ANNUAL REPORT
2022

SEPTEMBER 2023

BANK OF GREECE
EUROSYSTEM

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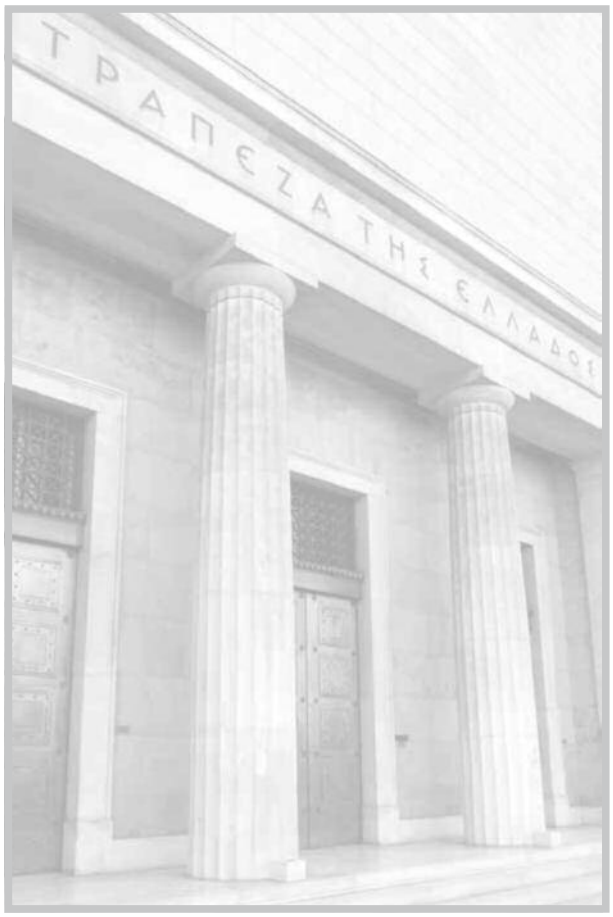
2022

Presented to the 90th General Meeting of Shareholders
on 7 April 2023 by Governor Yannis Stournaras



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FOREWORD BY THE GOVERNOR

The Russian invasion of Ukraine, over a year ago, and the subsequent imposition of sanctions triggered a series of developments in international energy and raw material markets. In the euro area, inflationary pressures recorded in the course of the recovery after the pandemic intensified, thereby leading to higher inflation. The increase in energy costs and the decrease in real disposable income had a negative impact on economic activity, which however proved more resilient than expected. Amid heightened uncertainty and fear of economic recession in the euro area, monetary policy was normalised in order to bring inflation down to its medium-term target. Although the current rise in inflation stems mainly from a negative aggregate supply shock, which central banks cannot easily offset, the dynamic response of the European Central Bank, which increased its key rates, signalled its decisiveness to contain inflation expectations and second-round effects. Uncertainty looms over future developments, however there is ground for optimism as, on the basis of available data, a deceleration of inflation is gradually becoming visible in the euro area.

The Greek economy, despite an unfavourable international environment, kept on growing strongly in 2022. Real GDP rose by 5.9%, mainly on the back of stronger private consumption and investment, as well as on account of the large increase in tourism. Fiscal measures aimed at containing the impact of the energy crisis on households and businesses contributed to this positive development. At the same time, labour market developments were favourable and the unemployment rate declined. The growth rate of the Greek economy is expected to be higher than the euro area average in 2023, though clearly lower than in 2022, with consumption –and especially investment, also through the efficient use of available European funds– still making a positive contribution.

The Greek economy, despite numerous and serious challenges, is on a positive track and in a position to overcome obstacles. Over the next years, the implementation of the National Recovery and Resilience Plan is expected to contribute to a further strengthening of investment, while supporting and creating new and better paying jobs. At the same time, the sustainability of Greek public debt is not compromised by higher financing costs over the medium term. However, fiscal support measures have to be targeted and temporary, in order to preserve fiscal credibility and stability and ensure efficient use of EU funds. A credible economic policy will contribute to regaining investment grade in 2023, with positive multiplier effects across the economy.

Over the past two years, the single monetary policy was faced with multiple and interrelated challenges. In this environment, and always within the context of the Eurosystem, the Bank of Greece continued to serve as custodian of monetary and financial stability. It ensured smooth liquidity conditions for the Greek credit system and contributed to easing upward pressures on Greek government bond yields as a result of monetary policy tightening. As the central bank of the country, we will keep on performing our tasks effectively, responsibly and impartially. In this demanding environment, we need to encourage financial markets to flourish and support our economy in a way that fosters economic integration and strong cooperation across Europe.

The Bank of Greece, in response to new challenges and technological advancements, recently completed the Bank's internal reorganisation project "Mellon", which emphasises meritocracy,

efficiency, effectiveness and flexibility of business processes. In this context, the digital transformation of the Bank, aiming at modernising and simplifying procedures by making effective use of technology and innovation, is nothing short of an unwavering aim.

In 2022 the Bank continued to incorporate sustainability principles in its operations and to implement relevant projects as part of its corporate social responsibility. It strengthened its role in issues pertaining to the environment and climate change. Furthermore, the Environmental Management System (EMS), which was certified by ISO in 2022, is a proof of the Bank's commitment to continuously improve its environmental performance. The efficient management of its human capital is a key priority of the Bank, which is constantly investing in knowledge and competence building, always guided by the principles of equality and meritocracy. It is worth noting that, in July 2022, the Bank of Greece co-signed the ESCB & SSM Equality, Diversity and Inclusion Charter. The Bank also fulfilled its role in disseminating culture, through the work of its Centre for Culture, Research and Documentation, while promoting financial literacy through a series of initiatives, e.g. educational programmes at the Bank of Greece Museum and relevant publications, and participating in similar initiatives organised by other members of the Eurosystem.

The Bank of Greece, through the publication of reports, research output and statistical data, informs the general public and provides reliable information on economic policy. It is said that a distinctive feature of institutions is the fact that they abide by consistent behavioural value systems. Over the years, the Bank of Greece has been sounding the alarm to governments and has been a guiding light whenever things were taking a wrong turn. In today's constantly changing global environment, we are committed to continuing to serve as a beacon of stability.

The Bank's vision is to be an effective, credible and innovative central bank, trusted by the society. This vision is shared and served in the best possible way by Bank of Greece employees, who make a crucial contribution to maintaining the high quality of the Bank's work and prestige. This is why I would like to thank them for their diligence and commitment and encourage them to keep up the good work. Lastly, I would also like to thank the members of the General Council for their support and cooperation.

Yannis Stournaras

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1 INTRODUCTION

2022 was a year of elevated uncertainty, due to the Russian invasion of Ukraine and a surge in inflation. Increased inflationary pressures largely stemmed from supply-side shocks, notably reflecting rising energy costs, while a significant contribution also came from demand-side factors, due to the strong post-pandemic economic recovery and the extensive fiscal support measures. The dynamic reaction of monetary authorities worldwide, with drastic increases in policy rates, was deemed necessary to signal their determination to both contain aggregate demand and rein in second-round inflationary effects and anchor inflation expectations, thereby minimising the risk of an upward price-wage spiral and achieving the price stability target in the medium term. In fact, the size of central bank interventions was such that last year saw the most abrupt shift in the monetary policy stance ever recorded in the post-war period, with still uncertain consequences on economic activity.

Amid unprecedented exogenous shocks and pervasive uncertainty, the Greek economy has made significant progress since the debt crisis of the previous decade, exhibiting high resilience, while also enhancing economic policy credibility. Over the past two years, Greece has recorded strong economic growth, above the euro area average, achieving real convergence of its living standards towards the European average. In particular, the negative output gap of the Greek economy is estimated to have closed in 2022 after eleven consecutive years.

The enhanced credibility of economic policy has been the result of the wide-ranging reforms implemented in the past few years, which have to a large extent corrected the imbalances of the Greek economy. The following areas are particularly worth mentioning:

- **Fiscal policy:** Despite widespread uncertainty and the adoption of additional fiscal support measures, the 2022 budget targets are estimated to have been achieved with a safe margin, thanks to higher growth and inflation than initially projected. The additional fiscal interventions did not burden the State Budget, as they were mostly financed by windfall revenues and by using the fiscal space created by better-than-expected economic activity and the overperformance of tax revenues. Accordingly, the support measures did not cause any deviation of the fiscal balance from the original budget targets. Based on Bank of Greece estimates, the fiscal balance for 2022 turned out better than expected, despite the adverse conditions, thereby strengthening Greece's fiscal credibility.

  In 2023, with the pandemic emergency measures no longer in place and with less energy-related fiscal support, a return to a structural primary surplus is expected. This means that the structure of the State Budget is such that it can generate primary surpluses without the need for additional measures; this is a result of the structural fiscal consolidation and the reforms implemented over the past years. Important reforms included improving the tax collection mechanism and addressing the sustainability problem of the social security system, which was recently complemented by the introduction of funded elements in the supplementary pension system and by a stepped-up clearance of pension arrears, with long-term fiscal benefits. The ability to generate structural primary surpluses is a key determinant of Greece's fiscal policy credibility, as it reduces reliance on additional discretionary measures to address fiscal imbalances. This, together with the favourable characteristics of public debt, makes the dynamics of the debt-to-GDP ratio very resilient

to adverse shocks in the medium term, thereby bolstering international investors' confidence in the prospects of the Greek economy.

- **Competitiveness of the economy:** Competitiveness in terms of relative prices and relative labour costs has improved significantly since 2010, having recouped the cumulative losses of the 2000-09 period. This cumulative improvement in competitiveness has been more marked in terms of unit labour costs, especially as the relevant index fell in 2021-22 below the levels observed prior to Greece's entry into the euro area. These hard-won and sizeable competitiveness gains were, to a large extent, due to the reform of the wage-setting framework and the deregulation of the labour market. As a result of past reforms, cost competitiveness continued to improve in 2022, despite strong price rises and mounting wage pressures.

The Greek economy has also made progress in several aspects of its structural competitiveness. This progress, which started with a series of reforms in the post-2010 period and was stepped up in the past few years (digital transformation of the economy, lowering corporate tax rates from 29% to 22% and dividend tax rates from 15% to 5%, etc.), contributes to improving the business and investment environment, bringing additional benefits to export-oriented sectors of the economy.

- **Investment:** In 2021 and 2022, foreign direct investment inflows increased strongly (to 2.8% and 3.1% of GDP, respectively, up from an average of 0.9% in 2002-18) and were a key tool for financing growth, promoting productivity and employment, and introducing innovative technologies. This development was mainly due to the gradual restoration of confidence in the prospects of the Greek economy. The acceleration of the privatisation and state property development programme, the participation of foreign companies in the equity of domestic firms and the record merger and acquisition activity observed in 2022 played an important role in boosting investment in recent years.

- **Extroversion:** Despite the deterioration in the current account deficit in the past few years, which was mostly due to temporary factors associated with the pandemic and rising international energy prices, the external sector of the Greek economy has undergone an impressive transformation. Overall, exports of goods and services as a share of GDP have almost doubled relative to 2010, reflecting not only the strong performance of tourism and transport services, but also the significant growth of goods exports, along with an increasing diversification of the Greek economy's export base. Greek exports have also improved in terms of quality, as e.g. exports of high-tech goods have grown remarkably.

- **Labour market:** The improvement in the labour market is now visible, with the unemployment rate falling to around 2010 levels, while the labour market slack has decreased and, for the first time since 2009, the labour force has expanded. These developments are largely attributable to the relaxation of labour market rigidities and the structural reforms implemented over the past decade. These reforms, which have increased labour market flexibility, have helped employment to respond more quickly to GDP growth.

- **Banking sector:** In the past few years, extensive restructuring has taken place in the banking sector. Banks have largely cleaned up their balance sheets, addressing the problem of non-preforming loans (NPLs) mainly using the Hellenic Asset Protection Scheme (HAPS). Banks' liquidity has also improved, benefiting from higher deposits and continued access to funding markets. Capital adequacy ratios remain at satisfactory levels, above the minimum regulatory requirements. Moreover, the return of banks to profitability in 2022 is a noteworthy development that improves the chances of a virtuous circle of stronger capital base and capacity to finance sound business plans. The Recovery and Resilience Facility (RRF) provides significant support to domestic bank financing for Greek firms on favourable

terms. Overall, the figures show that the Greek banking sector is now in a better position than in the past to absorb international market shocks like those observed recently, while it is also benefiting from continuing ECB support.

The support of European institutions to the economic policies pursued in Greece has been a decisive factor in the recovery of the Greek economy and in restoring confidence. For example, the eligibility of Greek government securities for the ECB's Pandemic Emergency Purchase Programme (PEPP) and the extension of their waiver from collateral eligibility rules for as long as PEPP reinvestments continue (at least until 2024) have greatly contributed to lower borrowing costs during the pandemic and a smooth transmission of monetary policy. Meanwhile, Greece is among the countries expected to benefit the most from the funds available under the NextGenerationEU (NGEU) programme. So far, Greece ranks first in RRF funds absorption, having already made progress in achieving milestones and targets. Greece is also one of the five countries that have collected the second instalment and the only country to have collected part of the third instalment. Absorption of EU structural and investment funds is also well on track. Overall, this European institutional support was a consequence of the design and implementation of credible medium-term fiscal and reform plans, which was recognised by international rating agencies and investors. The utilisation of European monetary and fiscal instruments has improved the Greek economy's medium-term growth prospects and strengthened the sustainability of public finances.

The benefits of reforms are now visible across the economy, with measurable and undisputable results. Continued implementation of credible economic policies is a prerequisite for further support by the European institutions and for strengthening investor confidence, with the ultimate aim of regaining and maintaining investment grade status. In this regard, the disbursement of NGEU funds is conditional on the implementation of further structural changes and the promotion of sound investment projects. At the same time, the participation of countries in the ECB's new Transmission Protection Instrument (TPI) is contingent on the adoption of prudent and sustainable fiscal and macroeconomic policies.

Despite progress in many areas, the Greek economy still has long-standing structural problems, which make it more vulnerable to possible new shocks compared with other countries. Examples of such inherent weaknesses include delays in the administration of justice, red tape and remaining inefficiencies in some areas of public administration, shortcomings in certain key infrastructures, delays in the completion of the national cadastre (land register), insufficient fight against tax evasion, gaps in the so-called "knowledge triangle" (education–research–innovation) and the quasi-oligopolistic conditions in specific goods and services markets. At the same time, the unemployment rate remains higher than the euro area average (especially for the most vulnerable groups such as the youth and women). In the labour market, skill mismatches remain a problem, with firms finding it difficult to hire suitable staff, as workers lack the skills required for the job or have shifted to other sectors with better employment prospects. The country's GDP is still below 2008 levels, while the government debt-to-GDP ratio remains the highest in the euro area.

The greatest risk to the prospects of the Greek economy, at a time of successive crises and elevated uncertainty, would be the loss of economic policy credibility, which has been so difficult to recoup, and a return to the bad practices of the past. It is true that any prolonged political uncertainty could undermine the confidence climate that has been built up in recent years. However, the most significant risk to the economy would be a return to inefficient policies of the past and the halt and/or reversal of reform efforts. The memories of the painful adjustment achieved in previous years are still fresh enough to recall the high economic and social costs needed to correct the chronic imbalances of the economy. Therefore, prudence, responsibility and cooperation by policymakers are needed to preserve the sacrifices of the past decade for the benefit of future generations.

Greece has the historic opportunity to complete the transformation of its economy, making it more resilient to future crises and converging towards the European average. The experience of the 10-year debt crisis, the awareness of the merit of fiscal responsibility and the recognition of the benefits of reforms have all contributed to the maturity of the Greek society, enabling it to understand the new international economic environment. The political will for fiscal responsibility and credible reform policies is a factor that helps to turn crises into opportunities so that the country can definitively overcome its chronic weaknesses, transform into a modern, sustainable, extrovert and competitive economy and demonstrate responsiveness and resilience in a highly uncertain international environment.

2 THE WORLD ECONOMY

The Russian invasion of Ukraine has had severe economic consequences across the world, mainly through an unprecedented increase in energy prices and high uncertainty about the duration of the conflict. Nevertheless, global economic activity continued to show resilience. Although the erosion of real incomes by high inflation, China's weak growth and a sharp tightening of global monetary and financial conditions led to significantly lower global GDP growth in 2022; the slowdown was milder than initially projected, mainly on the back of: (a) the pandemic-related pent-up demand and accumulated savings, which supported consumption; (b) a shift of consumption from goods to services; (c) a strong labour market; and (d) the adoption of temporary policy measures worldwide to contain energy costs.

Following a strong recovery in 2021, the global economy slowed down significantly in 2022. According to the latest IMF forecasts (January 2023), global GDP growth is projected to moderate to 3.4% in 2022 (from 6.2% in 2021) and 2.9% in 2023, with the slowdown being broadly based across advanced, as well as emerging and developing economies. In the latter category, China plays a major role in the expected slowdown, as in 2022 its economy grew at the lowest rate in four decades (excluding the year of the pandemic), mainly due to the property sector crisis and the strict COVID-19 containment measures introduced during the year.

Global commodity prices, notably gas prices, surged to historical highs, primarily on account of the impact of the war and, to a lesser extent, due to persistent global value chain disruptions. Geopolitical uncertainty, Russia's reduced hydrocarbon exports to Europe, EU and US sanctions on oil imports from Russia, as well as strong demand for gas, caused energy commodity prices to soar. Specifically, in 2022, the average price of crude oil increased by 41% and that of gas of all types by 115% in annual average terms. On the other hand, downward effects have been exerted by energy saving measures in Europe, the significant European gas storage filling, a milder winter and China's economic slowdown. These factors eventually contributed to a gradual decline in energy prices, which by early 2023 had come close to the levels observed prior to the war in Ukraine.

Global trade slowed down significantly in the course of 2022. In particular, international trade flows were severely affected by: (a) rising commodity prices; (b) a sharp slowdown in the Chinese economy, which disrupted manufacturing and exports, and exacerbated problems in global value chains; and (c) a deterioration in the terms of trade for many economies, owing to the appreciation of the US dollar. According to IMF estimates, global trade volume growth slowed to 5.4% in 2022, after a strong recovery of 10.4% in 2021, and is expected to fall further to 2.4% in 2023, in line with the anticipated slowdown in the global economy.

Global inflation rose sharply in 2022 and proved higher and more persistent than initially projected. Inflationary pressures stemmed from factors both on the supply side, mainly reflecting increases in energy prices, and on the demand side, including the withdrawal of pandemic-related measures, the recovery of the services sector and the fiscal support measures in response to the energy crisis. According to the IMF, global inflation is estimated to have increased sharply

to 8.8% in 2022 from 4.7% in 2021, while in advanced economies it reached a 40-year high. The expectation of a 6.6% fall in inflation in 2023 is supported by weaker global demand for commodities, but it is also due to the dampening impact of tighter monetary policies.

2022 saw one of the sharpest monetary policy tightening cycles in many economies worldwide, in order to counter exceptionally high, persistent and broadly-based (across goods and services) inflation. The pace and size of policy rate hikes, as well as quantitative tightening decisions, varied across economies depending on the prevailing supply and demand conditions. In the course of 2022, the central banks of major economies raised their policy rates drastically, with a view to containing inflation expectations.

The past year was also challenging for fiscal policy, in its dual goal of reducing deficits and safeguarding public debt sustainability after the pandemic and of addressing the impact of the energy crisis. Governments adopted temporary fiscal measures at a significant budgetary cost to mitigate the impact of the inflationary shock on household and business incomes. These measures were often generalised and included energy price subsidies, tax cuts and direct income transfers. Nevertheless, fiscal consolidation continued in almost all countries (except China), mainly because the extensive pandemic-related support measures were phased out. At the same time, global government debt is estimated to have decreased significantly to 91% of global GDP in 2022, due to declining deficits, economic recovery and inflation, but remained 7.5 percentage points above pre-pandemic levels.

In the euro area, economic activity in 2022 proved more resilient than initially expected, despite the impact of the war. The outlook for the euro area economy deteriorated in the course of the year, amid heightened geopolitical uncertainty, supply chain disruptions and historically high energy commodity prices, which weakened economic sentiment and pushed up inflation. The contraction in real incomes heavily weighed on private consumption and investment prospects. However, euro area governments, benefiting from the extension of the general escape clause of the Stability and Growth Pact, adopted discretionary measures to support households and firms in the face of rising energy costs. These fiscal support packages, together with the recovery of the services sector and a strong labour market, dampened the economic impact of the inflationary shock. At the same time, the adoption of energy saving measures by Member States and the mild winter in late 2022 reduced the risk of significant energy supply shortages and, hence, recession. Moreover, the fiscal support measures and the NGEU funds boosted economic activity and employment prospects in the euro area. GDP growth in the euro area in 2022 declined to 3.5%, from 5.4% in 2021. According to the ECB staff macroeconomic projections of March 2023, a further slowdown to 1.0% is expected for 2023, mainly on account of deteriorating financial conditions and weaker foreign demand.

In the course of 2022, inflation in the euro area rose sharply, reaching record highs. Inflation was driven by a combination of factors: (i) increases in energy costs and commodity prices, also due to the impact of the war in Ukraine; (ii) rising food prices, owing to higher transport and fertiliser costs; (iii) supply constraints triggered by disruptions in international trade and shortages of raw materials, equipment and labour; (iv) the release of pandemic-related pent-up demand; and (v) the depreciation of the euro due to the different pace of monetary policy normalisation across central banks. Headline inflation in the euro area, as measured by the Harmonised Index of Consumer Prices (HICP), averaged 8.4% in 2022, up from 2.6% in 2021. In 2023, headline inflation is projected to moderate to 5.3%, as a result of declining energy prices, among other factors.

3 THE SINGLE MONETARY POLICY

During 2022, rising inflationary pressures in the euro area forced the ECB to change its monetary policy stance. Initially, inflation was expected to decline in the course of 2022, as

the pick-up in prices was assessed to stem from temporary factors linked to the exit from the pandemic. As energy price increases were large and unexpected, it became clear that the war in Ukraine would substantially affect economic activity and inflation. The normalisation of the ECB's monetary policy was decided and announced at the December 2021 Governing Council meeting. Thereafter, a gradual reduction in net purchases under the APP (Asset Purchase Programme) and the PEPP (Pandemic Emergency Purchase Programme) was announced. Net purchases were indeed terminated at the end of March 2022 for the PEPP and in early July 2022 for the APP. The actual start of interest rate increases was only decided when the ECB's projections of both headline and underlying inflation in the euro area suggested that inflation would remain at undesirably high levels for an extended period and that it would still exceed the 2% target by the end of the projection horizon.

From July 2022 onwards, the ECB successively raised its key interest rates, ending an eight-year period of negative interest rates and marking the most abrupt shift in the monetary policy stance ever recorded in the euro area. The ECB indicated that interest rates needed to be raised significantly at a steady pace to reach levels that would be sufficiently restrictive to ensure a timely return of inflation to the medium-term target of 2%. It was also decided that the future path of key interest rates would not be signalled through the ECB's forward guidance, but would instead be determined based on incoming data and the Governing Council's evolving assessment of the economic and inflation outlook, following a meeting-by-meeting approach. All along this process, the ECB would maintain optionality, gradualism, data dependence and flexibility in the conduct of monetary policy. In its recent March 2023 meeting, the Governing Council stated that future policy rate decisions would be determined by its assessment of the inflation outlook in light of the incoming economic and financial data, the dynamics of underlying inflation, and the strength of monetary policy transmission. Cumulatively, the ECB raised its key interest rates by 250 basis points in 2022 (in successive meetings in July, September, October and December 2022) and by a further 100 basis points in early 2023 (in February and March 2023). By the end of March 2023, the interest rates on the main refinancing operations, the marginal lending facility and the deposit facility had come to 3.50%, 3.75% and 3.00% respectively.

Along with its interest rate increases, the ECB also adopted a number of other measures aimed to further normalise monetary policy, reduce excess liquidity and money supply, as well as address any renewed market fragmentation and ensure the smooth transmission of monetary policy across the euro area countries. Specifically:

- In March 2022, net asset purchases under **the pandemic emergency purchase programme (PEPP)** were terminated. Thereafter, the ECB continued to reinvest maturing principal payments from securities purchased under the PEPP until at least the end of 2024. Flexibility in PEPP reinvestments represents a first line of defence against risks to the monetary policy transmission mechanism.

- Also in March 2022, **the minimum credit quality waiver for Greek government bonds** was extended for at least as long as PEPP reinvestments continue.

- In July 2022, the **Transmission Protection Instrument (TPI)** was established, intended to support the effective transmission of monetary policy across euro area economies. The TPI can be activated through secondary market purchases of securities issued in jurisdictions experiencing a deterioration in financing conditions that is not warranted by country-specific fundamentals and poses a serious threat to the smooth transmission of monetary policy across the euro area. A decision to activate the TPI will be based, among other considerations, on certain eligibility criteria, including whether the Member States, whose securities will be purchased, pursue sound and sustainable fiscal and macroeconomic policies.

- In October 2022, **the terms and conditions of targeted longer-term refinancing operations (TLTRO III)** became less favourable to ensure consistency with monetary policy normalisation.

  In December 2022, it was decided that, starting from March 2023, **the APP portfolio would decline** at a measured and predictable pace. Net APP purchases were terminated in July 2022, as already mentioned, but the ECB continued to fully reinvest the principal payments from maturing securities purchased under the APP. From the beginning of March 2023 onwards, the Eurosystem does not reinvest all of the principal payments from maturing APP securities. The APP portfolio decline will amount to EUR 15 billion per month on average until mid-2023 and its subsequent pace will be determined over time.

Inflation in the euro area is projected to remain high for an extended period. Overall, the ECB's strategy demonstrates its determination to ensure the return of inflation to the medium-term target of 2% and the smooth functioning of the monetary policy transmission mechanism, standing ready to adjust all of its instruments within its mandate.

The Governing Council is closely monitoring current financial market tensions and stands ready to respond as necessary to preserve price stability and financial stability in the euro area. The ECB's policy toolkit is fully equipped to provide liquidity support to the euro area financial system, if needed. To this end, the Governing Council will apply flexibility as appropriate. Flexibility in monetary policymaking is essential for ensuring the smooth transmission of monetary policy and achieving price stability without disrupting financial markets.

4 THE GREEK ECONOMY: DEVELOPMENTS AND PROSPECTS

Macroeconomic environment

In 2022, the Greek economy maintained its growth momentum, with GDP growing at a rate of 5.9% (down from 8.4% in 2021), despite strong inflationary pressures and a worsening international environment. Real GDP exceeded pre-pandemic levels, driven by private consumption, despite the decline in household real disposable income due to high inflation. Factors that sustained consumption included pent-up demand, household savings accumulated during the pandemic, and the fiscal support measures to counter the energy crisis. A positive contribution to growth also came from higher services exports, spearheaded by the buoyant tourism sector, which recovered faster in Greece than in the rest of the world. In particular, travel receipts in 2022 almost reached the 2019 level, thereby supporting incomes and consumption. Investment was another GDP growth contributor, benefiting from higher corporate profitability, the utilisation of NGEU funds and robust foreign direct investment flows. On the other hand, a dampening effect on growth was exerted by higher imports, largely on the back of soaring energy import prices, as well as of increases in industrial production, private consumption and investment.

As a result of higher energy commodity prices, headline inflation surged in 2022, weighing on real household income and undermining the economic outlook. The Harmonised Index of Consumer Prices (HICP) increased by 9.3% in 2022 (from 0.6% in 2021), breaking successive all-time records month after month until September. The key drivers of inflation were the energy (+ 41%) and the food components (+ 9.7%). Over the course of the year, the large and continuous rises in energy and food prices gradually fed into the prices of services and non-energy industrial goods, causing core inflation to rise sharply as well (to +5.7% in 2022 from -0.7 in 2021). A moderation of inflation was seen in the last quarter of 2022, associated with the general downward trend in energy prices, but also with horizontal subsidies, mainly on electricity bills.

In the case of Greece, research by Bank of Greece staff showed that supply and demand shocks have had broadly equal contributions to headline inflation in the recent period. How-

ever, the contribution of supply was clearly more important for the path of core inflation, and even more so in services. **The labour market improved further in 2022**, despite a slowdown in total employment growth during the second half of the year, in line with weaker activity. Specifically, headcount employment increased by 5.4% in 2022, compared with 1.4% in 2021. Accordingly, the unemployment rate dropped to 12.4% from 14.7% in 2021, with significant declines in the long-term unemployment rate and the unemployment rate for the 20-29 age group. The labour force expanded for the first time since 2009, recording the highest annual growth rate in 24 years. At the same time, the labour market is showing signs of tightening compared with the previous year, with increased labour supply shortages in specific sectors such as tourism, construction, retail and wholesale trade, manufacturing and industry. And this notwithstanding the fact that the unemployment rate and other labour market slack measures remain relatively high (although they have declined since 2021).

The international competitiveness of the Greek economy continued to improve in 2022, in a global environment of soaring prices and nominal labour costs. In particular, it is estimated that competitiveness has continued to improve mainly in terms of unit labour costs, with average wage growth comparatively lower in Greece than in its main trading partners (also reflecting developments in minimum wages). Price competitiveness also improved slightly, as average annual domestic inflation, though high, did not exceed the corresponding weighted average inflation of Greece's main trading partners, both inside and outside the EU. In terms of structural competitiveness, Greece's ranking on the basis of an increasing number of composite indicators is improving, although it remains comparatively low at European and international level. Major factors behind these improvements include efforts to upgrade the business and macroeconomic environment, a stable and credible fiscal policy framework, the reforms implemented, and the successful and timely absorption of RRF funds. This favourable development is also reflected to some extent in increased foreign direct investment in many sectors, with FDI flows in 2021-2022 being the highest in 20 years.

The current account deficit widened significantly in 2022, to 9.7% of GDP (from 6.8% of GDP in 2021), as growth in goods exports was outpaced by that in imports, in particular of energy goods. Higher imports of goods were fuelled by stronger consumption, as well as ongoing increases in industrial production and in investment. Rising international fuel prices have also weighed on the current account balance, through a higher oil trade deficit. Negative contributions also came from the primary and secondary income accounts, which turned to deficits, mainly due to higher interest payments, and the fact that inflows expected in 2022 were postponed to 2023. These negative developments were partly offset by an increase in the services surplus, owing mainly to an impressive increase in travel receipts, which reached 97% of their 2019 level, and, to a lesser extent, in sea transport receipts.

The Greek real estate market strengthened significantly in 2022, mainly due to strong investor interest from abroad, despite the adverse effects of the war in Ukraine on borrowing, energy and construction costs in general. The housing market gained further momentum in 2022, driven mainly by strong foreign investor demand and tourism. House prices and residential investment continued to increase sharply, while business confidence in the residential construction sector rose to even more positive levels. By contrast, the rise in residential construction in the country as a whole came to a halt, after five consecutive years of robust positive rates, while the overall cost of building new residential properties increased significantly. In the commercial real estate sector, property prices continued to increase in the first half of 2022, especially for prime properties. However, total construction activity for commercial real estate recorded negative rates of change in the year to November. Overall, lower construction activity, amid growing costs of materials and energy and rising interest rates, contributed to a further pick-up in prices on account of reduced supply that does not meet the increased demand.

Fiscal developments

Amid renewed uncertainty in 2022 due to the Russian invasion of Ukraine and rising energy and food prices, together with supply chain disruptions, the need remained for emergency fiscal support to households and firms. A sizeable fiscal support package was therefore introduced in 2022, of which an estimated 85% concerned subsidies on electricity and gas consumption for households and firms, while 9% was in the form of social transfers and only 1% in the form of tax reliefs.

The additional fiscal measures in response to the energy crisis did not burden the state budget, as they were mostly financed by windfall revenues and by using the fiscal space created by better-than-expected economic activity and the overperformance of tax revenues. The latter was due both to higher inflation and to more extensive use of electronic transactions, which improved tax compliance. Accordingly, the additional support measures did not cause deviations from the budget targets.

As a result, fiscal consolidation remained on track in 2022, despite the challenging circumstances. Following two years of fiscal expansion to cushion the negative impact of the pandemic on the real economy, the fiscal policy stance shifted to contractionary in 2022. The decline in fiscal deficits continued in 2022 at a faster pace, mainly reflecting the withdrawal of pandemic emergency measures.

In 2021-22, Greece managed to achieve one of the largest fiscal consolidations in Europe and the greatest cumulative reduction of public debt, which dropped to below pre-pandemic levels. Between 2020 and 2021, the general government primary deficit decreased by around 2 percentage points of GDP to 5% (from 6.9% of GDP in 2020) and the debt ratio fell by 11.8 percentage points of GDP to 194.5%. For 2022, the reduction of the primary deficit is expected to turn out larger than initially projected, due to an under-execution of primary expenditure against the annual target and a better-than-expected performance of tax revenues. The revised forecasts of the Bank of Greece place the 2022 general government primary budget deficit at 1% of GDP and public debt at 171.4% of GDP. A better-than-expected fiscal performance would enhance fiscal credibility and would also bring forward an upgrade of the Greek sovereign to investment grade rating, while making the achievement of the primary surplus target in 2023 safer, in a time of heightened uncertainty and significant slowdown in growth.

The normalisation of the ECB's monetary policy, which was decided and announced in December 2021 and effectively started in 2022, implied higher borrowing costs for euro area countries, especially for Greece. Greek bond yields were more sensitive to international market volatility than those of other euro area countries, given their lower credit rating.

However, the observed rise in Greek bond yields does not jeopardise the sustainability of Greek government debt in the medium term. This is due to the favourable characteristics of Greek public debt (e.g. its composition and very long maturity), as arising from the agreed short- and medium-term debt relief measures. In addition, the overall issuance strategy of the Public Debt Management Agency and the timely hedging of all variable-rate debt via interest swap contracts in 2017-19 protect public debt dynamics from rising international interest rates, keeping interest payments relatively stable over the medium term. At the same time, there is scope for flexible debt management and debt issuance, with a view to containing borrowing costs and keeping gross financing needs low.

Despite increased uncertainty and higher borrowing costs, confidence in the prospects of the Greek economy was maintained during 2022, mainly due to the strong resilience of public debt to negative shocks and better-than-expected fiscal outcomes. In 2022, two rating agencies upgraded Greece to one notch below investment grade, while another two upgraded the country's economic outlook to positive. The ratings are underpinned by Greece's improved

economic fundamentals, the continued implementation of reforms, the effectiveness of the economic policies pursued and the fact that past structural reforms have enhanced the resilience of the economy and fiscal sustainability.

Banking sector

Bank credit expansion to the private sector accelerated markedly in 2022, remaining at a higher level compared to previous years. Stronger economic activity and firms' higher financing needs due to input price and energy inflation fuelled demand for bank loans. Also, amid heightened uncertainty related to the war in Ukraine, non-financial corporations (NFCs) had a precautionary motive to build up cash reserves. The withdrawal of earlier COVID-19 support measures, in particular the repayable advance and bank loan moratoria, was another driver of firms' demand for bank loans. On the supply side, the provision of liquidity by the Eurosystem, the sustained growth in bank deposits and the significant reduction in the NPL ratio had a positive impact. The average annual growth of bank credit to NFCs accelerated to 8.3% in 2022 from 5.7% in 2021, with the monthly net credit flow almost tripling on average relative to 2021.

The strong rebound in new bank loans in 2022 was mainly driven by credit to large firms, while consumer loans also increased. The average monthly gross flow of loans to large firms more than doubled in 2022 compared with 2021, while the corresponding flow to small- and medium-sized enterprises (SMEs) grew by 35%, accounting for one-fifth of the total flow of loans to NFCs. New loans to SMEs remained significant, supported by the financial instruments of the European Investment Bank. Also, the disbursement of low-interest RRF loans firms started in the second half of the year. The main recipients of new bank credit to NFCs were the sectors of industry (22.7% of the total), energy (16.8%) and retail and wholesale trade (12.8%). Bank credit to households kept contracting on an annual basis in 2022, but its pace of decline was weaker than in 2021, as consumer credit growth, which turned positive in March 2022 for the first time since 2010 and remained so thereafter, partly offset the continued contraction of housing loans.

Deposits by the domestic private sector continued to rise in 2022, although their annual growth was dampened by lower real deposit rates. Private sector deposits increased by a cumulative EUR 8.6 billion in 2022, which corresponds to about half of the 2021 flow. Household and business deposits were negatively affected by rising inflation which, together with nominal deposit rates remaining low, led to a decline in the real interest rate.

Household deposits in 2022 were supported by the strong pace of economic recovery. Household deposits grew by EUR 6 billion in 2022 (compared with EUR 8.5 billion in 2021) on the back of increases in nominal disposable income, underpinned by higher employment and the fiscal support measures. On the other hand, negative effects on household deposits were exerted by the release of pandemic-related pent-up demand, higher spending as a result of high inflation, and low nominal deposit rates that discouraged saving.

Business deposits continued to grow in 2022, but at a decelerating pace, albeit faster than in 2019. Business deposits grew by EUR 3.4 billion in 2022 (compared with EUR 7.8 billion in 2021), driven by significant increases in bank borrowing and a marked recovery in turnover and tourism receipts. On the other hand, increased business costs, largely as a result of higher imported input prices, had a negative effect on NFC deposits.

The increases in key ECB rates were gradually transmitted to domestic bank rates, with mixed effects on domestic credit and deposit developments, which, given the associated lags, will take time to fully unfold. Deposit rates remained at very low levels in 2022, despite policy rate increases. In real terms, the interest rate on time deposits for NFCs and households became more strongly negative. On the other hand, bank borrowing costs increased in 2022 across all types of credit, in line with the normalisation of the monetary policy stance. In partic-

ular, the average interest rate on loans to NFCs rose by 50 basis points in 2022 relative to 2021, while household borrowing costs also trended upwards, driven by higher interest rates on both consumer loans (up by 50 basis points) and housing loans (up by 36 basis points). However, increases in nominal lending rates remained below inflation, leading to a sharp decline in real interest rates in 2022.

Improved bank asset quality and higher interest rates have had a positive impact on the profitability of Greek banks. In 2022, Greek banking groups posted profits, mainly due to considerably lower provisions for credit risk and higher non-interest income (notably from fees and commissions, financial operations, etc.), as well as reduced operating expenses. Interest income strengthened overall in 2022, reflecting increases in lending rates during the second half of the year.

Capital adequacy ratios in December 2022 improved relative to one year earlier. The Common Equity Tier 1 capital ratio increased to 14.5% (from 13.6% in December 2021) and the Total Capital Ratio to 17.5% (from 16.2% in December 2021), both remaining below the respective euro area averages.

Greek banking groups improved their loan portfolio quality further, but the stock of NPLs as a share of total loans remains significantly higher than the euro area average. According to the latest available data, the NPL ratio declined further to 8.7% in December 2022 (from 12.8% in December 2021), compared with a euro area average of 2.3% (September 2022 data), while all systemic banks have already reached their single-digit NPL ratio operational target. The stock of NPLs fell to EUR 13.2 billion at end-September 2021, down by EUR 5.2 billion from end-December 2021 and by EUR 95.5 billion from their March 2016 peak. This marked improvement is primarily attributable to loan sales using the HAPS scheme and, to a lesser extent, to recoveries from active NPL management and repayments facilitated by the borrower support measures on the part of the government and banks. Of the total NPL stock, about two-thirds are corporate loans, one-fifth are housing loans and the remainder consists of consumer loans. About 36% of NPLs are subject to forbearance measures. It should be noted, however, that a high share of forborne loans soon falls back into arrears.

Private insurance undertakings

Having weathered well the challenges of the pandemic and of persistently low interest rates, the Greek insurance market also proved resilient to the impacts of the energy crisis, higher inflation and monetary policy tightening. The insurance market continued to adjust in 2022; notable developments included further concentration of the sector through mergers and acquisitions; higher sales of life insurance products linked to investment; and management of the consequences of the surge in inflation and the associated rise in interest rates worldwide.

The Greek insurance market is highly concentrated, especially in the life insurance segment, where the five largest (life and composite) insurers hold a combined market share of 80%. In the non-life segment, the share of the top five insurers is 51%.

In the first nine months of 2022, trends in gross written premiums varied across the two market segments. In the January-September 2022 period, life insurance gross written premiums declined marginally year-on-year, while non-life gross written premiums increased.

The balance sheets of insurance undertakings were affected by the change in market conditions, owing to widespread uncertainty and monetary policy tightening. In January-September 2022, total assets fell by 10% year-on-year, reflecting the adverse impact of the global surge in yields on the valuation of their government bond holdings, which account for more than one-third of total assets. A decline of 11% was also seen in total liabilities, a significant part of which relates to life insurance business. Own funds were 8% less than in the same period of

2021. With regard to the quality of the eligible own funds of the insurance market, 92% of these funds are classified at the highest quality level (Tier 1), while the SCR coverage ratio for all supervised insurance undertakings is well above 100%.

Important regulatory developments in 2022 concerned: (a) an adaptation in line with inflation of the amounts laid down in Solvency II Directive (conditions for exclusion from scope due to size, definition of large risks, absolute floor for the calculation of the Minimum Capital Requirement; (b) the adoption of EIOPA guidelines on Legal Entity Identifier; and (c) the adoption of EIOPA's Revised Guidelines on Contract Boundaries and on Valuation of Technical Provisions.

Investment-based insurance products, which are becoming increasingly popular in recent years, entail a number of risks for policyholders, calling for the attention of insurers and supervisors alike. Partly in connection with the low interest rates prevailing for long, sales of unit-linked life insurance products have grown in recent years. These products, linked to mutual fund shares or internal variable funds, cover both the insurance and the investment needs of policyholders, offering significant benefits to consumers, notably including potentially higher returns compared with traditional life insurance policies. However, they are also associated with certain risks, such as: (a) investment risk, given the underlying assets' variability and sensitivity to market changes; (b) the risk that returns at maturity may not turn out according to customers' expectations, due to higher-than-expected investment costs; and (c) the risk of misselling these products that are often very complex. Against this background, insurance undertakings should assess the value for money of their unit-linked products, while supervisory authorities have also an important role to play in protecting policyholders against possible bad business practices.

Forecasts

The Greek economy is expected to continue to grow in 2023 at a rate far above the euro area average, but significantly lower than in 2022. According to the latest Bank of Greece forecasts, economic activity should grow by 2.2% in 2023, supported by investment and, to a lesser extent, consumption. In particular, the normalisation of consumer demand, low growth of real household income and rising interest rates are expected to lead to moderate growth of private consumption. At the same time, the medium-term outlook for investment is very promising, in terms of both quantity and quality, with a growing share of investment in high value-added infrastructure (especially in green energy production). The upward revision of the 2023 growth rate compared with earlier forecasts reflects a positive carryover effect from the better-than-expected performance of the economy in 2022.

The tourism sector maintains a positive outlook this year as well, despite continued uncertainty. Despite the challenges facing global tourism, Greece's travel receipts this year are expected to remain at broadly the same levels as in 2022. However, economic, health-related and geopolitical factors could adversely affect tourism in 2023.

Headline inflation, while still remaining relatively high, is projected to decline significantly in 2023. In particular, annual HICP inflation is estimated at 4.4% this year, reflecting falling energy prices, as well as a negative base effect. Developments in the Headline index will be driven mainly by the food and non-energy industrial goods components, whereas energy inflation is expected to turn negative (due to a sharp decline in energy prices and base effects). Core inflation, on the other hand, is expected to remain equally high in 2023, reflecting strong inflationary pressures from the non-energy industrial goods and services components, and continue its convergence with headline inflation observed in the last quarter of 2022.

Weaker growth dynamics is expected to affect productivity, and wage growth will weigh on the competitiveness of the economy. A combination of lower employment growth in 2023, in line with weaker GDP growth, and some pick-up in wage growth will result in stagnant productivity and a noticeable increase in unit labour costs.

The current account deficit is projected to decline both in absolute terms and as a percentage of GDP, although it will remain at high levels. The expected de-escalation of energy prices, combined with a slowdown in domestic consumption expenditure, should dampen imports of goods. Meanwhile, the recovery of the world economy –albeit at a slowing pace– would have a positive impact on Greek exports of goods. The latter are expected to continue to grow, although less strongly than in 2022, in response to rising foreign demand. The services balance is also expected to show a small improvement, driven by higher travel receipts, which will however be influenced by disposable income developments in the main markets of origin. On the other hand, weaker demand for raw materials relative to 2022 and the euro's appreciation vis-a-vis the US dollar are projected to contain the surplus on the transport balance. At the same time, inflows of EU funds in the form of grants (e.g. under NGEU) will have a direct positive impact on the current account, through the primary and secondary income accounts. Finally, foreign direct investment inflows are projected to remain on an upward path, reflecting the acceleration of privatisations, inflows from European funds, as well as the improved business climate.

The fiscal stance is estimated to remain restrictive in 2023, as the primary balance is projected to improve further, contributing to a further reduction in public debt. Based on available data and the policy measures so far announced, the Bank of Greece expects the general government budget to return to a primary surplus of 0.7% of GDP in 2023, after three consecutive years in deficit. Budget consolidation is underpinned by the full withdrawal of pandemic-related emergency measures and a cutback on energy measures, which are only partially offset by the adoption of other fiscal support measures. General government debt is projected to decrease further to 162.5% of GDP in 2023, thanks to the dampening contribution of the implicit interest rate-growth differential to debt dynamics, while the primary balance component will also have a debt-reducing contribution, for the first time since 2019.

As regards public debt sustainability, the observed increase in borrowing costs does not undermine the declining path of the debt-to-GDP ratio. This is mainly due to the favourable structure of Greek public debt, about 76% of which is in the form of medium- to long-term liabilities to the official sector, and its very favourable repayment profile. At the same time, the past hedging swap contracts of the Public Debt Management Agency, which locked in historically low interest rates, together with the debt relief measures of 2017-18, have resulted in the stabilisation of interest payments on variable rate debt to the official sector, making Greek public debt more resilient to interest rate risk. Therefore, risks to the sustainability of public debt remain contained over the medium term, provided that: (i) fiscal measures to counter the impact of the pandemic and the energy crisis are temporary; (ii) from 2023 onwards, the government budget runs primary surpluses of close to 2% of GDP on average per year in order to fully cover interest payments on public debt; (iii) effective use is made of all available European resources, making a crucial contribution to closing the investment gap and boosting the economy's potential growth.

5 SOURCES OF RISK AND UNCERTAINTY

The current projections for the global economy are surrounded by heightened uncertainty, and risks remain elevated: (a) a possible escalation of geopolitical tensions or of the war in Ukraine could cause inflation and global energy prices to remain high for longer, implying a high risk of stagflation in Europe, which is a large net importer of energy and has been severely affected by deteriorating terms of trade; (b) a worsening of geopolitical fragmentation trends in trade would lead to economic de-globalisation, weaker growth and rising prices; (c) further disruptions in global supply chains and in energy supply sufficiency could lead to the emergence of regional solutions, raising issues of strategic autonomy and heightened uncertainty about trade dynamics; (d) an abrupt or generalised re-pricing of financial risk could rekindle fiscal sustainability risks and cause a new debt crisis, especially in developing economies.

Risks to the outlook for the euro area economy chiefly relate to geopolitical developments and volatility in international energy prices. The risk of a disruption of Europe's energy supply remains elevated, in particular for 2023-24, in the event of a prolongation or escalation of the war in Ukraine, especially if combined with higher energy demand by China. Moreover, an abrupt deterioration in financial conditions could have adverse effects on the viability of businesses, financial stability and public debt dynamics in several Member States. A sharp correction in real estate prices amid rising borrowing rates would further dampen domestic demand. Also, more persistent inflationary pressures than currently expected, due to second-round effects via wages or renewed energy price hikes, could cause a de-anchoring of inflation expectations to the upside and more persistent increases in core inflation. Reversely, a faster-than-expected fall in inflation, reflecting the effectiveness of monetary policy, and a greater resilience of private consumption and investment, thanks to the use of NGEU funds, would lead to lower inflation and higher growth.

The inflation outlook in the euro area is subject to considerable risks. Upside risks to inflation could materialise in the short term in the event of a further reduction in energy supply and a rise in retail prices for energy. It is worth noting that price pressures remain strong, partly because past increases in energy costs are now affecting a wider range of products. The risks to the medium-term inflation outlook are associated with: (a) a contraction of the euro area's production capacity; (b) inflation expectations rising above the Eurosystem's target; (c) higher-than-anticipated wage growth; (d) further increase in energy and food prices; and (e) a stronger pass-through of higher energy and food commodity prices to consumer prices. On the other hand, if aggregate demand and energy costs were to decline, upward pressures on prices would be mitigated over the medium term.

In a global environment of tighter monetary policy and high uncertainty, ensuring financial stability warrants vigilance by all parties involved. One factor behind the recent turmoil in financial markets was concerns about the impact of interest rate increases on both the liabilities and the assets sides of bank balance sheets. A bank's exposure to interest rate risk depends on its business model, as well as on supervisory practices. Typically, higher interest rates lead to losses on banks' bond portfolios, as higher interest rates reduce the prices of existing bonds, and even more so for long-term bonds. However, as part of their portfolio risk management, banks have the option to hedge interest risk in order to contain any losses.

At the euro area level, although the rise in interest rates is expected to positively affect bank income, strong banking supervision and the ECB's policy toolkit provide safeguards that financial stability will be preserved in the event of concerns about the impact of monetary policy tightening on banks' bond holdings and loan portfolio quality. Overall, the trend towards lower bond market valuations is expected to persist for as long as the ECB normalises its monetary policy by gradually raising its key rates to levels that will ensure a timely return of inflation to the medium-term target of 2%. In addition, an environment of high interest rate expectations, inflationary pressures and heightened geopolitical risks is expected to contribute negatively in this direction. However, the euro area banking sector remains resilient, having strong capital and liquidity positions. At the same time, the ECB's policy toolkit is fully equipped to provide liquidity support to the euro area financial system if needed to ensure smooth monetary policy transmission and safeguard financial stability.

As regards the Greek economy, maintaining the growth momentum in the period ahead is the key challenge. In more detail, downside risks to the outlook for the Greek economy include: (i) a deterioration of the external environment due to unfavourable geopolitical developments; (ii) higher and more persistent inflation; (iii) a protracted electoral period, which would exacerbate political uncertainty; (iv) a lower-than-expected absorption rate of NGEU funds; (v) a halt of reforms or reversal of past reforms, which would impair productivity growth and business competitiveness; and (vi) the emergence of a new generation of NPLs, due to the interest rate

hikes and the impact of the energy crisis, after the gradual withdrawal of the government support measures. Upside risks are associated with a stronger decline in inflation and a better-than-expected performance of tourism.

In the area of public finances, the increased fiscal challenges faced by several European countries call for fiscal prudence and responsibility. In an international environment of higher interest rates, commitment to restoring fiscal sustainability remains crucial. This is so because higher borrowing costs and slower growth reduce the positive contribution of the interest rate-growth differential, weakening the initial beneficial effect of inflation on the reduction of the debt-to-GDP ratio. Against this background, fiscal prudence is needed to avoid undermining the constantly declining path of public debt and prevent a new debt crisis. In the case of Greece in particular, following a smooth exit from the enhanced surveillance regime, fiscal credibility is of the essence, as sustainable public finances is a crucial factor for a sovereign credit rating upgrade. In the longer term however, there is increased uncertainty regarding public debt dynamics, as the gradual refinancing of accumulated debt to the official sector on market terms will increase the exposure of Greek government debt to interest rate, market and refinancing risks.

Turning to the banking sector, the monetary policy tightening and the slowdown in economic activity are expected to weigh on the outlook for credit expansion to the private sector in 2023, despite the support provided by European financial instruments. In particular, the ECB rate hiking cycle will be transmitted to bank lending rates, especially household credit rates that are more responsive to market rates. The higher cost of credit will affect the debt servicing capacity of private sector borrowers with floating-rate loans, in particular households, whose real incomes have already been eroded by inflation. At the same time, the expected economic slowdown in 2023 would increase the credit risk of NFCs and households, due to a deterioration in their financial condition. Also, in view of the risk of a new generation of non-performing loans emerging in 2023 as a result of the energy crisis, banks are more cautious to extend new loans. Overall, the annual growth rate of bank credit to NFCs is expected to decline, but to remain robust, supported by the low-interest co-funded loans generated by the European financing instruments (NSRF, NGEU).

The exposure of Greek banks' balance sheets to interest rate risk is limited. More specifically, Greek government bonds held in bank portfolios which are measured at fair value are negatively affected by the decline in their prices amid rising key interest rates. However, the majority (around 80%) of banks' government bond holdings are held to maturity and thus not affected by changes in their prices. It should also be noted that banks have been implementing interest rate risk hedging policies. Nevertheless, interest rate risk could become significant should banks be forced to sell these securities to obtain liquidity. It is therefore important to preserve the liquidity conditions of the banking sector, with the support of monetary authorities, in order to safeguard financial stability.

Lastly, strengthening the capital base of Greek banks remains an important challenge for the sector, particularly in the current environment of changing international financial conditions. The quality of bank capital remains relatively low, as deferred tax credits represent 52% of total prudential own funds. Meanwhile, the rise in interest rates implies higher interest expenses at a time when banks have to make progress towards meeting Minimum Requirements for own funds and Eligible Liabilities (MREL) through new bond issuance. This calls for a qualitative and quantitative strengthening of the capital base and an improvement in core profitability. An upgrade of the Greek sovereign credit rating to investment grade would be particularly important for banks, as it would be followed by similar upgrades for banks, thereby reducing their borrowing costs. Additional challenges for the domestic banking sector refer to addressing the consequences of climate change and adopting new, digital technologies.

6 POLICY RECOMMENDATIONS

Monetary policy

Identifying the drivers of inflation is crucial for monetary policy making, with a view to achieving a decline in inflation with the smallest possible output losses. Underlying inflationary pressures primarily stem from supply shocks, which cannot be effectively addressed by monetary policy. Still, it is important that monetary policy should respond in a resolute and timely manner to protracted supply shocks in order to prevent an entrenchment of higher inflation expectations and control second-round inflation effects. The recent interest rate increases by the ECB are working in this direction.

The tightening of the monetary policy stance is necessary to achieve the inflation target of 2% over the medium term. The increase in key interest rates and their maintenance above their neutral levels, until underlying inflation is clearly falling to levels consistent with the price stability objective, will prevent a de-anchoring of inflation expectations and second-round effects from strong wage pressures. In the current conjuncture, central banks need to remain vigilant, clearly communicate the monetary policy outlook and carefully plan their balance sheet contraction, in order to avoid shocks to the real economy and to financial markets.

The relatively higher contribution of supply-side factors to the recent surge in inflation, particularly in the euro area, calls for structural measures. The adoption of supply-side policies, towards addressing constraints in the labour market and the production of raw materials, speeding up the development of renewable energy sources and ensuring energy sufficiency, could lead to a faster decline in inflationary pressures and smaller output losses.

Fiscal policy

The current economic conjuncture calls for complementarity between monetary and fiscal policies, along with a flexible economic policy that can promptly adapt to rapidly changing conditions. Monetary and fiscal policy complementarity is necessary for achieving price stability in the medium term; anchoring inflation expectations; safeguarding financial stability; containing borrowing costs; ensuring long-term fiscal sustainability; and strengthening the growth momentum.

Experience from the management of past crises has demonstrated the major importance of counter-cyclical fiscal policies for strengthening the resilience of economies. Such policies, in good times, can help build the necessary buffers and fiscal space for the adoption of discretionary fiscal policies in bad times. Fiscal policy can play an active role in expanding the productive capacity of the real economy by supporting investment in human capital, green energy and digital technologies.

Ensuring a restrictive fiscal policy stance during the tightening of monetary policy requires fiscal prudence and discipline. In the current economic environment, there is pressure on policymakers to take action to mitigate the impact of inflation and energy shocks on household incomes, especially those of the poorer households. Such action is necessary to support private consumption and sustain the growth momentum. However, under the current circumstances, any support measures should be financed by using the available fiscal space and should be: (a) temporary, (b) targeted and (c) tailored to addressing the energy crisis. The temporary and targeted character of measures reduces the risk of demand-driven inflation. In this manner, fiscal policy can facilitate monetary authorities in achieving their target of bringing inflation back to 2% over the medium term. Moreover, given that inflation has significant distributional effects, disproportionately hitting low-income groups with a higher propensity to consume, the measures should be targeted to the most vulnerable. Support to firms should also be targeted, depending on their exposure to energy price increases and energy supply disruptions. Finally, such measures should be tailored to preserving incentives to consume less energy, while supporting en-

ergy efficiency and the green transition. Unless these requirements are met, the measures could exacerbate rather than weaken medium-term inflationary pressures, which would necessitate further monetary policy tightening.

The credit rating upgrade of the Greek sovereign to investment grade is a very important objective for economic policy in the upcoming period. Obtaining an investment grade status would lead to a very large expansion of the investor base for Greek government bonds, attracting new high-quality investment funds, thus containing the upward effects of tighter international monetary and financial conditions on sovereign bond yields. It would also have a positive impact on Greek businesses and banks by reducing their borrowing costs and attracting new capital.

Productive public investment and the implementation of reforms will strengthen the economy's resilience, total productivity and potential output. Therefore, the focus should be on vigorously implementing the actions outlined in the "Greece 2.0" plan, using NGEU funds, to boost public investment and provide a significant fiscal stimulus, helping to set the economy on a solid path of strong and sustained growth. Promoting the green and digital transition should remain a key policy priority, in line with the REPowerEU initiative and making effective use of RRF and other EU funds.

A coherent and credible medium-term fiscal framework is needed at a time of elevated uncertainty. The introduction of new revised fiscal rules in the EU will send a clear signal of alignment of economic policies with explicit fiscal sustainability objectives, while credible fiscal responsibility commitments will help anchor inflation expectations, supporting monetary policy in the fight against inflation.

The reform of the Stability and Growth Pact and the development of a new, credible EU fiscal framework are key prerequisites for making the euro area as a whole more resilient to future shocks. This new framework should be geared towards ensuring: (i) public debt sustainability at national level; (ii) the counter-cyclicality of fiscal policies; (iii) a credible enforcement mechanism that would be sufficiently automated, leaving little room for political interventions; and (iv) the transformation of the NGEU into a permanent fiscal instrument to finance investment mainly in the areas of climate change, energy and digitalisation. At the same time, the establishment of a central fiscal capacity should be accompanied by significant changes in economic governance, which could mean that Member States will no longer have control over certain budgetary tools in the conduct of national policies.

In the long run, uncertainty about public debt dynamics calls for vigilance and fiscal prudence. The gradual refinancing of accumulated debt to the official sector on market terms will increase the exposure of Greek government debt to interest rate and market risk, which eliminates any room for a relaxation of primary surplus assumptions. Therefore, the next decade provides a unique window of opportunity to rapidly reduce Greek public debt.

Competitiveness

Improving the competitiveness of the Greek economy should continue, through wage moderation. In general, any increase in the statutory minimum wage should preserve the economy's competitiveness and price stability, as well as jobs. It should also be prudent and balanced in terms of managing expectations so as to avoid adverse second-round effects on inflation. Wage decisions should also take into account medium-term productivity developments and the current environment of high uncertainty. In this way, raising the minimum wage would not add to persistent inflationary pressures, worsening the competitiveness of the Greek economy and ultimately reducing the real incomes of workers.

Another important challenge refers to addressing the current account deficit, including by attracting greenfield foreign direct investment. The widening current account deficit is

largely driven by conjunctural factors related to the pandemic and rising energy prices. A smaller part is attributable to higher imports of capital goods, which however enhance the productive capacity of the Greek economy and, in the medium term –through exports– to an improvement in the external balance. Finally, another significant part stems from intermediate goods, which probably reflects the expansion of Greek industry and its greater integration into global supply chains. Measures should therefore be taken to further strengthen the export-orientedness of the economy and import substitutions. In the medium term, a contribution to this end should be made by the productive utilisation of the increased flows of foreign direct investment observed recently, as a tool for introducing new innovative technologies. Infrastructure (transport, energy, information and communication), skills, research and development and integration into global value chains are prerequisites for attracting additional investment from abroad.

In the labour market, skills mismatches remain a significant problem. Actions to address this problem include upgrading technical education and (re)skilling vulnerable social groups to improve their employability.

Equally necessary are interventions to increase labour force participation, in particular of women and the youth. Such interventions are necessary as population ageing reduces total productivity and risks undermining the sustainability of social security systems. Policies that address low birth rates and improve the work-life balance, along with reforming the tax system and reducing incentives for early retirement, can help in this direction, so as to make it easier for more workers to join and remain in the labour market. Institutional interventions to further alleviate or subsidise social security contributions would lower non-wage costs and help tackle undeclared or underreported work.

Banking sector

In the banking sector, sustained profitability is important both for safeguarding its soundness and overall financial stability and for banks to provide the necessary credit to the real economy. The increase in net interest margins is expected to have a positive impact on banks' core profitability.

A stronger effort to further reduce the stock of NPLs is needed, especially as the full impact of the energy crisis and inflation on the quality of bank loan portfolios has not yet been reflected in bank balance sheets. Also, given that the clean-up of bank balance sheets has been achieved mainly through loan securitisation and sales, the stock of NPLs remains a burden for the real economy and excludes a large number of borrowers from bank credit. Finally, it should be noted that certain non-systemic banks have made little progress in addressing their still high NPL stocks.

Improving the financial aggregates of Less Significant Institutions (LSIs) will enhance the resilience of the banking sector. An improved LSI capital adequacy and possible mergers between LSIs would boost competition, enabling the provision of diversified and more competitive services to individuals and firms, especially small- and medium-sized enterprises.

European integration

The prospects of the Greek economy are of course also linked to developments in European integration. Currently, the major challenges for authorities relate to striking the right balance between collective European action and the sovereignty of the 27 different Member States. These challenges include developing a common foreign and defence policy, deepening democracy at supranational European level, shaping inclusive societies, reducing inequalities (now directly affecting domestic and international political developments), completing the Economic and Monetary Union (EMU), boosting investment in high technology and transitioning to a green economy.

One of the greatest challenges that need addressing is the completion of the EMU. EMU is a full monetary union but, despite major steps towards closer integration, it still remains an incomplete economic fiscal, banking and capital markets union. This gives rise to serious problems and centrifugal forces in times of crisis, accentuating North-South asymmetries.

The completion of the Banking Union will act as a catalyst for a full economic and monetary union. In particular, the supervision of all banks and not only the significant institutions, bank resolution and crisis management and, above all, the establishment of a deposit insurance scheme should be based on pan-European frameworks rather than on national arrangements. A European deposit insurance scheme, in particular, can greatly contribute to financial stability in the euro area by providing not just depositor compensation but also risk reduction in the event of a banking crisis. Further delays in completing the Banking Union would hamper the smooth transmission of monetary policy, through ongoing financial barriers and fragmentation, and would put the euro at a competitive disadvantage over other reserve currencies.

In this regard, encouraging green finance is a very effective way to strengthen the Capital Markets Union. The transition to a carbon-neutral economy and the achievement of the European climate and energy targets will require an estimated EUR 330 billion in investment annually over the next decade. The need for adequate green finance can act as a catalyst for financial market integration. The strengthening of the CMU is necessary for the completion of EMU because it will reduce market fragmentation and encourage diversification of financial resources. In this context, the development of a Green CMU can support the move to a CMU by adding depth and diversification to the financial instruments available, also enhancing the risk-sharing capacity of the EU financial system.

Climate change

As part of the green transition, a number of interventions would help build resilience to the climate crisis, including: (a) promoting public investment (alongside private investment) for climate-proofing infrastructure (e.g. public transport and the rail network in particular); (b) investing in clean energy generation and grids; (c) introducing a uniform progressive carbon tax; (d) making insurance mandatory for all buildings; (e) enabling public-private partnerships for effective insurance against natural disasters; and (f) establishing a rainy day fund out of public resources to address the impact of natural disasters linked to worsening climate conditions.

Progress in tackling the climate crisis has stalled because of the energy crisis, but this gridlock should not become permanent. The short-term measures deemed necessary to boost energy supplies in the winter of 2022 should not trap Europe into reliance on fossil fuels for many years to come. Energy saving and a shift to renewables are crucial not only for addressing the current energy crisis and ensuring energy sufficiency, but also for achieving climate neutrality. Public awareness of the importance of environmental protection and of the need to reduce countries' dependence on conventional energy products can play an important role in this regard, also in view of evidence that human capital, including environmental literacy, is associated with lower energy consumption and CO_2 emissions.

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Despite the successive and multi-faceted crises of recent years, the Greek economy has shown remarkable resilience. This is due to both the continued implementation of structural reforms and the conduct of credible policies as part of a coherent medium-term plan. Greece's exit from the enhanced surveillance regime, the ECB's ongoing support to Greek bonds and actions to prevent fragmentation in euro area money and capital markets, the repeated upgrades of the Greek sovereign credit rating, the strong performance of tourism and the announcement of major investments in Greece by large foreign corporations are important

developments that enhance the medium-term outlook of the economy and also demonstrate the effectiveness of the policies pursued.

The unfavourable international macroeconomic environment shadows the outlook for the Greek economy in 2023, calling for continued credible policies. Mitigating the effects of the energy crisis and maintaining the growth momentum in the period ahead are the key challenges facing economic policy. Despite increased risks, the sizeable support from available European funds, coupled with the lower exposure of the Greek economy to the energy crisis compared with the EU average and the favourable characteristics of Greek public debt, creates such conditions that, should a more adverse scenario for the EU materialise, the impact on the Greek economy would not be so severe.

Pressing further ahead with reforms and investments under the "Greece 2.0" plan will enhance the resilience of the Greek economy to future shocks. Increasing public and private investment and accelerating structural changes aimed at digital transformation, green transition and higher employment will shield the economy against future crises and solidify sustainable and inclusive economic growth. A healthy and strong domestic banking system, in collaboration with the international financial organisations involved, has a central role to play in achieving the goals of the National Recovery and Resilience Plan.

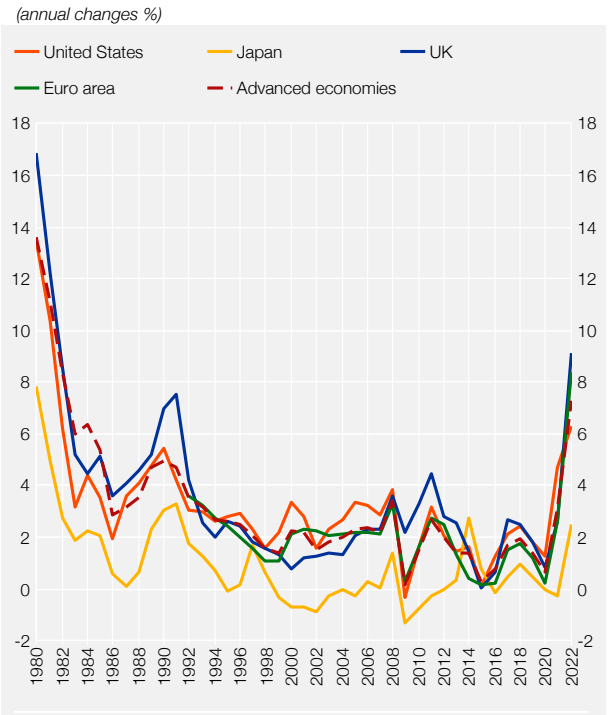
Moreover, maintaining fiscal credibility, in terms of achieving sustained primary surpluses over the medium term, could make it possible for the Greek sovereign debt to obtain investment grade rating in 2023. This is a very important objective, especially amid monetary policy tightening and deteriorating international financial conditions. In this context, given that 2023 is a year of national elections, there is a need for a common understanding and alignment among political forces in order to implement the key economic policy commitments and safeguard the achievements of the Greek economy over the past decade.

The road to full European integration is still long and difficult, but delaying the further reform of the EU architecture would lead to the marginalisation of Europe and prosperity losses for its citizens. Policymakers should act in a timely and proactive manner (i.e. before the outbreak of a new major crisis), with decisive, balanced and well-designed reforms at the euro area level, in a spirit of cooperation and mutual concessions. These changes will make the economies of the Member States more resilient, enhance the acceptance of the euro as a global reserve currency and lay the foundations for sustainable and lasting prosperity of all European citizens.

II THE EXTERNAL ENVIRONMENT OF THE GREEK ECONOMY

The global economy decelerated in 2022, weighed down by the fallout of the war in Ukraine, the lockdowns in China and the tightening of monetary and financial conditions as a result of the change in the monetary policy stance of major central banks in response to rising inflation, which in 2022 reached a post-1982 high in advanced economies (see Chart II.1). The risk of a de-anchoring of inflation expectations led monetary authorities across the globe to increase their key interest rates, while the need to provide protection from the sharp increase in the cost of living prompted fiscal authorities to take a number of temporary measures to contain energy costs for households and businesses. However, the withdrawal of the extensive pandemic-related support measures and robust nominal GDP growth brought about a significant improvement of fiscal aggregates in 2022. Supply chain disruptions during the pandemic and the ensuing energy crisis increased geopolitical concerns in advanced economies, necessitating action to enhance energy security and diversification of energy supply sources, promote energy saving and increase strategic autonomy from China and Russia. According to the current projections, global GDP should decelerate further in 2023, but to a lesser extent than last autumn's projection. Inflation in advanced economies showed signs of moderation towards the end of 2022 and in early 2023 and is expected to decline in 2023, but should still remain well above the medium-term targets of monetary authorities.

Chart II.1 Headline inflation in major economies



Sources: IMF, OECD and ECB.
Note: HICP for the euro area.

1 OVERVIEW OF DEVELOPMENTS[1]

Russia's invasion of Ukraine and the war that started on 24 February 2022 and is still ongoing, as well as the successive rounds of international sanctions against Russia, have had severe economic consequences worldwide, mainly through an unprecedented hike in energy prices, particularly of natural gas, but also through the heightened uncertainty surrounding the duration of this crisis. Advanced economies in particular, exerting indirect pressure on Russia to end the invasion and aiming to reduce Russia's energy export receipts, promptly adopted new strategies for their energy security and diversification of supply sources. The high energy dependency mainly of EU countries on Russia, in conjunction with short-term global hydrocarbon supply shortages and reduced extraction investment in recent years, led to excess demand; thus, fuel prices, already elevated since the end of 2021, increased further from March 2022 onwards, reaching new record highs in the summer of 2022.

1 The cut-off date for information and data used in this chapter is 24 March 2023.

Until February 2022, the global economy, trade and employment were recovering dynamically, despite a continuous increase of energy costs and inflation since the second half of 2021. Following the outbreak of the war, global economic activity continued to be resilient, with the exception of the US economy, which was in a technical recession in the first half of 2022. The erosion of real disposable income by high inflation took a heavier toll in the second half of the year, even though in many advanced economies the slowdown was eventually milder than initially expected. Pent-up demand and the excess savings built during the pandemic, a shift in consumption from goods to services, as well as a robust labour market continued to support economic activity in the course of the year, despite constantly rising inflation.

Inflation rose sharply worldwide in 2022 and, in advanced economies, reached its highest levels in the last 40 years. Inflationary pressures and the historic rise in inflation have been the result of factors on the demand side, due to the lifting of pandemic-related restrictions and the recovery of the services sector, as well as on the supply side, reflecting mainly energy commodity price increases. The relative role of supply and demand factors in inflation dynamics is crucial for designing the proper monetary policy response (see Box II.1).

Global trade decelerated markedly in 2022, as world demand was hit by the rise in global commodity prices and the Chinese economy's sharp slowdown; the latter caused disruptions in manufacturing and exports and, to some extent, sustained global value chain bottlenecks. Commodity prices, mainly of natural gas, soared to historically high levels, due to geopolitical instability and reduced Russian hydrocarbon exports to Europe, as well as persistent supply chain constraints. Year-on-year in 2022, the international crude oil price rose by 41% and that of natural gas (averages across all types) by 115%. A milder winter, high filling levels of European natural gas storage facilities and China's economic slowdown eventually contributed to a fall in energy prices, which in the early months of 2023 stood close to the levels seen before the Russian invasion.

Fiscal policy faced a complex set of challenges during 2022, in pursuit of the dual goal of helping address the successive crises and, at the same time, safeguarding public debt sustainability following the expansionary fiscal support measures adopted during the pandemic (see Box II.2). Fiscal support to household and business incomes became urgently necessary in 2022, in order to mitigate the economic and social impact of unprecedented inflation, in particular soaring energy costs. The temporary support measures adopted entailed significant budgetary costs. However, according to IMF estimates, fiscal deficits across advanced economies declined, driven down by the phasing-out of pandemic-related support measures. The world's public debt as a percentage of GDP fell more strongly than projected, to 91% of GDP in 2022, but still remains some 7.5 percentage points above pre-pandemic levels.

Monetary policy tightened in 2022, in order to tackle the extremely high, persistent and pervasive inflation (in goods and services). The pace and size of policy rate increases as well as the decisions to reverse quantitative easing differed across economies depending on their respective supply and demand conditions and cyclical positions. Bringing inflation down to levels consistent with central banks' targets, which will avert the risk of a de-anchoring of inflation expectations and strong second-round effects, remains a priority for most economies; however, it is not expected to be achieved before 2025.

Economic activity in the euro area in 2022 proved to be more resilient than expected, despite the repercussions of the war. The euro area economic outlook deteriorated during the past year, amid mounting geopolitical uncertainty, supply chain disruptions and record-high energy commodity prices that weakened economic sentiment and sent inflation skyrocketing. The decline in real incomes worsened the private consumption and investment outlook. Nevertheless, the extraordinary fiscal support measures to tackle higher energy costs, the recovery of the services sector as well as the robust labour market dampened the economic impact. At the same time, the adoption of energy-saving measures and other important initiatives and policy interventions

at the EU level (see Box II.3), as well as the mild winter in late 2022, mitigated the risk of severe energy shortages and, thus, the risk of recession. For 2022 as a whole, euro area GDP growth decelerated to 3.5%, from 5.4% in 2021. According to the ECB staff macroeconomic projections (March 2023), GDP growth is expected to slow down further to 1.0% in 2023, mainly due to tighter financing conditions, high inflation and weak foreign demand. The growth outlook for the euro area is surrounded by high uncertainty and downside risks stemming from geopolitical developments and energy commodity price volatility remain significant, although they are less pronounced than in earlier projections.

The strong economic recovery of south-eastern European countries in 2021 lost momentum in the course of 2022 across the region, but remained quite robust. The war in Ukraine has a very severe impact on most countries in the region through various economic channels, given their closer geographical, economic, historical and political ties with Russia. Those central banks of the region that are independent responded by gradually increasing their key interest rates.

2 GLOBAL AND EURO AREA ECONOMIC DEVELOPMENTS AND PROSPECTS AND POLICY INTERVENTIONS

2.1 The global economy

Following a strong recovery in 2021, the global economy decelerated in 2022, weighed down by the fallout from the war in Ukraine, the erosion of real incomes as a result of high inflation, China's weak growth and tighter financial conditions. For 2022 as a whole, global GDP growth is now expected by the IMF to decline from 6.2% in 2021 to 3.4% in 2022 and further to 2.9% in 2023. Even though the GDP growth rate has been revised upwards by 0.2 percentage points for both 2022 and 2023 compared with the October 2022 projection, it still falls short of the 2019-22 average of 3.8%.

In advanced economies, real GDP growth is expected to decelerate to 2.7% in 2022 and to 1.2% in 2023, from 5.4% in 2021. Among advanced economies, higher growth rates are projected in 2022 for the United Kingdom and the euro area and lower for the United States and Japan (see Table II.1). Across the four large economies of the euro area there is heterogeneity, with Italy and Spain being the best performers and France and Germany lagging behind; this is due to differences in their exposure to the external shocks from the Russia-Ukraine war, as well as in energy dependency and the weight of tourism in the respective economies.

In the United States, the economy was in technical recession in the first half of 2022 (annualised GDP contraction of 1.6% and 0.6% in the first and second quarters, respectively), as a result of negative developments in both net exports and inventories. However, private consumption remained strong, as higher expenditure on services offset lower goods expenditure. In the second half of 2022, GDP grew more than projected (up by 3.2% and 2.6% in the third and fourth quarters, respectively, on an annualised basis), as imports fell and government consumption rose sharply, while housing investment continued to decline at an accelerating pace during the year, due to higher interest rates and, therefore, rising mortgage credit costs. The recovery of the labour market continued and the unemployment rate stood at 3.5% in December 2022, down from 3.9% a year earlier, adding to inflationary pressures. Annual CPI inflation, after peaking at 9.1% in June, started to decline and, for the year as a whole, averaged 8.0%, compared with 4.7% in 2021. For the current and the coming year, GDP growth is projected by the OECD to decelerate from 2.1% in 2022 to 1.5% in 2023 and to 0.9% in 2024, as the goal of curbing inflation and the tightening of financial conditions increasingly dampens domestic spending, in particular fixed investment.

In the United Kingdom, despite the economy's low direct exposure to Russia and Ukraine, GDP kept decelerating over the course of the year, as inflation far outpaced nominal income growth.

Table II.1 Key macroeconomic aggregates of the world economy

	Number of countries	Share in GDP[1] (%)	GDP (volume, annual percentage changes)			Inflation[2] (annual percentage changes)			Fiscal balance[3] (% of GDP)			Gross government debt (% of GDP)			Current account balance (% of GDP)		
			2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023
World total	196	100.0	6.2	3.4	2.9	4.7	8.8	6.6	-	-	-	-	-	-	0.7	0.2	0.3
1. Advanced economies	40	42	5.4	2.7	1.2	3.1	7.3	4.6	-7.2	-3.6	-3.7	117.9	112.4	111.3	0.6	-0.6	-0.3
United States		37.4	5.9	2.1	1.5	4.7	6.3	3.7	-10.9	-4.0	-5.7	128.1	122.1	122.9	-3.7	-3.9	-3.1
Japan		9.1	2.1	1.0	1.4	-0.2	2.5	2.5	-6.7	-7.9	-3.6	262.5	263.9	263.1	2.9	1.4	2.2
United Kingdom		5.5	7.5	4.0	-0.2	2.6	9.1	6.7	-8.0	-6.4	-4.4	105.6	103.0	101.1	-2.0	-5.6	-6.0
Euro area	19	28.5	5.4	3.6	1.0	2.6	8.4	5.3	-5.1	-3.7	-3.4	95.3	91.0	89.4	1.8	-0.8	1.3
2. Emerging and developing economies	156	58	6.7	3.9	4.0	5.9	9.9	8.1	-5.3	-6.1	-5.4	63.7	64.5	67.5	0.8	1.3	1.0
China		32.0	8.4	3.0	5.3	0.8	1.9	2.2	-6.1	-8.9	-7.2	71.5	76.9	84.1	1.8	1.8	1.5
Russia		5.3	4.7	-2.1	-2.5	6.7	14.0	6.4	0.7	-2.3	-2.1	17.0	16.2	16.9	6.9	12.2	11.1

Sources: IMF, *World Economic Outlook* database and *Fiscal Monitor*, October 2022, and *WEO Update*, January 2023, OECD, *Economic Outlook, Interim Report*, March 2023, and European Commission, *European Economic Forecast, Autumn 2022*, November 2022. For the euro area: ECB, ECB staff macroeconomic projections for the euro area, March 2023, and Eurostat.
Note: Estimates for 2022 and projections for 2023.
1 Percentage share in world GDP in 2021, based on purchasing power parities (PPP).
2 HICP for the euro area and the UK; CPI for the other countries. Annual averages.
3 General government.

The rate of increase in GDP fell to 4.0% in 2022, from 7.5% in 2021, dragged down by weaker private and, more importantly, government consumption, while fixed capital formation remained robust. The unemployment rate declined further to 3.7%, while inflation surged to 9.1% in 2022, driven by energy price developments, aggregate supply disruptions and labour market tightness. High dependency on natural gas for production and household use led to soaring inflation, while monetary policy normalisation that had started in December 2021 through successive key interest rate increases continued in 2022. The government's announcement of expansionary measures in September, compounded by fiscal sustainability concerns, triggered a temporary political and financial crisis. According to OECD projections (March 2023), real GDP growth will be negative (-0.2%) in 2023, before recovering to 0.9% in 2024, as high energy costs severely affect domestic demand, despite planned increases in government consumption and in the minimum wage.

In emerging and developing economies, GDP growth is expected to have fallen to 3.9% in 2022 and to remain broadly unchanged in 2023, from 6.7% in 2021. China plays a major role in the projected slowdown; its GDP grew at an estimated rate of just 3.0% in 2022, the lowest rate in four decades (excluding the year of the pandemic), mainly due to the crisis in the property sector (which accounts for one-fifth of total economic activity) and the strict lockdowns until November, as part of the zero-COVID policy. By contrast, India's growth remained robust (6.8% in 2022, compared with 8.7% in 2021), supporting the region's overall performance. The war is expected to have had a severe impact on Russia in 2022 (GDP contraction of 2.2%, following 4.7% growth in 2021) and particularly on Ukraine (GDP down by 35%), but also on most of Europe's emerging economies, which, taken as a whole, are seen to stagnate in 2022 according to the IMF.

Inflation rose dramatically in 2022 at a global level, as a result of soaring energy prices, combined with robust final demand that benefited from supportive economic policies aiming to tackle

the pandemic and the energy crisis. The output gap in advanced economies is estimated by the IMF to have declined to -0.2% of potential GDP from -0.7% in 2021. Headline CPI inflation in advanced economies spiked to 7.3% in 2022 from 3.1% in 2021, while it is projected to drop to 4.6% in 2023. The curbing of inflation, which can be observed since late 2022 and is expected to intensify during 2023, is due to weaker global demand for commodities and the ensuing fall in their prices, but also to the dampening effect of monetary policy tightening on underlying inflation, which, according to the IMF, is expected to decline globally from 6.9% in the fourth quarter of 2022 to 4.5% in the fourth quarter of 2023. However, the disinflation process will likely last even longer: despite the anticipated easing of headline and core inflation, both indices are projected by the IMF to remain above pre-pandemic levels in more than 80% of the economies globally in 2024.

