorov, K., op. cit.; and De Santis, R. and Zaghini, A., op. cit.

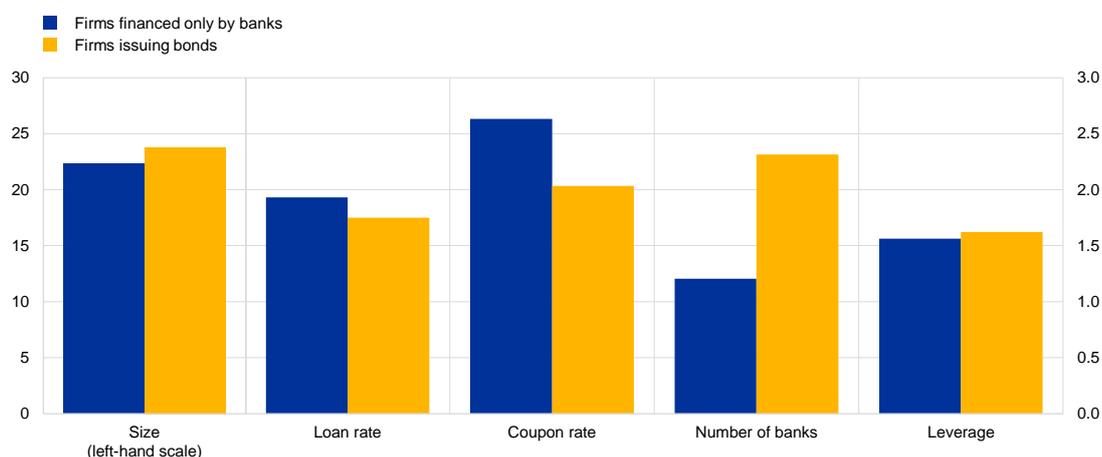
the market, further incentivising firms to issue bonds. At the same time, stricter regulation of banks dampened the bank lending supply, especially to riskier firms.<sup>25</sup>

As loans and bonds are not perfect substitutes, firms' incentives to use bond financing vary with their balance sheet characteristics, the structure of capital markets and the cost of alternative funding sources.<sup>26</sup> Empirical evidence based on a sample of large euro area non-financial corporations (NFCs) between 2014 and 2019 shows that NFCs issuing bonds are on average larger, more leveraged and have a lending relationship with a larger number of banks (Chart A). Also, firms are more likely to tap into the market if they have issued bonds in the past, if the average guarantee provided by the underwriters at issuance is larger and if the supply of credit from connected banks is lower. Moreover, bond issuance is more likely if the firm-specific cost of loans relative to bond financing rises.

### Chart A

#### Differences between NFCs issuing bonds and NFCs financed only by banks

(left-hand scale: Q4 2014 – Q3 2019, log of total assets; right-hand scale: percentages)



Sources: Large Exposure dataset, IMIR, Dealogic, Orbis and authors' calculations.

Notes: The chart shows the differences in size, loan rates, coupon rates, the number of connected banks and leverage between (comparable) firms which issue bonds and firms which do not. Size refers to the log of total assets. The loan rate is the average bank-level rate for loans with a given maturity and amount. For issuer firms, the coupon rate is the annualised coupon rate, while for non-issuers it is the average coupon rate of firms domiciled in the same country and with the same rating. Leverage is the ratio of firm debt to equity, divided by 100.

A comparison of firms with a similar probability of issuing bonds using propensity score matching suggests that credit cost is not the only driver of bond issuance.<sup>27</sup> Greater market supply – as measured by the average share of issuance guaranteed by underwriters – stimulates issuance, especially by firms with a low probability of issuing bonds ex ante. By contrast, when bank lending is constrained, firms with a high probability of issuing bonds tend to replace bank credit with market-based finance. And, when bank lending increases, they resort to both sources of financing.

The growing supply of credit from the market, in particular from non-banks, has positive effects on economic growth, as it facilitates the efficient allocation of capital and provides firms with an

<sup>25</sup> See Becker, B. and Ivashina, V., op. cit.; and Altavilla et al., op. cit.

<sup>26</sup> See Crouzet, N., op. cit.

<sup>27</sup> See Cappiello, L., Giuzio, M. and Lenoci, F., "Market-based finance for corporations: demand and supply of credit", mimeo, June 2022.

alternative credit source to finance new investments.<sup>28</sup> It may, however, also introduce new sources of volatility to the economic cycle and contribute to increasing corporate leverage, thus exacerbating the vulnerabilities of highly indebted firms. While banking regulation seeks to limit excessive credit supply, credit from non-banks lacks this sort of shock absorption mechanism. For this reason, it is important to assess whether bond issuance adds to bank credit in a way that increases firms' leverage, or whether it is instead a substitute for bank loans.

For the sample of euro area firms that issued bonds between the first quarter of 2014 and the third quarter of 2019, empirical evidence suggests that bond issuance has replaced bank financing. Estimating the joint effect of bond issuance on firms' size, leverage and financing structure allows the complementary or substitutive relationship between the two funding sources to be tested. If firms collectively experience an increase in size and leverage and a reduction in loan financing over total debt after issuing bonds, then this has increased their balance-sheets, thus complementing bank loans. By contrast, if firms' size and leverage do not change, and the financing structure shifts towards bond financing, then the latter has replaced bank lending. The regression results in Table A show that bond issuance has not altered firms' size and leverage but has replaced bank financing.<sup>29</sup> The shift towards market-based finance is, however, not homogeneous across countries and firms of different sizes. This may influence the transmission of monetary policy when it comes to the cost and volumes of financing, which has financial stability implications related to market fragmentation in credit provision.

**Table A**

Estimated impact of new credit on firms' assets, leverage and financing structure

	$\Delta TA_{f,t}$	$\Delta Lev_{f,t}$	$\Delta FinancingStructure_{f,t}$
Change in bonds $\Delta B_{f,t}$	-0.03	-0.05	-0.07***
Change in loans $\Delta L_{f,t}$	-0.01	-0.02	0.14**

Sources: Large Exposure dataset, IMIR, Dealogic, Orbis and authors' calculations.

Notes: The table includes the estimated coefficient obtained via a dynamic panel with Arellano and Bond estimator where the change in total assets, leverage and financing structure over two subsequent quarters are regressed on the change in bonds and loans.  $\Delta TA$ ,  $\Delta Lev$  and  $\Delta Financing Structure$  indicate the changes in the logarithm of firms' total assets, leverage (measured as debt over total assets) and financing structure (measured as share of bank loans to total debt) respectively, after issuing bonds. The set of control variables includes firms' size in t-1, change in equity, change in cash holdings, firms' profitability in t-1 measured as EBITDA, and country\*time fixed effects.

## 5 Conclusion

**This article has reviewed the evolution of firm financing structures in the euro area and the implications for macroeconomic shock transmission.** The share of bonds in euro area corporate debt has risen, in particular since the GFC, and this trend has persisted through the ongoing pandemic crisis. However, the motives for firms to access bond markets have differed across these crises. During the GFC, firms accessed bond markets as a substitute for falling loan supply. However, during the pandemic crisis, they did so as a result of the favourable relative cost of bond

<sup>28</sup> See, for example, Gambacorta, L., Yang, J. and Tsatsaronis, K., "Financial structure and growth", *BIS Quarterly Review*, March 2014, pp. 21-35; Langfield, S. and Pagano, M., "Bank bias in Europe: Effects on systemic risk and growth", *Economic Policy*, Vol. 31, No 85, January 2016, pp. 51-106.

<sup>29</sup> The substitutive relationship between loans and bonds over the period considered in this analysis therefore corresponds more closely to the patterns observed during the GFC and stands in contrast to the complementary relationship seen during the pandemic, which began after the end of the sample considered here.

financing, amid a supportive monetary policy environment, which also comprised measures directly targeted at fostering credit supply from corporate bond markets. As such, monetary policy effects have materialised alongside certain longer-term structural drivers of the increased reliance by firms on bond markets. These drivers include, for example, the growing footprint of non-bank financial intermediaries, which supply the bulk of credit in this market.<sup>30</sup> Moreover, drivers include the strengthened prudential landscape in which banks operate, which has an influence on loan market conditions.<sup>31</sup>

**The rise of bond finance has significant consequences for the transmission of shocks to the euro area economy.** Based on an empirical analysis of aggregate data, this article has highlighted the varying responses of different debt financing instruments to specific macroeconomic shocks: while accelerating business investment demand triggers qualitatively similar adjustments in bond and loan volumes, bond issuance mildly cushions the credit contraction after adverse supply shocks. Moreover, a higher share of bond financing strengthens the transmission of monetary policy measures that primarily operate via longer-term yields, whereas short-term rate changes tend to exert stronger real effects in economies that are more dependent on loans.

**There is substantial scope for further analysis of the mechanisms underlying these stylised macroeconomic facts.** The literature on firm financing structures and shock transmission is still nascent, in particular for the euro area. Complementary analysis drawing on firm-level data and linking the supply and demand sides of corporate bond and loan markets appears to be a particularly promising avenue to gather additional insight into the matters addressed in this article.

**The change in firm financing structures may also have broader implications for the strength and resilience of the euro area corporate sector.** As this sector has partly diversified away from bank loans, it may become more resilient to crises concentrated in the banking sector. In addition to this benefit at the aggregate level, the incidence of such crises also becomes less heterogeneous as more small and medium-sized firms move away from being solely reliant on bank loans and are instead gaining access to bond markets as a cushion. However, this beneficial diversification effect may be counteracted by other risks and sources of volatility across the economic cycle. Most notably, it is primarily non-bank financial intermediaries that provide credit to firms via bond markets. Structural vulnerabilities and shocks that impair their ability to provide credit can negatively affect NFC funding costs. Also, as some of the non-bank intermediary sectors are subject to less stringent regulatory and prudential frameworks, these may face weaker constraints on engaging in excessive risk-taking behaviour. In addition to the resulting risks to

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<sup>30</sup> While bond purchases are the primary channel for non-banks to extend credit to the corporate sector, some jurisdictions have also experienced increasing non-bank lending activity to firms; see, for example, the Irish case documented in Heffernan, T., McCarthy, B., McElligott, R. and Scollard, C., “[The role of non-bank lenders in financing Irish SMEs: Behind the Data](#)”, Central Bank of Ireland, Dublin, April 2021.

<sup>31</sup> See, for example, Altavilla, C., Laeven, L. and Peydró, J.-L., “[Monetary and macroprudential policy complementarities: evidence from European credit registers](#)”, *Working Paper Series*, No 2504, ECB, Frankfurt am Main, December 2020.

financial resilience and capital misallocation, more leveraged firms have increasingly started to access euro area bond markets over recent decades. Against this backdrop, there is a case for enhancing the regulatory framework for non-banks – including from a macroprudential perspective – to support financial stability and the smooth transmission of monetary policy.

### 3 The euro short-term rate (€STR): completing the transition to the new euro benchmark

Prepared by Javier Huerga, Antonio Matas, Anne-Lise Nguyen, Pascal Nicoloso and Vladimir Tsonchev

#### 1 Introduction

**The euro short-term rate (€STR), which has been published by the ECB since October 2019, is the overnight interest rate benchmark for the euro.** The €STR shows the average rate at which banks borrow overnight (one-day) deposits from other financial institutions, including non-banks, on an unsecured basis, i.e. without having to provide collateral. The €STR is published on each TARGET2 business day on the basis of transactions conducted and settled on the previous TARGET2 business day.<sup>1</sup>

**Benchmark rates like the €STR are a useful reference for many financial contracts, as they are publicly accessible, published by an independent institution on a regular basis and follow a transparent methodology that reflects market developments fairly and objectively.** Benchmarks are used to determine the interest due on loans, deposits and other debt, as well as to determine payments on more complex products such as options, forward contracts and swaps. They are also key for the valuation of financial assets. Reliable benchmark rates contribute to legal certainty in financial contracts and reduce the risk that a party might seek to influence an agreed rate in its favour. For that reason, benchmarks are widely used by organisations and individuals throughout the economic system.<sup>2</sup>

**Given their role in financial markets, benchmark rates are an important component in the initial stages of monetary policy transmission.** An accurate reflection of how bank funding conditions are affected by changes in the monetary policy stance is critical for monitoring the transmission of monetary policy impulses. Reliable benchmarks are also necessary for the smooth functioning of money markets, and therefore for financial stability.

**The launch of the €STR was part of a global reform of benchmarks.** The reform was initiated to address the vulnerability of some benchmarks to possible manipulation when volumes declined in the markets they were supposed to

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<sup>1</sup> TARGET2 is the real-time gross settlement system owned and operated by the Eurosystem. TARGET2 settles payments related to the Eurosystem's monetary policy operations, as well as bank-to-bank and commercial transactions, see [What is TARGET2?](#) on the ECB's website. A TARGET2 business day means in this context a day on which TARGET2 operates.

<sup>2</sup> See "[What are benchmark rates, why are they important and why are they being reformed?](#)", ECB, Frankfurt, July 2019.

represent (Box 1). The replacement of the euro overnight rate, EONIA, took place against this background.<sup>3</sup>

**Following a carefully planned transition, the €STR successfully replaced EONIA as the benchmark overnight rate for the euro. EONIA was discontinued on 3 January 2022.** The transition took place over several years, guided by a private sector working group on euro risk-free rates (WG RFR).<sup>4</sup>

Users of EONIA managed to successfully switch to the new benchmark within the required deadlines.<sup>5</sup>

## 2 The €STR as the new euro benchmark

**In 2017, in response to uncertainties over the viability of EONIA and the possible impact of its discontinuation, the ECB decided to start working on its own benchmark interest rate: the €STR.** EONIA was an overnight transaction-based lending rate, but did not comply with the new standards set out in the EU Benchmarks Regulation,<sup>6</sup> not least due to the lack of underpinning transactions and the high concentration of contributions. The absence of alternatives to EONIA could have led to major market disruptions, as trillions of euro of notional amounts in OISs were linked to it. The benchmark was also used as a discount rate in the valuation of derivatives and other assets, as a floating rate in some short-term debt and floating-rate repos, and as a remuneration rate in a number of deposits and secured transactions. The original aim of the ECB with the €STR was to provide a backstop should EONIA be discontinued.

In the aftermath of the LIBOR manipulation scandals, a coordinated global response guided the efforts to reform reference rates (Box 1).<sup>7</sup> Clear guidance was issued by public authorities to reduce reliance on IBOR-type rates, i.e. unsecured interbank benchmarks based on panel bank contributions. Instead, public authorities have promoted the use of near risk-free rates, i.e. overnight benchmarks based on market transactions. These rates benefit from higher market liquidity, are anchored in actual transactions and therefore do not incorporate expert judgement, which was required for many IBORs. For this reason, it was important to ensure that the euro area has a robust and reliable near risk-free rate.

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<sup>3</sup> The Euro Overnight Index Average (EONIA) was a transaction-based lending rate based on a panel of voluntary contributors and administered by a private benchmark provider, the European Money Markets Institute (EMMI).

<sup>4</sup> See the website of the European Securities and Markets Authority (ESMA) for more information on the [WG RFR](#), an industry group created to identify and recommend risk-free rates that could serve as alternatives to EONIA and fallbacks for EURIBOR benchmarks.

<sup>5</sup> See “[Goodbye EONIA, Welcome €STR!](#)”, *Economic Bulletin*, Issue 7, ECB, November 2019.

<sup>6</sup> Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014 (OJ L 171, 29.6.2016, p. 1).

<sup>7</sup> LIBOR (London Interbank Offered Rate) was designed to produce an average rate representative of the rates at which large, leading, internationally active banks with access to the wholesale unsecured funding market could fund themselves in that market in particular currencies for certain tenors. It is currently in the process of being wound down.

**When designing the €STR, the ECB had to address several important issues to develop a credible reference rate representative of the cost of liquidity, while avoiding the weaknesses of EONIA.** In particular, it was important to consider: (i) the information used for the daily rate calculation, specifically avoiding the pitfalls of contributions from a panel of some 20 voluntary contributing banks; (ii) the declining activity in the unsecured interbank market,<sup>8</sup> which suggested looking for broader coverage to anchor the rate in a sufficiently liquid market; (iii) how to engage the public in the design of the rate to make it reliable and understandable, enhancing acceptance among future users.

**The ECB was already collecting granular, timely, daily statistical data on the money market activities of selected euro area banks across four market segments: unsecured money market, secured money market, foreign exchange swap market and OIS market.** The data were readily available to the ECB. They were not collected for the sole purpose of calculating a benchmark but because they were necessary for the European System of Central Banks (ESCB) to fulfil its tasks, in particular implementing monetary policy. They were considered of sufficient quality and timeliness to serve the daily production of a reference rate. Reporting was supported by a legal obligation on the sample banks to provide data to the ECB under the Money Market Statistical Regulation (MMSR),<sup>9</sup> hence obviating the need to rely on voluntary contributions.

**The ECB initially considered both the unsecured and secured segments in order to identify sufficient market activity to underpin the €STR and resolve the lack of sufficient representative underlying data that led to EONIA's demise.** The secured segment is by far the most liquid market, as repo instruments have gained significantly in importance since the financial crisis at the expense of the unsecured money market. Moreover, the secured market has provided the basis for calculating risk-free rates in other jurisdictions, such as SOFR in the United States.<sup>10</sup> In the euro area, however, several important features meant that a benchmark reflecting the secured market would not always provide a clear indication of the cost of liquidity. These included: (i) the variety of government bonds used as collateral in repo transactions; (ii) the fact that these bonds often trade at different yields and have varying liquidity conditions; and (iii) the significant impact that balance sheet reporting dates (e.g. quarter-ends) have on repo rates. As a result, repo rates are driven by collateral costs as much as liquidity costs. This would have made such a benchmark particularly difficult to interpret in the euro area. Moreover, since the €STR was meant to replace EONIA, which was an unsecured benchmark, it was considered more logical from the user perspective to switch to a benchmark that reflected solely the cost of liquidity and did not include collateral costs. For these reasons, the ECB finally opted for the unsecured market.

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<sup>8</sup> The interbank market refers to transactions taking place between banks; the unsecured market refers to transactions such as deposits, call accounts and fixed-rate or variable-rate short-term debt securities issued with a maturity of up to and including one year.

<sup>9</sup> Regulation (EU) No 1333/2014 of the European Central Bank of 26 November 2014 concerning statistics on the money markets (ECB/2014/48) (OJ L 359, 16.12.2014. p. 97).

<sup>10</sup> SOFR (the Secured Overnight Financing Rate) is a broad measure of the cost of borrowing cash overnight against Treasury securities, published daily by the Federal Reserve Bank of New York.

**The ECB published the benchmark methodology after two public consultations and before the launch of the €STR in October 2019.** It solicited feedback on the main design parameters to ensure alignment with the prospective user base. The first consultation focused on broader considerations such as scope, with the second dedicated to more detailed methodological elements. In the run-up to the official start of the benchmark the ECB also published pre-€STR time series to allow market participants and prospective users to become familiar with the rate ahead of its launch. Market participants strongly backed the proposals put forward for consultation. With overwhelming support for a new overnight rate administered by the ECB, publication of the €STR started in October 2019.

### 3 The €STR determination process

**The daily €STR determination runs every TARGET2 business day to publish the rate and accompanying information at 08:00 CET.** The process starts at the reporting agents, i.e. the 47 banks that currently constitute the MMSR reference population. These report data on money market transactions each day in a standardised format, as required by the MMSR Regulation.<sup>11</sup> The reporting banks compile transaction-by-transaction data and send them to the national central bank (NCB), where the latter manages a local collection platform, or to a centralised ECB collection platform.<sup>12</sup> The collection platforms receive the data and automatically perform initial checks on their format and content. The NCBs and ECB interact with reporting agents on any technical issues that could affect receipt of complete data on time. The data are then submitted to the ECB, where they are processed and the economic sector classification of the counterparties added, and ineligible transactions filtered out according to the €STR methodology. Plausibility checks are then performed by the ECB on this subset of the data and transactions identified as atypical are double-checked with the reporting agents by the Eurosystem. The €STR and accompanying information are then automatically calculated and published, after a final check, at 08:00. If errors with an impact larger than two basis points are detected following publication, the ECB will revise and re-publish the €STR at 09:00, although such an event has never occurred at the time of writing. No changes are made to the €STR after that time. At 09:15, the compounded €STR (C-€STR) average rates and index are published.<sup>13</sup> Finally, the ECB performs a series of post-production activities to prepare for the following publication day and review data quality. Together with NCBs, the ECB liaises with reporting agents where necessary to verify the correctness of reported data and address any quality issues to prevent any effects on future calculations.

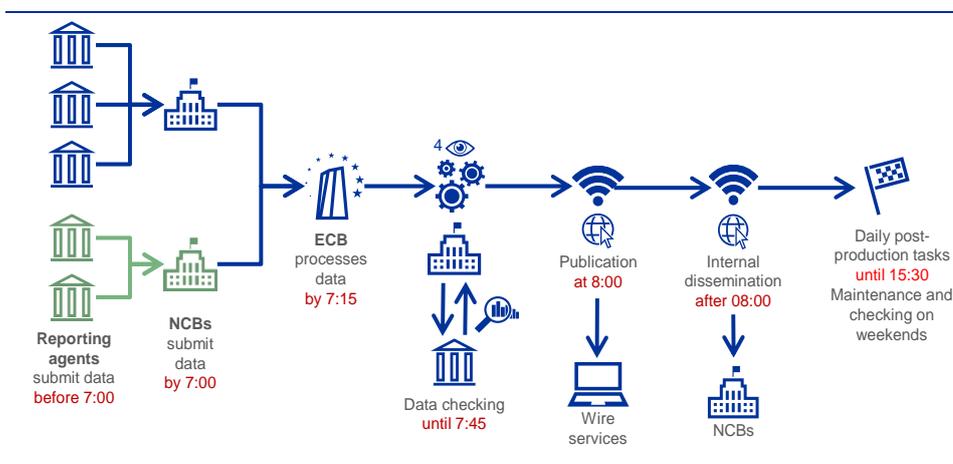
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<sup>11</sup> Regulation ECB/2014/48, the MMSR reporting instructions and other methodological and operational guidance are available on the [ECB's website](#).