The current outlook for the global economy is surrounded by high uncertainty and downside risks remain elevated, although they have abated somewhat since last autumn. Downside risks to the global economy outlook in the near term relate to a possible escalation of geopolitical tensions or of the war in Ukraine, a potential persistence of inflation at high levels for longer, a worsening of geopolitical fragmentation trends in global trade,[2] an abrupt or generalised repricing of financial risk or more acute debt crises in distressed developing economies. On the other hand, stronger-than-expected domestic demand, supported by dissaving and/or higher nominal wages, represents an upside risk to growth, but also to the inflation outlook. Meanwhile, the energy crisis and the need to support the more vulnerable people have once again demonstrated the major importance of disciplined fiscal policies, which, in good times, can help build the necessary buffers and fiscal space for the adoption of discretionary fiscal policies in bad times. Furthermore, they highlighted the importance of targeted rather than horizontal fiscal support, for avoiding a further inflationary impact from fiscal expansion. Moreover, increased vigilance is required, given that monetary policy tightening, while helping to stem inflation, leads to more adverse financial conditions, thus increasing financial risk in vulnerable financial institutions and businesses, as shown in March 2023 with the collapse of Silicon Valley Bank in the United States and the rescue of Credit Suisse in Switzerland (see Box IX.3).

Global trade and commodity prices

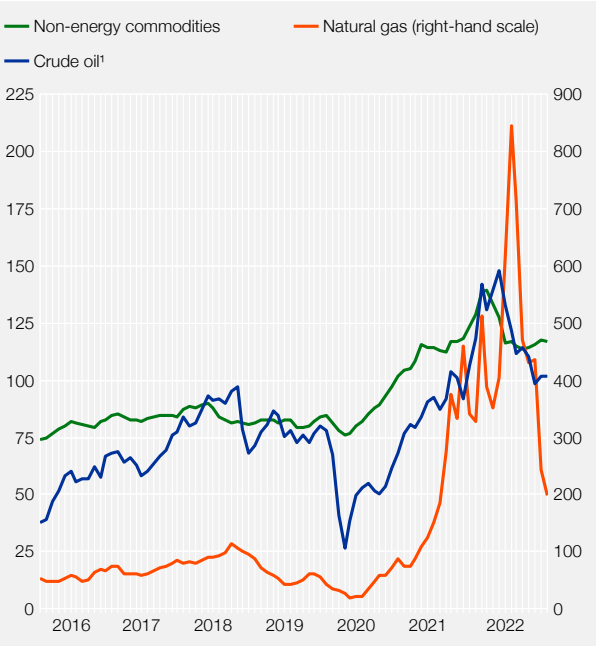
Global trade slowed down markedly during 2022, as the Russia-Ukraine war caused rises in the prices of energy and other commodities, thus affecting demand and global trade flows. Despite the positive effect of the release of pandemic-related pent-up demand on global trade, the surge of inflation dampened consumption and investment and, consequently, trade in goods, particularly in the second half of 2022. Another compounding factor was the worsened terms of trade for many economies, due to the appreciation of the US dollar, the most commonly used currency in international trade. Moreover, China's recurring lockdowns disrupted manufacturing and exports and, to some extent, sustained global value chain bottlenecks. Even though supply bottlenecks eased as from April 2022, with order delivery times gradually returning to normal, constraints still remained above pre-pandemic levels. For 2022 as a whole, the volume of global trade in goods and services is estimated to have increased by 5.4%, which partly reflects a base effect from the previous year's strong recovery of 10.4%. According to the IMF (January 2023), the volume of global trade is expected to decelerate to 2.4% in 2023, due to the weakening of the global economy.

In the first half of 2022, global commodity prices hit historic highs, driven mainly by the fallout from the war and, to a lesser extent, by continued bottlenecks in global value chains. Geopolitical instability and the reduction of Russian oil exports to Europe led average international crude oil prices to a peak of about USD 117 in June 2022. By contrast, the release of strategic oil reserves by members of the International Energy Agency, the energy-saving measures introduced in Europe and the slowdown of the Chinese economy pushed oil prices downwards.

2 European Commission, *Winter 2023 (Interim) Economic Forecast*, 13.2.2023, Box 1.1 "Global trade fragmentation risks".

Chart II.2 Global commodity prices (January 2016 - February 2023)

(market prices, monthly data, 2010=100)



Source: World Bank.
1 Average global price of three types of crude oil (UK Brent, West Texas Intermediate and Dubai).

The sanctions imposed by the EU and the United States on Russian oil imports also played a decisive role in the increase of average oil prices. In the second half of 2022, oil prices declined gradually, reaching USD 78 in December, up by 7.1% from one year earlier, amid worsening global economic outlook and financial conditions. For 2022 as a whole, the average international crude oil prices stood at USD 97 per barrel, having risen by a substantial 40.6% from USD 69 in 2021. For 2023, they are projected by the IMF to decline to about USD 81 per barrel, as reduced supply from OPEC and Russia and the EU ban on Russian crude oil imports are not expected to counterbalance the effect of weak global oil demand. In the first months of 2023, the international oil price rebounded marginally compared with December 2022 and stood close to USD 80 per barrel, amid a normalisation of economic activity in China and an improved economic outlook for certain advanced economies.

In 2022, the price of natural gas for all types increased sharply by 115% on an average annual basis, as a result of geopolitical uncertainty and strong demand for gas. In particular, the natural gas price in Europe surged by 150% in 2022 in annual average terms, reaching a historic peak in August 2022. However, mild weather and the slowdown of the Chinese economy contributed to a drop in prices, which were 5.2% lower in December 2022 than one year earlier (see Chart II.2). Regarding liquefied natural gas (LNG) in particular, an increase of 70.4% in its price in 2022 mainly reflected higher demand in the course of the year, following a sharp reduction of Russian natural gas flows. In early 2023, milder weather conditions and high filling levels of European gas storage facilities (about 84%) supported a drop in the natural gas price in Europe to a post-August 2021 low. Even though supply-side disruptions and the need to maintain high storage levels are expected to sustain upward pressures on natural gas prices in 2023, the decline in domestic consumption for electricity generation and industrial use should dampen gas price increases.

In early 2022, a depletion of base metal inventories and continued supply chain disruptions led to sharp increases in the prices of metal commodities, in particular aluminium, to record highs in March 2022. From mid-2022 onwards, monetary policy tightening in advanced economies and weaker demand alleviated pressures on the average prices of metals, which fell to their lowest levels since January 2021 in October, partly rebounding thereafter. Lower demand from China drove down the base metal price index, most notably copper and aluminium prices since May 2022, and the index showed a year-on-year decline of 8.3% in December 2022. Subsequently, reflecting the recovery of the Chinese economy, the metal index picked up by 5.4% month-on-month in January 2023, before falling again somewhat in February. In food commodities, price pressures subsided once Russia's blockade of Ukrainian grain exports was lifted in July 2022, as agreed under the Black Sea Grain Initiative. On the other hand, the US dollar appreciation kept food commodity prices at high levels, mainly for developing economies, putting additional stress on food security. Finally, the prices of precious metals decreased significantly in the third and fourth quarters of 2022, reflecting the impact of a stronger US dollar and higher interest rates. For 2022 as a whole, the average price of non-fuel commodities increased by 7.0% (in US dollars), compared with a 26.4% increase in 2021, and are projected by the IMF (January 2023) to fall by 6.3% in 2023.

Fiscal policy

In 2022, the surge in energy and food prices sparked a cost-of-living crisis across many economies, necessitating urgent fiscal support for shoring up household and business incomes and mitigating the economic and socio-political repercussions of very high inflation. The temporary fiscal measures adopted were often horizontal and included energy price subsidies, tax reductions and direct income transfers, with a significant budgetary cost, particularly in certain European economies that were hit harder by the energy crisis. Energy-related fiscal support amounted to about 0.7% of GDP on average in OECD economies in 2022, but was far above 2% of GDP in certain countries, especially in Europe.[3] However, according to IMF estimates, the fiscal deficit in advanced economies as a whole decreased to 3.6% of GDP in 2022, from 7.2% of GDP in 2021, mainly due to the phasing-out of the extensive pandemic-related support measures. By contrast, the fiscal deficit in emerging and developing economies grew to 6.1% of GDP in 2022, from 5.3% of GDP in 2021. The global public debt ratio is estimated to have declined more strongly than projected, to 91% of GDP in 2022, still remaining about 7.5 percentage points higher than pre-pandemic levels.

For 2023, persistently high inflation, high debt, rising interest rates, tighter financial conditions, slowing growth, the need to accelerate green investment and the ongoing uncertainty all pose challenges to fiscal policy, which is expected by the IMF to be slightly less accommodative across advanced and emerging economies. Among the largest economies, a relaxation of fiscal policy and a rise in the fiscal deficit are only expected in the United States this year. Against this complex background, the effectiveness of fiscal policy in tackling the successive crises and the need to ensure public debt sustainability call for: (a) a better targeting of temporary fiscal support measures towards vulnerable groups of population; (b) the creation of fiscal space in those countries where economic conditions normalise; and (c) the establishment of credible medium-term fiscal frameworks and rules. Furthermore, at the current juncture, the coordination of fiscal policy with the monetary authorities' efforts to rein in inflation will help avert risks of a de-anchoring of inflation expectations, of financial instability and of a sharp increase in the cost of borrowing. Finally, fiscal policy can play an active role in enhancing the production capacity and resilience of the real economy by supporting investment in human capital, green energy and digital technologies.

Monetary policy

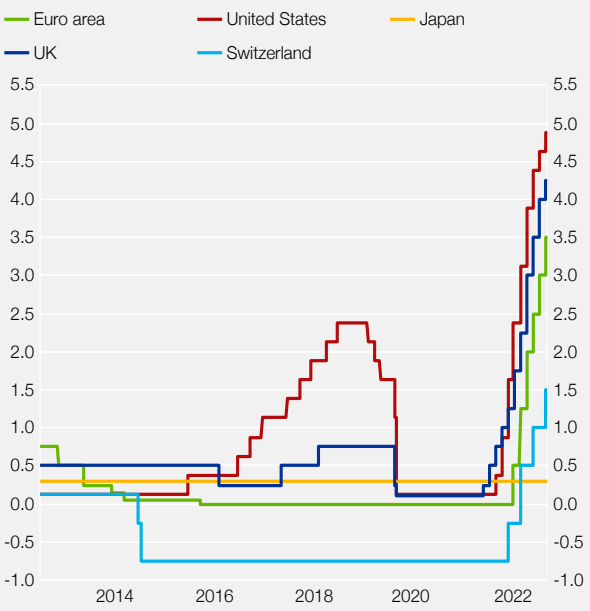
Monetary policy tightened in 2022, in order to tackle the extremely high, persistent and pervasive inflation (in goods and services). The pace and size of the policy rate hikes as well as the decisions to reverse quantitative easing differed across economies depending on their respective supply and demand conditions and cyclical positions. A return of inflation to central banks' targets remains a priority for most economies but will not likely be achieved before 2025. In the current circumstances, central banks need to remain vigilant, provide clear communication on the outlook for monetary policy and carefully design the reduction of their balance sheets with a view to avoiding unwarranted shocks to the real economy and financial markets.

In 2022, the Federal Reserve System raised the federal funds target rate range on seven occasions, from 0.00%-0.25% to 4.25%-4.50%, in one of the most aggressive monetary policy tightening rounds in its history. Further but less strong increases followed in February and March 2023, bringing the rate to 4.75%-5.00%. In the euro area, the Governing Council of the ECB embarked on the normalisation cycle later on, towards the end of July, with four key interest rate increases in 2022 and another two in February and March of the current year, thus bringing the main refinancing rate to 3.50%. The Bank of England, having started normalisation as early as December 2021, raised its main policy rate on four occasions in 2022 and another two in February and March 2023, setting it at 4.25% (see Chart II.3). The Swiss National Bank, despite the banking crisis that broke out in March, raised its policy rate by a further 50 basis points, on 24 March 2023, to 1.5%. The monetary policy stance remains restrictive in the major developing

3 OECD, *Economic Outlook, Interim Report: A Fragile Recovery*, 17 March 2023.

Chart II.3 Central bank key interest rates (1 January 2013 - 27 March 2023)

(percentages per annum; daily data)



Sources: Euro area: European Central Bank, interest rate on main refinancing operations. United States: Federal Reserve Bank, federal funds target rate. Japan: Bank of Japan, official discount rate. UK: Bank of England, repo rate. Switzerland: Swiss National Bank, policy rate.

economies as well (with the exception of Türkiye), in the face of inflationary pressures amplified by the depreciation of their currencies.

2.2 The euro area

During 2022, the euro area economic outlook deteriorated amid mounting geopolitical uncertainty, supply chain disruptions and record-high energy prices, which weakened economic sentiment and sent inflation skyrocketing. The decline in real incomes worsened the private consumption and investment outlook. The ECB's monetary policy tightening contributed to more adverse financial conditions, while the different pace at which central banks normalised their monetary policy to achieve price stability was one factor behind the depreciation of the euro. On the other hand, extraordinary fiscal support measures to counter rising energy prices costs and living costs, along with the increase of energy reserves, the recovery of the services sector and a strong labour market, helped to mitigate the negative economic impact. Meanwhile, the adoption of energy-saving measures by the Member States reduced the risk of significant energy shortages, hence of recession in the euro area.

Despite the fallout from the war, economic activity in the euro area in the first half of 2022 proved more resilient than expected earlier. Quarterly growth rates gradually decelerated from 0.9% in the second quarter of 2022 to 0.0% in the fourth quarter, mainly driven down by inflation and uncertainty, while the positive performance of tourism had an upward effect on growth. For 2022 as a whole, euro area GDP grew by 3.5%, compared with 5.4% in 2021. According to the ECB staff macroeconomic projections (March 2023), GDP growth is expected to slow to 1.0% in 2023, mainly due to a tightening of financing conditions, high inflation and weak foreign demand. This average projection masks significant differences across Member States, with higher growth rates expected in Ireland and Malta and lower in Germany, Finland and the Baltic states. However, in March 2023, the funding crisis and subsequent collapse of Silicon Valley Bank in the United States as a result of the rise of the federal funds rate fuelled an increase in uncertainty and a risk of a further tightening of financial conditions and of even slower growth in the euro area.

Despite a sharp rise in the level of prices during 2022 and a drop in consumer confidence to a historic low in September 2022, private consumption continued to recover, albeit at a slower pace, supported by labour market resilience and policy measures. Inflationary pressures and higher borrowing rates led to a gradual deceleration of consumer spending. Real household income was supported by fiscal policy measures to a lesser extent than in 2021, while nominal wage growth fell short of the rise in inflation. For 2022 as a whole, private consumption increased by 4.3%, compared with 3.7% in 2021, while marginal growth of just 0.7% is anticipated for 2023. Public consumption growth also weakened, from 4.3% in 2021 to 1.1% in 2022, reflecting the lifting of pandemic-related support measures, despite the adoption of emergency fiscal measures to address the energy crisis. In 2023, public consumption is projected to decline by 0.2% as policy support measures are phased out.

Geopolitical instability, rising borrowing rates and high energy costs had a negative impact on investment sentiment and expectations for future business activity. The tightening of financial

conditions and higher wage costs, driven by increases in minimum wages and inflation compensation, dented the investment momentum. A pick-up in euro area investment growth to 3.9% in the third quarter of 2022 relative to the previous quarter largely reflected a 91.8% increase in intellectual property investment in Ireland.[4] For 2022 as a whole, total investment in the euro area increased by 3.7%, compared with 3.8% in 2021, while a marginal increase of 0.3% is expected in 2023. Residential investment is expected to contract in 2023, adversely affected by rising interest rates, banks' tighter credit standards on loans to households and higher construction costs. On a positive note, the continued use of funds available under the European recovery instrument NextGenerationEU (NGEU) should support private investment, particularly in the area of green transition in view of the pressing need to strengthen Europe's energy autonomy.

The decline in foreign demand, mostly during the second half of 2022 as a result of high inflation and war-induced uncertainty, weighed on euro area trade. The euro area current account balance posted a deficit of 0.8% of GDP in 2022, compared with a surplus of 2.3% of GDP in 2021, mainly reflecting the euro depreciation and a deterioration in the terms of trade. On the other hand, the gradual easing of global supply chain bottlenecks, partly due to lower demand for durable goods, led to a fall in freight rates from their 2021 peak and, coupled with a rise in tourism, supported exports. For 2022 as a whole, total euro area exports of goods and services increased by 7.1%, compared with 10.7% in 2021, and are projected to increase by 3.4% in 2023. Net exports are expected to have a positive contribution to GDP in 2023, on the back of easing supply constraints, a short-run improvement in the terms of trade due to falling international energy prices, as well as weak domestic demand.

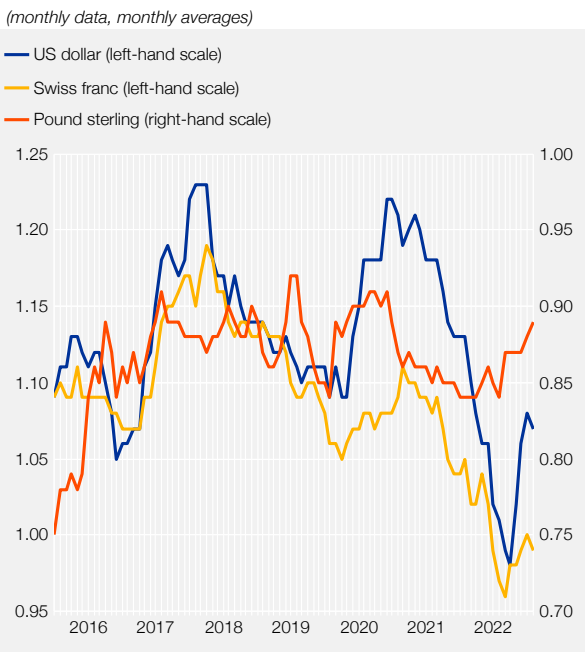
The labour market in the euro area remained resilient in 2022, reflecting labour hoarding tendencies, amid labour shortages. Total employment rose by 2.2% in 2022, compared with 1.4% in 2021. According to ECB staff projections (March 2023), employment should grow by a meagre 0.8% in 2023, in line with the expected economic slowdown and lower labour demand. Unemployment as a percentage of the labour force declined gradually to 6.6% by the fourth quarter of 2022, from 7.0% in the first quarter, and for the year as a whole it fell to 6.7% (from 7.7% in 2021). The unemployment rate in individual Member States, based on the latest monthly data (January 2023), ranged from 3.0% in Germany to 13.0% in Spain; for Greece, the most recent available figure refers to December 2022 and stands at 11.6%. An only marginal decline in the euro area unemployment rate to 6.6% is projected for 2023, amid an expected modest increase in the labour force.

Inflationary pressures intensified in 2022, without showing signs of abating any time soon. The historic increase in the level of prices stemmed from factors on the demand side, namely the lifting of pandemic-related restrictions and the recovery of the services sector, as well as supply-side factors, mainly associated with the surge in energy commodity prices (see Box II.1). Furthermore, the depreciation of the euro, but also labour market tightness, had an additional upward effect on consumer prices. Inflation in the euro area, as measured by the Harmonised Index of Consumer Prices (HICP), rose sharply to 7.1% in the first half of 2022 and to 10% in the fourth quarter of 2022. On an average annual basis, inflation stood at 8.4% in 2022, compared with 2.6% in 2021, while the fiscal support measures taken to tackle the energy crisis brought inflation down by 1.1 percentage points according to ECB estimates. In 2023, HICP inflation is projected by ECB staff (March 2023) to average 5.3%, chiefly on account of a sharp fall in energy inflation. In the first months of 2023, inflation edged downwards, reaching 8.5% in February 2023, from 9.2% in December 2022. HICP inflation excluding energy and food averaged 3.9% in 2022, up from 1.5% in 2021, mainly driven by the services and non-energy industrial goods components. In early 2023, it reached a new historic high; for the year as a whole, it is projected to peak at 4.6%, also fuelled by wage growth.

4 Underlying this increase is the transfer of intellectual property assets by large multinational corporations to Ireland, offering a more favourable tax treatment.

Chart II.4 US dollar, pound sterling and Swiss franc exchange rates vis-à-vis the euro (January 2016 - February 2023)

(monthly data, monthly averages)



Source: ECB.

Since mid-2022, credit expansion to the euro area economy has moderated, affected by monetary policy tightening and the resulting increase in borrowing costs, as well as by a decline in demand. The growth rate of bank credit to non-financial corporations decelerated gradually to 6.1% by January 2023, from 6.3% in December 2022 and 8.9% in October. The growth rate of loans to households fell from 4.7% in May 2022, the highest level since November 2008, to 3.8% in December 2022, before declining further to 3.6% in January 2023. The results of the ECB Bank Lending Survey for the fourth quarter of 2022 suggest a further tightening of credit standards for bank loans to firms and households, mainly due to banks' increased cost of funds and reduced risk tolerance (see Box VI.3). Demand for business loans decreased, mainly driven by higher lending rates, while loan demand for investment purposes recorded the sharpest decline. Finally, demand for housing loans declined to record lows, amid higher interest rates and lower consumer confidence and housing market prospects.

In 2022, fiscal policy in the euro area as a whole was restrictive, as the largest part of pandemic-related fiscal support measures was withdrawn (see Box II.2). The further fiscal support decided by governments in response to soaring energy prices and the high cost of living is estimated by the ECB to have amounted to about 0.7 percentage points of GDP in 2022. According to the ECB staff macroeconomic projections (March 2023), the fiscal deficit in the euro area as a whole is estimated at 3.7% of GDP in 2022, down from 5.1% of GDP in 2021; this improvement is largely attributable to stronger-than-expected GDP growth, which offset higher interest payment costs. In 2023, the fiscal deficit is projected to decline to 3.4% of GDP. Public debt, even though it continued to decline from the 2020 highs, will remain higher as a percentage of GDP than the 2019 figure and is estimated at 91% of GDP in 2022, compared with 95.3% in 2021, mainly because of the favourable interest rate-growth differential, which offset the primary fiscal deficit.

In 2022, the nominal effective exchange rate of the euro (vis-à-vis 41 trading partners) depreciated by 3.5%, in average annual terms, compared with an appreciation of 1.2% in 2021. In the first couple of months, the resilience of the euro area economy to the impact of the new variants of the coronavirus supported the euro. Nevertheless, geopolitical uncertainty and the different pace of monetary policy normalisation across the Federal Reserve System and the other central banks led to a depreciation of the euro against the US dollar and other currencies as from March 2022 in average monthly terms. Against the backdrop of concerns about a potential cut of Russian energy supplies to Europe and weak growth data for the euro area, the EUR/USD exchange rate fell to a 20-year low of 0.98 in October 2022; it rebounded thereafter, supported by a mild winter that alleviated energy supply concerns, stronger euro area economic data for the third quarter of 2022 and the ECB's successive key interest rate increases. In December 2022, it stood 7.8% above its October level, but still remained 6.3% weaker relative to December 2021. Similarly, the euro reached record lows against the Swiss franc in September 2022; by December, it had depreciated by 5.2% year-on-year. On the other hand, the euro strengthened by 2.4% against the pound sterling in the same period, amid political and financial turmoil in the United Kingdom (see Chart II.4). In early 2023, the euro recovered, on the back

of falling international energy prices, a lower risk of a deep recession in 2023, as well as more aggressive monetary policy normalisation by the ECB.

The risks to the euro area economy outlook remain significant and are tilted to the downside but are more contained in comparison with earlier projections. They continue to predominantly relate to geopolitical developments and volatility in international energy prices. The risk of disruption of Europe's energy supply remains elevated, in particular for 2023-24, in the event of a prolongation or escalation of the war in Ukraine, especially if combined with high energy demand by China. Meanwhile, the risk of severe disturbances in financial markets that could spill over to the real economy intensified in March 2023, with the collapse of Silicon Valley Bank in the United States and the rescue of Credit Suisse in Switzerland. Moreover, an abrupt deterioration in financial conditions could have adverse effects on the viability of businesses, financial stability and public debt dynamics in several Member States. A sharp correction in real estate prices amid rising borrowing rates would further dampen domestic demand. Also, more persistent inflationary pressures than currently expected, due to second-round effects via wages or renewed energy price hikes, could cause a de-anchoring of inflation expectations to the upside and more persistent increases in core inflation. Conversely, a faster-than-expected fall in inflation, reflecting the effectiveness of monetary policy, and a greater resilience of private consumption and investment, thanks to the use of NGEU funds, would lead to lower inflation and higher growth.

3 THE ECONOMIES OF SOUTH-EASTERN EUROPE

The strong economic recovery of south-eastern European countries in 2021 weakened in the course of 2022 across the region, yet it remained robust, with the average GDP growth rate estimated at 4.3% (see Table II.2). The Russian invasion of Ukraine has a very severe impact on most countries in the region through various economic channels, given their closer geographical, economic, historical and political ties with Russia.

The energy, food and transport cost hikes fuelled a surge of inflation in the region; in 2022, the annual change in the CPI ranged from 6.7% in Albania to as high as 72.3% in Türkiye. Those central banks of the region that are independent responded by gradually increasing their key interest rates, which in January 2023 stood at 1.42% in Bulgaria, 2.75% in Albania, 4.75% in the Republic of North Macedonia, 5.25% in Serbia and 7.0% in Romania. The growth of the region's GDP decelerated in 2022, mainly due to lower domestic demand, as high inflation and more unfavourable financing conditions eroded real incomes and hit private consumption and investment, particularly in the second half of the year. An additional negative impact came from a weakening in foreign demand, most notably by the EU member trading partners. Serbia, the largest economy of the Western Balkans, appears to have experienced the sharpest slowdown of GDP in 2022 (see Table II.2), due to lower exports to the euro area, which affected the country's manufacturing sector. The economic outlook for 2023 points to a further slowdown across all economies in the region, including Türkiye, as high inflation, increased energy costs and tighter financial conditions will further dent domestic and foreign demand.

Despite the international repercussions and uncertainty from the Russian invasion of Ukraine, in 2022 the Turkish economy recorded a decelerating yet high growth rate, compared with the other countries of the region, supported by private consumption and exports, while inventories had a negative contribution to growth. The unorthodox monetary policy of the country's central bank, with key interest rate cuts rather than hikes in a high inflation environment, pushed interest rates deeper into negative territory, leading to stronger credit expansion, thus resulting in a containment of the economic slowdown during the year, but at the same time to a gradual deterioration in the current account balance. The central bank of Türkiye lowered the policy rate on four occasions within 2022 (in August, September, October and November), from 14% to 9.0%, and further to 8.5% on 2 March 2023. Moreover, to support the currency, it introduced a banking regulation de-

Table II.2 Macroeconomic and banking indicators in south-eastern European countries

	GDP (volume, annual percentage changes)			Inflation (averages, annual percentage changes)			Balance of payments (% of GDP)			Fiscal balance (% of GDP)			Credit growth (annual percentage changes)			Capital Adequacy Ratio (%)			NPLs (%)		
	2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023	2020	2021	2022[2]	2020	2021	2022[2]	2020	2021	2022[2]
Albania	8.3	3.2	2.6	2.0	6.7	4.3	-7.6	-8.3	-7.9	-4.5	-3.4	-3.0	6.1	6.9	9.5	18.3	18.1	18.1	8.1	5.7	5.1
Bosnia-Herzegovina	7.1	4.0	1.3	2.0	11.0	8.0	-2.4	-3.1	-5.3	-0.3	-0.9	0.1	1.1	1.7	3.5	19.2	19.2	19.3	6.1	5.8	5.2
Bulgaria[1]	7.1	3.9	1.4	2.8	13.0	7.8	-0.5	-1.2	-3.0	-3.9	-3.4	-2.8	4.9	11.9	12.0	22.7	22.9	20.5	7.5	6.0	3.7
Montenegro	13.0	7.0	2.9	2.5	11.9	6.1	-9.2	-10.2	-9.3	-1.9	-5.6	-4.3	5.0	6.6	6.0	19.6	18.5	18.4	5.5	6.2	6.1
Republic of North Macedonia	3.9	2.3	2.5	3.2	14.1	7.9	-3.1	-7.8	-4.8	-5.4	-4.4	-3.3	6.4	5.8	9.7	16.7	17.3	17.7	3.3	3.1	3.2
Romania[1]	5.1	4.5	2.5	4.1	12.0	9.7	-7.5	-9.1	-8.8	-7.1	-6.5	-5.0	11.1	16.1	12.8	25.1	22.3	21.7	3.8	3.4	3.3
Serbia	7.5	2.7	2.4	4.1	11.9	10.6	-4.4	-8.6	-7.8	-4.1	-3.9	-3.4	12.3	9.1	8.9	22.4	20.8	19.5	3.7	3.6	3.2
Türkiye	11.4	5.6	2.8	19.6	72.3	54.1	-0.9	-5.9	-3.3	-2.3	-3.5	-4.0	36.4	28.0	78.3	19.4	17.8	19.5	4.1	3.1	2.2

Sources: European Commission, *European Economic Forecast, Autumn 2022*, November 2022, *Winter 2023 (Interim) Economic Forecast*, February 2023, and *EU Candidate Countries' & Potential Candidates' Economic Quarterly (CCEQ), 4th Quarter 2022*, January 2023, World Bank, *Western Balkans Regular Economic Report: Beyond the crises*, No. 22, Fall 2022, OECD, *Economic Outlook, Interim Report*, March 2023, and national central banks.
Note: Estimates for 2022 and projections for 2023.
1 Credit growth for the private sector in Bulgaria and Romania, total credit growth for the other countries.
2 Latest available month.

signed to discourage a replacement of lira-denominated deposits by dollar deposits and intervened in the foreign exchange market using its low foreign currency reserves. By end-2022, the Turkish lira had depreciated by 22.8% against the euro and by 27.3% against the US dollar year-on-year.

According to a preliminary estimate by the World Bank,[5] the direct damage costs caused by the earthquakes of 6 February 2023, which claimed more than 50,000 lives, come to USD 34.1 billion (or 4% of the Turkish 2021 GDP). This figure represents the physical damage costs and does not include the broader impact on the Turkish economy. Recovery and reconstruction costs will be much higher, potentially twice as high, given an expected rise in the cost of materials and labour. However, higher public and private investment in 2023 will likely mitigate the negative impact on the economy.

In Bulgaria and Romania, despite the economic slowdown, GDP grew at a robust pace in 2022, appreciably above the EU-27 average, supported by exports but also by wage growth and social transfers in response to the energy crisis that partly compensated for inflation-induced real income losses.

Risks to the short-term growth prospects of the countries in the region remain elevated in 2023. A persistence of inflationary pressures, a further deterioration of financial conditions, energy supply and security risks, as well as external imbalances, could lead to a more marked slowdown. Moreover, a potential political instability or resurgence of geopolitical tensions could hamper the progress of reforms in the countries of the region, while energy transition remains a key challenge.[6]

The war in Ukraine and its impacts worldwide, most notably on natural gas and food commodity prices, raised inflation dramatically in all the countries of the region in 2022. For 2023, a gradual

5 World Bank, *Global Rapid Post-Disaster Damage Estimation (GRADE) Report*, February 2023.
6 Albania has been the first country of the Western Balkans to adopt a National Energy and Climate Plan. This envisages an acceleration of the development of non-hydroelectric renewable energy sources as well as energy efficiency measures aiming to reduce greenhouse gas emissions.

decline in high energy prices is projected, particularly in the second half of the year. More specifically, in Bulgaria and Romania, HICP inflation rose sharply in 2022, only showing signs of stabilisation towards the end of the year, at high levels of around 14% in both countries. In addition, strong nominal wage growth, especially in the private sector, increased the risk of second-round effects on prices and inflationary expectations. In Türkiye, inflation started to decline in late 2022, after peaking at 85.5% in October. Serbia introduced price caps on basic foods in late 2021 and on oil in February 2022, combined with a cut in the excise tax on oil products. Moreover, in May 2022, it imposed multiple temporary bans on exports (of grain, flour and sunflower oil). In July, the government decided to cover from the state budget any price difference in natural gas imports (compared with November 2021) for wholesale suppliers, banning natural gas exports. In Albania, higher import prices drove up inflation to a 20-year high. It should be noted that rising electricity prices in international markets did not affect households until October 2022, as the public sector absorbed these price increases. To address the impact of the war on prices and incomes, the government adopted a Social Resistance Package in March 2022, including increases in pensions, subsidies to socially vulnerable groups and temporary income tax relief for all, as well as a temporary tax-free oil support scheme for farmers. In September 2022, the package was expanded with measures targeting large consumers of electricity, a minimum wage increase and stepped-up social transfers.

Current account balances remained in deficit in 2022 in all the countries of the region and, as a percentage of GDP, deteriorated under the impact of higher energy import costs. Most notably, in Türkiye, a growing current account deficit and other external imbalances catapulted the country's risk premium to an 18-year high. In all the countries of the region, with the exception of Montenegro and Türkiye, fiscal deficits as a percentage of GDP improved in 2022, due to robust nominal GDP growth. The banking systems of south-eastern European countries remain resilient and, in most of them, NPL ratios declined in 2022 compared with the previous year.

As regards the Stabilisation and Association Process (SAP) of the Western Balkans, on 12 October 2022 the European Commission adopted its 2022 Enlargement Package.[7] It also provided a detailed assessment of the progress made by the candidate countries and Türkiye, with a focus on the implementation of fundamental reforms that have been set as key priorities. On the same date, the European Commission recommended that the EU Council grant Bosnia and Herzegovina candidate status. On 19 July 2022,[8] Albania and the Republic of North Macedonia entered a new phase in their relations with the EU, following the first intergovernmental conferences on accession negotiations.

7 European Commission, "2022 Enlargement package: European Commission assesses reforms in the Western Balkans and Türkiye and recommends candidate status for Bosnia and Herzegovina", press release of 12.10.2022.

8 Council of the EU, "Intergovernmental Conference at Ministerial level on the Accession of Albania" and "Intergovernmental Conference at Ministerial level on the Accession of North Macedonia", press releases of 19.7.2022.

Box II.1

THE ROLE OF SUPPLY AND DEMAND AS DRIVERS OF INFLATION IN ADVANCED ECONOMIES

Inflation in advanced economies has risen substantially since mid-2021 to reach historically high levels in 2022, leading to a gradual normalisation of monetary policy after a protracted period of almost zero interest rates and quantitative easing. There seems to be no consensus in the public debate about the relative contribution of supply and demand factors to surging inflation. However, identifying the factors behind rising prices is key to effective monetary policy.

Specifically, when inflation is mainly demand-driven, tight monetary and fiscal policies are seen as key policy tools for addressing high inflation. On the other hand, when the rise in prices is due to supply-side constraints, an overly tight monetary policy can lead to a greater than necessary economic slowdown, or even to a contraction in GDP, without adequately containing inflationary pressures.

This box explores whether the recent exceptional surge in the price level across advanced economies largely reflects demand factors or supply disruptions. First, the major supply and demand factors that affected the price level at the current juncture are presented. Next, the main methodological approaches used to analyse the role of demand and supply in driving inflation in the United States and the euro area during 2022 are described and the key takeaways from recent studies are outlined. Last, some suggestions for enhancing the effectiveness of monetary policy in advanced economies are provided.

The determinants of supply and demand at the current juncture

The successive shocks that have hit the global economy since early 2020 were unprecedented and multi-faceted, and had a huge economic impact, resulting in an exceptional surge in the general price level owing to a number of both supply- and demand-side factors, which are difficult to disentangle. Inflation in advanced economies was affected by individual factors to a varying degree depending on each economy's exposure to global supply chains, the contribution of its services sector to output, as well as, more recently, its reliance on Russian natural gas and on energy imports in general.

In particular, in 2020, the COVID-19 pandemic led to an exogenous reduction in the supply of goods and services and subsequently to a sharp decline in demand, mainly in the services sector, as a result of the lockdown measures. Global supply bottlenecks, which were exacerbated by China's zero-COVID policy, sustained supply constraints throughout 2021. Against this backdrop, the deflation observed in 2020 amid an unparalleled recession was followed by a rapid return of prices to their pre-pandemic levels in 2021, with the reopening of economies and the release of pandemic-related pent-up demand.[1] A number of studies suggest that excess demand, stemming from the extensive and coordinated emergency monetary and fiscal policy responses to the pandemic, as well as from the increase in savings during the pandemic, has played a fundamental role in inflationary pressures.[2] This abrupt rebound in demand, combined with the depletion of inventories and the supply chain bottlenecks, have skyrocketed global transport costs and driven commodity prices upwards (see Chart A).

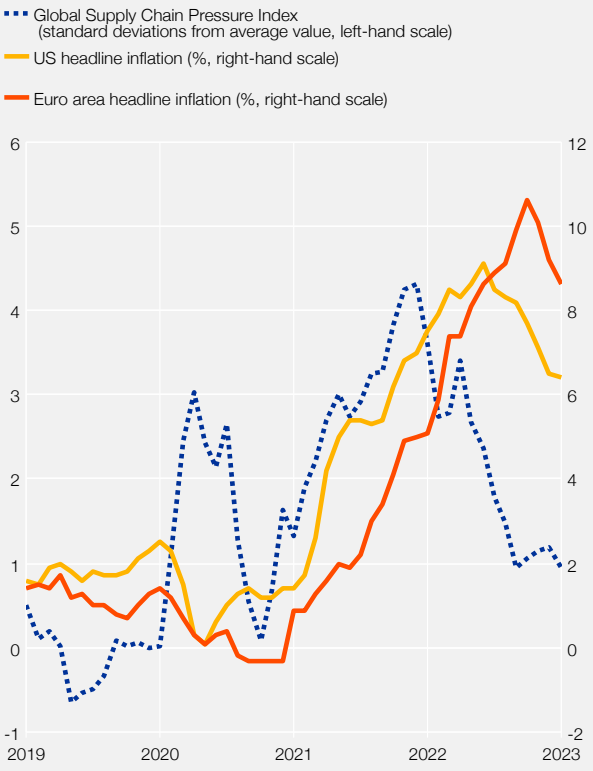
On top of the pandemic-related factors, Russia's invasion of Ukraine in early 2022 was another supply-side shock, primarily to energy prices and secondarily to food prices, further adding to inflationary pressures.[3] At the same time, the war-induced oil and gas supply shortages were compounded by an already strong demand for fossil fuels and gas in industry and transport after the lifting of pandemic-related restrictions, driving upwards global energy prices and hence inflation. The new emergency fiscal support measures to tackle the energy crisis and the elevated cost of living have also kept, to a certain extent, energy demand at high levels. It is telling that the contribution of energy to euro area HICP inflation peaked at 4.1 percentage points in the third quarter of 2022, from around 1 percentage point in the second quarter of

1 The rise in inflation in 2021 was in a large part attributed to base effects, which were strong, particularly for the energy component. Nevertheless, base effects explained only 2 percentage points of the total 5.3 percentage point increase in euro area headline inflation in December 2021. See ECB (2022), *Annual Report 2021*, Box 1 "Factors underlying the surge in HICP inflation", and Rubene, I. and G. Koester (2021), "Recent dynamics in energy inflation: the role of base effects and taxes", ECB, *Economic Bulletin*, Issue 3/2021.

2 Furman, J. (2022), "This Inflation Is Demand-Driven and Persistent", *Project Syndicate*, 20.4.2022.

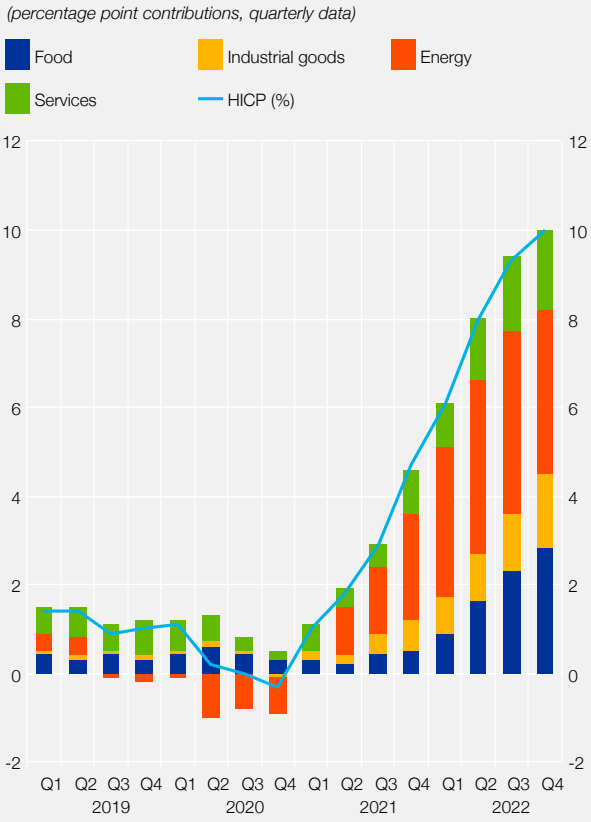
3 For the period 2021-22 as a whole, several studies cite as the principal factor behind rising inflation the role of supply disruptions, in the form of prolonged bottlenecks in global supply chains, supply shortages in semiconductors and increased shipping costs, or higher energy prices, because of the war and the ensuing sanctions against Russia. See Attinasi, M.G., R. De Santis, C. Di Stefano, R. Gerinovics and M.B. Tóth (2022), "Supply chain bottlenecks in the euro area and the United States: where do we stand?", ECB, *Economic Bulletin*, Issue 2/2022, and OECD (2021), *Economic Outlook – Interim Report*, Box 1 "The impact of commodity prices and shipping costs on inflation", September.

Chart A Headline inflation and global supply chain pressures



Sources: Federal Reserve Bank of New York (Global Supply Chain Pressure Index), US Bureau of Labor Statistics (US inflation) and Eurostat (euro area inflation).

Chart B Euro area headline inflation and its components



Source: Eurostat.

2021 (see Chart B). Although the contribution of energy prices to inflation remains high, the stronger contribution of the food and services components to HICP inflation since early 2022 demonstrates the equally important role of demand factors in driving inflation.

Methodological approaches to inflation analysis

The need to explore the role of supply and demand as drivers of inflation at the current juncture has led to the adoption of methodologies that analyse aggregate data on the Consumer Price Index (CPI) at a more granular level. The simplest approach is to assess price developments by decomposing CPI into those sub-categories of goods and services that are either associated with restrictions on consumption during the pandemic and subsequently with increased demand after the lifting of such restrictions (e.g. services and clothing), or are affected by global value chain bottlenecks and supply shortages (e.g. cars, durable goods and equipment).[4] However, such a simplistic analysis may overlook a significant part of the impact of supply and demand factors on other sub-categories of goods, whilst making difficult a comparison with periods when the impact of these factors is not so clear.

A fundamental methodological approach in the relevant literature is the recent empirical estimation by Shapiro (2022a; 2022b) on the role of supply and demand in driving inflation in the United States.[5] This approach separates the categories of the personal consumption expenditure (PCE) price index on a monthly basis into supply-

4 For an analysis, see ECB (2021), "The role of demand and supply factors in HICP inflation during the COVID-19 pandemic – a disaggregated perspective", *Economic Bulletin*, Issue 1/2021.

5 Shapiro, A.H. (2022a), "How Much do Supply and Demand Drive Inflation?", FRBSF Economic Letter 2022-15, and Shapiro, A.H. (2022b), "Decomposing Supply and Demand Driven Inflation", Federal Reserve Bank of San Francisco Working Paper 2022-18.

driven and demand-driven groups.[6] It should be noted that the empirical framework identifies unexpected changes in price and quantity, which means that it does not take into account shifts in the long-run trend that are more likely to reflect structural factors such as technological improvements, cost-of-living adjustments or demographic changes.[7] Recent studies by the OECD and the ECB[8] follow Shapiro's empirical framework, extending the analysis to selected OECD and euro area countries.[9]

The relative contribution of supply and demand to inflation

The aforementioned studies show that both supply-side and demand-side factors contributed to the rise in inflation between mid-2020 and mid-2022. According to OECD estimates, supply factors account for roughly half of total inflation, on average, in eight selected advanced economies, albeit with notable cross-country differences. Specifically, the contribution of demand factors was stable or increasing over the period under review in the United States, Canada, Australia, the United Kingdom and France, even surpassing in some of these countries (the United Kingdom, Canada and Australia) that of supply factors in the second quarter of 2022.

Turning to the euro area, the ECB finds that the increase in core inflation since the third quarter of 2021 was initially due to supply factors, but the contribution of demand factors became gradually larger to almost match that of supply factors in the first half of 2022. With regard to the goods and services categories, in August 2022 non-energy industrial goods (NEIG) inflation could be attributed to supply and demand factors by 60% and 40%, respectively, whereas services inflation by 30% and 70%, respectively. The weaker increase in services inflation relative to NEIG inflation was entirely driven by the different exposures to global supply shocks, as the demand component was essentially similar for both categories with the post-pandemic reopening of the economy.[10]

In the same vein, the BIS (see footnote 9) estimates that the surge in inflation between mid-2021 and mid-2022 reflects an interplay of extraordinarily expansionary demand conditions and supply constraints. In the United States, recent inflation dynamics have predominantly been driven by strong demand and to a lesser extent by tight supply. By contrast, in the four major euro area economies, supply factors are estimated to have played a somewhat greater role compared with the United States in the first half of 2022, which is consistent with the greater exposure of the euro area to the energy crisis and the consequences of the war in Ukraine.

The above empirical estimations are subject to high uncertainty. This is evidenced by the case of the United States, for which the quantitative results vary across different studies, despite the availability of highly granular data. For example, in contrast with the aforementioned BIS study, Shapiro (2022a; 2022b; see footnote 5) estimates that supply factors dominate over demand factors in explaining recent developments in US inflation. The methodological challenges, such as separating inflation into supply-driven and demand-driven components or

6 Demand-driven categories are identified as those where an unexpected change in price moves in the same direction as the unexpected change in quantity in the consumer basket in a given month. Supply-driven categories are identified as those where unexpected changes in price and quantity move in opposite directions. Finally, when a change in price or quantity is close to zero, the category is labelled as "ambiguous". The methodology uses a threshold, so that about 20% of the regression residuals are labelled as ambiguous. See Shapiro, A.H. (2022c), "A Simple Framework to Monitor Inflation", Federal Reserve Bank of San Francisco, Working Paper 2020-29.

7 A drawback of the methodology is that it cannot quantify the relative weight of supply and demand, but only assesses their relative role in shaping inflation. Therefore, even in demand-driven categories, supply may still play a role, although not a primary one, so the relative importance of supply in shaping prices could be underestimated.

8 OECD (2022), "Supply- and Demand-driven inflation in OECD economies", Box 1.1, *Economic Outlook*, November, Vol. 22, Issue 2, 19-20, and ECB (2022), "The role of demand and supply in underlying inflation: decomposing HICPX inflation into components", *Economic Bulletin*, Issue 7/2022.

9 Due to lack of monthly data for estimating quantity in the consumer basket, most studies use either quarterly national accounts data on consumer spending in constant prices or the available quarterly deflated turnover data for goods and services. Yet one caveat is that the alternative indices proxying for quantity in the consumer basket are not available for all CPI sub-categories and are thus matched to more than one sub-category in the model estimation. Under an alternative empirical framework, a BIS study estimates a structural factor model using quarterly data for the United States and the euro area. See BIS (2022), "What drives inflation? Disentangling demand and supply factors", BIS Working Paper No. 1047.

10 Lane, P. (2022), "Inflation Diagnostics", *The ECB Blog*, 25.11.2022.

lack of comparable data across countries and across the goods and services sub-categories, as well as the peculiar features of the pandemic period warrant a cautious interpretation of the results.

Conclusions and policy recommendations

The pandemic and energy crises are posing unprecedented challenges to economic policy makers. A key source of uncertainty is how to accurately diagnose the relative contribution of demand and supply factors to rising inflation at the current juncture. The present analysis shows that the recent surge in prices largely reflects the increased contribution of supply-side constraints, especially in the euro area, compared with the pre-pandemic period. This may be signalling heightened risks for advanced economies, as supply disruptions tend to lead to both higher prices and lower output. However, the contribution of demand remains crucial, despite the variation observed across advanced economies. This cross-country heterogeneity in the relative importance of supply and demand factors driving inflation points to differences in the effectiveness of monetary policy and to possible risks of economic imbalances. Besides, the effect of "ambiguous" factors, which cannot be labelled as entirely supply- or demand-related, remains significant, adding further uncertainty to the effective transmission of monetary policy.

The strengthening in supply-driven inflation at the current juncture means that steep interest rate hikes by monetary authorities aimed at reining in inflationary pressures may be less effective in bringing prices down. This is due to the fact that tight monetary policy affects the price level in an economy via lower domestic demand and employment. Against this backdrop, the adoption of policies on the supply side so as to minimise strains on the labour market, the production of raw materials and energy sufficiency could lead to a faster decline in inflationary pressures and smaller output losses. At the same time, a more gradual increase in nominal interest rates to achieve price stability, as well as the use of an appropriate empirical framework to track the short-term contribution of supply and demand factors to price developments would allow a timely assessment of second-round effects of monetary policy on aggregate demand and thus on output and prices.

Box II.2

OVERVIEW OF FISCAL SUPPORT MEASURES AND THEIR MACROECONOMIC EFFECTS IN THE EURO AREA AND THE UNITED STATES DURING THE COVID-19 PANDEMIC

The outbreak of the pandemic, with negative consequences worldwide, and the ensuing imposition of lockdown measures led to a forced suspension of a broad range of economic activities for quite a long time. Faced with the risk of a deep recession, governments provided considerable support to businesses and households. Both the euro area and the United States promptly addressed the economic fallout of the pandemic, by deploying large fiscal packages. However, the recovery has been largely uneven across the two economies, reflecting not only their inherent differences, but also the different approaches taken by the respective governments regarding support measures.[1] Specifically, euro area countries put emphasis on employment support schemes, whereas the United States opted mostly for measures to support disposable income. This box, first, provides a brief overview of fiscal support measures, with a focus on the euro area and the United States, and, second, discusses the economic recovery achieved so far on both sides of the Atlantic.

Fiscal policy response to the economic fallout of the COVID-19 pandemic

In order to stabilise aggregate demand in cases of mild shocks, automatic stabilisers have proved to be effective policy tools in the hands of fiscal authorities.[2] However, the economic shock caused by the lockdowns in spring 2020

1 For a discussion of the factors explaining the differences across advanced economies in the depth of the pandemic-induced recession and in their resilience, see Dimitropoulou, D. and A. Theofilakou (2021), "Explaining the cross-country differences in the economic fallout during the COVID-19 pandemic crisis", Bank of Greece, *Economic Bulletin*, No. 53, 29-48.

2 For an analysis of how automatic fiscal stabilisers operated during the pandemic crisis and their effectiveness, see Bank of Greece (2021), *Annual Report 2020*, Box V.1.

was unprecedented in magnitude and duration. For this reason, national governments reacted quickly and introduced a wide range of discretionary fiscal support measures, targeting the businesses and households most hit by the pandemic and the associated restrictions.

Such discretionary measures aimed to cushion the economic shock, by protecting employment and maintaining existing jobs, containing the fall in private consumption and supporting disposable income. The main fiscal support measures that were adopted can be grouped into two categories. First, directly budget-relevant measures, such as income transfers through benefits or tax and social security contribution deferrals. Job retention schemes,[3] which provided support both for businesses and households, played a crucial role.[4] Second, measures to support liquidity and solvency through loan moratoria, the provision of public guarantees and government loans, trade credit insurance and capital injections (e.g. to airline companies).

Euro area

In 2020, in order to contain the coronavirus pandemic and minimise its socio-economic impact, euro area governments adopted considerable fiscal and liquidity support measures at the national level.[5] In particular, according to the European Commission, the discretionary fiscal measures implemented by governments in the euro area in 2020 amounted to around 4% of GDP, on average, at the euro area level, while loan guarantees and other liquidity support measures for businesses, which however have no direct budgetary effect, reached around 17% of euro area GDP.[6] An alternative metric of fiscal support is based on the general government primary surplus. The change in the primary surplus captures the impact of both the discretionary measures that were introduced and expired or expected to expire, as well as the impact of automatic stabilisers (excluding liquidity support and guarantee-providing measures that have no direct budgetary impact). In euro area countries on average, the cumulative change in the primary fiscal balance relative to 2019 is estimated at 13.8% of GDP in 2020-21 and 17% of GDP in 2020-22. If inflows of funds from the Recovery and Resilience Facility (RRF) are also taken into account, support comes to 17.9% of GDP.[7] It should be noted that by the first half of 2022 the pandemic-related support measures that had been introduced over the previous two years had been lifted to a great extent.

Most euro area governments introduced policies to support businesses, with a focus on SMEs, and households during the period of the containment measures. Business support policies mostly included measures to enhance firms' liquidity, in order to prevent lay-offs and/or bankruptcies.[8] Sizeable measures were adopted

3 Job retention schemes can take three forms. First, short-time work schemes, such as Kurzarbeit in Germany, under which businesses facing difficulties because of COVID-19 can, subject to conditionality, temporarily reduce their employees' working hours instead of laying them off. Businesses are only burdened with the cost of actual hours worked by their employees, while employees receive a government grant for the hours not worked, thereby securing their full-time employment income. Second, furlough schemes, which provide grants to workers whose employment contracts are suspended, such as the Spanish ERTE scheme. Third, wage subsidy schemes, which entail the subsidisation of businesses for recruiting unemployed persons, such as the Dutch Noodmatregel Overbrugging Werkgelegenheid (NOW). A crucial aspect of all these schemes is that workers keep the contract they have signed with their employer even if their work is suspended. See OECD (2020), "Job retention schemes during the COVID-19 lockdown and beyond".

4 For more details about job retention schemes across countries, see Eichhorst, W., P. Marx, U. Rinne and J. Brunner (2022), "Job retention schemes during COVID-19: A review of policy responses", IZA-Institute of Labor Economics, IZA Policy Paper No. 187.

5 On top of the national measures implemented, the EU's response has also been significant. Such actions are not included in the present analysis.

6 See European Commission, *European Economic Forecast*, Autumn 2020.

7 See Licchetta, M., G. Mattozzi, R. Raciborski and R. Willis (2022), "Economic adjustment in the euro area and the United States during the COVID-19 crisis", European Economy Discussion Paper No. 160, European Commission.

8 Through the temporary SURE instrument, which provides to all EU countries credit (up to EUR 100 billion), in the form of short-term loans at low interest rates, EU Member States can obtain funding for the deployment of new or the extension of already existing job retention schemes, such as short-time work and wage subsidy schemes, as well as for health-related measures. The European Commission estimates that SURE supported about 31.5 million workers and 2.5 million businesses in 2020, and that nine million people participated in SURE-funded job retention schemes in 2021. See https://www.eca.europa.eu/Lists/ECADocuments/INSR22_28/INSR_SURE_EN.pdf.

to improve access to finance of businesses through public guarantees, government loans on favourable terms, or subsidies. On the demand side, many countries provided targeted income support to vulnerable social groups and households or regions most affected by the containment measures, mainly in the form of direct cash transfers.[9]

Yet, there is significant cross-country heterogeneity within the euro area in terms of both the amount and the composition of such measures. The International Monetary Fund (IMF), in an overview of policy responses during the pandemic crisis, classifies discretionary measures into two categories: (i) above-the-line support; and (ii) below-the-line measures and contingent liabilities.[10] On the basis of data on the discretionary fiscal measures that were announced between January 2002 and June 2021 (with an implementation horizon from 2020 onwards), Italy and Germany stand out, with overall measures surpassing 45% and 40% of their 2020 GDP, respectively, followed by France with about 25% and Spain with 22%. The composition of measures is also very different. Large European economies, such as Germany, France, Italy and Spain, announced government loans and guarantees to a much greater extent than above-the-line support. Consequently, the ranking changes if only above-the-line measures are taken into account: Greece ranks first, with overall measures accounting for 17.5% of 2020 GDP, followed by Germany and Austria (around 15% each), Italy (around 11%), France (9.6%) and Spain (slightly above 8%).[11]

It should also be noted that the majority of European countries (including the United Kingdom) had already in place relatively generous unemployment benefit schemes and short-time work schemes prior to the pandemic. With the outbreak of the pandemic and the ensuing imposition of restrictions, all euro area countries introduced such schemes or expanded existing ones to protect employment and support incomes.[12] Overall, the use of job retention schemes was high, as suggested by the OECD, although cross-country differences were observed in their design and implementation.[13]

United States

In the United States, the cumulative change in the primary fiscal balance relative to 2019 was larger than in the euro area and is estimated at 14.9% of GDP in 2020-21 and 17.4% of GDP in 2020-22.[14] Unlike in euro area countries, discretionary support in the United States was provided mostly through directly budget-relevant (above-the-line) measures. Thus, on the basis of IMF data, out of 28% of GDP discretionary fiscal measures (announced in the United States between January 2020 and June 2021 with an implementation horizon from 2020 onwards), above-the-line measures accounted for slightly more than 25% of 2020 GDP.[15] According to a study by Bruegel, the United States spent USD 561 billion on payment deferrals for taxes and social security contributions to ease liquidity conditions for firms and workers, as well as another USD 560 billion on liquidity-providing measures

9 For the economic measures taken in 2020 to address the consequences of the coronavirus crisis, see Bank of Greece (2020), *Monetary Policy 2019-2020*, Box II.1.

10 For example, the first category includes measures such as higher public spending on the health sector, extension of unemployment benefits, grants, tax and social security contribution moratoria. The second category comprises measures such as state-guaranteed loans, capital injections and government guarantees.

11 IMF (2021), Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic, October 2021, IMF Fiscal Affairs Department, Washington, DC.

12 In Germany, for instance, the existing short-time work scheme became temporarily more flexible and broader in scope. It is estimated that almost 10 million people had benefited from the Kurzarbeit scheme by mid-May 2020, compared with around 1.4 million people during the global financial crisis (https://www.bundesfinanzministerium.de/Web/EN/Home/home.html).

13 For example, during the first wave of the pandemic, the jobs supported by some job retention scheme as a percentage of total dependent employment was 35.2% in France, 30% in Italy, 20.5% in Spain and 15.5% in Germany. By May 2020, job retention schemes had supported about 50 million jobs across the OECD, about ten times as many as during the global financial crisis. See OECD (2020), "Job retention schemes during the COVID-19 lockdown and beyond".

14 See footnote 7.

15 It should be recalled that the change in the primary balance reflects the effect of emergency measures and automatic stabilisers, but does not capture the effect of measures without direct fiscal impact, while the IMF definition includes measures with or without fiscal impact and excludes the effect of automatic stabilisers.

through government loans and public guarantees to firms. The respective amount for immediate fiscal impulse measures, i.e. additional government spending (such as expenditure for healthcare, job retention schemes, subsidising SMEs, public investment and foregone revenues), was USD 1,940 billion.[16]

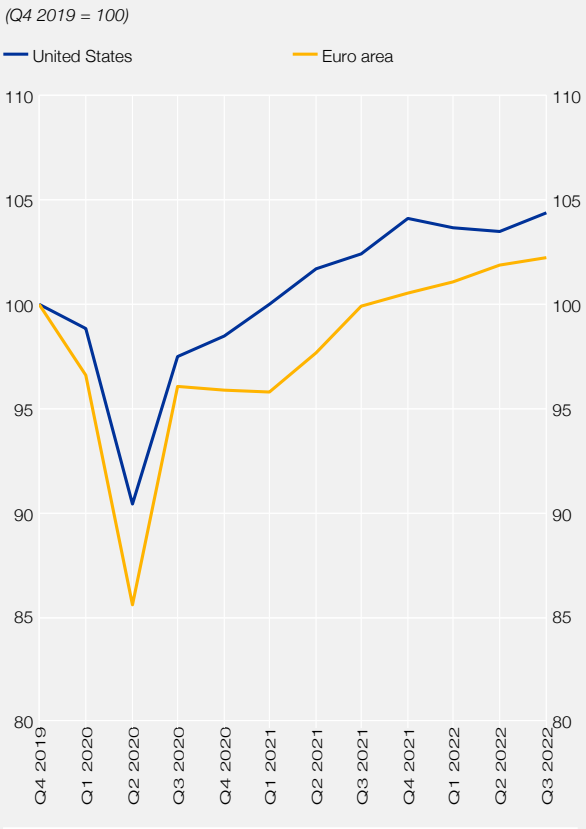
Specifically, the Coronavirus Aid, Relief, and Economic Security (CARES) Act[17] in 2020 provided direct economic assistance for American workers, households, small businesses and industries, amounting to about 11% of GDP (USD 2.3 trillion).[18] Through Economic Impact Payments, amounting to about 6% of GDP, households received relief payments of up to USD 1,200 per adult for eligible individuals and USD 500 per qualifying child.[19] At the same time, owing to soaring unemployment and the relatively modest unemployment benefits in the United States (compared with Europe), the US administration announced Short-Time Compensation (STC) as part of the CARES Act. However, the use of STC programmes remained rather weak, and the US administration introduced various temporary wage subsidy schemes, such as the Paycheck Protection Program (PPP)[20] and the Employee Retention Tax Credit (ERTC).[21] Notwithstanding this, most employers in the United States opted for temporary lay-offs. Respectively, on their part, many unemployed persons lacked incentives to seek employment, as they received unemployment benefits plus an additional weekly payment of USD 600 for four months under the CARES Act.[22]

The economic consequences of the pandemic and of the related support measures

Despite the timely response of governments to support their economies, the recession caused by the pandemic was deep, albeit short-lived. The economic slowdown was stronger in the euro area than in the United States and the return of GDP to its pre-pandemic level occurred in the first quarter of 2021 for the United States, compared with the third quarter of 2021 for the euro area (see Chart A).

As already mentioned, the composition of support measures differed across the euro area and the United States, reflecting differences in labour markets and welfare structures, as well as in the targeting of measures. This led to uneven developments in employment between the two economies (see Chart B). More specifically, employment in 2020 declined by 6% in the United States and recovered to pre-pandemic level in the third quarter of 2022. In the euro area, the decline averaged 2% and employment recovered to pre-pandemic level in the first quarter of 2021, i.e. four quarters earlier than in the United States.

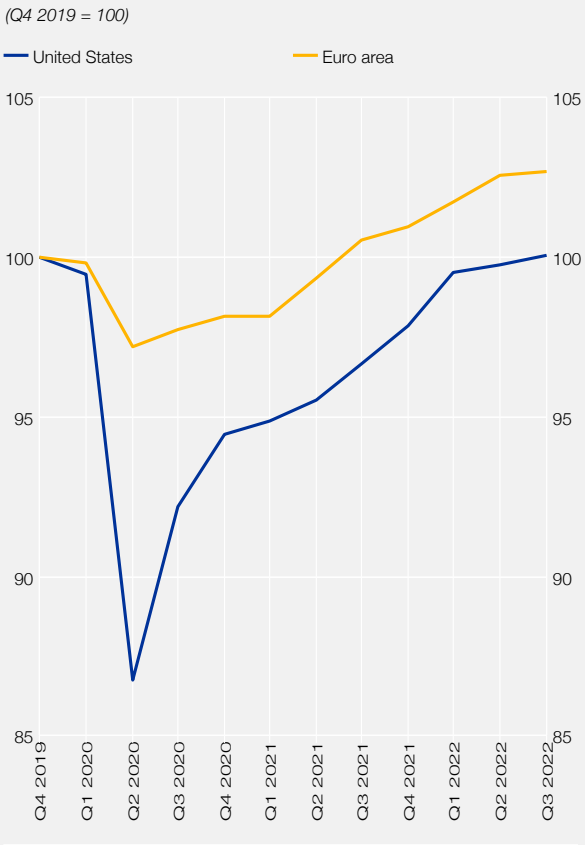
Chart A Real GDP



Source: OECD.

16 https://www.bruegel.org/dataset/fiscal-response-economic-fallout-coronavirus.
17 https://home.treasury.gov/policy-issues/coronavirus/about-the-cares-act.
18 https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#U.
19 For a four-member family, these payments provided direct economic relief totalling up to USD 3,400 (https://home.treasury.gov/policy-issues/coronavirus/assistance-for-american-families-and-workers/economic-impact-payments).
20 Under the PPP, businesses employing up to 500 persons could apply for loans in order to cover their payroll costs and retain their employees (https://home.treasury.gov/policy-is- sues/coronavirus/assistance-for-small-businesses/paycheck-protection-program).
21 The ERTC provides a tax credit to businesses whose sales dropped by more than 50% (https://www.irs.gov/newsroom/covid-19-related-employee-retention-credits-general-information-faqs).
22 Springford, J. and S. Tilford (2020), "Is the US or Europe more resilient to COVID-19?", Center for European Reform.

Chart B Employment



Source: OECD.

Chart C Private consumption

Source: OECD.

Although the fall in employment was stronger in the United States, private consumption declined less than in the euro area (see Chart C). This was mainly due to the direct transfers to households by the US administration, which boosted real disposable income in 2020 and 2021. Against this backdrop, private consumption in the United States had already returned to pre-pandemic level by the first quarter of 2021, whereas euro area consumption, still to this day, falls short of the level observed in the fourth quarter of 2019.[23]

The increase in private consumption in the United States indicates that rising inflation greatly reflects demand-side effects, alongside supply-side effects. In the euro area instead, inflation was mainly driven by a series of supply-side shocks, with high energy costs being the key driver.[24] The successive waves of the pandemic caused major supply chain disruptions that exacerbated with the outbreak of the war, initially leading to higher prices of commodities and food and subsequently pushing inflation upwards due to pass-through effects. Meanwhile, the phasing-out of pandemic-related restrictions released pent-up demand, especially in the services sector, which in turn strengthened upward price pressures. Lastly, the euro area economy had been affected by imported inflation from the United States.[25]

23 It should be noted that the slow recovery of euro area consumption is also due to a worsening in the terms of trade, as a result of the euro area's greater energy reliance on natural gas imports compared with the United States, which is reducing disposable income.

24 For a detailed discussion on the role of demand and supply in driving inflation in the United States and the euro area, see Box II.1 herein.

25 See the opening remarks of Bank of Greece Governor Yannis Stournaras at the panel "Monetary Policy fit for today and tomorrow", 13th Limassol Economic Forum, 21.10.2022. See also Hall, S.G., G.S. Tavlas and Y. Wang (2022), "Drivers and Spillover Effects of Inflation: the United States, the Euro Area, and the United Kingdom", Discussion Paper No. 22-13, Department of Economics, University of Birmingham (https://ideas.repec.org/p/bir/birmec/22-13.html).

Conclusions

Both the euro area and the United States responded to the pandemic-induced economic shock with unprecedented fiscal support measures. The quantification of the fiscal measures that were implemented in response to the COVID-19 crisis, as well as a comparison across euro area countries or between the euro area and the United States, can be very challenging. First, the initial estimates of the fiscal cost to euro area countries are often subject to material revisions, especially because of smaller uptakes.[26] Second, it is not always easy to identify which measures are discretionary and which are the result of automatic stabilisers. It should be stressed that European economies have typically incorporated in their economies much stronger automatic stabilisers than in the US economy. In order to achieve an equivalent total stabilisation effect, more sizeable discretionary measures are required in the United States than in Europe.

Both the euro area and the US economies have recovered markedly, with GDP now standing above its pre-pandemic level. Recovery in the United States was mostly led by consumption. In the euro area, while incomes and employment have recouped their losses, this is not the case with demand. Demand still falls short of its pre-pandemic level, because of both consumption and investment, although RRF funds will help to cover the shortfall in investment. These divergent developments suggest that the drivers of high inflation facing both economies (7.2% in the United States and 10% on average in the euro area in the fourth quarter of 2022) are different. In the United States, rising inflation is largely demand-driven. By contrast, the drivers of euro area inflation are complex and reflect the multiple supply-side inflationary shocks hitting the economy.

26 For many of the support programmes, actual uptake is considerably smaller and varies from one country to another. The European Systemic Risk Board (ESRB) provides information on the announced volumes and the uptake of measures, based on the reports published by national macroprudential authorities. In the first quarter of 2021, the overall volume of announced fiscal measures stood at 18.7% of GDP, up from 14.6% in the third quarter of 2020 (loan moratoria are not included), while the actual uptake of measures increased to 6.9% from 4.2% of GDP, respectively; see Wieland, V. (2022), "Overview of how major economies have responded to the Covid-19 pandemic: Growth trajectories, debt sustainability, best practices", European Parliament.

Box II.3

EU AND EURO AREA POLICY RESPONSES

Russia's war of aggression against Ukraine

The year 2022 was marked by Russia's invasion of Ukraine and the ongoing war with severe human losses and economic repercussions. The response of the EU institutions was immediate and decisive, focusing on humanitarian, political, economic and military support to Ukraine, as well as unprecedented sanctions against Russia. Since the outbreak of the war, the European Council has adopted ten packages of economic sanctions, including targeted restrictive measures against a total of 1,473 individuals and 205 entities. Sanctions include a ban on Russian oil imports to the EU and price caps on Russian seaborne crude oil and petroleum products exported to third countries. Total support to Ukraine from the European Union, EU Member States and European financial institutions amounts to EUR 67 billion, including EUR 25 billion of macro-financial assistance in the form of highly concessional long-term loans, helping Ukraine to restore critical infrastructure and reconstruct its economy. In June 2022, the European Council granted Ukraine the status of EU candidate country. Finally, the EU's efforts to secure global exports of grain and oilseeds from Ukraine through "Solidarity Lanes" were very important for addressing the food crisis that hit some developing countries.

Energy crisis in Europe

The Russian invasion of Ukraine has triggered an energy crisis in Europe, which required a closer coordination of policy actions at the EU level. These policy actions aimed at securing energy supply, reducing energy demand and mitigating skyrocketing energy prices. In March 2022, the European Council agreed on phasing out the EU's dependency on fossil fuel imports from Russia and diversifying energy supply through higher imports of liquefied

natural gas (LNG) from countries other than Russia and a faster development of renewable energy sources (RES). In June 2022, the EU adopted a Regulation to ensure that underground gas storage facilities in Member States are adequately filled ahead of the coming winter. Subsequently, EU energy ministers agreed on a voluntary reduction of 15% in gas consumption from August to March 2023 and of 10% in electricity consumption from December 2022 to March 2023, at their July and September meetings, respectively.

In September 2022, the EU complemented its short-term energy strategy with extraordinary support measures for households and firms. These measures involved redirecting the surplus revenues of electricity producers using the so called "inframarginal technologies" (such as renewables, nuclear energy and lignite) towards supporting and protecting final electricity users (applicable until June 2023), as well as a mandatory solidarity contribution on the surplus profits of energy undertakings active in the crude oil, gas, coal and refinery sectors (applicable until December 2023).

Following difficult and long negotiations at the level of heads of state or government, as well as at the ministerial level, particularly with regard to the imposition of a cap on gas prices, in December 2022 energy ministers adopted three Council Regulations introducing the following: (a) faster permitting processes and an accelerated and simplified deployment of renewable energy projects as part of the REPowerEU Plan;[1] (b) enhanced solidarity through better coordination of common gas purchases, exchanges of gas across borders and reliable price benchmarks for LNG; and (c) a temporary market correction mechanism to limit episodes of excessive gas prices. The mechanism is activated if the front-month Title Transfer Facility (TTF) derivative settlement price exceeds 180 EUR/MWh for three working days and is EUR 35 higher than the reference price for LNG on global markets during that three-day period.

Finally, in October and December 2022, the European Council called on the European Commission to accelerate work on the structural reform of the EU's electricity market, with a view to decoupling electricity prices from gas prices to better protect households and businesses, increase the resilience of the economy and speed up the green transition by facilitating the use of RES. The European Commission published the relevant legislative proposal on 14 March 2023.

Enlargement of the euro area – Croatia becomes the 20th member

The year 2022 marked the 20th anniversary of the introduction of euro banknotes and coins and was topped off with the decision to include Croatia as the twentieth member of the euro area on 1 January 2023.

Greece's exit from the enhanced surveillance framework

On 16 June 2022, the Eurogroup decided Greece's exit from the enhanced surveillance framework after its expiration on 20 August 2022. At its meeting of 5 December 2022, based on the first post-programme surveillance report of the European Commission, the Eurogroup approved the eighth and final tranche of the medium-term debt relief measures (EUR 644 million), the reduction to zero for the second half of 2022 of the 2% step-up interest margin on the EFSF loan used to finance a debt buyback (EUR 123 million) and the abolition of the step-up margin for the period 2023-2049.

The EU leads the way in adopting a minimum level of taxation for largest corporations

In December 2022, EU Member States agreed to implement the minimum taxation component (Pillar 2) of the G20/OECD international tax reform, whereby the profit of large multinational and domestic groups or companies with a combined annual turnover of at least EUR 750 million will be taxed at a minimum rate of 15%. Effective implementation of the relevant Directive will limit the race to the bottom in corporate tax rates and reduce the risk of tax base erosion and profit shifting across countries. The Directive has to be transposed into Member States' national law by the end of 2023.

1 Furthermore, as part of the "Fit for 55" package, the EU Council agreed in June 2022 to set a binding EU-level target of 40% of energy from renewable sources in the overall energy mix by 2030, instead of the previous target of 32%.

Extension of the general escape clause of the Stability and Growth Pact

In May 2022, the European Commission assessment was that heightened uncertainty and strong downside risks to the economic outlook in the context of the war in Ukraine, unprecedented energy price hikes and continued supply chain disruptions warranted an extension through 2023 of the general escape clause of the Stability and Growth Pact. The overhaul of fiscal rules forms part of a broader review of the EU's economic governance framework, which is currently under way.

Digital markets and digital services

After their adoption by the Council and the European Parliament, the Regulation on digital services (Digital Services Act) and the Regulation on digital markets (Digital Markets Act) entered into force in November 2022 and will fully apply from 2024. These introduce a single EU-wide set of new rules to create a safer and more open digital space and a level playing field with a view to fostering innovation, growth and competitiveness both in the European Single Market and globally.

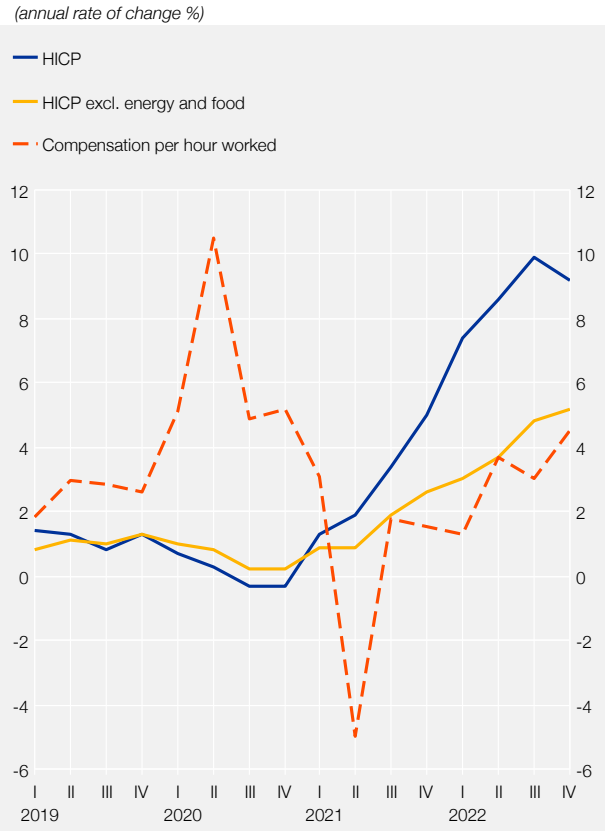
Adequate minimum wages in the EU

In June 2022, the Council of the EU reached a provisional agreement on new rules to ensure better and more effective protection for workers. These rules establish procedures for setting and updating the adequacy of statutory minimum wages and for promoting collective bargaining. The relevant Directive, which was adopted in October 2022 and must be transposed into Member States' national law within two years, does not prescribe a specific level of minimum wages.

III THE SINGLE MONETARY POLICY IN THE EURO AREA

Inflation rose sharply in the Monetary Union over the course of 2022 and continues to remain very high in early 2023 (see Chart III.1). Increases in energy and food prices, input shortages, the re-opening of the economy after the pandemic subsided and the depreciation of the exchange rate of the euro contributed to this development. Around mid-2022, the Governing Council of the ECB deemed that the conditions that should be satisfied before it started raising the key interest rates had been satisfied. At the time, the phasing out of net asset purchases by the Eurosystem was also being completed. Along with key interest rate increases, other monetary policy measures were introduced, such as the Transmission Protection Instrument (TPI) and the tightening of the terms and conditions of the TLTRO III operations. In early 2023, key interest rates continued to rise, while reinvestments in securities began to be scaled down so as to reduce the Eurosystem's APP portfolio.

Chart III.1 Inflation and labour compensation in the euro area (Q1 2019 - Q4 2022)



Sources: ECB and Eurostat.

1 OVERVIEW OF DEVELOPMENTS AND PROSPECTS[1]

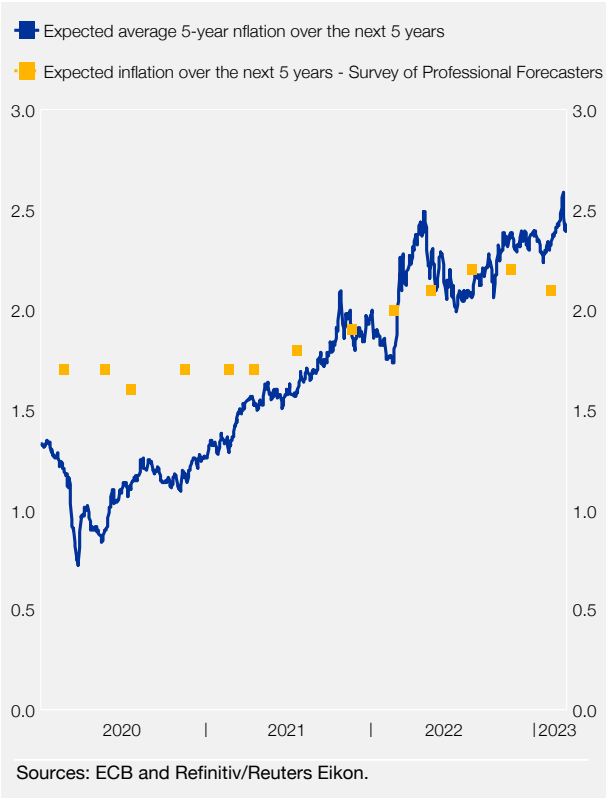
The sharp acceleration of inflation during 2022 was the combined result of: i) energy cost hikes, which gradually pushed prices upwards across the economy; (ii) higher food price rises due to an increase in transportation and fertiliser costs; (iii) other supply constraints stemming from shortages in raw materials, equipment and labour, which were amplified following Russia's invasion of Ukraine and hampered production in certain manufacturing sectors, construction as well as the services sector; (iv) the normalisation of demand following the lifting of health measures to curb the pandemic; and (v) the depreciation of the exchange rate of the euro. The Governing Council of the ECB repeatedly noted after the beginning of 2022 that most measures of longer-term inflation expectations derived from financial markets and from expert surveys stood at around 2%. It pointed out, however, during most of 2022, that initial signs of above-target revisions in those measures warranted close monitoring (see Chart III.2).

Initially the Governing Council of the ECB expected that inflation would decline during 2022 and stabilise at the 2% target in the medium term. However, in mid-2022, the ECB staff macroeconomic projections were revised upwards significantly, regarding both headline and core inflation

1 The cut-off date for information and data in this chapter is 17 March 2023.

Chart III.2 Long-term inflation expectations in the euro area
(2 January 2020 - 10 March 2023)

(percentages % per annum)



Sources: ECB and Refinitiv/Reuters Eikon.

in the euro area. According to these projections, inflation would remain undesirably elevated for some time, so that even at the end of the projection horizon (2024) it would stand above the 2% target. Consequently, the Governing Council decided that the conditions that should be satisfied before it started raising the key interest rates had been satisfied and announced its intention to raise key interest rates in July. Moreover, it announced that key interest rates would be raised again in September 2022. For the period after September 2022, the Governing Council noted that it anticipated that a gradual but sustained path of further increases in interest rates would be appropriate. The pace at which the Governing Council adjusted its monetary policy would depend on the incoming data and how the Governing Council assessed inflation to develop in the medium term. It underlined that this policy path will dampen demand and also guard against the risk of a persistent upward shift in inflation expectations. Indeed, at the meetings of September, October and December 2022, as well as at those of February and March 2023, the Governing Council decided to proceed to new key rate increases. In February 2023, the Governing Council concluded that risks to the inflation outlook had become more balanced compared with its earlier expectations. At the same time, it underscored that price pressures remained strong, partly because high energy costs were spreading throughout the economy. The ECB staff macroeconomic projections in March 2023 included a downward revision (as compared with December 2022) of the path of headline inflation in 2023 and the ensuing years, but an upward revision of core inflation in 2022.

Other monetary policy measures (besides key interest rate increases) in the course of 2022 and in the beginning of 2023 included the following: In March 2022, further reductions in net asset purchases by the Eurosystem under the APP were decided. It was also decided that Greek government securities would continue to be accepted as eligible collateral in Eurosystem refinancing operations for at least as long as reinvestments under the PEPP programme continued. Moreover, the pandemic-related collateral easing measures will be phased out in three steps by early 2024. In April, the Governing Council of the ECB decided to terminate net asset purchases under the APP as from the third quarter of 2022 (see Box III.1). In July 2022, the Transmission Protection Instrument (TPI) was established. The TPI will ensure that the monetary policy stance is transmitted smoothly across all euro area countries. This instrument will be activated to counter unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across the euro area. The Eurosystem will be able to make secondary market purchases of securities issued in jurisdictions experiencing a deterioration in financing conditions not warranted by country-specific fundamentals, to counter risks to the transmission mechanism to the extent necessary. In October 2022, the Governing Council of the ECB modified the terms and conditions of the TLTRO III refinancing operations in line with the normalisation of the single monetary policy stance.

In December 2022, the Governing Council announced that, from the beginning of March 2023 onwards, the APP portfolio will decline – initially by EUR 15 billion per month on average until

the end of the second quarter of 2023, as the Eurosystem will not reinvest all of the principal payments from maturing securities. Besides, by the end of 2023, the Governing Council will also review its operational framework for steering short-term interest rates, which will provide information regarding the endpoint of the balance sheet normalisation process. Box III.1 analyses in detail how the Eurosystem plans to reduce its balance sheet, in comparison with other major central banks.

In March 2023, the Governing Council of the ECB emphasised that it is monitoring current market tensions closely and stands ready to respond as necessary to preserve price stability and financial stability in the euro area. The Governing Council underlined that the banking sector of the euro area is resilient, with strong capital and liquidity positions. Besides, the ECB's policy toolkit is fully equipped to provide liquidity support to the euro area financial system if needed and to preserve the smooth transmission of monetary policy.

2 THE SINGLE MONETARY POLICY: FORMULATION AND IMPLEMENTATION

From the beginning of 2022 until before its meeting on 9 June 2022, the Governing Council of the ECB had reached the following conclusions in the context of its analysis of economic, financial and monetary developments regarding the Monetary Union.

The sharp acceleration of inflation (see Chart III.1) was the combined result of energy cost hikes (which gradually pushed prices upwards across the economy); higher food prices (due to an increase in transportation and fertiliser costs); supply constraints and normalisation of demand following the lifting of pandemic-related measures. Supply constraints stemmed from shortages in raw materials, equipment and labour, which were amplified following Russia's invasion of Ukraine and hampered production in certain manufacturing sectors, construction, as well as the services sector.

Inflation, however, was basically expected to decline in the course of 2022. Most measures of underlying inflation had followed an upward path, exceeding 2%, but due to the impact of temporary factors connected with the pandemic, it was considered, on the basis of the then available data, rather doubtful that this trend would continue. Market-based indices of energy prices suggested that energy price dynamics would eventually moderate, possibly even during 2022, while upward pressures on prices resulting from supply constraints were also expected to subside. The Governing Council estimated that, given expected inflation (that had come close to 2%), as well as the anticipated acceleration of wage increases as the economy was approaching full employment, underlying inflation would rise and headline inflation would come close to the 2% target.

High energy costs eroded the purchasing power of nominal income and as a result contributed to a shrinking of total expenditure. Nevertheless, the impact of energy price increases on the behaviour of households and enterprises would be mitigated on the one hand by the availability of savings (which had accumulated during the pandemic and could be spent, supporting total expenditure), and on the other hand, by the countervailing impact of fiscal measures taken both at national and at European Union level. The Governing Council judged that the constraints to production and consumption would gradually wane and anticipated an increase in GDP, which actually materialised in the course of 2022, despite the war in Ukraine.

The Governing Council of the ECB expressed its full support to the Ukrainian people and took action to ensure smooth liquidity conditions and the implementation of sanctions against Russia. The Governing Council stressed that it would take all the necessary measures in order to fulfil the Eurosystem's primary objective (price stability) and protect financial stability, while it attached critical importance to the provision of support to the economy also by fiscal policy, given the adverse geopolitical situation.

It was clear that the war would have a material impact on economic activity and inflation: energy, food and commodity prices in general would come under even higher upward pressure, international trade would be affected and business and consumer confidence would be impaired. Nevertheless, it was also a fact that, when the war broke out, on the one hand underlying conditions in the euro area economy were favourable and on the other hand, ample support was provided by economic policies. The health measures that had been taken in order to curb the spread of the Omicron variant had eventually affected economic activity less than similar measures taken in previous pandemic waves. Besides, these measures were being withdrawn in the euro area. By contrast, pandemic-related measures in Asia further disrupted supply chains. In the Monetary Union, the reopening of the sectors worst hit by the pandemic, as well as the fact that labour market conditions were favourable, with employment recording an increase and the unemployment rate declining, contributed to boosting income and expenditure. Although the number of jobs offered in several economic sectors revealed strong labour demand, wage increases remained moderate in general.

Inflation continued to exceed the projected levels in previous rounds of macroeconomic forecasts (at the end of 2022), as rises in energy prices were unexpected. Until the end of 2022, macroeconomic projections of average annual inflation continued to be revised upwards.[2] However, before June 2022, the Governing Council of the ECB estimated that the inflation rate would stabilise at the 2% target over the medium term. It underlined, however, that if price increases fed through into higher than anticipated wage rises, or if supply-side conditions worsened more durably, inflation could turn out to be higher over the medium term. Besides, from April 2022 onwards the Governing Council has repeatedly noted that longer-term inflation expectations derived from financial markets and from expert surveys were largely around 2%. Until the end of 2022, the Governing Council also pointed out initial signs of above-target revisions in a number of indicators of inflation expectations, which warranted close monitoring.[3]

According to the forward guidance provided by the Governing Council of the ECB at its meetings from the beginning of the year up to and including April 2022, any adjustments to the key ECB interest rates would take place some time after the end of the Governing Council's net purchases under the APP and would be gradual. The Governing Council expected the key ECB interest rates to remain unchanged until it saw inflation reaching 2% well ahead of the end of its projection horizon (2-3 years), and it judged that realised progress in underlying inflation was sufficiently advanced to be consistent with inflation stabilising at 2% over the medium term.

With regard to the monetary policy measures taken in the first five months of 2022, in March it was decided to further reduce net asset purchases under the APP. Greek government securities will continue to be accepted as eligible collateral in Eurosystem refinancing operations, for at least as long as reinvestments under the PEPP programme continue. It was announced that the Governing Council reserves the right to deviate from credit rating agencies' ratings if warranted. It was also decided that the pandemic-related collateral easing measures would be phased out in three steps by early 2024. In April, the Governing Council decided that net asset purchases under the APP would be terminated from the third quarter of 2022 onwards.

According to the ECB staff macroeconomic projections in June 2022, both headline and core inflation in the euro area would remain undesirably elevated for some time, so that even at the end of the projection horizon (2024) they would stand above the 2% target.

2 The ECB staff macroeconomic projections that were submitted to the Governing Council in March 2023 revised downwards (as compared with the December 2022 projections) the projection for headline inflation in the current and the ensuing years but revised upwards the projection for core inflation in 2023.

3 In March 2023, the Governing Council noted the current volatility of expected inflation measures derived from financial market prices.

Table III.1 Eurosystem key interest rates

(percentages % per annum)

Date of interest rate change[1]		Deposit facility	Main refinancing operations (fixed-rate tenders)	Marginal lending facility
2019	18 Sep.	-0,50	0,00	0,25
2022	27 July	0,00	0,50	0,75
	14 Sep.	0,75	1,25	1,50
	2 Nov.	1,50	2,00	2,25
	21 Dec.	2,00	2,50	2,75
2023	8 Febr.	2,50	3,00	3,25
	22 Mar.	3,00	3,50	3,75

Source: ECB.
1 Changes in the deposit facility and the marginal lending facility rates are effective from the first main refinancing operation following the relevant Governing Council decision (when the fixed rate on the main refinancing operation changes), rather than the date of the Governing Council meeting on which the relevant decision is made.

Consequently, the conditions that should be satisfied before the Governing Council started raising the key interest rates according to its forward guidance had been satisfied. As a result, it announced its intention to raise key interest rates in July. Moreover, it announced that key interest rates would be raised again in September 2022.

For the period after September 2022, the Governing Council anticipated that a gradual but sustained path of further increases in interest rates would be appropriate. The pace at which the Governing Council adjusted its monetary policy would depend on the incoming data and how the Governing Council assessed inflation to develop in the medium term.

In July, the Governing Council of the ECB increased interest rates by more than what had been announced in the previous month (see Table III.I), reflecting an upward revision of the inflation outlook, as well as the establishment of the Transmission Protection Instrument (TPI). It underlined that this policy path will dampen demand and also guard against the risk of a persistent upward shift in inflation expectations.

Furthermore, the Governing Council announced that it stopped forward guidance on interest rates and that future policy rate decisions would be data-dependent and follow a meeting-by-meeting approach. In fact, in March 2023 the Governing Council noted that the elevated level of uncertainty reinforces the importance of a data-dependent approach to the Governing Council's policy rate decisions, which will be determined by its assessment of the inflation outlook in light of the incoming economic and financial data, the dynamics of underlying inflation, and the strength of monetary policy transmission.

The main points of the Governing Council's analysis, as expressed at its meetings during the second half of 2022 and in early 2023, included the following:

The depreciation of the euro exchange rate, which was recorded in the course of 2022, added to those factors that had already been identified at the beginning of the year as fuelling the pickup of inflation. It was noted that government support measures to shield the economy from the impact of high energy prices in many Monetary Union member countries limited the risk of the sharp rise in energy prices fanning inflation, while it was underlined that they should be targeted and temporary. Such measures are expected to contribute to containing inflation in 2023, but once withdrawn, it is likely that inflation will resurge. In early 2023, it was underlined that these measures should be tailored to preserving incentives to consume less energy. As the energy crisis became less acute in the beginning of 2023, the Governing Council indicated that it was important to start rolling these measures back promptly in line with the fall in energy prices and in a concerted manner. Any such measures falling short of these principles were

likely to drive up medium-term inflationary pressures, which would call for a stronger monetary policy response.

On the other hand, there was a possibility of wage pressures in an effort to recoup the loss of purchasing power as a result of high inflation. In fact, signs of wage increases had already started to appear at the beginning of 2023. In March 2023, the Governing Council of the ECB noted that wage pressures had strengthened. It also pointed out that many firms had been able to raise their profit margins in sectors faced with constrained supply and resurgent demand.

In the second quarter of 2022, economic growth in the euro area picked up, mainly due to a rise in private services consumption. Although the strong performance of tourism continued to support economic growth after the second quarter too, the Governing Council of the ECB expected a slowdown of GDP in the second half of 2022. It was also pointed out that mounting inflation and the fear of a disruption of natural gas supply to euro area countries would lead to a decline in both consumer spending, due to the erosion of real income and loss of confidence, and output, as a result of higher costs. Furthermore, global demand had begun to drop, due to, among other things, the tightening of monetary policy in many major economies, but also heightened geopolitical uncertainty. Finally, the terms of trade for the euro area deteriorated, as import prices increased at a faster pace than those of exports. In February 2023, the Governing Council of the ECB noted that in addition to easing supply bottlenecks and more secure gas supplies, firms were still working through large order backlogs and confidence was improving. Output in the services sector had been holding up, supported by the continuing effects of the reopening of the economy and stronger demand for leisure activities.

In March 2023, the Governing Council noted that the euro area economy had stagnated in the fourth quarter of 2022, thus avoiding the previously expected contraction. However, private domestic demand had fallen sharply as a result of high inflation, prevailing uncertainties and tighter financing conditions. Based on the latest econometric projections, the Governing Council expects economic activity in the euro area to rebound in the coming quarters.

Industrial production is expected to pick up as supply conditions improve further, confidence continues to recover, and firms work off large order backlogs. Rising wages and falling energy prices will partly offset the loss of purchasing power that many households are experiencing as a result of high inflation. However, the Governing Council emphasised that these projections had been published prior to the emergence of financial market tensions in March 2023 and that these tensions implied additional uncertainty around the baseline assessments of economic growth and inflation. The projections include a downward revision (compared with the December 2022 projections) of the projection for headline inflation in 2023 and the ensuing years, but an upward revision of core inflation in 2023. Besides, the Governing Council noted the following upside risks to headline inflation: i) existing pipeline pressures that could still send retail prices even higher in the near term; ii) a persistent rise in inflation expectations above the Governing Council's target of 2% or higher than anticipated increases in wages and profit margins; (iii) a stronger than expected economic rebound in China, which could give a fresh boost to commodity prices and foreign demand. The Governing Council, however, also identified the following downside risks: i) persistently elevated financial market tensions could accelerate disinflation; ii) falling energy prices could translate into reduced pressure from underlying inflation and wages; iii) a weakening of demand, including owing to a stronger than expected transmission of monetary policy, would contribute to lower price pressures than currently anticipated, especially over the medium term.

As concerns financial and monetary conditions in the euro area, the Governing Council of the ECB noted the following developments during 2022, which continued into early 2023. First, market interest rates rose, as a result of the revised outlook for inflation and the single monetary policy stance, but also temporarily –during spikes of geopolitical uncertainty and, recently, fi-

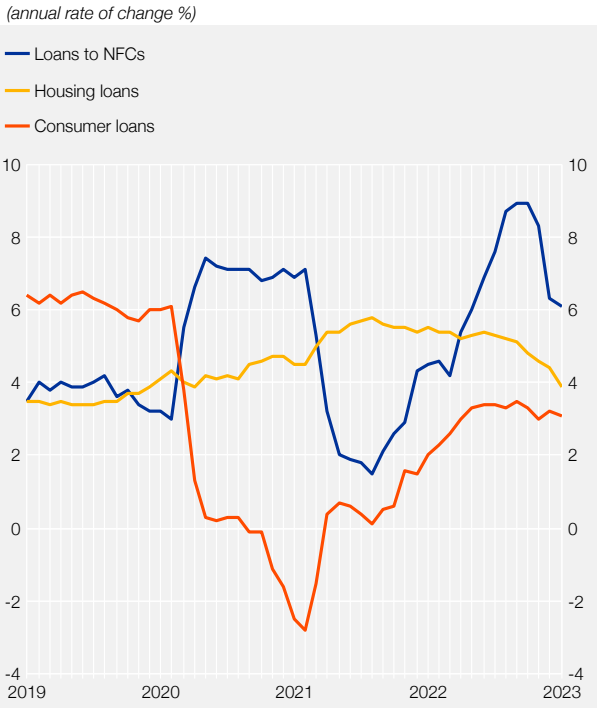
Chart III.3 Cost of borrowing indicator in the euro area (January 2020 - January 2023)

(percentage % per annum)

Source: ECB.
Note: This indicator is compiled by the ECB for housing loans to households and for loans to non-financial corporations (NFCs). It is calculated on the basis of the weighted average interest rates on new short- and long-term loans in these categories, with certain adjustments which improve comparability across euro area countries.

Chart III.4 Loans to non-financial corporations and households in the euro area[1] (January 2019 - January 2023)

(annual rate of change %)



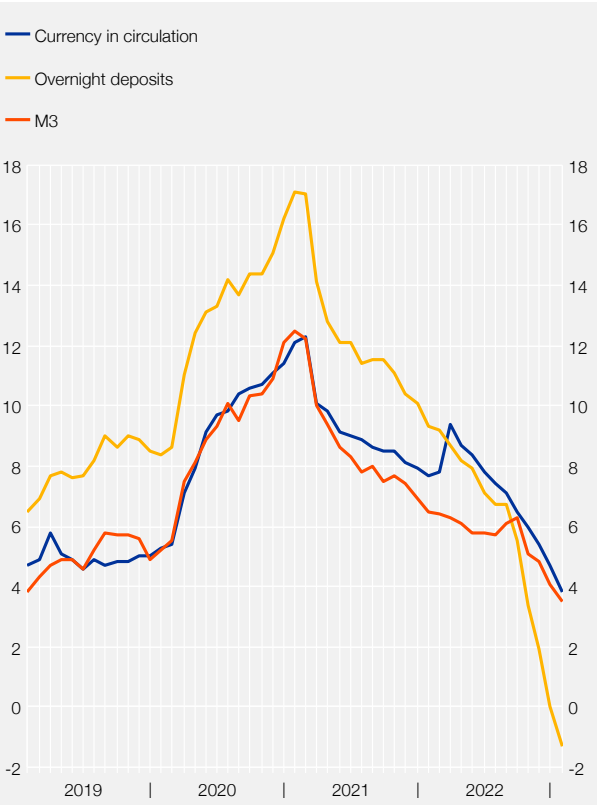
Source: ECB.
1 The rate of change in business and household financing has been adjusted for securitised or transferred loans, as well as for notional cash pooling provided by NFCs in certain euro area countries.

nancial market tensions– high volatility. Second, banks' funding costs rose and, third, banks' lending rates for businesses and households increased as a result (see Chart III.3). Fourth, NFC credit growth continued (see Chart III.4), given mainly increased needs for working capital due to the rise in the prices of inputs and inventory building, as well as reduced market-based funding. However, in March 2023, it was noted that NFC credit growth was declining owing to a combination of weaker demand and reduced supply. Fifth, housing loan growth decelerated. Sixth, the growth rate of monetary aggregates fell (see Charts III.5 and III.6). At the end of the first and the second half of 2022, the Governing Council conducted the regular bi-annual examination of the interaction between monetary policy and financial stability. In this context, it identified risks to financial stability due to the deterioration of the economic growth outlook and increasing credit risk. The Governing Council also noted an increase in risks stemming from fiscal developments in Member States. The tightening of financing conditions will limit in the medium term the emergence of vulnerabilities in the financial market, while in the short-term it fuels systemic tensions. However, the Governing Council concluded that banks in the euro area are well-capitalised, which buffers any adverse effects on financial stability stemming from the normalisation of the single monetary policy.

During its meetings in September, October and December 2022, as well as in February and March 2023, the Governing Council of the ECB decided new key interest rate hikes (see Table III.1). In December, it announced that interest rates would still have to rise significantly at a steady pace to reach levels that were sufficiently restrictive to ensure a timely return of inflation to the 2% medium-term target. In March 2023, the Governing Council of the ECB emphasised that it closely monitored current market tensions and stood ready to respond as necessary to preserve price stability and financial stability in the euro area. The Governing Council underlined that the euro area banking sector was resilient, with strong capital and liquidity positions, and

Chart III.5 Monetary aggregates in the euro area (January 2019 - January 2023)

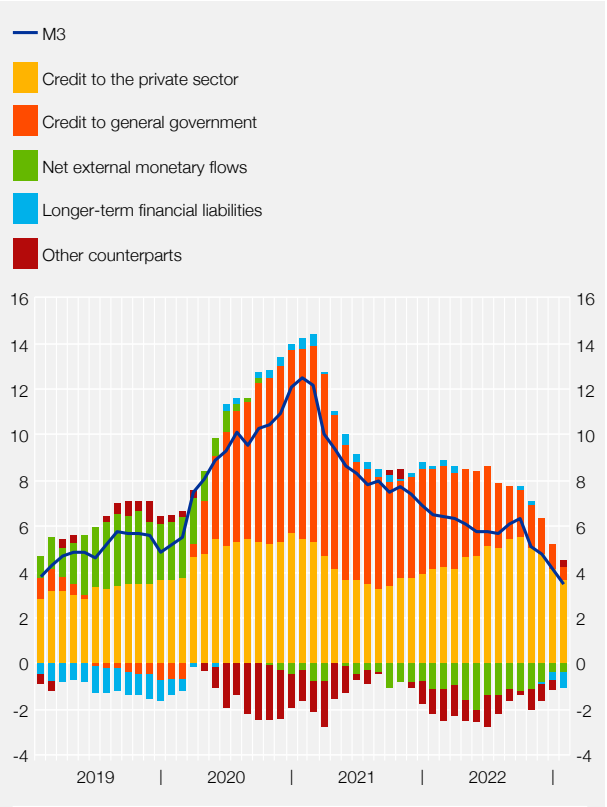
(annual rate of change %)



Source: ECB.

Chart III.6 Counterparts contributing to the change in the monetary aggregate M3 in the euro area (January 2019 - January 2023)

(annual rate of change % for M3; contribution in percentage points for counterparts)



Source: ECB.

that the ECB's policy toolkit was fully equipped to provide liquidity support to the euro area financial system if needed and to preserve the smooth transmission of monetary policy.

Regarding monetary policy measures adopted by the Eurosystem in the second half of 2022 in addition to key interest rate increases, in July 2022 the transmission protection instrument (TPI) was established. This mechanism was introduced with a view to ensuring that the monetary policy stance is transmitted smoothly across all euro area countries, otherwise the Eurosystem cannot fulfil its primary objective.

The transmission protection instrument will be activated to counter unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across the euro area. TPI purchases would be focused on public sector securities (marketable debt securities issued by central and regional governments as well as agencies) with a remaining maturity of between one and ten years. The scale of TPI purchases would depend on the severity of the risks facing monetary policy transmission. Purchases would be terminated either upon a durable improvement in transmission, or based on an assessment that persistent tensions are due to country fundamentals. The Governing Council will consider a cumulative list of criteria to assess whether the jurisdictions in which the Eurosystem may conduct purchases under the TPI pursue sound and sustainable fiscal and macroeconomic policies.

Purchases under the TPI would be conducted in such a way so that they do not cause any persistent impact on the overall Eurosystem balance sheet and hence on the monetary policy stance. In parallel with the establishment of this new mechanism, the Governing Council of the

ECB recalled that PEPP reinvestment flexibility will continue to be the first line of defence to counter risks to the transmission mechanism related to the pandemic.

In October 2022, the Governing Council of the ECB recalibrated TLTRO III operations to ensure that they were consistent with the broader monetary policy normalisation process and to reinforce the transmission of policy rate increases to bank lending conditions.

In December 2022, the Governing Council on the one hand confirmed that the key ECB interest rates are the Governing Council's primary tool for setting the monetary policy stance and on the other hand discussed principles for normalising the Eurosystem's monetary policy securities holdings. It was decided that, from the beginning of March 2023 onwards, the APP portfolio would decline at a measured and predictable pace, as the Eurosystem would not reinvest all of the principal payments from maturing securities. The decline would amount to EUR 15 billion per month on average until the end of the second quarter of 2023 and its subsequent pace would be determined over time (see Box III.1). The Governing Council will regularly reassess the pace of the APP portfolio reduction (a) to ensure it remains consistent with the overall monetary policy strategy and stance; (b) to preserve market functioning; and (c) to maintain firm control over short-term money market conditions. By the end of 2023, the Governing Council will also review its operational framework for steering short-term interest rates, which will provide information regarding the endpoint of the balance sheet normalisation process. Finally, in February 2023, the Governing Council announced that the remaining reinvestment amounts would be allocated proportionally to the share of redemptions across each constituent programme of the APP (PSPP: Public Sector Purchase Programme, ABSPP: Asset-Backed Securities Purchase Programme, CBPP3: Covered Bonds Purchase Programme 3, CSPP: Corporate Sector Purchase Programme). For the Eurosystem's purchases under the CSPP, the remaining reinvestments would be tilted more strongly towards issuers with a better climate performance.

Box III.1

BALANCE SHEET NORMALISATION STRATEGIES OF THE EUROPEAN CENTRAL BANK, THE US FEDERAL RESERVE AND THE BANK OF ENGLAND

In December 2022, the Governing Council of the European Central Bank (ECB) announced the key principles for the gradual reduction of Eurosystem's holdings of securities held for monetary policy purposes, in order to ensure that the central bank balance sheet remains consistent with the normalisation of the Eurosystem's monetary policy stance. The holdings of securities under the asset purchase programme (APP) would be declining by EUR 15 billion per month on average from the beginning of March until the end of June 2023, and the subsequent pace of decline would be determined over time. The Governing Council would regularly reassess the pace of the APP portfolio reduction to ensure it remains consistent with the monetary policy strategy, to preserve market functioning, and to maintain firm control over short-term money market conditions.

In February 2023, the ECB decided on the detailed parameters for reducing APP holdings through partial reinvestment, broadly in line with the practice followed under full reinvestments. In particular, the remaining reinvestment amounts would be allocated proportionally to the share of redemptions across each constituent programme of the APP[1] and, under the public sector purchase programme (PSPP), to the share of redemptions of each jurisdiction and across national and supranational issuers. For the Eurosystem's corporate bond portfolio, reinvestments of maturing securities would be tilted more strongly towards issuers with a better climate performance.

1 The APP comprises the public sector purchase programme (PSPP), the covered bond purchase programme (CBPP3), the corporate sector purchase programme (CSPP) and the asset-backed securities purchase programme (ABSPP).

The balance sheet normalisation or reduction policy, also known as quantitative tightening, can be seen as a reversal of quantitative easing, under which central banks embarked on purchase programmes for various assets (mostly public sector bonds) following the global financial crisis and the pandemic, with a view to creating favourable financial conditions and raising inflation from very low rates to levels consistent with the target. The securities purchased under such programmes are held in central banks' monetary policy portfolios. With quantitative tightening, central banks aim at reducing the size of their balance sheets to limit money supply in the economy and contain inflationary pressures. Quantitative tightening implies a reduction of monetary policy portfolios either through the partial or zero reinvestment of maturing securities acquired under the asset purchase programmes or through active sales of such securities.

The other two major central banks, i.e. the US Federal Reserve (Fed)[2] and the Bank of England (BoE), have also started to gradually reduce their balance sheets. The strategies pursued by the three central banks exhibit great similarities as well as several differences. A common feature in all three strategies is the prior announcement of the underlying principles and detailed parameters in advance of the implementation of the balance sheet reduction strategy. These announcements set out the main elements of quantitative tightening and provided forward guidance on key parameters such as definition of the primary instrument for adjusting the stance of monetary policy, desired pace of decline, portfolio sequencing, as well as terminal intended point of the balance sheet normalisation process. The timely and clear communication of the general principles and detailed parameters by all three central banks aimed at preparing the markets, thereby ensuring their smooth functioning during the process of quantitative tightening.

Timeline

The timeline and the parameters of the balance sheet reduction policy vary markedly across central banks. The ECB applied the most compressed timeline and began unwinding the APP portfolio in March 2023, just three months after the announcement of the underlying principles (in December 2022) and one month after the release of detailed parameters in February 2023 (see Figure A). In normalising their balance sheets, both the Fed and the BoE communicated the key principles six months before the start of quantitative tightening (see Figures B and C).

Primary instrument

All three banks have stressed that key interest rates remain the primary instrument for setting the monetary policy stance, while the reduction of their portfolios is expected to have an ancillary role in the monetary policy normalisation process.

Pace

The greatest difference across the three central banks relates to the adopted pace of balance sheet normalisation. The BoE is pursuing the most ambitious strategy, as it has gone straight from a full reinvestment policy to zero reinvestments of government bonds already since February 2022 and began selling off gilts in November that year.[3] On the other hand, the ECB and the Fed initially turned to a partial reinvestment policy, at a predictable and measured pace. Specifically, limiting reinvestments by EUR 15 billion per month on average, as pursued by the ECB between March and June 2023, corresponds to around 50% of maturing securities held in the APP portfolio. Besides, the current cap of USD 95 billion per month, in excess of which the Fed continues to reinvest, implies that the Fed is not expected to have a presence in the markets for certain months.[4]

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2 This box will not look into the first phase of monetary policy normalisation pursued by the Fed in the wake of the global financial crisis (2015-19).

3 According to BoE estimates, the balance sheet reduction resulting from zero reinvestments of gilts will amount to roughly GBP 70 billion for 2022-23. See Bank of England, Monetary Policy Report, Box A "The MPC's strategy for the mix of monetary policy instruments to deliver tighter policy", August 2021, https://www.bankofengland.co.uk/-/media/boe/files/monetary-policy-report/2021/august/monetary-policy-report-august-2021.pdf?la=en&hash=BBCA21B8254B381928385A615F0DEC51E111FE43. This amount was complemented with active sales of securities on a quarterly basis from November 2022 onwards, see https://www.bankofengland.co.uk/markets/market-notices/2022/ october/asset-purchase-facility-gilt-sales-market-notice-20-october-2022.

4 The cap was initially set at USD 47.5 billion for the first three months and was subsequently raised to USD 95 billion, which is split into USD 60 billion for maturing US Treasury bonds and USD 35 billion for maturing mortgage-backed securities.

Figure A Timeline of ECB balance sheet normalisation

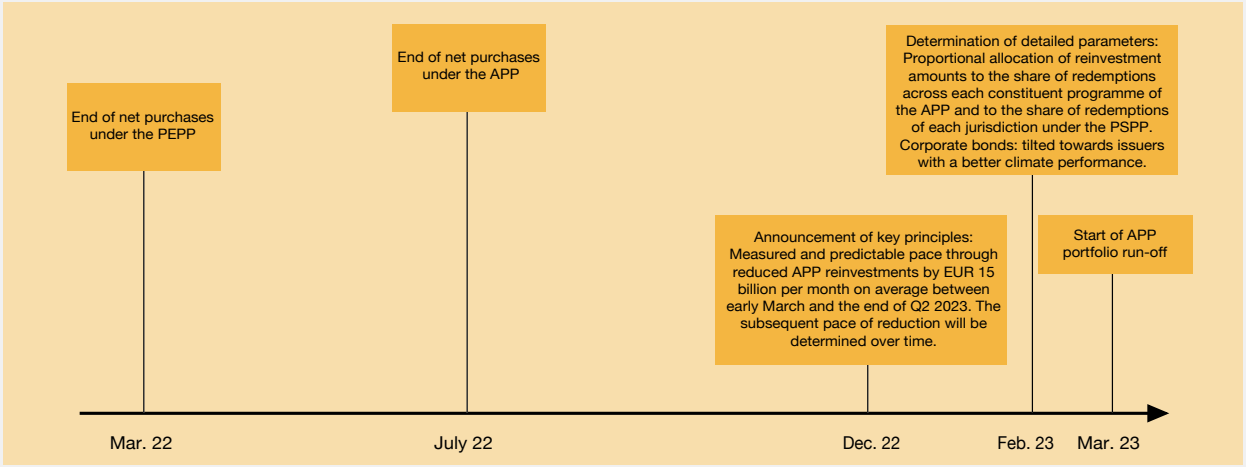
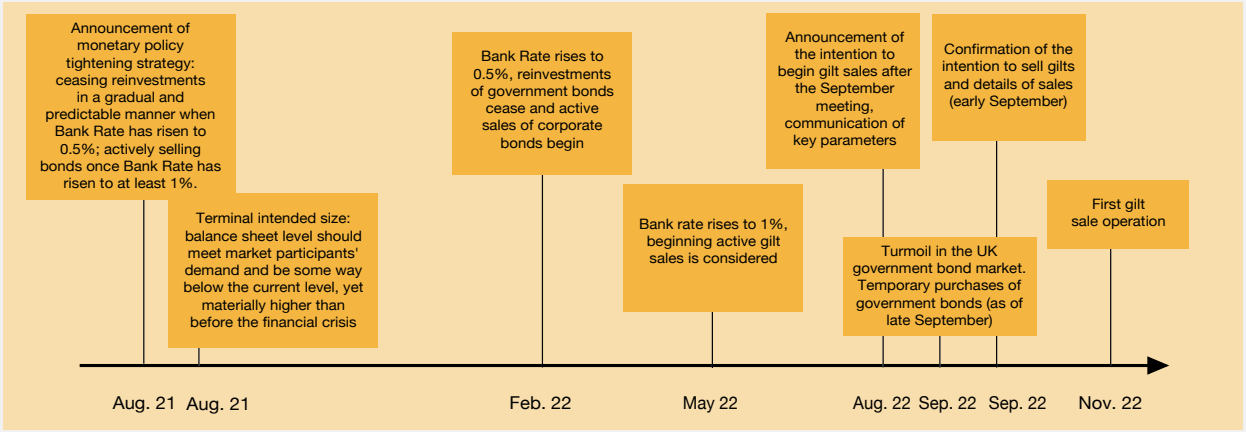


Figure B Timeline of Fed balance sheet normalisation

Figure C Timeline of BoE balance sheet normalisation



Predictability

All three banks have chosen to provide some predictability about the conditions that must be met for the unwinding of their balance sheets. The ECB provided time-contingent forward guidance on the process of balance sheet reduction, by offering a precise indication of timing and pace,[5] while the Fed and the BoE implemented

5 Until summer 2022 the ECB had been providing forward guidance that linked the reinvestment horizon to the lift-off of its key interest rates.

state-contingent forward guidance, by citing explicitly the circumstances that would warrant a balance sheet reduction. For instance, in August 2021 the BoE announced its intention to start reducing the stock of purchased assets when the Bank Rate reaches 0.5% and, if appropriate given the economic circumstances, by ceasing to reinvest government bonds. The BoE also announced that it would consider actively selling some of the stock of purchased assets only once the Bank rate reached at least 1%. On its part, the Fed announced in January 2022 that the shrinking of its balance sheet will commence after the process of increasing the target range for the federal funds rate has begun.

Terminal intended size

In their initial communications, both the Fed and the BoE provided some indication of the terminal intended size of their balance sheets, by determining the level of reserves needed in line with their operational frameworks. Against this backdrop, while the Fed has announced its intention to maintain securities holdings in amounts needed to implement monetary policy "efficiently and effectively" in an ample reserves regime, the BoE has stressed that it will continue its balance sheet normalisation until reserves "have fallen to the level demanded by market participants at the prevailing level of the Bank Rate". The BoE assesses that this level of reserves is likely to be somewhat below the current level, yet materially higher than it was before the financial crisis, at any given level of the Bank Rate, given a range of changes over that period, such as changes to funding markets and liquidity regulation. Turning to the ECB, it has announced that the ongoing review of its monetary policy implementation framework will provide information regarding the terminal intended state of its balance sheet normalisation process.

Flexibility

Lastly, as monetary policy gradually becomes less accommodative, all three central banks acknowledge the importance of incorporating flexibility in the principles governing quantitative tightening, so as to ensure a smooth balance sheet reduction process, without disrupting the functioning of financial markets. Flexibility relates to the reinvestment horizon and asset classes, as well as to the possibility of discontinuing quantitative tightening or resuming net asset purchases, if deemed necessary given the prevailing circumstances. This flexibility has proven very useful in practice, with the BoE embarking on temporary purchases of UK government bonds in September 2022 to contain financial market turmoil.

Conclusions

With the reduction of their balance sheets, central banks have entered an era of quantitative tightening, on which there is extensive literature but relatively little practical experience. The unwinding of expanded balance sheets is a major challenge to both central banks and market participants. In any event, central banks will be regularly reassessing their strategy to ensure that it remains consistent with the appropriate monetary policy stance and that firm control over financial market conditions is maintained.

3 THE EURO AREA MONEY MARKET

Excess liquidity in the banking system continued to hover around high levels during 2022, when it averaged EUR 4,510 billion, from EUR 4,119 billion in 2021 and EUR 2,519 billion in 2020 (see Chart III.7). In the January-February 2023 period, excess liquidity declined and stood on average at EUR 4,123 billion.

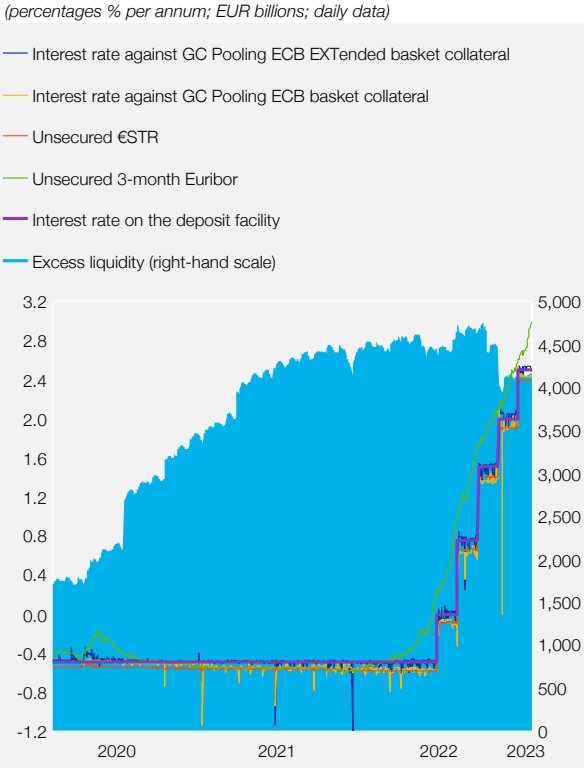
The value of the securities acquired through the asset purchase programmes of the Eurosystem amounted in 2022 on average to around EUR 4,900 billion, from around EUR 4,215 billion in the previous year. Of the individual programmes, the value of securities acquired under the Pandemic Emergency Purchase Programme (PEPP) accounted for the largest part of the rise, which was almost similar to that for the Public Sector Purchase Programme (PSPP), followed by the Corporate Sector Purchase Programme (CSPP). In the context of the gradual normalisation of monetary policy and withdrawal of its highly accommodative stance, net asset pur-

chases under the PEPP and APP were terminated as of 1 April and 1 July 2022, respectively, while only reinvestments continue.[4]

The share of the asset purchase programmes (PEPP and APP) in total liquidity provided to the Eurosystem counterparties stood at 70% on average in 2022, compared with 67% in 2021. The remaining share in total liquidity was raised through refinancing operations (TLTRO, PELTRO, LTRO and MRO) and amounted to 30%, from 33% previously. This development is mainly due to voluntary repayments of the high amounts of liquidity that had been raised through TLTRO III operations at the peak of the pandemic and which at end-2022 amounted to about EUR 1.3 trillion (December 2021: EUR 2.2 trillion). In view of the pick-up of inflation, it was decided that the interest rates applied on these operations from 23 November onwards would be adjusted, while banks were given additional dates for voluntary early repayment of the liquidity that had been raised through these operations. Furthermore, the interest rate applied on banks' required minimum reserves was set at the deposit facility rate instead of the rate on main refinancing operations, thus being aligned with money market interest rates.

Chart III.7 Interest rate on the deposit facility, money market rates and excess liquidity in the euro area (2 January 2020 - 10 March 2023)

(percentages % per annum; EUR billions; daily data)



Sources: ECB, Eurex Repo and Refinitiv/Reuters Eikon.

Up until July 2022, high excess liquidity affected the degree of utilisation of the two-tier system by credit institutions. The euro area banks utilised the maximum allowance up to which minimum reserves were exempt from the negative remuneration rate at a percentage of 99% in June; however, following the application of a positive rate on the deposit facility in September 2022, the use of this system was no longer necessary and was suspended.[5] For this reason, as the interest rate on the deposit facility was positive (0.75%) as from September, banks' excess reserves were shifted to a large extent from the Eurosystem's current accounts to the deposit facility.

In the first half of 2022, short-term interest rates in the money market continued to hover around negative levels (see Chart III.7). However, from the end of July, following the start of the cycle of key policy rate hikes by the Governing Council of the ECB, money market interest rates began to increase in parallel with the consecutive increases in key interest rates and generally stood closer to the deposit facility rate. Specifically, the €STR in the unsecured market stood on average at -0.58% between January and July 2022, but subsequently followed the rate of changes in key policy interest rates and stood at 1.9% at end-2022 and at 2.4% at end-February 2023. The three-month EURIBOR rate had already begun to increase earlier, since March 2022, pricing in more strongly expectations for a forthcoming rise in key interest rates, and stood at

4 As of March 2023, reinvestments of securities under the expanded asset purchase programme (APP) began to decline.

5 Under the two-tier system, a part of excess reserves that remained at the current accounts of the Eurosystem's counterparties was exempt and was not remunerated at the negative rate on the deposit facility, but at a zero rate. This system was implemented as of 30 October 2019, but its implementation was suspended by decision of the Governing Council of the ECB in September 2022 as, following the increases in key interest rates, the rate on the deposit facility stood at a positive level as of that month.

2.1% at end-December 2022 and at 2.7% at end-February 2023. In the secured lending (repo) market, which accounts for the bulk of transactions in the euro area money market, interest rates also remained until the end of July at very low levels, close to the deposit facility rate. The interest rate on holdings against standardised baskets of collateral GC Pooling ECB stood in this period at -0.58% and the corresponding interest rate GC Pooling ECBxt for the extended basket of lower-rated securities at -0.50%. Subsequently, these two rates rose by the end of 2022 to 1.9% and 2.04% and, at end-February 2023, to 2.4% and 2.5% respectively.

IV MACROECONOMIC DEVELOPMENTS AND PROSPECTS IN GREECE

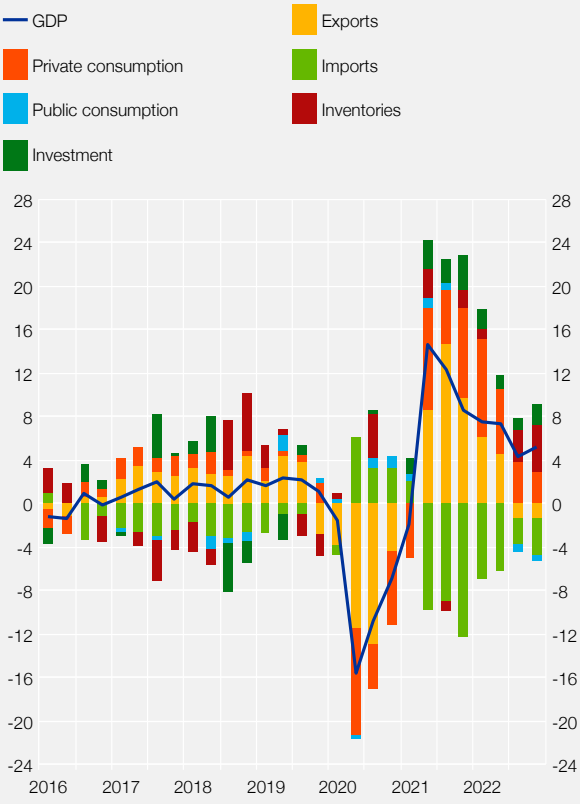
Amid strong inflationary pressures, the Greek economy maintained a high growth rate also in 2022. Growth was driven by private consumption, investment and tourism, although economic activity decelerated during the second half of the year. Business and consumer confidence deteriorated as a result of heightened uncertainty across the globe, mainly due to a surge in energy prices and losses in terms of production costs and income.

Headline inflation accelerated substantially, mainly due to an increase in energy prices, part of which gradually fed into the prices of services, pushing core inflation upwards. Thus, inflation is likely to remain high –though on a downward course– also in 2023. The labour market improved further in 2022, although its strong dynamics showed signs of weakening in the second half of the year, in line with a deceleration in economic growth.

The current account deficit widened significantly, as growth in goods exports was outpaced by that in goods imports, in particular energy goods imports. Nevertheless, travel receipts came close to their 2019 levels.

Chart IV.1 Contributions to annual GDP growth on the demand side (Q1 2016 - Q4 2022)

(contributions in percentage points)



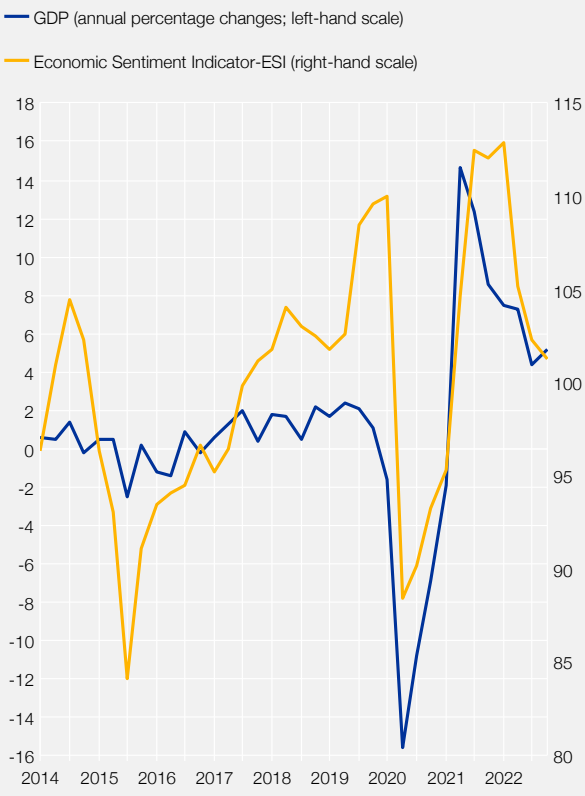
Source: ELSTAT.
Note: Data on GDP components refer to constant 2015 prices and are seasonally adjusted.

Maintaining a reasonably solid growth rate in the upcoming period is a key challenge for the Greek economy. Resources available through the EU recovery instrument NextGenerationEU (NGEU) and further structural reforms are expected to play a key role in boosting business productivity and competitiveness in the economy. Moreover, protecting incomes, mostly of vulnerable social groups, against strong inflationary pressures is expected to continue supporting private consumption.

The Greek economy is projected to keep growing also in 2023, albeit at a clearly lower pace compared to 2022. Risks to this projection are mostly tilted on the downside, including a further escalation of the war in Ukraine and/or worse-than-expected developments in energy prices and inflation. An upward effect on the growth rate could come from a faster decline in inflation and/or better-than-expected tourism performance.

1 OVERVIEW OF DEVELOPMENTS AND PROSPECTS[1]

Chart IV.2 GDP and ESI[1]
(Q1 2014 - Q4 2022)



Sources: ELSTAT and European Commission/IOBE.
1 Three-quarter moving average.

Economic activity maintained its growth momentum in 2022, despite a significant pickup in inflation and a worsening international environment. Real GDP exceeded pre-pandemic levels, mostly driven by increased private consumption, with households drawing down on their savings in order to compensate for the loss in purchasing power caused by higher prices. Increased services exports also had a positive contribution to growth, mainly driven by tourism and investment. The latter was supported by stronger business profitability, the utilisation of NGEU resources and the positive course of foreign direct investment. By contrast, an increase in imports, largely as a result of higher industrial production, private consumption and investment, had a negative contribution to GDP growth (see Chart IV.1 and Table IV.1).

Most indicators of economic activity, such as industrial production, retail sales and car sales, registered positive –albeit decelerating– growth rates in 2022. Both business confidence and consumer confidence indicators were volatile during the year, due to fast-paced inflation, although they recovered slightly in the last quarter (see Chart IV.2). After remaining in expansionary territory for quite some time, the Purchasing Managers' Index (PMI) also dropped.

The Greek real estate market rebounded strongly in 2022, despite increases in borrowing, energy and construction costs in general. Regional development projects that are planned or are already under way, a gradual improvement in infrastructure and an upgrading of the existing building stock (also supported by the National Recovery and Resilience Plan) helped maintain a positive outlook, despite lingering uncertainties that surround mainly the global economy, as well as a substantial correction already seen in major European real estate markets.

The labour market improved also in 2022, with total employment rising and the unemployment rate further dropping compared to 2021. Nevertheless, as from the second half of the year, with economic activity slowing down, total employment decelerated. Moreover, the labour market has been showing signs of tightness compared to the previous year, although the unemployment rate and other labour market slack indicators remain relatively high. Faster implementation of the "Greece 2.0" National Recovery and Resilience Plan should help maintain positive employment growth rates. Addressing existing distortions in the labour market, which are associated inter alia with high long-term, youth and female unemployment rates, remains a major challenge.

Headline inflation accelerated strongly in 2022, mainly due to a surge in global energy prices. Over the course of the year, large and continuous increases in energy and food prices gradually fed into the prices of services and non-energy industrial goods, causing core inflation to rise

1 The cut-off date for information and data used in this chapter was 24 March 2023.

sharply. HICP inflation is expected to decline substantially in 2023 –mainly as a result of falling energy prices– but to remain relatively high.

The international competitiveness of the Greek economy improved further in 2022, in an international environment characterised by very strong price inflation and nominal labour cost growth. Specifically, it is estimated that competitiveness continued to improve in terms of unit labour costs, despite a hike in the minimum wage in Greece, as a result of similar wage developments across many trading partners, rather than in terms of relative prices. Regarding structural competitiveness, based on an increasing number of indices Greece's ranking improved, reflecting the country's efforts to streamline the business and macroeconomic environment, as well as the reforms being implemented. This favourable development is mirrored to some degree in higher inflows of foreign direct investment (FDI) in several sectors.

The current account deteriorated significantly in 2022 year-on-year, as imports of goods outgrew exports of goods. Higher imports of goods were driven by stronger consumption, as well as sustained increases in industrial production and investment. Higher international oil prices weighed heavily on the current account. The contribution of the primary and secondary income accounts was also negative, mainly because some payments expected in 2022 were deferred to 2023. These negative developments were partly offset by an impressive rise primarily in travel receipts, which came close to their 2019 levels, and secondarily in sea transport receipts.

The significant pickup in inflation and continued uncertainties associated with the international economic environment jeopardise sustainable robust growth in the medium term. In this inflationary environment (see also Box IV.1), current challenges for economic policy include: (a) Maximising the benefits from the implementation of investment projects linked to the NGEU, in order to boost productivity in the economy. To this end, it is necessary to press ahead with reforms, particularly those involving faster implementation of export-oriented investment. (b) Cushioning the impact of high inflation and the energy crisis on household income, particularly for low-income households (see Box IV.2). Such actions would be necessary in order to support consumption and preserve the growth momentum. (c) Addressing the current account deficit by boosting the competitiveness and trade openness of the economy. In the medium term, productive use of the higher FDI flows recorded lately is also expected to help in this direction, as a tool introducing innovative technologies (for details, see Box IV.4). That said, increased benefits in terms of competitiveness achieved by the Greek economy in the past ten years may be supported by reduced wage and energy costs, with the aim to strengthen the competitive advantage of dynamic businesses in manufacturing and services (regarding tourism competitiveness in the new environment, see Box IV.3).

According to recent Bank of Greece projections, economic activity is expected to rise in 2023, as consumption and –even more so– investment should continue to make a positive contribution to growth. The carryover effect of the economy's solid performance in 2022, with GDP growth standing at 5.9% according to the latest ELSTAT estimate, as well as stronger high-frequency indicators of current conditions for the first months of 2023, lead to an upward revision of the growth forecast for 2023 (to 2.2%), from 1.5%, as projected in December's Monetary Policy Interim Report. The risks surrounding this forecast are mostly tilted to the downside and are largely driven by external factors. Specifically, the growth rate of the Greek economy could decline further in the event of (a) a further escalation of the war in Ukraine, as this would lead to a sharper slowdown of the global economy and, probably, to higher energy prices; (b) higher and more persistent inflation; (c) a new wave of the pandemic; (d) a lower-than-expected absorption rate of EU funds under the Recovery and Resilience Facility; and (e) a new generation of non-performing loans due to higher interest rates and the energy crisis, following the phasing-out of government support measures. On the other hand, upward risks include a faster deceleration of inflation and a more favourable than expected performance of the tourism sector.

2 ECONOMIC ACTIVITY

2.1 Demand

Economic activity maintained its growth momentum in 2022, despite strong inflationary pressures and the worsening international environment. Real GDP exceeded pre-pandemic levels, mostly driven by an increase in private consumption, as well as in services exports and gross fixed capital formation. By contrast, higher imports –largely as a result of increased industrial production, private consumption and investment– and lower public consumption had a negative contribution to GDP growth (see Chart IV.1 and Table IV.1).

Growth was primarily driven by private consumption, which registered a strong rate of increase in 2022 (+7.8%, with a contribution of +5.6 percentage points), despite a decline in the real disposable income of households as a result of strong inflationary pressures. On the basis of the quarterly non-financial accounts of institutional sectors published by ELSTAT, the nominal disposable income of households and non-profit institutions serving households (NPISHs) rose by 6.5% on average in January-September 2022, while real disposable income decreased by 1.2% due to rising inflation. An increase in households' nominal disposable income during this period is mostly attributable to a positive contribution from the income of the self-employed, which grew substantially as a result of the recovery in economic activity and, probably, the pass-through of high inflation to sole proprietors' services prices. Dependent labour income also made a positive contribution, primarily driven by higher employment and secondarily by rising dependent labour compensation per employee. By contrast, the lifting of the moratorium on tax and social security payments and a significant decline in pandemic-related subsidies had a negative contribution to household income developments (see Chart IV.3).

Private consumption growth reflects the release of households' pent-up demand, particularly for durable goods and services, which was also supported by savings accumulated during the

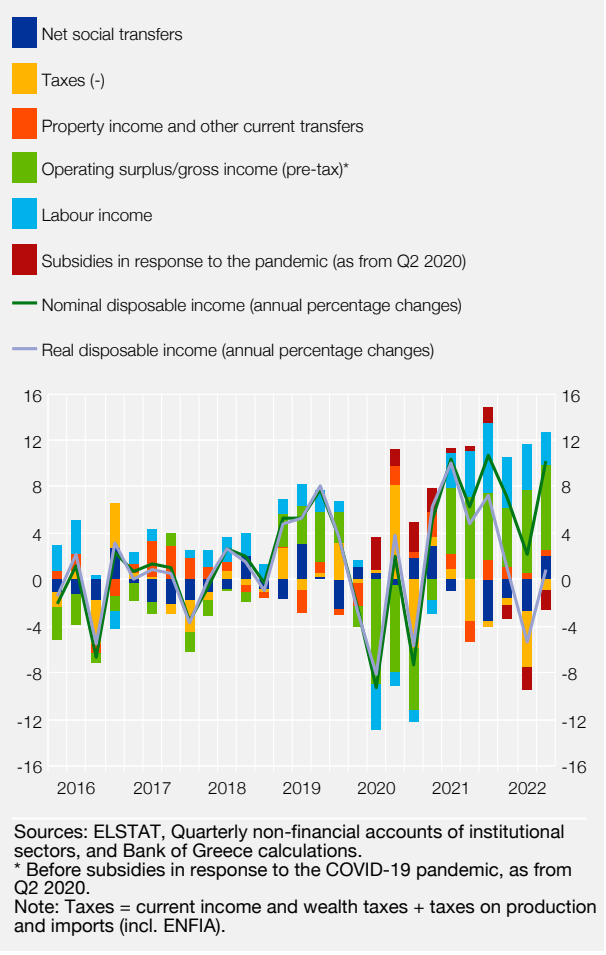
Table IV.1 Demand and GDP (2019-2022)

(annual percentage changes and percentage point contributions, at constant market prices of 2015)

	2019	2020	2021	2022	2022 (Q1)	2022 (Q2)	2022 (Q3)	2022 (Q4)
Private consumption	1.9 (1.2)	-7.7 (-5.4)	5.8 (4.1)	7.8 (5.6)	13.6 (9.1)	8.7 (6.0)	5.6 (3.8)	4.2 (2.9)
Public consumption	2.1 (0.4)	2.6 (0.5)	2.2 (0.5)	-1.6 (-0.3)	-0.9 (-0.2)	-0.5 (-0.1)	-2.8 (-0.6)	-1.9 (-0.4)
Gross fixed capital formation	-2.2 (-0.3)	1.1 (0.1)	20.0 (2.4)	11.7 (1.6)	13.3 (1.7)	10.1 (1.3)	8.3 (1.1)	14.8 (2.0)
Housing investment	12.6 (0.1)	19.0 (-0.6)	27.3 (-1.1)	36.1 (-1.3)	16.8 (-1.3)	16.8 (4.7)	10.1 (2.7)	117.4 (2.3)
Domestic final demand[1]	1.5 (1.4)	-4.7 (-4.7)	6.6 (7.0)	6.3 (6.8)	10.5 (10.6)	7.0 (7.2)	4.3 (4.3)	4.4 (4.5)
Inventories and statistical discrepancy (% of GDP)	1.4%	2.9%	3.4%	5.2%	3.6%	3.8%	5.9%	7.3%
Domestic demand	1.2 (1.2)	-3.6 (-3.7)	7.0 (7.6)	8.0 (8.7)	8.0 (8.4)	8.5 (8.9)	7.8 (8.2)	9.5 (10.1)
Exports of goods and services	4.9 (1.8)	-21.5 (-7.8)	24.1 (7.7)	4.9 (2.0)	17.4 (6.0)	12.1 (4.5)	-3.6 (-1.5)	-3.5 (-1.4)
Imports and goods and services	2.9 (-1.1)	-7.3 (2.7)	17.7 (-6.9)	10.2 (-4.6)	17.7 (-6.9)	14.6 (-6.1)	5.3 (-2.3)	7.5 (-3.4)
Foreign demand	**... (0.7)**	**... (-5.1)**	**... (0.8)**	**... (-2.6)**	**... (-0.9)**	**... (-1.7)**	**... (-3.8)**	**... (-4.8)**
GDP at market prices	**1.9**	**-9.0**	**8.4**	**5.9**	**7.5**	**7.3**	**4.4**	**5.2**

Source: ELSTAT, Quarterly national accounts, 7 March 2023. Annual data are non-seasonally adjusted. Quarterly data are seasonaly adjusted.
Note: Percentage point contributions in brackets.
1 Excluding inventories and statistical discrepancy.

Chart IV.3 Contributions to changes in disposable income (Q1 2016 - Q3 2022)



Sources: ELSTAT, Quarterly non-financial accounts of institutional sectors, and Bank of Greece calculations.
* Before subsidies in response to the COVID-19 pandemic, as from Q2 2020.
Note: Taxes = current income and wealth taxes + taxes on production and imports (incl. ENFIA).

expected to have an offsetting effect. In 2023, the normalisation of consumption demand, low growth of households' real income and higher interest rates are expected to lead to a mild increase in private consumption.

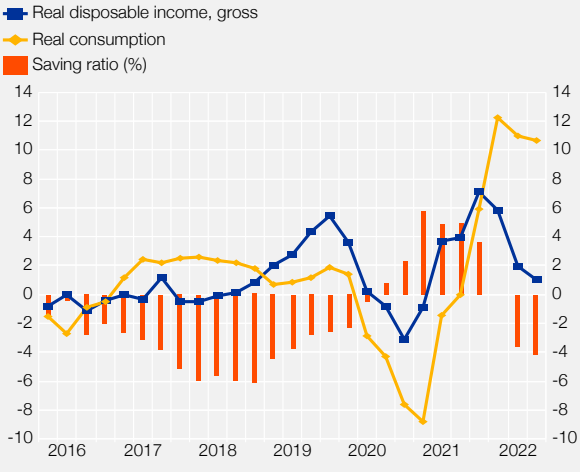
Stronger economic activity in 2022 further boosted investment growth, pushing it further upwards, albeit at a slower pace. Specifically, gross fixed capital formation grew by 11.7% in 2022, against 20.0% in 2021. The improvement is largely attributable to an increase of 36.1% in investment in "Housing" and of 21.5% in "Other construction". Investment in equipment grew substantially; in particular, investment in "Transport equipment and weapon systems" increased by 23.2% and in "Machinery and weapon systems" by 13.9%, while investment in "ICT equipment" dropped by 26.3%.

pandemic. The four-quarter moving average of households' saving ratio points to a significant decline in high saving ratios in 2022 (see Chart IV.4). In addition, strong inflation reduced households' purchasing power, forcing them to draw down on their savings.

Positive developments in private consumption in 2022 are also confirmed by an increase in the volume of retail sales, particularly of durables, as well as rising sales of private cars (see Table IV.2). Moreover, a substantial increase in services output also suggests higher consumption of services, of which households had been deprived during the pandemic. Nevertheless, developments in private consumption are surrounded by uncertainties, as also suggested by the course of the consumer confidence indicator (see Chart IV.5). Uncertainties are mainly associated with higher inflation, which affects households' real disposable income. In addition, price hikes, particularly for goods characterised by inelastic demand, such as food and energy, have distributional effects, mostly hitting lower-income households, which spend a relatively higher share of their income on such items, save less and are more liquidity-constrained.[2] However, the government's targeted fiscal measures to support vulnerable households against energy price increases are

Chart IV.4 Private consumption, households' disposable income and saving ratio[1] (Q1 2016 - Q3 2022)

(annual percentage changes in private consumption and in households' disposable income)



Source: ELSTAT, Quarterly non-financial accounts of institutional sectors.
1 Four-quarter moving average.

2 See "The impact of the recent rise in inflation on low-income households", ECB, *Economic Bulletin*, Issue 7/2022.

Table IV.2 Indicators of consumer and investment demand (2017-2023)

(annual percentage changes)[1]

	2017	2018	2019	2020	2021	2022 (available period)	2023 (available period)
Retail trade volume (overall index)	1.2	1.5	0.8	-4.0	10.3	3.2	
Retail trade confidence indicator	-6.7	9.3	6.0	-20.6	15.2	-5.3	17.4 (Feb.)
Consumer confidence indicator	-58.0	-44.1	-19.6	-32.5	-35.4	-50.7	-47.4 (Feb.)
New private passenger car registrations	22.2	25.8	13.2	-26.6	22.2	6.7	51.8 (Jan.)
Consumer credit[2]	-0.5 (Dec.)	-0.8 (Dec.)	-1.6 (Dec.)	-2.2 (Dec.)	-0.3 (Dec.)	1.2 (Dec.)	1.7 (Jan.)
Capacity utilisation in the capital goods industry	64.1	69.4	69.8	70.1	74.7	68.7	66.2 (Feb.)
Production of capital goods	2.1	5.8	6.0	0.2	13.8	5.5	18.7 (Jan.)
Public Investment Programme (PIP) disbursements	-5.4	4.8	-9.5	88.7	-15.5	22.5	-11.5 (Jan.)
Bank credit to domestic non-financial corporations[2]	0.3 (Dec.)	0.2 (Dec.)	1.7 (Dec.)	9.8 (Dec.)	2.8 (Dec.)	11.9 (Dec.)	10.6 (Jan.)
Housing credit[2]	-3.0 (Dec.)	-2.8 (Dec.)	-3.4 (Dec.)	-2.7 (Dec.)	-3.0 (Dec.)	-3.6 (Dec.)	-3.6 (Jan.)
Construction output index (at constant prices)	-18.2	-14.0	-6.0	-9.6	6.9	24.3	
Volume of building activity on the basis of permits	19.5	21.4	9.8	5.9	45.9	-7.0 (Jan.-Nov.)	
Construction confidence indicator	-9.6	4.8	0.0	7.9	103.5	-10.2	13.0 (Feb.)

Sources: ELSTAT (retail trade, cars, production of capital goods, volume of building activity, construction output); IOBE (confidence indicators, capacity utilisation); IOBE and European Commission (consumer confidence); and Bank of Greece (consumer and housing credit, business credit and PIP disbursements).
1 Excluding the consumer confidence indicator (weighted percentage balances of positive and negative answers) and capacity utilisation in the capital goods industry (percentages).
2 Reflecting changes in balances adjusted for loan write-offs/write-downs, exchange rate changes and reclassifications.

In the third quarter of 2022 (four-quarter moving sum), total private sector financing rose at a slower pace quarter-on-quarter (12.7% of GDP, from 13.1% in the second quarter of 2022), owing to a milder increase in external financing. The latter was supported by the dynamics of market-based financing (mainly non-residents' investment in non-listed firms, real estate investment and corporate debt issuance), while total loans (domestic and foreign) decreased, a development only partly offset by loans granted under the Recovery and Resilience Facility (RRF). Conversely, internal financing[3] increased strongly (to 10.5% of GDP in the third quarter of 2022, from 9.8% in the second quarter of 2022), primarily due to higher business profitability[4] and secondarily as a result of grants to enterprises under the RRF. Households registered negative savings, which reflected the lifting of the moratorium on tax and social security payments, the withdrawal of the bulk of pandemic-related grants, inflationary pressures, as well as the release of a large part of pandemic-related pent-up demand (see Chart IV.6).

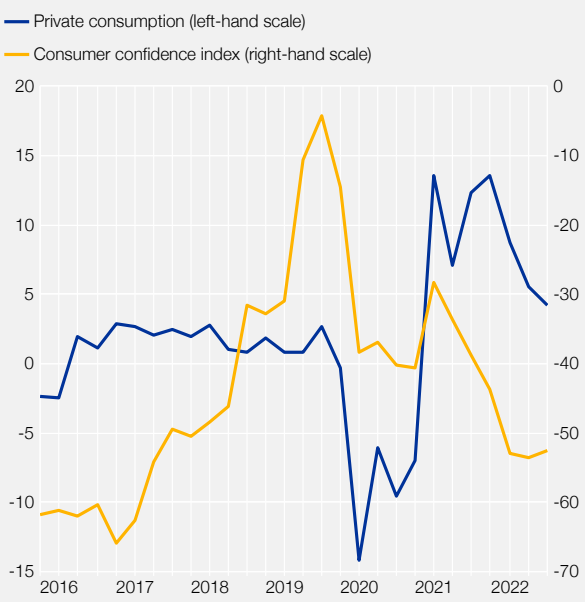
In the third quarter of 2022 (four-quarter moving sum), private sector gross capital formation in the real economy reached a peak (EUR 31.4 billion or 15.9% of GDP) last seen in early 2009, on the back of business performance.

Moreover, since the first quarter of 2022, the growth rate of the private sector's private savings has been lagging behind that of investment in the real economy; thus, in the third quarter of 2022, the private sector's financing gap reached 5.4% of GDP.

The medium-term outlook for an increase in investment is quite positive, as it is expected to improve both in absolute numbers and in quality terms, since a continuously growing share is

3 Internal financing is defined as the sum of gross household savings, retained corporate earnings and net capital transfers. The analysis is based on a four-quarter moving sum.
4 Not taking into account windfall taxes on the profits of electricity producers.

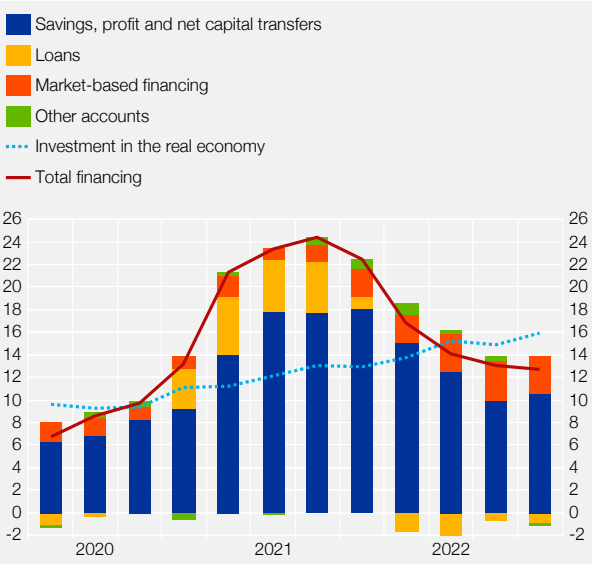
Chart IV.5 Private consumption and consumer confidence (Q1 2016 - Q4 2022)



Sources: ELSTAT and European Commission (consumer confidence index).
Note: Private consumption: annual percentage changes; consumer confidence: weighted balances.

Chart IV.6 Sources of private sector financing and real investment (Q4 2019 - Q3 2022)

(four-quarter moving sums, % of GDP)



Sources: Bank of Greece and ELSTAT.

channelled to high-value-added infrastructure. The recent surge in energy prices forced fossil fuel importing countries (including Greece) to fast-track projects involving further investment in green energy production. According to Greece's revised National Energy and Climate Plan, significant investment is expected by 2030, with a particular focus on photovoltaic and wind power generation plants and replacement of polluting passenger and goods vehicles, which should create 38,000 jobs. Lastly, the National Plan provides for upgrading buildings or building units in terms of energy efficiency, with projected annual investment reaching EUR 642 million for 2021-25 and EUR 935 million for 2026-30. Moreover, investment in natural gas diversification and security of supply is envisaged, such as an investment of EUR 339.6 million for the construction of an LNG floating storage and regasification unit (FSRU) by DiorigaGas in Agioi Theodoroi, Corinth, while works on the construction of an FSRU by Gastrade in Alexandroupoli are in progress. Additionally, significant investment in data centres has been scheduled by large firms in the industry, which should turn Greece into a major hub in the broader region.

The privatisation programme is also expected to make a substantial contribution, with budgeted revenue of EUR 595.3 million in 2022 and EUR 1.99 billion in 2023. In May 2022, the Government Council on Economic Policy approved the revised HRADF Asset Development Plan, which involves 27 projects, including the long-term concession of the Egnatia Odos and Attiki Odos motorways, efficient utilisation of the Athens and Thessaloniki Water Supply and Sewerage Companies, sale of equity stakes in Hellenic Petroleum (ELPE) and the Public Gas Corporation (DEPA), as well as redevelopment of ports, marinas and other real estate.

2.2 Supply

The gross value added of the Greek economy maintained its positive momentum, growing by 5.6% in 2022, largely as a result of positive performance in services, particularly tourism (see Table IV.3). The recovery in output is also reflected in a strong increase (35.5%) in the turnover of all enterprises in the Greek economy during 2022. Businesses in "Accommodation and catering service activities" recorded the largest increase in turnover (51.8%) in 2022.

Table IV.3 Gross value added at basic prices (2020-2022)

(annual percentage changes and sectoral contributions, at constant prices of 2015)

	2020	2021	2022	2022 (Q1)	2022 (Q2)	2022 (Q3)	2022 (Q4)
Agriculture, forestry and fishing	-4.7 (-0.2)	-2.5 (-0.1)	1.3 (0.1)	-1.2 (-0.1)	-0.4 (-0.0)	2.2 (0.1)	4.8 (0.2)
Secondary sector	2.5 (0.4)	10.7 (2.0)	4.2 (0.8)	7.9 (1.5)	3.7 (0.7)	4.1 (0.8)	-0.1 (-0.0)
Industry including energy	3.3 (0.5)	11.0 (1.9)	1.6 (0.3)	6.2 (1.1)	1.7 (0.3)	2.1 (0.4)	-3.2 (-0.6)
Construction	-3.4 (-0.1)	7.9 (0.2)	26.0 (0.5)	21.2 (0.4)	20.5 (0.4)	19.3 (0.4)	24.8 (0.5)
Tertiary sector	-11.4 (-8.8)	7.8 (5.9)	6.0 (4.6)	7.1 (5.3)	5.7 (4.4)	5.1 (3.9)	6.2 (4.8)
Trade, hotels and restaurants, transport and storage	-21.6 (-5.3)	16.2 (3.5)	12.6 (3.0)	16.3 (3.6)	17.5 (4.0)	10.8 (2.5)	7.4 (1.8)
Information and communication	2.8 (0.1)	9.8 (0.3)	4.5 (0.1)	-1.5 (-0.0)	1.6 (0.1)	4.1 (0.1)	12.9 (0.4)
Financial and insurance activities	-5.0 (-0.3)	-2.3 (-0.1)	2.4 (0.1)	-9.4 (-0.5)	-9.8 (-0.5)	0.4 (0.0)	29.6 (1.3)
Real estate activities	-11.5 (-2.0)	6.2 (1.1)	0.3 (0.1)	0.3 (0.1)	0.3 (0.1)	0.3 (0.1)	0.4 (0.1)
Professional, scientific and technical activities	-8.2 (-0.4)	5.6 (0.3)	13.5 (0.7)	6.4 (0.3)	10.0 (0.5)	13.0 (0.7)	17.6 (0.9)
Public administration and defence	-0.4 (-0.1)	1.8 (0.4)	-0.9 (-0.2)	0.4 (0.1)	-2.5 (-0.5)	-0.9 (-0.2)	-0.6 (-0.1)
Arts, entertainment and recreation	-23.5 (-0.8)	16.8 (0.5)	24.9 (0.8)	66.5 (1.7)	22.6 (0.7)	18.2 (0.6)	10.7 (0.4)
Gross value added at basic prices	-8.9	7.9	5.6	6.0	7.1	4.7	4.7

Source: ELSTAT, Quarterly national accounts, 7 March 2023. Annual data are non-seasonally adjusted. Quarterly data are seasonally adjusted.
Note: Percentage point contributions in brackets.

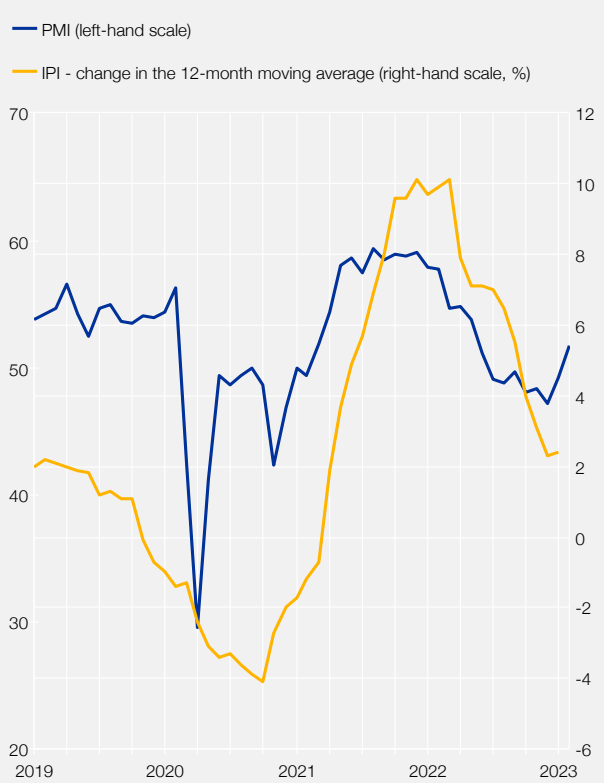
Gross value added in industry, including energy, continued its positive performance in 2022 (up by 1.6%). It is worth noting that industrial output has been growing since mid-2020, despite pandemic-related restrictions and the energy crisis that followed. This is in line with the evolution of the industrial production index, as well as the significant increase in exports of goods during this period. A small decrease in industrial production over the last few months of 2022 is attributable to a drop in electricity production, as a result of milder weather conditions, whereas manufacturing output continued to rise, though at a slower pace than in 2021. According to PMI data (see Chart IV.7), manufacturing output edged downwards in the second half of 2022, due to lower demand amid higher inflation.

Construction output grew by 26% in 2022. The sector's particularly robust performance is also captured by a marked rise in the construction output index during the same period. Nevertheless, leading activity indicators in construction (building permits index and business expectations index in construction) suggest a decline in construction activity, particularly since May 2022 (see Table IV.2).

In 2022, gross value added in services increased at an annual rate of 6.0% (mainly as a result of a positive performance of 12.6% in "Trade, hotels and restaurants, transport and communications"), contributing 4.6 percentage points (pps) to total gross value added growth. The latest available data on turnover in services at current 2022 prices confirm positive performance in the tertiary sector (see Table IV.4). This is also reflected in business confidence in the services sector, as the relevant IOBE index was positive at end-2022, while the Economic Uncertainty Indicator in the services sector dropped from 13.4 pps in January 2022 to 9.4 pps in December.

Regarding tourism services, travel receipts in 2022 reached 97% of their corresponding level in 2019 (see Charts IV.8 and IV.9). Tourism in Greece recovered more rapidly than in the rest of the

Chart IV.7 Purchasing Managers' Index (PMI) and Industrial Production Index (IPI) (January 2019 - February 2023)



Sources: Markit Economics and Hellenic Institute of Purchasing and Supply Management for the PMI and ELSTAT for the IPI.
Note: IPI data refer to the January 2019-January 2023 period.
1 Seasonally adjusted index; a value above 50 denotes an increase.

Table IV.4 Activity indicators in the services sector (2019-2022)

(annual percentage changes)

	2019	2020	2021	2022
A. Services turnover indices				
1. Trade				
Wholesale trade	-1.6	-10.8	22.1	21.5
Retail trade	1.3	-3.9	11.5	12.4
Trade and repair of cars and motorcycles	8.4	-13.0	29.0	15.9
2. Transport				
Land transport	1.0	-17.8	11.4	19.9
Sea and coastal passenger transport	6.3	-25.8	8.1	34.4
Air transport	6.3	-65.9	63.5	105.8
Storage and supporting transport activities	10.2	-14.6	15.6	28.2
3. Hotels and restaurants				
Accommodation and food service activities	1.3	-62.7	82.1	55.0
4. Information and communication				
Telecommunications	2.4	-2.6	7.3	5.8
Film, video and TV programme production, recordings and music products	-6.6	-17.5	14.9	21.7
Programming and broadcasting activities	6.1	0.4	1.2	10.4
5. Professional-scientific-technical activities				
Legal, accounting and management consulting services	6.0	-2.9	12.2	23.8
Architectural and engineering services	0.4	4.1	21.7	8.7
Advertising and market research	9.9	-8.6	12.0	11.5
Travel agencies and related activities	3.1	-75.0	112.2	86.1
B. Passenger traffic				
Athens International Airport	6.0	-68.4	52.8	84.1
Aegean Airlines[1]	7.3	-65.5	38.9	73.3
Piraeus Port	8.7	-59.3	34.7	45.5
C. Services confidence indicator	0.7	-22.2	37.8	1.9

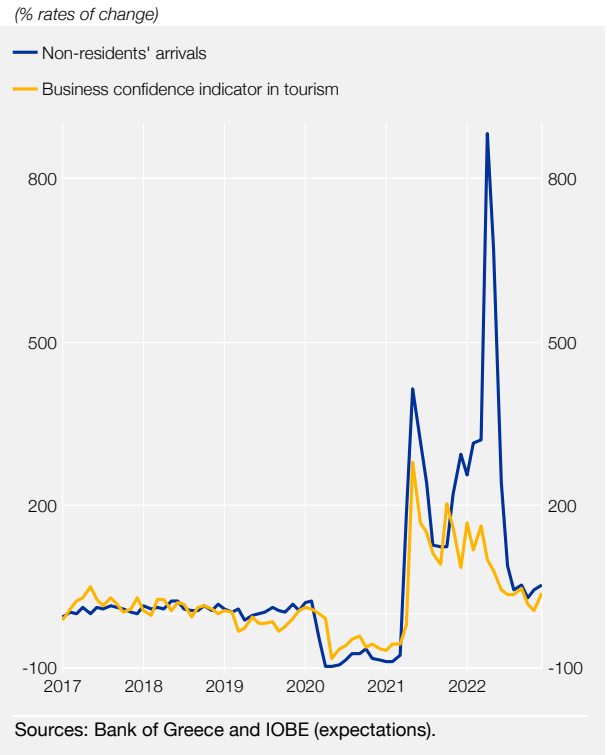
Sources: ELSTAT (services turnover), Athens International Airport, Aegean Airlines, Piraeus Port Authority and IOBE (services confidence).
1 Including charter flights.

world, outperforming key competitors in the Mediterranean (for more details, see Box IV.3 and Section 6). More specifically, Greece attracted 89% of its 2019 travellers, against 79% in Europe and 63% globally. During the same period, foreign passenger arrivals throughout Greece's airports were up by 85% against 2021, falling short of their 2019 levels by 0.1%.[5] In Greece's regional airports the increase in foreign passenger traffic was stronger than in Greek airports as a whole, reaching 7.2% of its 2019 level.

The outlook for tourism in Greece remains favourable for the current year, if early evidence from hotel reservations and the number of flight passengers scheduled by airliners for Greece is taken into account. Despite challenges for global tourism, travel receipts this year are expected to slightly exceed their 2022 level. Nevertheless, financial, health-related and geopolitical factors may have an adverse effect on tourism developments during 2023. Uncertainties in the economic environment, including high inflation and interest rates, increased energy and food prices and

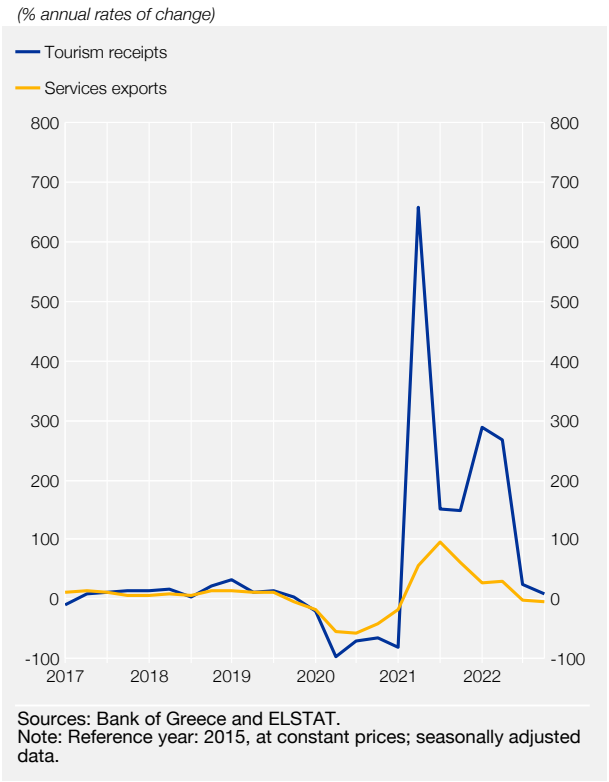
5 According to Eurocontrol, data for Greece up to and including 26.2.2023 show that the number of flights is expected to exceed its 2019 level. This should also be supported by an increase in the frequency and number of Greek and international flights, also in view of summer.

Chart IV.8 Inbound traveller flows and business confidence in tourism (January 2017 - December 2022)



Sources: Bank of Greece and IOBE (expectations).

Chart IV.9 Tourism receipts and services exports (Q1 2017 - Q4 2022)



Sources: Bank of Greece and ELSTAT.
Note: Reference year: 2015, at constant prices; seasonally adjusted data.

fears of a global recession remain the main barriers weighing on a recovery in tourism.[6] Potential risks also include persisting uncertainty as a result of the Russian invasion of Ukraine and other geopolitical factors, healthcare challenges related to COVID-19, as well as labour shortages.

The recovery in potential output continued in 2022, following a pandemic-related temporary halt. The growth rate of potential output is estimated to have reached 1.3% in 2022. This recovery was supported by (a) the strong dynamics of the economy before the outbreak of the pandemic; (b) positive effects from past structural reforms; and (c) the RRF resources. In particular, the negative output gap of the Greek economy is estimated to have closed in 2022 after 11 consecutive years. The recovery in potential output is underpinned by both labour and total factor productivity. A higher contribution from labour is mostly attributable to a gradual decline in unemployment, following a recovery in production activity, in particular investment, supported by the reforms implemented in 2010-12, which boosted the flexibility and efficiency of the labour market. Technically, the main driving force behind the increased contribution of labour is a drop in the natural rate of unemployment (NAWRU) from 15.1% in 2019 to 13.1% in 2023, while the effect of the stronger participation rate is almost fully offset by the ageing impact. It should be noted that the growth rate of total factor productivity remains low, although it is expected to gradually return close to pre-crisis levels. The main drivers are a recovery in capacity utilisation, the effects of structural reforms, a reallocation of resources towards more productive tradable sectors and among businesses within sectors, as well as new technologies incorporated in new investment. Lastly, the contribution of capital had been negative up to and including 2021, due to the impact of the debt crisis and the pandemic, although it is now already on a path to recovery. It should be noted that contributions from productivity and capital are higher than what they would have been without the RRF funds.

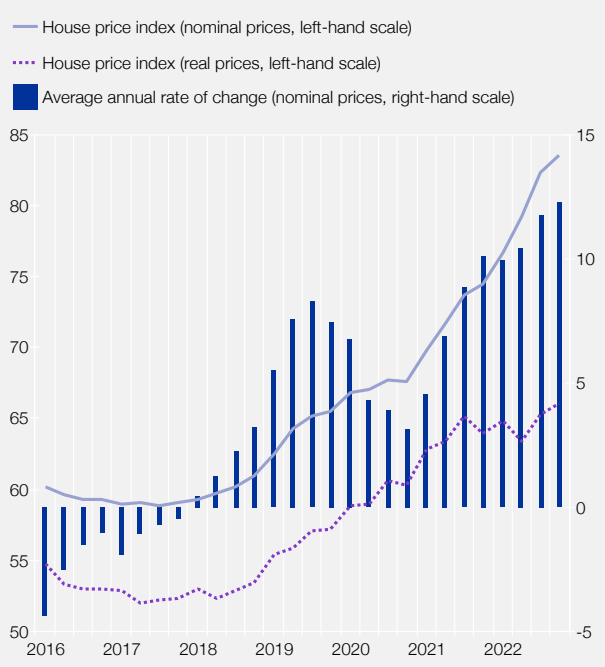
6 According to a survey by UNWTO Panel of Tourism Experts, October Edition (2022).

3 THE REAL ESTATE MARKET

2022 was a booming year for the Greek real estate market, despite the turmoil caused by the war in Ukraine and its adverse effects on the costs of borrowing, energy, materials and construction in general. The stable and positive outlook of the market, as well as investors' undiminished interest, especially from abroad, sustained strong price dynamics for residential and commercial properties, mostly in prime locations. Meanwhile, it is assessed that the slowdown in construction activity that was observed for most uses has pushed prices further upwards, and will continue to do so, as demand for prime properties has outstripped existing market supply.