<sup>12</sup> Currently, reporting banks in Germany, Spain, France and Italy submit the data to the local collection platform operated by their NCB, while those in Belgium, Ireland, Greece, the Netherlands, Austria and Finland submit data to the centralised ECB collection platform. The NCBs participate in the data checks that form part of the daily determination process.

<sup>13</sup> See Section 3.

**Figure 1**  
Graphical representation of the €STR determination process



**The robustness of the €STR determination process is underpinned by the use of MMSR data and largely automated procedures, thus avoiding any expert judgement and submissions as defined in the IOSCO principles for financial benchmarks.**<sup>14</sup> The €STR is automatically calculated using pre-existing statistical data related to actual transactions conducted by the MMSR reporting agents in financial markets. No extrapolations or adjustments are made to values. The supporting data are sourced in reliance on the ECB's powers to collect statistical data, which guarantees continuity – in collection and in the rate itself.<sup>15</sup> This also avoids the use of data submitted solely for the purpose of compiling a benchmark, a practice that can create additional vulnerabilities such as conflicts of interest and incentives for manipulation, as indicated in the IOSCO principles. The MMSR Regulation establishes minimum standards for transmission, accuracy, conceptual compliance and revisions, as well as minimum standards for data integrity. Compliance is regularly monitored by the Eurosystem. In cases of repeated non-compliance or serious misconduct an infringement procedure must be launched, and sanctions may be imposed under the ECB's legal framework for failure to comply with statistical reporting requirements.

The IT systems set up by the Eurosystem to receive and process the data and calculate the €STR are designed and implemented to meet high standards of criticality in terms of the availability, integrity and confidentiality of the receipt, processing and storage functions. Manual actions are rule-based and not subject to

<sup>14</sup> The IOSCO principles define expert judgement as “the exercise of discretion by an administrator or submitter with respect to the use of data in determining a benchmark”, such as “extrapolating values from prior or related transactions, adjusting values for factors that might influence the quality of data such as market events or impairment of a buyer or seller’s credit quality, or weighting firm bids or offers greater than a particular concluded transaction”. They define submissions as “prices, estimates, values, rates or other information that is provided by a Submitter to an Administrator for the purposes of determining a Benchmark”. See “[Principles for Financial Benchmarks – Final Report](#)”, The Board of the International Organization of Securities Commissions (IOSCO), July 2013.

<sup>15</sup> Article 5.1 of the Statute of the European System of Central Banks and the European Central Bank states that “In order to undertake the tasks of the ESCB, the ECB, assisted by the NCBs, shall collect the necessary statistical information either from the competent national authorities or directly from economic agents.”

any discretion, being limited to interactions with reporting agents for quality checks and contingency measures in the event of any automatic steps failing. Finally, transparency is ensured through the quarterly publication of errors higher than 0.1 basis point.

## Box 2

### The end of LIBOR: an overview of benchmark reforms in major currencies

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Prepared by Anne-Lise Nguyen and Vladimir Tsonchev

#### Ten years of reflection to reform the IBORs and progressively phase out LIBOR

In 2012 the vulnerabilities of the IBORs (interbank offered rates, which are unsecured interbank rates for longer tenors) became apparent, with declining liquidity in the interbank markets underpinning these rates and cases of attempted manipulation. It became clear that the overreliance of global financial markets on these rates posed clear risks to financial stability. The Financial Stability Board (FSB)<sup>16</sup> endorsed the Principles for Financial Benchmarks developed by the International Organization of Securities Commissions (IOSCO), covering standards on governance, integrity, methodology, quality and accountability. The FSB also established a subgroup, the Official Sector Steering Group (OSSG), to coordinate the efforts of public institutions, including central banks, to reform benchmarks. Over time, the OSSG agreed on the following recommendations:<sup>17</sup> i) that existing IBORs be strengthened, in particular by anchoring their methodologies in real transactions, as opposed to expert judgement; ii) that overreliance on IBORs be reduced, notably by promoting wider use of risk-free rates as alternative benchmarks; and iii) that contractual robustness be fostered, notably by encouraging implementation of robust fallback rates, i.e. rates available should an IBOR materially change or cease to be provided, in existing and new contracts referencing it. To guide market participants in these efforts, financial industry working groups were set up in the major currency areas with the support of public authorities to catalyse reform efforts. In addition, the International Swaps and Derivatives Association (ISDA) was mandated by the OSSG to develop fallback protocols for contracts referencing IBORs for derivative products.

The fate of LIBOR was progressively sealed.<sup>18</sup> As a first step, the new administrator, ICE Benchmark Administration (IBA), reformed its contribution-based methodology to anchor it in real transactions as far as possible. This was complemented by observed values in neighbouring market segments and by models (the “waterfall approach”). In 2017, however, LIBOR’s supervisory authorities (the UK Financial Conduct Authority (FCA) and the Bank of England), acknowledged that the rate remained fragile owing to the lack of transactions in the interbank unsecured market and the vulnerability of its panel, which was based on voluntary contributors. The panel agreed to continue contributing until the end of 2021 to allow a transition to alternative benchmarks. In March 2021 the FCA and IBA confirmed that GBP, EUR, CHF and JPY LIBOR rates would be discontinued at the end of 2021, along with a few of the USD settings; the five main tenors of USD LIBOR would cease at the end of June 2023. To allow an orderly wind-down, the main tenors of GBP and JPY LIBOR are also being published for an additional year using a synthetic methodology (i.e. based on

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<sup>16</sup> The FSB coordinates national financial authorities and international standard-setting bodies in regulatory, supervisory and other financial sector issues.

<sup>17</sup> See “[Reforming Major Interest Rate Benchmarks](#)”, FSB, July 2014.

<sup>18</sup> See the FCA’s website for more information on the [transition away from LIBOR](#).

compounded risk-free rates and a credit spread, instead of panel contributions). These synthetic rates cannot be used in new contracts and are aimed solely at easing the transition of legacy contracts that are particularly difficult to amend.

The picture for the euro is somewhat different, as EURIBOR is being maintained for the foreseeable future. Reform efforts here have mostly focused on the methodology, which was amended by its administrator, the European Money Markets Institute (EMMI), to better base contributions on real market transactions. The WG RFR also recommended fallback language based on the €STR (i.e. rates, trigger events and templates) for EURIBOR contracts. These recommendations complement those from the ISDA on fallback protocols for EURIBOR derivatives. Current work by the WG RFR includes fostering the use of the €STR in a diverse range of financial products.<sup>19</sup>

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## 4 Stages in the transition from EONIA to the €STR

The transition from EONIA to the €STR occurred in three stages. During the first of these, starting in September 2017, the €STR was developed and implemented. In the second stage, after the launch of the €STR in October 2019, the two rates co-existed side by side, with EONIA based on a new calculation method, i.e. it became fully dependent on the €STR plus a fixed spread. The official cessation of EONIA on 3 January 2022 marked the final stage of the transition.

### The development and implementation of the €STR

**The first step in the development of the €STR was to define the methodology for two main building blocks: (i) the underlying interest of the benchmark, i.e. the economic reality it seeks to measure and (ii) how the benchmark should be calculated so as to measure this accurately.**<sup>20</sup> The underlying interest of the €STR was defined as the wholesale euro unsecured overnight borrowing costs of euro area banks. EONIA focused exclusively on interbank lending, whereas the €STR reflects much broader activity by including short-term borrowing from a wider set of counterparties.<sup>21</sup> Taking borrowing activity beyond the interbank segment into account made it possible to overcome the limitations of an illiquid interbank lending market. The rate produced is based on a structurally stable activity for banks (accepting overnight funds from other entities) and reduces the influence of the credit element. The next step was to determine how to best measure the underlying interest, i.e. which transactions would be eligible for inclusion when computing the €STR and which calculation technique to apply. Analysis suggested narrowing down the eligible transactions to those executed by MMSR reporting banks as fixed rate overnight deposits placed by financial institutions. The specific instruments

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<sup>19</sup> See the working group's [Work Programme for 2022/23](#), on the ESMA website.

<sup>20</sup> See "[First ECB public consultation on developing a euro unsecured overnight interest rate](#)", ECB, Frankfurt, November 2017.

<sup>21</sup> Interbank lending at the time had become very illiquid, making EONIA vulnerable in view of its very low volumes.

(deposits) and counterparties (financials) selected provide a sufficiently homogeneous set of eligible transactions and ensure they are executed on market terms. Transactions with large non-financial corporates were excluded, as their pricing often reflects the quality of the customer relationship. Similarly, other types of instrument such as call accounts were kept out of the scope, as their pricing tends to be less reactive to day-to-day market movements. Finally, the decision was taken to calculate the €STR as a volume-weighted trimmed mean of the eligible transactions. Trimming is used to safeguard the rate from idiosyncratic volatility caused by transactions priced off the market, or from errors in the underlying statistical data. A contingency formula for calculating the €STR is activated when there is insufficient underlying data, owing to either market events or technical errors. A calculation with sufficient underlying data is defined as one based on reporting by at least 20 banks, where the largest five of these do not represent more than 75% of the volume. If these requirements are not met, the contingency calculation method is applied instead. This applies a weighted average of the previous day's €STR and the rate resulting from using the data for the current day.

**The regular methodology reviews that have been conducted confirm that the €STR remains a fair reflection of market movements, that it is backed by sufficient underlying data and that the scope and calculation method selected are therefore adequate.** These methodology reviews are conducted annually, and the resulting reports published on the ECB website.<sup>22</sup>

**The €STR governance has been set out in a dedicated ECB Guideline, while the pre-existing MMSR data collection continues to be founded in an ECB Regulation.**<sup>23</sup> The Guideline establishes the ECB's responsibility for administering the €STR and the tasks and responsibilities of the ECB and Eurosystem national central banks which contribute to the determination process and related procedures. It also sets up a control framework to protect the integrity and independence of the determination process and deal with any existing or potential conflicts of interest identified. In addition, the Guideline lays down the legal basis for establishing the €STR Oversight Committee, which reviews, challenges and reports on all aspects of the €STR methodology and determination process.<sup>24</sup>

**Operational implementation of the €STR required a dedicated IT system with high criticality standards to be set up and Eurosystem-internal operational procedures established.** These were both tested during a shadow production period of nine months before launch.<sup>25</sup>

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<sup>22</sup> For the latest report see “[€STR Annual Methodology Review](#)”, ECB, Frankfurt, January 2022.

<sup>23</sup> Guideline (EU) 2019/1265 of the European Central Bank of 10 July 2019 on the euro short-term rate (€STR) (ECB/2019/19), (OJ L 199, 26.7.2019, p. 8), and Regulation (EU) 1333/2014 of the European Central Bank of 26 November 2014 concerning statistics on the money markets (ECB/2014/48), (OJ L 359, 16.12.2014, p. 97). The Regulation establishes the reporting obligations, timeliness, frequency and quality requirements of the MMSR data collected and used to calculate the €STR.

<sup>24</sup> The Oversight Committee is chaired by the Vice-President of the ECB. It comprises five members, of whom three, including the Chair, are selected on the basis of nomination by the ECB and two on the basis of nomination by the NCBs operating a local collection platform, in each case upon a proposal from the ECB's Executive Board approved by a decision of the Governing Council.

<sup>25</sup> Shadow production of the €STR from January to September 2019 encompassed live testing of both the Eurosystem IT system and the operational procedures, and also involved reporting agents.

A pre-€STR time series was published after each reserve maintenance period from mid-2018 onwards to allow the public to familiarise itself with the forthcoming rate and to test internal operational procedures.

Internal audits were conducted on both the design and implementation of the €STR.<sup>26</sup>

## The transition from EONIA to the €STR

**The transition from EONIA to the €STR was designed by the WG RFR in line with the guidance of the FSB.**<sup>27</sup> The working group first focused on the replacement for EONIA and recommended the €STR as the main risk-free rate in euro,<sup>28</sup> following the wider market's preference for an unsecured overnight borrowing rate based on ECB statistical data. The working group also made recommendations<sup>29</sup> to ensure a smooth transition until EONIA was discontinued in 2022. For a two-year period, EONIA was recalibrated to be equal to the €STR plus a fixed spread that matched the difference observed between the underlying interests of the two benchmarks. The working group also issued a legal action plan<sup>30</sup> to discourage use of EONIA in new contracts and support implementation of €STR-based fallback language in legacy contracts, and issued recommendations to the industry in technical areas such as valuations and accounting.<sup>31</sup> These took into account market feedback gathered through public consultations and a number of outreach events hosted by both public and private sector institutions. The working group was also supported by the strong involvement of the EONIA administrator (EMMI) and the active steps taken by market infrastructure bodies.

### **The €STR started to be used as a reference in financial contracts immediately after its inception in 2019 and the switch from EONIA to the €STR was smooth.**

The main market to transition was the overnight index swap market, where €STR swaps slowly started being traded in October 2019, supported by clearing infrastructure. Many market participants, however, continued to reference EONIA, because the two indices were economically equivalent. The transition only accelerated once the main central counterparties converted the remaining contracts cleared from EONIA to the €STR and stopped clearing EONIA swaps in October

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<sup>26</sup> The audits covered the methodology, governance, determination process and IT. All audit recommendations were implemented before launch. The requirement for internal and external audits was also included in the €STR Guideline as part of governance; audits continued to take place after the launch of the €STR, see the ECB's [Statement of compliance with the IOSCO principles for financial benchmarks](#), published in 2020.

<sup>27</sup> See footnote 4.

<sup>28</sup> See [press release](#), ECB, Frankfurt, 13 September 2018.

<sup>29</sup> See Working group on euro risk-free rates, "[Recommendations of the working group on euro risk-free rates on the transition path from EONIA to the €STR and on a €STR-based forward-looking term structure methodology](#)", Frankfurt am Main, March 2019.

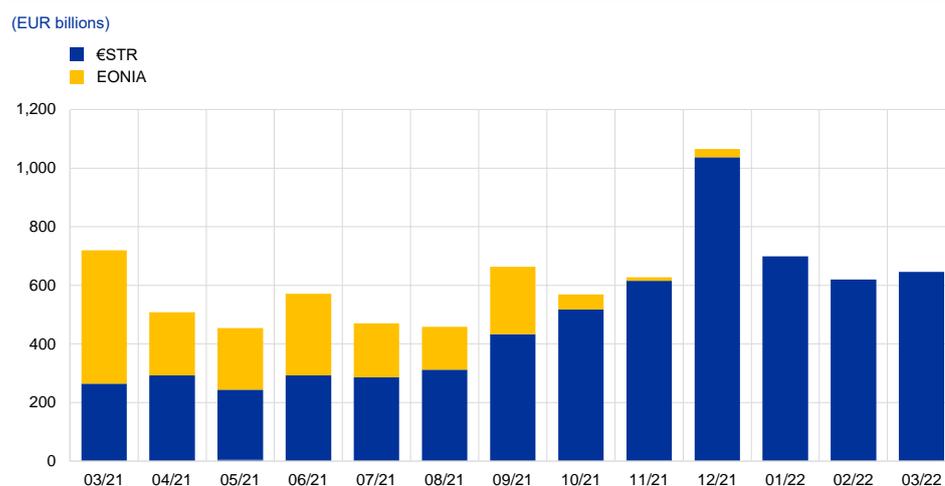
<sup>30</sup> See Working group on euro risk-free rates, "[Recommendations of the working group on euro risk-free rates on the EONIA to €STR legal action plan](#)", Frankfurt am Main, July 2019.

<sup>31</sup> See Working group on euro risk-free rates, "[Report by the working group on euro risk-free rates on the impact of the transition from EONIA to the €STR on cash and derivatives products](#)", Frankfurt am Main, August 2019 and "[Report by the working group on euro risk-free rates on the risk management implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR](#)", Frankfurt am Main, October 2019.

2021,<sup>32</sup> as shown below in Chart 1. The switch was also supported by a European Commission implementing regulation adopted in October 2021, which designated the €STR as replacing remaining references to EONIA in contracts and financial instruments with no, or no suitable, fallback provisions as of the date of its discontinuation.<sup>33</sup> Chart 2 shows the transition from EONIA to the €STR in the unsecured and secured segments of the euro money market.

### Chart 1

#### Shares of the €STR and EONIA OIS in MMSR transactions



Source: ECB

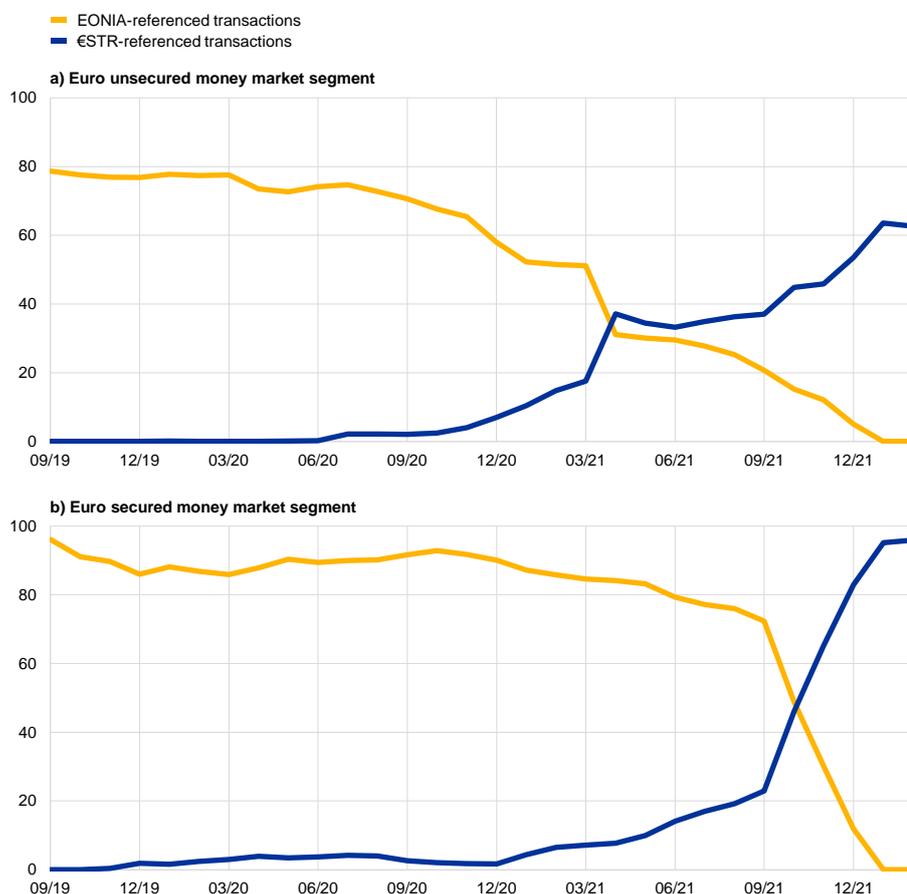
<sup>32</sup> Most EONIA swap transactions were cleared, i.e. settled, through a third party called a central clearing counterparty, which acts as an intermediary between the two counterparties and takes over the credit risk, the matching of transactions and the settlement process.

<sup>33</sup> Commission Implementing Regulation (EU) 2021/1848 of 21 October 2021 on the designation of a replacement for the benchmark Euro overnight index average (OJ L 374, 22.10.2021, p. 6).

## Chart 2

### Relative use of EONIA and the €STR as benchmarks in the euro variable-rate unsecured and secured money market segments

(percentages of total variable-rate business volume, monthly aggregates)



Source: ECB

## The €STR after the transition

**Following the discontinuation of EONIA on 3 January 2022, the €STR became the only overnight benchmark rate for the euro, with the working group on euro risk-free rates investigating ways to promote its wider use in the market.**

The €STR, much like EONIA, is now mainly used in derivatives such as OIS contracts. In response to the recommendations of the FSB, the WG RFR is considering other uses, including in cash market and cross-currency products.

**The €STR is also the fallback in EURIBOR contracts should that rate cease to exist in future.** The ISDA has already introduced €STR-based fallback provisions in its standard documentation to cater for discontinuation of EUR LIBOR and EURIBOR. The WG RFR has issued recommendations for €STR-based fallback rates in cash market products linked to EURIBOR. Depending on the asset class, the recommendations suggest using either forward-looking €STR rates (subject to their future availability), or a compounded €STR rate in all other cases.

**In response to market feedback, the ECB publishes compounded €STR average rates and a compounded index based on the €STR.** The rates are backward-looking compounded averages of the €STR calculated over standardised tenors of one week, one month, three months, six months and twelve months. The compounded €STR index makes it possible to calculate a compounded €STR average rate over any other tenor of choice. The ECB started publishing compounded average rates and a compounded index based on the €STR on 15 April 2021. Publication takes place each TARGET2 business day at 09:15. The rules for the calculation and publication of the compounded €STR average rates and index are published on the ECB website<sup>34</sup> and their design took account of a public consultation.

## Box 2

### Stylised statistical facts about the overnight index swap market

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Prepared by Gianluca Boscaroli and Ronald Rühmkorf

The €STR, as previously EONIA, is of importance for all euro-denominated derivative markets for the valuation of positions. In the case of overnight index swap (OIS), the €STR is in addition the actual underlying against which participants seek to hedge interest risk or take exposure to future rate changes. In this sense, the OIS market can be seen as the derivative market most directly connected to the new overnight benchmark.

Two large groups of transactions in the OIS market can be distinguished: the spot transactions and the forward transactions. Trades with a start date within three business days from the trade date are classified as spot, with those with a later start date classified as forward. According to MMSR data for the first quarter of 2022, most trading volume takes place in the forward market (56%) while the spot market is significantly smaller (32%). The remaining activity (12%) relates to novations, which usually occur when a transaction is cleared with a central counterparty between the two original transactors.