Chart IV.10 House price index (Q1 2016 - Q4 2022)

(2007=100, annual percentage changes)



Source: Bank of Greece.

On the basis of the apartment price indices published by the Bank of Greece, the annual rate of change in housing market prices continues to follow a strong upward trend, although with marked local variations. In greater detail, according to data (appraisals) collected from domestic credit institutions, in 2022, for the fifth consecutive year, prices in the housing market rose considerably, with apartment prices (in nominal terms) increasing by 11.1% on an annual basis,[7] up from 7.6% in 2021 and 4.5% in 2020 (see Chart IV.10). The prices of new apartments (up to 5 years old) in 2022 increased at an average annual rate of 11.8%, i.e. slightly higher than that for old apartment prices (10.5%). Broken down by geographical area, apartment prices in the country's large urban areas grew at a robust pace, while in Athens (13.0%) and Thessaloniki (11.8%) in particular they outpaced the average annual rate for Greece as a whole.

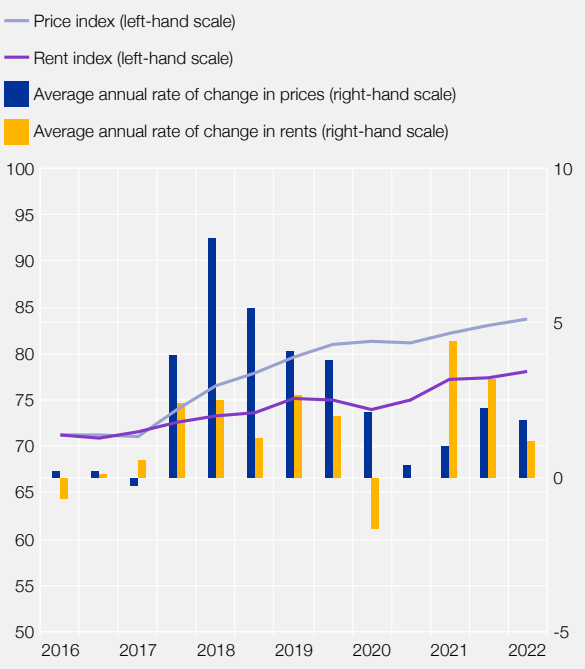
The dynamics of the housing market in 2022 strengthened markedly, mainly owing to strong foreign investor demand and buoyant tourism, which favourably affects houses mostly through short-term leases, as captured by inflows of foreign funds for house purchases.[8] Its sustained dynamics is confirmed by housing investment (ELSTAT data at constant prices), which rose by 36.1% in 2022 (27.3% in 2021), but remains low as a percentage of GDP (1.7%). In addition, positive business expectations in the house construction sector (IOBE data) strengthened further in 2022 on an annual basis by 4.0%. By contrast, the upturn in house construction for Greece as a whole reversed after five consecutive years of strong positive growth rates, with both the number and the volume of new building permits having declined between January and November 2022 (by -1.1% and -4.0%, respectively). At the same time, the total cost of construction of new residential buildings (ELSTAT data) for the year as a whole increased considerably by 8.8% (3.2% in 2021). The total amount of new housing loans, albeit still low, increased in 2022 by 20.7%, but at a much slower pace relative to 2021 (46.2%), whereas, according to data from the Bank Lending Survey (Q4 2022), demand for housing loans weakened for the third quarter in a row, after two years of increasing demand, possibly because of higher interest rates on housing loans.

7 Looking at each quarter of 2022, a sizeable gradual pick-up in the annual growth rate of prices is observed (9.9%, 10.4%, 11.7% and 12.2% in the first, second, third and fourth quarters of 2022, respectively).

8 Net inflows of funds for house purchases by foreign investors, as shown by Bank of Greece data, amounted to EUR 1,975.3 million in 2022, up by 68.0% from EUR 1,176.1 million in 2021.

Chart IV.11 Office indices (H1 2016 - H1 2022)

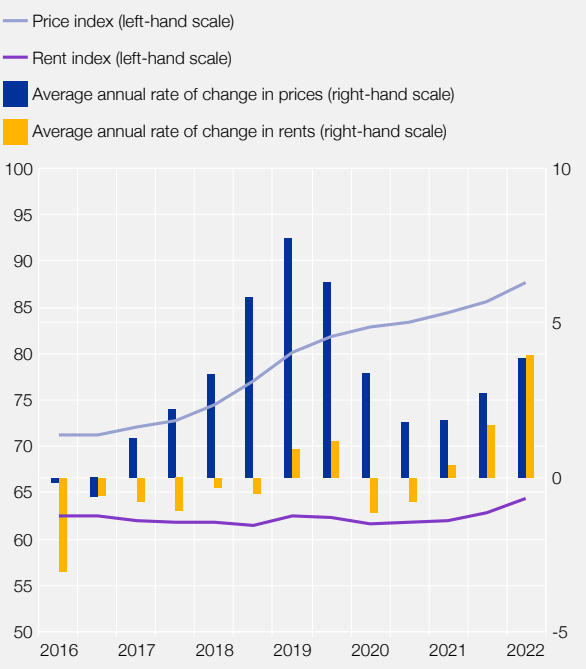
(2010=100, annual percentage changes)



Source: Bank of Greece.

Chart IV.12 Retail property indices (H1 2016 - H1 2022)

(2010=100, annual percentage changes)



Source: Bank of Greece.

In the segment of commercial properties, on the basis of data collected by the Bank of Greece, in the first half of 2022 the prices of prime offices rose by 0.7% compared with the previous half-year, while the prices of prime retail properties rose by 2.4% (see Charts IV.11 and IV.12).

In Athens, the corresponding rate of increase in office prices was much higher (2.0%), reflecting investors' keen interest in this market segment, in contrast with Thessaloniki (0.4%) and the rest of Greece in particular (-0.9%), where investor demand for offices was weak. Similarly, for prime retail properties, prices in Athens rose by 3.1%, whereas in Thessaloniki and the rest of Greece the increase was milder (1.4% and 1.5%, respectively). Lastly, office rents rose throughout the country by 0.9%, while retail rents rose by 2.5%, compared with the preceding half-year.

Over the January-November 2022 period, total construction activity for commercial uses (ELSTAT data) recorded negative rates of change,[9] after a year of buoyant building activity. However, the number of new permits both for offices and hotels increased by 13.3% and 39.7%, respectively, while the number of new retail property permits dropped by 27.8% year-on-year.

On the basis of data collected by the Bank of Greece, the bulk of new transactions by Real Estate Investment Companies (REICs), other investment funds and real estate developers during 2022 referred to prime and bioclimatic offices (29.6% of total investments[10]), while investors also showed strong interest in the development of new office buildings or the reconstruction of existing ones. Hotels and warehousing facilities absorbed 21.8% and 4.5% of funds, respectively, while sizeable investments were also channelled to retail properties in prime locations, houses bought for investment purposes, as well as land development projects. With regard to

9 Between January and November 2022, new building permits for commercial properties decreased, year-on-year, by 8.6% in number and by 10.2% in volume terms.

10 Data collected from REICs, real estate managers and consultants, as well as media releases referring to large investment transactions in real estate.

the geographical distribution of investments, it is estimated that the Attica region attracted more than 60% of funds, whereas investments in land development projects were spread out across the country. Minimum returns on prime offices situated in the capital's most commercial locations ranged between 5.6% and 6.4% in the second half of 2022, i.e. unchanged relative to the previous half-year, while returns on prime retail properties centrally located in Athens ranged from 5.3% to 6.2%, also unchanged from the first half of 2022.

The outlook for the Greek real estate market remains positive, in spite of the uncertainties surrounding the domestic and the global economy. Yet any forecast about medium-term developments in the market is quite precarious at the current juncture, as relevant domestic indicators point to mixed trends and buoyant real estate markets in Europe –and beyond– appear to already be in correction territory in terms of number of transactions, prices and returns. Taking into account the specific characteristics of the Greek market, the weaker price increases observed in recent years relative to other countries and the still attractive returns, and in the absence of new unexpected developments, real estate prices, particularly in the prime property segment, are expected to continue attracting increased interest. Besides, large-scale development projects that are planned or are already under way, a gradual improvement of infrastructures and an upgrading of the existing building stock (supported by the National Recovery and Resilience Plan) are set to help maintain the attractiveness of the market and its current dynamics.

4 THE LABOUR MARKET

The labour market improved considerably in 2022, with total employment growing by 5.4% and dependent employment by 7.7%. In the same vein, the unemployment rate fell to 12.4%, from 14.7% in 2021. Robust economic growth in the first half of the year was accompanied by an improvement in the labour market, but in the second half the labour market contracted significantly, due to weaker economic activity. At the same time, the labour market is showing signs of tightness, as job vacancies in the economy increased by 82.9% compared to 2021, while the labour market slack[11] decreased from 22.2% in 2021 to 18.5% in 2022.[12]

The decelerating growth rate of employment in the labour market was also reflected in data by the ERGANI information system, as net dependent employment flows in the private sector in 2022 were positive, though hovering around significantly lower levels than both in 2021 and before the pandemic. Specifically, 72,847 new jobs were created in 2022, against 133,082 and 127,644 in 2021 and 2019, respectively (see Chart IV.13), while lower net employment flows in 2022 are mainly attributable to a significant rise in layoffs and fixed-term contract expiries, despite increased hirings. Across sectors, the largest increase in hirings was recorded in tourism-related activities, on the back of an improved tourist season relative to 2021. Lastly, full-time employment hirings reached 51.1% of the total (against 53.4% in 2021).

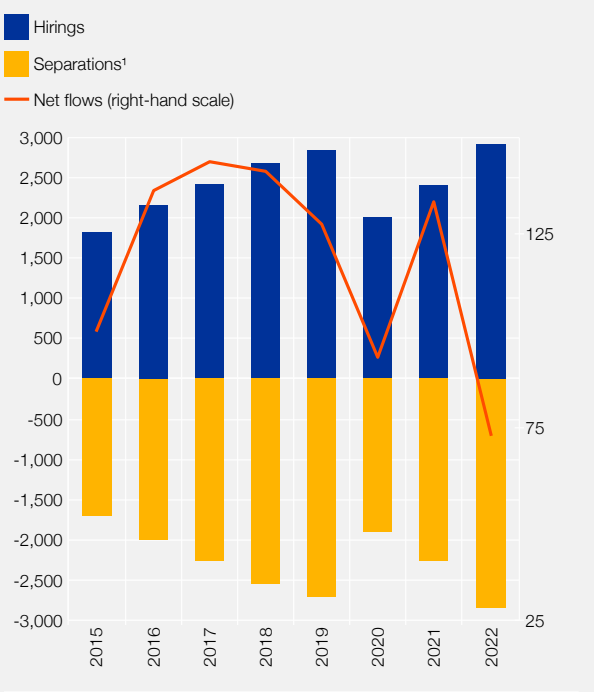
Electronic reporting data from the ERGANI information system showed an increase in the number of both workers and enterprises with personnel. Specifically, the number of employees on private-law contracts in 2022 increased by 3.97% compared with 2021, while the number of enterprises that employ workers grew by 1.1%. Out of total workers, 54.8% are employed in micro, small and medium-sized enterprises (up to 49 employees); specifically, 16.3% in

11 Labour market slack is defined as the sum of all unmet employment demands (unemployed people, underemployed people, people seeking employment but not immediately available, people available to work but not seeking employment) as a percentage of the labour force under the broader definition.

12 See Antonopoulos, C., S. Anyfantaki, H. Balfoussia, T. Kosma, E. Papapetrou, F. Petroulakis, P. Petroulas and P. Zioutou (2022), "The Greek labour market before and after the pandemic: slack, tightness and skills mismatch", Bank of Greece, *Economic Bulleti*n, No. 56.

Chart IV.13 Dependent employment flows in the private sector (2015-2022)

(thousand persons; annual data)



Sources: Manpower Employment Organisation (OAED) and "ERGANI" system.
1 Including termination and expiration of contracts and voluntary quits.

micro enterprises (with less than 5 employees), representing 72.6% of total enterprises, 11.6% in enterprises employing 59 workers (14.3% of total enterprises), 26.9% in enterprises employing 1049 workers (11.4% of total enterprises), 18.4% in enterprises employing 50,249 workers (1.5% of total enterprises), while 26.8% of workers are employed in enterprises with over 250 workers, which nevertheless represent a very small share (barely 0.3%) in total enterprises.[13]

According to the Labour Force Survey (LFS) data by ELSTAT, the number of employees in the first quarter of 2022 initially grew strongly and then decelerated, with the lowest growth rate recorded in the fourth quarter. The particularly positive pattern in the first quarter contributed to a 5.4% increase in employment in 2022, against 1.4% in 2021. Similarly, dependent employment rose by 7.7% (against 1.4% in 2021), while the number of other persons employed grew marginally by 0.5% (against 1.3% in 2021), reflecting mainly an increase in the self-employed with personnel and contributing family workers, while the self-employed without personnel decreased.

A rise in employment during this period mainly stemmed from an increase in the number of persons employed in manufacturing (5.9%, against 5.1% in 2021), construction (4.8%, against 0.7% in 2021), trade (2.8%, against 2.4% in 2021) and education (10.3%, against 3.6% in 2021), while tourism-associated activities posted the largest increase (16.1%, against 5.6% in 2021). By contrast, a decrease in persons employed was recorded in financial and insurance activities (2.3%, against 10.6% in 2021) and in public administration and defence (2.7%, against 9.5% in 2021) (see Chart IV.14).

A breakdown of employment by gender reveals that both male and female employment grew almost equally in 2022 (5.4% and 5.5%, respectively). As regards annual changes by age group, the 20-24 and 25-29 year-olds registered the strongest increases, thus contributing to a rise in their respective shares in total employment. Conversely, although the 30-44 and 45-64 year-olds recorded positive annual changes, their respective shares in total employment decreased marginally (36.9% and 47.5%, respectively).

The share of part-time employment fell marginally to 8.2% of total persons employed in 2022 (8.3% in 2021), reflecting the withdrawal of full-time job-creation support measures.

The labour force participation rate for the 15-64 age group in 2022 grew strongly (to 69.4%, from 67.3% in 2021), reflecting a rise in labour participation for both men and women. Labour participation increased for all individual age groups. Specifically, labour participation for the 2024, 25-29 and 30-44 age groups grew substantially by 4.5, 2.2 and 2.6 percentage points,

13 ERGANI, special annual issue, SEPE – OAED – EFKA, Electronic reporting data of total enterprises and employees-wage earners on private-law contracts, 1 October-11 November 2022, 17.1.2023 [in Greek].

respectively. Male and female –particularly youth– labour participation is very important, given that population ageing might undermine the sustainability of social security systems, as well as the potential growth of the Greek economy in the long run. To this end, possible lines of action could include policies that help improve work-life balance, as well as investing in technical education and training, alongside tax system reforms and reduced incentives for early retirement, in order to encourage more workers to return to and remain in the labour market.

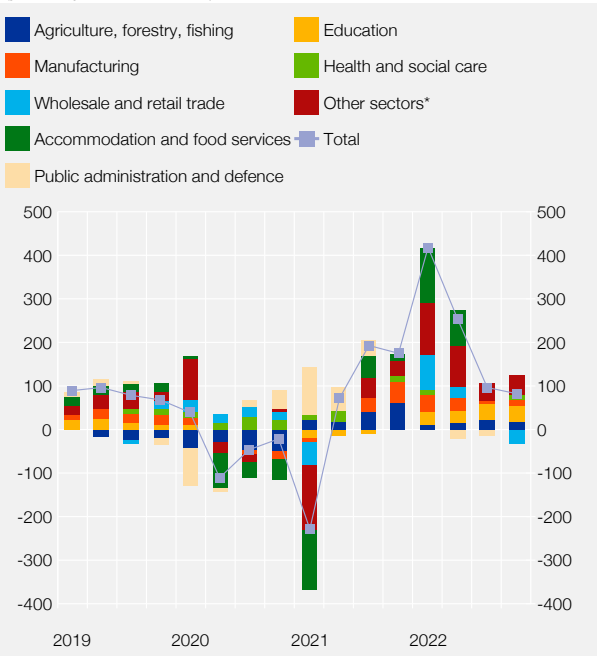
The rate of unemployment dropped to 12.4% (from 14.7% in 2021). The decline in unemployment benefited both men and women, although the female unemployment rate (16.4%) remained significantly higher than the male rate (9.3%). The youth unemployment rate (2029 years of age) also dropped to 23.3% (from 27.8% in 2021). The year 2022 also witnessed a decline in the long-term unemployment rate (to 7.7%, from 9.2% in 2021) (see Chart IV.15). Youth employment and labour participation require strengthening demand in sectors and jobs with high value added, attracting foreign direct investment and enhancing the openness of the Greek economy.

The short-term outlook for employment (IOBE/European Commission business surveys), although moving in positive territory in 2022, has deteriorated since 2021, mainly in trade and to a lesser extent in construction and manufacturing, while it improved in services, owing to the stronger performance of tourism. The weighted index of employment expectations decreased year-on-year, reflecting uncertainty related to developments in the war in Ukraine, higher interest rates and prices, and the impact on the economy.

Labour market tightness, which reflects the fact that job vacancies exceeded available workers and is represented by the job vacancy rate,[14] grew following the pandemic. Specifically, the job vacancy rate in 2022 increased to 1.0%, from 0.6% in 2021, although Greece and Spain registered the lowest job vacancy rates in the euro area. Moreover, a breakdown of the job vacancy rate by sector of economic activity reveals that certain sectors recorded high

Chart IV.14 Changes in the number of the employed: total and by sector of the economy (Q1 2019 - Q4 2022)

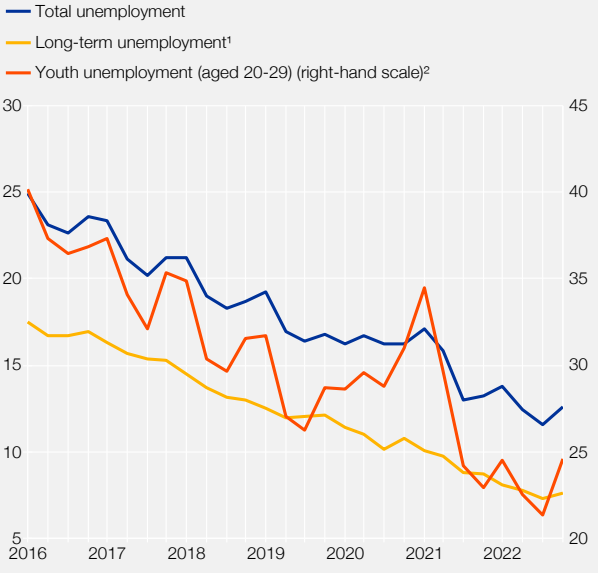
(year-on-year; in thousands)



Source: ELSTAT, Labour Force Survey.
* Including sectors with less than 6% contribution to total employment.

Chart IV.15 Unemployment rates (Q1 2015 - Q4 2022)

(% of labour force)



Source: ELSTAT, Labour Force Survey.
1 For 12 months or over.
2 As a percentage of the labour force of this age group.

14 The job vacancy rate is defined as the ratio (number of job vacancies) / (number of filled employment positions + number of job vacancies), expressed as a percentage.

vacancy rates, such as construction and trade, transport and accommodation (6.7% and 1.2%, respectively, in 2022). On the other hand, a number of sectors, i.e. manufacturing and industry, posted mild increases, albeit from low vacancy rates. Overall, the labour market seems to be tighter compared with the pre-pandemic period, led by tourism and construction.

The labour market has recovered after the pandemic and is expected to improve further in the long run, despite high inflation, increased interest rates and heightened uncertainty owing to the war in Ukraine. Employment protection measures during the pandemic and structural reforms in the past few years have shielded the labour market and protected incomes.[15] Nevertheless, there are still several distortions at play. The unemployment rate, although declining steadily and strongly in recent years, still hovers above the euro area average, while the unemployment rate among members of vulnerable social groups (youth, women) remains high. In addition, the serious issue of skill mismatches observed after the pandemic persists, with firms finding it hard to recruit qualified staff, as workers either lack the required skills or have shifted to other sectors with better employment prospects. Moreover, the labour market slack, though declining, remains significantly elevated. Further measures are necessary to deal with such issues, as the projected deceleration in economic activity over the medium term is expected to further weigh on the labour market. Particularly effective actions in this direction are upgrading technical education and (re)skilling vulnerable social groups, in order to equip them with appropriate skills and improve their employment prospects. Measures are also needed to improve the work-life balance, to integrate and keep in the labour market the inactive population, with a focus on women and youth. Institutional interventions to further reduce or subsidise social security contributions should lower non-wage costs and help tackle undeclared or underreported work. Lastly, the implementation of the National Recovery and Resilience Plan "Greece 2.0" should support investment and labour force training, thereby helping to create new, better paid jobs.[16]

5 INFLATION, WAGES AND BUSINESS PROFITS – INCOME INEQUALITY AND POVERTY

5.1 Inflation

Inflation, as measured by the Harmonised Index of Consumer Prices (HICP), rose to 9.3% in 2022, from 0.6% in 2021. Core inflation (HICP excluding energy goods and unprocessed food) rose to 5.7% in 2022 from 0.7% in 2021 (see Table IV.5 and Chart IV.16).

Annual HICP inflation kept increasing throughout 2022, topping all historical highs since the start of the series. The sharp upward path is attributable to all main components. The largest contribution came from energy goods, which grew by 41.0% in 2022, against 12.4% in 2021. Food also made a substantial contribution, registering an average annual increase of 9.7% (unprocessed food: 10.1%; processed food: 9.5%). Since mid-2022, services and non-energy industrial goods have also made large contributions, feeding the upward trend of core inflation.

The average annual rate of headline inflation (9.3%) was attributable to higher energy prices by 4.47 pps, increased food prices by 2.30 pps and a rise in both main core inflation components (services and non-energy industrial goods) by 2.53 pps.

The energy component of HICP inflation took an upward path as from April 2021 (9.8%), registering an increase of 44.0% on an annual basis in February 2022 (see Chart IV.17). It should

15 As from 1 April 2023, full-time minimum wage levels reached EUR 780, while minimum salaries per day came to EUR 34.84 (Ministry of Labour and Social Affairs, press release, 17.3.2023).

16 Regarding active labour market policies, labour subsidy schemes are implemented for the long-term unemployed and special or vulnerable social groups, while new training programmes are about to be launched –for both the employed and the unemployed– concerning digital and green skills, which draw on funds from the Recovery and Resilience Facility and the new NSRF.

Table IV.5 Price developments in Greece and the euro area

(annual percentage changes)

	2018	2019	2020	2021	2022
A. Euro area					
Harmonised Index of Consumer Prices (HICP) and its components					
Overall index	**1.8**	**1.2**	**0.3**	**2.6**	**8.4**
Goods	2.0	1.0	-0.4	3.4	11.9
Food	2.2	1.8	2.3	1.5	9.0
Processed food[1]	2.1	1.9	1.8	1.5	8.6
Unprocessed food	2.3	1.4	4.0	1.6	10.4
Industrial goods	1.9	0.5	-1.8	4.5	13.6
Non-energy industrial goods	0.3	0.3	0.2	1.5	4.6
Energy	6.4	1.1	-6.8	13.0	37.0
Services	1.5	1.5	1.0	1.5	3.5
Overall index excluding energy and unprocessed food	**1.2**	**1.2**	**0.9**	**1.5**	**4.8**
B. Greece					
Harmonised Index of Consumer Prices (HICP) and its components					
Overall index	**0.8**	**0.5**	**-1.3**	**0.6**	**9.3**
Goods	0.7	-0.3	-1.1	2.0	12.9
Food	0.9	0.0	1.3	1.2	9.7
Processed food[1]	1.0	-0.8	-0.1	0.7	9.5
Unprocessed food	0.5	2.0	4.5	2.2	10.1
Industrial goods	0.5	-0.5	-3.3	2.7	15.9
Non-energy industrial goods	-1.2	-0.4	-0.4	-0.7	5.0
Energy	3.9	-0.3	-9.8	12.4	41.0
Services	0.9	1.3	-1.4	-1.0	4.5
Overall index excluding energy and unprocessed food	**0.5**	**0.5**	**-1.0**	**-0.7**	**5.7**

Sources: Eurostat, ELSTAT and calculations based on ELSTAT data.
1 Including alcoholic beverages and tobacco.

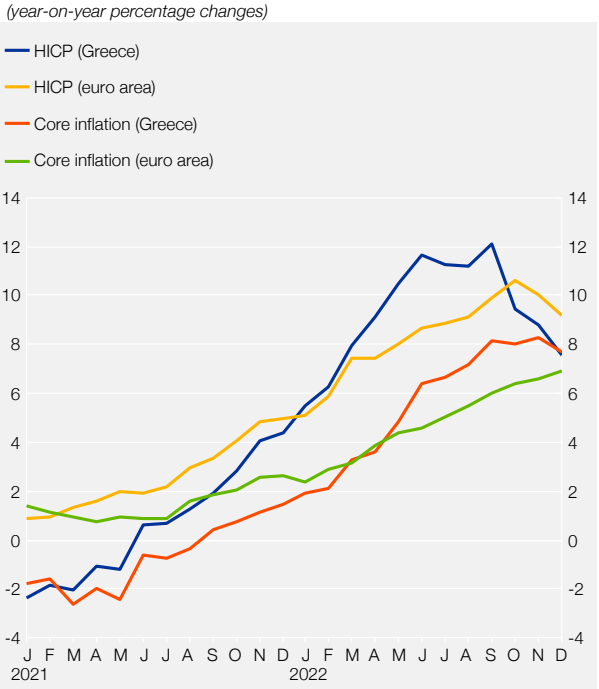
be noted that energy inflation had already been high before the outbreak of the war in Ukraine. The war, combined with the sanctions imposed, exacerbated inflationary pressures, causing an even stronger increase in energy prices, which peaked in May 2022 (up by 61.0% on an annual basis). Their decline in the last quarter of the year is associated with the overall downward course of energy prices, as well as across-the-board subsidies, mainly on electricity bills.

The food component has followed an upward trend since mid-2021, and since May 2022 prices' annual rates of change have exceeded 10%. Unprocessed food prices registered an average annual growth rate of 10.1%, with heightened volatility throughout the year, while processed food prices recorded an average annual growth rate of 9.5%, following a continuous upward course (see Table IV.6). The main food price sub-indices with the largest contributions and the highest average annual percentage changes were: "Bread and cereals" (13.9%), "Meat" (13.3%), "Dairy products and eggs" (16.1%), "Oils and fats" (20.7%) and "Vegetables" (12.0%).

Large and continuous rises in energy and food prices during 2022, from a certain point on (around mid-year), started to affect the components of core inflation. Services, which had posted negative average annual inflation rates over the past two years, had indeed started from a lower level; however, aided by high tourism demand, they largely incorporated energy and food price increases. Such sub-indices are namely "Accommodation services" (18.0% in 2022, against

Chart IV.16 Harmonised index of consumer prices (HICP) and core inflation in Greece and the euro area

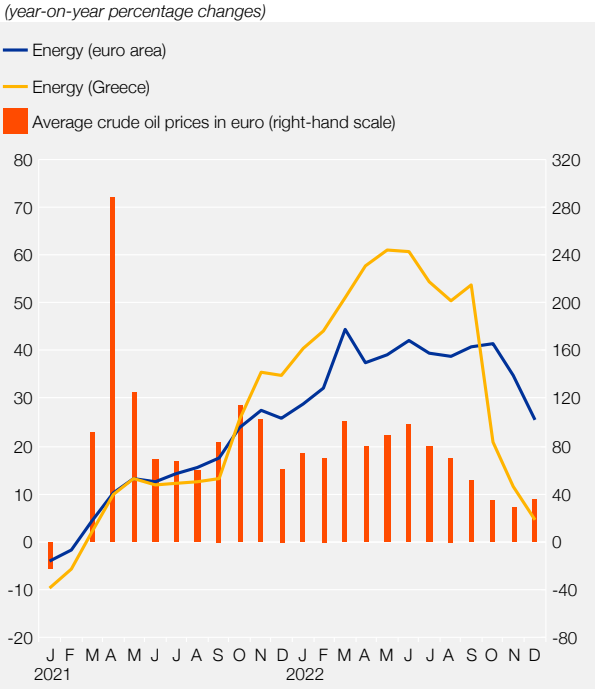
(year-on-year percentage changes)



Sources: Eurostat, ELSTAT and calculations based on ELSTAT data.

Chart IV.17 Evolution of energy prices in the euro area and in Greece and of Brent crude oil prices in euro (January 2021 - December 2022)

(year-on-year percentage changes)



Sources: Eurostat; calculations based on ELSTAT data; for crude oil prices (UK Brent), calculations based on ECB data.

Table IV.6 Price indices

(annual percentage changes)

	Consumer Price Index (CPI)							
		Sub-indices						
Years	Overall index	Goods	Services	CPI excluding fresh fruit & vegetables and fuel	CPI excluding food and fuel	Food & non-alcoholic beverages	Fresh fruit & vegetables	Fuel
2018	0.6	0.7	0.5	0.1	0.1	0.4	1.7	5.1
2019	0.3	-0.4	1.2	0.1	0.4	-0.1	5.6	0.4
2020	-1.2	-1.6	-0.8	-0.4	-0.6	1.4	6.5	-12.3
2021	1.2	2.4	-0.5	0.2	-0.1	1.4	1.2	14.9
2022	9.6	14.0	2.4	7.1	5.7	11.8	10.3	34.7

	Industrial producer price index						Import price index in industry	
	Domestic market				External market			
		Sub-indices						
Years	Overall index	Overall index excluding energy	Intermediate goods	Consumer goods	Overall index	Overall index excluding energy	Overall index	Overall index excluding energy
2018	3.3	0.1	1.2	-0.8	7.6	0.6	6.6	0.1
2019	0.6	0.3	1.1	-0.3	-0.6	-0.5	3.0	0.0
2020	-4.6	-0.1	-0.6	0.2	-15.5	-0.3	-10.8	-0.9
2021	11.9	2.3	4.1	0.8	20.0	5.5	20.0	2.8
2022	33.5	6.6	10.1	4.7	39.8	15.2	27.7	7.1

Source: ELSTAT and calculations based on ELSTAT data.

1.2% in 2021), catering services "Restaurants-patisseries-cafes" (4.7% in 2022, against 0.3% in 2021) and "Transport services" (11.1% in 2022, against 4.1% in 2021).

Industrial (non-food and non-energy) goods inflation, which, like services inflation, had registered a negative average annual rate in 2021 (0.7%) and started to rise from low levels in 2022, jumped to 9.0% in November 2022. In addition to energy price increases, it also incorporated various global supply disruptions.

The convergence of headline and core inflation in the last quarter of 2022 broadly prefigures the course of both aggregates in 2023. With the energy component expected to stand in negative territory (due to its sharp decline, various subsidies, and base effects), headline inflation should be mainly driven by food inflation and developments in services and non-energy industrial goods. HICP inflation is expected to decline markedly in 2022, though remaining at relatively high levels.

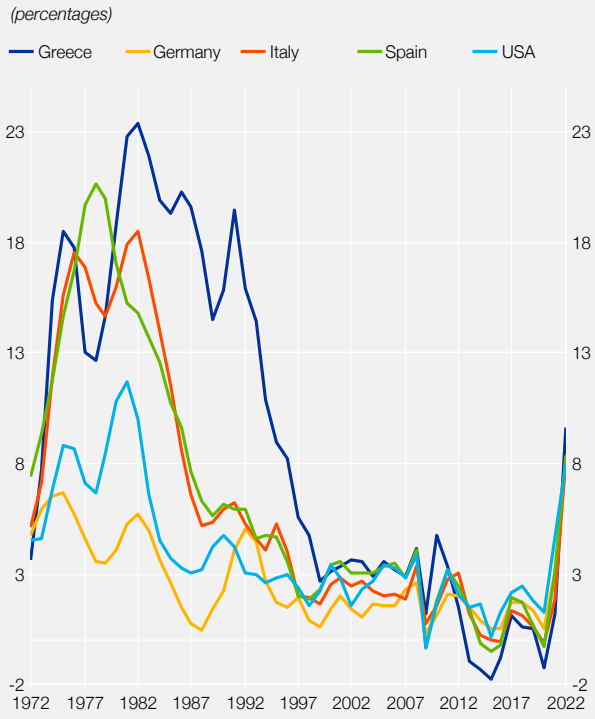
Box IV.1

DRIVERS OF INFLATION IN THE GREEK ECONOMY: THE ROLE OF SUPPLY AND DEMAND

In recent decades, inflation stabilised in all advanced economies, having dropped from double digit levels in the 1980s to around 2% from the 1990s onwards. In Greece, disinflation took a longer time to achieve, but after the fulfilment of the convergence criteria for joining the Economic and Monetary Union (EMU), inflation fell to historic lows, never exceeding an annual rate of 5%, and even turned negative for several years in the mid-2010s, during Greece's economic adjustment (see Chart A).

Starting in the second half of 2021, inflation in most advanced economies started to rise sharply and, in 2022, reached levels not seen in decades. Russia's invasion of Ukraine triggered a surge in energy costs, primarily for Europe, feeding into headline inflation and, later on, core inflation as well. This added to the upward effect on inflation which resulted from the COVID-19 global pandemic shock and the associated supply chain bottlenecks. Moreover, the unprecedented monetary and fiscal support measures introduced by central banks and governments to mitigate the economic impact of the pandemic are also likely to have played a role in inflation developments (see Box 2 in this publication).

Chart A Inflation in selected economies (1972-2022)



Source: Ha, J., M.A. Kose and F. Ohnsorge (2021), "One-Stop Source: A Global Database of Inflation", Policy Research Working Paper No. 9737, World Bank, Washington, DC.

This box aims to investigate the drivers of inflation in the Greek economy over the recent period. The exercise uses the model of Shapiro (2022),[1] which provides a flexible framework for identifying the sources of inflationary pressures, distinguishing between supply and demand shocks. The model has been used extensively in similar analyses by the Federal Reserve, the ECB, and the OECD (see Box 1 in this publication).

1 Shapiro, A.H. (2022), "Decomposing supply and demand-driven inflation", Federal Reserve Bank of San Francisco Working Paper No. 2022-18.

Drivers of inflation

Inflationary pressures typically have three possible sources. First, they can be the result of supply shocks that increase the cost of inputs, typically energy or imported intermediate goods. This is also known as cost-push inflation. Second, they can be the result of higher demand for a given level of supply, e.g. due to capital inflows or fiscal and monetary easing. This is commonly known as demand-pull inflation. Lastly, they can be the result of rising inflation expectations, which incentivises economic agents to renegotiate long-term contracts at higher prices (e.g. property rents, wages).

Analysing the drivers of inflation is highly relevant for monetary policy. Typically, monetary policy reacts effectively to demand shocks by raising borrowing costs and reducing liquidity, to contain aggregate demand. On the other hand, monetary policy does not react to small and temporary supply shocks, which increase input prices and reduce output, as monetary policy tools cannot affect supply in the short term. Moreover, any change in the monetary policy stance affects the real economy with a lag of several months, implying that a response to temporary shocks could generate undesirable volatility with little gain to be achieved.

However, large supply shocks risk affecting prices in other sectors or industries, especially when they involve intermediate inputs for the rest of the economy, such as energy, thereby raising medium-term inflation expectations and potentially leading to a further, self-sustaining increase in inflation. The oil crisis of the 1970s was such a shock. The consensus view is that the belated response of monetary authorities to rising oil prices at the time allowed inflation expectations to drift up and, together with other measures (wage indexation), led to a large and prolonged rise in inflation. In the current context, to avert a repetition of the 1970s episode of high inflation, central banks in developed countries responded by an initial normalisation and then by a tightening of the monetary policy stance, so as to contain inflationary pressures before they became entrenched and avoid more drastic action in the future.

Model methodology

This box uses a new model to decompose inflation into supply-related and demand-related shocks, namely the model developed by Shapiro (2022), as mentioned above. This approach distinguishes between supply-driven and demand-driven contributions to the personal consumption expenditure (PCE) price index. Demand-driven components are identified as those where an unexpected change in prices moves in the same direction as an unexpected change in quantity in the consumption basket each month. Supply-driven components are identified as those moving prices and quantities in opposite directions. For each consumption category, price and quantity regressions are run for the 2001-2022 period.[2] For each quarter in which price and quantity errors (deviations of actual values from those estimated by the model) have the same sign, the shock is assumed to be demand-driven; if they have a different sign, the shock is supply-driven. In reality, supply and demand shocks co-exist, thus the model can identify the relative strength of shocks. Statistically insignificant shocks are categorised as ambiguous.

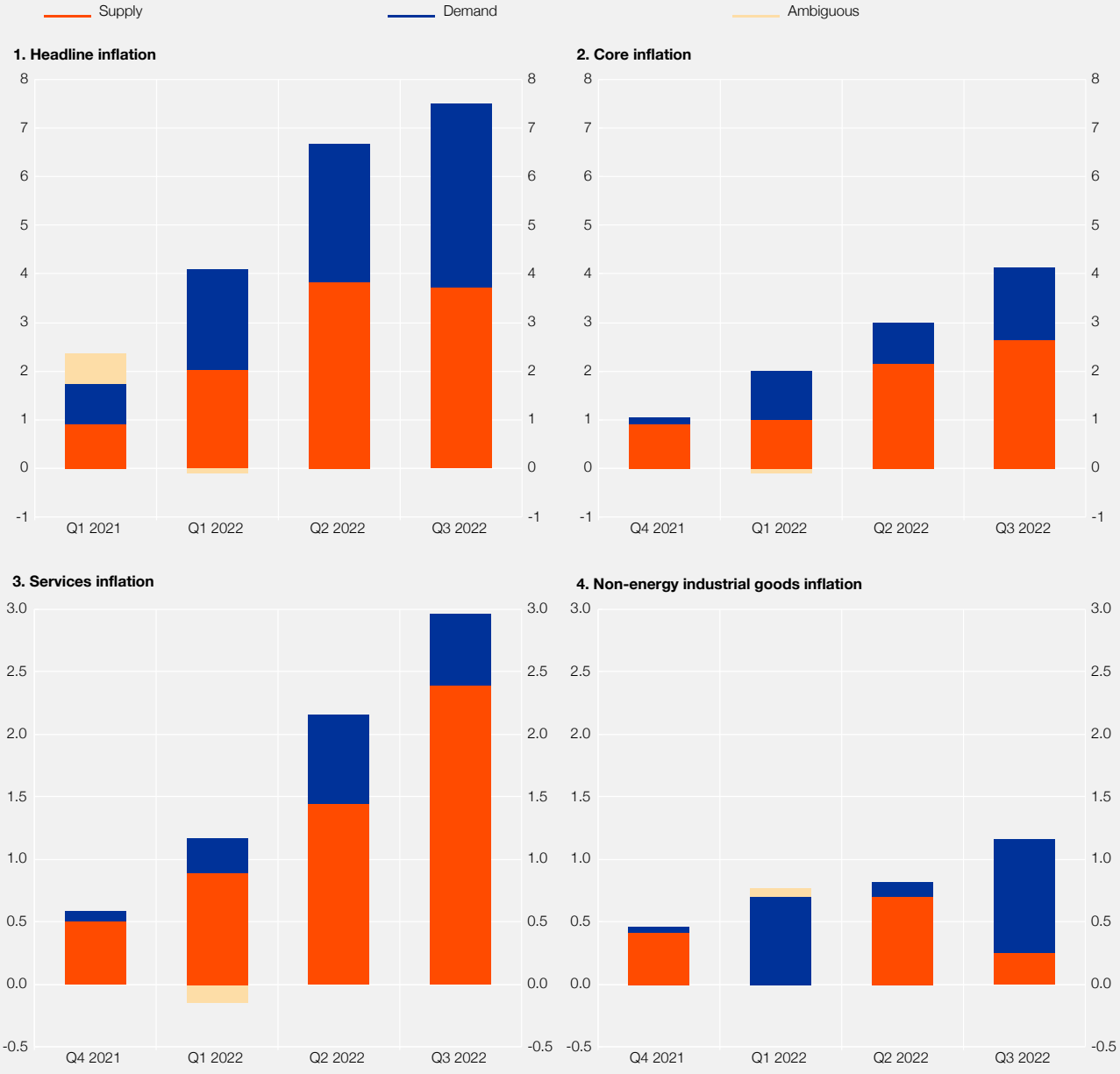
Consumer price indices are used for 24 categories of goods and services. As consumption data are not available on a quarterly basis for individual sectors, seasonally adjusted sectoral turnover indices are used instead, following the approach of Gonçalves and Koester (2022).[3] Consumer price indices are available at the level of indi-

2 Regressions are in the form of $x_{it} = \alpha_0 + \alpha_1 q_{it-1} + \alpha_{2qit-2} + \alpha_{3qit-3} + \alpha_{4qit-4} + \beta_{1pit-1} + \beta_{2pit-2} + \beta_{3pit-3} + \beta_{4pit-4} + \varepsilon_t$, where q_{it} is consumption for any given sector i in period t (proxied by the sectoral turnover index), p_{it} is the price and x_{it} is the price or consumption, as the case may be. Consumption and prices are expressed in logarithmic increases compared with the preceding period. To abstract from the exceptional impact of the COVID-19 shock, when turnover collapsed, making all series unstable, a statistical sample is used for the period up to and including the fourth quarter of 2019. Moreover, the use of four lags means that the measurements refer to the period from the fourth quarter of 2021 onwards, to exclude the two quarters particularly affected by the pandemic (second and third quarters of 2020).

3 While official disaggregated consumption and price data are available in a timely manner in the United States, in European Union countries similar/granular product-level consumption data are only available on an annual basis, i.e. at a frequency not adequate for the purpose of this exercise. See Gonçalves, E. and G. Koester (2022), "The role of demand and supply in underlying inflation – decomposing HICPX inflation into components", European Central Bank, *ECB Economic Bulletin*, Issue 7/2022.

Chart B Drivers of inflation (2021-2022)

(inflation in percentages; contributions in percentage points)



Source: Bank of Greece estimates.

vidual goods components.[4] As suggested by Gonçalves and Koester (2022), the matching is experimental and informal, so the results are indicative.[5] The same applies for the analysis in this box, as official seasonally adjusted data for consumer price indices at the level of individual goods are not available. The seasonal adjustment of of-

4 The matching of sectors and products is based on the methodology proposed by Cai, M. and T. Vandyck (2020), "Bridging between economy-wide activity and household level consumption data: Matrices for European countries", *Data in Brief*, Vol. 30.

5 This mainly applies for goods, which are typically sold by intermediaries (retailers), implying some distance between the point of production and the point of distribution. For example, retail turnover of the food and beverages sector (NACE G47) covers the following categories of goods: food (CP011), non-alcoholic beverages (CP012) and alcoholic beverages (CP021), weighted according to their respective significance for the sector. As the retail categories are less granular than the categories of goods, some smaller goods items correspond to two sectors.

ficial ELSTAT data is based on the X13 TramoSeats methodology. The final sample accounts for around 85% of the total consumption basket, as no turnover indices are available for certain consumption components.[6]

Drivers of inflation in Greece

Chart B reports the results of the empirical investigation for inflation, as measured by the Harmonised Index of Consumer Prices (HICP), and its components, on a quarterly basis.

According to the empirical results, at the initial stages of a rise in inflation, when inflation was still moderate, the individual impacts balanced out each other. In the fourth quarter of 2021, there was a significant ambiguous component; however, when inflation peaked in 2022, the supply component became increasingly important, accounting for 52% of headline inflation. A similar picture emerges for core inflation, which excludes energy and food (see Chart B2). Core inflation is used to calculate structural inflation, i.e. inflation that depends on the structure of the economy. Energy and food are often subject to exogenous shocks and their prices are highly volatile, although they do not affect prices in other sectors of the economy in the medium term. Supply shocks had an even larger contribution to core inflation, especially in the second and third quarters of 2022, when inflation hit a more than 20-year high. Overall, about two-thirds of core inflation in these two quarters are attributable to supply shocks.

Core inflation can be further decomposed into services inflation and non-energy industrial goods (NEIG) inflation. Services inflation is typically thought to reflect underlying pressures on inflation, as, in addition to energy costs, it is strongly influenced by labour costs. According to the empirical results for the services inflation (see Chart B3), the contribution of supply appears to be even larger, accounting for three-quarters of the services inflation. In non-energy industrial goods inflation, on the other hand, supply has a smaller contribution and demand plays a more important role overall, relative to the aggregate (see Chart B4).[7]

It should be noted that the model ignores global market and demand shocks, which are particularly relevant for import-intensive goods items, such as non-energy industrial goods. Shocks in such goods reflect a combination of domestic demand, domestic distribution costs and international production costs. For example, when a global supply shock is combined with strong domestic demand, the model is likely to attribute simultaneous price and consumption growth to a demand shock, while in fact domestic demand does not affect prices.[8] Therefore, the model inherently tends to overestimate the role of demand for imported products.[9]

Finally, Chart C shows the decomposition of inflation into its three components for the 2001-19 period. As in Shapiro (2022) for the United States, supply plays a larger role over time. At the same time, it illustrates how exceptional the current period is compared with the previous decade, particularly in terms of the behaviour of non-energy industrial goods inflation.

Conclusions and policy recommendations

The pandemic and the energy crises have induced upward pressures on inflation. A key source of uncertainty is the difficulty of delineating the relative contributions of demand and supply factors to this inflation surge. The analysis above uses a new model designed to address this concern and estimates a decomposition of Greek inflation into supply and demand drivers. Results show that supply and demand shocks have had similar contributions to headline inflation in the recent period; however, supply had a clearly stronger impact on core inflation, particularly in services. Underlying inflation pressures therefore emanate mainly from supply shocks,

6 Tobacco, furniture repair, education, health services, etc.

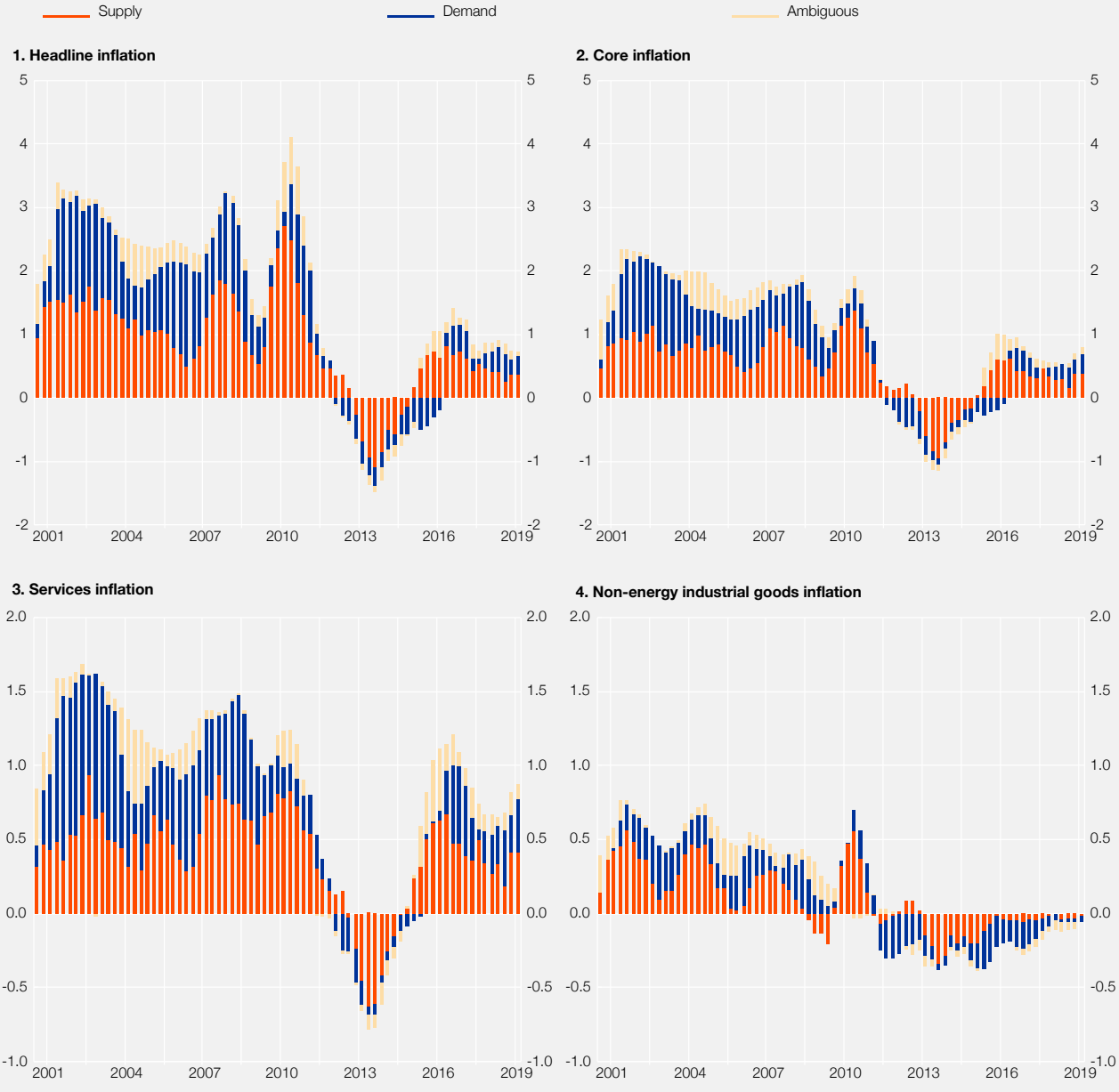
7 Non-energy industrial goods only have five sub-components, all of which can, under certain circumstances, be subject to the same shock, as was the case in the fourth quarter of 2021.

8 This is graphically represented by a flat supply curve for the domestic economy, implying that prices depend solely on the supply shock, while consumption on both supply and demand shocks.

9 According to the literature, large multinational manufacturing companies apply a similar pricing policy across countries sharing the same currency. See Cavallo, A., B. Neiman and R. Rigobon (2014), "Currency unions, product introductions, and the real exchange rate", *The Quarterly Journal of Economics*, 129(2), 529-595.

Chart C Drivers of inflation (2001-2019)

(inflation in percentages; contributions in percentage points)



Source: Bank of Greece estimates.

for which the usefulness of monetary policy instruments is limited. On the other hand, it is important for monetary policy to respond to prolonged supply shocks in a timely manner, so as to prevent a build-up of inflationary expectations, and the recent interest rate increases by the ECB should work in this direction. If supply shocks remain contained at low levels, it is likely that disinflation can be achieved without a significant decline in economic activity.

5.2 Labour costs

According to the latest national accounts data (see Table IV.7), in 2022 dependent employment rose considerably and compensation per employee increased very modestly, while productivity grew moderately and unit labour costs decreased.

Table IV.7 Compensation of employees and labour costs (2021-2023)

(annual percentage changes)

Greece	2021	2022	2023 (forecast)
Total compensation of employees	5.3	5.4	7.0
Compensation per employee	2.3	0.3	5.0
Labour productivity (GDP/total employment)	5.6	2.0	0.0
Unit labour costs (total economy)	-3.1	-1.7	5.0
Total compensation of employees in the general government sector	1.1	0.9[1]	-
Total compensation of employees in the business sector	7.5	10.8[1]	-

Sources: For 2021: ELSTAT, data from annual national accounts and accounts of institutional sectors, 18-26.10.2022. For 2022 (whole year): ELSTAT, national accounts data, 7.2.2023. For 2022 (Jan.-Sep.): ELSTAT, data from quarterly accounts of institutional sectors, 26.10.2022. For 2023: Bank of Greece forecast.
1 January-September 2022.

Specifically, in 2022 the increase in average wages was limited to 0.3%, despite the surge in inflation, thus reducing the risk of inflationary pressures becoming entrenched, although certain wage growth measures suggest that the increase in wages may have been somewhat larger.[17] Dependent employment growth accelerated remarkably (to 5.1% in 2022). Thus, in 2022 total labour compensation increased by 5.4%, mainly reflecting developments in the corporate sector (annual growth rate in January-September: 10.8%), while total labour compensation in general government grew more moderately (0.9% in January-September), according to data from the non-financial accounts of institutional sectors.

Specifically, according to data from the ERGANI information system, in January-December 2022, 217 firm-level agreements were concluded in the corporate sector, covering 168,472 employees. Of these agreements, 80 contracts provided for wage increases, while wages remained unchanged under the rest of the contracts.[18] The minimum wage was raised by 2% as from 1 January and by 7.5% as from 1 May 2022 (with an average annual increase of 7.2%), while a new rise of 9.4% is envisaged as from 1 April 2023 (implying –barring another hike– an average annual increase of 9.85% in 2023 so far).[19]

17 First, the latest national accounts data show that the annual growth rate of average wages recovered to 1.2% in the third and to 1.4% in the fourth quarter, from -0.8% in the first and -0.6% in the second quarter. Similarly, the annual growth rate of the wage cost index compiled by ELSTAT, from 1.3% in the first quarter, recovered to 0.8% in the second quarter, before reaching 11.0% in the third quarter and declining to 4.5% in the fourth quarter (with the average annual rate in 2022 standing at 3.8%). Lastly, annual electronic reporting data from the ERGANI information system for employees on private-law contracts between early October and early November reveal an increase of 5.2% in the average gross earnings for workers in this category between October 2021 and October 2022. However, the same annual reporting data showed a rise of 6.4% in the preceding period (Oct. 2020-Oct. 2021). Nevertheless, a revision of the national accounts data published by ELSTAT cannot be ruled out (the latest data available here are ELSTAT's first estimate for 2022 as a whole) as more data become available.

18 At firm level, a significant development was a two-year contract (ending in 2023) signed on 30.9.2021 covering 27,000 Sklavenitis Supermarkets employees, which provided for increases amounting to 3.0%-5.5% as from 1.11.2021 and additional benefits, mostly affecting data in 2022. Moreover, in October 2022 a collective agreement was signed covering Alpha Bank employees, which provided for one-off financial assistance of EUR 300-800, inversely proportional to wage levels, reaching EUR 2,000 for employees with increased needs. Additionally, on 6.12.2022 Delta Dairy announced increases of 5%-12% as from 1.1.2023, covering 90% of its 1,000 employees, also inversely proportional to their wage levels. At sectoral level, on 4.4.2022 a three-year collective agreement was signed for bank employees, which provided for increases amounting to 2% as from 1.10.2022, 1% as from 1.12.2023 and 2.5% as from 1.12.2024, while the hotel employees' two-year collective agreement signed in December 2022 provides for increases of 5.5% as from 1.1.2023 and 5.0% as from 1.1.2024. Lastly, in June 2022 the Minister of Labour announced that a sectoral collective agreement covering food service employees would be mandatory.

19 Under Article 39 of Law 5013/2023, the minimum wage-setting process was fast-tracked for 2023. Regarding the 1.4.2023 increase, see Ministry of Labour announcements, 17.3.2023.

Turning to general government, according to cash data released by the Ministry of Finance, the wage bill grew by 0.9% on an annual basis in January-December 2022.

In 2023, the rise in employment and in GDP is projected to decelerate substantially, while wage increases are expected to accelerate appreciably, resulting in stagnating productivity and markedly higher unit labour costs.

5.3 Business profits

In January-September 2022, the solid performance of the Greek economy and the tourism sector, fiscal policy measures during the pandemic and the energy crisis, as well as inflationary pressures contributed to exceptionally high business profitability. Specifically, the net profit margin (measured as the ratio of net operating surplus to net value added), which reflects business sector performance in terms of operating profits, reached a historical high in January-September 2022 (38.4%), against 33.6% in the corresponding period of 2021.

The gross operating surplus of enterprises in nominal terms increased further to 31.2% in January-September 2022 (from 26.2% year-on-year). This improvement is mostly attributable to a rise of 26.3% in gross value added, despite an increase of 12.6% in dependent labour income. By contrast, the impact of taxes minus subsidies on output was strongly negative, as in the third quarter of 2022 the moratorium on tax and social security payments was lifted and the bulk of the pandemic-related subsidies was withdrawn.

A large contribution to the operating surplus came from energy firms (e.g. DEH), which posted strong price and profit increases (not taking into account windfall taxes on the profits of electricity producers), and from businesses in food services and accommodation, as well as in manufacturing, which recorded a substantial increase in production. It should be noted that the recent high profit margins of businesses largely reflected government support measures implemented in the context of job retention schemes,[20] as well as the accumulation of savings by households during the pandemic, which helped support consumer spending dynamics and consumer demand despite higher prices.

5.4 Income inequality and poverty

The most recent data on inequality, poverty, social exclusion and living conditions in Greece are drawn from ELSTAT's Survey on Income and Living conditions (EU-SILC) 2021, for 2020 incomes, and the 2021 Household Budget Survey, for consumer spending in 2021. They largely capture a deterioration of the relevant measures in the past two years, which was partly to be expected, given the impact of the pandemic on economic activity and household incomes, particularly those of working youths, workers with a low level of education and low-income workers.

In greater detail, on the basis of EU-SILC 2021 data on household income in 2020, the following indicators shifted upwards (see Chart IV.18):

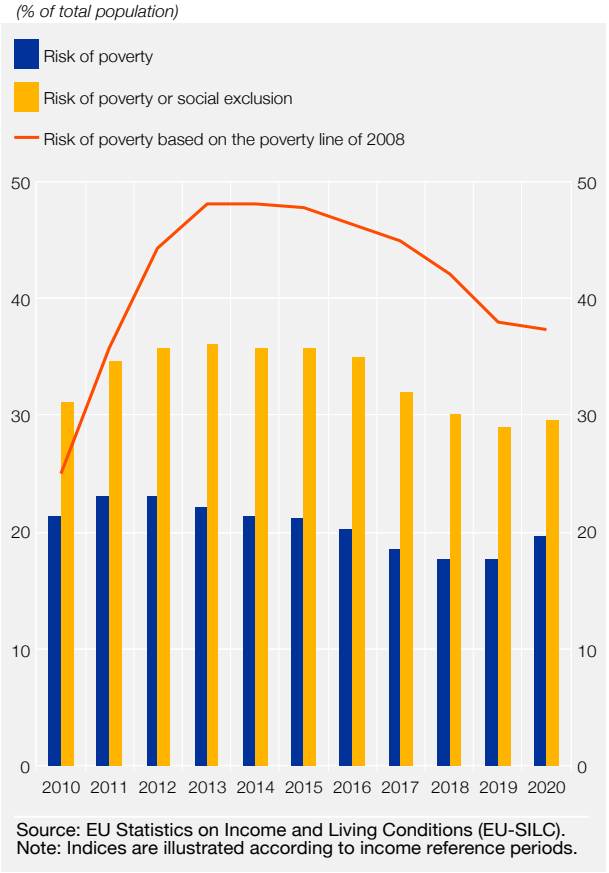
(a) The relative risk of poverty rate rose to 19.6%, from 17.7% for incomes of 2019 (EU-SILC 2020),[21] reversing the downward trend recorded in the past few years. Moreover, the relative risk of poverty in Greece is the eighth highest in the EU-27, remaining above the EU-27 average (16.8%).

20 European Central Bank (2021), "The role of profit margins in the adjustment to the COVID-19 shock", *Economic Bulletin*, Issue 2/2021.

21 The poverty line, which is the basis for calculating the risk of poverty, follows the population's average living standards, set at 60% of the median equivalised annual disposable income of all households (Eurostat definition). To calculate the equivalised household income, the first adult is given a weight of 1.0, the second and each subsequent person aged 14 and over are given a weight of 0.5, and each child under 14 is given a weight of 0.3. In the 2021 survey, the relative poverty threshold was EUR 5,251 for a single-person household and EUR 11,028 for a four-person household with two adults and two children under 14.

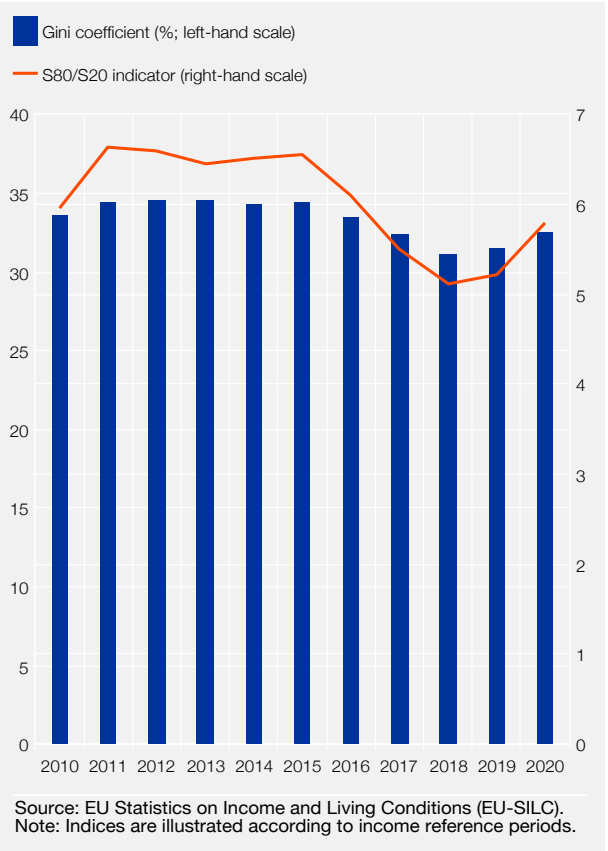
Chart IV.18 Risk of poverty (EU-SILC)

(% of total population)



Source: EU Statistics on Income and Living Conditions (EU-SILC).
Note: Indices are illustrated according to income reference periods.

Chart IV.19 Income inequality index (EU-SILC)



Source: EU Statistics on Income and Living Conditions (EU-SILC).
Note: Indices are illustrated according to income reference periods.

(b) The percentage of total population living at risk of poverty or social exclusion, according to the updated definition,[22] rose to 28.3% (or 2,971 thousand persons), from 27.4% in 2019 and 29.0% in 2018. According to the same survey, among the EU27, Greece registered the third highest risk of poverty or social exclusion in 2020. The average for the EU-27 countries was 21.7%.

(c) Income inequality indicators in Greece deteriorated significantly in 2020 (see Chart IV.19), although they remain close to the EU-27 average. The Gini coefficient rose to 32.4% for incomes of 2020 (EU27: 30.1%), from 31.4% for incomes of 2019. The income quantile share (S80/S20) ratio also increased, from 5.2 for incomes of 2019 to 5.8 for incomes of 2020 (EU27: 5.0).[23] Early in the financial crisis (incomes of 2008) the ratios stood at 33.1% and 5.8, respectively.

By contrast, the poverty rate in absolute terms, which maintains a constant poverty line in terms of real purchasing power in 2008, fell to 37.3% for incomes of 2020 (from 37.9% for incomes of 2019), continuing its downward course since 2015. Nevertheless, it should be noted that the risk of poverty, calculated on the basis of the above poverty line, was a mere 18.9% for incomes of 2008. The same rate in the EU is markedly lower (13.0%) for incomes of 2020.

22 Updated definition in the context of the "Europe 2030" programme; it refers to the population at risk of poverty or suffering from material and social deprivation (i.e. the population deprived of at least 7, out of a list of 13, goods and services) or living in households with low labour intensity.

23 The Gini coefficient is bounded between 0% when the national income is equally distributed (i.e. the poorest x% of the population receives x% of the national income for $0 < x \leq 100$) and 100% when the total national income is distributed to one person. The S80/S20 ratio represents the aggregate income received by the wealthiest 20% of the population to the aggregate income received by the poorest 20%. Both ratios move up with the increase in income inequality. However, the Gini coefficient accounts for the whole range of income inequality, while the S80/S20 ratio focuses on differences at the ends of the income distribution.

The relative poverty gap or intensity also evolved favourably,[24] dropping to 26.4% in 2020, from 27.3% for incomes of 2019.

However, further examination of EU-SILC 2021 data brings to the fore the need to better target social policy, as specific social groups face a higher risk of poverty: the unemployed (45.4%); inactive persons excluding pensioners (27.3%); households with dependent children (23.6%); and children aged up to 17 years (23.7%).[25] These findings are in line with another conclusion of the survey, specifically that the main contribution of social policy to reducing the poverty rate comes from pensions[26] (by 23.5 pps), while social benefits only had a minor contribution of 5.1 pps to lowering the poverty rate.

Compared with the survey results of the four previous years, when the contribution of social benefits to reducing the poverty rate was quite smaller (e.g. 3.8 pps in 2016), progress has been made. This development is also associated with a reorienting of social protection expenditure since 2017[27] – from spending on old-age benefits towards spending on family and tackling social exclusion.

The 2020 policy measures overall supported households' disposable income. They included a new tax scale involving a reduced bottom income tax rate for lower incomes, lower social security contributions for wage earners, as well as higher unemployment benefits and guaranteed minimum income markups in the context of addressing pandemic-related consequences. Nevertheless, due to the pandemic, in 2020 many households were subject to furlough schemes or had to suspend the operation of their businesses, suffering income losses. As a whole, according to the EU-SILC 2021 survey, the mean equivalised disposable income fell by 0.9% compared to the previous year, while 20.4% of the participants attributed the decline to the pandemic.[28] Moreover, the so-called "13th pension" and the social dividend –which had been granted in 2019– were not paid in 2020, while the fixed social security contributions system for the self-employed was restored; these developments put a disproportionate burden on lower incomes.

The earliest available data for Greece for 2021 are provided by the 2021 Household Budget Survey. As shown by consumer spending data in 2021, the risk of poverty increased on the basis of purchases by households (17.1%, from 15.6% in 2020) and total consumption expenditure (12.2%, from 11.9% in 2020), which also includes the value, in terms of money spent, of goods and services that a household received in kind (from their own production or shop, their employer or other sources). The S80/S20 ratio also increased (to 5.2 from 4.8 in 2020 and to 4.1 from 3.5 in 2020, respectively), following a similar trend in terms of both household purchases and total consumption expenditure.[29]

24 The poverty gap is the ratio by which the median income of the poor falls below the poverty line, i.e. it provides the average income shortfall of the poor.

25 Greece is among the OECD countries with high levels of child poverty. As regards policies dealing with child poverty, see National Academies of Sciences, Engineering, and Medicine (US), Webinar on "Ending Child Poverty – Examining Poverty Trends and Policy Implications" (4.5.2021).

26 The contribution of pensions to households' income support is also highlighted in a survey by the Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen & Merchants (IME-GSEVEE) "Households' income – Spending 2020" (January 2021) [in Greek], according to which in 2020 in Greece pensions were the main source of income for 44.3% of households.

27 According to data from the European System of integrated Social PROtection Statistics (ESSPROS).

28 Nevertheless, it should be noted that, according to the electronic reporting data – from 1.10.2022 to 11.11.2022 – collected by the Hellenic Labour Inspectorate – Independent Authority, the Public Employment Service (DYPA) and the single social security entity (EFKA) for total enterprises and employees-wage earners on private-law contracts, average gross monthly wages grew by 9.42% against 2021 and the share of employees with gross wages below EUR 700 dropped from 33.8% in 2021 to 20.6% in 2022. These developments are also associated with a double hike in minimum wage in 2022, initially to EUR 663 and then to EUR 713 (from EUR 650 in 2021).

29 It should be noted that, according to Eurostat flash estimates (FEs) based on incomes under the EU-SILC for 2021-28, a statistically significant decline –between 0.5 and 2 pps– in the risk of poverty in Greece is expected, while the estimated change in the inequality ratio is not statistically significant and ranges between -1 and +0.2 pp. The above estimates are based on nowcasting and microsimulation techniques and are published well in advance of the survey itself. Income FEs for 2021, based on the EU-SILC 2022, were published in July-August 2022, while EU-SILC 2022 data should be published in 2023.

Nevertheless, as a whole, the above-mentioned protection gaps remain, e.g. regarding the unemployed[30] and the poorest households, of which only one-third receives the guaranteed minimum income.[31]

As regards the unemployed, it should be noted that Law 4921/2022,[32] under which OAED was renamed Public Employment Service (DYPA), introduced changes in their obligations and in unemployment management in general. These include new digital tools (registry, unemployment card, individual action plans); one-off payment of EUR 300 to the long-term unemployed (over 5 years) when they prepare a Digital Individual Action Plan; means-testing those registered in the DYPA digital database for a period of over 12 months, in order to combat benefit abuse; deregistration of an unemployed after turning down three job offers; continued payment of 50% of the unemployment benefit until the expiry date to seekers that find a job during the regular unemployment benefit payment period; introduction of a governance system regarding the continued vocational training of the labour force; establishment and setup of childcare centres within enterprises; etc. Evidence for estimating the impact of those changes on the share of the unemployed covered by unemployment benefits is still scarce.

The coverage gap for the poorest households could be addressed by increasing the coverage of beneficiaries of the guaranteed minimum income, taking into account the existing means tests, the beneficiaries' effective access to complementary social services and the successful operation of activation services since April 2021, with a view to facilitating entry or re-entry of beneficiaries into the labour market. For instance, according to the OECD, a 25% increase in the guaranteed minimum income would mainly benefit the bottom income decile and, combined with a rise in the amount of labour income excluded from the calculation of the benefit, would reduce the risk of poverty by almost 2 pps.[33] It should be noted that, in the context of the support measures to address the implications of the pandemic and the energy crisis, the beneficiaries of the guaranteed minimum income received markups during the 2020-22 period.

In addition, it is necessary to reorient policies towards a "social investment state".[34] A welfare state of this type lays the groundwork for equal opportunities facilitating social mobility, protects citizens from misfortunes, helps reconcile professional and family life and generally acts proactively to address poverty and income inequality by investing in human capital, e.g. in education and healthcare.[35] Under these conditions, social policy is also beneficial for achieving strong and sustainable growth rates.[36]

The "National Strategy for Social Inclusion and Poverty Reduction" published in July 2022 is also a step in this direction and involves actions in four main areas, with the aim to improve

30 In fact, according to quarterly ELSTAT data on the number of the unemployed and monthly OAED data on the number of subsidised unemployed persons, the average share of unemployed coverage stood at 25.5% in January-September 2022 (from 35.1% for 2010 as a whole).

31 Marini, A., M.D. Zini, E. Kanavitsa, N. Millan, Ch. Leventi and N. Umapathi (2019), "A Quantitative Evaluation of the Greek Social Solidarity Income", World Bank Group, Washington, DC.

32 "Public Employment Service Reform and Digitalisation, upgrading, labour force upskilling, research into labour needs, and other provisions" (Government Gazette A75/18.4.2022).

33 OECD (2020), *OECD Economic Surveys: Greece 2020*.

34 Matsagganis, M. (2021), "The welfare state as an accelerator of sustainable development", *DiaNEOsis* [in Greek].

35 For the growth-enhancing benefits from reforming the Greek educational system, see Bank of Greece, *Annual Report 2019*, Box IV.2, pp. 120-125 [in Greek]. The establishment of a National System of Vocational Education, Training and Lifelong Learning under Law 4763/2020 could help in this direction.

36 See Aiyar et al. (2017), "Euro Area Policies, Selected Issues", *IMF Country report 17/236*. See also (a) OECD (2018), "Opportunities for all: OECD Framework for Policy Action on Inclusive Growth"; (b) OECD (2018), *A Broken Social Elevator? How to Promote Social Mobility*, OECD Publishing, Paris; (c) Hufe, P., R. Kanbur and A. Peichl (2018), "Measuring Unfair Inequality: Reconciling Equality of Opportunity and Freedom from Poverty", CESifo Working paper; and (d) World Bank (2018), *Growing United – Upgrading Europe's Convergence Machine*, World Bank Report on the European Union.

utilisation of national and European resources in 2021-27: (a) access to sufficient resources and commodities for persons living in extreme poverty (focusing on the homeless); (b) access to services for persons living in extreme poverty, persons with disabilities, children, the elderly, female victims of violence and abuse, the homeless and other vulnerable social groups; (c) integration into the labour market, improved employability and access to employment for the unemployed; and (d) horizontal governance.

The above-mentioned policy recommendations become increasingly relevant at the current juncture. The COVID-19 pandemic, the energy crisis and the ensuing economic crisis, as well as climate change, have exacerbated inequalities globally,[37] as they disproportionately affect the poor.[38] Thus, the role of social policy and targeted fiscal measures is seen as even more important and the need for targeting, efficiency and redistribution becomes imperative.[39] A first examination of the distributional impact of measures to address the energy crisis in Greece in 2022 is included in Box IV.2.

Lastly, at the current juncture it is necessary to acknowledge the unique opportunity offered to Greece by the resources secured from the European Recovery and Resilience Facility (RRF) for actions associated with employment, skill development and social cohesion. It is important to ensure efficient absorption of available resources by 2026. Based on information available so far, it can be argued that the outlook appears to be rather positive. Specifically, during the 2021-22 period, grant payments under "Employment, skills and social cohesion" reached EUR 780 million or one-third of total grants paid, mainly targeted to retraining projects.

37 See IMF (2021), Fiscal Monitor 2021; Sanchez Paramo, C. et al. (2021), "Covid-19 leaves a legacy of rising poverty and widening inequality" (https://blogs.worldbank.org/developmenttalk/covid-19-leaves-legacy-rising-poverty-and-widening-inequality); Credit Suisse (2021), *The Global Wealth Report 2021*; and European Trade Union Institute (2021), *Benchmarking Working Europe 2021: Unequal Europe*.

38 According to Oxfam International (an organisation fighting inequality and poverty), almost two-thirds of the wealth created since the outbreak of the pandemic was captured by the richest 1% of the planet. Meanwhile, 1.7 billion persons live in countries with high inflation, which aggressively erodes their incomes, leading large segments of the population to poverty. In fact, Oxfam notes that for the first time in 25 years an increase in extreme wealth is accompanied by an increase in extreme poverty. See Oxfam (2023), "Survival of the Richest: How we must tax the super-rich now to fight inequality". See also World Inequality Lab, *Climate Inequality Report 2023 – Fair taxes for a sustainable future in the Global South*, 30.1.2023.

39 For the distributional impact of measures to address the energy crisis in Greece in 2020, see Bank of Greece, Annual Report 2020, Box IV.4, pp. 141-143 [in Greek]. See also a recent study by G. Kaplanoglou, "The uneven distribution of the tax burden on households in Greece", Labour Institute of the General Confederation of Greek Labour (INE-GSEE), January 2023 [in Greek], examining developments in 2008-19 on the basis of micro data from the annual Household Budget Survey.

Box IV.2

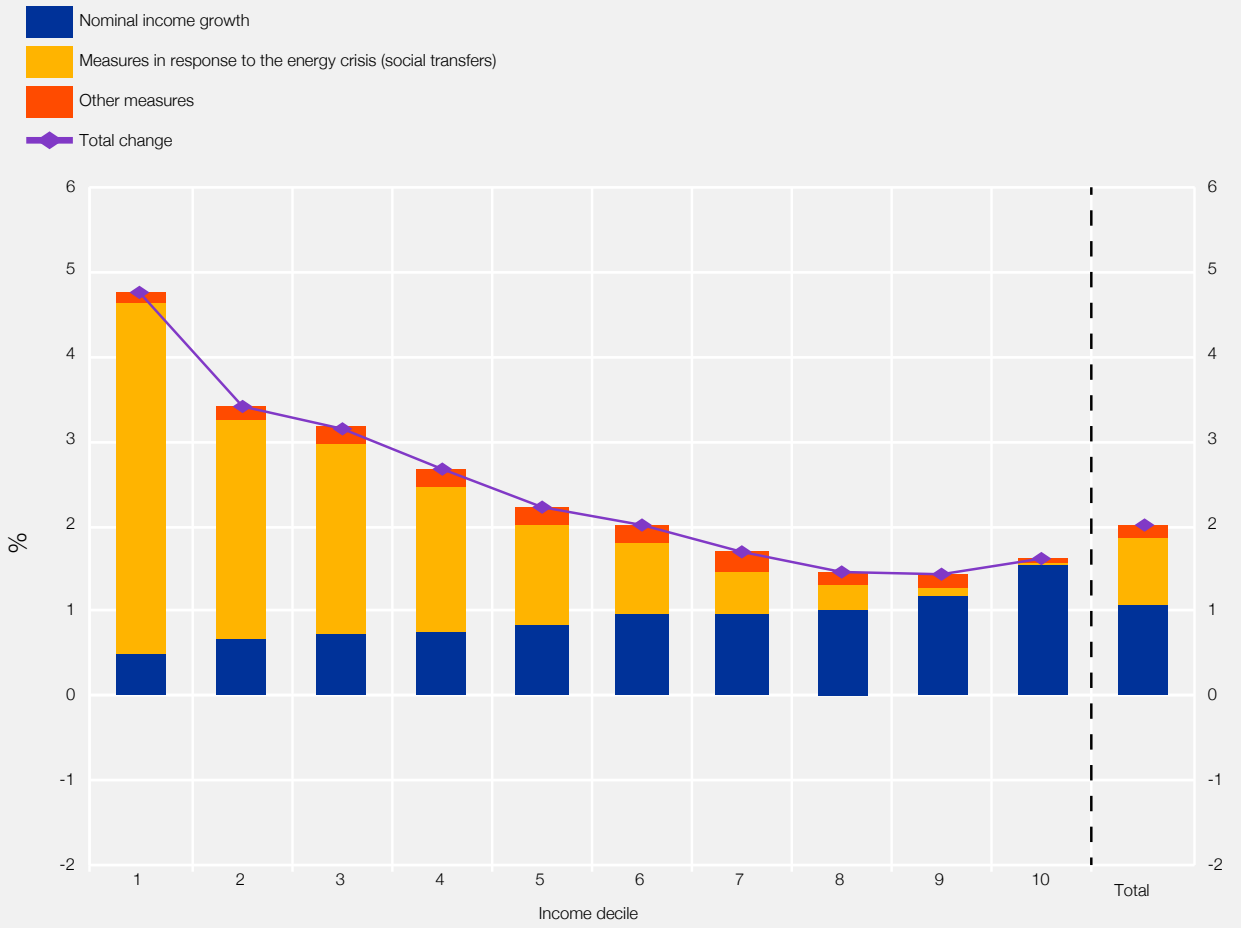
THE DISTRIBUTIONAL IMPACT OF MEASURES TO ADDRESS THE ENERGY CRISIS IN 2022

The inflation crisis, which started in 2021 due to global supply bottlenecks, escalated in 2022 with Russia's invasion of Ukraine, as high worldwide energy dependency on Russia pushed further upwards the prices of fuels and, subsequently, of other products as well. Rising inflation weighs on household real income, putting pressure on fiscal policy to contain losses. Moreover, given that inflation disproportionately affects lower-income households, which have a higher propensity to consume and a larger share of energy products in their consumption basket,[1] it has negative distributional effects. Therefore, fiscal policy is called upon to support the most vulnerable citizens, not only in order to stimulate consumption and growth, but also to maintain social cohesion by mitigating the adverse distributional effects of inflation.

1 Villani, D. and G. Vidal Lorda (2022), "Whom does inflation hurt most?", European Commission, JRC129558.

Change in nominal disposable income* (2021-2022)

(percentage change by decile of income distribution)



Source: EUROMOD simulations based on EU-SILC 2020 data.
* Household (equivalised) disposable income is calculated using the OECD equivalence scale, which gives a weight to all members of the household, i.e. 1.0 to the first adult; 0.5 to the second and each subsequent person aged 14 and over; and 0.3 to each child aged under 14. This enables to take into account economies of scale in household consumption, as well as household composition and the different needs of adults and children.

In Greece, the first fiscal interventions to address the energy crisis were introduced in 2021. They mostly involved subsidies on energy consumption (amounting to EUR 630 million), as well as extraordinary direct financial support to households, such as the one-off lump-sum transfers to low-paid pensioners, disabled people and the uninsured elderly and the double instalment of minimum guaranteed income (totalling EUR 266 million). Similarly, the household and business support measures adopted in 2022 mostly involved[2] subsidies on electricity and gas consumption (EUR 8.1 billion, out of a total fiscal package of EUR 10.7 billion[3]). Other interventions concerned subsidies to farmers and breeders, return of 60% of the increase in electricity bills for households, a pre-paid card for transport fuel (Fuel Pass), support to vulnerable households, an increase in the heating allowance, etc. Regarding in particular financial support to vulnerable households, two fiscal support packages (totalling EUR 816 million) were disbursed in April and December 2022, targeting low-paid pensioners, the long-term unemployed, child benefit claimants, the uninsured elderly receiving OPEKA (Organisation of Welfare Benefits and Social Solidarity) benefits and recipients of disability benefits.

2 For the composition of the fiscal measures to address the energy crisis in 2022, see Chart V.2, Bank of Greece, *Annual Report 2022*.
3 It should be noted that most of the interventions in response to the energy crisis were financed by revenues from the Energy Transition Fund (TEM), reducing the budgetary cost of support measures to EUR 4.8 billion.

This box aims to analyse the impact of inflation on household disposable income and assess how the latter was affected by the fiscal measures adopted in Greece in 2022, focusing on their distributional effects.

Methodology

The distributional effects were estimated using the EUROMOD tax-benefit microsimulation model,[4] based on data from the 2020 Household Income and Living Conditions Survey (EU-SILC). As the income reference period for the EU-SILC 2020 is the year 2019, incomes were adjusted to their nominal levels for the years 2021 and 2022. That is, two artificial income distributions were created, which may not fully reflect actual changes.

Next, the change in household disposable income in 2021-22 was decomposed into the change resulting from: (a) the nominal adjustment of income; (b) gains arising from the energy measures; and (c) the impact of other measures.

The analysis focuses on household income support measures in 2022, i.e. it examines a subset of the overall fiscal support package. Specifically, the simulated measures are: (a) support of EUR 200 in April 2022 and EUR 250 in December 2022 to pensioners with a monthly income of up to EUR 600 and EUR 800, respectively; (b) support of EUR 200 in April 2022 and EUR 250 in December 2022 to the uninsured elderly OPEKA; (c) support of EUR 200 in April 2022 and EUR 250 in December 2022 to beneficiaries of disability benefits; (d) a double instalment of minimum guaranteed income in April 2022 and December 2022; (e) one and a half additional monthly instalments of OPEKA child benefit in April 2022 and December 2022; (f) support of EUR 250 in December 2022 to the long-term unemployed; and (g) an increase in the heating allowance. The total cost of these measures amounted to around EUR 1 billion and accounted for 9% of the total fiscal package.

Empirical results

Based on the above analysis, the nominal disposable income of households is estimated to have increased by 2% on average in 2022, only partly compensating for higher consumer prices.[5] In addition, a considerable part (about 39%) of the nominal disposable income is attributable to the energy measures. A marginal positive effect is estimated to have come from other measures, mainly related to reduced social security contributions and higher unemployment benefits as a result of the increase in the minimum wage.