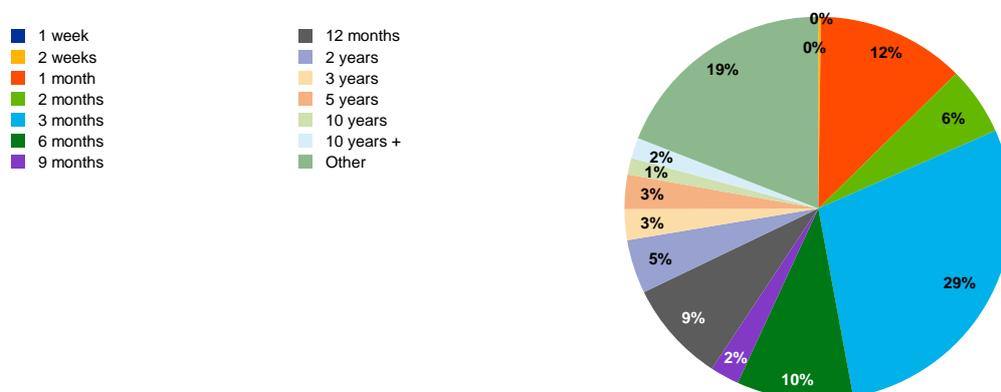
The data reveal that the OIS spot market is characterised by a strong dispersion in contract length (Chart A). The spot transactions can be classified by maturity buckets that define the most standard contract lengths according to the difference between contract start and maturity dates. In the first quarter of 2022, 68% of the activity in spot trading was concentrated in the intermediate maturities represented by the one-month bucket and its multiples up to and including the 12-month bucket; 13% of the volume was split among longer maturities (i.e. two years and above). Maturities under one month were traded much less (close to 0%). The remaining 19% of activity corresponds to less standardised transactions that cannot be classified in any standard maturity bucket and are labelled “other”. These have non-standard contract lengths (e.g. four months) and have either short maturities of up to five months or very long maturities of three to ten years.

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<sup>34</sup> See “[Compounded €STR average rates and index: Calculation and publication rules](#)”, ECB, Frankfurt, October 2020.

## Chart A

Total notional amounts broken down by maturity bucket for the first quarter of 2022

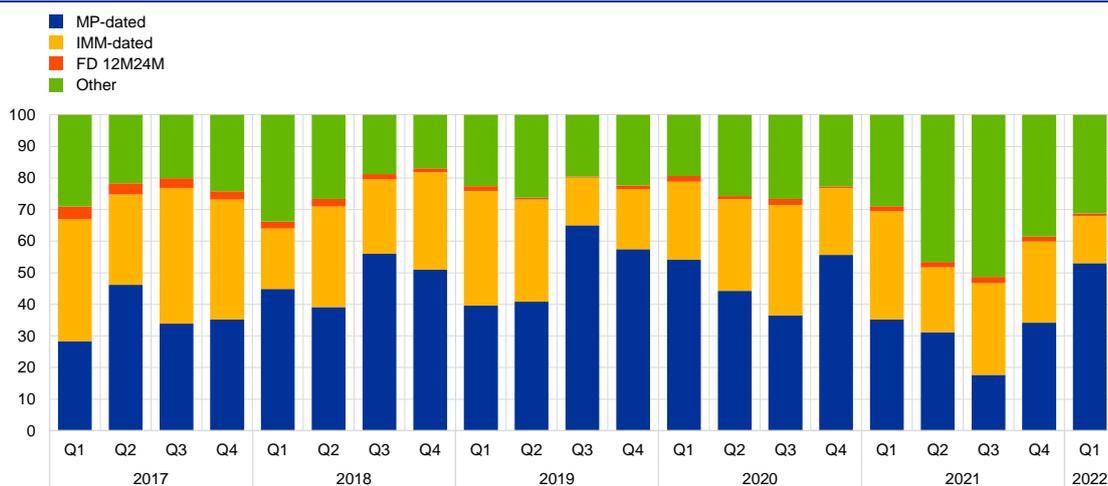


Source: ECB.

The OIS forward market is dominated by three different classes of contract, which jointly represented on average about 69% of the activity in this segment in the first quarter of 2022 (Chart B). Most of the volume is concentrated in transactions that have both their start and end dates tied to the Eurosystem’s reserve maintenance periods (labelled “MP-dated trades” in Chart B). These made up about 53% of the activity in the period. The second most traded type of OIS forwards have start and end dates matching International Monetary Market futures dates (IMM-dated trades),<sup>35</sup> with 15% of the market in the first quarter of 2022. A relatively small percentage of around 1% of the forward market corresponds to another standard contract, labelled “FD 12M24M”, which starts 12 months after the trade date and matures 12 months thereafter. The remaining 31% of volume in forward swaps relates to swaps not falling into any of the previous categories.

## Chart B

Forward notional amounts broken down by forward classification



Source: ECB.

<sup>35</sup> The IMM (International Monetary Market) dates are the third Wednesday of March, June, September and December.

## 5 Conclusion

**The transition from EONIA to the €STR was successfully completed according to schedule.** The smooth switch between the two benchmarks avoided risks to financial stability and monetary policy. Once private sector efforts to maintain the historical overnight rate EONIA met unsurmountable challenges, the ECB initiated work on its own benchmark rate based on existing statistical data. The €STR, initially conceived as a back-up, has become the main euro unsecured overnight rate. The financial industry has showed a clear preference for an unsecured rate produced by the central bank. Since its launch in 2019, the €STR has proved to be a reliable and robust reference rate, available to the entire market and accurately reflecting money market trends in the euro area.

As the main euro overnight risk-free rate, the €STR not only replaces EONIA but also serves as a basis for recommended fallback rates for the eventuality of EURIBOR being discontinued. The ECB supports this by publishing compounded €STR rates, which can be used as a EURIBOR fallback. Use of the €STR may develop in future as an alternative to EURIBOR in other market segments, too. This would be in line with international moves towards risk-free rates and consistent with the guidance from the FSB. Any concrete steps in this direction, however, need to be taken by the financial industry in Europe.

# Statistics

## Contents

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5 Financing conditions and credit developments	S 18
6 Fiscal developments	S 23

## Further information

ECB statistics can be accessed from the Statistical Data Warehouse (SDW):	<a href="http://sdw.ecb.europa.eu/">http://sdw.ecb.europa.eu/</a>
Data from the statistics section of the Economic Bulletin are available from the SDW:	<a href="http://sdw.ecb.europa.eu/reports.do?node=1000004813">http://sdw.ecb.europa.eu/reports.do?node=1000004813</a>
A comprehensive Statistics Bulletin can be found in the SDW:	<a href="http://sdw.ecb.europa.eu/reports.do?node=1000004045">http://sdw.ecb.europa.eu/reports.do?node=1000004045</a>
Methodological definitions can be found in the General Notes to the Statistics Bulletin:	<a href="http://sdw.ecb.europa.eu/reports.do?node=10000023">http://sdw.ecb.europa.eu/reports.do?node=10000023</a>
Details on calculations can be found in the Technical Notes to the Statistics Bulletin:	<a href="http://sdw.ecb.europa.eu/reports.do?node=10000022">http://sdw.ecb.europa.eu/reports.do?node=10000022</a>
Explanations of terms and abbreviations can be found in the ECB's statistics glossary:	<a href="http://www.ecb.europa.eu/home/glossary/html/glossa.en.html">http://www.ecb.europa.eu/home/glossary/html/glossa.en.html</a>

## Conventions used in the tables

-	data do not exist/data are not applicable
.	data are not yet available
...	nil or negligible
(p)	provisional
s.a.	seasonally adjusted
n.s.a.	non-seasonally adjusted

# 1 External environment

## 1.1 Main trading partners, GDP and CPI

	GDP <sup>1)</sup> (period-on-period percentage changes)						CPI (annual percentage changes)						
	G20	United States	United Kingdom	Japan	China	Memo item: euro area	OECD countries		United States	United Kingdom (HICP)	Japan	China	Memo item: euro area <sup>2)</sup> (HICP)
							Total	excluding food and energy					
	1	2	3	4	5	6	7	8	9	10	11	12	13
2019	2.8	2.3	1.7	-0.2	6.0	1.6	2.1	2.1	1.8	1.8	0.5	2.9	1.2
2020	-3.2	-3.4	-9.3	-4.5	2.3	-6.3	1.4	1.7	1.2	0.9	0.0	2.5	0.3
2021	6.1	5.6	7.4	1.7	8.1	5.4	4.0	2.9	4.7	2.6	-0.3	0.9	2.6
2021 Q2	0.5	1.6	5.6	0.5	1.2	2.2	3.7	2.8	4.8	2.0	-0.8	1.1	1.8
Q3	1.9	0.6	0.9	-0.7	0.7	2.3	4.4	3.2	5.3	2.8	-0.2	0.8	2.8
Q4	1.3	1.7	1.3	0.9	1.5	0.2	5.9	4.0	6.7	4.9	0.5	1.8	4.6
2022 Q1	.	-0.4	0.8	-0.2	1.3	0.6	7.9	5.5	8.0	6.2	0.9	1.1	6.1
2021 Dec.	-	-	-	-	-	-	6.6	4.6	7.0	5.4	0.8	1.5	5.0
2022 Jan.	-	-	-	-	-	-	7.2	5.1	7.5	5.5	0.5	0.9	5.1
Feb.	-	-	-	-	-	-	7.8	5.6	7.9	6.2	0.9	0.9	5.9
Mar.	-	-	-	-	-	-	8.8	5.9	8.5	7.0	1.2	1.5	7.4
Apr.	-	-	-	-	-	-	.	.	8.3	9.0	2.5	.	7.4
May <sup>3)</sup>	-	-	-	-	-	-	.	.	.	.	.	.	8.1

Sources: Eurostat (col. 6, 13); BIS (col. 9, 10, 11, 12); OECD (col. 1, 2, 3, 4, 5, 7, 8).

1) Quarterly data seasonally adjusted; annual data unadjusted.

2) Data refer to the changing composition of the euro area.

3) The figure for the euro area is an estimate based on provisional national data, as well as on early information on energy prices.

## 1.2 Main trading partners, Purchasing Managers' Index and world trade

	Purchasing Managers' Surveys (diffusion indices; s.a.)									Merchandise imports <sup>1)</sup>		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index <sup>2)</sup>			Global	Advanced economies	Emerging market economies
	Global <sup>2)</sup>	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders			
	1	2	3	4	5	6	7	8	9	10	11	12
2019	51.7	52.5	50.2	50.5	51.8	51.3	50.3	52.2	48.8	-0.5	-0.4	-0.6
2020	47.5	48.8	46.5	42.4	51.4	44.0	48.5	46.3	45.3	-4.1	-4.3	-3.8
2021	54.9	59.6	55.9	49.4	52.0	54.9	53.7	55.2	52.1	11.1	9.6	12.8
2021 Q2	57.5	65.3	61.9	49.6	53.0	56.8	53.9	58.8	52.9	1.9	1.6	2.1
Q3	53.0	56.8	56.3	47.4	50.6	58.4	51.7	53.4	50.3	-0.4	-0.2	-0.6
Q4	54.6	57.3	56.3	52.1	51.9	54.3	52.2	55.5	50.4	2.0	2.2	1.8
2022 Q1	52.2	54.9	58.3	48.7	48.0	54.2	51.0	52.6	49.1	1.8	3.5	0.1
2021 Dec.	54.5	57.0	53.6	52.5	53.0	53.3	53.3	55.0	50.7	2.0	2.2	1.8
2022 Jan.	51.0	51.1	54.2	49.9	50.1	52.3	50.7	51.1	49.0	3.8	5.3	2.3
Feb.	53.2	55.9	59.9	45.8	50.1	55.5	51.6	53.7	50.3	3.6	4.9	2.3
Mar.	52.4	57.7	60.9	50.3	43.9	54.9	50.6	53.0	47.9	1.8	3.5	0.1
Apr.	50.5	56.0	58.2	51.1	37.2	55.8	48.3	51.1	48.1	.	.	.
May	51.0	53.6	53.1	52.3	42.2	54.8	49.4	51.5	47.9	.	.	.

Sources: Markit (col. 1-9); CPB Netherlands Bureau for Economic Policy Analysis and ECB calculations (col. 10-12).

1) Global and advanced economies exclude the euro area. Annual and quarterly data are period-on-period percentages; monthly data are 3-month-on-3-month percentages. All data are seasonally adjusted.

2) Excluding the euro area.

## 2 Economic activity

### 2.1 GDP and expenditure components

(quarterly data seasonally adjusted; annual data unadjusted)

	GDP											
	Total	Domestic demand							External balance <sup>1)</sup>			
		Total	Private consumption	Government consumption	Gross fixed capital formation			Changes in inventories <sup>2)</sup>	Total	Exports <sup>1)</sup>	Imports <sup>1)</sup>	
					Total construction	Total machinery	Intellectual property products					
1	2	3	4	5	6	7	8	9	10	11	12	
<i>Current prices (EUR billions)</i>												
2019	11,984.3	11,578.2	6,378.5	2,456.8	2,654.2	1,253.6	770.6	623.0	88.7	406.0	5,766.1	5,360.1
2020	11,413.1	10,988.4	5,913.3	2,570.9	2,498.0	1,216.9	682.8	591.3	6.2	424.7	5,170.0	4,745.3
2021	12,269.7	11,779.9	6,268.4	2,714.9	2,692.3	1,360.4	759.7	564.6	104.3	489.8	6,060.9	5,571.2
2021 Q2	3,021.8	2,891.1	1,536.0	675.6	663.6	336.9	189.3	135.5	15.9	130.7	1,476.7	1,346.1
Q3	3,128.0	2,993.1	1,618.4	683.5	671.7	344.4	188.1	137.3	19.5	134.9	1,546.0	1,411.1
Q4	3,162.6	3,074.5	1,636.9	691.8	703.5	351.0	193.7	156.9	42.2	88.1	1,633.0	1,544.8
2022 Q1	3,210.0	3,124.5	1,660.8	696.1	713.6	370.3	197.6	143.7	53.9	85.5	1,693.2	1,607.7
<i>as a percentage of GDP</i>												
2021	100.0	96.0	51.1	22.1	21.9	11.1	6.2	4.6	0.8	4.0	-	-
<i>Chain-linked volumes (prices for the previous year)</i>												
<i>quarter-on-quarter percentage changes</i>												
2021 Q2	2.2	2.2	3.8	1.9	1.4	1.8	0.8	1.1	-	-	3.2	3.3
Q3	2.3	2.1	4.5	0.4	-0.9	-0.8	-1.8	0.2	-	-	1.9	1.4
Q4	0.2	1.0	-0.3	0.4	3.1	0.1	1.7	12.5	-	-	2.7	4.7
2022 Q1	0.6	0.2	-0.7	-0.3	0.1	3.4	1.5	-8.9	-	-	0.4	-0.6
<i>annual percentage changes</i>												
2019	1.6	2.5	1.3	1.9	6.8	3.3	1.8	22.3	-	-	2.7	4.7
2020	-6.3	-6.2	-7.8	0.9	-6.9	-4.5	-11.9	-5.8	-	-	-9.2	-9.1
2021	5.4	4.3	3.7	4.0	4.1	6.2	9.8	-6.5	-	-	10.9	8.8
2021 Q2	14.7	12.4	12.4	8.0	18.2	18.8	30.8	3.2	-	-	26.9	22.2
Q3	4.0	3.8	2.9	2.7	3.0	3.0	2.5	3.7	-	-	10.6	10.7
Q4	4.7	5.3	5.8	2.5	3.7	1.7	2.4	10.0	-	-	8.9	10.8
2022 Q1	5.4	5.6	7.5	2.3	3.7	4.5	2.1	3.9	-	-	8.4	9.1
<i>contributions to quarter-on-quarter percentage changes in GDP; percentage points</i>												
2021 Q2	2.2	2.0	1.9	0.4	0.3	0.2	0.0	0.1	-0.6	0.1	-	-
Q3	2.3	2.0	2.3	0.1	-0.2	-0.1	-0.1	0.0	-0.2	0.3	-	-
Q4	0.2	1.0	-0.1	0.1	0.7	0.0	0.1	0.6	0.4	-0.7	-	-
2022 Q1	0.6	0.2	-0.3	-0.1	0.0	0.4	0.1	-0.4	0.6	0.5	-	-
<i>contributions to annual percentage changes in GDP; percentage points</i>												
2019	1.6	2.4	0.7	0.4	1.4	0.3	0.1	1.0	-0.1	-0.8	-	-
2020	-6.3	-6.0	-4.1	0.2	-1.5	-0.5	-0.8	-0.3	-0.5	-0.4	-	-
2021	5.4	4.3	2.0	0.9	1.0	0.7	0.6	-0.3	0.4	1.3	-	-
2021 Q2	14.7	12.0	6.4	1.9	3.8	2.0	1.7	0.2	-0.2	2.7	-	-
Q3	4.0	3.5	1.5	0.6	0.6	0.3	0.2	0.2	0.7	0.5	-	-
Q4	4.7	5.0	3.0	0.6	0.8	0.2	0.2	0.5	0.7	-0.4	-	-
2022 Q1	5.4	5.4	3.8	0.5	0.8	0.5	0.1	0.2	0.3	0.1	-	-

Sources: Eurostat and ECB calculations.

1) Exports and imports cover goods and services and include cross-border intra-euro area trade.

2) Including acquisitions less disposals of valuables.

## 2 Economic activity

### 2.2 Value added by economic activity

(quarterly data seasonally adjusted; annual data unadjusted)

	Gross value added (basic prices)											Taxes less subsidies on products
	Total	Agriculture, forestry and fishing	Manufacturing energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services	
	1	2	3	4	5	6	7	8	9	10	11	12
<b>Current prices (EUR billions)</b>												
2019	10,742.5	178.3	2,101.5	560.9	2,041.4	531.7	478.8	1,205.1	1,249.8	2,025.6	369.4	1,241.7
2020	10,283.0	176.5	1,971.8	554.9	1,808.5	541.8	476.5	1,211.7	1,167.1	2,053.4	320.8	1,130.0
2021	10,997.7	188.3	2,156.4	603.9	2,011.1	577.8	483.0	1,243.4	1,252.7	2,150.2	330.8	1,272.0
2021 Q2	2,708.7	46.3	532.6	150.7	484.7	143.1	120.1	308.5	308.3	533.3	81.0	313.0
Q3	2,798.9	47.7	544.1	151.3	527.4	144.9	120.6	311.3	318.8	545.3	87.7	329.1
Q4	2,824.3	49.6	552.2	153.8	538.2	148.6	121.3	312.6	323.3	541.3	83.5	338.3
2022 Q1	2,870.4	50.0	576.5	159.3	544.3	148.2	122.6	314.2	325.3	544.0	86.0	339.5
<i>as a percentage of value added</i>												
2021	100.0	1.7	19.6	5.5	18.3	5.3	4.4	11.3	11.4	19.6	3.0	-
<b>Chain-linked volumes (prices for the previous year)</b>												
<i>quarter-on-quarter percentage changes</i>												
2021 Q2	1.9	0.9	0.3	1.5	4.6	1.9	0.4	0.7	1.8	1.8	5.6	4.7
Q3	2.5	-0.4	0.6	-0.6	7.4	1.4	-0.1	0.7	2.9	1.6	11.4	0.5
Q4	0.0	0.3	-0.4	0.4	0.3	2.7	0.2	0.2	1.1	-1.2	-2.7	2.7
2022 Q1	0.8	-1.9	0.9	3.0	0.8	0.8	0.2	1.0	0.5	0.1	3.2	-0.9
<i>annual percentage changes</i>												
2019	1.6	1.6	0.2	2.0	2.5	5.7	0.3	1.5	1.8	1.1	1.7	1.6
2020	-6.3	-1.4	-7.0	-4.8	-13.2	0.9	-0.4	-0.8	-7.8	-3.2	-17.7	-6.5
2021	5.2	-1.0	7.4	5.0	7.9	6.6	2.2	1.5	6.2	3.8	2.9	6.4
2021 Q2	14.5	0.1	21.6	18.0	24.1	11.2	4.3	3.4	15.6	10.3	14.7	16.2
Q3	4.1	-1.2	5.3	2.0	7.1	4.1	1.1	0.9	6.7	2.0	4.0	3.3
Q4	4.6	-2.0	1.4	0.5	11.6	8.3	1.8	1.5	6.3	2.4	13.7	5.7
2022 Q1	5.3	-1.1	1.3	4.3	13.6	7.0	0.8	2.6	6.5	2.4	18.1	7.1
<i>contributions to quarter-on-quarter percentage changes in value added; percentage points</i>												
2021 Q2	1.9	0.0	0.1	0.1	0.8	0.1	0.0	0.1	0.2	0.4	0.2	-
Q3	2.5	0.0	0.1	0.0	1.3	0.1	0.0	0.1	0.3	0.3	0.3	-
Q4	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	0.1	-0.2	-0.1	-
2022 Q1	0.8	0.0	0.2	0.2	0.2	0.0	0.0	0.1	0.1	0.0	0.1	-
<i>contributions to annual percentage changes in value added; percentage points</i>												
2019	1.6	0.0	0.0	0.1	0.5	0.3	0.0	0.2	0.2	0.2	0.1	-
2020	-6.3	0.0	-1.4	-0.3	-2.5	0.0	0.0	-0.1	-0.9	-0.6	-0.6	-
2021	5.2	0.0	1.5	0.3	1.5	0.4	0.1	0.2	0.7	0.8	0.1	-
2021 Q2	14.5	0.0	4.0	1.0	3.9	0.6	0.2	0.4	1.8	2.1	0.4	-
Q3	4.1	0.0	1.0	0.1	1.3	0.2	0.1	0.1	0.8	0.4	0.1	-
Q4	4.6	0.0	0.3	0.0	2.0	0.4	0.1	0.2	0.7	0.5	0.4	-
2022 Q1	5.3	0.0	0.3	0.2	2.4	0.4	0.0	0.3	0.7	0.5	0.5	-

Sources: Eurostat and ECB calculations.

## 2 Economic activity

### 2.3 Employment <sup>1)</sup>

(quarterly data seasonally adjusted; annual data unadjusted)

	Total	By employment status		By economic activity									
		Employees	Self-employed	Agriculture, forestry and fishing	Manufacturing, energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12	13
Persons employed													
<i>as a percentage of total persons employed</i>													
2019	100.0	86.0	14.0	3.0	14.6	6.0	25.0	2.9	2.4	1.0	14.0	24.3	6.7
2020	100.0	86.0	14.0	3.0	14.5	6.2	24.4	3.0	2.4	1.0	13.9	24.9	6.6
2021	100.0	86.2	13.8	3.0	14.3	6.3	24.2	3.1	2.4	1.0	14.1	25.1	6.6
<i>annual percentage changes</i>													
2019	1.3	1.5	0.2	-2.4	1.1	2.5	1.5	3.3	0.0	1.7	1.4	1.4	0.4
2020	-1.5	-1.5	-1.7	-2.3	-1.9	0.8	-3.7	1.5	-0.6	-0.3	-2.4	0.8	-3.1
2021	1.2	1.4	-0.3	0.3	-0.4	3.0	0.0	4.7	0.3	0.5	2.5	2.0	-0.1
2021 Q2	2.1	2.5	-0.2	2.5	-0.5	4.8	0.9	4.5	0.5	1.3	4.4	2.8	1.8
Q3	2.1	2.4	0.4	0.1	0.4	2.9	2.0	5.5	0.9	0.0	4.3	2.2	0.8
Q4	2.1	2.5	0.0	-0.9	0.9	3.0	2.8	6.2	0.4	-0.1	3.4	1.7	0.6
2022 Q1	2.9	3.2	1.0	-1.2	1.3	3.4	4.8	5.7	-0.5	1.8	4.1	1.7	2.4
Hours worked													
<i>as a percentage of total hours worked</i>													
2019	100.0	81.3	18.7	4.1	14.9	6.8	25.9	3.1	2.4	1.0	13.9	21.7	6.1
2020	100.0	82.0	18.0	4.3	15.0	6.9	24.2	3.3	2.6	1.1	13.8	23.1	5.7
2021	100.0	81.8	18.2	4.2	14.9	7.1	24.4	3.4	2.5	1.1	14.0	22.8	5.7
<i>annual percentage changes</i>													
2019	1.0	1.3	-0.2	-3.3	0.5	2.3	1.1	3.4	0.4	2.0	1.3	1.3	0.2
2020	-7.9	-7.1	-11.4	-2.6	-7.6	-6.6	-14.0	-1.8	-2.8	-6.9	-8.3	-2.1	-13.1
2021	5.2	5.0	6.4	1.5	4.3	8.8	6.2	6.6	2.1	6.1	6.8	3.7	5.2
2021 Q2	16.6	15.1	24.2	7.0	15.0	26.4	24.9	11.1	5.6	18.7	18.7	8.1	25.7
Q3	3.2	3.6	1.5	-1.0	2.2	2.3	4.6	6.7	1.0	2.8	6.3	2.2	0.7
Q4	4.9	5.0	4.7	-1.2	2.3	4.0	10.6	5.9	0.6	2.4	5.4	1.8	7.4
2022 Q1	6.4	6.5	5.8	-1.5	2.7	4.7	14.8	5.8	-0.6	6.6	6.5	1.8	12.7
Hours worked per person employed													
<i>annual percentage changes</i>													
2019	-0.3	-0.2	-0.4	-1.0	-0.5	-0.2	-0.4	0.0	0.3	0.3	-0.1	-0.1	-0.2
2020	-6.5	-5.7	-9.8	-0.3	-5.8	-7.3	-10.7	-3.2	-2.2	-6.6	-6.0	-2.9	-10.3
2021	4.0	3.5	6.8	1.2	4.7	5.6	6.2	1.9	1.8	5.6	4.1	1.6	5.3
2021 Q2	14.2	12.3	24.5	4.4	15.6	20.7	23.8	6.2	5.1	17.1	13.7	5.2	23.6
Q3	1.1	1.2	1.1	-1.2	1.8	-0.5	2.5	1.1	0.0	2.8	1.9	0.0	-0.1
Q4	2.8	2.5	4.7	-0.2	1.4	1.0	7.6	-0.3	0.2	2.6	1.9	0.1	6.7
2022 Q1	3.5	3.3	4.8	-0.3	1.4	1.2	9.5	0.1	-0.2	4.7	2.3	0.1	10.0

Sources: Eurostat and ECB calculations.

1) Data for employment are based on the ESA 2010.

## 2 Economic activity

### 2.4 Labour force, unemployment and job vacancies

(seasonally adjusted, unless otherwise indicated)

	Labour force, millions	Under-employment, % of labour force	Unemployment <sup>1)</sup>											Job vacancy rate <sup>3)</sup>
			Total		Long-term unemployment, % of labour force <sup>2)</sup>	By age				By gender				
			Millions	% of labour force		Adult		Youth		Male		Female		
						Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
% of total in 2020			100.0		80.1		19.9		51.3		48.7			
2019	163.506	3.5	12.429	7.6	3.3	10.060	6.8	2.369	16.3	6.348	7.3	6.081	8.0	2.2
2020	160.953	3.5	12.833	8.0	3.0	10.280	7.0	2.553	18.1	6.581	7.7	6.252	8.3	1.8
2021	163.300	3.4	12.627	7.7	3.2	10.174	6.8	2.453	16.8	6.426	7.4	6.200	8.1	2.4
2021 Q2	163.097	3.5	13.006	8.0	3.3	10.411	7.0	2.595	17.8	6.587	7.6	6.419	8.4	2.3
Q3	164.012	3.3	12.371	7.5	3.1	9.935	6.7	2.436	16.4	6.295	7.2	6.077	7.9	2.6
Q4	164.446	3.3	11.760	7.2	3.0	9.573	6.4	2.188	14.8	6.038	6.9	5.722	7.4	2.8
2022 Q1	.	.	11.339	6.9	.	9.213	6.1	2.126	14.1	5.736	6.5	5.603	7.3	3.1
2021 Nov.	-	-	11.700	7.1	-	9.496	6.3	2.204	14.9	5.989	6.8	5.710	7.4	-
Dec.	-	-	11.568	7.0	-	9.408	6.3	2.160	14.5	5.938	6.8	5.630	7.3	-
2022 Jan.	-	-	11.429	6.9	-	9.288	6.2	2.141	14.3	5.822	6.6	5.607	7.3	-
Feb.	-	-	11.311	6.8	-	9.198	6.1	2.113	14.0	5.692	6.5	5.619	7.3	-
Mar.	-	-	11.277	6.8	-	9.154	6.1	2.123	14.0	5.695	6.5	5.581	7.2	-
Apr.	-	-	11.181	6.8	-	9.059	6.0	2.122	13.9	5.636	6.4	5.545	7.2	-

Sources: Eurostat and ECB calculations.

1) Where annual and quarterly Labour Force Survey data have not yet been published, they are estimated as simple averages of the monthly data. There is a break in series from the first quarter of 2021 due to the implementation of the Integrated European Social Statistics Regulation. Owing to technical issues with the introduction of the new German system of integrated household surveys, including the Labour Force Survey, the figures for the euro area include data from Germany, starting in the first quarter of 2020, which are not direct estimates from Labour Force Survey microdata, but based on a larger sample including data from other integrated household surveys.

2) Not seasonally adjusted.

3) The job vacancy rate is equal to the number of job vacancies divided by the sum of the number of occupied posts and the number of job vacancies, expressed as a percentage. Data are non-seasonally adjusted and cover industry, construction and services (excluding households as employers and extra-territorial organisations and bodies).

### 2.5 Short-term business statistics

	Industrial production					Construction production	Retail sales				Services turnover <sup>1)</sup>	New passenger car registrations	
	Total (excluding construction)		Main Industrial Groupings				Total	Food, beverages, tobacco	Non-food	Fuel			
	Manufacturing	Intermediate goods	Capital goods	Consumer goods	Energy								
1	2	3	4	5	6	7	8	9	10	11	12	13	
% of total in 2015	100.0	88.7	32.1	34.5	21.8	11.6	100.0	100.0	40.4	52.5	7.1	100.0	100.0
annual percentage changes													
2019	-1.0	-1.1	-2.6	-1.1	1.4	-1.8	2.2	2.4	1.0	3.7	0.8	2.9	1.8
2020	-8.0	-8.5	-7.2	-11.9	-4.3	-4.4	-5.7	-0.8	3.7	-2.3	-14.4	-8.8	-25.1
2021	7.8	8.6	9.4	8.8	7.8	1.6	5.2	5.0	0.9	7.8	9.4	13.3	-3.1
2021 Q2	23.2	25.3	25.6	31.7	18.5	5.6	18.0	11.8	1.8	18.7	29.7	26.1	53.4
Q3	6.0	6.8	7.6	5.2	8.8	-0.9	0.7	2.5	0.0	4.1	3.5	12.8	-23.6
Q4	0.2	0.0	2.0	-4.1	3.9	2.1	0.7	4.0	-0.5	6.3	13.9	16.9	-25.0
2022 Q1	-0.3	0.0	1.2	-5.0	6.1	-1.5	5.6	5.0	-2.2	9.7	11.7	.	-13.0
2021 Nov.	-1.3	-1.9	2.0	-9.3	5.6	4.6	0.5	8.5	0.8	12.8	19.7	-	-21.6
Dec.	1.8	1.9	1.7	0.3	4.9	2.6	-1.0	2.3	-1.1	3.8	13.7	-	-24.9
2022 Jan.	-1.5	-1.6	0.6	-8.8	6.7	0.2	4.5	8.5	-1.7	16.1	13.0	-	-10.0
Feb.	1.7	2.1	3.1	-3.4	9.0	-0.7	8.9	5.2	-2.0	9.9	12.1	-	-7.1
Mar.	-0.8	-0.4	-0.1	-2.7	3.0	-4.0	3.3	1.6	-2.7	4.0	10.2	-	-19.9
Apr.	.	.	.	.	.	.	.	3.9	-4.0	8.9	14.6	-	-18.3
month-on-month percentage changes (s.a.)													
2021 Nov.	2.5	2.6	1.1	2.3	2.3	1.7	0.1	1.3	0.2	2.1	-1.5	-	0.5
Dec.	1.7	1.2	0.7	4.8	-0.8	-0.2	-0.7	-2.2	0.6	-4.4	0.2	-	2.4
2022 Jan.	-0.8	-0.4	-0.3	-2.7	2.3	-1.4	3.4	0.1	-0.2	1.2	-1.9	-	-5.4
Feb.	0.5	0.7	0.8	-0.4	2.1	-2.1	1.1	0.5	-0.6	1.2	2.5	-	5.2
Mar.	-1.8	-1.6	-2.0	-2.7	-2.3	-1.7	0.0	0.3	0.9	-0.6	-1.4	-	-13.4
Apr.	.	.	.	.	.	.	.	-1.3	-2.6	-0.7	1.9	-	1.1

Sources: Eurostat, ECB calculations and European Automobile Manufacturers Association (col. 13).

1) Including wholesale trade.

## 2 Economic activity

### 2.6 Opinion surveys (seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances, unless otherwise indicated)								Purchasing Managers' Surveys (diffusion indices)			
	Economic sentiment indicator (long-term average = 100)	Manufacturing industry		Consumer confidence indicator	Construction confidence indicator	Retail trade confidence indicator	Service industries		Purchasing Managers' Index (PMI) for manufacturing	Manufacturing output	Business activity for services	Composite output
		Industrial confidence indicator	Capacity utilisation (%)				Services confidence indicator	Capacity utilisation (%)				
	1	2	3	4	5	6	7	8	9	10	11	12
1999-15	98.8	-5.2	80.6	-11.6	-15.4	-8.6	7.3	-	51.2	52.5	53.0	52.8
2019	103.6	-4.8	81.9	-6.8	6.8	-0.2	10.9	90.5	47.4	47.8	52.7	51.3
2020	88.3	-13.3	74.4	-14.2	-6.8	-12.6	-15.9	86.4	48.6	48.0	42.5	44.0
2021	110.8	9.3	81.8	-7.4	4.3	-1.8	8.2	87.7	60.2	58.3	53.6	54.9
2021 Q2	111.0	9.4	81.9	-5.6	3.5	-1.3	6.7	87.3	63.1	62.7	54.7	56.8
Q3	117.3	13.6	82.8	-4.3	5.9	4.7	17.0	89.0	60.9	58.6	58.4	58.4
Q4	115.7	13.7	82.5	-7.6	9.9	3.1	16.1	88.8	58.2	53.6	54.5	54.3
2022 Q1	111.2	11.8	82.5	-13.6	9.6	2.0	12.8	88.9	57.8	54.7	54.1	54.2
2021 Dec.	114.1	13.8	-	-9.3	10.6	2.2	12.6	-	58.0	53.8	53.1	53.3
2022 Jan.	113.0	13.1	82.4	-9.7	9.6	3.4	11.1	88.1	58.7	55.4	51.1	52.3
Feb.	114.2	13.4	-	-9.5	10.2	4.5	14.2	-	58.2	55.5	55.5	55.5
Mar.	106.5	9.0	-	-21.5	9.0	-2.0	13.0	-	56.5	53.1	55.6	54.9
Apr.	104.9	7.7	82.6	-22.0	7.0	-3.9	13.6	89.7	55.5	50.7	57.7	55.8
May	105.0	6.3	-	-21.1	7.2	-4.0	14.0	-	54.6	51.3	56.1	54.8

Sources: European Commission (Directorate-General for Economic and Financial Affairs) (col. 1-8) and Markit (col. 9-12).

### 2.7 Summary accounts for households and non-financial corporations (current prices, unless otherwise indicated; not seasonally adjusted)

	Households							Non-financial corporations					
	Saving ratio (gross)	Debt ratio	Real gross disposable income	Financial investment	Non-financial investment (gross)	Net worth <sup>2)</sup>	Housing wealth	Profit share <sup>3)</sup>	Saving ratio (net)	Debt ratio <sup>4)</sup>	Financial investment	Non-financial investment (gross)	Financing
	Percentage of gross disposable income (adjusted) <sup>1)</sup>	Annual percentage changes					Percentage of net value added	Percentage of GDP	Annual percentage changes				
	1	2	3	4	5	6	7	8	9	10	11	12	13
2018	12.5	93.0	1.9	1.9	6.2	2.5	4.6	35.4	5.6	75.0	2.1	7.7	1.7
2019	13.1	93.3	1.9	2.7	3.8	6.1	4.0	35.1	6.2	74.8	2.0	8.0	1.9
2020	19.4	96.3	-0.5	4.2	-3.5	4.5	3.6	31.1	4.4	81.8	3.1	-14.4	2.0
2021 Q1	20.6	96.6	0.1	4.6	10.8	7.0	3.9	32.0	5.5	82.9	3.8	-10.3	2.0
Q2	19.1	96.6	3.8	4.2	31.3	6.6	5.0	34.2	7.4	80.4	4.4	19.4	2.4
Q3	18.6	96.8	0.8	4.0	17.7	7.4	6.7	34.4	8.0	79.8	4.6	14.2	2.5
Q4	17.3	96.8	-0.2	3.4	18.4	7.0	7.0	34.8	8.0	80.0	5.4	17.1	3.2

Sources: ECB and Eurostat.

1) Based on four-quarter cumulated sums of saving, debt and gross disposable income (adjusted for the change in pension entitlements).

2) Financial assets (net of financial liabilities) and non-financial assets. Non-financial assets consist mainly of housing wealth (residential structures and land). They also include non-financial assets of unincorporated enterprises classified within the household sector.

3) The profit share uses net entrepreneurial income, which is broadly equivalent to current profits in business accounting.

4) Defined as consolidated loans and debt securities liabilities.

## 2 Economic activity

### 2.8 Euro area balance of payments, current and capital accounts

(EUR billions; seasonally adjusted unless otherwise indicated; transactions)

	Current account											Capital account <sup>1)</sup>	
	Total			Goods		Services		Primary income		Secondary income		Credit	Debit
	Credit	Debit	Balance	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit		
1	2	3	4	5	6	7	8	9	10	11	12	13	
2021 Q2	1,092.0	1,004.0	87.9	617.6	533.4	237.4	210.8	204.6	185.1	32.3	74.7	18.7	12.2
Q3	1,115.9	1,042.8	73.2	626.1	553.6	252.9	238.6	193.9	173.4	43.0	77.2	32.2	13.5
Q4	1,174.0	1,151.7	22.3	649.9	621.0	278.9	248.4	205.9	200.6	39.4	81.7	59.6	46.8
2022 Q1	1,217.7	1,181.9	35.8	690.8	677.7	291.3	246.9	200.1	187.3	35.5	70.1	27.7	19.9
2021 Oct.	380.5	375.4	5.1	208.8	197.5	90.4	83.8	67.6	66.8	13.7	27.2	9.0	4.9
Nov.	402.8	395.7	7.2	221.4	208.6	98.7	84.5	70.4	74.9	12.3	27.7	6.1	4.3
Dec.	390.7	380.6	10.0	219.7	214.8	89.8	80.1	67.8	58.9	13.3	26.8	44.5	37.6
2022 Jan.	405.6	384.0	21.6	229.7	217.9	96.4	79.7	67.7	61.9	11.7	24.5	8.3	5.6
Feb.	409.1	393.4	15.7	233.0	227.6	98.0	84.5	66.2	59.7	11.9	21.6	7.5	4.3
Mar.	403.0	404.6	-1.6	228.0	232.2	96.9	82.7	66.2	65.7	11.8	24.0	11.9	10.0
<i>12-month cumulated transactions</i>													
2022 Mar.	4,599.6	4,380.4	219.2	2,584.4	2,385.6	1,060.5	944.6	804.5	746.4	150.2	303.8	138.2	92.4
<i>12-month cumulated transactions as a percentage of GDP</i>													
2022 Mar.	36.7	35.0	1.8	20.6	19.1	8.5	7.5	6.4	6.0	1.2	2.4	1.1	0.7

1) The capital account is not seasonally adjusted.

### 2.9 Euro area external trade in goods<sup>1)</sup>, values and volumes by product group<sup>2)</sup>

(seasonally adjusted, unless otherwise indicated)

	Total (n.s.a.)		Exports (f.o.b.)					Imports (c.i.f.)					
	Exports	Imports	Total			Memo item: Manu- facturing	Total			Memo items:			
			Intermediate goods	Capital goods	Consumption goods		Intermediate goods	Capital goods	Consumption goods	Manu- facturing	Oil		
1	2	3	4	5	6	7	8	9	10	11	12	13	
<i>Values (EUR billions; annual percentage changes for columns 1 and 2)</i>													
2021 Q2	34.4	33.9	596.3	291.8	117.2	177.3	493.8	557.9	323.8	92.5	136.1	405.6	53.2
Q3	13.7	23.0	608.4	306.0	118.6	172.0	502.1	582.5	347.0	94.3	135.5	416.8	58.6
Q4	12.0	32.3	635.6	322.2	115.7	186.1	524.0	652.1	398.7	96.8	148.0	449.0	71.5
2022 Q1	16.6	39.7	670.6	.	.	.	550.1	707.8	.	.	.	472.1	.
2021 Oct.	7.4	25.3	207.7	104.8	37.8	60.9	171.1	208.1	126.6	30.9	47.6	143.6	23.0
Nov.	14.7	33.3	214.6	108.2	39.1	63.1	176.2	218.1	133.9	31.8	50.0	149.8	25.3
Dec.	14.1	38.6	213.4	109.2	38.9	62.1	176.8	225.9	138.3	34.2	50.4	155.6	23.3
2022 Jan.	19.8	45.2	222.0	111.4	42.2	64.7	183.4	230.3	142.6	34.2	49.7	157.6	24.5
Feb.	16.9	39.4	223.4	113.2	40.5	65.1	186.0	234.7	147.0	34.0	49.7	157.6	28.7
Mar.	14.0	35.4	225.3	.	.	.	180.7	242.8	.	.	.	156.8	.
<i>Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)</i>													
2021 Q2	29.1	20.5	104.5	109.5	101.3	101.5	103.3	109.5	110.6	113.7	108.4	111.9	86.1
Q3	4.4	5.5	103.6	110.3	100.6	96.7	102.2	108.2	109.7	112.7	105.3	110.9	85.6
Q4	0.8	9.4	105.3	112.5	96.1	101.9	104.1	115.2	119.6	109.0	110.4	114.6	94.1
2022 Q1	.	.	.	.	.	.	.	.	.	.	.	.	.
2021 Sep.	0.2	3.0	103.1	110.0	98.3	97.1	101.7	108.7	109.9	112.6	106.0	111.1	84.1
Oct.	-3.0	2.7	104.3	110.7	95.1	101.8	103.1	110.8	113.6	106.3	108.0	111.5	91.3
Nov.	3.1	9.9	106.9	113.8	98.4	103.2	105.4	115.6	120.7	107.8	111.3	114.4	97.2
Dec.	2.4	16.0	104.5	113.0	94.9	100.7	103.8	119.2	124.5	112.9	112.0	117.9	93.9
2022 Jan.	5.9	15.3	106.3	110.5	104.0	103.8	105.6	114.4	117.5	112.3	108.9	116.7	92.4
Feb.	2.7	11.7	106.0	111.8	100.0	102.9	106.9	115.2	118.2	113.5	109.1	117.0	97.0

Sources: ECB and Eurostat.