Given that income support measures in response to the crisis predominantly target lower-income households that are more vulnerable to inflation, they are progressive in nature, increasing by 4.1% the income of households in the bottom decile where they contribute for almost the entire (87%) of the overall growth in nominal disposable income. The contribution gradually drops as we move to higher income brackets, reaching about 0.03% for the top decile. Therefore, these support measures appear to mitigate inflation-induced income inequality and the disproportionate impact on the purchasing power of lower-income households.

Concluding remarks and clarifications

Overall, it is estimated that in 2022 the social transfers to households in response to the energy crisis partially compensated for inflation-related losses of household real income and mitigated the impact of rising consumer prices on income inequality. However, the analysis does not address price measures under the energy package, which are of a significantly larger size and less targeted, and may thus have a regressive distributional impact.[6] Moreover, the analysis does not take into account changes in household behaviour but rather looks at first-round distributional effects.

Finally, despite their estimated progressive distributional impact, the energy-related income support measures should remain targeted and temporary, be financed by using the available fiscal space and be accompanied by energy-saving actions and incentives to reduce energy consumption.

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4 Version I.4.113. For more information on the EUROMOD model, see https://euromod-web.jrc.ec.eu- ropa.eu/.

5 See Section 5.1, Bank of Greece, *Annual Report 2022*.

6 See Amores, A.F., H. Basso, S. Bischl, P. De Agostini, S. De Poli, E. Dicarlo, M. Flevotomou, M. Freier, E. Garcia-Miralles, M. Pidkuyko, M. Ricci and S. Riscado, "Inflation, fiscal policy and inequality -The distributional impact of fiscal measures to compensate consumer inflation", ECB Occasional Paper (forthcoming).

6 COMPETITIVENESS

The international competitiveness of the Greek economy improved further in 2022, in a global environment characterised by very strong growth of price inflation and nominal labour costs. Specifically, it is estimated that competitiveness continued to improve in terms of unit labour costs, – despite a rise in the minimum wage in Greece,[40] as a result of wage developments in many trading partners, and less so in terms of relative prices. In terms of structural competitiveness, an increasing number of indices shows that Greece's ranking has been improving, which reflects the country's efforts to upgrade the business and macroeconomic environment, as well as the reforms being implemented. This positive development is partly confirmed by increased inflows of foreign direct investment in several sectors. In fact, foreign direct investment in Greece reached a 20-year high in 2021-22.

In greater detail, the nominal effective exchange rate fell (depreciation) in 2022. The substantial strengthening of the US dollar against the euro (11% in 2022), mainly due to the earlier and faster normalisation of US monetary policy compared with the euro area, is driven by bilateral exchange rate developments. The appreciation of the euro against the Japanese yen, the Swedish krona and the Turkish lira partially offset its depreciation against the US dollar, the Swiss franc and the Australian dollar. HICP inflation in Greece was higher than in the euro area countries (9.3% against 8.4%), but lower than in Greece's major trading partners, i.e. Turkey, Romania and Bulgaria. The real effective exchange rate on the basis of relative unit labour costs in total economy declined (improved) also in 2022. Unit labour costs in total economy decreased in Greece (1.7%[41]) and increased in the euro area (3.2%). The most important factor behind the improvement in Greek competitiveness in terms of unit labour costs for 2022 was the fact that these costs posted comparatively stronger increases in the major trading partners.

Likewise, a decrease (improvement) in national harmonised competitiveness indicators compiled by the ECB was registered in 2022, both for Greece and for other euro area countries (see Chart IV.20).[42] The real effective exchange rate based on relevant consumer price indices (CPI) recorded a small decline (improvement) in 2022, as average annual domestic inflation, though standing at high levels, did not exceed the corresponding weighted average for Greece's major EU and non-EU trading partners (see Table IV.8).

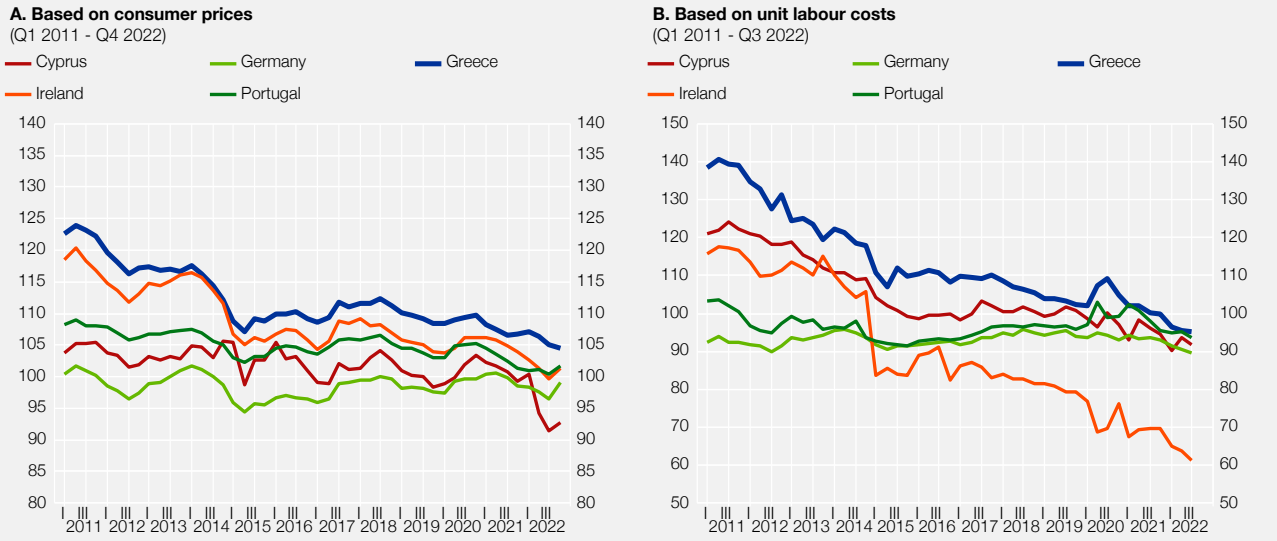
For 2023, despite a projected downturn of the business cycle, most economies are experiencing pressures for wage increases to offset the erosion of real income due to persistently high headline inflation, which is expected to remain above the central banks' medium-term target in the 2023-24 period. According to projections by the European Commission,[43] in 2023 inflation in Greece is expected to be lower than the euro area average (4.5%, against 5.6%).

Competitiveness in terms of both relative prices and relative labour costs has generally improved substantially since 2010, having recouped the cumulative losses of the 2000-09 period. This cumulative improvement in competitiveness has been more pronounced in terms of unit labour costs, as the relevant index actually fell in 2021-22 below the levels observed prior to Greece's entry into the euro area. This laborious and extensive recovery of international competitiveness is attributable to a reform of the overall wage-setting framework, as well as to the prolonged recession and low growth facing the Greek economy during the years of fiscal adjustment.

40 The minimum wage was raised in two phases in 2022, on 1 January and on 1 May, respectively.
41 See Section 5.2 in this chapter.
42 It should be noted that, following Croatia's accession into the euro area as from 1.1.2023, the ECB updated the calculations announced and introduced new coding.
43 European Commission, *European Economic Forecast, Winter 2023*, February 2023.

Chart IV.20 Harmonised competitiveness indicators (real effective exchange rates)

(quarterly data; 2000=100)



Source: ECB, Statistical Data Warehouse.
Notes: An increase (decrease) suggests a deterioration (improvement) of competitiveness. Changes in the HCI for Ireland reflect a revision in the method of calculation of national accounts data.

The Greek economy has also made progress in several aspects of its structural competitiveness. This progress, which started through a series of reforms in the post-2010 period and was stepped up in the past few years (digital transformation of the economy, reduction of the corporate income tax rate from 29% to 22% and the dividend tax rate from 15% to 5%, etc.), helps to improve the business and investment environment, bringing additional benefits to export-

Table IV.8 Nominal and real effective exchange rate (EER) indices for Greece

(index: 2000=100)

	Nominal EER		Real EER					
	Broad NEER[1]		Broad REER[1]			REER-euro area		
			CPI-deflated		ULCT-deflated*	CPI-deflated		ULCT-deflated*
Year		Percentage change		Percentage change		Percentage change		Percentage change
2000	100.0		100.0		100.0	100.0		100.0	
2010	112.4	-2.8	118.3	-0.4	126.1	0.6	123.4	0.1	118.7	0.3
2015	110.6	-2.7	106.5	-4.6	106.8	-4.2	111.9	-4.8	103.4	-3.2
2016	112.0	1.3	107.1	0.5	103.2	-3.4	112.3	0.3	102.8	-0.5
2017	113.6	1.4	107.7	0.6	102.1	-1.0	113.4	1.0	102.1	-0.7
2018	116.0	2.1	108.1	0.3	100.1	-2.0	108.4	-0.9	98.8	-3.1
2019	115.8	-0.2	105.8	-2.0	96.8	-3.3	106.7	-0.8	96.6	-2.3
2020	117.4	1.5	104.4	-1.3	100.7	4.0	105.8	-1.6	99.5	3.0
2021	118.7	1.1	102.5	-1.9	96.8	-3.8	104.4	-2.0	96.0	-3.5
2022	119.8	-1.0	102.1	-0.4	92.4	-4.5	104.9	0.6	94.4	-1.7

Sources: Indices are calculated by the Bank of Greece on the basis of ECB and European Commission data. An increase (decrease) in EER indices suggests a deterioration (improvement) of competitiveness. Data on exchange rates, consumer prices (CPI) and unit labour costs in total economy (ULCT) are provided by the ECB and the European Commission.
* The index is subject to regular revisions.
1 Broad REER indices include Greece's 28 major European or non-European trading partners. Weights are calculated on the basis of imports and exports of manufacturing goods (SITC 5-8).

oriented sectors of the economy. Moreover, it paves the way for an increase in foreign direct and productive investment in Greece, which is already evident in 2021-22 and is expected to boost the total production and export capacity of the domestic economy over the medium term. According to the IMD's world competitiveness indicators (World Competitiveness Ranking, 15.6.2022), in the past three years Greece has made huge strides compared with the previous decade. Nevertheless, for 2022 the country dropped one position and now ranks 47th among 63 economies. Compared with other countries, its economic performance improved, while its ranking worsened in government efficiency (55th from 52nd), business efficiency (46th from 44th) and infrastructure (41st from 39th). The main challenges ahead, according to the IMD report, include introducing a special programme for the digital transformation of the industrial ecosystem; supporting the international expansion into new markets; adapting the local industrial ecosystem to the principles of energy efficiency and circular economy; leveraging the employability of the workforce by introducing training programmes; and attracting significant foreign direct investment, which would further consolidate confidence in the Greek economy and accelerate its transformation. Greece made significant comparative progress on the basis of the International Tax Competitiveness Index compiled by the Tax Foundation (18.10.2022), climbing 4 positions in 2022 and ranking 29th among 38 countries. Some strengths of the Greek tax system are that the net personal tax rate of 5% on dividends is significantly below the OECD average of 24.2% and that the corporate income tax rate of 22% is below the OECD average of 23.6%. Among weaknesses, at 24% (OECD average: 19%), Greece has one of the highest VAT rates in the OECD on one of the narrowest bases. Moreover, according to a recent Transparency International report, Greece improved its ranking, climbing from the 58th to the 51st position among 180 countries, as well as its performance in the Corruption Perceptions Index.

7 BALANCE OF PAYMENTS

According to Bank of Greece data, the current account deficit in 2022 deteriorated significantly compared to the previous year and stood at EUR 20.1 billion (9.7% of GDP), against EUR 12.3 billion in 2021 (6.8% of GDP). This development was mainly driven by a larger increase in imports –primarily of fuel and secondarily of other goods– than in exports of goods, as well as a deterioration of the primary and secondary income accounts. Specifically, the larger deficit of the oil balance was attributable on the one hand to higher international oil prices and on the other to the increased volume of oil imports, which weighed heavily on the current account. Moreover, non-oil imports of goods outstripped the corresponding exports, so as to meet the needs of stronger consumption and investment, as well as of domestic production. Nevertheless, these developments were partly offset by a recovery in tourism activity and travel receipts, which almost reached their 2019 levels. Although net sea transport receipts increased, a deterioration in the other transport services balance partly offset this improvement (see Table IV.9).

In 2023, the current account balance is expected to improve, both in absolute terms and as a percentage of GDP. The expected decline in energy prices, coupled with a slowdown in domestic consumption expenditure, should dampen imports of goods. Moreover, the continuing –although decelerating– recovery of the global economy (see Chapter II), combined with the improved competitiveness of the Greek economy, should have a positive effect on Greek exports of goods. Specifically, exports of goods, which have gained strong momentum, are expected to continue to grow, albeit at a slower pace than in 2022, reflecting a rise in foreign demand. Geopolitical developments, a resurgence of inflationary pressures and renewed rises in oil prices are potential risks that may contribute to a decline in both foreign and domestic demand, with negative effects on exports and imports of goods and services.

The services balance is also expected to register a small improvement, as travel receipts should grow slightly in 2023 and return to their 2019 levels. Specifically, its dynamics in 2023 is expected to be determined by developments in travellers' disposable income in major markets of

Table IV.9 Balance of payments

(EUR millions)

	2019	2020	2021	2022
I CURRENT ACCOUNT BALANCE (I.A + I.B + I.C + I.D)	**-2,725.5**	**-10,964.4**	**-12,271.6**	**-20,093.5**
I.A BALANCE OF GOODS (I.A.1 - I.A.2)	**-22,833.3**	**-18,528.1**	**-26,719.1**	**-39,020.1**
I.A.1 Exports of goods	*32,433.6*	*28,904.4*	*39,327.9*	*53,506.8*
Fuel	9,078.8	6,102.5	10,210.2	17,609.7
I.A.2 Imports of goods	*55,266.9*	*47,432.5*	*66,046.9*	*92,526.9*
Fuel	14,119.3	9,298.4	16,087.3	30,768.2
I.B BALANCE OF SERVICES (I.B.1 - I.B.2)	**21,115.9**	**7,278.3**	**12,845.0**	**19,468.1**
I.B.1 Receipts	*40,162.6*	*22,711.3*	*35,056.4*	*47,586.5*
Travel	18,178.8	4,318.8	10,502.7	17,676.2
Transport	17,303.1	13,814.2	18,728.1	23,434.0
I.B.2 Payments	*19,046.8*	*15,433.0*	*22,211.5*	*28,118.4*
Travel	2,743.8	792.9	1,112.5	1,924.6
Transport	11,377.4	9,873.0	15,078.7	19,578.7
I.C PRIMARY INCOME ACCOUNT (I.C.1 - I.C.2)	**-1,591.6**	**-275.9**	**368.7**	**-239.9**
I.C.1 Receipts	*6,202.9*	*6,324.1*	*6,608.1*	*7,278.5*
Labour (wages, salaries)	246.9	201.4	220.2	224.7
Investment (interest, dividends, profits)	3,046.7	2,942.0	3,019.2	3,580.7
I.C.2 Payments	*7,794.5*	*6,599.9*	*6,239.4*	*7,518.3*
Labour (wages, salaries)	1,411.6	1,336.4	1,309.7	1,493.8
Investment (interest, dividends, profits)	5,975.9	4,838.8	4,433.3	5,364.0
I.D SECONDARY INCOME ACCOUNT (I.D.1 - I.D.2)	**583.5**	**561.2**	**1,233.8**	**-301.6**
I.D.1 Receipts	*3,827.9*	*4,064.5*	*5,008.2*	*4,390.6*
General government	2,361.2	2,452.7	3,561.7	2,642.7
I.D.2 Payments	*3,244.5*	*3,503.4*	*3,774.4*	*4,692.2*
General government	1,830.3	1,914.9	2,297.1	3,058.7
II CAPITAL ACCOUNT (II.1 - II.2)	**679.8**	**2,733.6**	**4,000.9**	**3,111.6**
II.1 Receipts	*1,178.7*	*3,124.5*	*4,915.0*	*3,857.0*
General government	1,023.0	2,932.0	4,055.5	2,523.2
II.2 Payments	*498.9*	*390.9*	*914.1*	*745.3*
General government	4.9	4.4	5.0	7.2
III FINANCIAL ACCOUNT (III.A + III.B + III.C + III.D)	**-2,247.0**	**-7,747.7**	**-7,107.6**	**-15,596.1**
III.A DIRECT INVESTMENT[1]	**-3,910.5**	**-2,332.3**	**-4,412.6**	**-4,485.0**
Assets	562.4	568.6	1,147.7	1,891.0
Liabilities	4,472.9	2,900.9	5,560.4	6,376.0
III.B PORTFOLIO INVESTMENT[1]	**24,231.5**	**48,339.5**	**23,829.9**	**8,836.8**
Assets	25,927.1	35,443.0	27,316.7	10,206.3
Liabilities	1,695.6	-12,896.5	3,486.7	1,369.5
III.C OTHER INVESTMENT[1]	**-22,652.0**	**-55,291.1**	**-29,060.9**	**-18,102.5**
Assets	-3,605.6	2,362.1	3,713.7	-3,538.1
Liabilities	19,046.4	57,653.2	32,774.6	14,564.4
(Loans of general government)	-4,444.8	1,342.6	-957.9	-4,496.0
III.D CHANGE IN RESERVE ASSETS[1]	**84.0**	**1,536.2**	**2,536.0**	**-1,845.4**
IV BALANCING ITEM (I + II - III + IV = 0)	**-201.3**	**483.2**	**1,163.1**	**1,385.7**
RESERVE ASSETS (STOCK)	**7,571**	**9,739**	**12,770**	**11,341**

Source: Bank of Greece.
1 (+) increase, (-) decrease.

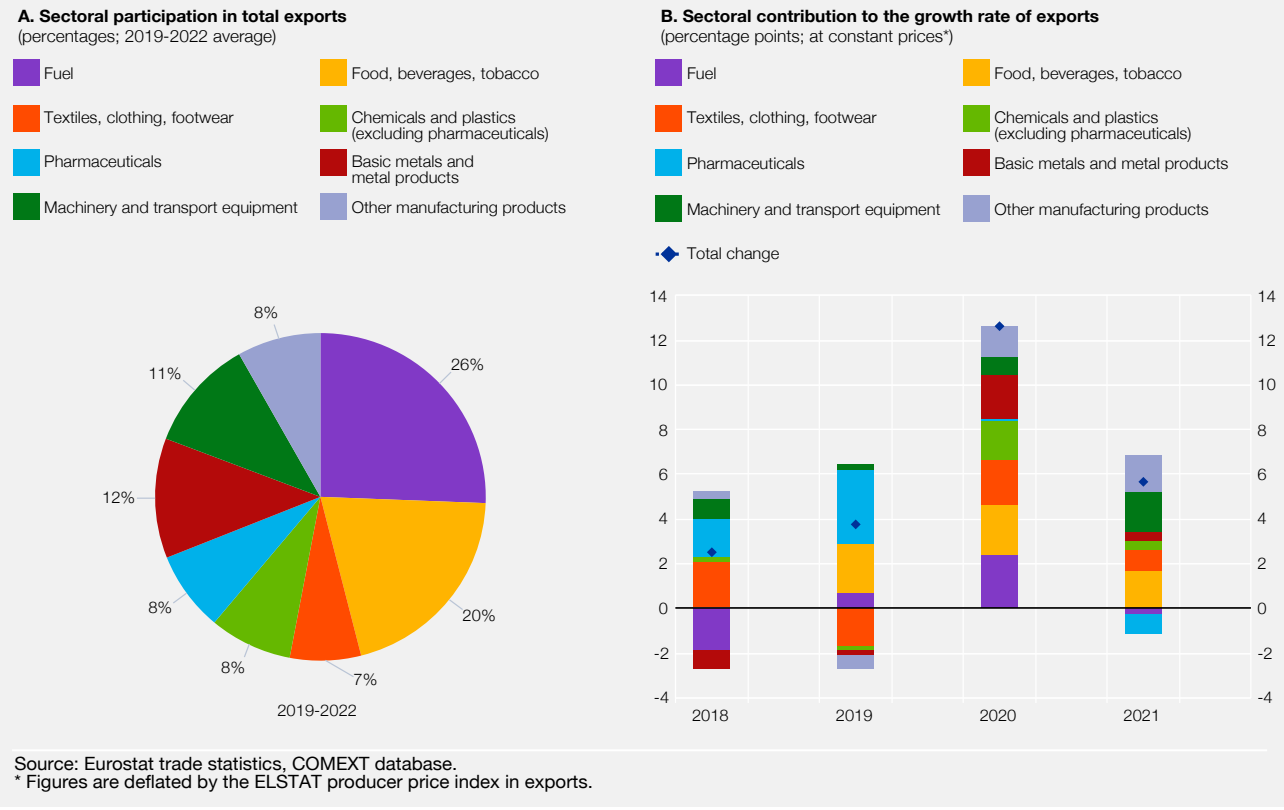
origin, due to inflation and high energy prices. The 2023 outlook for sea transport receipts, following their historical high in 2022, is less optimistic, as several tailwinds that prevailed in 2022, such as port congestion and the strong recovery in demand for raw materials, are not expected to linger on in 2023. In addition, a recent strengthening of the euro vis-à-vis the US dollar has a negative impact on sea transport receipts.

EU financing, including both the remaining resources under the Partnership Agreement for the Development Framework 20142020 and the new Multiannual Financial Framework 20212027, as well as the Recovery and Resilience Facility by 2026, to the extent that it is provided in the form of grants, should have a direct positive effect on the current account, through the primary and secondary income accounts. Moreover, a substantial part of the grants qualifies as capital transfers and is recorded under the capital account, thus reducing the economy's total financing requirements, while the share of financing in the form of loans is recorded under the financial account. Lastly, a significant contribution to the financing of the current account is estimated to come from foreign direct investment (FDI), which is expected to maintain its momentum, reflecting an acceleration of privatisations,[44] inflows from European funds, as well as the ensuing improvement of competitiveness and business sentiment.

7.1 Balance of goods

The goods deficit grew by EUR 12.3 billion in 2022, as imports of goods increased more than the corresponding exports (see Table IV.9). Increased imports of goods are attributable not only to higher international oil and other energy goods prices, but also to changes in volume. Although exports of goods continued their upward course, their growth rate was lower than that for imports of goods. Exports of goods increased, at constant prices, by 4.3%. Specifically, non-oil exports grew by 7.0%, with the largest contribution coming from machinery and means of transport, as

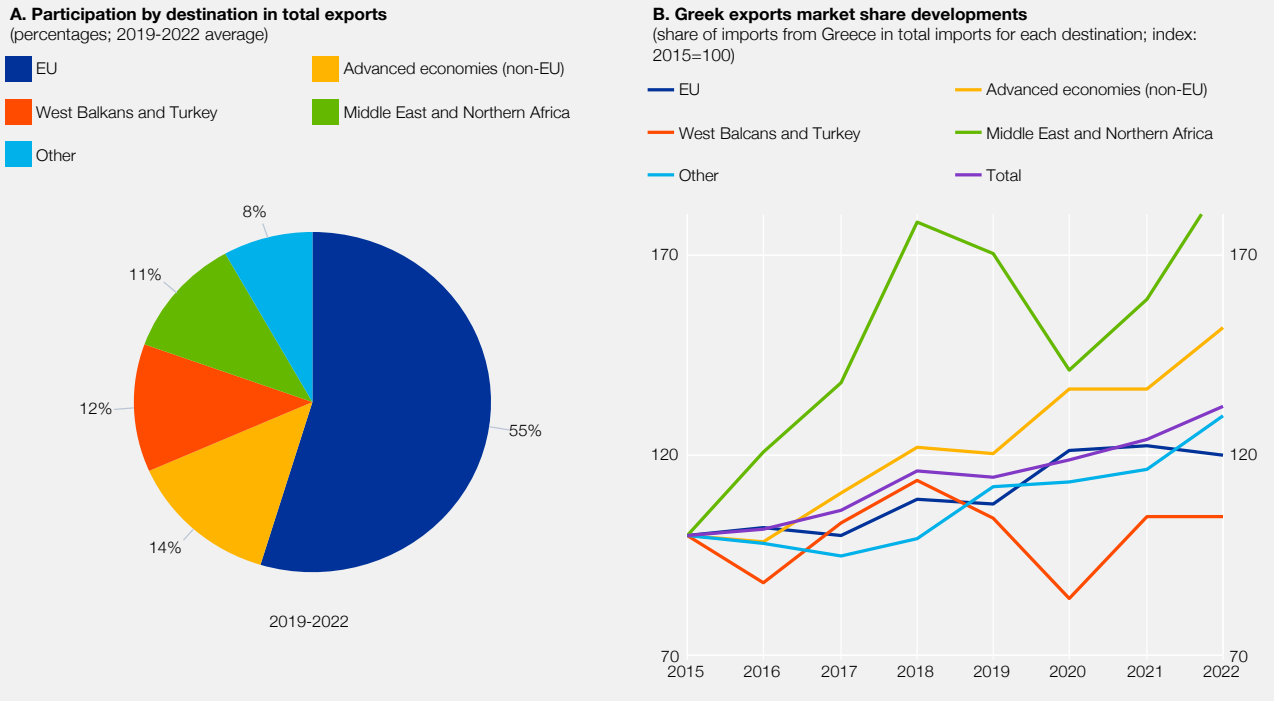
Chart IV.21 Exports of goods by sector



Source: Eurostat trade statistics, COMEXT database.
* Figures are deflated by the ELSTAT producer price index in exports.

44 Ministry of Finance (2022), *Introductory Report on the 2023 Budget*, November.

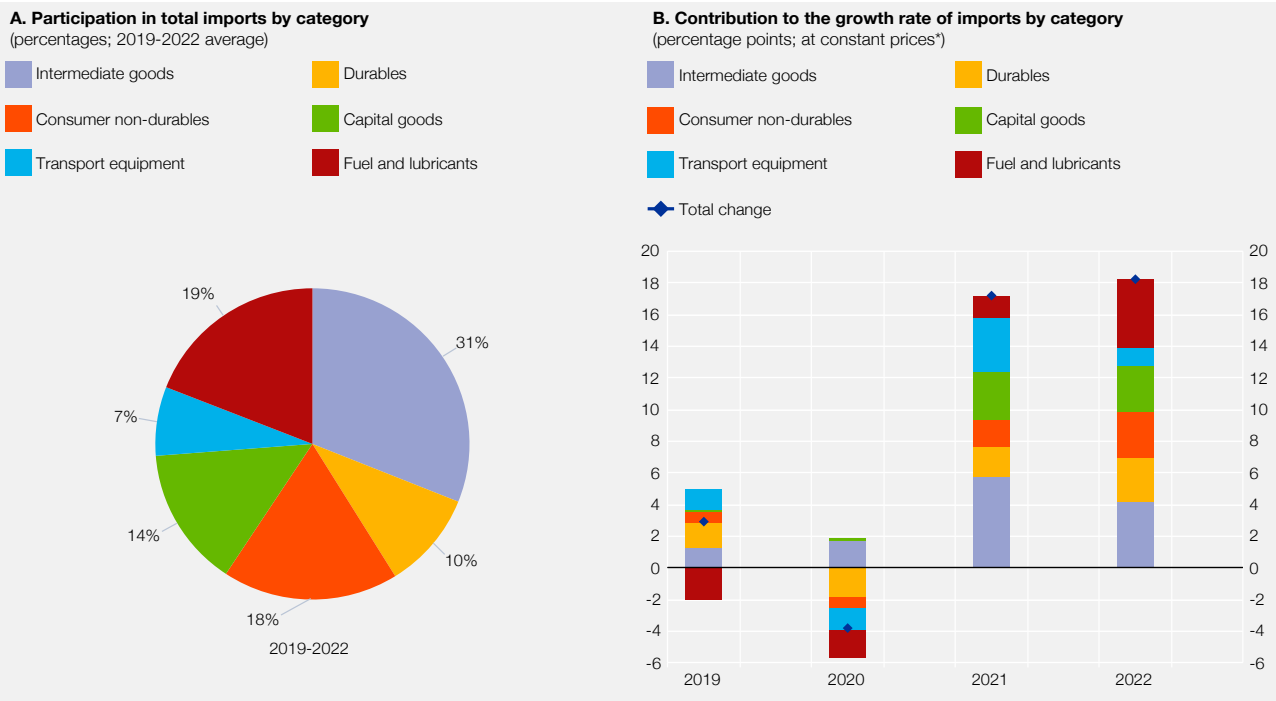
Chart IV.22 Exports of goods by destination



Sources: Eurostat trade statistics (COMEXT database) and IMF (DOTS).

well as food, beverages and tobacco, while oil exports at constant prices dropped by 4.4% (see Chart IV.21). The market share of Greek exports of goods to other (non-EU) advanced economies rose, while the share to EU Member States remained broadly unchanged (see Chart IV.22).

Chart IV.23 Imports of goods by use



Source: Eurostat trade statistics, COMEXT database.
* Figures are deflated by the ELSTAT import price index.

Imports of goods, at constant prices, increased by 16.9%, with oil imports growing at an even faster pace (24.1%). The rise in non-oil imports, at constant prices, outpaced (15.5%) that in the corresponding exports, reflecting an acceleration of consumer –durable and non-durable– goods imports, as well as the continuing upward path of intermediate and capital goods imports (see Chart IV.23).

7.2 Balance of services

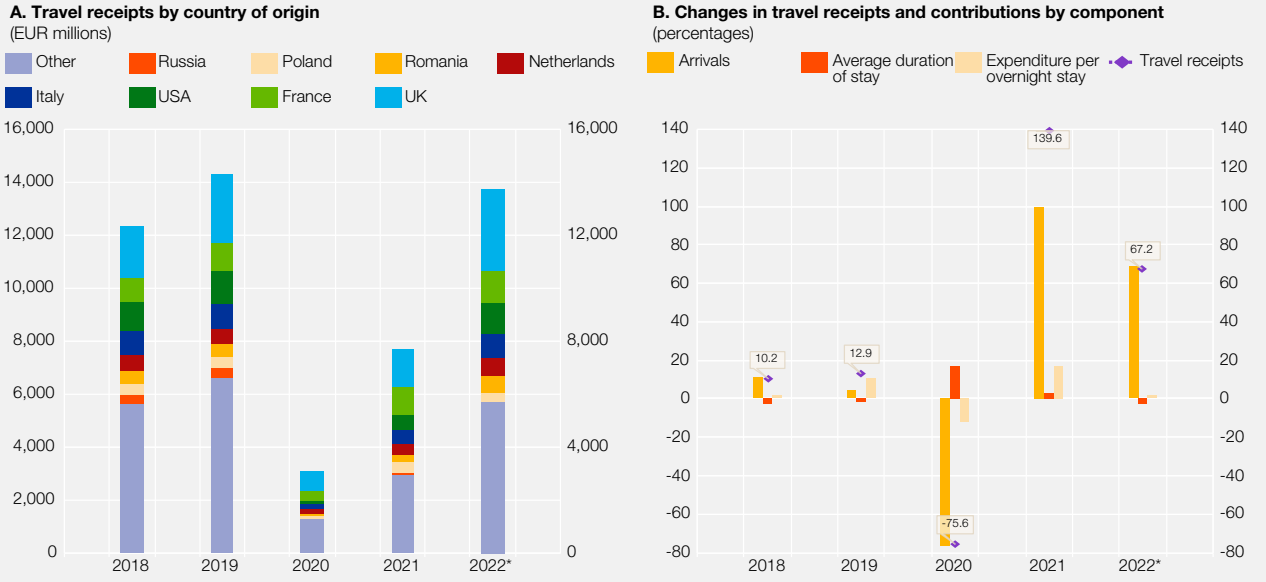
In 2022, the services surplus improved substantially by 51.6%, primarily as a result of higher net travel receipts and, secondarily, of an improvement in the transport and other services balances. Once the pandemic-related restrictions were lifted, Greece regained its share in the Mediterranean market, maintaining the 4th position among competitive destinations in terms of arrivals.[45] In fact, travel bans in other travel destinations (such as Asia) generally had a positive impact on the Mediterranean market, with receipts recovering 82% of their 2019 levels, against 63% for international tourism receipts in January-September 2022.[46]

Travel receipts increased by 68.3% in 2022 compared to 2021 and amounted to EUR 17.7 billion (reaching 97.2% of the 2019 receipts). This is mainly attributable to a rise in non-residents' arrivals and less so to an increase in their average length of stay, due to a drop in arrivals by road, while the rise in average expenditure per overnight stay was moderate (see Chart IV.24). As a result, average expenditure per trip grew by 10.0% compared to 2019, reflecting some opening-up to higher-income travellers. Arrivals rose by 89.3% to reach 88.8% of their 2019 levels; the largest contribution came from euro area arrivals, which exceeded their 2019 levels to reach 104.5%, albeit with a small decrease in average expenditure (see Box IV.3). Moreover, there was an increase in the average expenditure of travellers from countries with big Greek communities (USA, Australia, Canada), as well as travellers from Romania and Sweden. In addition, according to January-September 2022 data from the Border Survey, in the popular tourist destinations of the Southern Aegean (Cyclades and the Dodecanese islands), Crete and the Ionian Islands, the recovery of receipts and visits reached 74.6% and 97.9%, respectively, compared to 2019 (against 48.7% and 85.0% for the country as a whole). The region of Attica posted receipts and visits equalling 46.7% and 93.2% of their levels in the corresponding January-September 2019 period. Average expenditure per trip in the Ionian Islands was substantially higher, but less so in the regions of Crete and Attica.

The surplus of the transport balance recorded a small improvement, since a rise in net sea transport receipts was partly offset by a deterioration of the other transport balance, which is associated with the transportation costs of higher goods imports.[47] Sea transport receipts reached EUR 21.0 billion, exceeding their historical high in 2008 (EUR 17.6 billion). Although the corresponding payments grew at a faster pace than receipts, the sea transport surplus increased by 20.5%.[48] The course of sea transport receipts reflects both developments in freight rates, which –according to the ClarkSea Index– increased by around 30% compared to 2021, and a rise in active shipping capacity, in terms of ships operated by companies based in Greece (see Chart IV.25). Specifically, as regards this fleet's main sectors of activity, i.e. dry bulk and tankers, freight rates moved into opposite directions, as dry bulk freight rates dropped by 24%,[49] while tanker freight rates were almost six times higher.[50] Additionally, the appreciation of the

45 Bank of Greece (2022), *Monetary Policy – Interim Report 2022*, December [in Greek].
46 UNWTO (2023), *World Tourism Barometer*, 21(1), January.
47 In the balance of payments, the value of imports is reported in f.o.b. (free on board) terms. The value of imports reported in c.i.f. (cost, insurance, freight) terms is converted into f.o.b. terms, by applying a fixed conversion coefficient of 5%, representing freight and insurance premiums. The resulting difference is allocated to transportation and insurance services by 4/5 and 1/5, respectively.
48 Payments for sea transport services also include payments of net revenue from freight rates paid by operators in Greece to shipowners abroad.
49 Dry bulk rates, despite an increase in the first half of 2022, posted a decline for 2022 as a whole. This development reflects weakening demand for raw material imports, as well as port decongestion.
50 A remarkable increase in tanker freight rates, particularly in the second half of 2022, reflects on the one hand heightened demand –partly as a result of the Russia-Ukraine war– and on the other the low levels of relevant freight rates in 2021.

Chart IV.24 Breakdown of and changes in travel services (2018-2022)



Source: Bank of Greece, Border Survey.
* Provisional data (excluding cruises).

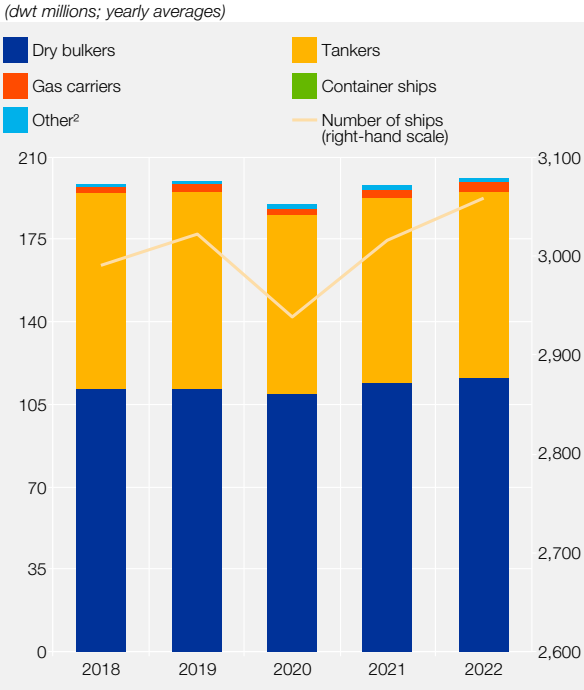
US dollar vis-à-vis the euro further strengthened the increase in sea transport receipts.[51]

Lastly, the other services balance improved year-on-year, as an improvement in the other business services and financial services balances was partly offset by a rise in net payments for insurance services, also due to higher insurance premiums on imported goods.

7.3 Primary and secondary income accounts – Capital account

In 2022, the primary and secondary income accounts deteriorated and registered a deficit, against a surplus in 2021. Specifically, the deterioration of the primary income account in 2022 mainly reflects higher net interest, dividend and profit payments. The deterioration of the secondary income account in 2022 is attributable to (a) the approval by the ESM of only one tranche of policy-contingent debt relief measures for Greece (transfer of ANFA/SMP income equivalent amounts and reduction of the step-up margin), whereas in 2021 two tranches had been approved;[52] and (b) the disbursement of one tranche under the RRF in 2022, which represents around 10% of total financing, whereas in 2021 the pre-financing disbursement had amounted to 13%.

Chart IV.25 Developments in the merchant fleet[1] managed by companies located in Greece



Source: Bank of Greece calculations. For the set-up methodology of the fleet managed by Greece, see Papaspyrou, M. and A. Petralias (2019), "The Greek shipping estimation model", Bank of Greece, Economic Bulletin, No. 49, July.
1 Merchant ships in operation (excluding recreational and fishing) with gross tonnage of over 100.
2 Including passenger ships, barges, etc.

51 It should be noted that the US dollar is the key currency in the shipping industry.
52 The latest tranche of ANFA/SMP income equivalent amounts was disbursed by the ESM in March 2023.

The capital account also worsened, as the surplus was significantly smaller year-on-year, since general government receipts were, as already mentioned, lower due to the disbursement of only one tranche under the RRF in 2022. By the end of 2022, EUR 4.0 billion (in the form of grants) had been disbursed by the RRF, of which EUR 1.8 billion was recorded as direct transfers under the secondary income account (specifically the general government account) and EUR 2.2 billion was recorded under the capital account (for fixed capital formation), strengthening the current account financing.[53]

Inflows from the EU structural and investment funds, recorded under the primary and secondary income accounts, reached EUR 2.0 billion in 2022 and inflows of direct agricultural subsidies under the Common Agricultural Policy stood at EUR 2.3 billion.[54] The disbursement of the RRF funds is contingent upon fulfilling the related milestones in project implementation.[55] Specifically, within 2022 the first tranche was disbursed under the NGEU and the second payment request was submitted, which was then disbursed in early 2023. For the rest of 2023, one more tranche is expected to be disbursed, and at least one request should be submitted for the next payment. Regarding the absorption of funds under the Partnership Agreement for the Development Framework 2014-2020, by end-2022 Greece had absorbed around 89% of its allocated amount (against 77% at end-2021). To ensure total absorption, projects that more than cover the remaining amount have already been approved, while an acceleration typically observed at the end of each programming period is also evident. Moreover, the payment of EUR 269.9 million at the beginning of 2022 marked the start of disbursements under the new National Strategic Reference Framework (NSRF) 2021-2027. In line with standard practice, disbursements are expected to accelerate towards the end of the programming period. Lastly, under the REACT-EU programme, funds amounting to EUR 933 million were disbursed, covering almost half of the allocated resources, while under the European instrument SURE Greece received the total amount of loans allocated to the country, i.e. EUR 6.2 billion.

7.4 Financial account

Under direct investment, residents' external assets, which represent residents' direct investment abroad, grew by EUR 1.9 billion in 2022. These were mainly channelled to Information and communications, Real estate management, Financial and insurance activities, and Arts and recreation. The main destinations were Ireland, Cyprus, the Netherlands, the United Kingdom and Romania.

Residents' external liabilities represent non-residents' net foreign direct investment (FDI) inflows into Greece. During 2022, they grew substantially and reached a 20-year (2002-22) high (EUR 6.4 billion or 3.1% of GDP). Inflows primarily reflect investment in mergers & acquisitions and share capital increases, and secondarily in real estate. The amount of inflows is mainly attributable to a scaling-up of privatisations (Hellenic Electricity Distribution Network Operator (HEDNO) and Public Gas Corporation (DEPA) Infrastructures) and the sale of the merchant acquiring business by Greek systemic commercial banks (see Box IV.4).[56] Total inflows are mainly channelled into manufacturing (food and tobacco) and services (financial activities and real estate management), as well as private housing transactions. FDIs mainly originate from Italy, Germany, Luxembourg, the Netherlands, France and Switzerland.

Under portfolio investment, an increase in Greek residents' external assets is chiefly attributable to a rise of EUR 9.0 billion in residents' holdings of foreign bonds and Treasury bills. An increase in residents' external liabilities is attributable to a rise of EUR 1.3 billion in non-residents' holdings

53 An additional EUR 3.5 billion was disbursed in the form of loans and recorded under the financial account.

54 Bank of Greece calculations based on cash inflows from EU Structural Funds (provisional data). Structural Funds are defined as the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund (CF).

55 The milestones and timelines of projects are set out in the Annex to the Proposal for a Council Implementing Decision on the approval of the assessment of the recovery and resilience plan for Greece (COM 328, 17.6.2021).

56 See for instance Piraeus Bank, press release, 16.3.2022.

of Greek bonds and Treasury bills. Under other investment, a drop in residents' external assets is due to a decline of EUR 8.1 billion in residents' deposit and repo holdings abroad, which was partly offset by a EUR 4.7 billion statistical adjustment associated with the issuance of banknotes. An increase in their liabilities represents mainly a rise of EUR 17.7 billion in non-residents' deposit and repo holdings in Greece (the TARGET account included). At end-2022, Greece's reserve assets stood at EUR 11.3 billion, compared with EUR 12.8 billion at end-2021.

8 INTERNATIONAL INVESTMENT POSITION AND EXTERNAL DEBT

At end-2022, Greece's net external liabilities stood at EUR 294 billion (141% of GDP), down by EUR 18 billion year-on-year.[57] This mainly reflects a decline in the net liabilities of general government and, to a lesser extent, of the other sectors of the economy (see Table IV.10). Moreover, the net international investment position (NIIP)-to-GDP ratio improved significantly, including due to nominal GDP growth.

Although Greece posted the highest negative Net International Investment Position (NIIP)[58] as a percentage of GDP in 2021 in the EU,[59] risks to the Greek economy are currently rather limited, as the negative NIIP of general government (127% of GDP), which is the main contributor to the country's negative NIIP, refers to ESM/EFSF loans to general government at low interest rates and with long maturities. Nevertheless, the past few years also saw an increase in the net liabilities of the other sectors of the economy, mainly reflecting a sale of (mostly business and household) loans, which were transferred to non-resident financial institutions. The NIIP improvement needed in the medium term requires either high growth rates, which could more than offset current account deficits, or sizeable and permanent current account surpluses.

Net direct investment liabilities grew, reflecting a rise in FDI inflows into Greece (see also Section 7.4 above). Net portfolio investment assets[60] posted an increase of EUR 27 billion. This is attributable to both a decline in general government net liabilities, also reflecting improved derivative valuation, and an increase in Bank of Greece net assets, which is also related to the Bank's transactions in the context of monetary policy implementation through asset purchases (see also Chapter III).

Under other investment, the negative net position remained almost unchanged against 2021, as the lower net liabilities of the other sectors of the economy and general government were almost fully offset by a rise in the net liabilities of the Bank of Greece and other financial institutions (the TARGET account included). Specifically, a decrease in other sectors' net liabilities reflects a change in the loan recording methodology, for loans serviced by credit servicing firms (CSFs).[61] Lastly, foreign reserve assets declined, mainly due to the use of special drawing rights (SDRs) allocated by the IMF in the third quarter of 2021.

57 Changes in IIP reflect changes not only in non-residents' investment in Greece and residents' investment abroad, i.e. financial account flows, but also changes in the valuation of such investment. These would be difficult to calculate, as they are associated with changes in the market valuation of assets (mainly bonds and equities) that make up Greece's foreign assets and liabilities, as well as fluctuations in exchange rates.

58 The NIIP is defined as the difference between a country's assets and liabilities against non-residents. Depending on the positive or negative sign, a country is characterised as a net creditor or a net debtor, respectively, against the rest of the world. The IIP reflects, at any given point in time, the level of a country's assets and liabilities against non-residents. Assets and liabilities are broken down into key categories, i.e. direct investment, portfolio investment, other investment and foreign reserve assets, as well as into sectors of the economy, i.e. general government, the Bank of Greece, other financial institutions and other sectors. It should be noted that, in compliance with international reporting requirements, direct investment, bonds and equities are valued at market price as at the last day of the reference period.

59 European Commission (2022), *Alert Mechanism Report 2023*, November.

60 Also including IIP financial derivatives.

61 As from the fourth quarter of 2022, according to the Bank of Greece's monetary and banking statistics methodology, the nominal value of loans serviced by CSFs does not include off-balance-sheet interest and the amounts of write-offs/write-downs of loans made by the credit institution that transferred the loan portfolio.

Table IV.10 Greece's international investment position by type of investment and sector

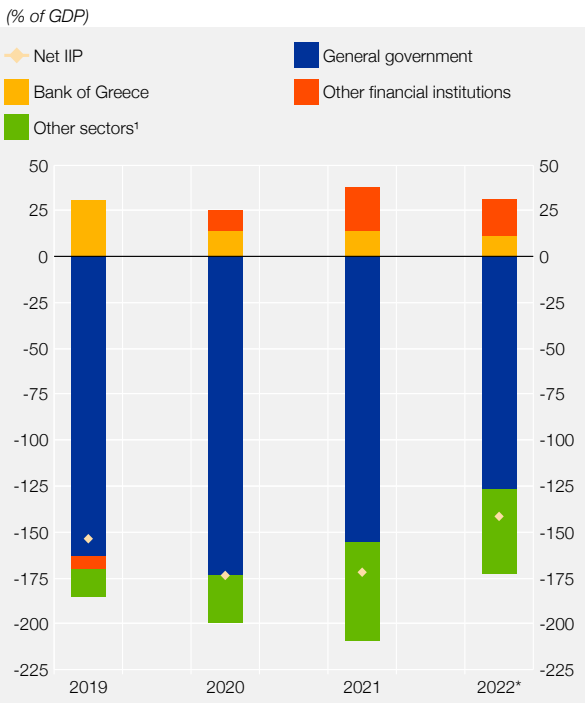
(EUR millions)

	2019	2020	2021	2022*
I. DIRECT INVESTMENT	**-23,071**	**-20,703**	**-24,852**	**-31,306**
I.1 Abroad by residents	20,508	16,142	17,625	19,309
I.2 In Greece by non-residents	43,579	36,845	42,477	50,614
II. PORTFOLIO INVESTMENT[1]	**65,467**	**112,996**	**139,858**	**166,526**
II.1 Assets	132,222	165,044	192,622	211,429
II.2 Liabilities	66,755	52,047	52,764	44,903
1. General government	**-40,811**	**-27,202**	**-21,553**	**-7,809**
1.1 Assets	45	663	906	7,529
1.2 Liabilities	40,856	27,865	22,459	15,338
2. Bank of Greece	**70,290**	**90,286**	**112,955**	**122,593**
2.1 Assets	70,290	90,286	112,955	122,593
2.2 Liabilities	0	0	0	0
3. Other financial institutions	**28,741**	**42,247**	**44,765**	**51,664**
3.1 Assets	43,517	54,719	55,498	59,849
3.2 Liabilities	14,776	12,472	10,733	8,185
4. Other sectors	**7,247**	**7,665**	**3,691**	**78**
4.1 Assets	18,370	19,376	23,263	21,458
4.2 Liabilities	11,123	11,710	19,572	21,380
III. OTHER INVESTMENT	**-332,498**	**-389,586**	**-440,089**	**-440,471**
III.1 Assets	65,747	68,173	78,214	75,273
III.2 Liabilities	398,245	457,759	518,304	515,743
1. General government	**-258,578**	**-259,755**	**-260,842**	**-255,902**
1.1 Assets	2,439	2,439	3,424	3,915
1.2 Liabilities	261,016	262,193	264,265	259,817
2. Bank of Greece	**-21,548**	**-76,368**	**-99,993**	**-109,295**
2.1 Assets	10,309	12,904	17,225	21,786
2.2 Liabilities	31,857	89,272	117,218	131,081
3. Other financial institutions	**-44,743**	**-27,549**	**-7,001**	**-16,000**
3.1 Assets	20,650	22,124	28,841	23,892
3.2 Liabilities	65,393	49,672	35,842	39,891
4. Other sectors[2]	**-7,629**	**-25,914**	**-72,253**	**-59,273**
4.1 Assets	32,350	30,707	28,725	25,681
4.2 Liabilities	39,979	56,621	100,978	84,954
IV. RESERVE ASSETS	**7,571**	**9,739**	**12,770**	**11,341**
NET INTERNATIONAL INVESTMENT POSITION (I + II + III + IV)	**-282,531**	**-287,554**	**-312,314**	**-293,909**
Net IIP as % of GDP	**-154.1**	**-173.8**	**-171.9**	**-141.3**

Source: Bank of Greece.
* Bank of Greece estimates on the basis of provisional balance of payments and IIP data.
1 Portfolio investment includes financial derivatives.
2 As from the fourth quarter of 2022, according to the monetary and banking statistics methodology of the Bank of Greece, the nominal value of loans serviced by Credit Servicing Firms (CSFs) does not include off-balance-sheet interest and the amounts of write-offs/write-downs of loans made by the credit institution that transferred the loan portfolio.

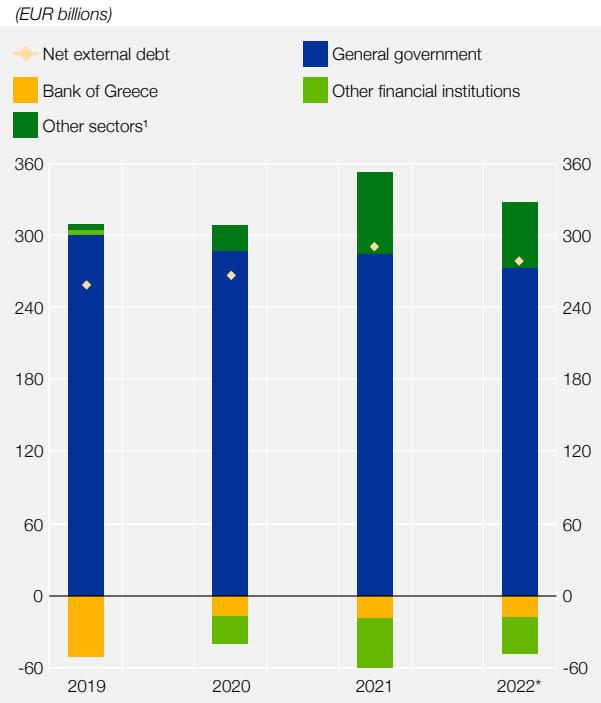
Based on a sectoral breakdown (see Chart IV.26), the improved NIIP in 2022 is associated with a decline in net liabilities of both general government and the other sectors of the economy; however, this was partly offset by a deterioration in the net position of primarily other financial

Chart IV.26 Net international investment position by sector



Source: Bank of Greece.
* Bank of Greece estimates based on provisional balance of payments and IIP data.
1 As from the fourth quarter of 2022, according to the monetary and banking statistics methodology of the Bank of Greece, the nominal value of loans serviced by CSFs does not include off-balance-sheet interest and the amounts of write-offs/write-downs of loans made by the credit institution that transferred the loan portfolio.

Chart IV.27 Net external debt by sector



Source: Bank of Greece.
* Bank of Greece estimates based on provisional balance of payments and IIP data.
1 As from the fourth quarter of 2022, according to the monetary and banking statistics methodology of the Bank of Greece, the nominal value of loans serviced by CSFs does not include off-balance-sheet interest and the amounts of write-offs/write-downs of loans made by the credit institution that transferred the loan portfolio.
Note: Negative values denote assets.

Table IV.11 Gross and net external debt (current prices)

(EUR millions)

	2019	2020	2021	2022*
A. General government	298,955	286,398	285,347	275,033
B. Bank of Greece	31,857	89,272	117,218	131,081
C. Other financial institutions	68,362	52,912	40,394	45,698
D. Other sectors[1]	40,059	57,645	104,060	87,975
E. Direct investment – total economy	9,264	7,779	7,685	6,930
Gross external debt (A+B+C+D+E)	**448,497**	**494,007**	**554,705**	**546,718**
Gross external debt as % of GDP	244.6	298.7	305.3	262.8
Gross external debt of general government as % of GDP	163.1	173.1	157.1	132.2
Net external debt	**258,726**	**267,189**	**290,926**	**279,237**
Net external debt as % of GDP	141.1	161.5	160.1	134.2

Source: Bank of Greece.
* Bank of Greece estimates on the basis of provisional balance of payments and IIP data.
1 As from the fourth quarter of 2022, according to the monetary and banking statistics methodogology of the Bank of Greece, the nominal value of loans serviced by Credit Servicing Firms (CSFs) does not include off-balance sheet interest and the amounts of write-offs/write-downs of loans made by the credit institution that transferred the loan portfolio.

institutions and secondarily the Bank of Greece. As previously mentioned, an improvement in the net position of the other sectors of the economy is chiefly associated with a change in the methodology for recording loans serviced by CSFs.

Greece's gross external debt,[62] at current prices, dropped by EUR 8 billion to EUR 547 billion (263% of GDP) at end-2022, which reflects reduced liabilities, on the one hand, of the other sectors of the economy, as a result of the aforementioned change in methodology, and, on the other, of general government. This development was partly offset by an increase in liabilities primarily of the Bank of Greece and secondarily of the other financial institutions (see Table IV.11). It should be noted that the gross external debt-to-GDP ratio improved noticeably, including due to a significant increase in nominal GDP in 2022.

Net external debt[63] dropped by EUR 12 billion to EUR 279 billion (134% of GDP) in 2022, following an improvement in the net positions of the other sectors of the economy and general government. This was partly offset by a deterioration in the net positions of the other financial institutions and the Bank of Greece (see Chart IV.27).

62 Gross external debt equals IIP liabilities minus equity and financial derivatives.
63 Net external debt equals the net IIP minus the net position in equity from direct investment and portfolio investment, as well as the net position in derivatives, gold and equity included in reserve assets.

Box IV.3

THE GREEK TOURISM SECTOR: PERFORMANCE AND CHANGES FOLLOWING THE PANDEMIC

Tourism is a major component of the Greek economy and a sector hard hit by the pandemic worldwide. 2022 was the first year to see a return of tourism activity to pre-pandemic levels, with the relevant aggregates coming quite close to the levels observed in 2019, which had been a very good year for tourism. At the same time, higher energy prices led to a rise in inflation, affecting prices across the sector, as well as travel spending. This box reviews the evolution of total nominal and real tourism receipts and the changes in the sector after its post-pandemic reopening, mainly in comparison with 2019. It also discusses the price competitiveness of the Greek tourism product relative to its major competitors, the changes in demand for and supply of hotel services, with a reference to investment and employment, and, lastly, the tax burden on Greek hotels compared with EU-27 competitor countries.

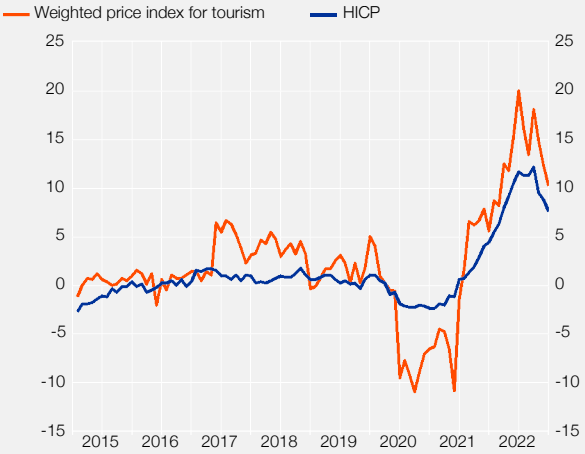
Travel receipts in nominal and real terms

The tourism sector is made up of a number of closely related activities, including hotels, transport and restaurants.[1] The main goods and services items under travel spending are accommodation (49.2%), restaurants (14.2%), transport[2] (20.4%), cultural and leisure activities (3.5%) and purchase of goods (12.7%).[3] Prices do not evolve in a consistent manner across these categories. The nominal increase in travel receipts is affected by the level of prices. At the same time, rising prices due to the re-emergence of inflation have a negative impact on demand for tourism-related services, as they reduce the disposable income of travellers.

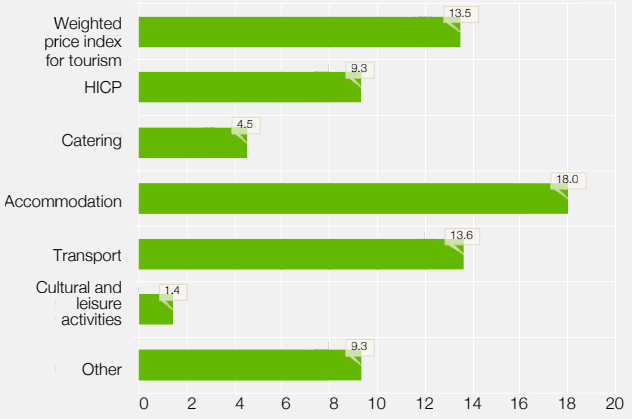
1 See Bank of Greece (2020), *Monetary Policy 2019-2020*, Box IV.3 "The impact of the COVID-19 pandemic on tourism and the economy".
2 Cross-border transport is not included.
3 See Hackl, P. and S. Hatzimarinakis (2017), "Tourism Satellite Accounts: Potentials and Needs. Technical Assistance action to support tourism planning and policy for the promotion of sustainable tourism development in Greece", EU-funded grant project implemented within the framework of the European Commission's Structural Reform Support Service (SRSS).

Chart A Weighted price index for tourism

1. Evolution of the HICP annual rate of change and the price index for tourism (Jan. 2015 - Dec. 2022)
(base year: 2015=100)



2. Annual rate of change of the weighted price index for tourism and its components (2022)



Source: Eurostat, Bank of Greece calculations.

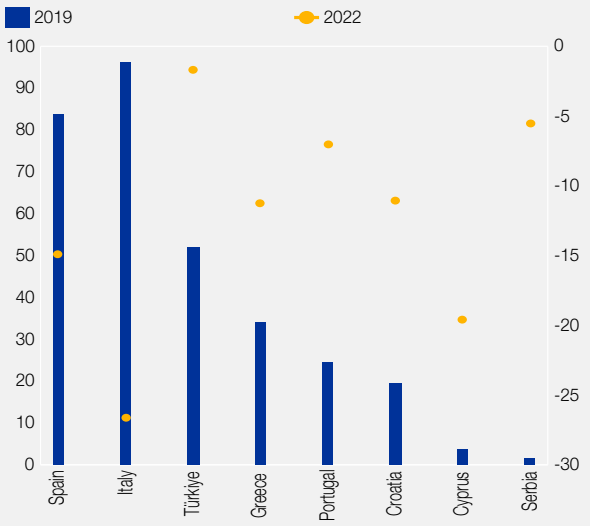
The calculation of the deflated tourism revenue and the estimation process involve two steps.[4] In particular, given the nature of tourism activity, which is made up of the categories mentioned above, neither the headline inflation index nor the hotel-restaurants subindex could adequately proxy the change in prices in the sector, although they have been used in relevant studies.[5] Rather, the appropriate deflator is a composite index based on the weight of each category in total travel expenditure, with the latter being derived from the Border Survey; this index has also been used to develop the pilot tourism satellite accounts for Greece. It should be noted that, instead of the national Consumer Price Index (CPI), the Harmonised Index of Consumer Prices (HICP) was used, which better captures non-residents' expenditure.[6,7] Weighted price developments for the tourism industry are presented in Chart A, which shows that recently these prices increased more than the headline HICP (up by 9.3% and 13.5%, respectively, in 2022). Hotel prices rose significantly more than the HICP (18%), while the rise of restaurant prices was milder (4.5%). Transport prices, having also been affected by higher fuel costs, increased by 13.6%. Travel receipts in nominal terms grew by 68.3% between 2021 and 2022, reaching 97.2% of their 2019 level. Receipts growth in real terms, as proxied by the weighted consumer price index for tourism, reached 48.9% in the same period, with a recovery rate[8] of 90.2% at constant prices. In 2022, non-residents' arrivals increased by 89.3% relative to 2021, with a recovery rate of 88.8%.

Price changes compared with competitor countries

The ranking of Mediterranean countries in global tourism, based on their aggregate share in the global tourism market, improved in the January-September 2022 period, benefiting from the strict lockdowns in other parts of the world, notably in Asia.[9] Greece remained fourth in terms of arrivals (after Spain, Italy and Türkiye), having in-

4 In the first step, total tourist spending is allocated to the individual categories mentioned above. In the second step, the prices in each category are deflated using the respective price subindices for hotels, restaurants, transport and cultural activities and leisure, and the headline HICP for the category of "other goods".
5 See e.g. Morley, C. (1994), "The use of CPI for tourism prices in demand modelling", *Tourism Management*, 15(5).
6 Kasimati, E., E. Kondelis and K. Lagopoulos (2021), "An estimate of international receipts and the turnover of the hotel and food sectors during the second year of the pandemic", KEPE, *Economic Developments*, Issue 46.
7 Kasimati, E., E. Kondelis and K. Lagopoulos (2020), "Greek tourism during coronavirus: Estimation of non-residents' travel receipts and the turnover of enterprises in accommodation and food service activities", KEPE, *Economic Developments*, Issue 43.
8 The recovery rate shows to what extent the relevant variable size returned to its 2019 level. If travel receipts were deflated by the headline HICP, the recovery rate would be 89.6%.
9 Bank of Greece (2022), *Monetary Policy – Interim Report 2022*, December.

Chart B Tourist arrivals in 2022 and 2019 in Greece and in competitor countries



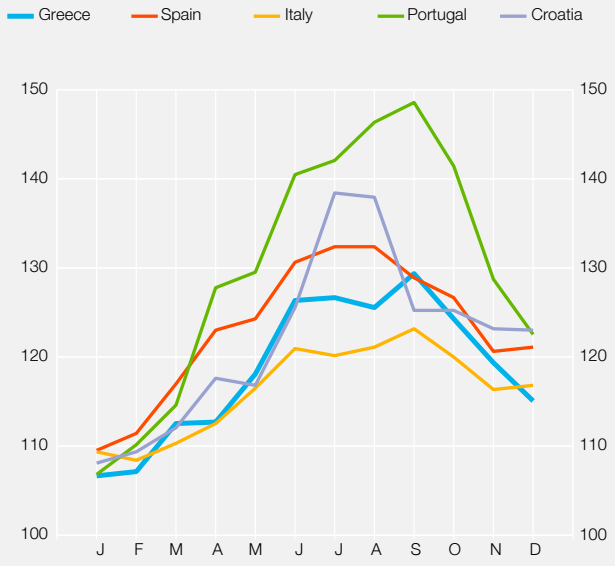
Sources: Bank of Greece and European Travel Commission (2023).
Note: Left-hand scale: Non-residents' arrivals in 2019 (million travellers); right-hand scale: percentage change in tourist arrivals, available data for 2022 vis-à-vis corresponding data for 2019.

creased its share of tourist arrivals surpassing its competitors (Spain and Italy). Chart B shows the number of inbound travellers in Greece and in its Mediterranean competitors in 2022, as well as the percentage change compared with 2019. Based on available data for 2022, the smallest declines compared with 2019, thus the strongest recovery to 2019 levels, were recorded by Türkiye and Serbia (-2% and -6%, respectively, in the eleven-month period). While Türkiye remains a popular destination, Serbia is a visa-free country for Russian passport holders. The inflow of Russian travellers to Serbia in 2022 may have been used as a pretext, as many are likely to have left the country due to the war in Ukraine and its impact on their lives in an increasingly isolated Russia. A strong recovery is also observed for Portugal (-7% in the eleven-month period), followed by Croatia and Greece (-11% for 2022 as a whole). By contrast, according to the European Travel Commission,[10] the largest drop in tourist arrivals (over 36%) was seen in the Baltic States, Finland, Romania and Slovakia. Currently, the Baltic States have banned the entry of Russian travellers due to the war, while Slovakia has suspended applications for tourist visas from Russians.

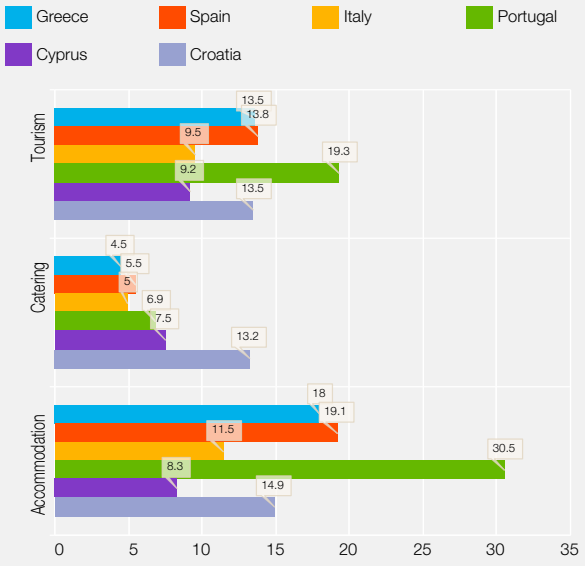
Chart C depicts developments in tourism prices in Greece and in a selected set of competitor countries in each month of 2022,[11] based on the overall weighted price index for tourism (panel 1) and the subindices for restaurants

Chart C Price developments compared with competitor countries (2022)

1. Monthly evolution of the weighted index for tourism in selected countries



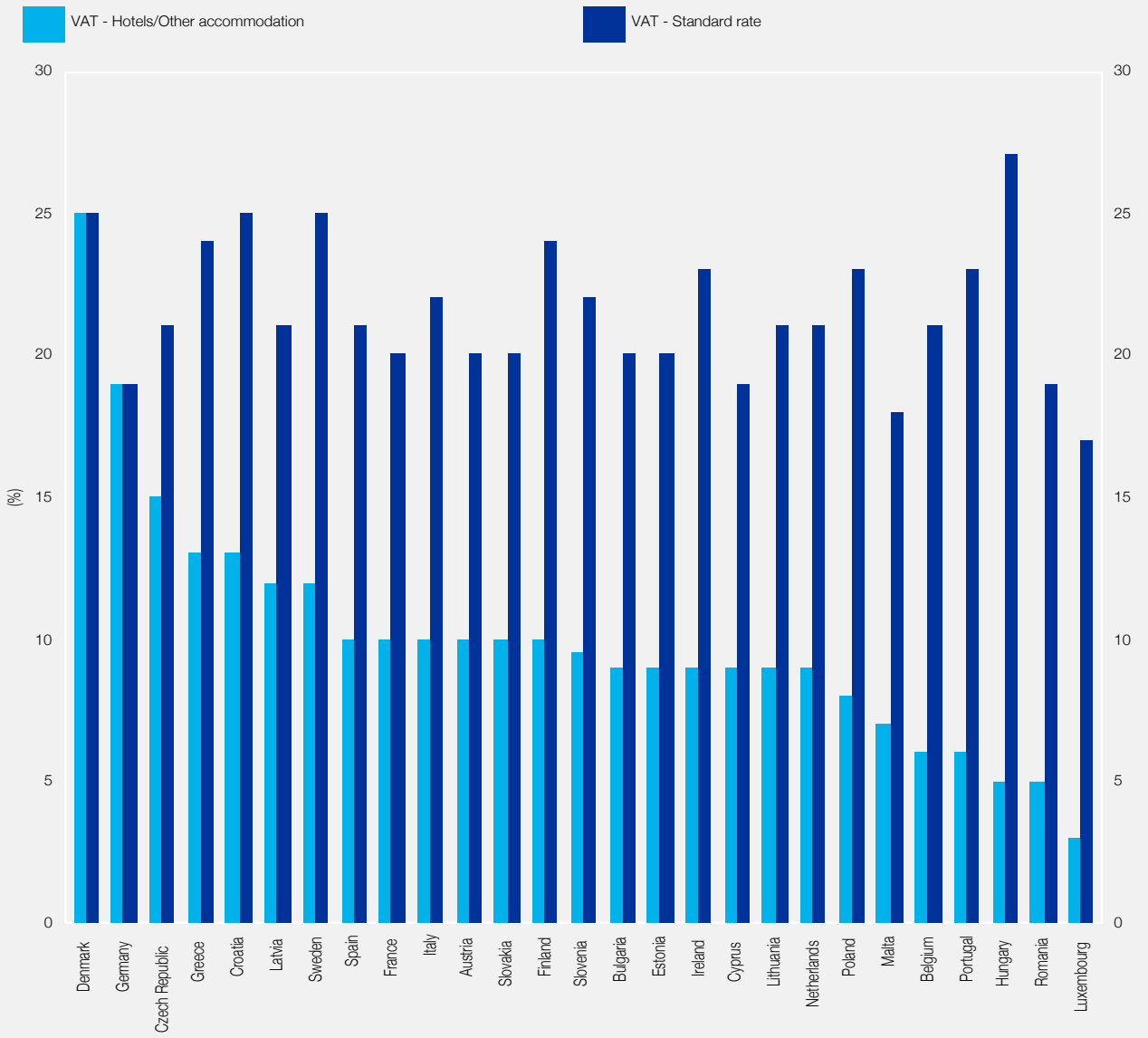
2. Total weighted index for tourism and catering & accommodation sub-indices



Source: Eurostat, Bank of Greece estimates.

10 European Travel Commission (2023), *European Tourism 2022 – Trends & Prospects*, Quarterly report (Q4/2022).
11 Applying the same allocation of travel spending into categories for all selected countries.

Chart D Value added tax on hotels in EU-27 countries



Source: European Commission (2021).

and hotels (panel 2). Among Greece's main Mediterranean competitors (apart from Cyprus, which records lower figures), Italy appears to have contained prices in 2022, in stark contrast with Portugal. Moreover, the large depreciation of the Turkish lira and high inflation in Türkiye are factors that attract travellers. Greece appears to lie in the middle in terms of prices vis-à-vis its major competitors. Prices in the Greek restaurant/catering sector remain competitive, having increased less than any other competitor country. On the other hand, accommodation prices in Greece are on the rise, as constrained supply is unable to meet increased demand in popular destinations, but also because higher new investment in the construction of luxury tourist accommodation may have shifted prices upwards.

Tax burden and competitiveness

An important factor affecting demand for a country's tourism product is taxation. According to the European Travel Commission (2020),[12] demand has increased for destinations which discount value added tax (VAT) for accommo-

12 European Travel Commission (2020), *European Tourism 2019 – Trends & Prospects*, Quarterly report (Q4/2019).

dation. Chart D shows, for each EU-27 country, the standard VAT rate for goods and services, as well as the accommodation-specific VAT rate. As can be observed, all countries except Denmark apply lower VAT rates on accommodation than the standard rate. In Greece, the accommodation tax rate is 13%, the fourth highest in the EU-27, but well below the standard VAT rate of 24%. Most of Greece's competitors in the tourism market apply lower accommodation VAT rates compared with Greece. Specifically, the VAT rate on hotels and other accommodation is 10% in Italy and Spain, 9% in Cyprus and 6% in Portugal. Croatia's accommodation tax rate is 13%, same as in Greece, while its standard tax rate is marginally higher than in Greece (25%). Lastly, in Türkiye, the VAT on hotels and other accommodation was close to zero and was increased to 2%, effective from 1 January 2023.

Hotels: contribution to economic recovery

A sector's contribution to the national economy depends on its size and its interactions with other sectors. In terms of their share in active demand, travel spending in Greece accounted for 11% of nominal GDP in 2019, up from 7% in 2021. On the supply side, the share of hotels and restaurants in total gross value added (GVA) was 7% in 2019 and 6% in 2021. Employment in the sector stood at 325 thousand persons in 2021, most of whom worked in full-time jobs.

Demand for hotel services: a strengthening following the COVID-19 crisis

In the past couple of years, as well as before the pandemic, a significant strengthening of tourist flows, along with an upgrading and expansion of the country's hotel capacity and improved tourism services in other sectors (e.g. catering), led to a rise in demand for hotel services. On the basis of data for the first nine months of 2022, arrivals and overnight stays of non-residents at hotels in Greece exceeded pre-pandemic levels, while the average number of overnight stays per arrival was the same as in 2019 (4.8 nights spent per arrival) (ELSTAT 2022).[13] It should be noted that non-residents make up the vast majority of Greek hotel guests, accounting for around 86% of total overnight stays in 2022.

The occupancy rate of bed places in hotels recovered in January-September 2022 to 58%, exceeding its pre-pandemic level (55% in the same period of 2019) (ELSTAT 2022). Overall, the occupancy rate of hotel accommodation in Greece varies over the year, reflecting strong seasonality given the focus on summer and seaside tourism. Occupancy rates vary widely across Greek regions. In 2021, the highest occupancy rates were seen in the Ionian Islands, the South Aegean and Crete, followed by the region of Attica. Particularly low rates are recorded in regions that are less developed tourism-wise, such as Western Macedonia, Western Greece and Central Greece (ELSTAT 2022).[14]

Supply of hotel services: expanding and upgrading infrastructure

In 2022, the Greek hotel sector expanded its capacity relative to pre-pandemic levels. Specifically, 10,133 hotels operated in Greece in 2022, up by 2% from 2019 (9,971). The number of rooms reached 444,597 in 2022, compared with 43,689 in 2019 (up by 3%), while the number of bed places in hotels came to 886,861, up by 4% from 856,347 in 2019.[15]

Between 2019 and 2022, hotel capacity grew in terms of both number of rooms per hotel (44 rooms in 2022, from 43 in 2019) and number of bed places per hotel (88 bed places in 2022, from 86 in 2019). Moreover, the quality of the country's hotel capacity has been steadily improving since 2019. This development is particularly important, as it is driven by five-star hotels which offer high-class services, thereby boosting Greece's reputation as a destination, and also bring more tourism revenue. In 2022, five-star hotels accounted for 7% of the total, compared with 6% in 2019. Five-, four- and three-star hotels together made up 54% of all hotels in 2022, up from 50% in 2019. Hotel capacity significantly expanded and upgraded across all Greek regions in 2019-22. The

13 Hellenic Statistical Authority (2022), "Arrivals and nights spent in hotels, similar establishments, short-stay accommodation and tourist campsites, January-September 2022 (provisional data)", press release, 22.12.2022.
14 Hellenic Statistical Authority (2022), "Arrivals and nights spent in hotels, similar establishments, short-stay accommodation establishments and tourist campsites, year 2021 (final data)", press release, 21.7.2022.
15 Hellenic Chamber of Hotels (2022), "Greek Hotel Capacity 2022 – Nationwide data. Breakdown of hotel capacity in 2022 by class and region at country level" [in Greek].

largest increase in bed places in five-star hotels was recorded in the regions of Western Macedonia and Epirus through upgrades in existing facilities, as well as in Attica, which overtook Crete and the Southern Aegean at the top of the ranking in terms of number of five-star hotels.

Conclusions – Way forward and policy recommendations

Tourism activity in 2022 showed a strong momentum, with receipts and arrivals largely recovering to their levels seen in 2019, a very good year for tourism. Importantly, the tourism industry has a direct and an indirect impact on GDP through its interactions with other sectors of the economy. At the same time, this momentum is being dampened by rising prices and the impact on the disposable income of travellers in the main countries of origin.

Greek tourism staged a recovery in the summer of 2022, outperforming other destinations in the Southern Mediterranean region. This encouraging trend reflected growing demand following the lifting of pandemic-related travel restrictions. The recovery in tourism is expected to continue, but at a slower pace as a result of inflationary pressures, weak economic growth and the ongoing war in Ukraine. Increased cost of living is expected to cause a shift in traveller preferences towards cheaper destinations closer to home.

As travel demand returns to its pre-pandemic levels, the sector is faced with major challenges. The European Travel Commission (2022)[16] reports that the erosion of consumers' disposable income is becoming a major concern for both European and long-haul travellers in general. Furthermore, there is an urgent need to strengthen the sector's resilience and competitiveness through innovative and more sustainable approaches for the benefit of society and the planet, while addressing overtourism and environmental concerns.

16 European Travel Commission (2022), *European Tourism* 2022 – *Trends & Prospects*, Quarterly report (Q3/2022).

Box IV.4

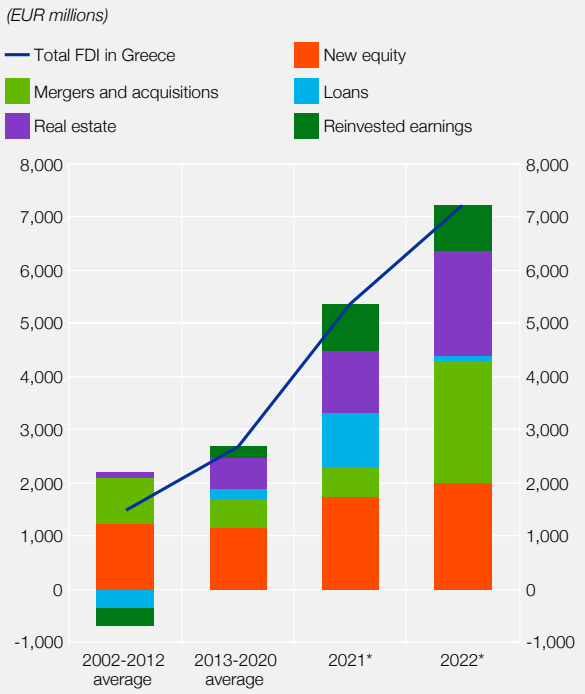
BREAKDOWN OF FOREIGN DIRECT INVESTMENT FLOWS IN GREECE IN 2021-2022

Foreign direct investment (FDI) flows attract growing attention from policymakers worldwide, as they are a key tool for financing growth, boosting productivity and employment, and introducing innovative technologies[1] in recipient countries. Greece witnessed a significant increase in FDI inflows over the past decade. This box identifies the underlying factors of this development, based on a breakdown of FDI inflows in Greece by type, by country of origin and by industry, and recommends policies to further attract FDI.

In 2021 and 2022, FDI flows into Greece grew markedly (reaching 2.8% and 3.1% of GDP, respectively, up from an average 0.9% for the 2002-18 period). This is attributable to a gradual restoration of confidence in the prospects of the Greek economy, backed by the improved business and economic environment, political stability, stronger public finances and lower tax and social security contributions. The upward trend of FDI started as early as 2019 (2.4% of GDP) and has continued since. It was only interrupted in 2020, as FDI flows remained weak amid the global pandemic crisis. However, the bulk of FDI growth for 2022 was recorded in the first quarter, followed by quarterly declines of 28% and 58%, respectively, in the second and third quarters. This pattern, also seen at a global level, reflected a deterioration of investment climate due to the impact of the war in Ukraine and higher inflation, interest rates and energy prices.[2] Despite the progress achieved in certain areas, the structural competitiveness of the Greek economy falls short of European and international levels, and there is considerable room for further improvement.[3]

1 See Arbatli, E. (2011), "Economic policies and FDI inflows to emerging market economies", IMF Working Paper No. 2011/192; Zairis, A. (2016), "The course of direct investment in the Greek economy", *East-West Journal of Economics and Business*, Vol. XIX, No. 2; Petroulas, P. (2008); "Foreign direct investment in Greece, productivity and technology diffusion", Bank of Greece, *Economic Bulletin*, No. 31; and Bank of Greece (2013), *Annual Report 2012*, p. 105.
2 OECD, Foreign direct investment in figures, 28.10.2022.
3 Bank of Greece (2022), *Monetary Policy – Interim Report 2022*, December.

Chart A Breakdown of FDI flows in Greece by type



Source: Bank of Greece.
* Provisional data.

During the 2021-22 period, significant efforts were made to attract foreign investors, and the strong FDI inflows to Greece can be attributed to the completion of planned privatisation deals (which had been delayed in 2020 due to the pandemic) and the spin-off and subsequent sale of the merchant acquiring business by Greek systemic banks. 2022 was the first year of implementation of the three-year strategic plan of the Hellenic Republic Asset Development Fund (HRADF/TAIPED), which involved significant new initiatives and actions.[4] The most significant transactions concerned the partial acquisition of the Hellenic Electricity Distribution Network Operator (HEDNO S.A.) by Spear WTE Investments Sarl; the sale of 100% of DEPA Infrastructure to the Italian group Italgas SpA; and the disbursement of the first tranche from the sale and transfer of Hellinikon S.A. to Hellinikon Global I S.A. (a subsidiary of Lamda Development).[5]

A. Breakdown of FDI flows in Greece by financial instrument

Based on balance of payments data compiled by the Bank of Greece, FDI inflows are primarily directed to share capital increases and acquisitions and, secondarily, to real estate investment (see Chart A). Already since 2013, investor interest in real estate has been strong and is associated with the "Golden Visa" programme of the Ministry of Migration and Asylum, offering a residence permit for non-EU citizens (and their family members) who invest EUR 250,000 or more in Greek real estate.[6]

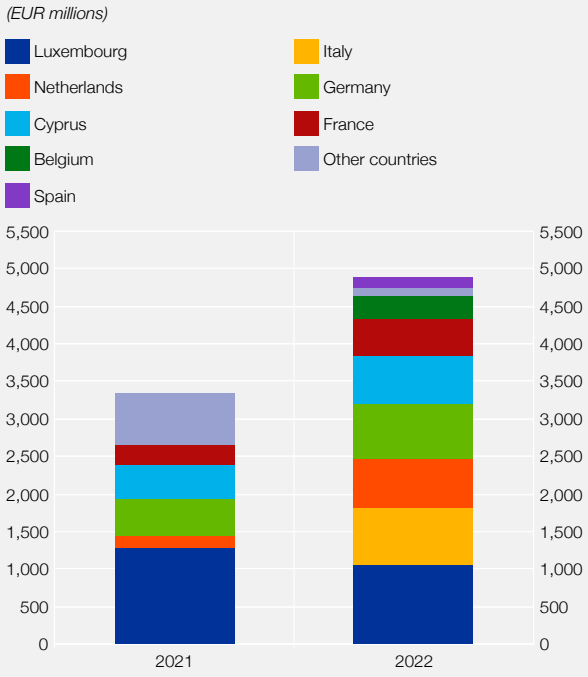
It should be noted that greenfield FDI in Greece remains very low in terms of value,[7] and the number of relevant new projects announced for Greece (2003-21) shows no significant upward trend.[8] Nevertheless, greenfield investment plays a crucial role in increasing available funding for investment in the economy and could attract additional private and foreign investment (crowding-in effect), boosting the growth potential.[9]

B. Breakdown of FDI flows in Greece by partner country and by industry[10] of the direct investment enterprise

FDI inflows to Greece in 2021-22 mostly originated from advanced economies (see Charts B and C), particularly EU countries (2021: 62% of the total; 2022: 69%), led by Italy and Germany.[11]

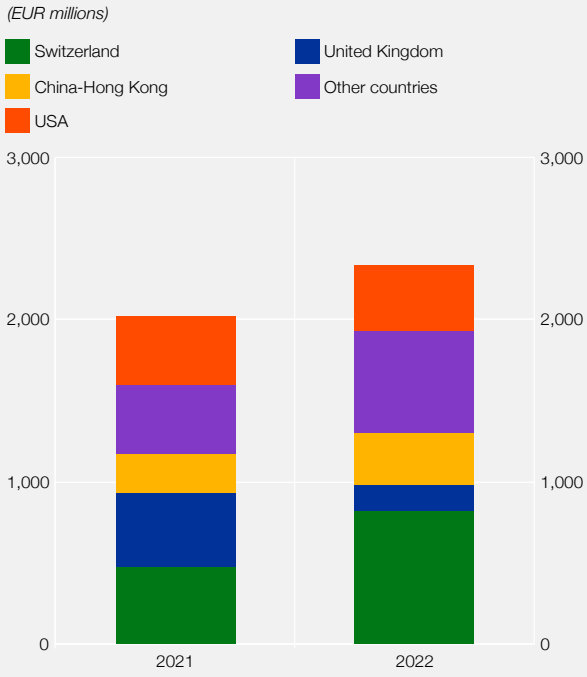
4 Ministry of Finance, *Introductory Report on the 2023 Budget*, November 2022 [in Greek].
5 The deal concerns the largest urban development project in Europe, at the former Ellinikon International Airport area and the coastal zone of Agios Kosmas, see https://hradf.com/elliniko/).
6 The qualifying threshold will be adjusted to EUR 500,000, effective from 2024; the amount refers to the minimum acquisition cost of real estate property or the total contractual rent for hotel accommodation facilities or furnished tourist accommodation in the regional units of North, Central and South Athens (parts of the Attica Region), as well as on the islands of Mykonos and Santorini and in the Municipality of Thessaloniki.
7 Bank of Greece, *Annual Report 2016* [in Greek].
8 UNCTAD, *World Investment Report*, Annex table 14: Value of announced greenfield FDI projects, by destination, 2003-2021, and Annex table 17: Number of announced greenfield FDI projects, by destination, 2003-2021.
9 Bank of Greece, *Annual Report 2019*, Box II.1 [in Greek].
10 According to OECD methodology, industry allocation is based on the immediate counterparty's economic activity (OECD Benchmark Definition of Foreign Direct Investment – 4th Edition).
11 The geographical allocation of FDI is based on the location of the immediate counterpart, which fails to clearly reflect the origin of investment, as exceptionally high FDI levels are recorded for certain countries (e.g. Cyprus, Luxembourg and the Netherlands) that are significant financial hubs.

Chart B Breakdown of FDI flows in Greece by partner country (EU countries)



Source: Bank of Greece.
Note: Provisional data.

Chart C Breakdown of FDI flows in Greece by partner country (non-EU countries)



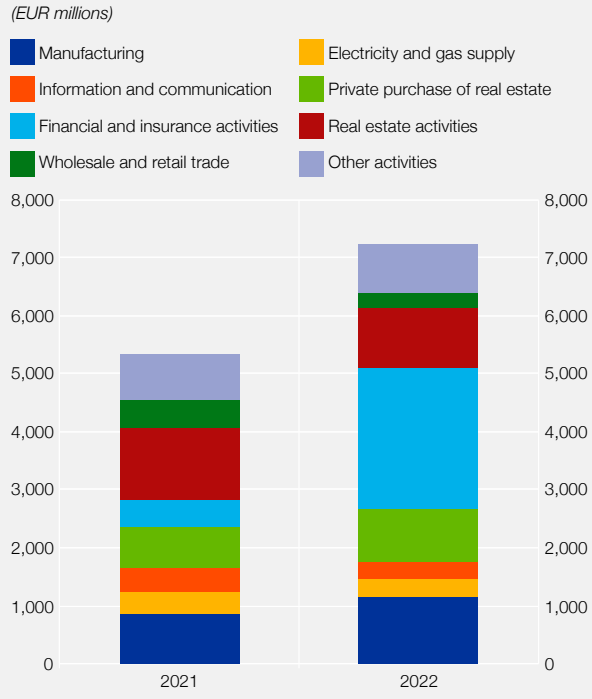
Source: Bank of Greece.
Note: Provisional data.

The opposite was the case with investment in real estate, where non-EU countries have the largest share (2021: 54%, 2022: 65%), most notably the United States, Hong Kong, Switzerland, the United Kingdom, Singapore and Israel (see Section A above on the "Golden Visa" programme).

Turning to a sectoral breakdown, FDI is mostly directed to manufacturing (food-beverages-tobacco products and other manufacturing industries), services (financial and insurance activities, energy, and real estate management) and private purchases and sales of real estate (see Chart D).

It should be noted that financial activities also include enterprises operating as SPEs (e.g. transactions through financial holding companies) between the direct investor and the ultimate direct investment enterprise (see the partial acquisition of the Hellenic Electricity Distribution Network Operator (DEDDHE) via the MSCIF Dynami Bidco Single Member[12].

Chart D Breakdown of FDI flows in Greece by industry



Source: Bank of Greece.
Notes: Provisional data. Other activities: mining and quarrying; agriculture, forestry and fishing; construction and other service activities.

Conclusions and policy recommendations

During the 2021-22 period, FDI inflows to Greece registered a continuous upward trend, which was due to

12 Announcement, Public Power Corporation, 20.10.2021.

structural and temporary factors, as well as to faster implementation of the HRADF strategic plan for the utilisation of public real estate. Moreover, FDI featured high on the policy agenda, and government officials intensified their contacts with potential foreign investors. Yet, greenfield FDI remains weak. Key prerequisites for attracting more FDI include upgrades in infrastructure (transport, energy, IT) and skills, fostering research and development (R&D) activity, and the country's integration into global value chains[13]. Additionally, it is important to identify the scope for new opportunities for investment. The Greek government has already been implementing the "Synergassia" programme, including various information activities to promote to the international business community the Greek regions and sectors that show significant growth opportunities.

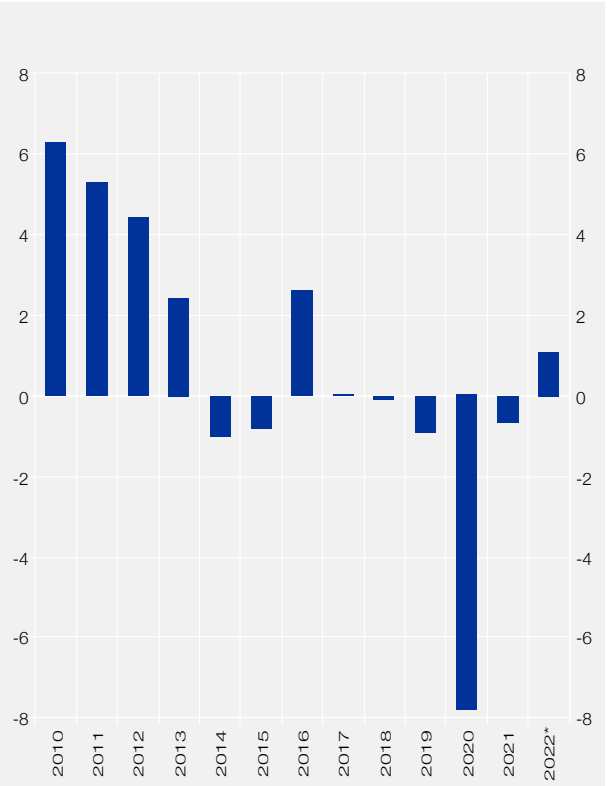
13 OECD, "The geography of foreign investment in OECD member countries – How investment promotion agencies support regional development", 15.12.2022.

V FISCAL DEVELOPMENTS AND PROSPECTS

In 2022, despite the gradual easing of the pandemic crisis, uncertainty heightened, due to the economic fallout from Russia's invasion of Ukraine, which undermined global security and stability, worsening the growth outlook for the economies of EU Member States and the world economy. Against this background, the rise in energy and food prices that had started in the last four months of 2021 was further intensified, sustaining the need for emergency fiscal measures to support households and businesses. Meanwhile, the ECB took further steps in normalising its monetary policy, by raising key interest rates in an aim to combat inflationary pressures and contain inflation expectations. As a result, borrowing costs rose for all euro area countries, but especially Greece, on account of its relatively lower credit rating. Greece's fiscal support measures were mostly financed by windfall revenues and using the fiscal space created by better-than-expected economic activity and the overperformance of tax revenues. Thus, fiscal consolidation continued in 2022, despite adverse conditions, and Greece smoothly exited from enhanced surveillance. The current rise in Greek government bond yields does not jeopardise debt sustainability in the medium term, as the favourable composition and maturity profile of Greek public debt make it resilient to interest rate risk. This provides a window of opportunity for stepping up efforts to restore a sound fiscal balance and preserve the credibility of fiscal policy, both of which are essential for regaining investment grade rating and ensuring long-term debt sustainability. To this end, timely and effective utilisation of NGEU funds, adherence to the rules of the new EU fiscal framework and continuation of structural reforms are seen as crucial prerequisites.

Chart V.1 Change in the cyclically adjusted general government primary balance

(% of potential GDP)



Source: Bank of Greece.
* Forecast.
Notes: The cyclically adjusted general government primary balance is calculated according to Eurosystem methodology. It excludes support for the financial sector and receipts from the Next Generation EU (NGEU) instrument.

1 OVERVIEW OF DEVELOPMENTS AND PROSPECTS[1]

In 2022, escalating energy prices due to Russia's military invasion of Ukraine necessitated an expansion of the fiscal support measures for households and businesses that had been introduced in 2021. These measures were for the most part financed by windfall revenues and using the fiscal space created by better-than-expected economic activity, as well as by the overper-

1 The cut-off date for information and data used in this chapter is 24 March 2023.

formance of tax revenues, and thus did not burden the state budget. Combined with the withdrawal of most of the pandemic-related measures, the primary balance of general government as a percentage of GDP is expected to have improved significantly in 2022 relative to 2021. Consequently, following two years (2020-2021) of expansionary fiscal policies aimed at containing the impact of the pandemic on the real economy, fiscal policy is estimated to have turned contractionary in 2022 (see Chart V.1). Similarly, Greece's government debt ratio is expected to have declined further in 2022, as a result of a considerable increase in nominal GDP growth due to higher inflation, marking the largest debt reduction among euro area countries.

Having smoothly exited from enhanced surveillance, Greece must now preserve the credibility of its fiscal consolidation efforts. A return to permanent primary surpluses and continuation of structural reforms are prerequisites for regaining an investment-grade credit rating, which is a key and non-negotiable objective of economic policy. The focus should be on increasing those productive investments that are conducive to sustainable growth and a continued downward path of public debt.

2 FISCAL DEVELOPMENTS IN 2022

In 2022, the fiscal data notified to Eurostat for the year 2021 indicated a significant improvement in deficit and debt figures as percentages of GDP, reflecting a rebound in economic activity. Specifically, according to the second EDP notification of fiscal data for 2018-2021 by the Hellenic Statistical Authority (ELSTAT) in October 2022, in 2021 the general government primary deficit was 5.0% of GDP and general government debt 194.5% of GDP (see Table V.1), down from 6.9% and 206.3% of GDP, respectively, in 2020.

The rise in inflation, which started in the last four months of 2021 in the context of supply chain disruptions and a release of pent-up demand as economies gradually reopened, accelerated markedly in 2022 following Russia's invasion of Ukraine, increasing the pressure for additional fiscal support measures in 2022, to mitigate the impact of higher energy prices and further support households' disposable incomes and the functioning of businesses.

During the early part of 2022, increased uncertainty surrounding Greece's growth dynamics amid these new circumstances, along with the need for additional fiscal interventions, led to a revision of the 2022 budget forecasts. The 2022 Stability Programme, published in May 2022, projected a more moderate decline in the 2022 primary deficit, to 2.0% of GDP (instead of 1.4% of GDP in the Introductory Report on the 2022 Budget), but a faster decline in the debt-to-GDP ratio to 180.2% (instead of 187.3%), mainly reflecting an increase in nominal GDP due to an upward revision to the inflation forecast.[2]

In the second half of 2022, energy prices increased further, necessitating an expansion of fiscal interventions to support incomes. Financing of these measures was facilitated by the increased revenues of the Energy Transition Fund due to the introduction of an extraordinary levy (windfall tax) on energy producers and higher income from auctions of emission allowances, as well as by the overperformance of tax revenues against the annual budget target. The overperformance of total tax revenue was a result of several factors, notably higher-than-projected real GDP growth, higher inflation[3] and more extensive use of electronic payments, improving tax collection. Thus, the financing of the additional fiscal measures did not burden the state budget and did not lead to a deviation of the budget balance and, by extension, of the government debt from the targets originally set in the 2022 budget.

2 The Stability Programme (May 2022) included a revision of the 2022 real GDP growth figure to 3.1%, down from 4.5% in the Introductory Report on the 2022 Budget (November 2021).

3 Based on an empirical investigation, the contribution of higher-than-projected inflation to tax revenue is 0.6-0.8 percentage points of GDP (median estimate). See Bank of Greece, *Monetary Policy 2021-2022. Executive Summary and Boxes*, June 2022, Box 3.

Table V.1 General government balances

(% of GDP)

	2019	2020	2021	2022*
General government balance[1] *(national accounts data – convergence criterion)*	**1.1**	**-9.9**	**-7.5**	**-4.1**
– Central government	0.4	-10.3	-8.2	
– Social security funds, local government authorities and legal entities in public law	0.7	0.4	0.8	
General government primary balance	**4.1**	**-6.9**	**-5.0**	**-1.6**

Sources: Ministry of Finance and ELSTAT.
* Forecast (State General Accounting Office, Introductory Report on the 2023 Budget).
1 ELSTAT data, as notified to the European Commission (Excessive Deficit Procedure). Totals/subtotals may not add up due to rounding.

Accordingly, in the Introductory Report on the 2023 Budget (November 2022), based on expected real GDP growth of 5.6%, the general government primary deficit is projected at 1.6% of GDP in 2022 (down from 2% of GDP in the 2022 Stability Programme[4]) (see also Section 6).

Available fiscal data suggest that the 2022 primary deficit could turn out to be lower still, mainly due to the under-execution of primary expenditures and, to a lesser extent, tax revenues exceeding even the revised targets (see also Section 5.3). A better-than-expected fiscal performance would enhance fiscal credibility and would also contribute to a faster regaining of investment-grade credit rating, while at the same time making the goal for a primary surplus in 2023 more reachable, in a period of heightened uncertainty and significantly weaker growth. The revised projections of the Bank of Greece point to a primary deficit of 1.0% of GDP and a debt ratio of 171.4% of GDP in 2022. In other words, despite widespread uncertainty and the additional fiscal support measures, the 2022 Budget's fiscal targets are estimated to have been achieved with a safe margin, thanks to higher-than-expected GDP growth. In 2023, based on the available data and the details of the policy interventions announced so far, the primary balance is projected to shift to a surplus of 0.7% of GDP and the debt ratio is projected to decline further to 162.5% of GDP.

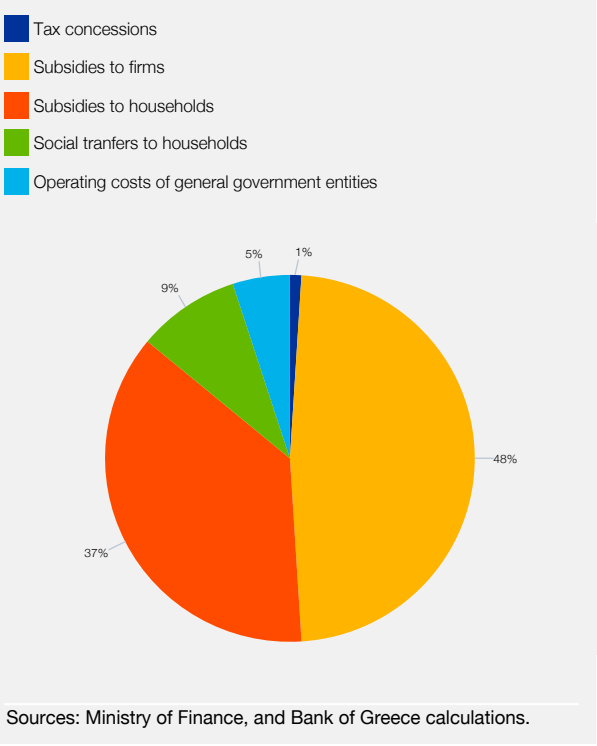
In 2022, the fiscal interventions in response to the energy crisis represented a total amount of EUR 10.7 billion, compared with EUR 1 billion in 2021. However, the majority of measures, as mentioned above, did not burden the state budget. The budgetary cost of these interventions, estimated at EUR 4.8 billion (up from EUR 242 million in 2021), was almost entirely covered by the fiscal space created by better-than-expected growth performance relative to the 2022 Budget projections.

Fiscal measures to compensate for rising energy costs were introduced in the last four months of 2021 and mainly involved across-the-board subsidies on households' and firms' electricity and gas consumption; a suspension for two months (November and December) of network access fees for gas consumers; one-off financial support to vulnerable population groups, such as a doubling of minimum guaranteed income granted in December, a higher heating allowance, as well as a one-off additional allowance to low-income pensioners, disabled persons and uninsured elderly persons.

As energy prices escalated in 2022, subsidies on households' and firms' electricity and gas bills were expanded, but became more targeted, being scaled to consumption, and were accompanied by incentives to reduce energy consumption. Additional measures included: a further in-

4 However, taking into account that the projection in the Introductory Report on the 2023 Budget (November 2022) includes the transfer of ANFA/SMP income of EUR 748 million (0.4 percentage points of GDP) in July 2022, which had not been envisaged in the Stability Programme of May 2022, the 2022 primary balance projection remains unchanged. This implies that the additional fiscal interventions during 2022 have not caused a deviation of the fiscal balance from the initial target.

Chart V.2 Composition of fiscal measures in response to the energy crisis



Sources: Ministry of Finance, and Bank of Greece calculations.

crease in the heating allowance and an expanded scope of eligible beneficiaries; direct "at the pump" subsidies on transport and heating oil distributed in the domestic market by refineries and fuel importers; a rebate of 60% of the increase in household electricity bills; a pre-paid fuel card, known as "Fuel Pass"; and support to low-income pensioners and other vulnerable population groups through extraordinary allowances (in April and December) and to farmers through tax exemptions and subsidies. Of the total amount of energy-related fiscal support provided in 2022, about 85% concerned subsidies to businesses and households (see Chart V.2), 9% social transfers,[5] 5% operating costs of general government entities and 1% tax relief (for a detailed description of fiscal policy measures, see the Annex to this chapter).

Interest rates increased worldwide in 2022, on the back of monetary policy tightening by major central banks with a view to stemming inflationary pressures and containing inflation expectations. In particular, the ECB in July 2022 began raising policy rates, accelerating the pace of monetary policy normalisation. In the context of generalised interest rate hikes, a sharp increase was observed in the yields of Greek government bonds, as their lower credit rating and the shallowness of the relevant market made them more sensitive to international volatility than the securities issued by other European countries.

Meanwhile, the ECB continued its support to Greek government bonds: on 24 March 2022, the Governing Council decided to continue to allow national central banks to accept as eligible collateral in Eurosystem refinancing operations Greek government bonds that do not satisfy the Eurosystem's minimum credit quality requirements but fulfil all other applicable eligibility criteria, for at least as long as reinvestments in Greek government bonds under the pandemic emergency purchase programme (PEPP) continued. The Governing Council added that it reserved the right to deviate also in the future from credit rating agencies' ratings if warranted, in line with its discretion under the monetary policy framework, thereby avoiding mechanistic reliance on those ratings.

Despite higher uncertainty, confidence in the growth prospects of the Greek economy was maintained during the year. Specifically, two credit rating agencies –DBRS and S&P– raised Greece's sovereign credit rating to just one notch below investment grade, and a third credit rating agency –Fitch Ratings– upgraded the country's outlook to positive. Key drivers of these upgrades were: (i) a steeper-than-initially-estimated decline in the debt ratio; (ii) a better-than-expected budget outturn; (iii) a reduction in NPL volumes, strengthening financial stability and significantly limiting risks in the banking system; and (iv) stronger-than-initially-projected GDP growth.

In 2022, the Greek government continued its debt issuance activity, raising a total of EUR 8.3 billion, which contributed to a deepening of the domestic market for government bonds and to maintaining high cash reserves. In particular, the Public Debt Management Agency

5 For an analysis of the distributional impact of energy-related social transfers to households in 2022, see Box IV.3.

Table V.2 Financing sources of the net cash state budget deficit

(change in EUR millions)

	2019	2020	2021	2022
Greek government Treasury bills	-2,667	-812	-1	0
Greek government bonds	4,354	11,815	14,800	3,850
General government cash reserves[1] ("-" indicates an increase, "+" a decrease)	3,305	5,477	696	-848
Short-term borrowing (repos)	4,600	6,453	1,601	12,968
External borrowing[2]	-9,115	1,205	-1,215	-3,305
Total	**477**	**24,138**	**15,880**	**12,664**

Sources: Bank of Greece and PDMA (Public Debt Bulletins).
1 Including changes in the central government accounts with the Bank of Greece and other credit institutions, as well as changes in the debt management account. Excluding changes in the OPEKEPE (Payment and Control Agency for Guidance and Guarantee Community Aid) account.
2 Comprising loans from abroad - from the European Investment Bank, the SURE scheme and the Recovery and Resilience Facility - and securities issued abroad, irrespective of their currency denomination. Excluding non-residents' holdings of securities issued in Greece.

(PDMA) raised EUR 3 billion in January by a new ten-year government bond issue (at a yield of 1.836%); EUR 1.5 billion in April by reopening the 2020 seven-year bond issue at a yield of 2.366%; EUR 500 million by reopening a 2017 fifteen-year bond (at a yield of 3.61%); EUR 400 million by reopening past bond issues, maturing in 2037 and 2042, at yields of 3.51% and 3.56%, respectively; EUR 0.7 billion by two reopenings, in July and November, of the January 2022 ten-year bond issue; EUR 1 billion by a new five-year issue at a floating rate (three-month Euribor plus 123 basis points); and a EUR 1.2 billion through the reopening of this latter issue in November.

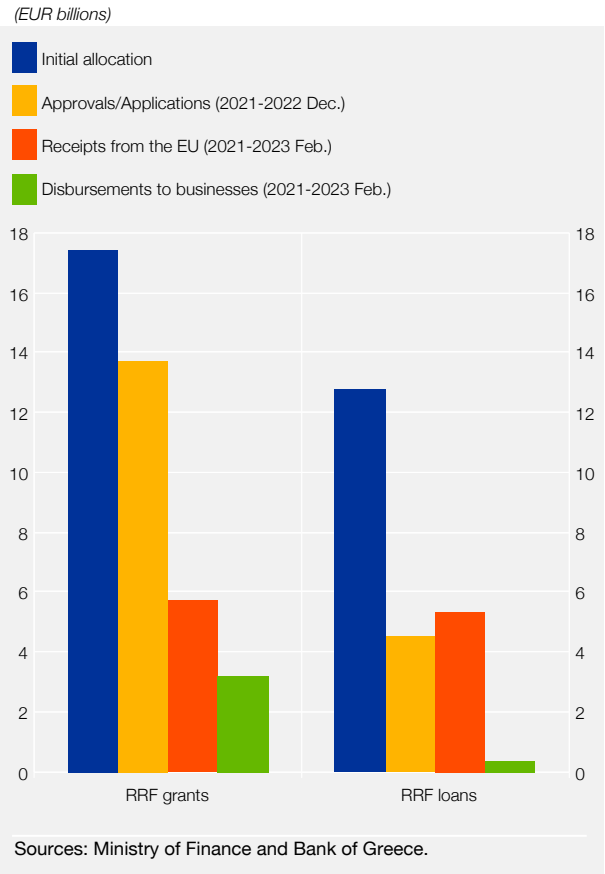
On 4 April 2022, Greece made a third early IMF loan repayment of EUR 1.86 billion, following the early repayments of November 2019 and March 2021, thereby fully settling its debt obligations to the IMF. Similarly, December 2022 saw an early repayment of the 2023 instalment (EUR 2.65 billion) on bilateral loans under the Greek Loan Facility (GLF).

Meanwhile, short-term general government borrowing continued to take place through the issuance of 13-, 26- and 52-week Treasury bills, which kept posting negative yields in the first half of 2022, before returning to positive and increasing yields thereafter, as well as through cash management operations in the form of repurchase agreements (repos), mostly with general government entities to utilise their cash surpluses (see Table V.2).

Government cash reserves remained at high levels, boosted by the release, in July, of a seventh tranche of medium-term debt relief measures for Greece, worth EUR 748 million, and by EUR 531 million privatisation proceeds, mainly from the sale of stakes in DEPA Infrastructure S.A. At end-2022, government cash reserves stood at EUR 18.1 billion, up from EUR 17.3 billion one year earlier.

In the first months of 2023, the ECB took further steps to tighten its monetary policy, intensifying its effort to stem inflation amid mounting uncertainty. In January 2023, the PDMA launched a ten-year bond issue, raising EUR 3.5 billion, frontloading half of the year's planned debt issuance. At 4.279%, the yield was 244 basis points higher than in the respective new issue in January 2022, due to rising global borrowing costs. Still, the issue had a much higher oversubscription ratio, reflecting stronger demand for Greek bonds, and attracted increased participation from long-term and institutional investors. Also in January 2023, Fitch upgraded Greece to BB+ (from BB), just one notch below investment grade, with a stable outlook, acknowledging the economy's resilience despite the worsened international environment and the increase in uncertainty. Moody's followed suit in March 2023, upgrading Greece's rating outlook to positive from stable.

Chart V.3 Recovery and Resilience Facility



Sources: Ministry of Finance and Bank of Greece.

Regarding the absorption of funds available under the Recovery and Resilience Facility (RRF), Greece has made progress in milestones and targets, and is one of the five countries that have received a second instalment of RRF funding and the only country to have also received part of a third instalment, as it managed, by September 2022, to fulfil three milestones of the loan part of RRF originally linked to the next payment request in 2023. Approvals of eligible investment projects and respective disbursements are also well under way. In terms of grants, as at end-February 2023, receipts from the EU amounted to EUR 5.7 billion, or 32.8% of the total allocation of EUR 17.4 billion, and disbursements to project owners amounted to EUR 3.2 billion (out of a EUR 13.6 billion total of approved projects). In terms of loans, receipts from the EU came to EUR 5.3 billion at the end of February 2023 (or 27.6% of the total EUR 12.7 billion allocation) and disbursements to project owners were EUR 242 million (see Chart V.3).

3 INSTITUTIONAL FRAMEWORK AND FISCAL REFORMS

A large part of the support measures introduced in the previous two years to address the pandemic crisis was phased out in 2022. Moreover, support measures already in place since the last four months of 2021 to cushion the impact of higher energy and food prices were maintained and expanded, but became more targeted, based on specific eligibility criteria (income, family status, etc.).

Key policy interventions of a structural nature included a major reform of property tax, with significant changes to the structure of Unified Property Ownership Tax (ENFIA); tax incentives for mergers and partnerships involving sole proprietorships and small and medium-sized enterprises; support to business investment in the green economy, energy and digital transformation; a repeal of the special solidarity levy on all incomes, including public and private sector wages and pensions; and a permanent 3-percentage-point reduction in social security contribution rates.

Additional measures to support disposable incomes were decided in 2023. Most notably, these included the so-called “Market Pass”, subsidising part of households’ grocery costs; the provision of one-off financial support to pensioners; and the extension of reduced VAT rates applying to certain goods and services (see the Annex “Fiscal policy measures” to this chapter).

In the first half of 2022, the European Commission published the last two enhanced surveillance reports on Greece. According to the 13th Enhanced Surveillance Report on Greece (February 2022), Greece had recovered swiftly from the pandemic and the outlook remained strong, albeit subject to high uncertainty mostly related to the evolution of the pandemic and the rise in energy prices. In the 14th Enhanced Surveillance Report on Greece (May 2022), the Commission determined that Greece had taken the necessary actions to achieve the agreed reform commitments, despite the challenging circumstances triggered by the economic implications of new

waves of the pandemic as well as of Russia's military aggression against Ukraine. As regards debt sustainability analysis (DSA), the updated baseline scenario in that report acknowledged that Greece's debt ratio was on a firmly downward path, and that gross financing needs (GFN) remained below the 20% of GDP threshold. This 14th report served as a basis for the release, in July, of the seventh tranche of medium-term debt relief measures for Greece, worth EUR 748 million. Regarding the release of the eighth and final tranche, the deadline for Greece to fulfil its agreed reform commitments was extended until October 2022. Among these commitments, those on the fiscal front were "material clearance of non-pension arrears and full clearance of pension arrears", as well as "full operationalisation of the complete IT system in local tax offices".

Meanwhile, the European Commission extended for another year, until the end of 2023, the suspension of fiscal rules of the Stability and Growth Pact in view of heightened uncertainty and downside risks to the economic outlook in the context of the war in Ukraine, unprecedented energy price hikes and continued supply chain disturbances.[6] With specific regard to Greece, it was recommended that in 2023 it should, as a matter of priority, ensure a prudent fiscal policy, including by limiting current expenditure growth below medium-term potential output growth, taking into account temporary and targeted fiscal measures to protect households and firms from higher prices, and that it should also expand public investment expenditure, including by making use of available EU funds. Credible and gradual debt reduction and fiscal sustainability remain key priorities in the medium term.[7]

At its meeting on 16 June 2022, the Eurogroup gave the green light for Greece's exit from enhanced surveillance. From 20 August onwards, Greece is subject to regular post-programme surveillance until it repays at least 75% of the financial assistance received from one or more fellow Member States, the European Financial Stabilisation Mechanism (EFSM), the European Stability Mechanism (ESM) or the European Financial Stability Facility (EFSF). As part of post-programme surveillance, the European Commission conducts, in liaison with the ECB, regular missions in the countries concerned to periodically assess their economic, fiscal and financial situation. At the same time, the ESM has established an Early Warning System (EWS) to detect loan repayment risks, which also applies to EFSF loans.

On 9 November 2022, the European Commission adopted a communication setting out orientations for a reformed EU economic governance framework, aimed to strengthen debt sustainability and enhance sustainable and inclusive growth through investment and reforms. The orientations seek to ensure that the framework is simpler, more transparent and effective, with greater national ownership and better enforcement, while allowing for reform and investment and reducing high public debt ratios in a realistic, gradual and sustained manner. The two benchmarks of the Stability and Growth Pact –3% of GDP for the deficit and 60% of GDP for debt– would remain unchanged, whereas the excessive deficit procedure (EDP) is expanded in scope to include breaches of not only the 3% deficit reference value but also of the agreed debt reduction path (debt criterion). These orientations are in line with the Bank of Greece's proposals on the revision of EU fiscal rules[8] and allow little room for deviation from the agreed primary surplus target of around 2% of GDP on average annually.

Also in November 2022, the European Commission published its first Post-programme Surveillance Report on Greece, recognising that Greece had taken the necessary actions to complete its specific commitments, despite the challenging circumstances due to Russia's war of aggres-

6 European Commission, "European Semester – Spring Package: Sustaining a green and sustainable recovery in the face of increased uncertainty", press release, 23 May 2022.

7 Recommendation for a Council Recommendation on the 2022 National Reform Programme of Greece and delivering a Council opinion on the 2022 Stability Programme of Greece (COM(2022) 609 final, 23.5.2022).

8 See *Annual Report 2021*, Chapter V, Special Feature, p. 173, April 2022.

sion against Ukraine. Regarding debt sustainability, the Commission acknowledges that Greece's debt ratio will continue to decline, conditional on the ability to achieve and maintain primary surpluses. Reviewing progress with the implementation of the agreed reform commitments, the report confirmed that the end-to-end IT tax collection system was fully operational across the Independent Authority for Public Revenue (AADE), while acknowledging good progress in the clearance of pension arrears (this was actually further stepped up after the Report's cut-off date). More specifically, 2022 saw the clearance of the entire stock of main pension arrears, while more than half of supplementary pension arrears were cleared in the first two months of 2023 through the newly introduced Ministry of Labour and Social Affairs automated and digital procedures for application processing. However, the material clearance of non-pension arrears proved more challenging.

On the basis of this report, the Eurogroup approved, on 5 December 2022: the eighth and final tranche of medium-term debt relief measures (EUR 603 million), which was released in March 2023; the reduction to zero of the step-up interest margin on certain EFSF loans (used to finance a debt buyback in 2012) for the second half of 2022 (EUR 123 million); and the reduction to zero of the step-up margin for 2023-49 (additional debt relief of about EUR 5.2 billion).

4 POLICY RECOMMENDATIONS

The current international environment is fraught with uncertainty associated with persistently high inflation, the protracted war in Ukraine, international energy and food price developments and the risk of deglobalisation.

Furthermore, the increased fiscal challenges facing many European countries highlight the importance of safeguarding the downward path of public debt, so as to prevent a new debt crisis. In an international environment of higher interest rates, commitment to lowering the primary deficit remains key, as higher borrowing costs and slowing growth are limiting the favourable contribution of the interest rate-growth differential (snowball effect), thus weakening the initial beneficial contribution of inflation to reducing the debt ratio. This, in turn, points to the need for fiscal prudence, meaning that any support measures should be financed by using the available fiscal space so that they do not jeopardise fiscal sustainability.

Particularly in the case of Greece, it is important to preserve the fiscal credibility achieved in the pre-pandemic period. In the two years that followed the sizeable fiscal expansion of 2020, Greece is expected to have achieved one of the largest fiscal consolidations in the EU, reducing its primary deficit substantially (by about 5.3 percentage points of GDP, compared with 3.6 percentage points of GDP on average in the euro area[9]), and the largest cumulative reduction in public debt, with its debt ratio standing below the level observed in 2019, i.e. before the pandemic. Greece's fiscal performance and sustainability are crucial factors for a credit rating upgrade, much more so than for other European countries, as Greece still has the highest debt ratio in the EU and falls short of investment grade.

The current economic conjuncture calls for a more effective coordination of monetary and fiscal policies, as well as for flexibility enabling prompt economic policy response to rapidly changing circumstances. Both monetary and fiscal authorities are facing significant challenges in their effort to counter inflationary pressures and, at the same time, shore up households and businesses. If the two policies act independently of each other, there is the risk that they may pull in opposite directions, eroding the effort to stabilise prices. This would increase uncertainty, thereby undermining efforts to safeguard the purchasing power of households and support in-

9 European Commission, AMECO database.

vestment. The experience of the pandemic has shown that complementarity between monetary and fiscal policies is necessary for achieving both medium-term price stability and long-term fiscal sustainability, as well as for stronger growth.

Any fiscal support measures should therefore be: (i) temporary; (ii) targeted; and (iii) tailored to addressing the energy crisis. The temporary character of measures and the avoidance of horizontal fiscal interventions reduce the risk of demand-pull inflation. In this way, fiscal policy facilitates monetary authorities in achieving their target of bringing inflation back to 2% over the medium term, without the need for measures that would further slow the economy. At the same time, as inflation has strong distributional effects across income groups, hitting hardest the lower incomes that have a higher propensity to consume, the measures should be targeted to the most vulnerable income groups, to cushion the negative impacts of inflation on consumption spending, especially for those most in need of support. Support for businesses needs likewise to be targeted, depending on their exposure to energy price hikes and energy supply disruptions. Finally, fiscal support measures should be tailored to preserving incentives to consume less energy and to fostering energy saving actions and the transition to a greener economy.

A coherent medium-term fiscal framework is essential against the background of increased economic uncertainty. In this regard, the introduction of new, revised fiscal rules in the EU will send a clear message of alignment of economic policies to explicit objectives for fiscal sustainability, while credible commitment to responsible fiscal policies will help anchor inflation expectations, supporting monetary policy in the fight against inflation. The viability of economic policy choices will depend on addressing short- and long-term challenges. In the short term, particular emphasis should be placed on strengthening investments that enhance total factor productivity, such as those relating to renewable energy and, more generally, green growth. Combined with policies to improve competitiveness and other structural reforms, such investments would create the conditions for an easing of inflationary pressures and an improvement in long-term potential output. The actions envisaged in the “Greece 2.0” plan should therefore be rigorously implemented, also by utilising RRF funds. This would put the economy on a solid and sustainable growth path. The green and digital transitions should remain high on the policy agenda, using the support provided by the REPowerEU initiative and by the RRF and other EU funds.

5 DEVELOPMENTS IN FISCAL AGGREGATES DURING 2022

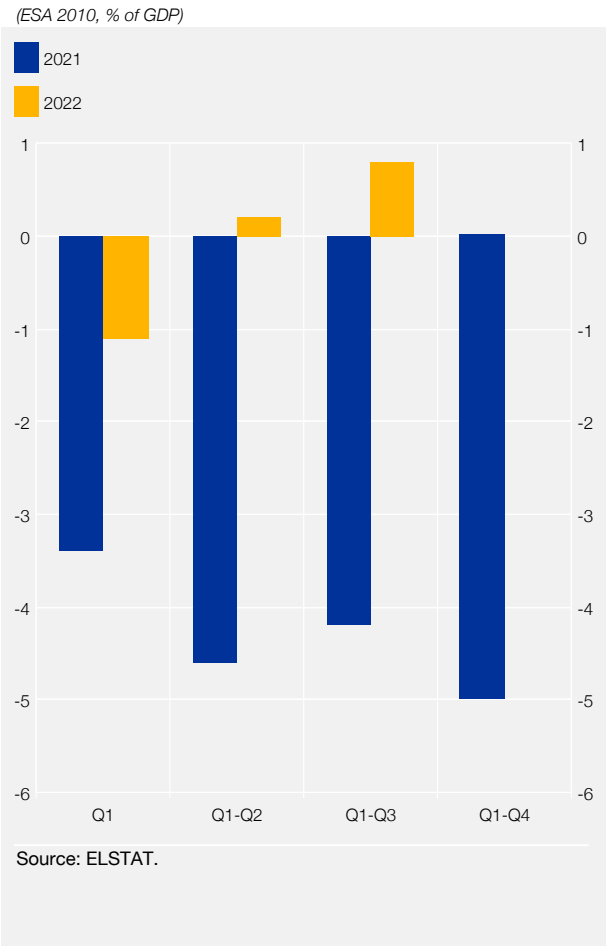
5.1 General government (ELSTAT, national accounts data)

According to national accounts data for the first nine months of 2022, the general government primary balance improved by 5.1 percentage points year-on-year, shifting to a surplus of 0.9% of GDP, as revenue increased by 1.4 percentage points and expenditure decreased by 3.7 percentage points relative to GDP (see Chart V.4).

In absolute terms, revenue increased by 20.5% year-on-year, mainly driven by a rebound in economic activity, rising food and energy prices, and base effects associated with the lifting of moratoria on social security contributions and taxes. Most of this increase was attributable to a rise in revenue from indirect taxes, partly due to the recording of the following amounts: EUR 2.1 billion, which is the total amount returned to the Energy Transition Fund (TEM) from the levy on the windfall revenues of the energy producers who trade on the Hellenic Energy Exchange; EUR 300 million, which is the amount received by TEM from the special public utilities account referred to in Article 55 of Law 4011/2018;[10] as well as another amount, representing the total sum returned to TEM from the sliding Feed-in-Premium (FiP) tax, the value of which surpassed

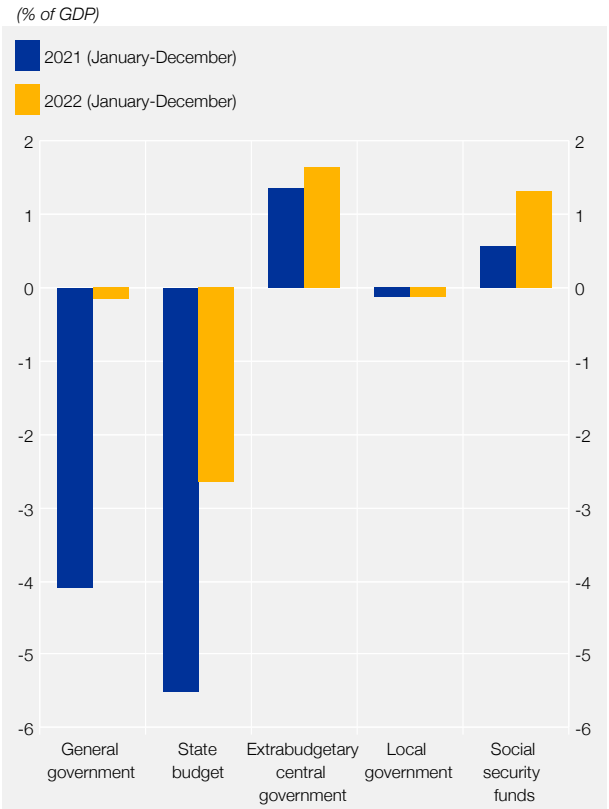
10 The Operator of the Hellenic Electricity Transmission System (ESMIE) and gas network operators keep a special management account (“public utilities account”). This is debited with compensation of licenced providers and credited with network access fees charged to consumers and collected by providers.

Chart V.4 General government primary balance on a national accounts basis



Source: ELSTAT.

Chart V.5 General government primary balance on a cash basis



Source: Ministry of Finance, State General Accounting Office.
Note: The general government primary balance figure is after consolidation of intra-general governmental transactions. Therefore, it may differ from the sum of the individual balances of general government sub-sectors.

that of the previous year.[11] Revenue from direct taxes also increased, as did revenue from social security contributions (on the back of higher employment and higher average wages), privatisation proceeds and capital revenue. By contrast, other current revenues decreased.

Primary expenditure increased by 4.5% compared with the first nine months of 2021. The components that rose were: (i) social benefits, due to energy-related support targeted to vulnerable households; (ii) intermediate consumption, because of increases in energy and other commodity prices; (iii) on a net basis, subsidies, as subsidies on electricity bills more than offset a reduction in pandemic-related expenditure;[12] (iv) public investment, also due to expenditure for RRF grants; and (v) marginally, compensation of employees. By contrast, capital transfers fell due to the non-recurrence of certain pandemic-related expenditures incurred in the previous year, as did other primary expenditure.

5.2 General government (State General Accounting Office data)

According to cash data on general government collected by the State General Accounting Office, the general government cash balance improved from a deficit of 6.3% of GDP in 2021 to

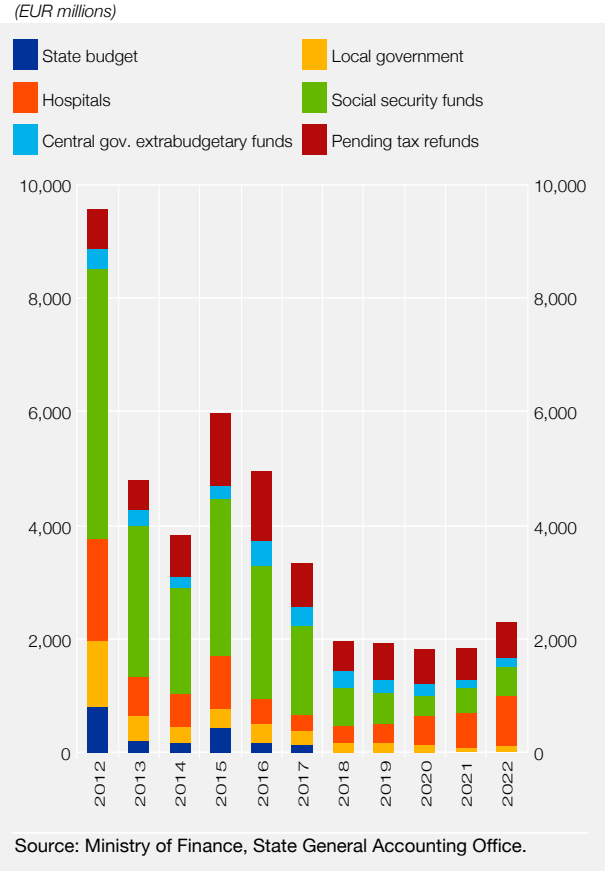
11 Under the Sliding Feed-in-Premium operating aid scheme, if the compensation that RES plants receive from their participation in the electricity market exceeds a predefined reference tariff level (market-clearing price), the excess is returned to TEM.

12 Subsidies on electricity bills totalled EUR 4.4 billion, of which EUR 2.4 billion was financed out of TEM revenues (levy on energy producers' windfall revenues and special utilities account). TEM's revenue is recorded under indirect taxes.

a deficit of 2.3% of GDP in January-December 2022. The general government primary cash balance also improved, from a significant deficit of 4.1% of GDP in 2021 to a marginal deficit of 0.1% of GDP.

The main factors contributing to this outturn were: (i) a 2.9 percentage point-of-GDP reduction in the state budget primary deficit (see Section 5.3); (ii) a 0.3 percentage point-of-GDP expansion in the primary surplus of extrabudgetary central government funds, largely on account of increases in TEM revenues, including in the form of mainly state budget transfers for subsidies; (iii) a 0.7 percentage point-of-GDP increase in the primary surplus of social security funds, due primarily to increased revenues from social security contributions and arrears settlement; and (iv) a relatively stable local government primary deficit (see Chart V.5).

Chart V.6 General government arrears



Source: Ministry of Finance, State General Accounting Office.

At the end of 2022, total general government arrears (including tax refunds, but excluding pending pension claims) increased by EUR 516 million year-on-year, with arrears to suppliers contributing EUR 410 million to the overall increase in total general government arrears and tax refunds accounting for the remaining EUR 106 million. As a result, the total stock of general government arrears amounted to EUR 2.4 billion (of which EUR 1.7 billion was to suppliers and EUR 0.7 billion related to tax refunds). Arrears to suppliers mostly (53%) relate to hospitals. It should be noted that pharmaceutical clawbacks have not been deducted from hospital arrears data (see Chart V.6).

5.3 State budget (on a modified cash basis)

The state budget balance improved from a deficit of 8.2% of GDP in 2021 to a deficit of 5.6% of GDP in January-December 2022 (see Table V.3). The state budget primary balance also improved from a deficit of 5.7% of GDP in 2021 to a deficit of 3.2% of GDP.

This latter improvement was a result of state budget revenue gains (before refunds) of 9.7% offsetting the increase in state budget primary expenditures (+2.1%). Revenue growth was mainly driven by a rise in tax and other current revenues, while expenditure growth was mainly due to the increase in defence and RRF grant-related spending.

The revised primary balance target of the Introductory Report on the 2023 Budget was overachieved by EUR 1.9 billion, mainly as a result of a EUR 2.1 billion primary expenditure restraint, in particular the under-execution of both PIB expenditure and expenditure for purchases of goods and services, but also because of the non-use of unallocated expenditures. Revenue fell marginally short of the budgeted amount. However, a more accurate assessment of revenue performance against targets would call for an adjustment for the fact that a budgeted 2022 road duty revenue of EUR 486 million was actually not realised, as the payment deadline was moved to 2023, which had not been anticipated at the time the annual target for this item was set. Adjusted for this, revenue exceeds the budgeted amount by EUR 416 million, while the amount by which the primary balance target was overachieved increases to EUR 2.3 billion.

Table V.3 State budget balances (State General Accounting Office – modified cash basis)

(EUR millions)

	January-December		Percentage change (%)	Deviation from the 2022 budget targets[1]
	2021	2022	2022/2021	
1. State budget net revenue (a-b)	**54,879**	**59,623**	**8.6**	**-230**
a. State budget revenue (I+II+III+IV)	**59,981**	**65,776**	**9.7**	**-69**
I. Taxes	48,126	55,217	14.7	82
II. Transfers	8,690	6,357	-26.8	-547
III. Sales of goods and services	611	833	36.3	51
IV. Other revenue	2,554	3,369	31.9	345
b. Tax refunds	**5,102**	**6,153**	**20.6**	**160**
Memo items:				
Revenue from the Public Investment Budget (PIB)[2]	4,569	3,581	-21.6	-878
Revenue from the Recovery and Resilience Facility[3]	2,310	1,718	-25.6	0
2. State budget expenditure (I+II+III+IV+V+VI+VII)	**69,750**	**71,279**	**2.2**	**-1,974**
State budget primary expenditure (2-VI)	**64,878**	**66,240**	**2.1**	**-2,090**
I. Compensation of employees	13,494	13,640	1.1	-54
II. Transfers	37,038	35,086	-5.3	590
III. Purchases of goods and services	1,992	2,145	7.7	-284
IV. Acquisitions of fixed assets	2,672	3,496	30.8	-49
V. Other primary expenditure	680	847	24.6	-1,702
VI. Interest payments (on a gross basis)	4,872	5,039	3.4	116
VII. Public Investment Budget expenditure	8,695	8,182	-5.9	-618
VIII. Recovery and Resilience Facility expenditure	307	2,843	826.1	27
3. State budget surplus/deficit (1-2)	**-14,872**	**-11,656**		**1,744**
% of GDP	*-8.2*	*-5.6*		
4. State budget primary balance (3+2.V)	**-10,327**	**-6,652**		**1,854**
% of GDP	*-5.7*	*-3.2*		

Source: Ministry of Finance/State General Accounting Office, State Budget Execution Bulletin, December 2022.
1 Deviation from the 2022 budget targets, after adjustment for the estimated total outturns according to the Introductory Report on the 2023 Budget.
2 Revenue from the Public Investment Budget (PIB) is included in the "Transfers" and "Other revenue" categories.
3 Revenue from the Recovery and Resilience Facility is included in the "Transfers" category.

Based on available disaggregated data, changes in the main revenue components of the 2022 state budget relative to 2021 are as follows:

Total tax revenue rose by 14.7%, with all main components contributing to the increase (see Table V.4). Revenue collection was EUR 82 million better than budgeted, due to target over-performance in almost all revenue categories, except for other current taxes, other taxes on production and excise duties. Specifically:

- Revenue from taxes on goods and services rose by 18.1% compared with 2021, on the back of stronger consumption and price increases in goods (especially petroleum products) and services. In particular, revenue from VAT on petroleum products surged steeply (by 46.4%), as oil prices hit substantially higher levels. Revenue from VAT on other goods and services and from excise duties on other goods also rose, driven by higher prices, coupled with con-

Table V.4 State budget tax revenue

(EUR millions)

	January-December		Percentage change (%)	Deviation from the 2022 annual targets[1]
	2021	2022	2022/2021	
Total taxes (A+B+C+D)	**48,126**	**55,217**	**14.7**	**82**
A. Taxes on goods and services	**26,737**	**31,584**	**18.1**	**166**
of which: 1. VAT (1.a + 1.b + 1.c)	17,431	21,422	22.9	116
1.a VAT on petroleum products and their derivatives	1,749	2,560	46.4	40
1.b VAT on tobacco	658	661	0.5	-15
1.c VAT on other goods and services	15,024	18,201	21.1	91
2. Excise duties (2.a + 2.b + 2.c)	6,659	6,984	4.9	-89
2.a Excise duty on energy	3,940	4,148	5.3	-56
2.b Excise duty on tobacco products	2,130	2,155	1.2	-19
2.c Excise duty on other goods and services	589	680	15.4	-15
B. Property taxes	**2,652**	**2,692**	**1.5**	**165**
of which: ENFIA	2,615	2,655	1.5	159
C. Income tax	**14,696**	**17,011**	**15.8**	**330**
of which: 1. Personal income tax	10,173	11,047	8.6	-31
2. Corporate income tax	3,374	4,629	37.2	324
D. Other	**4,041**	**3,930**	**-2.7**	**-579**

Source: Ministry of Finance/State General Accounting Office, State Budget Execution Bulletin, December 2022.
1 Deviation from the 2022 annual targets after adjustment for the estimated total outturns according to the Introductory Report on the 2023 Budget.

sumption gains associated with the robust performance of tourism. The target was exceeded by EUR 166 million, largely on account of higher-than-budgeted revenues from VAT on other goods and services, supported by the overperformance of tourism receipts and rising prices for goods and services.

- Revenue from annual property taxes grew by 1.5% compared with 2021, mainly driven by increased ENFIA revenue as a result of a more front-loaded collection schedule compared with a year earlier (2022: 8 instalments out of 10; 2021: 4 out of 6).The target was over-achieved by EUR 165 million.

- Revenue from income tax increased by 15.8%. This resulted from: (i) the deferred collection, within 2022, of the 7th and 8th instalments of the 2021 personal and corporate income taxes, which was higher than the deferred collection in 2021; (ii) higher income tax withholding, on the back of the unwinding of most furlough schemes and the rebound in employment; and (iii) the partial collection of tax arrears accumulated during the pandemic. The target was overachieved by EUR 330 million, as a result of the overperformance of corporate income tax.

- Revenue from other current taxes (which are included in “Other taxes”) fell by 14.0% in 2022, mainly reflecting lower road duty revenue, as a payment deadline extension was announced earlier than in 2021. This (two-month) extension, which had not been budgeted for, led to a shortfall of EUR 471 million in this item against the budgeted amount.

Transfer income fell by a substantial 26.8% compared with 2021, dragged down by lower PIB and RRF revenues. A shortfall of EUR 547 million in this item was the combined result of lower-

than-budgeted PIB revenue and windfall revenues of EUR 367 million from an extraordinary levy of 90%, calculated for the period October 2021-June 2022 on the increase in the gross profit margin of electricity producers.

Revenue from sales of goods and services was 36.3% higher year-on-year and exceeded slightly (by EUR 51 million) the budgeted target.

Other revenue increased by 31.9%, due to Refundable Advance repayments of EUR 998 million, and exceeded the budget target by EUR 345 million, reflecting a reversal of undisbursed commitments for other general government entities.

Overall, revenue from the PIB declined by 21.6% in 2022 year-on-year and were EUR 878 million short of the budgeted amount.

Finally, tax refunds rose by 20.6% year-on-year and were EUR 160 million higher than budgeted.

State budget primary expenditure grew by 2.1% in 2022 year-on-year, driven mainly by increased investment spending and acquisition of fixed assets (defence spending), while the phasing-out of pandemic-related support made a negative contribution. This item showed a shortfall of EUR 2.1 billion against the annual target, reflecting both the under-execution of PIB spending and expenditure for purchases of goods and services and non-absorption of part of reserve appropriations (see Table V.3) due to procedural delays. Based on available disaggregated data, developments in the main categories of state budget primary expenditure were as follows:

- Compensation of employees edged up by 1.1% year-on-year and represents a small underspend of EUR 54 million compared with the annual target.

- Expenditure on transfers decreased by 5.3% year-on-year, as spending on energy-related measures (representing a total burden of EUR 3.4 billion) was more than offset by EUR 4.2 billion of expenditure savings resulting from the phasing-out of pandemic-related support measures.

In particular, COVID-19-related transfers totalled EUR 2.2 billion in 2022 (2021: EUR 6.4 billion) and consisted of: (i) the special-purpose compensation; (ii) an extraordinary grant to the National Organisation for Healthcare Services (EOPYY) and to hospitals/health administrative regions; (iii) an extraordinary grant to the Public Employment Service (DYPA, former OAED) to cover revenue losses due to the cut in employees' social security contributions; (iv) a grant to the Electronic National Social Security Entity (e-EFKA); (v) a grant to a variety of social security funds to cover social security contribution costs for subsidised new jobs; and (vi) compensation to property owners for loss of rent income.

Expenditures in response to the energy crisis comprised: (i) a grant to the Organisation of Welfare Benefits and Social Solidarity (OPEKA) to cover the costs of a one-off additional child allowance, the one-off doubling of the minimum guaranteed income for all eligible beneficiaries, extraordinary financial support to disabled persons and an increased monthly pension for uninsured elderly persons; (ii) a grant to e-EFKA to cover the costs of extraordinary financial support to vulnerable pensioners; (iii) a grant to Information Society S.A. to subsidise transport fuel consumption costs (under the "Fuel Pass" scheme); (iv) a grant to the Payment and Control Agency for Guidance and Guarantee Community Aid (OPEKEPE) to mitigate the impact on Greek livestock breeding; (v) a special-purpose compensation in support of taxi drivers; (vi) subsidies on transport diesel and heating oil; and (vii) transfers to the Energy Transition Fund.

Actual transfers exceeded the budgeted amount by EUR 590 million. The overrun was covered by unallocated expenditure.

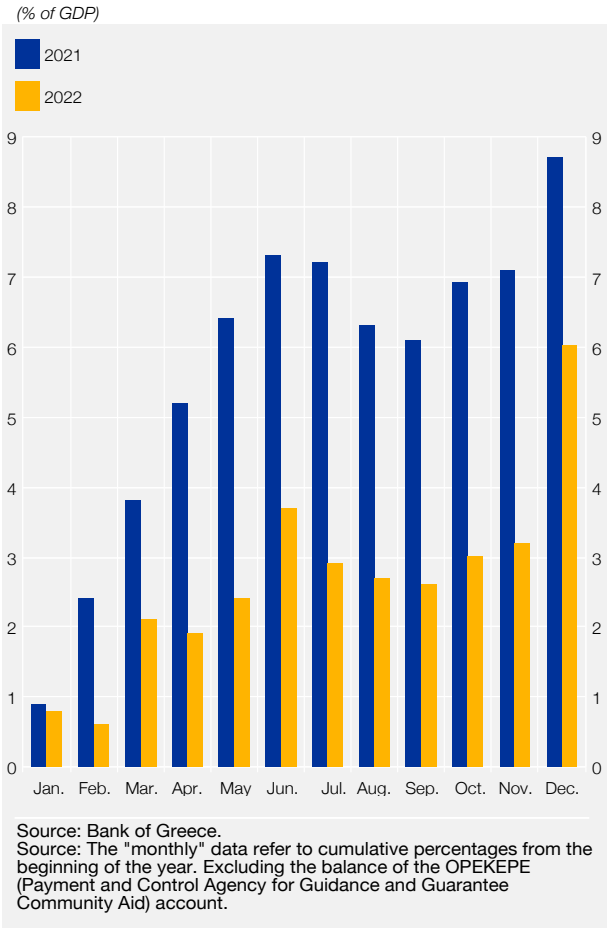
- Purchases of goods and services rose by 7.7% on an annual basis, owing to increased electricity and fuel costs of ministries and other central government entities, and were EUR 284 million lower than the target.

- Expenditure on the acquisition of fixed assets grew by around EUR 0.8 billion in line with budget forecasts, reflecting increased outlays for Ministry of National Defence procurement of military equipment.

- PIB expenditure increased by 5.9% year-on-year as a combined result of a reduction in pandemic-related support (2022: EUR 0.6 billion, 2021: EUR 3.1 billion) and higher other investment expenditure (up by EUR 2 billion or 36.1%). During 2022, the main pandemic-related outlays recorded in this category included: in the Regions, aid to small and micro enterprises hit by the pandemic; healthcare staffing; funding for the "Gefyra II" programme; subsidies to businesses in the tourism sector; and an extraordinary grant to affected entertainment businesses, gyms, dance schools, etc. Actual PIB expenditure fell EUR 618 million short of the budget target.

- Finally, RRF expenditure grew by EUR 2.5 billion year-on-year, from EUR 307 million in 2021 to EUR 2,843 million in 2022, representing a marginal overrun of EUR 27 million compared with the budget target.

Chart V.7 Central government net borrowing requirement on a cash basis (January 2021 - December 2022)



Source: Bank of Greece.
Source: The "monthly" data refer to cumulative percentages from the beginning of the year. Excluding the balance of the OPEKEPE (Payment and Control Agency for Guidance and Guarantee Community Aid) account.

5.4 State budget on a cash basis

The state budget net cash balance improved to a deficit of 6.1% of GDP, compared with a deficit of 8.7% of GDP in 2021 (see Table V.5 and Chart V.7). The state budget net primary cash balance also improved to a deficit of 3.1% of GDP, against a deficit of 5.4% of GDP in the previous year.

The ordinary budget balance improved over the previous year, underpinned by higher revenues on the back of rebounding economic activity, the effects of higher prices, the unwinding of the

Table V.5 State budget net balance on a cash basis

(EUR millions)

	2019	2020	2021	2022
State budget[1]	**-477**	**-24,138**	**-15,880**	**-12,664**
% of GDP	-0.3	-14.6	-8.7	-6.1
- Ordinary budget	2,376	-19,043	-13,780	-6,950
- Public Investment Budget	-2,853	-5,095	-2,100	-5,714

Source: Bank of Greece.
1 As per movements in the respective accounts with the Bank of Greece and other credit institutions. Including movements in public debt management accounts. Excluding movements in the OPEKEPE account.

vast majority of furlough schemes, a more frontloaded ENFIA tax collection schedule compared with a year earlier, and increased VAT revenue collection. The change in primary expenditure had a neutral effect, as the withdrawal of pandemic-related measures offset the expenditure-increasing effect of emergency financial support to compensate for price rises.

The Public Investment Budget (PIB), which also includes RRF transactions, deteriorated as revenue from RRF decreased and the corresponding expenditure increased.

5.5 General government gross debt

In the Introductory Report on the 2023 Budget, public debt was projected to have increased by EUR 1.6 billion in nominal terms in 2022, to EUR 355 billion, due to new borrowing from capital markets and the EU. By contrast, based on GDP data for 2022, released in March 2023, a further decline to 170.6% is foreseen in the 2022 government debt-to-GDP ratio, as the debt-reducing contribution of both the interest rate-growth differential (snowball effect) and, to a lesser extent, other adjustments (including higher privatisation proceeds) is expected to have more than offset the debt-increasing effect of the primary deficit.[13] In 2023, the debt-to-GDP ratio is expected to decline further still, to 159.3%, due mainly to the denominator effect, i.e. the increase in nominal GDP due to high inflation, but also –for the first time since the pandemic began– the debt-reducing impact of a primary surplus (see Table V.6).

The rise in government borrowing costs as a result of higher interest rates is presumably unlikely to pose significant risks to medium-term debt sustainability, given the debt's favourable composition –76% of Greek public debt is in the form of medium-to-long-term liabilities to the official sector (see Table V.7)– and very favourable maturity profile thanks to the agreed medium-term debt relief measures.

In particular, the PDMA's strategy has contributed to maintaining the favourable composition of Greek public debt, despite economic headwinds. Indicatively: (a) As of end-December 2022,

Table V.6 Decomposition of changes in the general government debt-to-GDP ratio[1]

(percentage points of GDP)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*	2023*
General government debt-to-GDP ratio	178.2	180.3	176.7	180.5	179.5	186.4	180.6	206.3	194.5	170.6	159.3
Changes in the general government debt-to-GDP ratio	16.2	2.2	-3.6	3.8	-1.1	6.9	-5.8	25.7	-11.7	-23.9	-11.4
- Effect of the primary balance	9.2	-0.4	2.3	-3.5	-3.7	-4.3	-4.1	6.9	5.0	1.6	-0.7
- Contribution of the snowball effect	11.8	6.7	4.4	5.1	0.7	0.7	-0.9	22.6	-16.0	-22.2	-9.5
- Deficit-debt adjustment[2]	-4.8	-4.1	-10.3	2.1	2.0	10.5	-0.8	-3.9	-0.7	-3.3	-1.1

Sources: Introductory Report on the 2023 Budget and ELSTAT.
* Forecasts.
1 The mathematical relationship used for the decomposition of changes in the public debt-to-GDP ratio is the following:

$$\left[\frac{D_t}{Y_t} - \frac{D_{t-1}}{Y_{t-1}}\right] = \frac{PB_t}{Y_t} + \left[\frac{D_{t-1}}{Y_{t-1}} * \frac{i_t - g_t}{1+g_t}\right] + \frac{SF_t}{Y_t}$$

Where D_t = general government debt
PB_t = primary balance (deficit (+) or surplus (-))
Y_t = GDP at current prices
g_t = nominal GDP growth rate
i_t = average nominal interest rate on government debt
SF_t = deficit-debt adjustment

2 The "deficit-debt adjustment" includes expenditure or liabilities that do not affect the deficit, but increase debt, as well as receipts (e.g. from privatisations) that do not affect the deficit but reduce debt.

13 According to available data (on a national accounts basis) for the third quarter of 2022, general government debt amounted to 171.8% of GDP at end-September 2022.

Table V.7 General government consolidated debt[1]

(EUR millions)

	2018	2019	2020	2021
Short-term liabilities	13,385	14,019	13,372	12,860
– Securities	*11,144*	*11,752*	*11,122*	*10,811*
– Loans	*2,241*	*2,267*	*2,250*	*2,049*
Medium- and long-term liabilities	315,091	310,491	321,200	333,870
– Securities	*41,738*	*46,102*	*56,065*	*70,125*
– Loans	*273,353*	*264,389*	*265,135*	*263,745*
Coins and deposits	6,245	6,583	6,581	6,704
Total	**334,721**	**331,093**	**341,153**	**353,434**
% of GDP	***186.4***	***180.6***	***206.3***	***194.5***
– Euro-denominated debt	327,287	327,335	336,987	352,261
of which:				
to the Bank of Greece	*(2,367)*	*(1,895)*	*(1,421)*	*(944)*
to the Support Mechanism	*(245,714)*	*(245,294)*	*(244,133)*	*(241,481)*
– Non-euro-denominated debt[2]	7,434	3,758	4,166	1,173
of which: to the Support Mechanism	*(7,391)*	*(3,716)*	*(4,128)*	*(1,139)*

Sources: ELSTAT and PDMA.
1 According to the Maastricht Treaty definition.
2 Valuation based on the foreign exchange rates prevailing on 31 December of each year.

100% of general government debt has been kept in the form of fixed-rate obligations, meaning that interest rate risk is very limited. (b) At end-December 2022, the weighted average term to maturity of general government debt was still very long, at 19.8 years.

Consequently, the Bank of Greece reckons that,[14] despite the increase observed in Greek government bond yields in 2022, risks to debt sustainability are contained over the medium term, provided that the fiscal measures taken in response to the pandemic and energy crises remain temporary and that available EU funds are effectively utilised. In the longer term, however, there is increased uncertainty, as the gradual refinancing of accumulated debt to the official sector on market terms will increase the exposure of Greek government debt to interest rate and market risks, which eliminates any room for a relaxation of primary surplus assumptions. Compounding this uncertainty is climate change, which is expected to negatively impact on public debt sustainability (see Box V.1).

According to the simulation results, the projected evolution of the debt-to-GDP and GFN-to-GDP ratios up to the early 2030s shows very little variation across the different scenarios considered, illustrating the public debt's increased medium-term resilience to possible adverse shocks. As already mentioned, this is largely a result of the favourable repayment profile of debt owed to the official sector, but also of the timely establishment of interest rate swaps, which have locked in the historically low interest rates of previous years. It should be noted, though, that the current favourable characteristics of the debt stock are not permanent. They only provide a significant window of opportunity to ensure that public debt remains sustainable as maturing existing loans are gradually refinanced on market terms. Preserving fiscal credibility through a return to, and maintenance of, primary surpluses, and regaining an investment-grade credit rating will be key to successfully exploiting this window of opportunity.

14 *Monetary Policy – Interim Report 2022, Executive Summary and Boxes*, Box 4, 36-40.

6 THE BUDGET FOR 2023

According to the Introductory Report on the 2023 Budget submitted in November 2022, the fiscal policy stance will be restrictive in 2023, as the withdrawal of pandemic-related emergency fiscal support and the downscaling of energy-crisis support will only partly offset other expansionary fiscal measures. During the early part of 2023, additional income support measures were implemented on expectations of better-than-estimated state budget execution.

In more detail, a general government primary surplus of 0.7% of GDP is forecast for 2023 (2022: primary deficit of 1.6%), assuming an economic rebound, with real GDP growth of 1.8%. This improvement over 2022 will come from the unwinding of most of the emergency measures taken in 2022 in response to the health and energy crises, as well as from expectations of a recovery in economic activity, also underpinned by the absorption of EU funds available under the RRF. Domestic demand will be the main driver of the economic recovery, with all components expected to contribute to the increase: government consumption is expected to grow by 0.2%, private consumption by 7.2% and gross fixed capital formation by 10.0%.

The budget for 2023 projects the primary balance to improve by 2.3 percentage points of GDP, as a combined result of:

(a) the withdrawal of measures prompted by the COVID-19 pandemic. For financial year 2023, the budget includes just EUR 180 million (the equivalent of 0.1% of GDP) in respect of wage costs of temporary healthcare staff, whereas in 2022 expenditure on COVID-19-related measures had amounted to EUR 4.4 billion;

(b) the downscaling of energy-crisis support. The budget for 2023 only makes a provision of EUR 1 billion under “unallocated expenditures” for energy-crisis support (primarily electricity bill subsidies conditional on the evolution of energy prices) and for increased energy spending by general government entities, whereas the total size of the respective fiscal measures affecting the 2022 fiscal balance had amounted to EUR 4.8 billion; and

(c) other fiscal measures, totalling EUR 4.2 billion (or 1.9% of GDP), designed to boost economic activity and support household budgets under strain from inflationary pressures, including: a permanent 3% reduction in employees’ social security contributions, effective from 2023; a permanent repeal of the social solidarity levy on all incomes, including public and private sector wages and pensions; a “Save/Renovate” subsidy programme for the renovation and energy-efficiency upgrade of the existing stock of residential properties; a programme for low-interest loans to young first-time homebuyers aged 39 or under; the extension to 2023 of reduced VAT rates applying to specific services, including tourism, etc.

At the beginning of 2023, one-off, temporary and targeted measures were taken in support of disposable incomes. Such measures included the provision of extraordinary financial support to pensioners and the extension of reduced VAT rates applying to certain categories of goods. The combined fiscal cost of these interventions was estimated at EUR 800 million and projected to be covered through the fiscal space that is set to result from better-than-expected fiscal performance in 2022.

It is worth noting that pension expenditure is forecast to increase by EUR 1.4 billion in 2023, due to the indexation of main pensions to inflation and GDP growth as set out in Article 25(4)(a) of Law 4670/2020[15] –the cost of which is estimated at EUR 909 million– and the acceleration

15 The indexation coefficient is calculated as the sum of the annual GDP growth rate and the headline CPI inflation of the previous year, divided by two.

of the award process for new pensions. By contrast, defence payments are projected to be EUR 1.4 billion lower in 2023 than in 2022.

Also, absorption of EU funds available under the RRF is projected to amount to EUR 5.3 billion (or 2.4% of GDP) in 2023, of which EUR 3.4 billion will be in the form of grants and EUR 1.8 billion in the form of loans. These funds are expected to contribute 1.9% to GDP growth in 2023, without taking into consideration investment resources mobilised by the private sector.

As regards privatisation proceeds, a total of EUR 2 billion is expected to be received in 2023. This will almost entirely come from signed projects, mainly from the Egnatia Odos concession agreement (EUR 1.496 million).

Public debt in 2023 is projected to decline to 159.3% of GDP, mainly thanks to the debt-decreasing effect of the interest rate-growth differential (snowball effect), though, in nominal terms, it will rise by a marginal EUR 2 billion, partly on account of RRF loans.

Box V.1

CLIMATE CRISIS AND FISCAL RISKS: MACROECONOMIC IMPACTS AND THE ROLE OF THE NGEU

The climate crisis has been characterised as "a potentially catastrophic global externality and one of the world's greatest collective action problems".[1] It is a potential threat to macroeconomic balance as well as to financial and fiscal stability and one of the top systemic risks[2] for the world economy. It is associated with extreme weather events[3] that disrupt social and economic balance, affecting all areas of the economy, including the primary sector, the energy sector, infrastructure, public health and safety and, thus, supply and demand. An effective response to the climate crisis involves a productive transformation of the economy towards green growth. This transition has to take into account cross-country differences and spillovers, especially in the current context of economic volatility, as well as transition costs.

Therefore, the climate crisis is one of the most important collective action problems facing the world, calling for common frameworks for action and cooperation between countries. As a follow-up to the Paris Agreement, which has been ratified by all Member States, the EU has adopted ambitious action plans to achieve climate neutrality by 2050.

This box seeks to identify the channels whereby the impacts of the climate crisis affect fiscal stability and provides policy recommendations for addressing such impacts.

The impacts of climate change on fiscal stability

The impacts of climate change on fiscal stability are transmitted via two main channels: (i) through the effect on GDP (macroeconomic effect); and (ii) through the effect on tax revenues and public expenditure relating to measures adopted to address the phenomenon and, thus, on fiscal balance and public debt sustainability.

The macroeconomic effects of climate change on GDP are linked to disruptions to supply and demand in the economy caused by climate change and environmental degradation (physical risks).[4] Extreme weather events damage the productive capacity of the primary sector, cause losses in capital equipment, infrastructure and

1 IMF, *World Economic Outlook – Housing and the Business Cycle*, April 2008.
2 European Economy, "Global Imbalances: False Alarm or Genuine Source of Concern?", Economic Brief 074, November 2022.
3 For example, the greenhouse effect and global warming, floods, fires and natural disasters.
4 See Batten, S. et al. (2016), "Let's talk about the weather: The impact of climate change on central banks", Bank of England Working Paper No. 603.

assets (buildings, etc.) and also weigh on labour productivity, income, employment and wealth, hence consumption, investment and economic growth. It is also worth noting the impact on the current account balance (e.g. via changes in infrastructure investment) as a result of extreme climate conditions,[5] particularly in tourism[6] (through the changing suitability or unsuitability of geographical areas – see the figure).

Fiscal effects and the impact on public debt sustainability can be indirect (resulting from the above-mentioned effects on GDP) or direct (resulting from increased costs of response measures). Extreme weather events are associated with higher expenditures on infrastructure, transfers to affected households and firms, as well as on health and safety; to the extent that they are not budgeted, such expenditures constitute additional costs in the form of contingent liabilities. Moreover, addressing climate migration flows could be linked to social tensions as well as possible additional fiscal costs. The revenue side of the budget would thus reflect both the indirect effects of changes in the tax base (consumption, wages, profits) and in labour productivity and any direct effects of tax relief to affected persons.[7]

Climate shocks affect public debt sustainability through their impact on the primary budget balance, GDP growth and borrowing costs, insofar as these reflect the ease (difficulty) of market access for a country that has (or has not) taken steps towards green transition.[8] As regards the sustainability of Greek public debt, the European Commission's projections[9] consider two global warming scenarios (by 1.5°C and 2°C). They show that, on average, the debt-to-GDP ratio increases in 2032 by 2.6 and 2.8 percentage points, respectively, relative to the baseline debt sustainability analysis scenario.

At the global level, tackling the climate crisis requires the design and implementation of appropriate policies to prevent and address its adverse impacts, while respecting the specificities of each country and its economy, laying the groundwork for smooth and sustainable growth and preserving macroeconomic and fiscal stability.

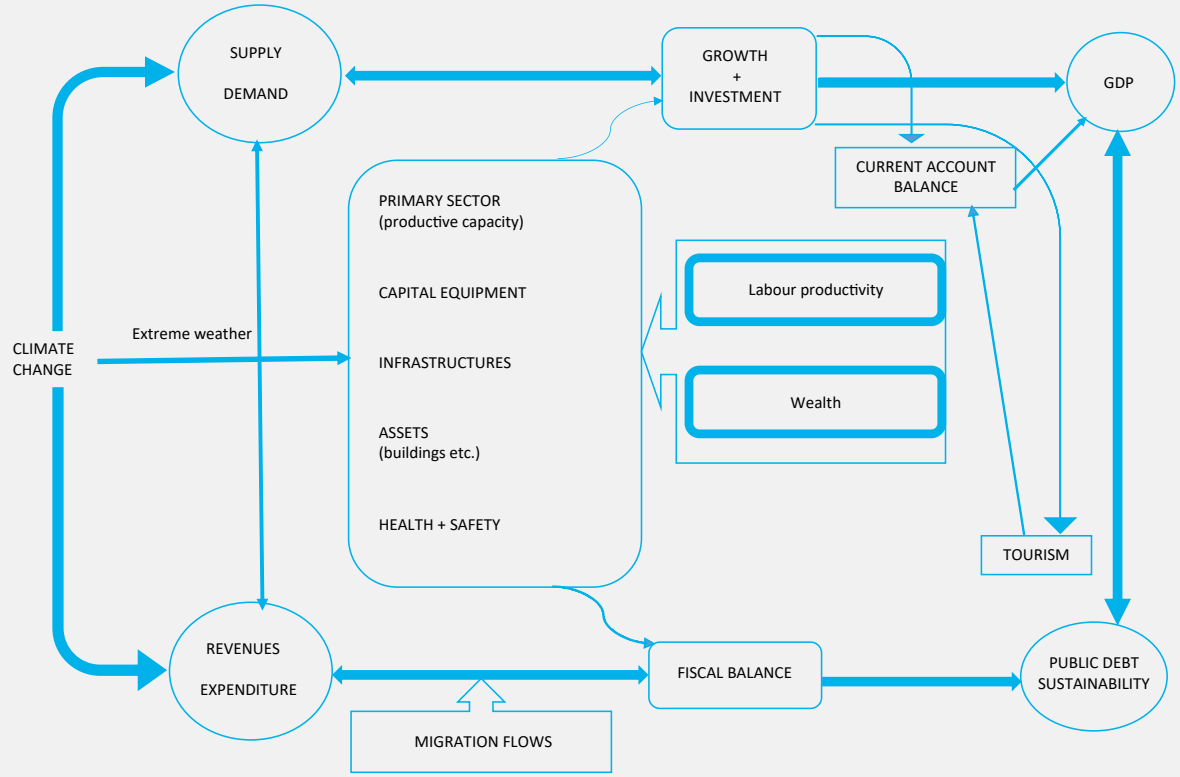
Climate crisis and green taxonomy: roadmap for sustainable finance

Besides its negative consequences on people's lives, the climate crisis also has adverse effects on the sustainability of the financial sector and public finances, as it influences decision-making by economic agents (governments, investors, consumers); the latter therefore need tools to better assess, supervise and manage climate risks,[10] but also more broadly to safeguard the green transition of economies.

Against this background, it is crucial to define a set of uniform rules, tools and incentives for a smooth environmental transition.[11] At the European level, this gap is bridged by the EU Green Taxonomy. This is a common classification system establishing a list of environmentally sustainable economic activities, covering more than 90 sectors of the private and public economy, with a view to successfully redirecting investment flows towards projects that help address environmental challenges and protect biodiversity.[12] This is achieved through a five-

5 For quantified results, see IMF (2022), *External Sector Report – Pandemic, War, and Global Imbalances*, August.
6 See Gagliardi, N., P. Arevalo and S. Pamies (2022), "The Fiscal Impact of Extreme Weather and Climate Events: Evidence for EU Countries", European Commission Discussion Paper No. 168, July.
7 Tax revenues per capita equal tax revenues/GDP multiplied by labour productivity (GDP/workers) and by workers/population; see e.g. OECD (2021), "Climate change and long-term fiscal sustainability".
8 See Zenios, S.A. (2022), "The risks from climate change to sovereign debt", *Climatic Change*, 172, 30.
9 European Commission (2022), *Quarterly Report on the Euro Area*, 21(2).
10 For an analysis of these risks, see Tobias, A., P. Grippa, M. Gross, V. Haksar, I. Krznar, S. Lamichhane, C. Lepore, F. Lipinsky, H. Oura and A. Panagiotopoulos (2022), "Approaches to Climate Risk Analysis in FSAPs", IMF Staff Climate Note No. 2022/05, https://www.imf.org/en/Publications/staff-climate-notes/Issues/2022/07/12/Approaches-to-Climate-Risk-Analysis-in-FSAPs-519515.
11 See also Bank of Greece, *Annual Report 2021*, Box II.3 "Investment with a positive environmental impact: concept and financing".
12 In other words, it sets the carbon emission levels and all specific criteria that need to be met for a private or public firm's activities or a financial product to be considered eligible for funding. See European Commission (2020), "Financing a Sustainable European Economy. Technical Report", March, https://finance.ec.europa.eu/system/files/2020-03/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf; and Crabbendam, N. and C. Descio (2022), "The EU taxonomy explained – Here's what it means for your company", *Carbon Trust Insights*, https://www.carbontrust.com/news-and-events/insights/the-eu-taxonomy-explained-heres-what-it-means-for-your-company.

Transmission channels of the impacts of the climate crisis to fiscal stability



step process: (1) identification of activities; (2) verification of whether the screening criteria for energy generation are met; (3) verification that no significant harm is caused to the environment; (4) disclosure of quantitative performance data based on sustainability criteria (environmental, social and governance – ESG);[13] and (5) alignment of at least 50% of a firm's turnover with these steps.

Through transparency and information, the EU taxonomy enables market participants and the government to identify any environmentally harmful investment activities. Clearly, by introducing practicable legislation incorporating ESG criteria, governments can strengthen the absorption of EU funds, primarily under the Recovery and Resilience Fund, as compliance with the new European legislation (EU Taxonomy and SFDR[14]) is a key factor in the eligibility of private and public investment. At the same time, the effectiveness of control mechanisms remains a major challenge, given that, under the new legislative framework for EU financing, the competitiveness of Greek firms depends directly on compliance with the above sustainability criteria.[15]

Green transition targets for the Greek economy

After 2010, and in the context of the three economic adjustment programmes, the Greek energy market was an area of policy action towards the opening-up of energy markets, stronger competition, integration into the single European energy market and increasing investment in renewable energy sources (RES). A distinct feature of

13 For a company, the three sustainability criteria refer to: (i) its actions for the environment; (ii) its stance towards society; and (iii) its corporate governance.

14 Regulation (EU) 2019/2088 (Sustainable Finance Disclosure Regulation – SFDR) aims to provide greater transparency on the sustainability of financial products in order to direct private capital towards sustainable investments, while preventing greenwashing. Its phasing-in started in March 2021.