1) Differences between ECB's b.o.p. goods (Table 3.8) and Eurostat's trade in goods (Table 3.9) are mainly due to different definitions.

2) Product groups as classified in the Broad Economic Categories.

## 3 Prices and costs

### 3.1 Harmonised Index of Consumer Prices <sup>1)</sup>

(annual percentage changes, unless otherwise indicated)

	Total					Total (s.a.; percentage change vis-à-vis previous period) <sup>2)</sup>						Administered prices	
	Index: 2015 = 100	Total		Goods	Services	Total	Processed food	Unprocessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Administered prices
		Total excluding food and energy											
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2021	100.0	100.0	68.7	58.2	41.8	100.0	16.7	5.1	26.9	9.5	41.8	86.7	13.3
2019	104.8	1.2	1.0	1.0	1.5	-	-	-	-	-	-	1.1	1.9
2020	105.1	0.3	0.7	-0.4	1.0	-	-	-	-	-	-	0.2	0.6
2021	107.8	2.6	1.5	3.4	1.5	-	-	-	-	-	-	2.5	3.1
2021 Q2	107.4	1.8	0.9	2.5	0.9	0.5	0.3	0.9	-0.2	3.7	0.2	1.8	2.4
Q3	108.0	2.8	1.4	4.1	1.2	1.2	0.7	1.0	1.4	4.3	0.6	2.7	3.5
Q4	109.9	4.6	2.4	6.2	2.4	1.6	0.9	1.3	0.1	9.1	1.0	4.6	5.1
2022 Q1	112.3	6.1	2.7	8.8	2.5	2.7	1.6	3.1	1.5	14.4	0.7	6.0	6.9
2021 Dec.	110.4	5.0	2.6	6.8	2.4	0.3	0.5	1.0	0.4	0.4	0.1	4.9	5.6
2022 Jan.	110.7	5.1	2.3	7.1	2.3	1.1	0.5	1.0	0.7	6.2	0.2	4.9	6.3
Feb.	111.7	5.9	2.7	8.3	2.5	0.8	0.6	1.0	0.6	3.4	0.2	5.8	6.3
Mar.	114.5	7.4	3.0	10.9	2.7	1.7	0.6	1.5	0.1	12.2	0.3	7.3	8.1
Apr.	115.1	7.4	3.5	10.4	3.3	0.1	1.4	2.2	0.4	-4.0	0.5	7.4	8.0
May <sup>3)</sup>	116.1	8.1	3.8	.	3.5	0.8	1.6	-0.1	0.4	2.0	0.3	.	.

	Goods						Services						
	Food (including alcoholic beverages and tobacco)			Industrial goods			Housing	Transport	Communi-cation	Recreation and personal care	Miscel-laneous		
	Total	Processed food	Unpro-cessed food	Total	Non-energy industrial goods	Energy						Rents	
	14	15	16	17	18	19	20	21	22	23	24	25	
% of total in 2021	21.8	16.7	5.1	36.4	26.9	9.5	12.2	7.5	6.5	2.7	11.4	9.0	
2019	1.8	1.9	1.4	0.5	0.3	1.1	1.4	1.3	2.0	-0.7	1.7	1.5	
2020	2.3	1.8	4.0	-1.8	0.2	-6.8	1.4	1.3	0.5	-0.6	1.0	1.4	
2021	1.5	1.5	1.6	4.5	1.5	13.0	1.4	1.2	2.1	0.3	1.5	1.6	
2021 Q2	0.6	0.8	-0.2	3.6	0.8	12.0	1.4	1.3	0.8	-0.1	0.5	1.6	
Q3	1.9	1.7	2.5	5.4	1.8	15.8	1.4	1.1	2.4	0.7	1.1	1.6	
Q4	2.5	2.4	2.7	8.4	2.4	25.7	1.6	1.1	4.0	1.2	3.1	1.7	
2022 Q1	4.2	3.6	6.4	11.5	2.9	35.1	1.8	1.2	3.3	0.1	4.1	1.6	
2021 Dec.	3.2	2.8	4.7	8.9	2.9	25.9	1.6	1.1	4.0	1.0	3.3	1.8	
2022 Jan.	3.5	3.0	5.2	9.3	2.1	28.8	1.7	1.2	3.1	0.0	3.8	1.6	
Feb.	4.2	3.5	6.2	10.9	3.1	32.0	1.8	1.2	3.3	-0.1	4.1	1.6	
Mar.	5.0	4.1	7.8	14.4	3.4	44.3	1.9	1.2	3.5	0.3	4.4	1.7	
Apr.	6.3	5.4	9.2	12.9	3.8	37.5	2.1	1.3	5.4	0.5	5.2	1.7	
May <sup>3)</sup>	7.5	7.0	9.1	.	4.2	39.2	.	.	.	.	.	.	

Sources: Eurostat and ECB calculations.

1) Data refer to the changing composition of the euro area.

2) In May 2016 the ECB started publishing enhanced seasonally adjusted HICP series for the euro area, following a review of the seasonal adjustment approach as described in Box 1, *Economic Bulletin*, Issue 3, ECB, 2016 (<https://www.ecb.europa.eu/pub/pdf/ecbu/eb201603.en.pdf>).

3) Flash estimate.

## 3 Prices and costs

### 3.2 Industry, construction and property prices

(annual percentage changes, unless otherwise indicated)

	Industrial producer prices excluding construction <sup>1)</sup>										Con- struction <sup>2)</sup>	Residential property prices <sup>3)</sup>	Experimental indicator of commercial property prices <sup>3)</sup>
	Total (index: 2015 = 100)	Total		Industry excluding construction and energy						Energy			
		Manu- facturing	Total	Intermediate goods	Capital goods	Consumer goods							
						Total	Food, beverages and tobacco	Non- food					
1	2	3	4	5	6	7	8	9	10	11	12	13	
% of total in 2015	100.0	100.0	77.3	72.1	28.9	20.7	22.5	16.5	5.9	27.9			
2019	104.7	0.6	0.6	0.8	0.1	1.5	1.0	1.1	0.9	-0.1	3.1	4.2	4.5
2020	102.0	-2.6	-1.7	-0.1	-1.6	0.9	1.0	1.1	0.6	-9.7	2.0	5.3	1.7
2021	114.5	12.3	7.4	5.8	10.9	2.5	2.1	2.0	1.8	32.3	5.3	8.1	-0.2
2021 Q2	109.4	9.2	6.8	4.7	9.0	1.7	1.8	1.8	1.2	23.7	4.4	7.3	-2.8
Q3	115.6	14.0	9.3	7.5	14.1	3.0	2.8	2.9	2.1	34.3	7.0	9.2	-0.3
Q4	127.3	24.0	12.3	9.7	18.0	4.3	4.0	3.9	3.0	67.5	7.2	9.6	3.7
2022 Q1	140.9	33.1	15.5	12.7	21.4	6.1	7.4	.	5.5	92.6	.	.	.
2021 Nov.	126.7	23.7	12.7	9.8	18.3	4.4	3.9	3.9	3.1	66.1	-	-	-
Dec.	130.6	26.4	12.3	10.2	18.7	4.7	4.6	4.7	3.2	73.8	-	-	-
2022 Jan.	137.5	30.8	14.1	11.9	20.5	5.7	6.4	6.3	5.0	86.0	-	-	-
Feb.	138.9	31.5	14.6	12.3	20.9	6.0	7.0	.	5.5	87.4	-	-	-
Mar.	146.3	36.9	17.7	13.7	22.7	6.5	8.7	.	6.0	104.1	-	-	-
Apr.	148.0	37.2	19.3	15.6	25.1	7.2	10.9	.	6.7	99.2	-	-	-

Sources: Eurostat, ECB calculations, and ECB calculations based on MSCI data and national sources (col. 13).

1) Domestic sales only.

2) Input prices for residential buildings.

3) Experimental data based on non-harmonised sources (see [https://www.ecb.europa.eu/stats/ecb\\_statistics/governance\\_and\\_quality\\_framework/html/experimental-data.en.html](https://www.ecb.europa.eu/stats/ecb_statistics/governance_and_quality_framework/html/experimental-data.en.html) for further details).

### 3.3 Commodity prices and GDP deflators

(annual percentage changes, unless otherwise indicated)

	GDP deflators							Oil prices (EUR per barrel)	Non-energy commodity prices (EUR)						
	Total (s.a.; index: 2015 = 100)	Total	Domestic demand				Exports <sup>1)</sup>		Imports <sup>1)</sup>	Import-weighted <sup>2)</sup>			Use-weighted <sup>2)</sup>		
			Total	Private consump- tion	Govern- ment consump- tion	Gross fixed capital formation				Total	Food	Non-food	Total	Food	Non-food
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
% of total									100.0	45.4	54.6	100.0	50.4	49.6	
2019	105.3	1.7	1.5	1.1	1.8	2.3	0.8	0.3	57.2	2.0	4.4	-0.1	3.0	8.2	-2.3
2020	107.1	1.7	1.2	0.6	3.8	1.1	-1.3	-2.7	37.0	1.4	3.3	-0.3	-1.0	-0.3	-1.8
2021	109.3	2.0	2.8	2.2	1.6	3.5	5.7	7.8	59.8	29.5	21.3	37.2	28.8	21.7	37.1
2021 Q2	108.5	0.6	1.5	1.5	-1.2	2.6	4.6	7.1	57.0	38.3	20.2	56.4	35.7	20.5	54.4
Q3	109.8	2.8	3.7	2.7	2.7	4.6	7.3	9.8	61.9	31.0	26.1	35.4	32.3	28.2	36.7
Q4	110.7	3.1	4.5	3.8	2.2	5.5	9.9	13.8	69.4	30.7	30.0	31.3	33.7	33.4	34.0
2022 Q1	111.7	3.3	5.2	4.7	2.5	6.3	11.5	16.4	88.7	32.6	36.0	29.7	36.1	39.8	32.5
2021 Dec.	-	-	-	-	-	-	-	-	65.7	29.1	32.3	26.4	33.7	38.0	29.4
2022 Jan.	-	-	-	-	-	-	-	-	75.5	29.1	29.5	28.7	33.3	34.7	31.7
Feb.	-	-	-	-	-	-	-	-	84.4	29.5	31.7	27.7	32.4	34.3	30.4
Mar.	-	-	-	-	-	-	-	-	104.6	38.8	46.3	32.6	42.4	49.6	35.0
Apr.	-	-	-	-	-	-	-	-	98.2	34.8	50.8	22.0	38.1	52.6	23.7
May	-	-	-	-	-	-	-	-	106.2	23.1	47.1	4.9	26.6	47.8	6.6

Sources: Eurostat, ECB calculations and Bloomberg (col. 9).

1) Deflators for exports and imports refer to goods and services and include cross-border trade within the euro area.

2) Import-weighted: weighted according to 2009-11 average import structure; use-weighted: weighted according to 2009-11 average domestic demand structure.

## 3 Prices and costs

### 3.4 Price-related opinion surveys

(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances)					Purchasing Managers' Surveys (diffusion indices)			
	Selling price expectations (for next three months)				Consumer price trends over past 12 months	Input prices		Prices charged	
	Manu- facturing	Retail trade	Services	Construction		Manu- facturing	Services	Manu- facturing	Services
	1	2	3	4	5	6	7	8	9
1999-15	4.3	5.7	-	-4.4	32.4	56.7	56.3	-	49.7
2019	4.4	7.3	9.1	7.7	18.1	48.8	57.1	50.4	52.4
2020	-0.4	2.0	-0.6	-5.0	11.4	49.0	52.1	48.7	47.2
2021	31.5	24.0	10.3	20.1	30.3	84.0	61.9	66.8	53.4
2021 Q2	30.2	18.1	7.7	16.8	22.2	85.9	60.1	68.2	53.1
Q3	36.4	28.8	13.2	27.0	37.5	87.7	63.8	70.3	55.1
Q4	46.1	41.7	19.7	36.5	52.4	88.4	69.5	72.1	56.9
2022 Q1	50.7	49.1	23.8	39.3	59.9	84.2	74.2	72.9	59.8
2021 Dec.	47.8	42.1	20.7	36.4	54.6	86.7	69.6	70.2	57.2
2022 Jan.	46.8	43.4	22.3	36.4	55.7	83.5	70.9	72.7	57.9
Feb.	48.8	48.3	23.4	36.9	61.8	82.0	72.2	71.7	58.8
Mar.	56.5	55.6	25.6	44.6	62.1	87.0	79.6	74.2	62.6
Apr.	60.0	56.4	29.5	52.0	68.5	87.7	78.7	77.3	65.2
May	56.1	56.7	28.4	49.3	71.6	84.2	77.4	76.2	64.6

Sources: European Commission (Directorate-General for Economic and Financial Affairs) and Markit.

### 3.5 Labour cost indices

(annual percentage changes, unless otherwise indicated)

	Total (index: 2016 = 100)	Total	By component		For selected economic activities		Memo item: Indicator of negotiated wages <sup>1)</sup>
			Wages and salaries	Employers' social contributions	Business economy	Mainly non-business economy	
	1	2	3	4	5	6	7
% of total in 2018	100.0	100.0	75.3	24.7	69.0	31.0	
2019	106.9	2.4	2.5	2.0	2.4	2.4	2.2
2020	110.2	3.1	3.8	1.0	2.8	3.8	1.8
2021	111.7	1.3	1.3	1.4	1.2	1.6	1.5
2021 Q2	115.8	-0.2	-0.6	1.0	-0.9	1.4	1.8
Q3	107.5	2.4	2.3	2.6	2.4	2.2	1.4
Q4	118.7	1.9	1.4	3.3	2.1	1.3	1.6
2022 Q1	.	.	.	.	.	.	2.8

Sources: Eurostat and ECB calculations.

1) Experimental data based on non-harmonised sources (see [https://www.ecb.europa.eu/stats/ecb\\_statistics/governance\\_and\\_quality\\_framework/html/experimental-data.en.html](https://www.ecb.europa.eu/stats/ecb_statistics/governance_and_quality_framework/html/experimental-data.en.html) for further details).

## 3 Prices and costs

### 3.6 Unit labour costs, compensation per labour input and labour productivity

(annual percentage changes, unless otherwise indicated; quarterly data seasonally adjusted; annual data unadjusted)

	Total (index: 2015 =100)	Total	By economic activity									
			Agriculture, forestry and fishing	Manu- facturing, energy and utilities	Con- struction	Trade, transport, accom- modation and food services	Information and commu- nication	Finance and insurance	Real estate	Professional, business and support services	Public ad- ministration, education, health and social work	Arts, enter- tainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12
<b>Unit labour costs</b>												
2019	105.3	1.8	-1.5	2.3	1.8	0.7	0.9	1.8	2.5	2.4	2.6	2.0
2020	110.1	4.5	-0.4	3.1	4.0	5.5	1.3	0.4	1.3	5.6	6.8	14.2
2021	110.0	0.0	4.3	-3.2	2.7	-1.5	1.9	1.1	4.7	1.1	0.3	1.6
2021 Q2	109.1	-4.4	5.5	-10.6	-1.3	-7.8	0.4	-1.9	8.0	-1.7	-4.9	-2.0
Q3	110.1	1.5	4.4	-0.9	2.8	0.1	4.6	2.7	3.1	1.1	2.3	0.3
Q4	111.1	1.3	4.5	2.5	4.6	-0.7	1.0	2.7	4.4	1.2	1.0	-6.1
2022 Q1	112.1	1.8	3.1	3.8	2.6	-0.3	1.6	2.1	4.8	2.3	2.0	-5.0
<b>Compensation per employee</b>												
2019	107.4	2.1	2.5	1.4	1.4	1.6	3.2	2.1	2.4	2.8	2.3	3.3
2020	106.8	-0.6	0.5	-2.3	-1.7	-4.9	0.7	0.7	0.8	-0.2	2.5	-3.0
2021	111.2	4.1	2.9	4.4	4.7	6.3	3.8	3.1	5.7	4.6	2.0	4.6
2021 Q2	109.8	7.4	3.0	9.2	11.1	13.5	6.8	1.8	10.3	8.8	2.1	10.4
Q3	112.3	3.4	3.1	3.9	1.9	5.1	3.2	2.8	4.0	3.5	2.1	3.4
Q4	113.1	3.8	3.4	3.0	2.1	7.7	3.0	4.1	6.1	4.1	1.7	6.1
2022 Q1	114.1	4.4	3.2	3.9	3.5	8.1	2.7	3.4	5.6	4.7	2.7	9.6
<b>Labour productivity per person employed</b>												
2019	102.0	0.3	4.1	-0.8	-0.4	0.9	2.3	0.3	-0.1	0.3	-0.3	1.3
2020	97.0	-4.9	0.9	-5.2	-5.6	-9.8	-0.6	0.3	-0.5	-5.5	-4.0	-15.1
2021	101.0	4.2	-1.3	7.8	2.0	7.9	1.8	1.9	1.0	3.5	1.7	3.0
2021 Q2	100.7	12.3	-2.4	22.1	12.6	23.1	6.4	3.8	2.1	10.7	7.3	12.7
Q3	102.0	1.8	-1.3	4.9	-0.9	5.0	-1.3	0.2	0.9	2.3	-0.2	3.2
Q4	101.8	2.5	-1.1	0.5	-2.4	8.5	2.0	1.3	1.7	2.8	0.7	13.0
2022 Q1	101.8	2.5	0.1	0.1	0.9	8.4	1.1	1.2	0.8	2.3	0.6	15.3
<b>Compensation per hour worked</b>												
2019	107.3	2.3	3.1	1.9	1.7	2.0	3.1	1.7	2.1	2.8	2.4	3.7
2020	113.1	5.4	2.7	3.3	4.3	5.9	3.2	2.2	5.6	5.0	5.0	6.3
2021	113.7	0.5	0.5	0.0	-0.4	0.7	2.0	1.6	1.6	1.0	0.7	0.5
2021 Q2	112.6	-4.4	-3.0	-4.5	-6.5	-6.3	1.2	-2.6	-0.7	-2.7	-2.2	-6.1
Q3	114.0	2.2	3.0	2.2	2.0	2.2	1.7	3.0	1.1	1.6	2.4	3.0
Q4	115.2	1.3	1.8	1.8	1.6	0.2	3.4	4.4	3.2	2.4	1.8	0.8
2022 Q1	115.6	1.1	2.4	2.7	2.5	-1.5	2.5	3.4	2.9	2.1	2.7	0.7
<b>Hourly labour productivity</b>												
2019	102.5	0.6	5.1	-0.3	-0.2	1.3	2.3	0.0	-0.5	0.4	-0.2	1.5
2020	104.2	1.7	1.2	0.6	1.9	0.9	2.7	2.5	6.5	0.5	-1.1	-5.3
2021	104.3	0.1	-2.5	2.9	-3.4	1.7	0.0	0.2	-4.4	-0.6	0.1	-2.2
2021 Q2	104.2	-1.7	-6.5	5.7	-6.7	-0.6	0.1	-1.2	-12.9	-2.6	2.0	-8.8
Q3	104.4	0.7	-0.1	3.1	-0.4	2.4	-2.4	0.1	-1.8	0.4	-0.1	3.3
Q4	104.7	-0.3	-0.9	-0.9	-3.3	0.8	2.3	1.2	-0.9	0.9	0.6	5.9
2022 Q1	104.0	-0.9	0.4	-1.3	-0.4	-1.0	1.1	1.4	-3.8	0.0	0.5	4.8

Sources: Eurostat and ECB calculations.

## 4 Financial market developments

### 4.1 Money market interest rates

(percentages per annum; period averages)

	Euro area <sup>1)</sup>						United States	Japan
	Euro short-term rate (€STR) <sup>2)</sup>	Overnight deposits (EONIA) <sup>3)</sup>	1-month deposits (EURIBOR)	3-month deposits (EURIBOR)	6-month deposits (EURIBOR)	12-month deposits (EURIBOR)	3-month deposits (LIBOR)	3-month deposits (LIBOR)
	1	2	3	4	5	6	7	8
2019	-0.48	-0.39	-0.40	-0.36	-0.30	-0.22	2.33	-0.08
2020	-0.55	-0.46	-0.50	-0.43	-0.37	-0.31	0.64	-0.07
2021	-0.57	-0.48	-0.56	-0.55	-0.52	-0.49	0.16	-0.08
2021 Nov.	-0.57	-0.49	-0.57	-0.57	-0.53	-0.49	0.16	-0.09
Dec.	-0.58	-0.49	-0.60	-0.58	-0.54	-0.50	0.21	-0.08
2022 Jan.	-0.58	-	-0.56	-0.56	-0.53	-0.48	0.25	-0.03
Feb.	-0.58	-	-0.55	-0.53	-0.48	-0.34	0.43	-0.02
Mar.	-0.58	-	-0.54	-0.50	-0.42	-0.24	0.84	-0.01
Apr.	-0.58	-	-0.54	-0.45	-0.31	0.01	1.10	-0.01
May	-0.58	-	-0.55	-0.39	-0.14	0.29	1.47	-0.02

Source: Refinitiv and ECB calculations.

1) Data refer to the changing composition of the euro area, see the General Notes.

2) The ECB published the euro short-term rate (€STR) for the first time on 2 October 2019, reflecting trading activity on 1 October 2019. Data on previous periods refer to the pre-€STR, which was published for information purposes only and not intended for use as a benchmark or reference rate in any market transactions.

3) The European Money Markets Institute discontinued EONIA on 3 January 2022.

### 4.2 Yield curves

(End of period; rates in percentages per annum; spreads in percentage points)

	Spot rates					Spreads			Instantaneous forward rates			
	Euro area <sup>1), 2)</sup>					Euro area <sup>1), 2)</sup>	United States	United Kingdom	Euro area <sup>1), 2)</sup>			
	3 months	1 year	2 years	5 years	10 years	10 years - 1 year	10 years - 1 year	10 years - 1 year	1 year	2 years	5 years	10 years
	1	2	3	4	5	6	7	8	9	10	11	12
2019	-0.68	-0.66	-0.62	-0.45	-0.14	0.52	0.34	0.24	-0.62	-0.52	-0.13	0.41
2020	-0.75	-0.76	-0.77	-0.72	-0.57	0.19	0.80	0.32	-0.77	-0.77	-0.60	-0.24
2021	-0.73	-0.72	-0.68	-0.48	-0.19	0.53	1.12	0.45	-0.69	-0.58	-0.12	0.24
2021 Nov.	-0.90	-0.85	-0.82	-0.64	-0.35	0.50	1.23	0.49	-0.81	-0.73	-0.30	0.07
Dec.	-0.73	-0.72	-0.68	-0.48	-0.19	0.53	1.12	0.45	-0.69	-0.58	-0.12	0.24
2022 Jan.	-0.70	-0.66	-0.57	-0.27	0.03	0.69	1.00	0.37	-0.59	-0.36	0.17	0.40
Feb.	-0.73	-0.68	-0.54	-0.11	0.22	0.90	0.81	0.44	-0.56	-0.21	0.42	0.59
Mar.	-0.70	-0.49	-0.09	0.42	0.62	1.11	0.73	0.35	-0.05	0.58	0.81	0.81
Apr.	-0.59	-0.26	0.21	0.74	0.94	1.20	0.85	0.42	0.30	0.94	1.13	1.14
May	-0.38	-0.08	0.36	0.97	1.22	1.30	0.78	0.58	0.40	1.10	1.47	1.47

Source: ECB calculations.

1) Data refer to the changing composition of the euro area, see the General Notes.

2) ECB calculations based on underlying data provided by Euro MTS Ltd and ratings provided by Fitch Ratings.

### 4.3 Stock market indices

(index levels in points; period averages)

	Dow Jones EURO STOXX indices												United States	Japan
	Benchmark		Main industry indices											
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care	Standard & Poor's 500	Nikkei 225
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2018	375.5	3,386.6	766.3	264.9	172.6	115.8	173.1	629.5	502.5	278.8	292.9	800.5	2,746.2	22,310.7
2019	373.6	3,435.2	731.7	270.8	183.7	111.9	155.8	650.9	528.2	322.0	294.2	772.7	2,915.5	21,697.2
2020	360.0	3,274.3	758.9	226.8	163.2	83.1	128.6	631.4	630.2	347.1	257.6	831.9	3,217.3	22,703.5
2021 Nov.	478.7	4,306.4	1,020.6	311.7	191.9	100.4	176.9	859.8	1,002.3	380.2	286.3	933.0	4,668.9	29,370.6
Dec.	469.1	4,207.9	1,020.3	303.9	189.5	99.9	172.3	846.9	961.1	383.4	283.8	909.0	4,677.0	28,514.2
2022 Jan.	471.0	4,252.3	1,031.4	300.2	190.1	107.0	185.0	846.7	910.8	385.5	281.3	887.8	4,573.8	27,904.0
Feb.	452.7	4,084.1	978.2	285.0	180.8	107.8	185.6	805.7	823.6	374.5	286.1	863.7	4,436.0	27,066.5
Mar.	422.1	3,796.6	942.7	253.7	172.5	103.1	160.8	762.7	791.8	351.9	279.7	858.7	4,391.3	26,584.1
Apr.	428.9	3,837.3	984.0	255.1	179.2	106.2	164.1	751.7	772.3	370.6	298.1	912.6	4,391.3	27,043.3
May	413.5	3,691.8	974.9	238.2	172.6	113.1	158.1	725.8	724.2	369.5	298.3	864.5	4,040.4	26,653.8

Source: Refinitiv.

## 4 Financial market developments

### 4.4 MFI interest rates on loans to and deposits from households (new business) <sup>1), 2)</sup>

(Percentages per annum; period average, unless otherwise indicated)

	Deposits				Revolving loans and overdrafts	Extended credit card credit	Loans for consumption			Loans to sole proprietors and unincorporated partnerships	Loans for house purchase				Composite cost-of-borrowing indicator	
	Over-night	Redeemable at notice of up to 3 months	With an agreed maturity of:				By initial period of rate fixation		APRC <sup>3)</sup>		By initial period of rate fixation					APRC <sup>3)</sup>
			Up to 2 years	Over 2 years			Floating rate and up to 1 year	Over 1 year			Floating rate and up to 1 year	Over 1 and up to 5 years	Over 5 and up to 10 years	Over 10 years		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2021 May	0.01	0.34	0.18	0.57	4.88	16.07	5.21	5.32	5.95	2.04	1.31	1.43	1.26	1.31	1.61	1.32
June	0.01	0.34	0.16	0.59	4.89	16.01	5.21	5.16	5.78	1.94	1.31	1.43	1.26	1.30	1.60	1.32
July	0.01	0.34	0.19	0.58	4.78	15.98	5.37	5.25	5.86	1.97	1.34	1.45	1.27	1.30	1.61	1.32
Aug.	0.01	0.34	0.17	0.59	4.83	16.01	5.75	5.31	5.92	2.04	1.34	1.47	1.24	1.28	1.60	1.32
Sep.	0.01	0.34	0.18	0.57	4.90	15.93	5.50	5.25	5.88	1.93	1.31	1.45	1.25	1.29	1.59	1.30
Oct.	0.01	0.34	0.19	0.58	4.82	15.91	5.62	5.21	5.85	2.00	1.32	1.47	1.26	1.30	1.60	1.31
Nov.	0.01	0.34	0.19	0.57	4.82	15.86	5.11	5.20	5.83	2.06	1.32	1.48	1.30	1.32	1.61	1.32
Dec.	0.01	0.35	0.17	0.60	4.74	15.89	5.11	5.05	5.66	1.87	1.34	1.46	1.30	1.30	1.60	1.31
2022 Jan.	0.01	0.35	0.20	0.56	4.76	15.82	5.58	5.28	5.87	1.95	1.35	1.46	1.31	1.32	1.61	1.33
Feb.	0.01	0.46	0.19	0.56	4.81	15.78	5.28	5.27	5.87	2.09	1.35	1.49	1.39	1.38	1.66	1.38
Mar.	0.01	0.47	0.19	0.52	4.81	15.76	5.46	5.24	5.81	2.08	1.40	1.53	1.54	1.47	1.75	1.47
Apr. <sup>6)</sup>	0.01	0.47	0.20	0.56	4.74	15.78	5.76	5.38	5.98	2.24	1.43	1.72	1.77	1.58	1.89	1.61

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) Including non-profit institutions serving households.

3) Annual percentage rate of charge (APRC).

### 4.5 MFI interest rates on loans to and deposits from non-financial corporations (new business) <sup>1), 2)</sup>

(Percentages per annum; period average, unless otherwise indicated)

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Over-night	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2021 May	-0.01	-0.23	0.19	1.78	1.85	1.95	2.04	1.57	1.45	1.42	1.16	1.17	1.27	1.46
June	-0.02	-0.31	0.27	1.83	1.88	1.97	2.02	1.55	1.43	1.54	1.20	1.13	1.24	1.46
July	-0.02	-0.31	0.13	1.71	1.81	2.14	1.99	1.58	1.43	1.37	1.27	1.32	1.16	1.48
Aug.	-0.03	-0.35	0.17	1.75	1.78	1.93	2.02	1.55	1.45	1.36	1.23	1.12	1.14	1.44
Sep.	-0.03	-0.35	0.15	1.77	1.79	1.99	1.99	1.51	1.43	1.34	1.27	1.25	1.28	1.49
Oct.	-0.03	-0.36	0.17	1.71	1.79	2.09	1.99	1.54	1.42	1.32	1.15	1.19	1.24	1.43
Nov.	-0.03	-0.35	0.16	1.68	1.78	2.01	2.03	1.49	1.43	1.36	1.07	1.11	1.23	1.38
Dec.	-0.03	-0.33	0.17	1.67	1.84	1.96	1.95	1.51	1.43	1.32	1.14	0.97	1.19	1.36
2022 Jan.	-0.04	-0.32	0.20	1.67	1.91	1.94	2.00	1.52	1.41	1.37	1.13	1.24	1.29	1.43
Feb.	-0.04	-0.32	0.41	1.67	1.77	1.93	2.08	1.50	1.43	1.42	1.07	1.08	1.46	1.42
Mar.	-0.04	-0.30	0.64	1.69	1.77	1.96	2.11	1.50	1.45	1.52	1.25	1.17	1.54	1.49
Apr. <sup>6)</sup>	-0.04	-0.30	0.44	1.67	1.89	1.97	2.17	1.52	1.46	1.67	1.19	1.12	1.57	1.51

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector.

## 4 Financial market developments

### 4.6 Debt securities issued by euro area residents, by sector of the issuer and initial maturity

(EUR billions; transactions during the month and end-of-period outstanding amounts; nominal values)

	Outstanding amounts							Gross issues <sup>1)</sup>						
	Total	MFIs (including Euro- system)	Non-MFI corporations			General government		Total	MFIs (including Euro- system)	Non-MFI corporations			General government	
			Financial corporations other than MFIs	FVCs	Non- financial corporations	Central govern- ment	Other general govern- ment			Financial corporations other than MFIs	FVCs	Non- financial corporations	Central govern- ment	Other general govern- ment
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
<b>Short-term</b>														
2019	1,283	550	181	.	85	406	61	415	177	80	.	47	73	38
2020	1,530	455	145	.	98	714	118	455	177	70	.	45	114	49
2021	1,463	460	145	.	93	669	95	428	204	46	.	35	107	36
2021 Oct.	1,534	486	141	.	104	686	117	421	203	41	.	41	105	32
Nov.	1,533	499	143	.	98	680	113	428	223	45	.	31	102	27
Dec.	1,463	460	145	.	93	669	95	312	138	46	.	37	76	15
2022 Jan.	1,491	482	152	.	101	650	106	449	199	56	.	43	106	44
Feb.	1,461	465	150	.	102	642	103	407	192	47	.	33	98	39
Mar.	1,494	463	160	.	111	646	113	536	241	77	.	52	111	56
<b>Long-term</b>														
2019	16,314	3,817	3,401	.	1,319	7,152	626	247	69	74	.	20	78	7
2020	17,288	3,891	3,206	.	1,459	8,006	725	296	68	71	.	27	114	16
2021	18,500	4,053	3,514	.	1,548	8,590	795	284	63	77	.	20	111	13
2021 Oct.	18,375	4,038	3,469	.	1,528	8,553	787	298	64	106	.	22	92	13
Nov.	18,524	4,062	3,516	.	1,556	8,598	792	268	50	82	.	36	90	9
Dec.	18,500	4,053	3,514	.	1,548	8,590	795	191	45	91	.	7	42	6
2022 Jan.	18,633	4,083	3,536	.	1,550	8,659	805	350	111	75	.	14	135	15
Feb.	18,772	4,108	3,560	.	1,548	8,748	808	283	78	69	.	8	118	10
Mar.	18,922	4,150	3,584	.	1,560	8,816	812	326	94	84	.	23	117	8

Source: ECB.

1) For the purpose of comparison, annual data refer to the average monthly figure over the year.

### 4.7 Growth rates and outstanding amounts of debt securities and listed shares

(EUR billions; percentage changes)

	Debt securities							Listed shares				
	Total	MFIs (including Eurosystem)	Non-MFI corporations			General government		Total	MFIs	Financial corporations other than MFIs	Non- financial corporations	
			Financial corporations other than MFIs	FVCs	Non- financial corporations	Central government	Other general government					
1	2	3	4	5	6	7	8	9	10	11		
<b>Outstanding amount</b>												
2019	17,597.2	4,367.2	3,581.8	.	1,403.5	7,558.3	686.5	8,560.4	537.8	1,410.5	6,612.1	
2020	18,817.6	4,346.0	3,351.4	.	1,556.4	8,720.5	843.2	8,442.0	468.4	1,312.2	6,661.4	
2021	19,962.9	4,513.7	3,658.7	.	1,640.9	9,259.3	890.2	10,325.5	597.3	1,544.1	8,184.1	
2021 Oct.	19,909.1	4,524.1	3,609.9	.	1,631.6	9,239.4	904.0	10,305.7	613.8	1,701.7	7,990.2	
Nov.	20,057.2	4,560.8	3,658.7	.	1,654.2	9,277.7	905.7	10,021.7	566.5	1,619.3	7,835.9	
Dec.	19,962.9	4,513.7	3,658.7	.	1,640.9	9,259.3	890.2	10,325.5	597.3	1,544.1	8,184.1	
2022 Jan.	20,124.1	4,564.7	3,688.4	.	1,651.0	9,309.5	910.6	9,876.4	606.9	1,537.9	7,731.6	
Feb.	20,232.7	4,573.0	3,709.6	.	1,650.2	9,389.4	910.5	9,319.5	552.5	1,416.4	7,350.5	
Mar.	20,415.4	4,613.1	3,744.1	.	1,670.7	9,462.6	925.0	9,370.4	539.5	1,425.2	7,405.7	
<b>Growth rate</b>												
2019	3.1	3.8	4.9	.	5.6	1.5	1.8	0.0	0.5	0.0	0.0	
2020	7.4	1.2	2.7	.	12.3	10.9	24.3	1.0	0.6	2.3	0.8	
2021	5.1	2.2	7.0	.	5.0	5.9	4.5	1.9	1.7	5.9	1.1	
2021 Oct.	4.3	1.4	5.6	.	4.1	5.3	5.6	2.0	1.9	5.1	1.3	
Nov.	5.1	2.2	7.1	.	5.0	5.7	5.3	1.9	2.0	5.6	1.1	
Dec.	5.1	2.2	7.0	.	5.0	5.9	4.5	1.9	1.7	5.9	1.1	
2022 Jan.	5.0	2.2	7.8	.	5.1	5.4	3.7	1.7	1.6	4.5	1.2	
Feb.	4.7	2.6	7.2	.	4.1	5.1	3.2	1.4	1.5	4.2	0.9	
Mar.	4.5	2.0	7.5	.	4.8	4.7	2.7	1.2	0.2	3.9	0.7	

Source: ECB.

## 4 Financial market developments

### 4.8 Effective exchange rates <sup>1)</sup>

(period averages; index: 1999 Q1=100)

	EER-19						EER-42	
	Nominal	Real CPI	Real PPI	Real GDP deflator	Real ULCM	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2019	98.1	93.1	92.9	88.7	77.5	87.0	115.4	92.4
2020	99.6	93.5	94.1	89.3	76.9	87.6	119.4	93.9
2021	99.6	93.4	94.5	88.5	72.6	85.7	120.8	94.2
2021 Q2	100.5	94.0	94.9	89.1	72.5	86.0	121.9	94.9
Q3	99.5	93.4	94.4	88.6	72.6	85.2	120.5	94.0
Q4	97.7	91.8	93.3	86.4	71.3	83.8	119.1	92.7
2022 Q1	96.4	91.4	94.6	.	.	.	118.6	92.6
2021 Dec.	97.1	91.2	93.1	-	-	-	119.0	92.5
2022 Jan.	96.6	91.2	94.1	-	-	-	118.6	92.3
Feb.	96.9	91.6	94.6	-	-	-	118.9	92.7
Mar.	95.9	91.3	95.1	-	-	-	118.4	92.8
Apr.	95.2	89.9	95.6	-	-	-	116.4	90.4
May	95.6	90.0	97.1	-	-	-	116.2	89.9
	<i>Percentage change versus previous month</i>							
2022 May	0.4	0.0	1.5	-	-	-	-0.2	-0.6
	<i>Percentage change versus previous year</i>							
2022 May	-5.2	-4.5	2.0	-	-	-	-4.9	-5.6

Source: ECB.

1) For a definition of the trading partner groups and other information see the General Notes to the Statistics Bulletin.

### 4.9 Bilateral exchange rates

(period averages; units of national currency per euro)

	Chinese renminbi	Croatian kuna	Czech koruna	Danish krone	Hungarian forint	Japanese yen	Polish zloty	Pound sterling	Romanian leu	Swedish krona	Swiss franc	US Dollar
	1	2	3	4	5	6	7	8	9	10	11	12
2019	7.735	7.418	25.670	7.466	325.297	122.006	4.298	0.878	4.7453	10.589	1.112	1.119
2020	7.875	7.538	26.455	7.454	351.249	121.846	4.443	0.890	4.8383	10.485	1.071	1.142
2021	7.628	7.528	25.640	7.437	358.516	129.877	4.565	0.860	4.9215	10.146	1.081	1.183
2021 Q2	7.784	7.528	25.638	7.436	354.553	131.930	4.529	0.862	4.9240	10.141	1.098	1.206
Q3	7.626	7.497	25.500	7.437	353.871	129.763	4.566	0.855	4.9319	10.195	1.083	1.179
Q4	7.310	7.518	25.374	7.438	364.376	130.007	4.617	0.848	4.9489	10.128	1.054	1.144
2022 Q1	7.121	7.544	24.653	7.441	364.600	130.464	4.623	0.836	4.9465	10.481	1.036	1.122
2021 Dec.	7.199	7.520	25.246	7.436	367.499	128.800	4.614	0.849	4.9492	10.273	1.041	1.130
2022 Jan.	7.192	7.525	24.470	7.441	358.680	130.009	4.552	0.835	4.9454	10.358	1.040	1.131
Feb.	7.196	7.534	24.437	7.441	356.970	130.657	4.549	0.838	4.9458	10.534	1.046	1.134
Mar.	6.992	7.571	25.007	7.440	376.640	130.711	4.752	0.836	4.9482	10.546	1.025	1.102
Apr.	6.960	7.558	24.435	7.439	374.865	136.606	4.649	0.837	4.9442	10.318	1.021	1.082
May	7.083	7.536	24.750	7.441	384.454	136.241	4.648	0.850	4.9460	10.496	1.035	1.058
	<i>Percentage change versus previous month</i>											
2022 May	1.8	-0.3	1.3	0.0	2.6	-0.3	0.0	1.6	0.0	1.7	1.4	-2.2
	<i>Percentage change versus previous year</i>											
2022 May	-9.3	0.2	-3.2	0.1	8.7	2.8	2.7	-1.5	0.4	3.4	-5.6	-12.9

Source: ECB.

## 4 Financial market developments

### 4.10 Euro area balance of payments, financial account

(EUR billions, unless otherwise indicated; outstanding amounts at end of period; transactions during period)

	Total <sup>1)</sup>			Direct investment		Portfolio investment		Net financial derivatives	Other investment		Reserve assets	Memo: Gross external debt
	Assets	Liabilities	Net	Assets	Liabilities	Assets	Liabilities		Assets	Liabilities		
	1	2	3	4	5	6	7	8	9	10	11	12
<i>Outstanding amounts (international investment position)</i>												
2021 Q1	29,821.1	30,376.6	-555.5	11,449.4	9,502.1	11,520.0	13,674.5	-128.2	6,130.5	7,200.0	849.4	15,505.2
Q2	30,326.6	30,718.8	-392.2	11,492.5	9,503.9	12,026.4	14,021.1	-134.1	6,072.8	7,193.8	869.0	15,393.1
Q3	31,085.0	31,357.5	-272.5	11,728.7	9,470.0	12,229.3	14,334.7	-102.8	6,227.5	7,552.8	1,002.4	15,787.6
Q4	32,029.1	32,209.3	-180.2	11,881.1	9,729.9	12,851.5	14,659.5	-96.9	6,336.4	7,820.0	1,057.0	16,025.3
<i>Outstanding amounts as a percentage of GDP</i>												
2021 Q4	261.0	262.5	-1.5	96.8	79.3	104.7	119.5	-0.8	51.6	63.7	8.6	130.6
<i>Transactions</i>												
2021 Q2	207.4	104.4	103.0	-0.5	-5.7	230.4	70.3	-2.5	-27.1	39.8	7.1	-
Q3	387.3	302.5	84.8	45.8	-61.2	121.3	67.2	24.2	72.9	296.6	123.2	-
Q4	163.7	141.5	22.2	-24.1	-71.4	143.9	24.1	44.5	-3.5	188.8	2.9	-
2022 Q1	311.6	316.7	-5.1	66.7	17.7	-37.9	8.5	0.9	282.4	290.4	-0.4	-
2021 Oct.	297.6	274.3	23.3	16.3	0.8	50.7	17.4	13.9	213.5	256.1	3.2	-
Nov.	143.6	146.1	-2.5	52.1	52.8	60.1	-4.7	26.3	4.6	98.0	0.6	-
Dec.	-277.4	-278.9	1.4	-92.4	-125.1	33.1	11.5	4.3	-221.5	-165.3	-0.8	-
2022 Jan.	229.5	221.4	8.1	54.5	50.1	18.6	-7.5	3.8	154.8	178.9	-2.2	-
Feb.	126.8	120.7	6.1	25.3	-22.1	-4.8	16.8	-1.0	105.7	126.0	1.7	-
Mar.	-44.7	-25.4	-19.3	-13.2	-10.3	-51.7	-0.7	-1.9	22.0	-14.5	0.1	-
<i>12-month cumulated transactions</i>												
2022 Mar.	1,070.0	865.2	204.9	87.8	-120.7	457.6	170.2	67.1	324.7	815.7	132.8	-
<i>12-month cumulated transactions as a percentage of GDP</i>												
2022 Mar.	8.5	6.9	1.6	0.7	-1.0	3.7	1.4	0.5	2.6	6.5	1.1	-

Source: ECB.

1) Net financial derivatives are included in total assets.