15 Empirical research has found a statistically significant relationship between the calibration of credit risk and the fulfilment of sustainability criteria. See Dumrose, M., S. Rink and J. Eckert (2022), "Disaggregating confusion? The EU Taxonomy and its relation to ESG rating", *Finance Research Papers*, https://doi.org/10.1016/j.frl.2022.102928.

the energy reform agenda was a focus on the economic benefits to consumers and firms from the opening-up of markets and less on the need to move to a new green growth model.[16]

The first attempt to specify the main objectives and policy measures for the green transition was made after the end of the third adjustment programme, through the National Energy and Climate Plan (NECP 2019).[17] The initial NECP[18] goals and measures were later revised and modernised by the Climate Law (Law 4936/2022, see Box X.2 herein), and further supplemented by the national Recovery and Resilience Plan (Greece 2.0)[19] as part of the NGEU, aiming to accelerate green transition.

With respect to agreed policy objectives, the most profound changes related to the stronger reduction of carbon emissions from 43% to 55% by 2030, aiming at zero net emissions by 2050. A number of additional policy measures have also been adopted, such as the timetable for eliminating the use of fossil fuels, the increase in electricity generation from RES in large buildings, as well as the exclusive sale of electric and hybrid cars as from 2030. The recent Law 4951/2022 on the modernisation of the RES licensing procedure, electricity storage and the framework for the development of pilot floating photovoltaic plants are also steps in that direction.

Further to the initial target-setting, the national Recovery and Resilience Plan (Greece 2.0)[20] helps to achieve these environmental goals and provides essential financing to additional projects aimed at the green transition of the economy.[21] These projects concern, inter alia, the development of infrastructure for electricity storage, power grid interconnection of remote areas, renovation and energy upgrades of public and private buildings, development of electric car charging stations, public transport electrification, as well as the funding of research and development (R&D) to reduce emissions in maritime navigation. In addition, resources are allocated to implement urban and spatial planning reform, as well as to promote important projects such as the creation of infrastructure for urban waste treatment in sensitive areas, e.g. tourist areas – evidently, such actions will create long-term sustainable green jobs.[22]

Fiscal policy recommendations for green growth

Fiscal policy tools are also instrumental in addressing the consequences of climate change. According to the World Bank,[23] preventive public investments (complementary to private investments) with a scope to mitigate

16 For a more comprehensive overview of the main reforms in the Greek energy market during the three successive economic adjustment programmes, see Ioannidis, A. (2022), "Energy Reforms in Greece during the Economic Adjustment Programmes", European Commission, Discussion Paper 166.

17 Ministerial Decision no. 4/23.12.2019 of the Governmental Economic Policy Council (Government Gazette B 4893) ratified the National Energy and Climate Plan (NECP).

18 Consultation is ongoing on a revised NECP, including a significant increase in the share of RES for various uses (electric mobility, heating and cooling, energy saving).

19 At the same time, additional resources to promote the green transition at the EU level are also expected through the EU REPowerEU programme, following the proposal to revise the Regulation establishing the Recovery and Resilience Facility towards the inclusion of REPowerEU in the updated national Recovery and Resilience Plans.

20 The EU Regulation establishing the Recovery and Resilience Facility requires at least 37% of the national recovery and resilience plan's total allocation to support climate objectives. In the case of the Greek plan (Greece 2.0), a significant part (37.5%) concerns goals related to green transition, the implementation of which will be supported through grants and loans. Moreover, according to a recent assessment by the European Commission (European Commission (2022), Review report on the implementation of the Recovery and Resilience Facility), reforms and investments proposed by Member States exceed on average the 37% target, with some dedicating as much as 50% of the allocated resources for environmental purposes. Total estimated climate expenditure in the adopted plans amounts to EUR 198 billion, about 40% of the total plans' allocation.

21 According to the assessment of the National Recovery and Resilience Plans against green transition goals (Green Recovery Tracker) based on implementation data by the end of 2021, the National Recovery and Resilience Plan (including grants and loans) achieved a green spending share of 14%, which increases to 24% if grants only are taken into account.

22 Pissarides, Ch., D. Vagianos, N. Vettas and K. Meyir (2020), "Development Plan for the Greek Economy" (Pissarides Committee Report). [in Greek]

23 World Bank (2019), *Fiscal policies for development and climate action* (ed. Pigato, M.), Washington, DC.

the effects of the climate crisis deliver better results (imply lower economic and social costs) compared to the ex-post corrective fiscal interventions/policies imposed after the occurrence of severe climate events.

According to an OECD country report,[24] in the case of Greece, the State budget could more thoroughly and regularly analyse the environmental impact on fiscal aggregates by applying a risk analysis method. It also stresses the need for a more systematic categorisation of costs according to their contribution to the achievement of environmental objectives (green budgeting).

On the revenue side, in addition to the positive effects of Greenhouse Gas pricing on this type of emissions,[25] the introduction of a single progressive tax on the cost of fossil fuel emissions[26] would create additional fiscal space for targeted support to households (mitigating widening inequalities due to environmental degradation[27]) and firms[28] (to generate fewer greenhouse gases).

Ensuring the effectiveness of fiscal interventions to strengthen the green transition requires: (a) budgetary neutrality intertemporally (e.g. financed through increased taxation or expenditure cuts rather than through budget deficits) and (b) carefully planned financing of preventive actions in the same direction.

Lastly, interventions such as tighter energy efficiency standards for existing buildings, replacing financial support with state-subsidised loans for energy upgrading of buildings (instead of direct cash transfers), higher public investment with a very clear focus on the green transition of the economy,[29] such as through investment in public transport (rail network), clean energy infrastructure and energy networks, targeted assistance to tackle energy costs as well as the horizontal introduction of mandatory building insurance will help to drastically reduce contingent liabilities from climate change and more frequent natural disasters. Similarly, the accumulation of public resources in the form of a Rainy Day fund would help the Greek economy to smooth its way towards green transition.

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24 OECD (2023), *OECD Economic Surveys: Greece 2023*, OECD Publishing, Paris.

25 A mechanism that, in environmental terms, acts as an incentive to limit emissions and adopt innovations and new technologies towards green transition.

26 Price levels obtained through the EU Emissions Trading System.

27 According to Cevik, S. and J. Jalles (2022), "For Whom the Bell Tolls: Climate Change and Inequality", *IMF Working Papers*, No. 103, the effect of climate change on income distribution in developing countries is seven times greater than in advanced economies, as the former tend to have weaker capacity to adapt to its consequences.

28 Moreover, the additional fiscal space could also be used to provide tax incentives towards sustainable private investment financing tools (e.g. green bonds). For details, see IOBE (2023), "Adaptation to climate change: Challenges and opportunities for the Greek economy". [in Greek]

29 According to Delgado-Téllez, M., M. Ferdinandusse and N. Carolin (2022), "Fiscal policies to mitigate climate change in the euro area", ECB, *Economic Bulletin*, Issue 6/2022, Greece ranks among the countries with the largest share of the requested Recovery and Resilience Plan (RRP) directed towards green transition.

ANNEX TO CHAPTER V
FISCAL POLICY MEASURES

In 2022,[1] prominence was given to the protection of social groups affected by the energy crisis, while emphasis was also placed on keeping fiscal policy on a sustainable path and on continuing structural reforms. Specifically, numerous urgent tax provisions were adopted to counter rising energy costs, changes were made to the structure of Unified Property Ownership Tax (ENFIA), and significant tax incentives were introduced to boost the growth and transformation of businesses. Also, a number of measures were adopted to support vulnerable social groups (e.g., low-income pensioners, persons with disabilities, minimum guaranteed income beneficiaries, etc.). Legislation was introduced to rationalise social security and the pension system, improve the organisation of entities in the broader public sector, protect motherhood, etc. Targeted income support has continued to be provided in 2023, with a view to alleviating higher energy and living costs.

In more detail:

Law 4916/2022, passed in March, established a one-off subsidy (via an electronic card, known as Fuel Pass I) on transport fuel consumption cost, in an amount of EUR 30-50, depending on the type of vehicle and region of residence of beneficiaries, effective from 26 April to 10 June 2022. Eligible for the subsidy were natural persons (including self-employed workers and sole proprietors) with a declared family income of up to EUR 30,000. The measure was reinstated in July (Fuel Pass II)[2] for July, August and September 2022, with higher amounts and expanded income criteria (family income up to EUR 30,000, increased by EUR 3,000 for each additional member). A major reform was also introduced in ENFIA property tax, including : (a) new tax scale, with a merge of low and middle property value brackets and a cut in tax rates; (b) for natural persons, abolition of supplementary tax (which was based on the taxpayer's total real property value); (c) increase in tax deduction rates for total real property value of up to EUR 150,000; and (d) payment of tax in 10 equal monthly instalments.

The same law provided for state budget subsidisation of transport diesel oil distributed in the domestic market from 1 to 30 April 2022. Refineries and fuel importers are eligible for a subsidy of EUR 0.12/litre, based on the value (before VAT) of the sale invoices they have issued to domestic retailers and industrial customers.

Under **Law 4917/2022** of March, extraordinary financial support of EUR 200 was granted in April to pensioners with personal taxable income up to EUR 7,200 and annual family income up to EUR 14,400 for fiscal year 2020. Persons with disabilities and uninsured elderly persons also received a one-off additional allowance of EUR 200 in April. For the same month, the minimum guaranteed income granted to eligible beneficiaries was doubled and the child allowance was increased by half. Moreover, for employees furloughed in January 2022, the Easter bonus and the social security contributions corresponding to the time of suspension of employment contract were covered by the State Budget.

Law 4920/2022, passed in April, included tax provisions that envisaged a conditional exemption of farmers and coastal fishermen from the fixed business levy and the option to lift inactive status for vehicles within 2022 by paying proportional road duties. Other significant fiscal

1 The fiscal policy measures adopted up to March 2022 are described in the 2021 *Annual Report*.
2 Joint Ministerial Decision 4105/2022, Government Gazette B 4091/30.7.2022.

interventions of the law concerned a temporary framework for state aid measures to mitigate the impact of the coronavirus outbreak (COVID-19), in line with the respective framework of the European Union. Eligible for such aid are natural persons and undertakings of all forms facing pandemic-related liquidity constraints, in accordance with Section 3.1 of the Communication from the Commission 1863/19.3.2020 "Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak".[3] Finally, the same law provided for a first amendment to the 2022 State Budget, approving a Supplementary Budget of EUR 2.6 billion.

Law 4935/2022 of May introduced significant tax incentives to foster business partnerships and transformations, including income tax exemptions. In particular, natural persons whose principal activity is agriculture can be exempted, subject to conditions, from 50% of income tax on their pre-tax agricultural earnings.

Under the same law, transformed businesses are exempted from income tax on valuation gains from fixed asset transfers to a third party; stamp duties; transfer tax on the acquisition of company shares and capital concentration tax.

Law 4936/2022, also passed in May, provided for emergency support to compensate part of electricity consumption cost increases for domestic consumers. In particular, natural persons, tax residents of Greece, meeting the specified income criteria (2021 net household income of up to EUR 45,000) are eligible for a rebate of 60% of the increase in all electricity bills issued during December 2021-May 2022, up to a total subsidy amount of EUR 600 per household.

Under the same law, electricity producers were charged with an extraordinary one-off levy of 90%, calculated on a monthly basis for the period from 1 October 2021 to 30 June 2022, on the year-on-year increase[4] in their gross profit margin.

Regarding eligibility of consumers for subsidisation under the above provisions, Joint Ministerial Decision 109471/1763/18.11.2021 (Government Gazette B 5402/22.11.2021) applied.

Law 4940/2022, passed in June, simplified the procedure for the issuance of social security clearance certificates for the transfer of real estate, by introducing an online certificate of no-debt or of debt verified solely by the e-EFKA's Centre for the Collection of Social Security Arrears (KEAO). By the same law, the housing allowance granted to university undergraduates was expanded in scope to include public Vocational Training Institutes (IEK) students.

Law 4949/2022 of June introduced emergency tax and customs provisions, including:

- Extension of reduced and super-reduced VAT rates applying to certain goods and services (personal protective and sanitary equipment, import of works of art, etc.).

- Provisions on real property tax for natural persons, with factors of upward/downward adjustment to starting prices depending on property type.

- Arrangements regarding alternative taxation of income earned abroad by natural persons who transfer their tax residence to Greece. The standard tax arising from foreign income tax legislation is reduced by any amount of tax paid for the relevant fiscal year.

3 Total aid, together with any other aid received by the undertaking under Section 3.1 of the Temporary Framework, may not exceed, per undertaking (a) EUR 2,300,000; (b) for undertakings active in the fishing and aquaculture sector, EUR 345,000; and (c) for undertakings active in primary agricultural production, EUR 290,000.

4 Weighted by the share of fixed-price supply contracts in an electricity producer's total contracts and net of discounts to end consumers and rebates under bilateral power supply agreements.

– Extension until 31 December 2022 of the suspension of tax on donations to public benefit legal entities.

– Exemption of artists and handicraftsmen from the fixed business levy for fiscal years 2022, 2023 and 2024, provided they restart business by 30 June 2023.

– Provisions on taxation of games of chance (games and persons subject to tax, tax rates).

– A provision to the effect that any amount of NSRF co-funded aid to businesses suffering from the consequences of Russia's invasion of Ukraine and ensuing international sanctions[5] shall be tax-exempt, non-transferable, and not subject to garnishment.

Under **Law 4951/2022** of the Ministry of the Environment and Energy, passed in July and addressing energy and environmental protection matters, the price adjustment clause in electricity bills was repealed for the 1 August-1 July 2023 period. At the same time, a temporary mechanism for the Partial Return of the Day-Ahead Market Revenues was established and implemented during the 1.7.2022-1.6.2023 period and concerns electricity producers or renewable energy pools.

Law 4955/2022, passed in July, transposed Council Directive (EU) 2020/262 of 19 December 2019 laying down the general arrangements for excise duty. In addition, this law modernised the framework governing the customs agent profession, regulated other customs and tax matters and included other emergency provisions.

Law 4964/2022 of the Ministry of the Environment and Energy, passed in July, extended the deadline for the final submission of income tax returns for fiscal year 2021 to 30 August 2022, with the option to pay tax in eight equal monthly instalments, the first two by end-August 2022 and the remaining six by the end of each subsequent month.

Law 4972/2022, passed in September, regulated matters relating to corporate governance in state-owned enterprises and other subsidiaries of the Hellenic Corporation of Assets and Participations (HCAP), as well as the management of State holdings in sociétés anonymes and laid down provisions on the HCAP. The same law introduced a second amendment to the 2022 State Budget, increasing the Ordinary Budget by EUR 2,500,000,000 and the Public Investment Budget by EUR 200,000,000 for the co-funded part and by EUR 200,000,000 for the national part.

The law also includes other significant tax and fiscal provisions:

– Sanctions were imposed on undertakings for failure to transmit retail sales data through the Electronic Tax Register System (FIM). Sanctions include suspension of business operation for 48 or 96 hours, depending on the severity of the violation.

– Stamp duties were imposed on interest-bearing loans and other credit facilities as well as the contractual interest accrued thereon.

– The solidarity levy was repealed from 1 January 2023 onwards for all income of all natural persons, including public sector employees and pensioners.

5 Under Council Regulation (EU) 2022/428 of 15 March 2022 amending Regulation (EU) No 833/2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine and Communication from the Commission – Temporary Crisis Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia (2022/C131 I/01).

– Exemptions from the fixed business levy were provided: (a) for fiscal year 2022 (unlike fiscal years 2019-2021) to farmers and coastal fishermen (these had been subject to that charge in fiscal years 2019-2021; and (b) for fiscal year 2022 and thereafter, to sole proprietors and legal entities that increase the total working time of their employees relative to the previous fiscal year.

– The amount of the student housing allowance was increased from EUR 1,000 to 1,500 per annum, or to EUR 2,000 in cases of shared tenancy.

– The cost of heating oil distributed to the domestic market from 15 October to 31 December 2022 was subsidised by the State Budget at a rate of EUR 0.20/litre. For 2023 and up to 31 March, the subsidy was adjusted to EUR 0.12/litre before VAT.[6]

– It was clarified that the new tax-free threshold of Law 4839/2021 for donations and parental gifts of any asset applies to monetary amounts transferred to a bank account after 1 October 2021.

Alongside the heating oil subsidy per litre, aimed to reduce heating oil costs, the heating allowance granted to eligible beneficiaries was increased by successive ministerial decisions from EUR 14,000 to EUR 16,000 for an unmarried beneficiary and from EUR 20,000 to EUR 24,000 for married couples incremented by EUR 3,000 for each dependent child.

To operationalise the above provisions of Law 4972/2022 on retail sales data transmission, the Independent Authority for Public Revenue (IAPR) issued a number of implementing decisions (including **A. 1038/14.3.2022**, **A. 1090/5.7.2022**, **A. 1146/26.10.2022** and **A. 1170/30.11.2022**). These addressed matters relating to technical specifications and submission rules; cross-checking of data; procedures and deadlines for the electronic transmission of data to the IAPR; identification of invoices where connection with the myDATA digital platform is lost; pre-filling of VAT returns with information transmitted to myDATA, etc.

With **Law 4978/2022** of October, the Hellenic Parliament ratified the Code for Collection of Public Revenue, consolidating the provisions of Legislative Decree 356/1974 and its successive amendments into a new Code that is up-to-date, simplified and functional, as it describes public revenue collection procedures in a systematic and comprehensible manner.

Law 4986/2022 of October, on matters relating to the electricity market, imposed a special contribution to the Energy Transition Fund (EUR 10/MWh) on gas-powered electricity producers.

Law 4997/2022, passed in November, introduced further emergency measures aimed to: (a) provide financial support to vulnerable groups of population, such as low-income pensioners, uninsured elderly persons and beneficiaries of disability allowances, minimum guaranteed income and child allowances; (b) rationalise social security and pension provisions, including by setting a ceiling on supplementary pensions; shortening to 10 years (from 20) the prescription period for EFKA claims; doubling the number of instalments under social contribution arrears payment schemes to 24 from 12; (c) introduce organisational improvements in agencies supervised by the Ministry of Labour and Social Affairs, (d) establish pilot early intervention programmes for disabled children and vulnerable social groups; and (e) regulate labour market issues and promote equality and inclusion at workplace through the protection of working mothers, by extending the maternity benefit from six to nine months for private sector employees and prohibiting discrimination against HIV-positive workers.

6 Under a Joint Ministerial Decision (Government Gazette 6958/30.12.2022) extending the effect of the previous Joint Ministerial Decision that had introduced heating oil subsidisation.

The tax and social security interventions of the law include among other things:

– Permanent 3-percentage-point reduction in social security contribution rates, effective from 2023.

– Instalment schemes for the payment of arrears to social security organisations.

– Incentives for the conversion of part-time employment contracts to full-time contracts through subsidisation of social security contributions of private sector employers and employees.

– Bringing forward pension indexation to inflation and GDP growth;[7] increase in the minimum pension for farmers; and provisions regarding other categories of pensioners (military personnel, top judiciary officials).

– Responsibility for the ultimate pension entitlement decision in cases of successive insurance with e-EFKA and another pension provider.

– Determination of the gross total amount of supplementary pension.

– Payment of contributions to the Hellenic Auxiliary Pensions Defined-Contribution Fund (TEKA).

– Full payment of subsidised contributions to TEKA.

The same law also introduced fiscal measures to provide targeted support to households to compensate for high inflation:

– One-off allowance to vulnerable pensioners of EUR 250 for Christmas 2022 (up from EUR 200 paid in April 2022), with higher income and property thresholds for eligibility.[8]

– One-off increases, exceptionally for December 2022, in social benefits to vulnerable social groups. Specifically, (a) the extraordinary disability allowance granted by the Organisation of Welfare Benefits and Social Solidarity (OPEKA) to approximately 174,000 beneficiaries was increased by EUR 250; (b) the monthly pension and the social solidarity allowance for uninsured elderly persons granted to about 36,000 beneficiaries was increased by EUR 250; (c) the minimum guaranteed income was doubled; and (d) the one-off child allowance to eligible families was increased 1.5 times.[9]

– Extension of the maternity benefit to nine months, payable by the Public Employment Service (DYPA) in an amount per month equal to the current statutory minimum wage plus a proportional share of Christmas, Easter and holiday bonuses. Under the same law, such maternity support also applies in cases of adoption.

The provisions of **Law 5006/2022**, passed in December: (a) established the “My Home” programme for low or no-interest loans to young first home buyers, co-funded by DYPA; (b) introduced a new type of public-private partnership, whereby private developers will construct

7 A provision is introduced, stating that the Joint Ministerial Decision on pension indexation will henceforth be issued by the end of each year, based on data in the Introductory Report on the State Budget for the following year.

8 The allowance amount is EUR 250 per eligible pensioner (and for each of the spouses if they are both eligible), regardless of number of dependent household members. In cases of dual pension from e-EFKA and the State General Accounting Office, the allowance is payable by e-EFKA.

9 The additional allowance is tiered according to income, amounting to EUR 105 or 63 or 42 for each of the first two children and to 210 or 126 or 84 for the third and each subsequent child.

apartment buildings on land owned by general government entities and subsequently lease the properties to eligible tenants at a controlled rent; (c) established a youth housing programme using former refugee residences; (d) established a programme to subsidise renovation/repair costs for empty homes, on condition that the owner will lease them to eligible beneficiaries, thereby increasing the available stock of residential properties and (e) introduced urban planning and other provisions for the optimal use of state-owned property. Under the same law, the minimum survivor's pension is subject to inflation/GDP growth indexation as set out in Law 4387/2016 for all other types of pensions. Finally, for social security arrears subject to instalment schemes, the interest rate increase was suspended for one year, retroactively starting from 13 September 2022.

A number of amendments to a bill tabled by the Ministry of Health and passed as **Law 5007/2022** in December, regulated matters within the remit the Ministry of Finance. In particular:

– In response to soaring energy prices, a temporary solidarity contribution was imposed for fiscal year 2022, at a rate of 33% on the taxable profits of businesses in sectors and industries related to fossil fuels. The paid amount of such contribution qualifies as expenditure deductible from taxable income.

– For the February-July 2023 period, the so-called Market Pass was introduced, to support low- and medium-income households in meeting part of the increased cost of food. Eligible households are entitled to 10% of an amount of monthly grocery purchases that is set at EUR 220 a single-member household, increased by EUR 100 for each additional member and up to a total ceiling of EUR 1,000. Payment is effected in the form of a digital debit card issued for that purpose or of a transfer to a bank account specified by the beneficiary. In the former case, the subsidy is credited to the card on a monthly basis and can be redeemed at grocery stores, farmer markets and other food retailers. In the latter case, the subsidy amount is 80% of the initial entitlement, is paid on a quarterly basis and can be used for any purchases. It is explicitly stated that such subsidy is non-transferrable and exempt from any tax, deduction, levy or contribution, attachment or garnishment or set-off against any debt to government or banks.

Law 5018/2023 of February included provisions relevant to the military and civilian personnel of the armed forces (establishment of providence funds, salary matters, etc.). During parliamentary debate on the draft law, a number of provisions within the remit of the Ministry of Labour and Social Affairs were added, in particular: (a) Advance payment against supplementary pension to retirement, disability and survivor pensioners, provided that the main pension has been awarded but the supplementary pension application has been submitted before 1 July 2022 and is still pending. Such advance payment is disbursed by 15 March 2023 without any other action by the beneficiary. For each month of delay in supplementary pension award from the submission of the application to 31 January 2023, the advance payment amounts to EUR 100 for retirement pensioners and EUR 50 for disability and survivor pensioners. (b) Speeding up the processing of supplementary pension applications through the fast-track procedure established by Article 48 of Law 4921/2022. (c) Unconditional extension for one year (until 29 February 2024) of public health insurance coverage for vulnerable social groups (long-term unemployed, uninsured elderly persons). (d) Renewal of the 2022 health insurance regime for non- employee workers (exceptional coverage until 31 May irrespective of any social security contribution arrears, and extension of coverage until 29.2.2024 where contributions to the health component for 2022 are fully paid. (e) Payment of Easter bonus to suspended workers of fur manufacturing businesses affected by the consequences of the war in Ukraine.

In the context of the annual adjustment envisaged by **Law 4670/2020**, Ministerial Decision **9801/2023** increased by 9.64% the ceiling on pensionable earnings and the amounts of main pension contribution brackets for the self-employed and independent professionals, effective from 1 January 2023.

Law 5024/2023 of February addressed matters relating to the Unified Property Ownership Tax (ENFIA), including an exemption from 2023 ENFIA of properties in areas hit by natural disasters and special provisions for listed buildings and historical monuments, and brought about improvements to the out-of-court settlement mechanism.

Law 5036/2023 of March introduced additional support measures in response to the energy crisis, including:

- Establishment of a comprehensive framework for the payment of debts to tax administration, social security and local authorities. Specifically, debtors who, by 1 February 2023, have dropped out of 120 or 72 instalment arrangements may have the arrangement reinstated for their remaining debt, provided that, by 31 July 2023, they pay two monthly instalments, i.e., the one currently due and the longest outstanding. For debts that became overdue between 1 November 2021 and 1 February 2023, an arrangement of up to 72 monthly instalments is available to debtors who only fell into arrears following the start of the energy crisis.

- Emergency one-off cash transfer to e-EFKA main retirement, disability or survivor pension beneficiaries (as at December 2022) pensioners whose pensions have increased by less than 7.75% or not at all during 2023. The amount of the support depends on total net pre-tax main pension income in March 2023 and its change relative to December 2022. For total pre-tax main pension income of up to EUR 1,100, the support is EUR 200, EUR 250 or EUR 300 if the pension increase such income has increased by 3.5%-6.99%, 3.49% or less, or zero, respectively. For total pension income of EUR 1,100-1,600, the amount is EUR 200 or EUR 250, if the pension increase over December 2022 is up to 3.49% or nil, respectively.

- Extension for further six months and until the end of the year of the temporary favourable VAT regime (reduced rate of 13% or super-reduced rate of 6%, depending on the category) applying to a number of goods and services, such as dialysis lines, defibrillators, passengers transport, coffee and non-alcoholic beverages, cinemas, gyms and dancing schools.

- Same as in last year, refund of the special consumption tax (EFK) on diesel oil consumed for agricultural use.

- Partial advance payment of support to farmers suffering damages to crops because of natural disasters.

- A 3% discount on the total amount of income tax if paid one-off by 31 July 2023.

- Same as in last year, the tax on personal and corporate income earned in fiscal year 2022 may be paid in eight equal monthly instalments starting from July 2023 and by February 2024 at the latest.

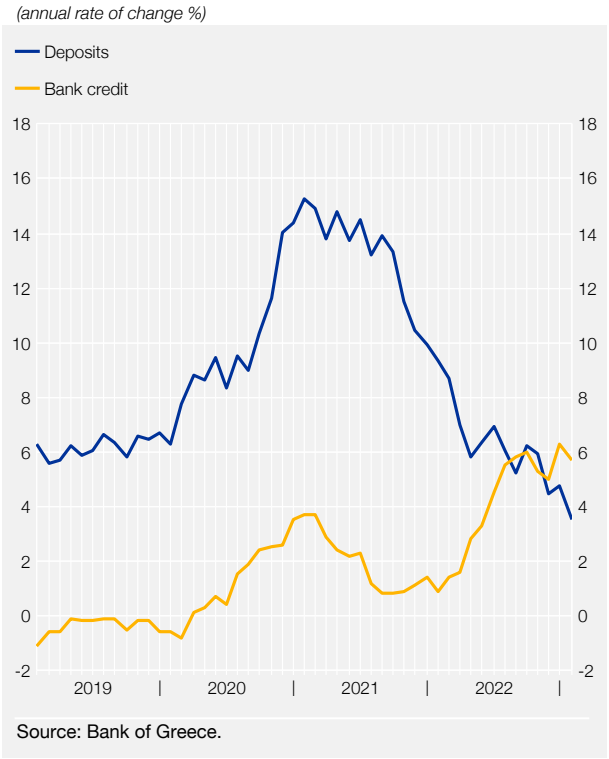
- Taxation of European Parliament Members' remuneration and pensions according to the standard income tax scale.

Finally, a draft law was tabled in March, with measures to support the families of the victims and the injured in the train crash at Tempi on 28 February 2023.

VI MONEY, CREDIT AND BANKS

The increase in the stock of bank deposits and stronger credit expansion to non-financial corporations, which have marked the recent years, continued throughout 2022 (see Chart VI.1). Inflationary pressures, exacerbated by the war in Ukraine, called for a monetary policy response at the euro area level. The increase in Eurosystem key interest rates gradually passed through to bank interest rates in Greece, with multiple effects on domestic credit growth and on the evolution of deposits with Greek banks that will take some time to unfold due to time lags. At least until the end of 2026, loans under the Recovery and Resilience Facility (RRF) are set to provide considerable support to domestic bank credit and contain funding costs for domestic firms.

Chart VI.1 Domestic private sector bank credit and deposits (January 2019 - January 2023)



Source: Bank of Greece.

Banks' return to profit in 2022 is significant, as among other things it becomes more likely that a virtuous circle of financing will be set in motion. Profitability prospects are improving with the gradual exit from the low interest rate environment and emerging signs of stronger bank credit growth. On the other hand, profitability is dampened by rising interest payments, as banks issue bonds amid increased borrowing costs globally in order to meet the minimum requirement for own funds and eligible liabilities (MREL). A dampening effect should also be expected from an increase in the cost of credit risk in an environment of slowing economic activity. Against this background, containing funding costs remains a key challenge for Greek banks, with a potential upgrade of their credit ratings making a favourable contribution to this end.

1 OVERVIEW OF DEVELOPMENTS AND PROSPECTS[1]

In 2022 the net and the gross flow as well as the growth rate of bank credit to non-financial corporations (NFCs) remained higher than the levels seen in the past few years, before and after the outbreak of the pandemic. Nominal GDP growth and higher house prices in particular boosted demand for bank loans, while the supply of bank credit also benefited from the ample liquidity provided by the Eurosystem to its counterparties, the increased availability of bank deposits and the progress made by banks in cleaning up their balance sheets of most non-performing loans. Box VI.3 outlines domestic banks' perceptions of the factors that influenced bank loan supply and demand in Greece and draws comparisons with perceptions at the euro area level. The Pan-European Guarantee Fund of the EIB Group as well as other guarantee and co-funding programmes

1 The cut-off date for information and data used in this chapter is 24 March 2023.

also supported the provision of business loans by domestic banks (see Box VI.1). The effective use of loans under the RRF will further underpin the financing of Greek firms up until end-2026.

Domestic private sector deposits continued to rise in 2022, although their annual growth rate moderated. The key driver of the increase in private deposits was higher GDP. Conversely, the release of the pandemic-related pent-up demand by households and higher costs for businesses (given their strong reliance on imported products or raw materials), as well as the fall in real deposit rates worked in the opposite direction.

After falling for nearly ten years, the average bank lending rate for NFCs rose in 2022, in line with the normalisation of the single monetary policy stance delivered by the Eurosystem through key interest rate hikes, among other measures. The average lending rate for households also rose, as a result of increases in the interest rates on consumer and housing loans.

Faster nominal GDP growth, due to higher real GDP, coupled with rising domestic inflation, has a positive effect on bank credit expansion and on the level of bank deposits. In fact, to the extent that rising inflation translates into lower real interest rates –associated with a rise in inflation that is expected to prevail until the repayment of the financial assets (in this case, deposits and loans)– which are not offset by higher nominal interest rates, its effect becomes even more favourable on credit expansion (but unfavourable on the level of deposits). On the other hand, the ongoing tightening of the single monetary policy is exerting an upward pressure on real interest rates. Against this background, domestic credit expansion will tend to decline directly, due to the higher cost of bank credit, and indirectly, because of the ensuing economic slowdown, compared with an environment of very low real interest rates. The inflow of RRF funds into the country is expected to have the opposite effect, i.e. it will support investment, GDP, credit growth and bank deposits, partly on account of reduced funding costs for businesses and partly owing to increased availability of external financing.

In 2022, the NPL ratio (non-performing loans to total loans) declined substantially, gradually converging towards the European average. Capital adequacy ratios improved relative to December 2021. In the first nine months of 2022 Greek banking groups posted profits, mainly as a result of lower loan-loss provisions and of non-recurring income. The increase in interest rates is expected to boost net interest income for the Greek banking sector, although at the same time it implies a rise in interest payments, as banks will be issuing bonds in an environment of increased borrowing costs globally so as to meet the minimum requirements for own funds and eligible liabilities (MREL) (see Box VI.4). The measures to support businesses and households, as well as increased lending on favourable terms under NextGenerationEU (NGEU), are bolstering economic activity, with an ultimate positive impact on banks' assets.

2 BANK CREDIT

The annual rate of bank credit expansion to the private sector picked up markedly in 2022, after the slowdown observed in 2021 (see Chart VI.2), and rose to a higher average annual level compared to one year earlier. The path of this rate in 2022 mainly reflects stronger credit expansion to NFCs.

The annual rate of change in outstanding bank credit to general government moderated in 2022, continuing its downward trend since the second half of 2021. This rate remained quite elevated in 2022, on average, and reached 17.0%, against 61.0% in 2021, as purchases of Greek government securities by commercial banks and the Bank of Greece (under the PEPP) continued.

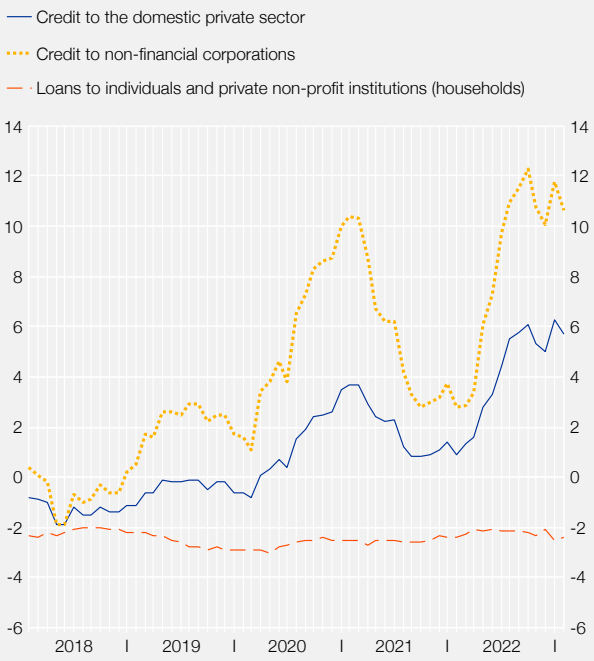
In greater detail, the annual rate of increase in credit to NFCs rebounded strongly in 2022, peaking in September at 12.3%, which is comparable with the historical highs seen before the out-

break of the euro area debt crisis (May 2009: 12.7%). Thereafter, in the two months up to November, it moderated by 2 percentage points to stand at 11.8% in December (January 2023: 10.6%), against 3.7% in December 2021 (annual average: 8.3%; 2021: 5.7%).

The average monthly net flow of credit to NFCs almost tripled in 2022 to EUR 570 million, up from EUR 206 million in 2021 (2020: EUR 559 million). Similarly, the average monthly gross flow of bank loans with a fixed maturity to NFCs increased markedly to EUR 1.9 billion in 2022 (of which only one-fifth is related to loan restructuring agreements), from EUR 988 million in 2021, overshooting by a wide margin the historical high of 2020 (EUR 1,350 million). In addition, the average monthly outstanding amount of bank loans without a fixed maturity (i.e. credit lines and other credit facilities) rose by EUR 1.5 billion (+25%) relative to 2021.

Chart VI.2 Bank credit to the private sector (January 2018 - January 2023)

(annual rate of change %)



Source: Bank of Greece.

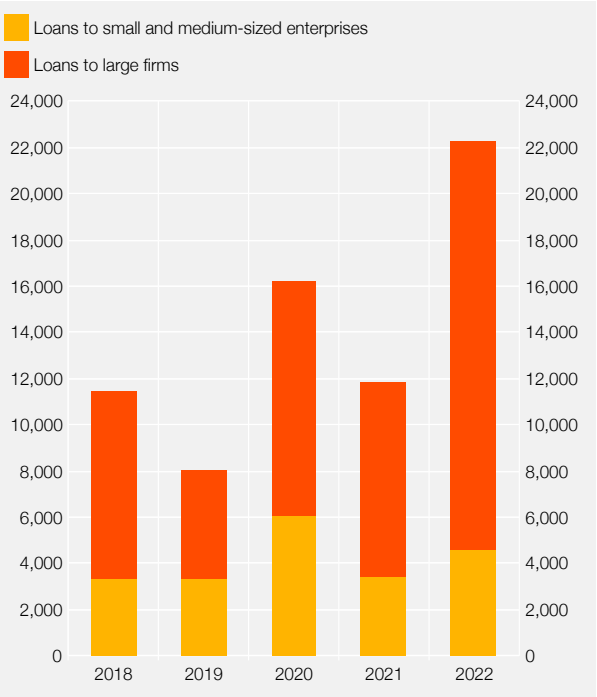
The strong recovery of new bank loans to NFCs in 2022 was mainly driven by credit to large firms. The average monthly gross flow of loans (with a fixed maturity) to large firms (EUR 1.5 billion) more than doubled in 2022 compared to 2021 (EUR 707 million). It should not be overlooked that the corresponding flow to small- and medium-sized enterprises (SMEs) (EUR 379 million) also increased by 35% in annual terms and accounted for one-fifth of the total flow of lending to NFCs (see Chart VI.3). The provision of new loans to SMEs remained considerable thanks to the contribution of the financial instruments of the EIB Group, whereas backing from the credit support schemes of the Hellenic Development Bank (HDB) was very low in 2022, because most of the schemes were associated with the pandemic emergency.[2]

More specifically, the revival of credit expansion to NFCs in 2022 was driven by certain demand- and supply-side factors. The strong upswing in economic activity in 2022 also fuelled demand for new business loans. Moreover, the high annual inflation rate pushed upwards firms' expenses for nominal investment, as well as their liquidity needs for working capital expenses, which were amplified by high energy costs (see Boxes VI.2 and VI.3). On the other hand, the higher nominal interest rates on loans to NFCs in 2022, on average, are estimated to have had an adverse impact on demand. However, the real ex post interest rate remained negative throughout 2022. Furthermore, the expiry of measures to address the pandemic, notably the repayable advance measure, spurred firms (in vulnerable sectors) to substitute government resources for bank credit, to the extent that these firms have not yet fully recovered from the effects of the pandemic. By contrast, the outstanding amounts of the pandemic-related HDB schemes held by firms as bank debt imply that firms continue to benefit from such resources, given their relatively longer repayment period. On the supply side, the drastic further reduction of NPLs as a percentage of total loans in 2022 to single digits in September strengthened banks' ability to provide credit to NFCs. Moreover, banks kept their overall liquidity at satisfactory levels, as a result of sizeable customer deposit inflows in 2022 and of Eurosystem financing. It should be noted that in 2022 the increase in total credit to NFCs was greatly supported by the extensive

2 It should be noted that in 2021 loan disbursements to SMEs through HDB schemes accounted for one-third of the total gross flow of bank loans to SMEs (plus sole proprietors).

Chart VI.3 Bank loans with a defined maturity to NFCs (2018 - 2022)

(annual cumulative gross flows,[1] EUR millions)

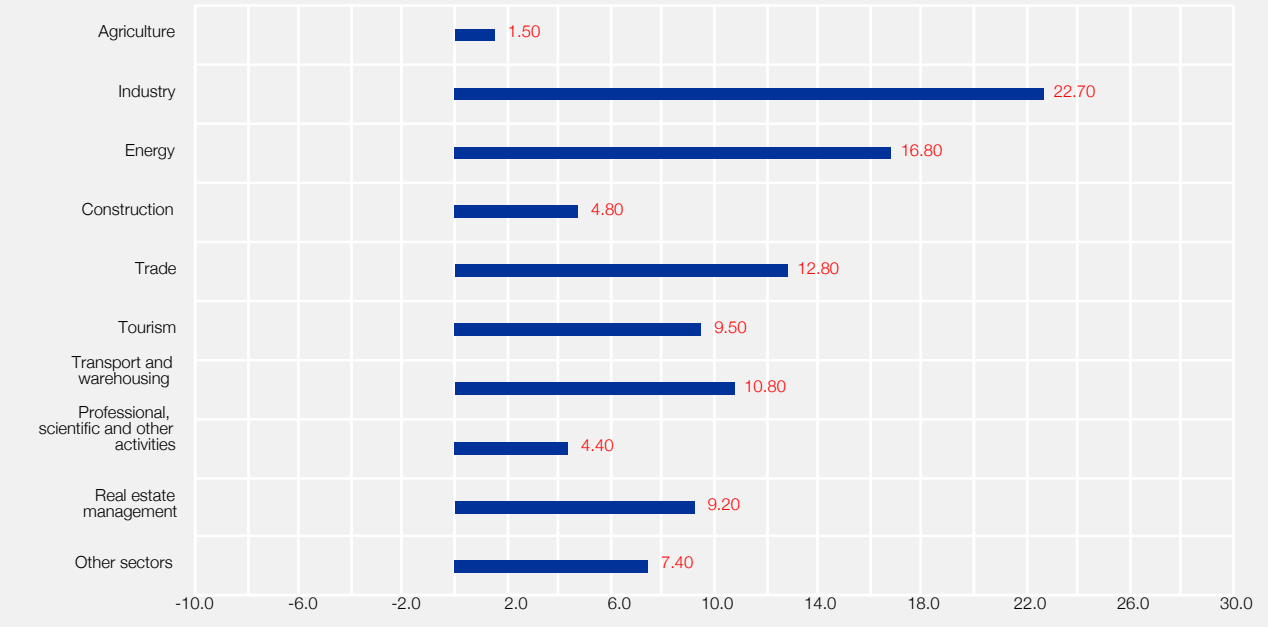


Source: Bank of Greece.
1 Gross flow equals the amounts agreed in new bank loan contracts, as captured by interest rate statistics. Under Bank of Greece Governor's Act 2672/5.5.2014, effective since June 2014, forbearances are not included in the amounts of new loans.

provision of new bank loans through the financial instruments of the EIB Group (see Box VI.1) and in particular through the guarantee scheme backed by the Pan-European Guarantee Fund. By way of illustration, disbursements of new bank loans to firms using this guarantee scheme amounted to EUR 3.3 billion in 2022 as a whole, accounting for 4.8% of outstanding credit to businesses and sole proprietors in December 2022. Furthermore, corporate loans under the RRF started to be granted in the second half of the year. It should be noted that such loans comprise: (i) government loans using funds from the Recovery and Resilience Facility ("RRF loans") that banks redistribute to NFCs for the purpose of financing selected investment projects and which are not included in bank lending data; and (ii) loans that relate to the co-financing required of banks using own resources ("co-financing loans") and which have been taken into account in the figures of bank lending to NFCs. During this six-month period, disbursements of co-financing loans, i.e. using purely banks' own resources, were limited. However, it is important that new co-financing loan agreements had picked up by the end of 2022, which means that higher flows of loan disbursements to NFCs can be recorded in 2023.

Chart VI.4 Shares of individual sectors in the cumulative gross flow of total bank credit to NFCs in 2022

(percentages %)

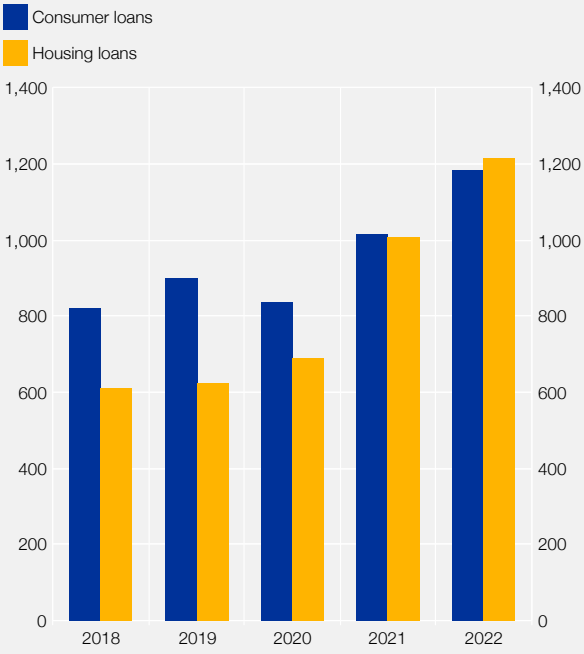


Source: Bank of Greece and AnaCredit database.
Note: Total gross flow of bank credit to NFCs in 2022 amounted to EUR 12.4 billion.

Chart VI.4 presents a percentage breakdown of the total gross flow of loans to NFCs in 2022, by economic sector (according to the Bank of Greece's AnaCredit database). Industry, energy and trade were the sectors with the highest shares in the total flow of business loans. More specifically, new loans to the industrial sector in 2022 amounted to EUR 2.8 billion, i.e. 22.7% of the total flow of loans to NFCs (EUR 12.4 billion). The corresponding flow of loans to the energy sector came to EUR 2 billion (16.8% of total flow) and that to trade stood at EUR 1.6 billion (12.8%). Moreover, in December 2022 the highest shares in total outstanding bank loans to NFCs were accounted for by industry (23.4%), trade (19.7%) and tourism (14.0%) (followed by energy: 12.0% and transport-warehousing: 7.7%). It should be noted that in 2020-21 the bulk of new bank loans to NFCs had been channelled to those three sectors through HDB credit support programmes.

Chart VI.5 Bank loans with a defined maturity to households (2018 - 2022)

(annual cumulative gross flows,[1] EUR millions)



Source: Bank of Greece.
1 Gross flow equals the amounts agreed in new bank loan contracts, as captured by interest rate statistics. Under Bank of Greece Governor's Act 2672/5.5.2014, effective since June 2014, forbearances are not included in the amounts of new loans.

Turning to loans to households, the annual rate of change in consumer loans strengthened to 1.2% in December 2022 (January 2023: 1.7%), compared with -0.3% in December 2021, while the corresponding rate for housing loans worsened (-3.6% in December 2022, from -3.0% in December 2021; January 2023: -3.6%). The monthly gross flow of both consumer and housing loans with a defined maturity increased on average in 2022 relative to 2021 (consumer loans: 2022: EUR 98 million, 2021: EUR 84 million; housing loans: 2022: EUR 101 million, 2021: EUR 84 million) (see Chart VI.5).

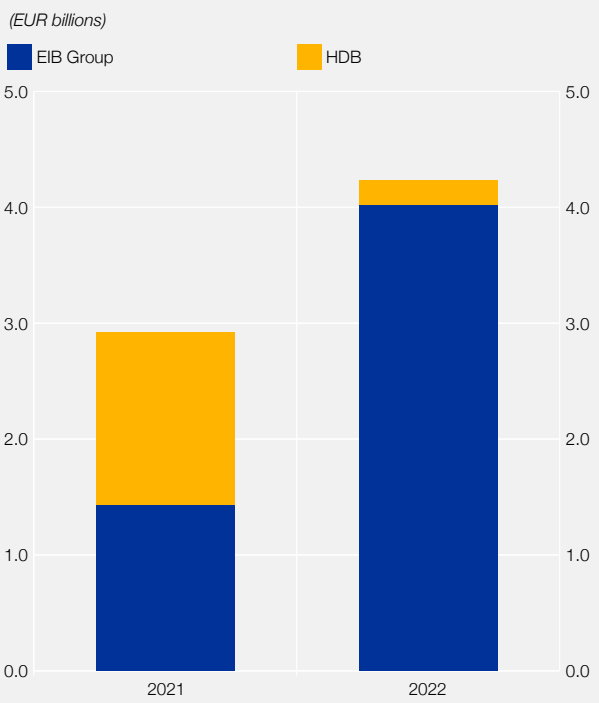
The outlook for credit expansion to the private sector is adversely affected by the tightening of monetary policy and the rise in bank lending rates. The forthcoming slowdown in GDP growth in 2023 will weigh on demand for loans by firms and households as well as on banks' loan supply, as credit risk will increase due to the ensuing deterioration in the financial condition of NFCs and households. The increased credit cost will also affect the debt servicing capacity of private sector borrowers with floating-rate loans, in particular households, whose real income has already been eroded by inflation. Overall, the annual rate of increase in bank lending to NFCs is expected to moderate but to remain robust, assisted by banks' co-financing loans –for firms' investment projects– which are provided through financial instruments under the National Strategic Reference Framework − ESPA (2021-2027) programmes and the RRF.

Box VI.1

CONTRIBUTION OF FINANCIAL INSTRUMENTS TO THE EXTERNAL FINANCING OF DOMESTIC BUSINESSES AND PROFESSIONALS

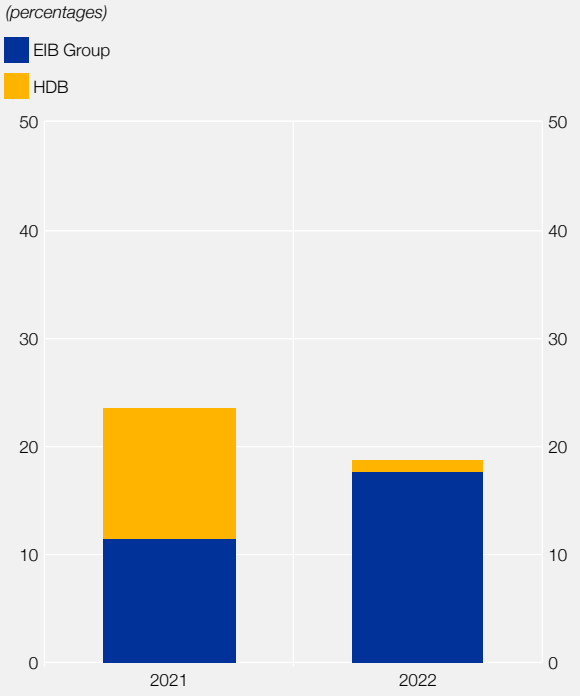
In 2022, financial instruments (FIs) helped direct resources from the European Structural Funds into supporting the liquidity of Greek enterprises and implementing strategic investment. The use of FIs to channel public resources

Chart A Bank loan disbursements associated with financial instruments to non-financial corporations and professionals



Sources: Hellenic Development Bank and Hellenic Bank Association.
Note: HDB: Hellenic Development Bank; EIB Group: European Investment Bank (EIB) and European Investment Fund (EIF).

Chart B Share of financial instruments in new bank loans to non-financial corporations



Sources: Hellenic Development Bank and Hellenic Bank Association. Bank of Greece calculations.
Note: HDB: Hellenic Development Bank; EIB Group: European Investment Bank (EIB) and European Investment Fund (EIF).

into the real economy was promoted considerably at the European level in 2020 – to compensate for the economic and social consequences of the pandemic – and has been a standard and efficient policy tool ever since.

2022 results

In Greece, the liquidity of domestic enterprises was supported in 2022, as in the previous year, mainly through debt and guarantee instruments.[1] These instruments utilise public national and European resources and were mostly deployed with the intermediation of the domestic banking system. More specifically, in 2022, non-financial corporations (NFCs) and professionals received new loans amounting to EUR 4.2 billion backed by instruments managed by the European Investment Bank (EIB) Group[2] and the Hellenic Development Bank (HDB) (see Chart A). Compared with 2021, 2022 saw an increase in disbursements of bank loans related to FIs, which is mainly attributable to the utilisation of available resources under the Pan-European Guarantee Fund (EGF).

In 2022, in aggregate terms, around 1/5 of new bank loans to NFCs and professionals was associated with programmes offered by the EIB Group and the HDB (a little less than in 2021, see Chart B). These instruments gave a major boost to the liquidity of micro-, small- and medium-sized enterprises (SMEs). Indicatively, during the period under review, more than half of the bank loans to micro enterprises, SMEs and professionals were associated with guarantee or co-financing schemes (EUR 2.9 billion,[3] out of a total of EUR 5.0 billion[4]). The greater contribution of FIs to SMEs' financing is mainly attributable to quotas related to the allocation of funds offered.

1 The most important financial instruments include: (a) debt instruments; (b) risk sharing instruments/guarantees; and (c) equity instruments.
2 The EIB Group consists of the European Investment Bank (EIB) and the European Investment Fund (EIF).
3 Financial programmes for SMEs include all programmes under the European Investment Fund (EIF) as well as the share of HDB loans to SMEs and micro enterprises.
4 The amount of credit covered by public funds, for which the credit risk is carried by the State (fiduciary loans).

Moreover, SMEs' demand for cheaper borrowing through FIs is expected to be comparatively higher, due to their limited access to alternative sources of finance.

Across individual programme categories, the largest share (85%) referred to guarantee programmes, under which the State assumes part of the credit risk, otherwise to be carried by the lender. Thus, the bank is obliged to reduce its collateral requirements. At the same time, capital requirements for credit institutions are lower compared with typical lending without State guarantees. In terms of volumes, the Pan-European Guarantee Fund contributed the most,[5] covering loans amounting to EUR 3.3 billion (i.e. around 4/5 of total bank lending associated with FIs), with EUR 2.5 billion granted to SMEs.

Comparison with other euro area countries

Greece showed remarkable performance in absorbing resources from the EU Structural and Investment Funds through FIs during the 2014-20 period. According to a recent report by the European Commission,[6] in terms of total value, Greece ranked first among EU Member States regarding debt instruments and third regarding guarantees.

Recovery and Resilience Facility

In addition to FIs, domestic businesses have been assisted by low interest loans granted in 2022 under the Recovery and Resilience Facility (RRF). These are in essence co-funded loans, with co-financing arrangements in the total investment expenditure: up to 50% participation of public resources (RRF loans),[7] a minimum of 30% banking leverage (bank loans) and a minimum of 20% own participation. In 2022, loan contracts amounted to EUR 2.5 billion. The minimum interest on RRF loans was 0.35% and, since 24 October, it has remained at 0.35% for small and very small businesses and has risen to 1% for other businesses.[8] In aggregate terms, in 2022 and in January-February 2023, domestic businesses received bank lending amounting to EUR 0.6 billion, with the bulk of disbursements carried out since the fourth quarter of 2022.

Outlook

In the future, domestic businesses are expected to benefit from:

(a) Supply of new loans under the Recovery and Resilience Facility: in addition to the EUR 5.3 billion already received, an inflow of EUR 7.4 billion is expected, aiming to co-finance private investment.[9]

(b) Setting up new programmes, by utilising resources under the new Multiannual Fiscal Framework 2021-2027. The new programmes seek to support European Commission priorities and new national priorities, including a reinforced methodology for climate-related actions. They might also co-finance Hellenic Development Bank (HDB) schemes, such as the "Economise-Autonomise" scheme, aiming to support energy autonomy in housing, or the "Entrepreneurship Fund", focusing on financing SMEs by providing loans for investment purposes and working capital on favourable terms.

5 This was activated in 2020 as part of the emergency measures in response to the pandemic.
6 See European Commission, "Summaries of the data on the progress made in financial instruments – Situation as at 31 December 2020" (November 2022).
7 Including credit covered by public funds under the Recovery and Resilience Facility.
8 See Joint Ministerial Decision, Government Gazette B 5473/24.10.2022.
9 Investment pillars: (a) digital transformation; (b) green transition; (c) extroversion; (d) achieving economies of scale through collaborations, acquisitions and mergers; and (e) innovation-research and development.

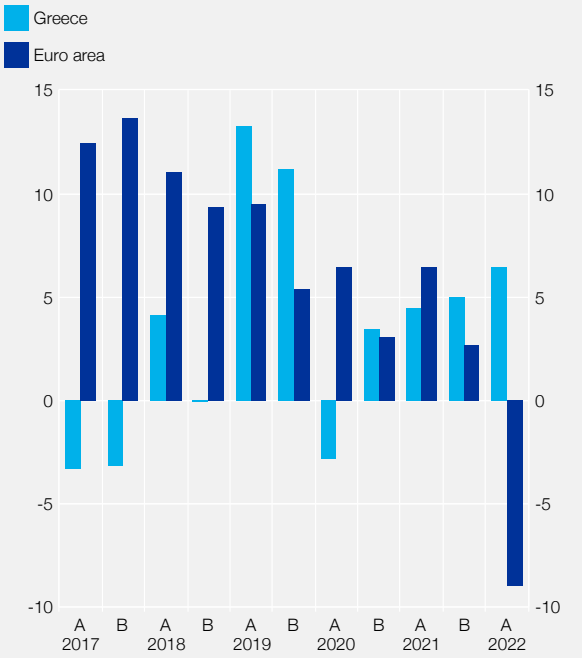
Box VI.2

FINANCING CONDITIONS FOR SMEs: INSIGHTS FROM THE SAFE SURVEY

The results of the latest round of the Survey on the Access to Finance of Enterprises (SAFE) show that in April-September 2022 small and medium-sized enterprises in Greece reported an increase in the availability of bank

Chart A Change in the availability of bank loans to SMEs in Greece and the euro area

(in the corresponding six months,[1] net percentage of respondents[2])



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted every six months and covers the periods of April-September (round A) and October-March (round B).
2 The net percentage is the percentage of firms reporting that the availability of bank credit increased minus the percentage of firms reporting that it decreased.

loans, supported by banks' increasing willingness to provide credit, although, according to firms, the general economic outlook had a negative impact (albeit not as much as in the euro area). By contrast, in the euro area the availability of bank loans declined, mainly on account of banks' reduced willingness to provide credit, but also due to a significant deterioration in the economic environment. At the same time, financing terms and conditions deteriorated, as enterprises reported a large increase in bank interest rates as well as in other charges, fees and commissions on bank lending in Greece. In fact, the euro area experienced the largest deterioration since the launch of the survey in 2009.

Availability of external financing to small and medium-sized enterprises

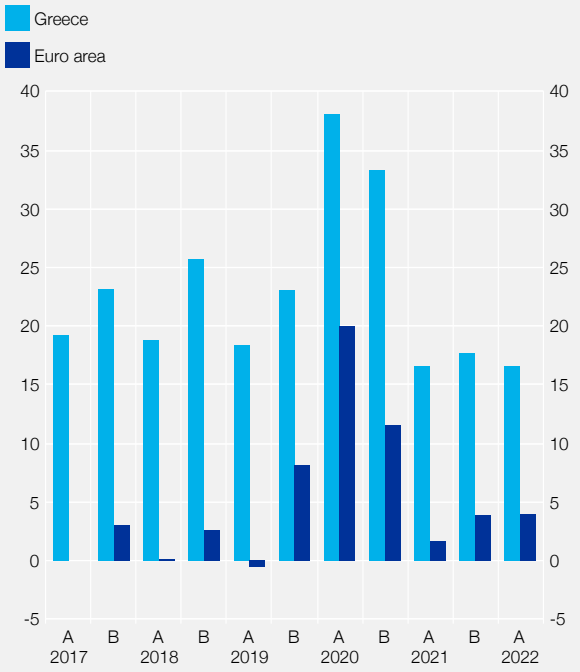
In the most recent survey round, SMEs in Greece reported a positive net percentage[1] in terms of the evolution of the availability of fixed-term bank loans (6%) (see Chart A) as well as credit lines or overdrafts (10%). By contrast, for the first time since the April-September 2014 period, euro area firms reported a deterioration in the availability of bank loans (-9%) (see Chart A) as well as credit lines or overdrafts (-5%). With regard to their access to other non-bank sources of external financing, after a deterioration over the October 2021-March 2022 period, in the latest survey round SMEs in Greece signalled increases in the availability of leasing or hire-purchase[2] (2%) and trade credit (8%). At the same time, in the euro area firms reported no change in the availability of leasing and hire-purchase services and a deterioration in the availability of trade credit (-3%).

With respect to factors affecting the availability of external financing, firms in Greece continued to report a positive impact of banks' willingness to provide credit (12 %), while in the euro area firms reported a negative impact in the most recent round of the survey (-2 %). In Greece, contrary to the previous period, the overall impact of the factors determining firms' solvency[3] was positive, while in the euro area firms reported a positive but significantly weaker impact. By contrast, firms reported a negative impact due to the general economic outlook[4] in Greece (-13%) and much more so in the euro area (-44%). In addition, in contrast with successive previous findings after the April-September 2020 period indicating the supportive role of fiscal measures,[5] in the latest survey round firms reported that the fiscal support measures had a negative impact on the availability of external financing (Greece: -4%, euro area: -16%).

1 The results refer to net percentages of respondents, which are defined as the percentage of enterprises reporting that during the past six months a given factor (e.g. availability of bank loans) increased minus the percentage of those reporting that it declined.
2 In the survey, leasing or hire-purchase is treated as a financing source which enables firms to obtain the use of a fixed asset (for example, cars or machinery) in exchange for regular payments, but without immediate ownership of the asset.
3 This is a sum of the net percentages of three separate factors: (a) firm's credit history; (b) firm's own capital; and (c) firm-specific outlook.
4 A negative net impact means that the enterprises reporting that macroeconomic developments favourably affected the availability of external financing were less than those reporting a negative impact.
5 SMEs' access to public financial support measures includes, *inter alia*, public co-financing or guarantee schemes for bank loans.

Chart B Change in SMEs' needs for bank loans in Greece and the euro area

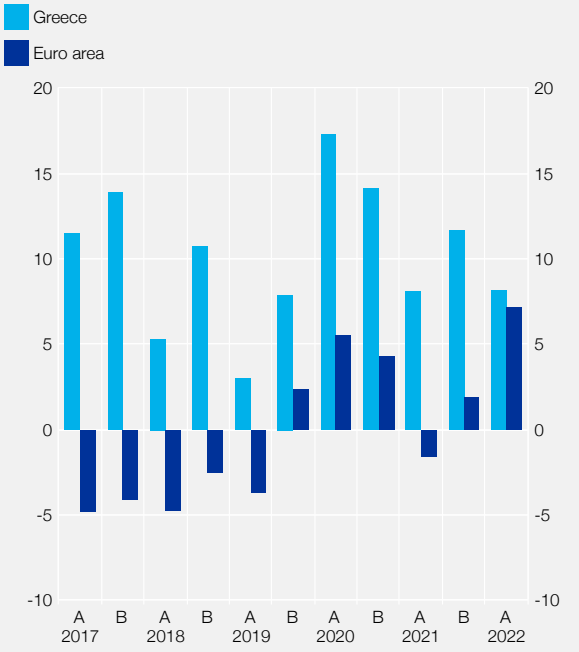
(in the corresponding six months,[1] net percentage of respondents[2])



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted every six months and covers the periods of April-September (round A) and October-March (round B).
2 The net percentage is the percentage of firms reporting that firms' needs for bank loans increased less the percentage of firms reporting that they decreased.

Chart C Change in the SMEs external financing gap indicator in Greece and the euro area

(in the corresponding six months,[1] weighted net percentage of respondents[2])



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted every six months and covers the periods of April-September (round A) and October-March (round B).
2 The external financing gap indicator is calculated as the weighted average of financing gaps (needs minus availability) for each of the five sources of external financing: a) fixed-maturity bank loans, b) credit lines or bank overdrafts, c) trade credit, d) equity, and e) debt securities.

SMEs' external financing needs

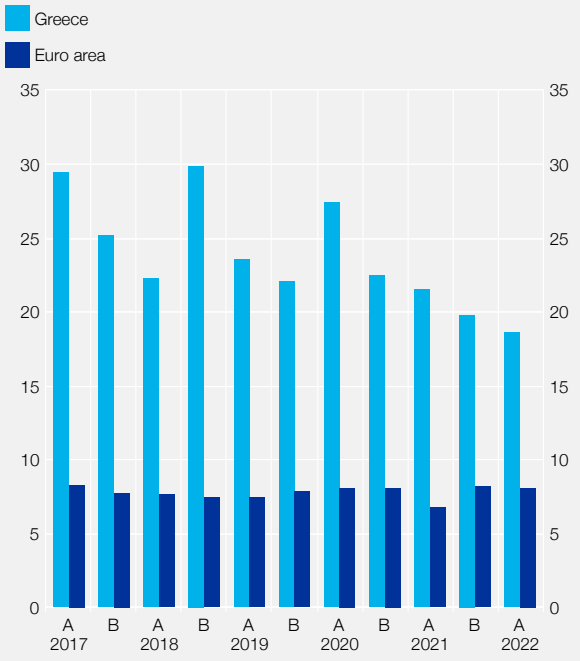
Compared with the findings in the period immediately after the outbreak of the COVID-19 pandemic, in the latest round of the survey firms reported for the third consecutive round weaker increases in their needs (i.e. demand) for fixed-term bank loans (Greece: 17%, euro area: 4%) (see Chart B) and for credit lines or overdrafts (Greece: 28%, euro area: 11%), as well as for trade credit (Greece: 22%, euro area: 13%) and leasing or hire-purchase (Greece: 11%, euro area: 11%).

The improvement in the availability of bank credit, coupled with a decline in firms' external financing needs, contributed to a decline in the external financing gap indicator in Greece to levels similar to the euro area average (Greece: 8%, euro area: 7%), as the significant reduction in the availability of bank loans in the euro area led to a widening in the respective financing gap indicator (see Chart C). At the same time, firms reported that the overall financing obstacles indicator decreased slightly in Greece (19%), while it remained unchanged in the euro area (8%) (see Chart D).

In the period under review, the decline observed after the first phases of the pandemic in the percentage of firms that applied for bank loans continued (Greece: 20%, euro area: 22%), while the percentage of SMEs that were discouraged from applying for fear of rejection remained low (Greece: 15%, euro area: 5%). The percentage of firms that did not apply for loans due to sufficient internal funds increased in Greece (38%), while it decreased slightly in the euro area (44%). As regards the outcome of bank loan applications, the percentage of applications that were fully or mostly granted increased significantly in Greece (64%), approaching the record highs of the April-September 2010 period, bringing it close to the European average (70%). At the same time, the rejection rate fell in Greece (9%) to its lowest level since the launch of the survey in 2009, while it recorded a small increase (6%) in the euro area, though remaining at relatively low levels.

Chart D Change in the SMEs financing obstacles indicator in Greece and the euro area

(in the corresponding six months,[1] sum of net percentages of respondents[2])



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted every six months and covers the periods of April-September (round A) and October-March (round B).
2 The overall financing obstacles indicator is calculated as the sum of the percentages of firms reporting loan applications that were rejected or loan applications for which only a limited amount was granted, as well as the percentage of firms which refused to take the loan due to high borrowing costs and those that did not apply at all out of fear of rejection by the bank.

Main problems of small and medium-sized enterprises

In the most recent survey round, most SMEs of the sample reported that their main concerns were the lack of skilled labour (Greece: 23%, euro area: 28%) and the increase in production or labour costs (Greece: 18%, euro area: 18%); the next major problem of firms was access to external financing in Greece (14%) and finding customers in the euro area (12%).

Bank financing terms and conditions

As regards bank financing terms and conditions, firms reported exceptionally high increases in bank interest rates[6] and other charges, fees and commissions on bank lending (net percentages: 30% and 46% respectively), while the euro area recorded the highest net percentages (63% and 53% respectively) since the launch of the survey in 2009.

Conclusions

In contrast to the euro area, small and medium-sized enterprises in Greece reported an increase in the availability of bank loans, which, coupled with firms' reduced external financing needs, contributed to the narrowing of the external financing gap indicator to levels close to the euro area average. Reflecting the increase in ECB interest rates, small and medium-sized enterprises in Greece and, to an even larger extent, in the euro area reported exceptionally high increases in bank lending rates. At the same time, both in Greece and the euro area, the main problems of most of the small and medium-sized enterprises in the sample were increased production or labour costs and finding skilled labour.

6 Respondents were asked whether the level of interest rates on bank loans, overdrafts and credit lines increased.

Box VI.3

THE BANK LENDING SURVEY[1]

The latest rounds of the Bank Lending Survey, which look at developments in 2022, provide evidence of increasing demand for business and consumer credit in Greece. At the same time, initial growth in loan demand in the euro area was subsequently offset by negative developments, particularly in housing loans and gradually in consumer and corporate loans. On the supply side, banks in Greece reported that credit standards remained broadly unchanged, but overall terms and conditions on business financing eased somewhat. In the euro area, banks mostly reported a tightening in credit standards, as well as in terms and conditions across all loan categories.

Loan demand

Credit institutions in Greece estimate that firms' demand for loans recorded a quarter-on-quarter increase in 2022 (see Chart A). Regarding the factors contributing to this development, banks mainly reported firms' increased

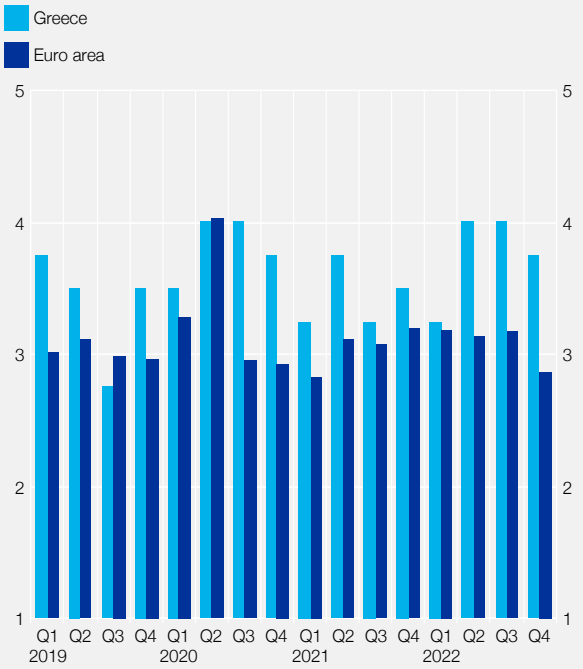
1 The Bank Lending Survey (BLS) is conducted by the Eurosystem on a quarterly basis, using a sample of about 140 banks across the euro area, including the four Greek systemic banks.

needs to finance fixed investment, as well as inventories and working capital, while the need for mergers/acquisitions and restructurings contributed to a lesser extent. In the first nine months of 2022, euro area banks reported small increases in demand for business loans (see Chart A), mainly supported by firms' needs for inventory and working capital financing. By contrast, in the fourth quarter, euro area credit institutions recorded a decline in demand for business loans, mainly reflecting lower needs for fixed investment financing and the impact of the rise in the general level of interest rates.

Banks also reported mixed changes in households' demand for loans. Specifically, demand for housing loans declined in Greece in 2022, except in the first quarter, driven mainly by an increase in the general level of interest rates and deteriorating consumer confidence, although improved housing market prospects played a supportive role. Similarly, in the euro area, demand for housing loans declined during most of 2022, driven mainly by the higher general level of interest rates, as well as by deteriorating consumer confidence and housing market prospects. By contrast, with the exception of the first quarter, credit institutions in Greece reported increases in demand for consumer credit and other loans, supported by increased spending on durable consumer goods. In the euro area, the initial growth (first and second quarter) in demand for consumer credit was offset by ensuing negative developments.

Chart A Change in demand for loans by non-financial corporations in Greece and the euro area[1]

(in the corresponding calendar quarter; average[2])



Source: ECB/Bank of Greece, Bank Lending Survey.
1 Banks' perceptions of changes in demand for loans over the corresponding calendar quarter.
2 Average of banks' responses using a five-point scale, where demand for loans 1 = "decreased considerably", 2 = "decreased somewhat", 3 = "remained unchanged", 4 = "increased somewhat", and 5 = "increased considerably".

Loan supply

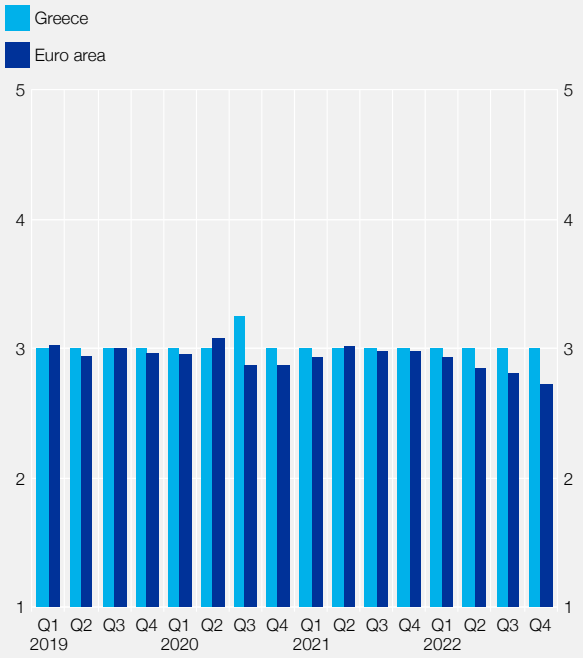
According to the banks surveyed, credit standards in Greece remained unchanged across all loan categories (see Chart B). In the euro area, credit standards for business loans recorded a small but durable tightening in 2022 (see Chart B), mainly due to the deteriorating outlook for the economy in general, and the industry- or firm-specific situation in particular, as well as banks' lower risk tolerance. As regards housing loans, credit standards in the euro area tightened somewhat following an unchanged first quarter, reflecting an overall deterioration in the economic outlook, as well as in households' solvency and housing market prospects, and also the contribution of banks' lower risk tolerance. With regard to consumer credit, in the euro area the initial slight easing of credit standards in the first quarter was offset by the tightening observed during the remainder of the year, also driven by the deterioration in the economic outlook, as well as in consumers' solvency.

As regards terms and conditions on loans in Greece, the sample reported that they remained unchanged for loans to households, while they relatively eased for business loans in the second quarter (see Chart C), mainly due to pressure from competition and the subsequent narrowing of margins on average-risk loans, as well as on riskier loans. In the euro area, following an unchanged first quarter, credit institutions reported a small tightening of terms and conditions on business loans (see Chart C), mainly driven by banks' lower risk tolerance and the widening of margins on average-risk loans, as well as on riskier loans. In addition, euro area banks reported a tightening in their terms and conditions on housing and consumer loans.

Credit institutions reported that the share of rejected applications for loans to firms remained unchanged in Greece, while in the euro area it recorded a small increase in the third and fourth quarters, following an unchanged first half of the year. As regards loans to households in Greece, the share of rejected applications increased slightly, while it remained unchanged for most of 2022 for consumer credit and other loans, except for a small

Chart B Change in credit standards on loans to non-financial corporations in Greece and the euro area[1]

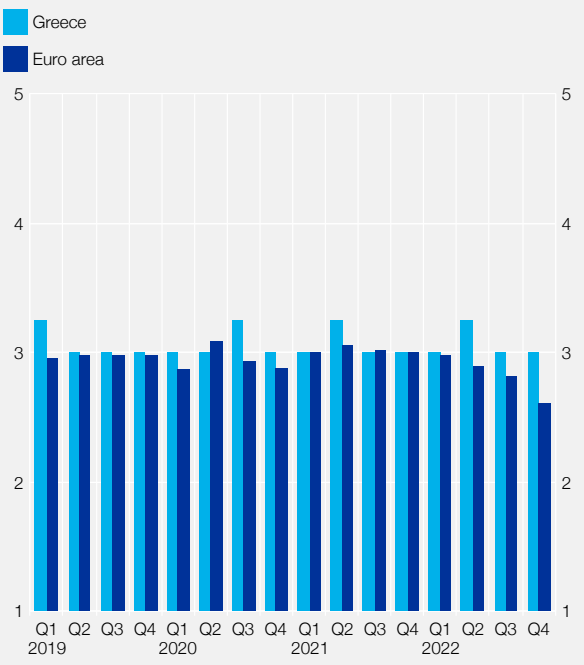
(in the corresponding calendar quarter; average[2])



Source: ECB/Bank of Greece, Bank Lending Survey.
1 Banks' perceptions of changes in credit standards in the corresponding calendar quarter.
2 Average of banks' responses using a five-point scale, where credit standards 1 = "tightened considerably", 2 = "tightened somewhat", 3 = "remained unchanged", 4 = "eased somewhat", and 5 = "eased considerably".

Chart C Change in terms and conditions on loans to non-financial corporations in Greece and the euro area[1]

(in the corresponding calendar quarter; average[2])



Source: ECB/Bank of Greece, Bank Lending Survey.
1 Banks' perceptions of changes in terms and conditions on loans over the corresponding calendar quarter.
2 Average of banks' responses using a five-point scale, where terms and conditions on loans 1 = "tightened considerably", 2 = "tightened somewhat", 3 = "remained unchanged", 4 = "eased somewhat", and 5 = "eased considerably".

increase in the second quarter. In the euro area, the share of rejected applications for loans to households increased slightly during most of the year.

Survey results on ad hoc questions

In their replies to the ad hoc questions regarding their funding sources, banks mostly reported a slight deterioration in their access to medium-to-long-term debt financing. At the same time, credit institutions in Greece continued to report an improvement in their access to short-term deposits, while a deterioration was reported in the euro area in the third and fourth quarters, following improvements in the first half of the year.

In addition, credit institutions in Greece reported that the evolution of the NPL ratio had a slight easing effect on credit standards, as well as on terms and conditions on loans to households, while it had a neutral impact on business loans. In the euro area, the evolution of the NPL ratio led to some tightening of credit standards and terms and conditions on business loans, while it had a broadly neutral impact on loans to households.

Regarding the new regulatory and supervisory measures, banks in Greece reported that the measures had a neutral impact on their total assets, but they favourably affected their capital position and funding conditions. In the euro area, credit institutions reported a favourable impact on their total assets and capital positions, but also a small tightening in their funding conditions. Over the past 12 months, the new regulatory and supervisory measures have generally not affected banks' credit standards and lending rate margins in Greece, while they have led to some tightening in the euro area.

As regards funding obtained through TLTRO III, banks reported that their participation had improved their financial situation and increased their lending volumes. Concerning the impact of TLTRO III on credit standards and terms

and conditions on loans, credit institutions in Greece reported a neutral impact, while a relative easing was reported in the euro area across all loan categories.

Banks' responses in Greece since the third quarter have been reflecting the results of the increase in the ECB deposit facility rate, indicating a slight improvement in their overall profitability and net interest income, unlike the euro area, where a negative impact was reported.

Credit institutions in Greece reported that the APP had a neutral impact on lending volumes, as well as credit standards and terms and conditions on loans, while an improvement in lending volumes was reported in the euro area, together with some easing of credit standards and terms and conditions on business and housing loans. Banks in Greece reported at the beginning of 2022 that the APP strengthened their assets, liquidity and funding conditions and also improved their profitability and capital position while, following reduced APP financing, they reported a neutral impact on their liquidity, funding conditions and capital position. In the euro area, banks initially recorded improvements in their liquidity and funding conditions and simultaneous deterioration in profitability while, following reduced APP financing, they reported a deterioration in their liquidity position, as well as in their funding conditions and profitability.

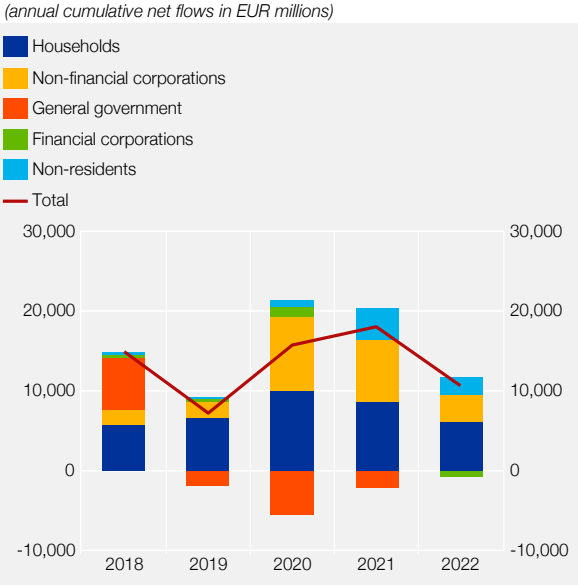
3 BANK DEPOSITS

In 2022, private sector deposits continued to grow, albeit at a slowing pace for the second year in a row. More specifically, bank deposits by the domestic private sector increased by a cumulative EUR 8.6 billion (or 5%) in 2022, corresponding to about half of the 2021 flow (EUR 16.2 billion), but similar to the annual flows observed in 2018-19 before the pandemic (see Chart VI.6). The outstanding amounts of deposits held by the private sector at end-2022 came to EUR 189 billion, which is the highest level seen since mid-2011.

Household deposits grew by EUR 6.0 billion in 2022, compared with EUR 8.5 billion in 2021. The annual growth rate of household deposits, which had started to moderate since the fourth quarter of 2021, continued to decline in 2022, hovering around 4% during the April-December period, i.e. below its pre-pandemic level in 2019 (December 2022: 4.4%, December 2021: 6.8%; see Chart VI.7). In January 2023, it slowed further to 3.7%.

Chart VI.6 Annual flow of domestic bank deposits (2018 - 2022)

(annual cumulative net flows in EUR millions)



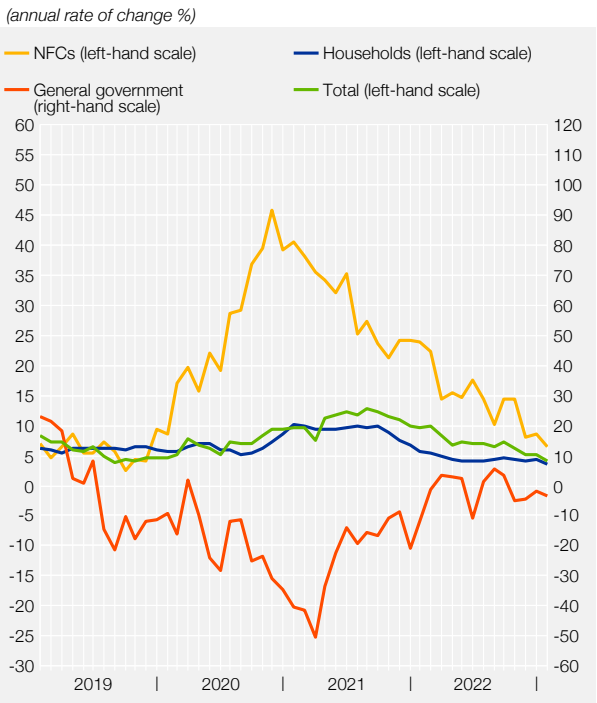
Source: Bank of Greece.

Developments in household deposits in 2022 were underpinned by the strong economic recovery, which continued to be mirrored in a remarkable rise in dependent employment (in the sectors of tourism, manufacturing, construction and trade) mostly over the first half of the year, as well as in self-employed income. Household deposits also benefited from the income support provided to natural persons in various forms in response to energy and food price hikes.[3]

Nevertheless, the increase in nominal deposit rates in 2022 was not sizeable enough to incentivise household savings. Household consumption continued to grow due to pent-up demand,

3 For more information, see Chapter V herein.

Chart VI.7 Domestic bank deposits (January 2019 - January 2023)



Source: Bank of Greece.

coupled with the expiry of most pandemic-related support measures. In fact, if inflation developments are taken into account, the annual growth rate of household deposits in real terms, after outpacing its nominal rate briefly at the height of the pandemic, weakened markedly thereafter and turned negative from February 2022 onwards, reflecting the surge in inflation. In the last quarter of 2022, household deposits shrank at a weaker pace in real terms.