## 5 Financing conditions and credit developments

### 5.1 Monetary aggregates <sup>1)</sup>

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	M3											
	M2					M3-M2						
	M1		M2-M1			7	Repos		9	10	11	12
	Currency in circulation	Overnight deposits	Deposits with an agreed maturity of up to 2 years	Deposits redeemable at notice of up to 3 months	8		Money market fund shares	Debt securities with a maturity of up to 2 years				
1	2	3	4	5	6	8	9	10	11	12		
Outstanding amounts												
2019	1,222.4	7,721.9	8,944.3	1,069.7	2,364.2	3,433.9	12,378.2	79.3	528.8	-1.4	606.6	12,984.8
2020	1,360.8	8,886.2	10,247.0	1,034.9	2,450.1	3,485.0	13,731.9	101.5	636.5	-0.7	737.2	14,469.2
2021	1,464.7	9,796.8	11,261.5	927.4	2,507.6	3,435.0	14,696.5	117.6	658.5	12.2	788.3	15,484.8
2021 Q2	1,419.7	9,350.5	10,770.2	936.3	2,489.6	3,425.9	14,196.1	111.9	613.7	27.5	753.1	14,949.1
Q3	1,444.6	9,617.8	11,062.4	903.2	2,493.4	3,396.6	14,458.9	120.6	600.9	38.7	760.2	15,219.1
Q4	1,464.7	9,796.8	11,261.5	927.4	2,507.6	3,435.0	14,696.5	117.6	658.5	12.2	788.3	15,484.8
2022 Q1	1,525.0	9,938.1	11,463.1	936.0	2,519.6	3,455.6	14,918.7	123.0	596.4	33.0	752.3	15,671.0
2021 Nov.	1,459.9	9,698.3	11,158.1	928.9	2,499.4	3,428.3	14,586.5	126.1	644.5	33.7	804.3	15,390.8
Dec.	1,464.7	9,796.8	11,261.5	927.4	2,507.6	3,435.0	14,696.5	117.6	658.5	12.2	788.3	15,484.8
2022 Jan.	1,482.0	9,827.9	11,309.9	945.9	2,512.8	3,458.7	14,768.5	129.8	615.2	29.9	774.9	15,543.5
Feb.	1,494.0	9,914.0	11,408.0	931.8	2,520.3	3,452.1	14,860.1	131.1	590.6	24.6	746.3	15,606.5
Mar.	1,525.0	9,938.1	11,463.1	936.0	2,519.6	3,455.6	14,918.7	123.0	596.4	33.0	752.3	15,671.0
Apr. <sup>(p)</sup>	1,524.4	9,964.9	11,489.4	954.1	2,518.8	3,472.9	14,962.3	115.3	603.2	35.8	754.3	15,716.5
Transactions												
2019	57.7	604.8	662.5	-61.6	62.4	0.8	663.3	4.2	-4.1	-58.5	-58.3	605.0
2020	138.4	1,250.1	1,388.5	-28.9	86.7	57.8	1,446.3	19.5	113.7	0.1	133.4	1,579.7
2021	105.2	903.2	1,008.5	-118.5	67.2	-51.3	957.1	12.0	22.7	10.1	44.8	1,001.9
2021 Q2	26.9	217.3	244.2	-54.0	12.6	-41.4	202.8	2.9	-3.6	11.7	11.0	213.8
Q3	25.1	256.1	281.3	-34.4	11.7	-22.6	258.6	5.7	-12.8	10.0	2.9	261.5
Q4	21.1	190.9	212.0	16.9	14.4	31.3	243.4	-3.5	57.7	-29.7	24.5	267.9
2022 Q1	60.3	133.6	193.9	11.8	9.6	21.4	215.3	5.1	-62.0	20.7	-36.2	179.0
2021 Nov.	8.1	44.4	52.5	-5.0	3.6	-1.4	51.1	-8.1	25.6	-2.1	15.4	66.5
Dec.	4.8	98.9	103.7	-2.0	8.5	6.5	110.2	-8.6	14.0	-21.8	-16.4	93.8
2022 Jan.	17.2	27.1	44.4	20.7	3.2	23.8	68.2	11.8	-43.2	16.7	-14.7	53.5
Feb.	12.0	83.8	95.8	-13.1	7.6	-5.5	90.3	1.5	-24.5	-4.4	-27.5	62.8
Mar.	31.0	22.7	53.7	4.3	-1.2	3.1	56.8	-8.2	5.8	8.3	6.0	62.7
Apr. <sup>(p)</sup>	-0.5	10.8	10.3	13.4	-0.6	12.8	23.1	-8.8	6.8	1.4	-0.6	22.6
Growth rates												
2019	5.0	8.5	8.0	-5.4	2.7	0.0	5.7	5.5	-0.8	-	-8.8	4.9
2020	11.3	16.2	15.6	-2.7	3.7	1.7	11.7	24.4	21.6	-	22.0	12.2
2021	7.7	10.2	9.8	-11.4	2.7	-1.5	7.0	11.9	3.6	-	6.1	6.9
2021 Q2	9.0	12.2	11.8	-12.9	3.8	-1.4	8.3	13.5	8.5	-	10.6	8.4
Q3	8.5	11.5	11.1	-15.5	3.2	-2.5	7.6	12.7	1.0	-	7.5	7.6
Q4	7.7	10.2	9.8	-11.4	2.7	-1.5	7.0	11.9	3.6	-	6.1	6.9
2022 Q1	9.6	8.7	8.8	-6.0	2.0	-0.3	6.6	9.4	-3.4	77.8	0.3	6.3
2021 Nov.	8.1	10.3	10.0	-11.0	2.6	-1.4	7.1	20.6	8.1	66.1	11.4	7.3
Dec.	7.7	10.2	9.8	-11.4	2.7	-1.5	7.0	11.9	3.6	-	6.1	6.9
2022 Jan.	7.7	9.4	9.2	-7.0	2.5	-0.3	6.8	14.0	-3.0	73.6	0.9	6.5
Feb.	7.8	9.3	9.1	-6.8	2.3	-0.3	6.8	17.0	-4.2	-9.8	-1.3	6.4
Mar.	9.6	8.7	8.8	-6.0	2.0	-0.3	6.6	9.4	-3.4	77.8	0.3	6.3
Apr. <sup>(p)</sup>	8.8	8.2	8.2	-2.8	1.7	0.4	6.3	1.3	-1.7	23.1	-0.4	6.0

Source: ECB.

1) Data refer to the changing composition of the euro area.

## 5 Financing conditions and credit developments

### 5.2 Deposits in M3 1)

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Non-financial corporations 2)					Households 3)					Financial corporations other than MFIs and ICPFs 2)	Insurance corporations and pension funds	Other general government 4)
	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos			
	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Outstanding amounts</b>													
2019	2,483.9	2,070.3	256.7	150.5	6.4	7,044.4	4,399.1	492.0	2,152.4	1.0	1,026.5	215.7	464.7
2020	2,976.1	2,522.8	309.9	140.1	3.2	7,663.7	4,965.2	437.3	2,260.4	0.9	1,097.0	234.6	501.2
2021	3,244.5	2,818.6	290.7	128.6	6.5	8,088.1	5,380.3	372.8	2,334.2	0.7	1,236.8	228.4	551.6
2021 Q2	3,087.3	2,651.4	290.7	136.7	8.5	7,918.9	5,207.3	407.1	2,303.8	0.7	1,164.8	222.5	494.6
Q3	3,155.5	2,731.4	283.8	130.8	9.6	8,025.8	5,319.1	388.9	2,317.2	0.7	1,210.6	227.4	515.6
Q4	3,244.5	2,818.6	290.7	128.6	6.5	8,088.1	5,380.3	372.8	2,334.2	0.7	1,236.8	228.4	551.6
2022 Q1	3,269.7	2,841.8	287.3	129.8	10.8	8,189.2	5,480.1	357.7	2,350.3	1.1	1,272.4	229.7	555.7
2021 Nov.	3,207.3	2,778.9	291.5	129.4	7.5	8,063.4	5,359.0	377.8	2,325.6	1.0	1,233.1	231.9	517.0
Dec.	3,244.5	2,818.6	290.7	128.6	6.5	8,088.1	5,380.3	372.8	2,334.2	0.7	1,236.8	228.4	551.6
2022 Jan.	3,242.1	2,810.2	294.5	127.1	10.3	8,133.6	5,424.9	364.7	2,343.3	0.8	1,264.7	238.7	537.2
Feb.	3,266.0	2,843.1	284.7	126.6	11.6	8,170.2	5,457.7	360.8	2,350.8	1.0	1,280.5	234.8	545.7
Mar.	3,269.7	2,841.8	287.3	129.8	10.8	8,189.2	5,480.1	357.7	2,350.3	1.1	1,272.4	229.7	555.7
Apr. (p)	3,278.6	2,841.7	297.9	129.5	9.6	8,201.6	5,495.1	356.5	2,349.0	1.0	1,282.6	224.3	566.0
<b>Transactions</b>													
2019	149.5	167.0	-18.9	1.8	-0.4	396.1	361.2	-26.3	61.7	-0.5	25.1	9.8	29.3
2020	515.9	469.8	55.8	-6.8	-2.9	611.8	560.4	-53.8	105.3	0.0	142.6	20.4	36.7
2021	254.5	279.6	-21.3	-6.9	3.0	423.5	411.3	-65.1	77.5	-0.2	145.9	-8.2	48.2
2021 Q2	41.4	53.0	-9.2	-3.5	1.1	93.9	94.4	-14.9	14.5	-0.1	34.3	5.6	3.6
Q3	60.8	69.0	-8.0	-1.2	0.9	108.6	111.6	-18.3	15.4	-0.1	46.0	1.9	21.9
Q4	85.1	84.8	5.7	-2.3	-3.1	60.4	59.3	-16.1	17.2	0.1	38.1	2.4	32.7
2022 Q1	19.6	18.2	-3.9	1.1	4.2	99.7	98.6	-11.3	12.0	0.4	35.0	1.5	4.3
2021 Nov.	20.0	23.2	-2.8	0.5	-0.8	17.1	20.8	-5.8	2.2	-0.1	-1.6	-5.9	5.2
Dec.	36.9	38.9	-0.3	-0.7	-1.0	23.7	20.2	-5.0	8.8	-0.2	5.1	-3.6	34.5
2022 Jan.	-1.6	-9.0	3.3	0.5	3.7	44.1	43.9	-4.8	5.0	0.0	25.8	8.9	-14.4
Feb.	25.6	34.3	-9.5	-0.5	1.4	37.0	32.6	-3.4	7.6	0.2	12.5	-3.8	8.5
Mar.	-4.4	-7.1	2.4	1.2	-0.9	18.7	22.1	-3.1	-0.5	0.2	-3.3	-3.6	10.2
Apr. (p)	0.0	-6.3	8.3	-0.5	-1.5	9.8	12.5	-1.6	-0.9	-0.2	0.9	-6.1	10.3
<b>Growth rates</b>													
2019	6.4	8.8	-6.8	1.2	-6.5	6.0	8.9	-5.1	3.0	-35.6	2.5	4.8	6.7
2020	20.8	22.7	21.6	-4.5	-47.0	8.7	12.7	-10.9	4.9	-5.2	14.3	9.4	7.9
2021	8.5	11.1	-6.9	-5.0	98.2	5.5	8.3	-14.9	3.4	-18.6	13.2	-3.5	9.6
2021 Q2	8.4	11.4	-8.3	-5.7	47.4	7.6	11.0	-11.8	4.5	-20.2	15.9	-2.7	5.6
Q3	7.1	10.3	-12.1	-5.4	38.0	7.0	10.2	-13.1	4.0	-31.8	15.1	-6.8	9.1
Q4	8.5	11.1	-6.9	-5.0	98.2	5.5	8.3	-14.9	3.4	-18.6	13.2	-3.5	9.6
2022 Q1	6.8	8.6	-5.1	-4.2	40.4	4.6	7.1	-14.4	2.6	27.6	13.6	5.4	12.7
2021 Nov.	7.9	10.6	-7.6	-6.1	35.6	6.0	9.0	-14.4	3.4	0.0	15.7	-3.9	6.9
Dec.	8.5	11.1	-6.9	-5.0	98.2	5.5	8.3	-14.9	3.4	-18.6	13.2	-3.5	9.6
2022 Jan.	7.8	9.7	-3.6	-4.1	55.9	5.3	8.0	-14.7	3.1	-13.8	14.8	2.7	6.9
Feb.	8.0	9.9	-4.1	-4.9	96.0	5.1	7.7	-14.6	2.9	1.6	14.6	2.0	10.0
Mar.	6.8	8.6	-5.1	-4.2	40.4	4.6	7.1	-14.4	2.6	27.6	13.6	5.4	12.7
Apr. (p)	6.9	8.3	-0.8	-4.1	22.0	4.4	6.9	-13.9	2.2	8.1	12.5	-1.1	14.2

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).

3) Including non-profit institutions serving households.

4) Refers to the general government sector excluding central government.

## 5 Financing conditions and credit developments

### 5.3 Credit to euro area residents <sup>1)</sup>

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Credit to general government			Credit to other euro area residents								
	Total	Loans	Debt securities	Total	Loans					Debt securities	Equity and non-money market fund investment fund shares	
					Total	To non-financial corporations <sup>3)</sup>	To households <sup>4)</sup>	To financial corporations other than MFIs and ICPFs <sup>3)</sup>	To insurance corporations and pension funds			
	1	2	3	4	5	Adjusted loans <sup>2)</sup>	6	7	8	9	10	11
Outstanding amounts												
2019	4,654.5	989.2	3,653.5	13,856.8	11,446.4	11,835.1	4,474.3	5,930.1	891.0	151.0	1,560.5	849.9
2020	5,914.6	998.8	4,903.9	14,333.2	11,919.8	12,299.4	4,708.3	6,132.0	911.7	167.8	1,548.2	865.3
2021	6,552.1	997.2	5,553.1	14,814.1	12,341.7	12,726.6	4,864.0	6,372.4	944.1	161.2	1,583.3	889.0
2021 Q2	6,217.0	1,003.7	5,211.6	14,488.0	12,077.6	12,441.9	4,730.9	6,255.4	942.1	149.1	1,523.2	887.2
Q3	6,364.7	999.2	5,363.9	14,611.0	12,182.5	12,536.2	4,769.9	6,316.1	951.8	144.7	1,531.9	896.6
Q4	6,552.1	997.2	5,553.1	14,814.1	12,341.7	12,726.6	4,864.0	6,372.4	944.1	161.2	1,583.3	889.0
2022 Q1	6,551.8	1,002.7	5,546.4	15,022.7	12,561.0	12,690.7	4,917.7	6,471.5	1,018.7	153.0	1,595.0	866.8
2021 Nov.	6,476.2	987.3	5,487.3	14,738.5	12,310.2	12,659.5	4,815.9	6,365.0	968.8	160.6	1,540.8	887.4
Dec.	6,552.1	997.2	5,553.1	14,814.1	12,341.7	12,726.6	4,864.0	6,372.4	944.1	161.2	1,583.3	889.0
2022 Jan.	6,545.9	992.4	5,551.7	14,903.9	12,453.4	12,607.6	4,874.9	6,415.2	990.6	172.8	1,564.5	886.0
Feb.	6,560.7	996.5	5,561.5	14,939.7	12,499.5	12,656.6	4,885.9	6,436.0	1,007.5	170.2	1,561.6	878.5
Mar.	6,551.8	1,002.7	5,546.4	15,022.7	12,561.0	12,690.7	4,917.7	6,471.5	1,018.7	153.0	1,595.0	866.8
Apr. <sup>(p)</sup>	6,508.3	1,003.0	5,480.4	15,077.7	12,631.7	12,778.2	4,944.2	6,490.8	1,035.8	161.0	1,606.2	839.8
Transactions												
2019	-88.4	-23.2	-65.6	449.6	376.1	422.9	115.0	200.3	40.6	20.2	30.2	43.4
2020	1,042.0	13.5	1,028.3	737.1	538.1	559.0	288.2	209.1	23.9	16.9	170.8	28.2
2021	667.2	-0.5	677.3	569.4	480.6	513.8	176.7	261.6	51.9	-9.7	79.4	9.4
2021 Q2	163.8	9.1	154.1	53.3	43.5	51.7	-18.0	74.8	-10.9	-2.4	4.8	5.0
Q3	152.2	-4.7	156.9	136.4	122.5	125.5	40.2	65.8	23.5	-7.0	9.2	4.8
Q4	201.1	-1.1	202.0	229.1	175.1	225.5	98.5	60.4	0.0	16.1	62.7	-8.7
2022 Q1	91.9	4.8	87.1	194.2	186.0	168.2	45.6	76.3	72.4	-8.3	24.7	-16.6
2021 Nov.	65.0	1.0	64.0	52.1	72.9	65.7	25.6	23.1	18.6	5.6	-14.2	-6.7
Dec.	104.1	9.9	94.1	97.5	54.1	99.3	53.5	14.2	-14.2	0.6	41.8	1.6
2022 Jan.	11.3	-5.2	16.5	63.8	78.9	65.5	6.5	25.8	35.7	10.9	-13.8	-1.3
Feb.	52.1	4.1	47.9	51.4	52.3	61.6	13.5	22.1	19.3	-2.6	2.6	-3.5
Mar.	28.6	5.9	22.7	79.0	54.8	41.1	25.6	28.4	17.4	-16.6	35.9	-11.8
Apr. <sup>(p)</sup>	0.9	0.4	-0.2	73.9	64.5	82.0	23.4	20.2	13.1	7.7	14.3	-4.9
Growth rates												
2019	-1.9	-2.3	-1.8	3.4	3.4	3.7	2.6	3.5	4.8	16.0	2.0	5.5
2020	22.2	1.4	27.8	5.4	4.7	4.7	6.4	3.5	2.7	10.3	11.4	3.4
2021	11.3	0.0	13.8	4.0	4.0	4.2	3.8	4.3	5.7	-4.7	5.3	1.1
2021 Q2	13.1	0.5	16.2	3.6	3.1	3.0	1.4	4.5	3.4	-3.5	5.3	7.5
Q3	11.0	0.0	13.5	3.4	3.2	3.3	1.6	4.3	6.4	-10.1	3.0	7.3
Q4	11.3	0.0	13.8	4.0	4.0	4.2	3.8	4.3	5.7	-4.7	5.3	1.1
2022 Q1	10.1	0.8	11.9	4.3	4.4	4.6	3.5	4.5	9.1	-1.1	6.7	-1.7
2021 Nov.	10.8	-1.2	13.5	3.8	3.7	3.7	2.4	4.4	6.2	0.5	3.1	6.2
Dec.	11.3	0.0	13.8	4.0	4.0	4.2	3.8	4.3	5.7	-4.7	5.3	1.1
2022 Jan.	10.8	0.1	13.0	4.3	4.5	4.6	3.8	4.4	7.4	11.5	4.5	0.9
Feb.	10.7	0.0	12.8	4.3	4.7	4.8	3.9	4.4	8.9	11.1	4.5	-0.1
Mar.	10.1	0.8	11.9	4.3	4.4	4.6	3.5	4.5	9.1	-1.1	6.7	-1.7
Apr. <sup>(p)</sup>	9.3	0.3	11.1	4.8	4.9	5.3	4.5	4.4	10.8	3.8	7.9	-1.7

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) Adjusted for loan sales and securitisation (resulting in derecognition from the MFI statistical balance sheet) as well as for positions arising from notional cash pooling services provided by MFIs.

3) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).

4) Including non-profit institutions serving households.

## 5 Financing conditions and credit developments

### 5.4 MFI loans to euro area non-financial corporations and households <sup>1)</sup>

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Non-financial corporations <sup>2)</sup>					Households <sup>3)</sup>				
	Total		Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total		Loans for consumption	Loans for house purchase	Other loans
		Adjusted loans <sup>4)</sup>					Adjusted loans <sup>4)</sup>			
	1	2	3	4	5	6	7	8	9	10
<b>Outstanding amounts</b>										
2019	4,474.3	4,576.5	966.7	877.5	2,630.1	5,930.1	6,221.7	720.1	4,523.5	686.5
2020	4,708.3	4,829.7	897.2	1,009.7	2,801.4	6,132.0	6,400.5	700.6	4,724.7	706.7
2021	4,864.0	4,995.0	888.8	1,006.6	2,968.7	6,372.4	6,635.7	698.2	4,970.9	703.4
2021 Q2	4,730.9	4,852.0	831.7	969.3	2,929.9	6,255.4	6,514.4	694.1	4,852.6	708.7
Q3	4,769.9	4,884.9	834.3	971.1	2,964.4	6,316.1	6,574.4	696.6	4,914.4	705.0
Q4	4,864.0	4,995.0	888.8	1,006.6	2,968.7	6,372.4	6,635.7	698.2	4,970.9	703.4
2022 Q1	4,917.7	4,892.1	911.5	1,002.4	3,003.8	6,471.5	6,671.4	700.7	5,063.2	707.6
2021 Nov.	4,815.9	4,928.1	869.1	979.3	2,967.5	6,365.0	6,620.5	702.5	4,956.9	705.6
Dec.	4,864.0	4,995.0	888.8	1,006.6	2,968.7	6,372.4	6,635.7	698.2	4,970.9	703.4
2022 Jan.	4,874.9	4,851.1	891.3	1,000.9	2,982.7	6,415.2	6,616.4	697.5	5,011.3	706.4
Feb.	4,885.9	4,858.5	899.4	998.8	2,987.7	6,436.0	6,643.9	701.0	5,028.2	706.9
Mar.	4,917.7	4,892.1	911.5	1,002.4	3,003.8	6,471.5	6,671.4	700.7	5,063.2	707.6
Apr. <sup>(p)</sup>	4,944.2	4,919.0	924.5	1,012.0	3,007.6	6,490.8	6,696.6	702.2	5,082.1	706.6
<b>Transactions</b>										
2019	115.0	142.5	-13.0	44.8	83.2	200.3	216.2	41.0	168.5	-9.2
2020	288.2	325.3	-54.1	138.7	203.6	209.1	193.0	-11.8	210.7	10.2
2021	176.7	208.7	-1.3	2.9	175.1	261.6	266.6	10.7	255.0	-4.1
2021 Q2	-18.0	-21.8	-57.5	-42.9	82.4	74.8	70.2	2.3	72.1	0.4
Q3	40.2	44.6	4.1	2.0	34.2	65.8	67.4	4.1	64.0	-2.3
Q4	98.5	127.6	55.9	37.2	5.5	60.4	70.9	6.5	55.7	-1.8
2022 Q1	45.6	48.3	18.9	-4.6	31.3	76.3	82.6	4.8	68.9	2.6
2021 Nov.	25.6	22.8	10.6	9.6	5.4	23.1	24.2	4.7	18.8	-0.3
Dec.	53.5	78.9	21.5	28.5	3.6	14.2	23.9	-1.0	16.6	-1.4
2022 Jan.	6.5	5.3	0.2	-6.8	13.1	25.8	23.9	1.0	24.4	0.3
Feb.	13.5	15.3	8.7	-1.4	6.2	22.1	29.6	3.8	17.4	0.8
Mar.	25.6	27.7	10.0	3.5	12.0	28.4	29.1	0.0	27.0	1.4
Apr. <sup>(p)</sup>	23.4	25.1	11.8	7.6	4.1	20.2	24.8	1.8	18.5	-0.1
<b>Growth rates</b>										
2019	2.6	3.2	-1.3	5.3	3.2	3.5	3.6	6.0	3.9	-1.3
2020	6.4	7.1	-5.7	15.9	7.8	3.5	3.1	-1.6	4.7	1.5
2021	3.8	4.3	-0.1	0.3	6.3	4.3	4.2	1.5	5.4	-0.6
2021 Q2	1.4	1.9	-11.8	-2.2	7.3	4.5	4.0	0.6	5.7	0.5
Q3	1.6	2.1	-8.6	-3.6	6.9	4.3	4.1	0.5	5.6	-0.2
Q4	3.8	4.3	-0.1	0.3	6.3	4.3	4.2	1.5	5.4	-0.6
2022 Q1	3.5	4.1	2.4	-0.8	5.4	4.5	4.5	2.6	5.4	-0.2
2021 Nov.	2.4	2.9	-3.6	-2.2	6.0	4.4	4.1	1.6	5.5	-0.4
Dec.	3.8	4.3	-0.1	0.3	6.3	4.3	4.2	1.5	5.4	-0.6
2022 Jan.	3.8	4.5	0.6	0.1	6.2	4.4	4.3	2.0	5.5	-0.4
Feb.	3.9	4.6	1.5	0.1	6.0	4.4	4.4	2.3	5.4	-0.3
Mar.	3.5	4.1	2.4	-0.8	5.4	4.5	4.5	2.6	5.4	-0.2
Apr. <sup>(p)</sup>	4.5	5.2	5.8	1.9	5.1	4.4	4.5	3.0	5.3	-0.2

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).

3) Including non-profit institutions serving households.

4) Adjusted for loan sales and securitisation (resulting in derecognition from the MFI statistical balance sheet) as well as for positions arising from notional cash pooling services provided by MFIs.

## 5 Financing conditions and credit developments

### 5.5 Counterparts to M3 other than credit to euro area residents <sup>1)</sup>

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	MFI liabilities						MFI assets			
	Central government holdings <sup>2)</sup>	Longer-term financial liabilities vis-à-vis other euro area residents					Net external assets	Other		
		Total	Deposits with an agreed maturity of over 2 years	Deposits redeemable at notice of over 3 months	Debt securities with a maturity of over 2 years	Capital and reserves		Total		
								Repos with central counterparties <sup>3)</sup>	Reverse repos to central counterparties <sup>3)</sup>	
1	2	3	4	5	6	7	8	9	10	
<b>Outstanding amounts</b>										
2019	363.4	7,055.1	1,944.5	50.2	2,155.2	2,905.3	1,474.7	417.4	178.9	187.2
2020	744.6	6,961.4	1,914.8	42.1	1,991.8	3,012.7	1,437.6	489.8	130.1	139.2
2021	797.1	6,891.6	1,839.0	37.1	1,998.1	3,017.4	1,364.0	443.2	118.8	136.8
2021 Q2	680.1	6,847.3	1,868.8	40.2	1,956.0	2,982.3	1,411.7	359.9	123.7	134.5
Q3	690.9	6,856.6	1,850.7	38.6	1,975.9	2,991.4	1,375.7	415.2	139.0	146.0
Q4	797.1	6,891.6	1,839.0	37.1	1,998.1	3,017.4	1,364.0	443.2	118.8	136.8
2022 Q1	740.4	6,873.8	1,847.3	35.8	1,983.6	3,007.1	1,362.0	348.6	153.0	164.4
2021 Nov.	706.9	6,905.3	1,830.9	37.7	2,011.7	3,025.1	1,388.8	399.5	144.5	149.9
Dec.	797.1	6,891.6	1,839.0	37.1	1,998.1	3,017.4	1,364.0	443.2	118.8	136.8
2022 Jan.	723.6	6,900.3	1,846.5	36.8	2,013.4	3,003.5	1,359.3	358.2	165.3	158.8
Feb.	731.5	6,882.4	1,836.6	36.5	2,007.6	3,001.8	1,375.0	345.1	166.0	159.4
Mar.	740.4	6,873.8	1,847.3	35.8	1,983.6	3,007.1	1,362.0	348.6	153.0	164.4
Apr. <sup>(p)</sup>	768.5	6,893.2	1,845.5	35.6	2,010.8	3,001.3	1,344.3	448.1	180.6	171.6
<b>Transactions</b>										
2019	-25.0	107.2	-5.5	-2.9	28.0	87.6	311.8	14.2	-2.7	-2.5
2020	316.3	-34.8	-14.9	-8.0	-101.1	89.1	-60.2	142.3	-48.8	-48.0
2021	53.1	-33.2	-74.2	-5.0	-39.8	85.8	-121.0	-93.8	-11.3	-2.3
2021 Q2	-24.0	-19.4	-21.9	-1.0	-24.5	28.1	-16.6	-30.1	-3.6	4.3
Q3	10.8	1.8	-18.1	-1.5	8.2	13.3	-44.1	29.7	15.3	11.5
Q4	106.7	11.6	-13.3	-1.6	6.1	20.3	-71.2	27.2	-20.2	-9.2
2022 Q1	-53.2	-41.6	-18.1	-1.3	-31.3	9.1	-24.0	-177.9	34.0	34.7
2021 Nov.	-32.3	-12.1	-13.4	-0.5	0.8	1.0	-31.3	-63.6	4.6	2.2
Dec.	90.4	6.6	7.8	-0.6	-18.4	17.8	-37.5	26.6	-25.7	-13.1
2022 Jan.	-69.5	-7.8	-10.2	-0.3	5.0	-2.3	-2.5	-96.4	46.4	29.0
Feb.	7.9	-18.8	-10.2	-0.3	-6.3	-2.0	-8.6	-43.0	0.5	0.7
Mar.	8.4	-15.0	2.3	-0.7	-30.0	13.4	-12.9	-38.6	-12.9	5.0
Apr. <sup>(p)</sup>	28.1	32.4	-4.9	-0.2	0.1	37.4	-43.9	52.2	27.6	7.2
<b>Growth rates</b>										
2019	-6.4	1.6	-0.3	-5.3	1.3	3.1	-	-	-1.5	-1.5
2020	87.4	-0.5	-0.8	-15.9	-4.7	3.0	-	-	-27.3	-25.7
2021	7.1	-0.5	-3.9	-11.9	-2.0	2.9	-	-	-8.7	-1.7
2021 Q2	-10.3	-0.6	-2.7	-8.2	-4.8	3.9	-	-	-22.3	-22.9
Q3	-12.9	-0.7	-3.5	-9.9	-4.4	3.9	-	-	-0.6	-0.9
Q4	7.1	-0.5	-3.9	-11.9	-2.0	2.9	-	-	-8.7	-1.7
2022 Q1	5.7	-0.7	-3.8	-13.1	-2.1	2.4	-	-	20.1	31.9
2021 Nov.	-5.6	-0.4	-5.1	-11.2	-1.5	3.5	-	-	-2.4	1.9
Dec.	7.1	-0.5	-3.9	-11.9	-2.0	2.9	-	-	-8.7	-1.7
2022 Jan.	5.4	-0.2	-4.2	-12.2	-0.6	2.8	-	-	12.1	13.1
Feb.	6.2	-0.5	-4.4	-11.9	-0.7	2.4	-	-	14.0	14.3
Mar.	5.7	-0.7	-3.8	-13.1	-2.1	2.4	-	-	20.1	31.9
Apr. <sup>(p)</sup>	7.4	0.0	-3.1	-13.3	-1.9	3.4	-	-	35.8	36.6

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) Comprises central government holdings of deposits with the MFI sector and of securities issued by the MFI sector.

3) Not adjusted for seasonal effects.

## 6 Fiscal developments

### 6.1 Deficit/surplus

(as a percentage of GDP; flows during one-year period)

	Deficit (-)/surplus (+)					Memo item: Primary deficit (-)/ surplus (+)
	Total	Central government	State government	Local government	Social security funds	
	1	2	3	4	5	6
2018	-0.4	-1.0	0.1	0.2	0.3	1.4
2019	-0.7	-1.0	0.0	0.0	0.3	1.0
2020	-7.1	-5.8	-0.4	0.0	-0.9	-5.6
2021	-5.1	-5.0	-0.1	0.0	-0.1	-3.6
2021 Q1	-8.1	.	.	.	.	-6.6
Q2	-6.8	.	.	.	.	-5.3
Q3	-6.1	.	.	.	.	-4.7
Q4	-5.1	.	.	.	.	-3.6

Sources: ECB for annual data; Eurostat for quarterly data.

### 6.2 Revenue and expenditure

(as a percentage of GDP; flows during one-year period)

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure					Capital expenditure
		Direct taxes	Indirect taxes	Net social contributions	Compensation of employees			Intermediate consumption	Interest	Social benefits			
1	2	3	4	5	6	7	8	9	10	11	12	13	
2018	46.4	45.9	12.9	13.0	15.2	0.5	46.9	43.2	9.9	5.3	1.8	22.3	3.7
2019	46.3	45.8	12.9	13.0	15.0	0.5	46.9	43.2	9.9	5.3	1.6	22.4	3.8
2020	46.5	46.1	12.9	12.7	15.6	0.5	53.6	49.1	10.7	5.9	1.5	25.5	4.5
2021	47.3	46.6	13.3	13.2	15.3	0.7	52.4	47.7	10.3	6.0	1.5	24.2	4.8
2021 Q1	46.7	46.2	12.9	12.8	15.7	0.5	54.8	50.2	10.8	6.1	1.5	25.8	4.6
Q2	46.6	46.0	12.9	12.9	15.5	0.6	53.3	48.7	10.5	6.0	1.5	25.0	4.7
Q3	46.8	46.2	13.0	13.0	15.4	0.6	53.0	48.3	10.4	6.0	1.4	24.6	4.7
Q4	47.4	46.7	13.3	13.2	15.3	0.7	52.5	47.7	10.3	6.0	1.5	24.3	4.8

Sources: ECB for annual data; Eurostat for quarterly data.

### 6.3 Government debt-to-GDP ratio

(as a percentage of GDP; outstanding amounts at end of period)

	Total	Financial instrument			Holder			Original maturity		Residual maturity			Currency	
		Currency and deposits	Loans	Debt securities	Resident creditors	Non-resident creditors	Up to 1 year	Over 1 year	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Euro or participating currencies	Other curren- cies	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2018	85.8	3.1	13.7	69.0	48.2	32.5	37.6	8.2	77.7	16.1	28.3	41.4	84.4	1.5
2019	83.8	3.0	12.9	67.9	45.5	30.7	38.3	7.7	76.1	15.7	27.7	40.5	82.5	1.3
2020	97.2	3.2	14.2	79.9	54.5	39.1	42.7	11.3	85.9	19.1	31.5	46.6	95.5	1.7
2021	95.6	3.0	13.6	79.0	55.7	41.8	39.8	10.0	85.6	17.9	31.0	46.6	94.2	1.4
2021 Q1	99.9	3.2	14.1	82.6	.	.	.	.	.	.	.	.	.	.
Q2	98.1	3.1	13.8	81.2	.	.	.	.	.	.	.	.	.	.
Q3	97.5	3.0	13.8	80.7	.	.	.	.	.	.	.	.	.	.
Q4	95.6	3.0	13.6	79.0	.	.	.	.	.	.	.	.	.	.

Sources: ECB for annual data; Eurostat for quarterly data.

## 6 Fiscal developments

### 6.4 Annual change in the government debt-to-GDP ratio and underlying factors <sup>1)</sup>

(as a percentage of GDP; flows during one-year period)

	Change in debt-to-GDP ratio <sup>2)</sup>	Primary deficit (+)/surplus (-)	Deficit-debt adjustment							Interest-growth differential	Memo item: Borrowing requirement	
			Total	Transactions in main financial assets				Revaluation effects and other changes in volume	Other			
				Total	Currency and deposits	Loans	Debt securities					Equity and investment fund shares
	1	2	3	4	5	6	7	8	9	10	11	12
2018	-2.0	-1.4	0.4	0.4	0.4	-0.1	0.0	0.2	0.0	-0.1	-1.0	0.8
2019	-2.0	-1.0	0.1	0.2	0.1	-0.1	0.0	0.2	-0.2	0.0	-1.1	0.9
2020	13.4	5.6	2.1	2.5	2.0	0.4	-0.1	0.1	-0.4	0.0	5.7	9.6
2021	-1.6	3.6	0.0	0.7	0.4	0.1	0.1	0.1	-0.1	-0.5	-5.3	5.2
2021 Q1	13.9	6.6	1.8	2.1	1.5	0.5	-0.1	0.2	-0.4	0.1	5.5	10.3
Q2	3.5	5.3	-1.3	-0.5	-1.0	0.3	0.0	0.2	-0.3	-0.5	-0.5	5.7
Q3	0.6	4.7	-1.2	-0.4	-0.8	0.2	0.0	0.2	-0.3	-0.5	-2.9	5.2
Q4	-1.6	3.6	0.0	0.7	0.4	0.1	0.1	0.1	-0.1	-0.5	-5.3	5.2

Sources: ECB for annual data; Eurostat for quarterly data.

1) Intergovernmental lending in the context of the financial crisis is consolidated except in quarterly data on the deficit-debt adjustment.

2) Calculated as the difference between the government debt-to-GDP ratios at the end of the reference period and a year earlier.

### 6.5 Government debt securities <sup>1)</sup>

(debt service as a percentage of GDP; flows during debt service period; average nominal yields in percentages per annum)

	Debt service due within 1 year <sup>2)</sup>					Average residual maturity in years <sup>3)</sup>	Average nominal yields <sup>4)</sup>						
	Total	Principal		Interest			Outstanding amounts				Transactions		
		Maturities of up to 3 months	Maturities of up to 3 months	Total	Floating rate		Zero coupon	Fixed rate	Maturities of up to 1 year	Issuance	Redemption		
	1											2	3
2019	12.2	10.8	3.6	1.4	0.4	7.5	2.2	1.3	-0.1	2.5	2.1	0.3	1.1
2020	14.9	13.6	4.2	1.4	0.3	7.6	1.9	1.1	-0.2	2.2	2.3	0.0	0.8
2021	14.3	12.9	4.2	1.3	0.3	7.9	1.6	1.1	-0.3	1.9	1.9	-0.1	0.5
2021 Q1	14.7	13.2	5.1	1.4	0.4	7.8	1.8	1.1	-0.2	2.1	2.1	0.0	0.5
Q2	14.5	13.2	4.8	1.4	0.3	7.9	1.7	0.5	-0.3	2.0	2.1	-0.1	0.5
Q3	14.6	13.3	4.4	1.4	0.3	7.9	1.7	1.1	-0.3	2.0	1.8	-0.1	0.5
Q4	14.3	12.9	4.2	1.3	0.3	7.9	1.6	1.1	-0.3	1.9	1.9	-0.1	0.5
2021 Nov.	14.5	13.1	4.0	1.4	0.3	8.0	1.6	1.1	-0.3	1.9	1.9	-0.1	0.5
Dec.	14.3	12.9	4.2	1.3	0.3	7.9	1.6	1.1	-0.3	1.9	1.9	-0.1	0.5
2022 Jan.	14.2	12.9	4.9	1.3	0.3	8.0	1.6	1.1	-0.3	1.9	1.9	-0.1	0.6
Feb.	14.1	12.9	5.2	1.2	0.3	8.0	1.6	1.1	-0.3	1.9	1.7	-0.1	0.5
Mar.	14.7	13.5	5.0	1.3	0.3	8.0	1.6	1.1	-0.3	1.9	1.7	-0.1	0.4
Apr.	14.2	12.9	4.4	1.3	0.3	8.0	1.5	1.1	-0.3	1.9	1.7	-0.1	0.5

Source: ECB.

1) At face value and not consolidated within the general government sector.

2) Excludes future payments on debt securities not yet outstanding and early redemptions.

3) Residual maturity at the end of the period.

4) Outstanding amounts at the end of the period; transactions as 12-month average.

## 6 Fiscal developments

### 6.6 Fiscal developments in euro area countries

(as a percentage of GDP; flows during one-year period and outstanding amounts at end of period)

	Belgium	Germany	Estonia	Ireland	Greece	Spain	France	Italy	Cyprus	
	1	2	3	4	5	6	7	8	9	
Government deficit (-)/surplus (+)										
2018	-0.9	1.9	-0.6	0.1	0.9	-2.6	-2.3	-2.2	-3.6	
2019	-2.0	1.5	0.1	0.5	1.1	-3.1	-3.1	-1.5	1.3	
2020	-9.0	-4.3	-5.6	-5.1	-10.2	-10.3	-8.9	-9.6	-5.8	
2021	-5.5	-3.7	-2.4	-1.9	-7.4	-6.9	-6.5	-7.2	-1.7	
2021 Q1	-8.9	-5.6	-5.6	-5.7	-12.6	-11.3	-9.7	-10.1	-7.5	
Q2	-6.6	-4.9	-4.3	-4.4	-11.0	-8.4	-8.3	-8.9	-6.4	
Q3	-6.9	-4.2	-3.9	-3.3	-9.8	-7.8	-8.0	-8.0	-4.7	
Q4	-5.5	-3.7	-2.4	-1.9	-7.4	-6.9	-6.5	-7.2	-1.7	
Government debt										
2018	99.8	61.2	8.2	63.1	186.4	100.5	97.8	134.4	98.4	
2019	97.7	58.9	8.6	57.2	180.7	98.3	97.4	134.1	91.1	
2020	112.8	68.7	19.0	58.4	206.3	120.0	114.6	155.3	115.0	
2021	108.2	69.3	18.1	56.0	193.3	118.4	112.9	150.8	103.6	
2021 Q1	116.9	69.9	19.6	60.6	209.3	125.2	117.9	159.3	120.9	
Q2	113.7	69.6	19.6	59.2	207.5	122.7	114.4	155.6	111.4	
Q3	111.3	69.3	19.7	57.7	201.6	121.7	115.7	154.6	109.0	
Q4	108.2	69.3	18.1	56.0	193.3	118.4	113.3	150.8	103.6	
	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Austria	Portugal	Slovenia	Slovakia	Finland
	10	11	12	13	14	15	16	17	18	19
Government deficit (-)/surplus (+)										
2018	-0.8	0.5	3.0	2.1	1.4	0.2	-0.3	0.7	-1.0	-0.9
2019	-0.6	0.5	2.3	0.6	1.7	0.6	0.1	0.4	-1.3	-0.9
2020	-4.5	-7.3	-3.4	-9.5	-3.7	-8.0	-5.8	-7.8	-5.5	-5.5
2021	-7.3	-1.0	0.9	-8.0	-2.5	-5.9	-2.8	-5.2	-6.2	-2.6
2021 Q1	-6.9	-7.3	-2.5	-9.2	-5.2	-10.8	-7.1	-8.3	-6.5	-6.4
Q2	-7.7	-5.4	-0.6	-7.7	-3.9	-9.3	-5.9	-6.6	-6.3	-5.0
Q3	-6.3	-3.5	-0.1	-8.1	-3.6	-7.9	-4.0	-6.5	-5.8	-4.5
Q4	-7.3	-1.0	0.9	-8.0	-2.5	-5.9	-2.8	-5.2	-6.2	-2.6
Government debt										
2018	37.1	33.7	20.8	43.7	52.4	74.1	121.5	70.3	49.6	59.8
2019	36.7	35.9	22.3	40.7	48.5	70.6	116.6	65.6	48.1	59.6
2020	43.3	46.6	24.8	53.4	54.3	83.3	135.2	79.8	59.7	69.0
2021	44.8	44.3	24.4	57.0	52.1	82.8	127.4	74.7	63.1	65.8
2021 Q1	45.4	45.1	28.0	57.3	54.9	87.0	138.9	85.0	59.8	69.7
Q2	43.2	44.6	26.1	58.9	54.1	86.2	135.3	80.1	61.1	68.7
Q3	43.4	45.1	25.3	56.6	52.5	84.2	130.6	79.7	61.2	68.0
Q4	44.8	44.3	24.4	57.0	52.1	82.8	127.4	74.7	63.1	65.8

Source: Eurostat.

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This Bulletin was produced under the responsibility of the Executive Board of the ECB. Translations are prepared and published by the national central banks.

The cut-off date for the statistics included in this issue was 8 June 2022.

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PDF ISSN 2363-3417, QB-BP-22-004-EN-N  
HTML ISSN 2363-3417, QB-BP-22-004-EN-Q