Corporate deposits grew by EUR 3.4 billion in 2022, compared with EUR 7.8 billion in 2021. This increase is associated with stronger credit expansion to NFCs, while the marked recovery in turnover and tourism receipts –which is however expressed in nominal terms and incorporates the impact of prices– boosted firms' revenues mainly in the third quarter of 2022.[4] Overall, corporate deposit growth continued to decline in 2022 and early 2023 from the high levels seen in 2020, but remained slightly improved compared with 2019 (December 2022: 8.5%, December 2021: 24.2%, November 2020: 45.8%; see Chart VI.7). It is worth noting that, in contrast with households, real corporate deposit growth, although declining sharply in 2022, remained slightly positive, on average, in the second half of the year.

The share of NFC deposits in total private sector deposits continued to increase in 2022, reaching on average 22%, against 20% in 2021 and 15% in 2019, whereas that for households shrank further to 75% on average, from 77% in 2021 and 82% in 2019. The corresponding share for insurance undertakings and other (non-bank) financial institutions remained around 3%. This gradually increasing trend in the share of business deposits has been observed since 2016 and appears to have strengthened during the pandemic years 2020-21.

Breaking down deposits by degree of liquidity, overnight deposits held by households and NFCs (savings and sight deposits, as well as current accounts) continued to trend upwards, as observed for several years now, owing to increased demand for deposits as a means of payment, as well as their near-zero interest rate spread vis-à-vis deposits with an agreed maturity in the low interest rate environment that had prevailed until recently. Since late 2021 however, the rate of increase in more liquid deposits appears to be following a continuous downward trend (see Chart VI.8). Towards the end of 2022, a partial shift of NFC and household cash holdings from overnight deposits towards deposits with an agreed maturity (time deposits) began, which continued into January 2023.

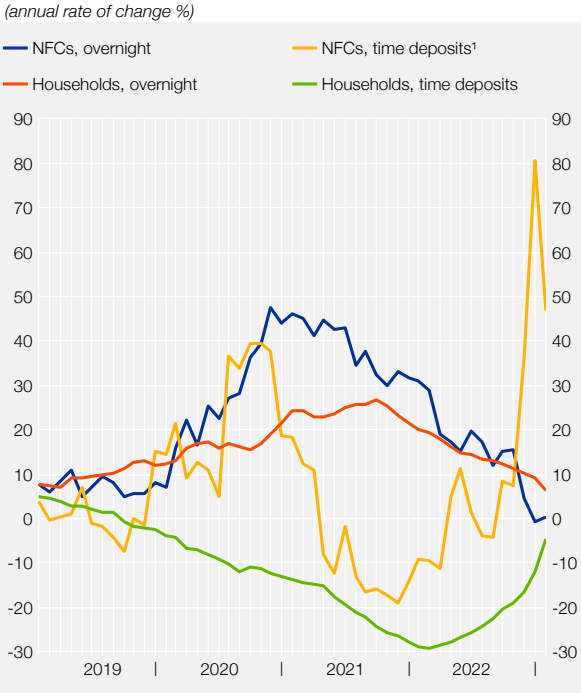
The annual rate of change in deposits with an agreed maturity remained negative overall in 2022 for households, but came close to zero after the first months of the year (see Chart VI.8). In the same vein, NFCs recorded a positive rate of change in time deposits –bringing to a halt the successive negative changes observed since 2021– that picked up markedly towards the

4 On the basis of ELSTAT data, in 2022 NFCs' turnover grew by 36% compared to 2021 (excluding firms in energy-related industries). On the basis of balance of payments data, tourism receipts grew by 68%, respectively.

end of 2022. The upward adjustment of interest rates on time deposits, after the ECB kicked off its interest rate hike cycle in July 2022, was relatively limited in 2022, especially for households, and only started in the last quarter of the year.[5] Lastly, in 2022 the surge in volatility observed in the securities markets is likely to have raised risk aversion among many investors and contributed to higher demand for alternative holdings, such as deposits.

Chart VI.8 Deposits by non-financial corporations and households, broken down by their degree of liquidity (January 2019 - January 2023)

(annual rate of change %)



Source: Bank of Greece.
1 Time deposits and repos.

At the same time, central government deposits with commercial banks remained relatively stable in 2022 (up by EUR 0.2 billion), although central government deposits with the Bank of Greece decreased by EUR 3.5 billion between December 2021 and December 2022, also on account of an early repayment of Greek Loan Facility (GLF) loans in December. Deposits held with commercial banks by social security funds and local authorities, which together with central government make up the general government sector, decreased in 2022 by EUR 0.4 billion. The remaining sectors made a positive contribution to banks' deposit base for the second consecutive year, mainly as a result of increased deposits by non-residents (up by EUR 2.2 billion, compared with EUR 4.0 billion in 2021), whereas deposits by insurance undertakings and other financial institutions shrank (by EUR 0.8 billion).

The projected economic slowdown is expected to help sustain positive yet lower rates of change in money demand. A greater pass-through of policy rate hikes to deposit rates should also stimulate demand for interest-bearing deposits. On the other hand, higher interest rates, as a result of further monetary policy tightening, are expected to have a contractionary impact on real GDP and hence on disposable income and demand for bank loans, with negative implications for deposits. Rising inflation discourages money holding, unless counterbalanced by higher nominal deposit rates. If the rise in inflation (in contrast with the current juncture) is not expected to be reversed in the medium term, investment in assets that retain their real value, such as real estate, commodities, etc., becomes more attractive.

4 BANK INTEREST RATES

Bank deposit rates in 2022 continued to stand at very low levels, despite the Eurosystem's policy rate hikes, as credit institutions did not rush to adjust significantly their rates amid improved liquidity conditions. The weighted average interest rate on time deposits held by households and NFCs was 0.16% in 2022, nearly the same as in 2021 (January 2023: 0.6%), while the corresponding rate on overnight deposits (current accounts and sight and savings deposits) almost turned zero. In real terms, the interest rate on time deposits for NFCs and households became strongly negative as a result of rising inflation (2022: -9.1%; 2021: -0.5%; January-March 2023: -6.7%).

5 For instance, the interest rate spread between deposits with an agreed maturity (of up to 1 year) and overnight deposits widened by 78 bps for NFCs and by 19 bps for households between December 2021 and December 2022. For a more detailed discussion of developments in bank deposit and lending rates, see Section 4 in this chapter.

Policy rate hikes are expected to be further passed through to bank deposit rates. A stronger pass-through is expected in interest rates on time deposits, which are used for saving or investment purposes and can more easily be substituted by other products.

The total cost of bank borrowing for NFCs increased in 2022 compared with its 2021 average (see Chart VI.9), as banks adjusted their lending rates upwards, especially in September. As a result, the weighted average interest rate on business loans stood at 3.5% in 2022, up from an average of 3.0% in 2021 (January 2023: 5.0%).[6]

In greater detail, the weighted average interest rate on loans with a fixed maturity increased in the last four months of the year by about 1.5 percentage points across almost all categories and came to 3.4% over the reviewed period (2021: 2.9%; January 2023: 4.9%). The corresponding interest rate on loans to SMEs (which accounted for 20% of the gross flow of business loans with a fixed maturity in 2022) rose somewhat less, by 1.2 percentage points, over that same four-month period and came to 3.7% (January 2023: 5.0%).

Similarly, the weighted average interest rate on loans without a defined maturity increased over the last four months of the year by 1.3 percentage points. Nevertheless, as this increase practically reversed past decreases, the interest rate remained broadly unchanged on average, at 4.2%, relative to 2021 (January 2023: 5.7%). Across categories, the interest rate on credit lines (94% of outstanding loans without a defined maturity) stood at 4.1%, unchanged from 2021, while the interest rate on bank overdrafts dropped by 50 bps to 5.6%.

With regard to a size classification of loans with a fixed maturity, considerable interest rate increases were observed across all categories. In particular, the weighted average lending rate in 2022 stood at: (i) 5.1% for loans of up to EUR 250,000 (2021: 4.6%); (ii) 3.9% for loans between EUR 250,000 and EUR 1 million (2021: 3.3%); and (iii) 3.2% for loans above EUR 1 million (2021: 2.7%). The share of new loans over EUR 1 million rose slightly compared to 2021 (to 91% of the annual gross flow of business loans with a fixed maturity over the reviewed period, from 85% in 2021).

A favourable effect on bank borrowing costs for businesses, especially for SMEs, continued to come from EIB Group and HDB schemes (see Box VI.1). Disbursements of business loans that are associated with the financial instruments of the above-mentioned development banks in 2022 exceeded EUR 4.2 billion, accounting for 23% of new loans with a defined maturity to all NFCs over the reviewed period. The corresponding disbursements of loans to SMEs came to EUR 2.9 billion and accounted for more than half of new loans with a defined maturity to SMEs.

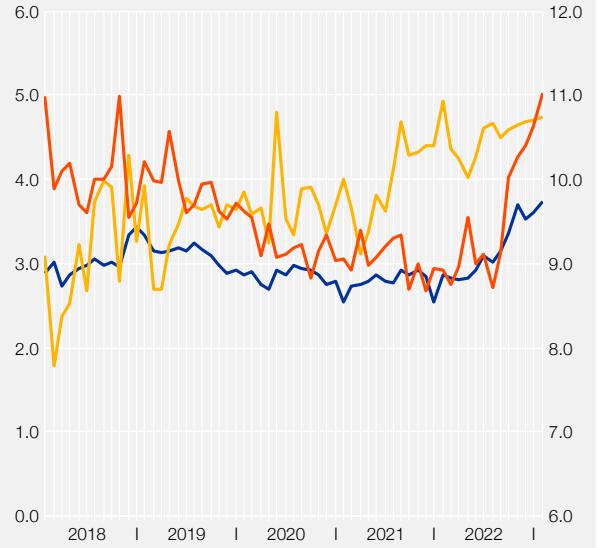
Bank lending costs for households worsened in 2022 and early 2023, as credit institutions had raised the interest rates on both consumer and housing loans already since mid-2022. Specifically, the weighted average interest rate on housing loans in 2022 stood at 3.1%, i.e. 36 bps higher than the 2021 average (January 2023: 3.7%; see Chart VI.9). Likewise, the weighted average interest rate on consumer loans with a defined maturity increased to 10.5%, i.e. around 50 bps higher than the 2021 average (January 2023: 10.7%; see Chart VI.9). This increase is more sizeable compared with past increases and is partly due to the lower share of secured consumer loans with a defined maturity.[7] Regarding the relative importance of the two fixed-

6 It should be noted that the weighted average bank lending rate overestimates –so far to a small extent– real borrowing costs for businesses, as interest rate statistics do not include the low-interest rate loans that are granted to firms from public resources under the RRF or other co-financing instruments. The minimum interest rate on RRF loans, which was 0.35%, has remained unchanged for loans to micro and small enterprises, but has increased to 1% for all other firms since 24 October (Government Gazette B 5473/24.10.2022).

7 Such loans are typically offered at an interest rate that is more than 1 percentage point higher than that on unsecured consumer loans.

Chart VI.9 Interest rates on new corporate, housing and consumer loans (January 2018 - January 2023)

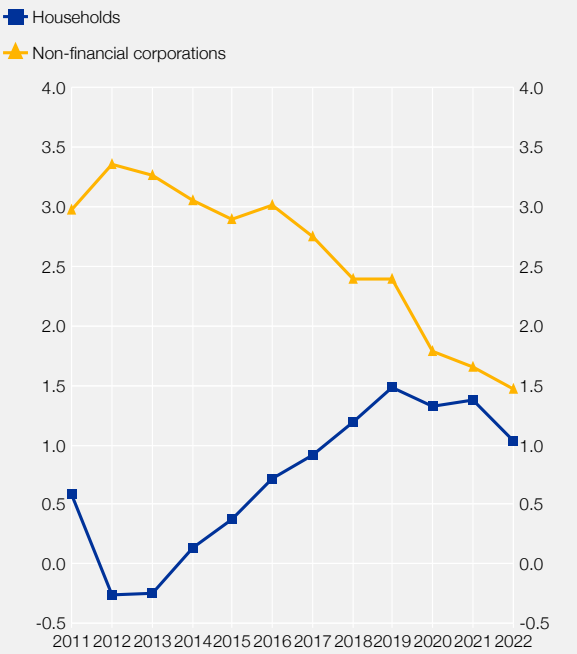
(annual percentages %)



Source: Bank of Greece.

Chart VI.10 Differential in borrowing costs for non-financial corporations and households for house purchase between Greece and the euro area (2011 - 2022)

(percentage points, annual averages)



Sources: ECB and Bank of Greece.
Note: Borrowing costs for non-financial corporations and households are estimated using composite cost-of-borrowing indicators, which are based on bank interest rate statistics and are designed to enable cross-country comparability. See ECB, Statistical Data Warehouse, Cost of borrowing indicators.

maturity loan categories (housing and consumer credit), consumer loans represented around 50% of the gross flow of new loans with a defined maturity to households over the period under review, as in 2021. Lastly, the weighted average interest rate on loans without a defined maturity, which, by order of size of their outstanding amounts, comprise credit cards, credit lines and bank overdrafts, decreased by 16 bps to 14.4% (January 2023: 14.7%).

In real terms, the average bank lending rate for NFCs stood at -5.8% in 2022, against 2.5% in 2021 (and 4.9% on average over the 2011-20 period; January 2023: -2.3%). Similarly, the average bank lending rate for households was -4.1%, compared with 4.2% in 2021 (2011-20: 4.9%; January 2023: -1.6%).

The differential in the weighted average cost of borrowing for NFCs between Greece and the euro area[8] narrowed to 147 bps on average in 2022 (2021: 166 bps), compared with 290 bps on average over the 2011-19 period (see Chart VI.10). The corresponding differential in households' weighted average cost of borrowing for house purchase narrowed to 104 bps (2021: 138 bps). The convergence, which is observed over the past few years, in the weighted average cost of borrowing for firms and households in Greece towards the euro area average is supported, among other things, by the clean-up of bank balance sheets from non-performing exposures, improvements in the legal framework for the protection of creditors' rights and the development of alternative sources of funding such as the bond market. More recently and with

8 Borrowing costs for NFCs and households are estimated using composite cost-of-borrowing indicators, which are based on bank interest rate statistics and are designed to enable cross-country comparability. See ECB, Statistical Data Warehouse, Cost of borrowing indicators.

regard to firms in particular, this convergence has been underpinned by the extensive use of co-funding and guarantee instruments in Greece.

Looking ahead, the pass-through of Eurosystem policy rate hikes to bank lending rates will be inevitable, yet probably asymmetric across business and household loan rates. As suggested by findings in several studies, the pass-through of monetary policy rates and money market rates is stronger for lending rates to households.[9] Nevertheless, with regard to housing loans, the share of new loans with a floating interest rate has shrunk considerably over the past few years (from 86% on average over the 2011-17 period to 57% in 2021 and 44% in 2022). This development helps the smooth debt servicing of housing loans, as it mitigates heightened interest rate risk arising from monetary policy normalisation. Turning to firms, the terms and conditions of bank credit to businesses are expected to continue to be supported by public resources through co-funding and guarantee schemes, as well as low-interest rate loans under the RRF.

5 DEVELOPMENTS IN THE BANKING SECTOR

In the first nine months of 2022, euro area banking groups overall increased their profitability (by 6.6% year-on-year) and return on equity (ROE). This development mainly reflects the interest rate hikes since the second half of 2022, which translated into increased operating income (+7.7%), as well as reduced loan-loss provisions, which offset an increase in operating expenses.[10] In the first nine months of 2022, Greek banks increased their profitability considerably, mainly on the back of a substantial reduction in loan-loss provisions (see Table VI.1). In greater detail, operating expenses decreased, whereas operating income increased mostly on account of a considerable rise in net non-interest income (fee and commission income, trading income and other income). Interest income is expected to strengthen in 2022 as a whole, due to higher lending rates during the second half of the year.

Looking at the profitability prospects of Greek banks, rising interest rates and credit growth, which bolster interest income, have a favourable effect. On the other hand, the tightening of global financial conditions has led to higher borrowing costs on international capital markets, resulting in increased interest payments.[11] This factor is expected to persist as Greek banks continue to issue bonds, so as to meet the minimum requirement for own funds and eligible li-

9 See Lazaris, P. et al. (2021), "Interest rate pass through in the deposit and loan products provided by Greek banks", Bank of Greece, Working Paper No. 287.

10 See ECB, "Supervisory Review and Evaluation Process 2022", 8.2.2023 (https://www.bankingsupervision.europa.eu/banking/srep/2023/html/ssm.srep202302_aggregateresults2023.en.html). Regarding the outlook for the European banking sector in 2023, international credit rating agencies expect that bank profitability will benefit from rising interest rates, but will be adversely affected by higher funding costs, the projected economic slowdown and the creation of new NPLs (see for instance Fitch Ratings, *Western European Banks Outlook 2023*; and Moody's, "Banking System Outlook – Italy: Outlook turns negative from stable as stagflation risk rises"). On the other hand, inflationary pressures push the real value of debt downwards since they improve borrowers' nominal income.

11 In 2022 and early 2023, Greek core banks issued bonds in order to meet the minimum requirement for own funds and eligible liabilities (MREL). These issues were carried out at a higher cost relative to 2021, in line with the visible tightening of global financial conditions (see Chapter IX) and the higher cost of similar issues by European banks. In particular, in 2022 and early 2023 the following senior preferred bonds issues were launched: 1) Alpha Bank: three issues totalling EUR 920 million at a weighted average interest rate of 7.23% and with a weighted average maturity of 4.0 years; 2) Eurobank: two bond issues totalling EUR 1 billion at a weighted average interest rate of 5.69% and with a weighted average maturity of 4.4 years; 3) National Bank of Greece: one issue of a 5-year bond amounting to EUR 500 million with a coupon rate of 7.25% in November 2022 and another issue in December 2022, amounting to GBP 200 million with a maturity of 4.5 years and a coupon rate of 8.75% (final cost for the Bank 6.97% after currency swaps); and 4) Piraeus Bank: one issue amounting to EUR 350 million at an interest rate of 8.25% and with a maturity of 4.2 years. In addition, the following subordinated bonds were issued: 1) by Eurobank in December 2022, a Tier 2 bond amounting to EUR 300 million with a coupon rate of 10%; and 2) by Alpha Bank in February 2023, an AT1 bond amounting to EUR 400 million with a coupon rate of 11.875%.

Table VI.1 Financial results of Greek banks

(amounts in EUR millions)

	Jan.-Sep. 2021	Jan.-Sep. 2021	Change (%)
Operating income	**6,616**	**7,965**	**20.4**
Net interest income	4,209	4,053	-3.7
– Interest income	5,400	5,387	-0.2
– Interest payments	-1,191	-1,334	12.0
Net non-interest income	2,407	3,912	62.5
– Net fee and commission income	1,088	1,272	17.0
– Trading income	1,238	1,902	53.7
– Other income	82	738	>100
Operating expenses	**-3,075**	**-2,932**	**-4.6**
Staff costs	-1,543	-1,363	-11.7
Administrative costs	-1,107	-1,125	1.7
Depreciation	-425	-444	4.4
Net income (operating income - operating expenses)	**3,541**	**5,033**	**42.1**
Loan-loss provisions	-7,673	-1,341	-82.5
Other impairment losses[1]	-183	-162	-11.8
Non-recurring profits/losses	-81	-128	57.8
Profits/losses before tax	**-4,396**	**3,403**	**-**
Taxes	-260	-799	>100
Profits/losses from discontinued operations	39	299	>100
Profits/losses after tax	**-4,617**	**2,903**	**-**

Sources: Financial statements of the four significant banking groups (SIs) and supervisory data for the less significant banks (LSIs).
1 Impairment of securities and of tangible and intangible assets.

Table VI.2 Key indicators of loan portfolio quality

(percentages %; on-balance-sheet items on a solo basis)

	Dec. 2021	Dec. 2022
Non-performing to total loans (NPL ratio)	**12.8**	**8.7**
NPL ratio, by portfolio		
Corporate loans	*13.0*	*7.6*
Large firms	7.1	3.4
Small and medium-sized enterprises	21.0	11.7
Sole proprietors and micro enterprises	30.7	27.1
Shipping	6.2	2.5
Housing loans	*10.4*	*10.5*
Consumer loans	19.5	18.1
Breakdown of NPLs by default category or bucket		
Unlikely to pay	**35.5**	**30.6**
Past due > 90 days	**31.0**	**33.2**
91-180 days	4.6	3.6
181-360 days	4.7	4.0
>1 year	21.6	25.6
Denounced loans	**33.5**	**36.2**
Other indicators		
Forborne loans (share in total loans)	**10.6**	**7.5**
Performing loans[1]	6.4	4.8
Non-performing loans[2]	39.1	36.1
Loans subject to legal protection	**0.5**	**0.3**
NPL coverage ratio	42.1	45.3
Default rate	0.6	0.4
Cure rate	3.3	4.0

Source: Bank of Greece.
Note: Figures refer to the banking system as a whole.
1 Forborne performing loans to total performing loans.
2 Forborne non-performing loans to total non-performing loans.

abilities (MREL), in an environment of elevated interest rates.[12] Against this backdrop, any further upgrades of Greek banks' credit ratings should contribute to containing their funding costs on international capital markets.[13] The impact of higher funding costs further weighs on bank profitability, with a possible sharp rise in deposit rates putting strong upward pressure on interest payments.[14]

12 On the basis of Single Resolution Board data (SRB MREL Dashboard 2022: Q3), at end-September 2022 the MREL shortfall that had to be covered with bond issues or other types of eligible liabilities by the end of 2025 amounted to around EUR 10.6 billion.
13 It should be noted that an upgrade of Greece's credit rating to investment grade is expected to also lead to upgrades for the four core banks, as was the case in 2022 and early 2023. More specifically, Greece's sovereign credit rating and consequently the ratings of the four significant Greek banks were upgraded in 2022 and in early 2023, mainly as a result of the Greek economy's resilience, the reduction of non-performing loans and improved profitability. Thus, the gap between the highest long-term credit rating of each significant bank at the group level and the investment grade threshold is currently 3 notches for Eurobank and the National Bank of Greece (BB-), 4 notches for Alpha Bank (B+) and 5 notches for Piraeus Bank (B2).
14 The ratio of loans to NFCs and households to deposits by NFCs and households in September 2022 was significantly lower for Greek banks (66%) compared with the euro area (104.8%). It is therefore expected that a symmetric increase in interest rates across deposits and on floating-rate loans will reduce Greek banks' net interest income.

Capital adequacy ratios at the euro area level declined in September 2022 relative to December 2021.[15] For Greek banks by contrast, the Common Equity Tier 1 (CET1) ratio on a consolidated basis rose considerably to 14.5% in December 2022 (from 13.6% in December 2021), and the Total Capital Ratio (TCR) rose to 17.5% (from 16.2% in December 2021), remaining both below the corresponding euro area ratios. In fully loaded terms, the CET1 ratio rose to 13.4% in December 2022, from 11.7% in December 2021, and the TCR to 16.4% from 14.4%, respectively.

For euro area banks, the NPL ratio continued its downward path, while the share of stage 2 loans (i.e. where credit risk has increased significantly since initial recognition) in total loans kept increasing in September 2022 for the fourth quarter in a row, amidst a worsening macroeconomic environment.[16] For Greek banks, the quality of loan portfolios on a solo basis improved in 2022.[17] The NPL ratio for the Greek banking sector as a whole declined further (December 2022: 8.7%, December 2021: 12.8% – see Table VI.2), but remained well above the euro area average, while all significant banks have already met their operational target of a single-digit NPL ratio.[18]

Lastly, the share of stage 2 loans in total loans decreased in December 2022 compared to December 2021 (10.7%, against 12.6%, respectively). In December 2022, around 36% of total NPLs were subject to forbearance solutions, while it should be stressed that a large part of the forborne loans re-default within a relatively short period after the forbearance agreement.[19]

To sum up, looking ahead, the Greek banking sector is faced with challenges associated with the need to enhance bank profitability. To be more precise, higher interest rates translate into higher interest income, but at the same time, as a result of rising borrowing costs globally, they also drive interest payments upwards, at a juncture when banks must press ahead with meeting the minimum requirement for own funds and eligible liabilities (MREL) through the issuance of new bonds (see Box VI.4). Against this backdrop, an upgrade of Greece's sovereign credit rating to investment grade would be crucial for banks, leading to their subsequent upgrade and thus to lower funding costs.

15 ECB data, Supervisory Banking Statistics: (i) CET1 ratio 14.7% in September 2022, against 15.6% in December 2021; (ii) TCR 18.7% in September 2022, against 19.6% in December 2021.

16 ECB data, Supervisory Banking Statistics: (i) NPL ratio 2.3% in September 2022, against 2.6% in December 2021; (ii) stage 2 loans to total loans: 9.7%.

17 The stock of NPLs came to EUR 13.2 billion, down by EUR 5.2 billion at end-December 2021 and by EUR 95.5 billion from their March 2016 peak. Figures refer to on-balance-sheet loans (before provisions) and advances of Greek commercial and cooperative banks (on a solo basis), according to supervisory data for NPL monitoring.

18 The NPL ratio for the four significant banks was 6.4% in December 2022. NPLs are broken down as follows: about 65% are business loans, around 24% are housing loans and the rest are consumer loans. Denounced loans, unlikely to pay loans and loans that are more than 90 days past due and have not been denounced yet have almost equal shares. The NPL ratio has declined across loan portfolios, with the largest reduction being recorded in the SME loan portfolio.

19 It should be noted that forborne loans (i.e. including those which are serviced regularly) amount to a total of EUR 11.4 billion.

Box VI.4

DETERMINANTS OF BANK PROFITABILITY IN GREECE AND IN THE EURO AREA

Improvement of banks' profitability enhances their capacity to absorb adverse external shocks and constitutes a significant motive for them to expand lending, thereby supporting, in turn, economic activity. This box examines the evolution of two profitability indicators for Greek and euro area banks, i.e. return on equity (ROE) and net

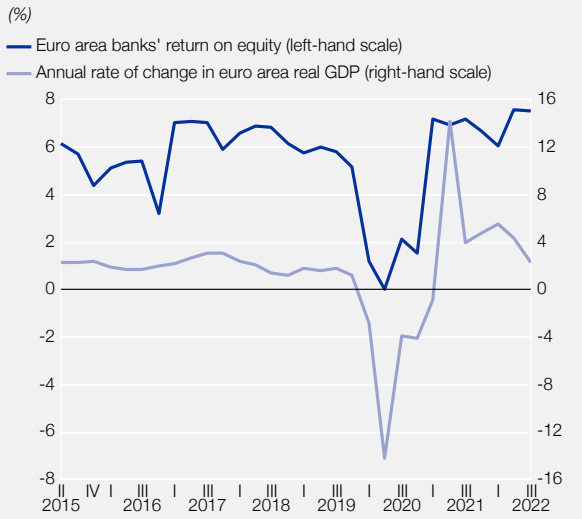
interest margin (NIM), for the period Q2 2015-Q3 2022.[1] In addition, it investigates the determinants of these indicators, putting them into the context of macroeconomic and financial developments.

Return on equity

According to the literature, bank profitability is determined by macroeconomic as well as financial factors, by sector-specific (e.g. market concentration) and by bank-specific factors.[2] For euro area banks in particular, previous studies have identified real GDP growth and the non-performing loan (NPL) ratio as the key drivers of bank profitability in the period 2007-16.[3]

Chart A illustrates the negative impact of the pandemic on bank profitability and its subsequent recovery, in line with the recession and the ensuing rebound of economic activity. More specifically, following the outbreak of the pandemic in early 2020, negative growth rates were accompanied by a decrease in euro area banks' net interest margins and loans and advances to customers by 4.7% and 1.0%, respectively, in 2020. By contrast, in 2021, a year of positive GDP growth in the euro area, both profitability measures increased, by 0.6% and 4.2% respectively. Moreover in 2020, on the one hand, the euro area NPL ratio continued its downward course, helped by the economic support measures, whereas, on the other hand, euro area banks booked increased provisions, fearing a new wave of NPLs. This latter development contributed to a decrease in euro area banks' profitability.[4]

Chart A Euro area banks' return on equity and economic activity in the euro area



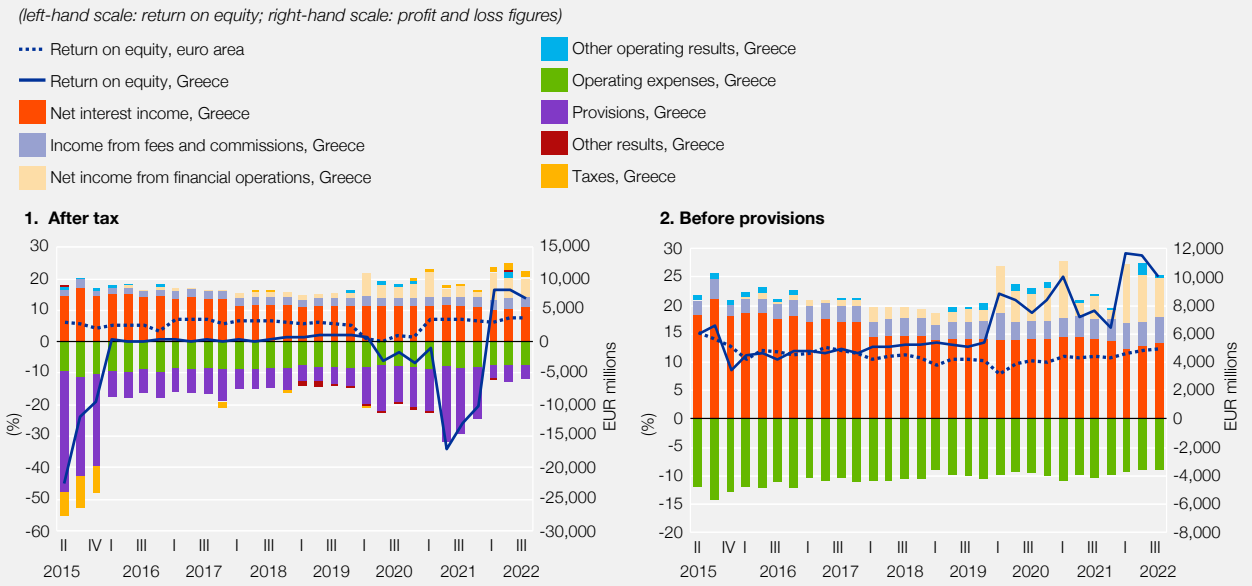
Sources: ECB, Supervisory Banking Statistics, and Eurostat.

The need to tackle NPLs leads to a decline in bank profitability. In particular, during 2015 and 2020-21, provisioning for credit risk was the main factor behind the decrease in the Greek banking sector's profitability (see Chart B, panel 1). Excluding the impact of this factor, the return on equity of the Greek banking system would be similar to that of the euro area (see Chart B, panel 2).

More specifically, in the Greek banking sector, while net interest income declined over the reviewed period, the net interest income-to-equity ratio remained relatively stable, being slightly higher than that of euro area banks in Q3 2022 (21.0% and 17.5%, respectively). Moreover, as part of banks' efforts to diversify their income sources,[5] net fee and commission income has increased in recent years. The net fee and commission income-to-equity ratio has followed an upward trend, yet it remains lower than that of euro area banks, which has been relatively stable over the reviewed period (Q3 2022: 6.6% and 10.1%, respectively). There is also an upward trend in both profits from financial transactions and their ratio to equity, which exceeded the corresponding

1 For this period, there are published data on euro area banks supervised by the ECB's Single Supervisory Mechanism (SSM) (Supervisory Banking Statistics).
2 See e.g. Claessens, S., N. Coleman and M. Donnelly (2018), " 'Low-For-Long' interest rates and banks' interest margins and profitability: Cross-country evidence", *Journal of Financial Intermediation*, 35, 1-16; and Mirzaei, A., T. Moore and G. Liu (2013), "Does market structure matter on banks' profitability and stability? Emerging vs. advanced economies", *Journal of Banking & Finance*, 37, 2920-2937.
3 Indicatively, see Elekdag, S., S. Malik and S. Mitra (2020), "Breaking the bank? A probabilistic assessment of euro area bank profitability", *Journal of Banking & Finance*, 120, 105949.
4 Euro area banks increased their loan-loss provisions by 80.6% in 2020, while they reduced them by 53.1% in 2021.
5 According to the literature, greater income diversification is associated with higher profitability among European banks; see Mergaerts, F. and R.V. Vennet (2016), "Business models and bank performance: A long-term perspective", *Journal of Financial Stability*, 22, 57-75.

Chart B Return on equity



Sources: Bank of Greece and ECB, Supervisory Banking Statistics.
Note: Return on equity of Greek and euro area banks is calculated on the left-hand panel by dividing net profit/loss by equity at the end of each period and on the right-hand panel by dividing income before provisions by equity. Profit and loss statement figures have been annualised for the purposes of comparability between quarters.

euro area figure in Q3 2022 (11.2% and 2.9%, respectively). It should be noted, however, that results from financial transactions are subject to significant volatility. As far as operating expenses are concerned, Greek banks have made substantial efforts to contain them, leading to a downward trend, while both their ratio to assets and their ratio to operating income are lower than those of the euro area (Q3 2022: Greece: 1.09% and 35.9%, euro area: 1.15% and 61.4%, respectively).

Net interest margin

In the current period, during which the ECB raises its key interest rates to fight inflation, banks pass on these increases to lending and deposit rates. Thus, a significant effect on the main source of bank income, i.e. net interest income, is expected. In order to draw conclusions about the potential impact of interest rate increases on bank profitability, the net interest margin is employed.[6] According to the literature, net interest margin is related with monetary policy, macroeconomic variables, whether loans are granted mainly at fixed rates or floating rates, as well as bank-specific factors such as the business model.[7] During periods of monetary policy tightening, banks' net interest margins tend to rise, as the increase in deposit rates is usually slower than that in lending rates, while in floating-rate loans the increase is immediate.

The net interest margin is illustrated in Chart C both for Greek and euro area banks. The same chart also presents the net interest margin for different categories of banks, so as to facilitate the comparison with euro area banks which have similar characteristics with Greek ones. It is important to distinguish between banks primarily granting loans at floating rates and banks with predominantly fixed-rate loans, as an increase in key interest rates translates faster into a larger net interest margin for the former compared to the latter. For the purposes of the present analysis, euro area countries were classified into those where the majority of loans are granted at floating rates, including Greece,

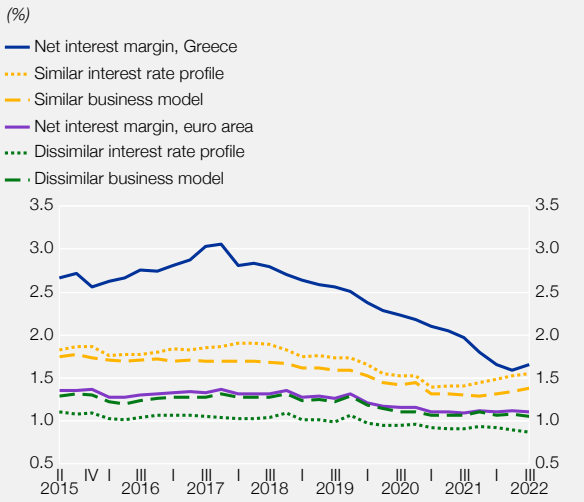
6 The net interest margin is calculated as net interest income over the stock of interest-bearing assets. The numerator comprises the net interest income from loans, securities, derivatives and other assets, and the denominator includes the respective assets that generate interest income.

7 See ECB (2015), *Financial Stability Review*, Box 5: "Euro area banks' net interest margins and the low interest rate environment"; Borio, C., L. Gambacorta and B. Hofmann (2017), "The influence of monetary policy on bank profitability", *International Finance*, 20, 48-63; and Mergaerts, F. and R.V. Vennet (2016), *op. cit.*

and hence labelled "similar interest rate profile" in the chart, and those with the highest proportion of loans granted at fixed rates ("dissimilar interest rate profile").[8] Furthermore, it is meaningful to distinguish banks depending on their business model, which seems to play an important part in profitability. Greek banks mainly focus on retail and corporate credit and have a broad deposit base.

As can be seen in Chart C, the net interest margin in Greece is larger than that of the euro area, but it has shown a convergence trend since early 2018, mainly reflecting a continued decline in Greek banks' net interest income amid NPL sales[9] and weak credit growth. Going forward, the evolution of the net interest margin will be determined by the structure of the Greek banking sector and by the higher funding costs faced by Greek banks, relative to their euro area counterparts, due to their below investment grade credit ratings. Furthermore, it can be seen that the interest margin of euro area banks with a similar business model to that of Greek banks is larger than that of banks with different models; this finding is consistent with evidence in the literature that mainly deposit-funded euro area banks have higher profitability indicators.

Chart C Net interest margin of Greek and euro area banks



Sources: Bank of Greece (data and calculations) and ECB, Supervisory Banking Statistics (data).
Notes: The net interest margin is calculated as: (Interest income - Interest expenses) / Interest-bearing assets. The latter comprise loans, securities, derivatives and cash and balances with central banks. Other margins are calculated by dividing net interest income from loans, securities or derivatives by the corresponding assets. Euro area banks with an interest profile similar (dissimilar) to that of Greece include those registered in countries where more floating (fixed) interest rate loans are granted on average. Banks' business models are classified according to the Single Supervisory Mechanism classification. Euro area banks with a business model similar (dissimilar) to that of Greece include those whose funding is based more (less) on deposits by NFCs and households.

Focusing on the most recent period of key interest rate hikes, it appears that the net interest margin of euro area banks operating in countries with a similar interest profile to that of Greece has been on an upward trend since Q4 2021, in contrast with the net interest margin of euro area banks operating in countries where lending is primarily done at fixed interest rates.[10] This finding is also consistent with evidence that changes in the short-term rate mainly affect banks' net interest margins in countries where lending is predominantly done at floating interest rates.[11] Recent reports by credit rating agencies[12] have also pointed out that rising interest rates will favour banks in southern euro area countries, where the majority of loans are granted at floating rates, while the factors that are expected to weigh on profitability measures, as a result of higher interest rates, are a rise in non-performing loans and the increased cost of market-based funding. It should be noted that an increase in the key interest rates that would be passed through equally to loans and deposits would lead to a decrease in the net interest income in most euro area countries and particularly in Greece where the loan-to-deposit ratio is low.[13]

8 Fixed rate countries: Belgium, France, Germany and the Netherlands. Floating rate countries: Austria, Greece, Estonia, Ireland, Spain, Italy, Cyprus, Lithuania, Luxembourg, Malta, Portugal, Slovenia and Finland. The classification of countries is based on the ECB's MFI interest rate statistics (Statistical Data Warehouse, Risk Assessment Indicators), with "fixed rate countries" identified as those in which the average ratio of fixed-rate new loans to NFCs and households to total new loans exceeds the corresponding euro area average, and with the remaining countries identified as "floating rate countries".

9 The non-performing loans sold typically carry higher interest rates, in line with the associated higher credit risk; as a result, the sale has a disproportionate effect on interest income.

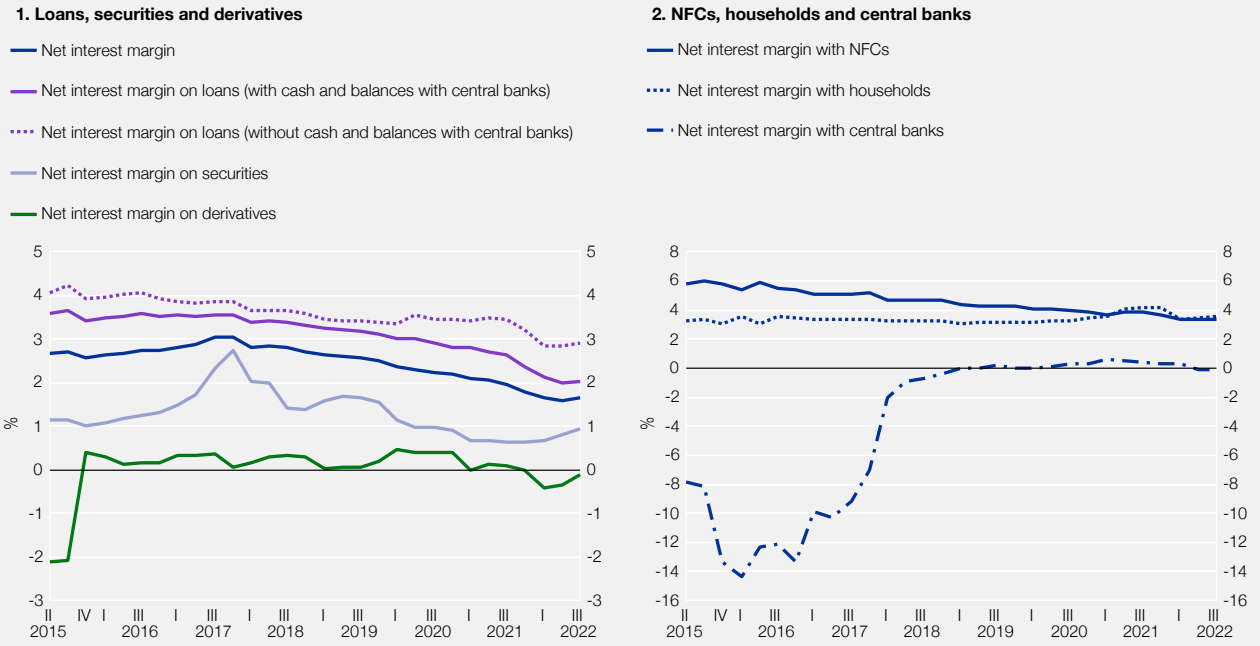
10 It is clarified that the net interest income in absolute terms, i.e. the numerator of the net interest margin, increased in 2022 for banks with both similar and dissimilar interest rate profiles and business models, in response to ECB key interest rate increases.

11 The net interest margin of banks in countries where lending is primarily done at fixed interest rates is mainly affected by the slope of the yield curve and is related to new loan origination. See ECB (2015), *op. cit*.

12 See e.g. Fitch Ratings, *Western European Banks Outlook 2023*, 5.12.2022.

13 The ratio of loans to NFCs and households to deposits by NFCs and households in September 2022 was significantly lower in Greek banks compared to that of the euro area (65.5% and 104.8%, respectively).

Chart D Net interest margin of Greek banks



Source: Bank of Greece.
Notes: The net interest margin is calculated as: (Interest income - Interest expenses) / Interest-bearing assets. Other margins are calculated by dividing net interest income on loans, securities or derivatives by the corresponding assets. The net interest income on loans is presented with and without the effect of the margin with central banks, which is calculated as: (Interest income on cash and balances with central banks - Interest expenses on cash and balances with central banks) / Cash and balances with central banks.

In the Greek banking sector, the net interest margin followed a slightly upward trend in the period 2016-17, mainly driven by the net interest margin on securities (see Chart D, panel 1). During that period, the net interest margin on loans, including the net interest margin on transactions with the central bank,[14] remained relatively stable, as the benefit from the lower recourse to the more costly ELA (Emergency Liquidity Assistance) funding was offset by a decline in the net interest margin on loans to NFCs (see Chart D, panel 2). In the subsequent period Q1 2018-Q1 2022, the net interest margin trended downwards, mainly due to NPL sales (see footnote 9). The increase in the key interest rates since June 2022, as it was passed on more to loan rates than to deposit rates, led to a slight increase of the net interest margin in Q3 2022.

Conclusions

Sustained profitability in the Greek banking sector is important both for safeguarding its soundness and overall financial stability and for providing the necessary credit to the real economy. The main factors expected to boost profitability indicators in the foreseeable future are interest rate increases, which will boost net interest income, a potential upgrade of Greece's credit rating to investment grade, which would contain banks' funding costs, continued credit expansion utilising NGEU funds, a containment of operating expenses by investing in digitalisation and innovation, as well as a strengthening of the fee and commission income from non-credit activities, such as insurance products and asset management. On the other hand, any substantial increase of credit risk as a result of higher interest rates, persistently high inflation, and economic slowdown, coupled with increased market-based funding costs, in a time when there is a heightened issuance activity to meet the minimum requirement for own funds and eligible liabilities (MREL), are expected to have a negative effect on profitability indicators.

14 The net interest margin on transactions with central banks is calculated as follows: (Interest income on cash and balances with the central bank – Interest expenses on loans from the central bank) / Cash and balances with the central bank.

VII OVERVIEW OF THE PRIVATE INSURANCE MARKET

In 2022 the Greek insurance market continued to experience significant changes. The most important trends concerned: a) an even higher concentration in the sector due to mergers and acquisitions, a trend that began in 2021; b) an increase in the share of insurance products that are linked to investments across the life insurance sector; and c) an attempt to manage the consequences of the sharp rise in inflation, combined with the exit from the prolonged low interest rate environment of previous years.

Having addressed the cumulative effects of the pandemic and low interest rates in 2020-2022, the insurance market proved to be resilient also to the impact of the energy crisis, which worsened after the outbreak of the war in Ukraine, exhibiting adaptability to emerging risks.

Due to the preceding prolonged low interest rate period, a rise in the supply of unit-linked insurance products in the life insurance sector was observed in recent years. These products that are linked to mutual fund shares or variable internal funds cover both the insurance and investment needs of customers at the same time. The dual nature of these products makes it imperative that insurance undertakings assess value for money in the unit-linked market, while at the same time the role of supervisors in protecting policyholders from potential bad business practices is becoming more important (see Box VII.1).

1 KEY MARKET FIGURES[1]

On 30.9.2022, there were 37 insurance undertakings in the Greek private insurance market,[2] which can be classified by type of authorisation as follows:

- 2 life insurance undertakings;
- 19 non-life insurance undertakings;[3] and
- 16 insurance undertakings (composites) writing both life and non-life business (including life insurance undertakings underwriting only non-life business of "Accident" and "Sickness" classes).[4]

Of the aforementioned 37 insurance undertakings, 35 operate and are supervised in accordance with the European Directive "Solvency II", which applies to all EU Member States since 1.1.2016, while 2 insurance undertakings are exempted, due to their size, from several requirements related to all three pillars of Solvency II.[5] Of the 35 insurance undertakings subject to

1 The cut-off date for information and data used in this chapter is 31 January 2023.
2 Excluding the mutual insurance undertakings referred to in the first sentence of para. 1 of Article 7 of Law 4364/2016.
3 As from 21.7.2022, there are 19 insurance undertakings in the non-life insurance market, due to the establishment of the enterprise Horizon 1964 Non-Life Insurance Company S.A.
4 As from 31.12.2021, there are 16 insurance undertakings writing both life and non-life business, due to the merger of Generali Life S.A. with Generali Hellas S.A. (formerly AXA Insurance S.A.).
5 The Bank of Greece, based on the principle of proportionality, has allowed 2 insurance undertakings that meet the required size and business criteria to be exempted from certain Solvency II provisions regarding the solvency requirements, the system of governance and public disclosure.

the provisions of Solvency II, 13[6] belong to insurance groups with their parent undertaking in other countries and 5 to insurance groups subject to supervision by the Bank of Greece. In addition, as at 31.12.2021, 4 insurance undertakings with head offices in Greece operate in other EU Member States under the freedom to provide services.

Furthermore, according to the most recent data available by the European Insurance and Occupational and Pensions Authority (EIOPA), on 31.12.2021, 215 insurance undertakings with head offices in other EU Member States operated in Greece, either under the freedom of establishment (branches) or the freedom to provide services, the financial supervision of which is the responsibility of the supervisory authorities of their home Member States. The annual gross written premiums of these undertakings at the end of 2021 amounted to EUR 267 million as regards branches, and EUR 715 million for activity conducted under the freedom to provide services, corresponding to 5% and 13% of the total Greek insurance market. In particular regarding the motor third-party liability insurance market, the market share of insurance undertakings from other Member States which are writing insurance business in Greece, either under the freedom of establishment (branch) or the freedom to provide services, has increased in terms of number of vehicles to 20% in the first three quarters of 2022 (from 18% on 31.12.2021).

The financial data presented below concern only the 35 insurance undertakings that operate in the domestic insurance market and that are subject to supervision by the Bank of Greece, according to Solvency II.

The domestic insurance market is characterised by significant concentration, especially with regard to the undertakings that carry out life insurance business and to the undertakings that carry out both life and non-life insurance business, since the 5 largest insurance undertakings hold 80% of the relevant market, in terms of technical provisions. The 5 largest insurance undertakings operating in non-life insurance business, in terms of gross written premiums, hold a share of 51% of the relevant market.

Gross written premiums of the life insurance business in the period between January and September 2022 amounted to EUR 1.8 billion, down by 1% year-on-year. Of the aforementioned amount, EUR 0.76 billion is linked to investments, i.e. 44% of the total gross written premiums of life insurance business, compared with 40% in the corresponding period of 2021, up by 6%. At the same time, an increase was recorded in gross written premiums with a profit share of 2%, while a 28% decrease was recorded in other life insurance business. During the same period, non-life insurance premiums amounted to EUR 1.6 billion, up by 5% compared to the first 9 months of the previous year. Of this amount, the lines of business with the most significant market shares are third-party motor liability (33%), fire insurance (20%) and hospital expenses insurance (17%), with year-on-year premium changes of +1%, +5% and +8%, respectively. During the same period (January-September 2022), claims incurred amounted to EUR 1.3 billion for life insurance and EUR 0.6 billion for non-life insurance, up by 8% and 19%, respectively.

For non-life insurance, the loss ratio of the market on 30.9.2022 stood at 48% of the relevant earned premiums of the same period (compared with 42% on 30.9.2021), while the expense ratio (administration expenses and commissions) remained unchanged at 46%.

Total assets of insurance undertakings supervised by the Bank of Greece amounted to EUR 18.5 billion on 30.9.2022, down by 10% compared to 30.9.2021. Of total assets, EUR 7.1 billion (38%) were held in government bonds and EUR 2.7 billion (15%) in corporate bonds. Turning to the credit rating of these assets, 95% of government bonds and 86% of corporate bonds

6 Following Bank of Greece Credit and Insurance Committee (CIC) decision no 426/2/7.6.2022 and after Allianz S.E. exercised its acquisition rights and completed the process of acquiring European Reliance General Insurance S.A. on 21.9.2022, there are now 13 insurance undertakings that belong to insurance groups.

were BB- and above. In addition, EUR 3.7 billion (20%) concerned investments where investment risk is borne by the policyholder. Total liabilities of insurance undertakings amounted to EUR 14.7 billion (compared with EUR 16.5 billion as at 30.9.2021), while total technical provisions amounted to EUR 13.4 billion as at 30.9.2022 (compared with EUR 15.0 billion as at 30.9.2021), of which EUR 10.4 billion related to life insurance business and EUR 3.0 billion to non-life business. As regards life technical provisions, 33% refers to investment-linked life insurance (compared with 29% as at 30.9.2021).

The equity of the insurance market amounted to EUR 3.8 billion as at 30.9.2022, down by 8% compared to 30.9.2021. The total Solvency Capital Requirement (SCR)[7] amounted to EUR 1.9 billion and the corresponding total eligible own funds were EUR 3.7 billion. Concerning the quality of the eligible own funds of the insurance market, 92% of these own funds are classified in the highest quality category (Tier 1). In parallel, the SCR coverage ratio for all insurance undertakings is significantly higher than 100%. The Minimum Capital Requirement (MCR)[8] for the entire insurance market came to EUR 0.7 billion and the corresponding total eligible own funds to EUR 3.4 billion.

2 SUPERVISORY DEVELOPMENTS

During 2022, the Bank of Greece issued the following Executive Committee Acts which concern the insurance market:

– **Executive Committee Act 203/2/24.03.2022 "Revision and adaptation, under Article 252 of Law 4364/2016, of the amounts determined in said law, in accordance with Communication no 2021/C 423/12 of the European Commission"**

On 4.4.2022, the above Act of the Executive Committee of the Bank of Greece regarding the revision and adaptation of the amounts referred to in Law 4364/2016 in line with the percentage change of the Harmonised Indices of Consumer Prices (HICP) of all Member States was published in the Government Gazette. This Act revised the amounts for the definition of large risks, the amounts regarding the conditions for exclusion of (re)insurance undertakings from scope due to size, and the absolute floor for the calculation of the Minimum Capital Requirement.

– **Executive Committee Act 208/1/28.6.2022 "Adoption of the Guidelines of the European Insurance and Occupational Pensions Authority (EIOPA) on Legal Entity Identifier (LEI) (EIOPA-BoS-2021/456) – Repeal of Credit and Insurance Committee Decision 121/9/30.10.2014"**

On 11.7.2022, the above Act of the Executive Committee of the Bank of Greece regarding the adoption of the revised EIOPA Guidelines on Legal Entity Identifier (LEI) was published in the Government Gazette. Before the transposition of Directive 2009/138/EC (Solvency II) into Greek legislation by Law 4364/2016, the Bank of Greece had already issued CIC decision no. 121/9/30.10.2014 on the adoption of the EIOPA guidelines regarding the use of LEI by (re)insurance undertakings. The new Executive Committee Act adopts the revised guidelines, which expand the scope by requiring also (re)insurance intermediaries (both natural and legal entities) to have and use an LEI, provided that they operate cross-border, and at the same time identifies the legal entities in insurance groups that must have an LEI.

– **Executive Committee Act 213/1/5.12.2022 "Adoption of the revised guidelines of the European Insurance and Occupational Pensions Authority (EIOPA) on contract boundaries (EIOPA-BoS-22/394)" and Executive Committee Act 213/2/5.12.2022 "Adoption of the re-**

7 The Solvency Capital Requirement reflects the adequacy of the own funds so that the insurance undertaking has the ability to absorb losses at a confidence level of 99.5% with a time horizon of one year.

8 The Minimum Requirement reflects the adequacy of the own funds so that the insurance undertaking has the ability to absorb losses at a confidence level of 85%, with a time horizon of one year, and represents a level of capital below which the interests of policyholders could be seriously jeopardised if the undertaking were allowed to continue operating.

vised guidelines of the European Insurance and Occupational Pensions Authority (EIOPA) on valuation of technical provisions (EIOPA-BoS-22/393)"

On 15.12.2022, the above two Acts of the Executive Committee of the Bank of Greece, regarding the adoption of the revised EIOPA guidelines on contract boundaries and the valuation of technical provisions, were published in the Government Gazette.

Act 213/2/5.12.2022 adopts the revised EIOPA guidelines on technical provisions, which specify general principles for calculating technical provisions and strengthen the consistency of the legislation in relation to a) the application of the principle of proportionality; b) the alignment of requirements, when calculating technical provisions, with the corresponding requirements that apply to the calculation of capital requirements using an internal model; c) the use of dynamic policyholder behaviour modelling in cases of insurance obligations that include financial guarantees or options; d) the use of stochastic modelling to capture the value of financial guarantees or options; and e) the calculation of future profits related to future premiums.

Act 213/1/5.12.2022 adopts the revised EIOPA guidelines on contract boundaries, which specify general principles in relation to a) the explanation of contract boundaries that should be taken into account by the actuarial models when calculating technical provisions; and b) the unbundling of each insurance contract into two or more parts for the application of actuarial methods in the calculation of technical provisions and the identification of a financial guarantee of benefits with a discernible effect on the economics of a contract.

The above Acts were set to enter into force on 1.1.2023, effective date of the repeal of Executive Committee Acts 74/12.2.2016 and 81/12.2.2016, respectively.

– **Executive Committee Act 213/3/5.12.2022 "Amendment to Executive Committee Act no 169/1/29.04.2020 (Government Gazette B 1878) on professional training for the activity of distributing (re)insurance products"**

On 15.12.2022, the above Act of the Executive Committee of the Bank of Greece, which amends Executive Committee Act 169/1/29.4.2020 regarding the deadline for presenting the professional knowledge certification required for conducting the activity of distributing (re)insurance products, was published in the Government Gazette with immediate effect.

Box VII.1

RISKS TO POLICYHOLDERS ARISING FROM INVESTMENT-LINKED INSURANCE PRODUCTS

Life insurance undertakings offer, among other things, products that cover both the investment and the insurance needs of customers. These types of products concern life insurance linked to investments (or investment funds) and are referred to as "unit-linked". In the Greek insurance market, gross written premiums for unit-linked business have increased in recent years, almost doubling their share in total life insurance written premiums (from 21% in 2019 to 39% in 2022).

Benefits and risks of unit-linked products

Unit-linked products offer significant advantages to consumers, primarily because of their potentially higher returns than traditional life insurance policies. The prolonged low-interest rate environment of previous years and the generalized escalation of inflation worldwide in recent years have highlighted the products carrying investment characteristics, as an attractive solution for policyholders.

However, in addition to the potentially higher returns, these products are also associated with certain risks that policyholders should be aware of. First, given that such products are either linked to mutual funds or va-

riable internal funds, i.e., funds managed by the insurance company, they are susceptible to market changes and therefore carry investment risk, which is typically borne by the policyholders themselves. Second, these products come with investment costs, which are transferred to policyholders, which means that the returns at maturity may not turn out according to their expectations. Third, unit-linked products are often characterised by high complexity, thus increasing the risk of misselling (i.e. they do not match the customer's investment and insurance profile), as well as the risk of a mismatch between the policyholder's expectations and the realized returns.

Value for money and the role of insurance undertakings

Insurance undertakings must ensure a fair relationship between the costs and benefits (value for money (VfM)) of unit-linked products; in fact, the Product Oversight and Governance (POG)[1] process requires that customer value is considered throughout a product's lifecycle. However, deviations are observed across the European Union (EU) about how the VfM requirement is perceived by the insurance undertakings and their distributors, as well as in how its application is supervised. For this reason, the European Insurance and Occupational Pensions Authority (EIOPA), as a follow-up to its relevant supervisory statement,[2] developed a methodology for assessing value for money in the unit-linked market,[3] outlining a common supervisory approach across EU and safeguarding that consumer needs are considered throughout a product's lifecycle, namely from the design to distribution stage.

Pricing of unit-linked products is one of the key elements of VfM. According to the latest report of EIOPA on costs and past performance of insurance-based investment products (IBIPs),[4] some products carry high costs, which have material impact on the policyholders' future returns. Insurance undertakings should maintain a structured pricing process with clearly defined and justified charges.

In addition, insurance undertakings, before they launch the unit-linked products, should test them using scenario analysis, and afterwards adapt them accordingly whenever any significant change happens either with regard to the needs, objectives and characteristics of the target market or to market risks. This implies that insurance undertakings should constantly monitor and regularly review their unit-linked products to identify events that could materially affect the main features, the risk coverage, or the guarantees of these products.

Concerning distribution practices, insurance undertakings offering unit-linked products should ensure the completeness and transparency of pre-sale information provided to prospective customers, enabling them to make informed decisions in full awareness of the risks associated with the transaction in question. Moreover, insurance undertakings, as manufacturers of such products, should assess the level of product complexity and consider this when determining the target market and the appropriate distribution strategy.

Supervision of the risk of business conduct

The question of value for money of unit-linked products is of paramount importance to supervisors and is among the priorities of both EIOPA and national supervisory authorities. In this context, the Bank of Greece monitors the efforts of insurance undertakings to offer reasonable value for money to their customers. For this purpose it develops internally appropriate systems for the measurement and evaluation of the risk of business conduct, aiming to identify products that do not seem to comply with the concept of VfM for the policyholders and takes appropriate supervisory actions when necessary.

1 EIOPA's approach to the supervision of product oversight and governance (October 2020).
2 Supervisory statement on assessment of value for money of unit-linked insurance products under product oversight and governance (November 2021).
3 Methodology for assessing value for money in the unit-linked market (October 2022).
4 Costs and past performance report 2023 (January 2023).

VIII MACROPRUDENTIAL POLICY

The ultimate objective of the macroprudential policy of the Bank of Greece is to contribute to safeguarding the stability of the financial system as a whole, by strengthening its resilience and reducing the build-up of systemic risks.

In this context, during 2022 the Bank of Greece: (a) set the countercyclical capital buffer (CCyB) rate for Greece at 0%, for the second, third and fourth quarters of 2022 and for the first quarter of 2023; (b) identified the Other Systemically Important Institutions (O-SIIs) in Greece for 2022, in accordance with the relevant EBA guidelines (EBA/GL/2014/10); and (c) set the O-SII buffer rate for 2023 at 1%.

Moreover, the countercyclical capital buffer rate for Greece for the second quarter of 2023 remained unchanged at 0%.[1]

1 SETTING THE COUNTERCYCLICAL CAPITAL BUFFER RATE

The countercyclical capital buffer (CCyB) aims to address the procyclicality of credit growth and leverage, i.e. to ensure an appropriate level of credit growth and leverage in both the upward and the downward phase of the business cycle. The CCyB rate ranges from 0% to 2.5%,[2] calibrated in steps of 0.25 percentage points or multiples of 0.25 percentage points. The CCyB consists of Common Equity Tier 1 (CET1) capital and is expressed as a percentage of the total risk exposure amount of the institutions that are exposed to credit risk in Greece.[3]

In an economic upswing, setting the CCyB rate at a level above 0% contributes to building up a capital buffer in excess of the minimum requirements applicable in the context of microprudential supervision, thus achieving the prevention and mitigation of excessive credit growth and leverage. Conversely, in an economic downturn, reducing the CCyB rate releases part of the accumulated capital buffer and can therefore encourage the extension of credit to the real economy, thereby mitigating the impact of recession.

Under Law 4261/2014 (Article 127),[4] the Bank of Greece assesses on a quarterly basis the intensity of cyclical systemic risk and the appropriateness of the CCyB rate for Greece, and sets or adjusts the CCyB rate, if necessary. This rate was set for the first time in the first quarter of 2016 and has since remained zero.

The appropriateness of the CCyB rate is assessed by taking into account, among other things, the level of the "standardised credit-to-GDP gap", as defined in Recommendation ESRB/2014/1. In greater detail, the ratio of short-term and long-term debt securities and loans (i.e. credit), as reported in the financial liabilities of the private non-financial sector, to the sum of the figures

1 The cut-off date for information and data used in this chapter is 20 March 2023.
2 For the purposes of paragraph 2 of Article 130 of Law 4261/2014, the designated authority may set the CCyB rate in excess of 2.5% of the total risk exposure amount, if this is justified on the basis of the considerations set out in paragraph 3 of Article 127 of Law 4261/2014.
3 The total risk exposure amount is calculated in accordance with Article 92(3) of Regulation (EU) No 575/2013.
4 As currently in force, after being amended by Article 44 of Law 4799/2021, which transposed the provisions of Article 136 of Directive 2013/36/EU as amended by Directive (EU) 2019/878.

of the last four quarterly observations of GDP is calculated initially (in nominal terms, non-seasonally adjusted). Subsequently, the long-term trend of the credit-to-GDP ratio is calculated by applying the Hodrick-Prescott filter. The "standardised credit-to-GDP gap" is the difference between the credit-to-GDP ratio and its long-term trend. A high positive value of the "standardised credit-to-GDP gap" indicates excessive credit growth relative to GDP growth, which poses increased risks to the financial system, thus requiring the setting of the CCyB rate at a level above 0%.

In addition to the "standardised credit-to-GDP gap", the Bank of Greece also examines a number of additional indicators to monitor the build-up of cyclical systemic risk.[5] These indicators are grouped into six categories:

1) Credit developments, where the growth of credit to the domestic private sector and the ratio of outstanding credit to the domestic private sector to GDP at current prices, the growth of loans to households and the growth of credit to non-financial corporations are monitored.

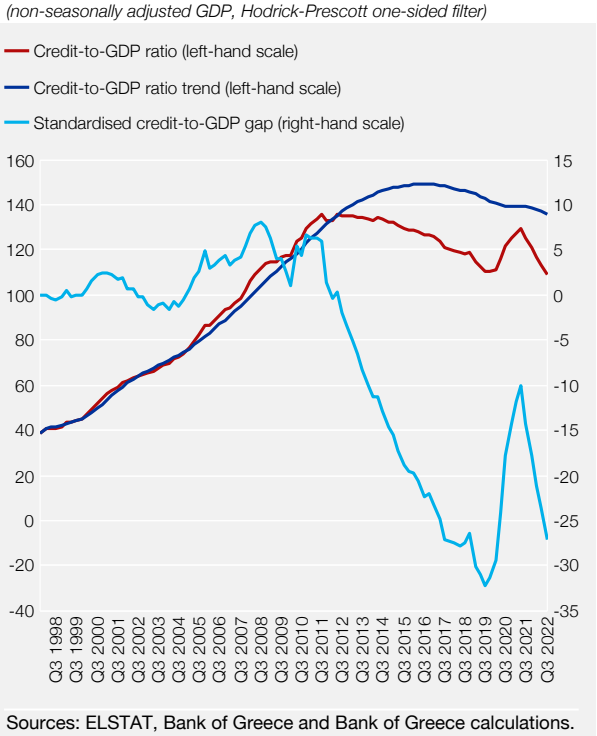
2) Private sector indebtedness, where the ratio of outstanding credit to non-financial corporations to GDP, the households' debt-to-income ratio and the debt-service-to-income ratio at origination (DSTI-O) for loans secured by residential real estate are monitored.

3) Potential overvaluation of property prices, where price developments in residential and commercial (office and retail) real estate are monitored.

4) The strength of bank balance sheets, where the net interest margin, the growth of risk-weighted assets, the leverage ratio and the loan-to-deposit ratio are monitored.

Chart VIII.1 Standardised credit-to-GDP gap (Q3 1998 - Q3 2022)

(non-seasonally adjusted GDP, Hodrick-Prescott one-sided filter)



Sources: ELSTAT, Bank of Greece and Bank of Greece calculations.

5) External imbalances, as reflected in the evolution of the current account balance-to-GDP ratio.

6) Risk pricing, where the ATHEX Composite Share Price Index and the FTSE/ATHEX bank index are monitored.

In Greece, the "standardised credit-to-GDP gap" has remained in negative territory since 2012. In the third quarter of 2022 it stood at -27.1 percentage points, compared with -23.6 in the previous quarter (see Chart VIII.1), mostly due to the rise in nominal GDP. It should be pointed out that the latest available data on the financial liabilities of the private non-financial sector prior to setting the CCyB rate for the second quarter of 2023 refer to the third quarter of 2022. For this value of the "standardised credit-to-GDP gap", the benchmark buffer rate (buffer guide), as defined in Recommendation B, paragraph 3(a) of Recommendation ESRB/2014/1, is zero.

The analysis of additional indicators points to emerging cyclical systemic risks in certain

5 For detailed definitions, see Bank of Greece Executive Committee Act 202/1/11.3.2022 (in Greek).

areas, such as credit to non-financial corporations, residential real estate prices and the current account. Overall, however, it confirms the view of an absence of excessive credit growth and leverage. Therefore, the Bank of Greece maintained the CCyB rate at 0% throughout 2022 and for the first and second quarters of 2023. Given that the CCyB rate remained at the minimum level, the capital requirements on credit institutions were not affected.

2 IDENTIFICATION OF THE OTHER SYSTEMICALLY IMPORTANT INSTITUTIONS (O-SIIs) IN GREECE AND SETTING OF THE O-SII BUFFER RATE

Under Law 4261/2014 (Article 124), the Bank of Greece is responsible for identifying other systemically important institutions (O-SIIs)[6] among the institutions authorised in Greece. O-SIIs are identified on an annual basis, so as to consider the application of an O-SII buffer, which consists of Common Equity Tier 1 (CET1) capital. The implementation of the O-SII buffer aims at reducing moral hazard and strengthening the resilience of O-SIIs. Moral hazard arises from a credit institution's expectation that it will not be allowed to fail due to its systemic importance ("too big to fail"). The imposition of additional capital requirements in the form of an O-SII buffer limits excessive risk-taking by a systemically important credit institution, aiming to reduce moral hazard. Moreover, it cushions the systemic impact of moral hazard by strengthening the systemically important institution's capital buffer to absorb potential losses and thus reduces contagion risk.

Table VIII.1 Mandatory scoring indicators

Criterion	Indicators	Weight (%)
Size	Total assets	25
Importance	Value of domestic payment transactions	8.33
	Private sector deposits from depositors in the EU	8.33
	Private sector loans to recipients in the EU	8.33
Complexity/ Cross-border activity	Value of OTC derivatives (notional)	8.33
	Cross-jurisdictional liabilities	8.33
	Cross-jurisdictional claims	8.33
Interconnectedness	Intra-financial system liabilities	8.33
	Intra-financial system assets	8.33
	Debt securities outstanding	8.33

Source: EBA, EBA/GL/2014/10.

The Bank of Greece identifies O-SIIs using the methodology set out in the relevant guidelines of the European Banking Authority (EBA/GL/2014/10), as adopted under Executive Committee Act 56/18.12.2015. According to this methodology, the competent authorities calculate a score indicating the systemic importance of each credit institution based on specific criteria. These criteria relate to size, importance for the Greek economy, cross-border activity and interconnectedness of the institution with the financial system (see Table VIII.1). The mandatory indicators, which should be used as a minimum by the competent authorities in calculating the score of each credit institution, correspond to these four criteria. The score of each credit institution is expressed in basis points (bps). Each competent authority sets a threshold in bps; credit institutions exceeding it are designated as O-SIIs. This threshold can be set from 275 bps up to 425 bps to take into account the specificities of each Member State's banking sector and to ensure the homogeneity of the group of O-SIIs identified in this way based on their systemic importance. The EBA proposes 350 bps as an indicative threshold. Moreover, the competent authorities may identify further relevant entities as O-SIIs based on additional qualitative and/or quantitative indicators of systemic risk.

In calculating the systemic importance scores for credit institutions authorised in Greece, the Bank of Greece used the mandatory indicators only (see Table VIII.1) and selected a threshold of 350 basis points.

6 Other systemically important institutions are contrasted with those identified as global systemically important institutions (G-SIIs).

On the basis of the above, the following institutions were identified as O-SIIs for 2022:

- National Bank of Greece S.A.
- Piraeus Financial Holdings S.A.
- Alpha Services and Holdings S.A.
- Eurobank Ergasias Services and Holdings S.A.

By Executive Committee Act 212/1/21.9.2022, the Bank of Greece decided to set the O-SII buffer for 2023 at 1.00% on a consolidated basis for all O-SIIs, as identified above, as well as on a solo basis for the following credit institutions:

- Alpha Bank S.A.
- National Bank of Greece S.A.
- Piraeus Bank S.A.
- Eurobank S.A.

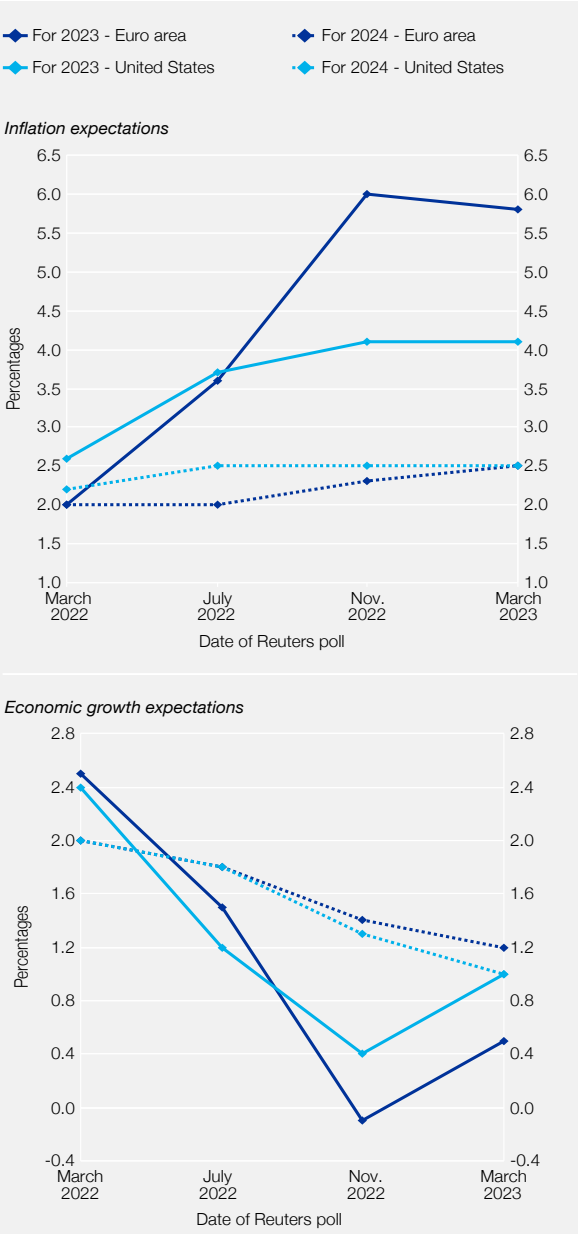
IX CAPITAL MARKETS

Interest rate hikes by central banks during 2022 may have been steep, but they have helped to ease inflation expectations across major economies worldwide (see Chart IX.1, top panel). The tightening of monetary conditions drove upwards government and corporate bond yields globally, including Greek bond yields, while equity prices fell, as investors' expectations about economic activity in major economies across the globe worsened (see Chart IX.1, bottom panel). In addition, recent developments in the US banking sector further aggravated global financial conditions and raised uncertainty about the future path of interest rates. In 2023, investors are expecting key interest rates to stabilise from the second half onwards, and any further increases in bond yields should therefore be modest. In this context, a further upgrade of Greece's sovereign credit rating would be a very important development, bringing it to investment grade and expanding the pool of funds that can invest in Greek bonds.

1 OVERVIEW OF DEVELOPMENTS AND PROSPECTS[1]

In 2022, central banks in the United States and the euro area tightened their monetary policy, by discontinuing net asset purchases and substantially raising their policy rates. As a result of interest rate hikes, medium-to-long-term inflation expectations eased and remained anchored to central banks' inflation targets. On the other hand, the higher cost of capital owing to rising bond yields, as well as investors' concerns regarding the economic outlook, brought about negative returns in equity markets. Between late 2022 and early 2023, the stabilisation prospects of interest rates and optimism that the recession will be avoided in major economies led to a stabilisation of bond yields and to a rise in equity prices. Yet, in March the collapse of Silicon Valley Bank in the United States (see Box IX.3) and the issues facing

Chart IX.1 Investors' expectations about inflation and growth rates



Source: Refinitiv.
Notes: The top panel illustrates inflation expectations in the euro area (HICP) and the United States (CPI) on four dates for 2023 and 2024. The bottom panel illustrates economic growth expectations in the euro area and the United States on four dates for 2023 and 2024. The source of the data are Reuters surveys among economists and strategists in financial markets (Reuters Polls) and the expected value is the median of responses.

1 The cut-off date for information and data used in this chapter is 30 March 2023.

other US and European banks, including First Republic Bank and Credit Suisse, rekindled concerns among investors and led to a further tightening of financial conditions, with heightened volatility in equity and bond markets and a sharp drop in bank equity prices globally.

Tighter global monetary and financial conditions have strongly affected Greek bond yields as well as issuance activity by the Greek sovereign and Greek corporations. The continuous upgrade of Greece's sovereign credit rating is a very positive development, bringing it to just one notch short of investment grade. The goal of the investment grade rating is crucial for Greece, as it is expected to counterbalance the upward pressures exerted by the tightening of global monetary and financial conditions on Greek government and corporate bond yields. To this end, a primary surplus in 2023, as well as a re-affirmance of the resilience of economic growth in Greece should play a key role (see Box IX.2).

2 INTERNATIONAL MONEY AND CAPITAL MARKETS

With regard to the path of interest rates in the coming months, markets expect further increases in the euro area and stabilisation in the United States (see Chart IX.2). These expectations are accompanied by a stabilisation of inflation expectations over the medium term and downward revisions of investors' expectations about economic activity (see Chart IX.1, top panel for inflation and bottom panel for economic activity).

The US Federal Reserve (Fed) has raised its key policy rate by a total of 475 basis points (bps) between March 2022 and end-March 2023, starting with a very strong pace (of up to 75 bps) to return to more normal sizes of increase at the FOMC's 2023 meetings.[2] The more recent FOMC projections regarding the policy rate range until end-2023 suggest that the federal funds rate is expected to slightly exceed 5% in 2023, where it will be kept until the end of the year.[3]

Until the first ten days of March, money markets were pricing in further interest rate hikes during 2023, adjusting their initial expectations upwards, with the federal funds futures in the United States pointing to a policy rate range of 5.25-5.5% by the second half of the year (see Chart IX.2, right-hand panel). However, after the failure of Silicon Valley Bank, uncertainty has mounted and volatility is observed in investors' expectations about the path of key interest rates until the end of 2023. Expectations among investors, as implied by the US federal funds futures, are currently suggesting that interest rates should initially stabilise at the level of the FOMC March meeting, before declining to a range of 4-4.25% or even 3.75-4% by the end of 2023.

In the euro area, in 2022 the ECB also embarked on a gradual normalisation of its monetary policy, first by ending net purchases under asset purchase programmes and subsequently by raising its key interest rates.[4] Specifically, the ECB has raised its key interest rates by a total of 350 bps since mid-2022, confirming money market expectations about the path of interest rates, at the respective meetings of the ECB Governing Council (see Chapters VI and VII in the Bank of Greece *Monetary Policy Reports* of June and December 2022, respectively).[5] Until the end of autumn 2023 further interest rate hikes are anticipated, with the deposit facility rate being

2 In particular, the FOMC decided to raise the policy rate by 25 and 50 bps in March and May 2022, respectively, and by 75 bps each time at the meetings of June, July, September and November. The subsequent pace of interest rate hikes slowed, as in December 2022 the FOMC raised the federal funds rate by 50 bps and in February and March 2023 by 25 bps each time, bringing the current target range to 4.75-5%, from 0-0.25% in early 2022.

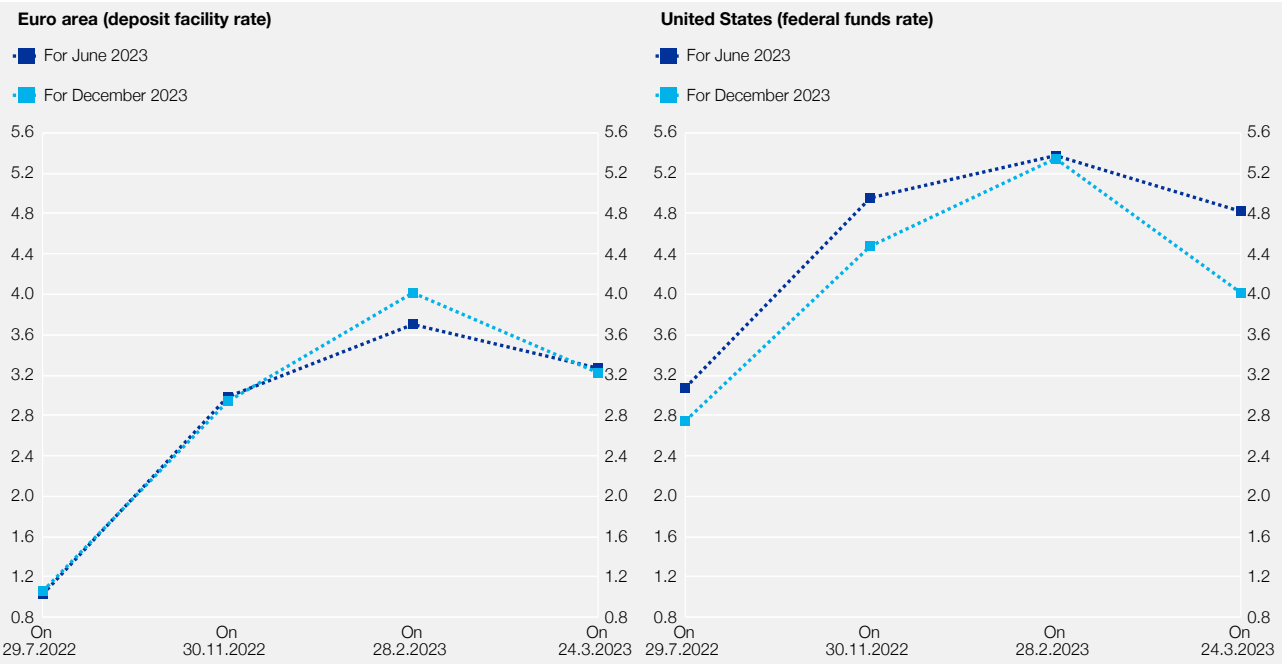
3 See Figure 2 in FOMC Economic Projections, 22.3.2023.

4 The ECB decided to end net asset purchases under the PEPP last March and under the APP in July 2022.

5 On 21 July 2022, the ECB announced an increase of 50 bps in key interest rates, while at the meetings of September and October further increases of 75 bps were announced each time. At the December meeting, the ECB decided to raise key interest rates by 50 bps. Further rate hikes of 50 bps each were announced in February and March 2023.

Chart IX.2 Expected key interest rates in the euro area and the United States

(percentages %)



Source: Refinitiv.
Notes: The panels show the expected key interest rates in the euro area and the United States on four dates for the June and December 2023 meetings of the Governing Council of the ECB and the FOMC, respectively. The expected interest rates are derived from €STR OIS rates for the euro area and from CME futures contracts for the United States.

expected to stand at 3% or increase slightly to 3.25% or 3.5% by December 2023 (see Chart IX.2, left-hand panel). Both in the United States and in the euro area, after the collapse of Silicon Valley Bank and the problems facing Credit Suisse, earlier expectations among investors about further rate hikes have weakened, although investor expectations are still surrounded by uncertainty to a great extent.

The gradual monetary policy tightening by the ECB and the Fed led to a significant decline in the spreads between nominal bond yields and inflation-linked bond yields, i.e. breakeven inflation rates – see Chart IX.3).[6] As a result, the announced policy rate hikes have contributed to anchoring investors' medium-term inflation expectations close to central banks' target levels, while at the same time long-term inflation expectations also remain well-anchored to the level of the medium-term inflation target in both economic areas.[7]

Nominal risk-free bond yields consist of an inflation component and a real yield component. Inflation-linked bond yields, which are neutral to inflation, provide an indication of developments in the second component. The fact that inflation-linked bond yields both in the United States and in the euro area increased more than nominal yields, after it became apparent that central banks intended to raise interest rates, points to reduced propensity to hedge against inflation risk, attesting to the credibility of the monetary policy pursued.[8] The ongoing monetary policy

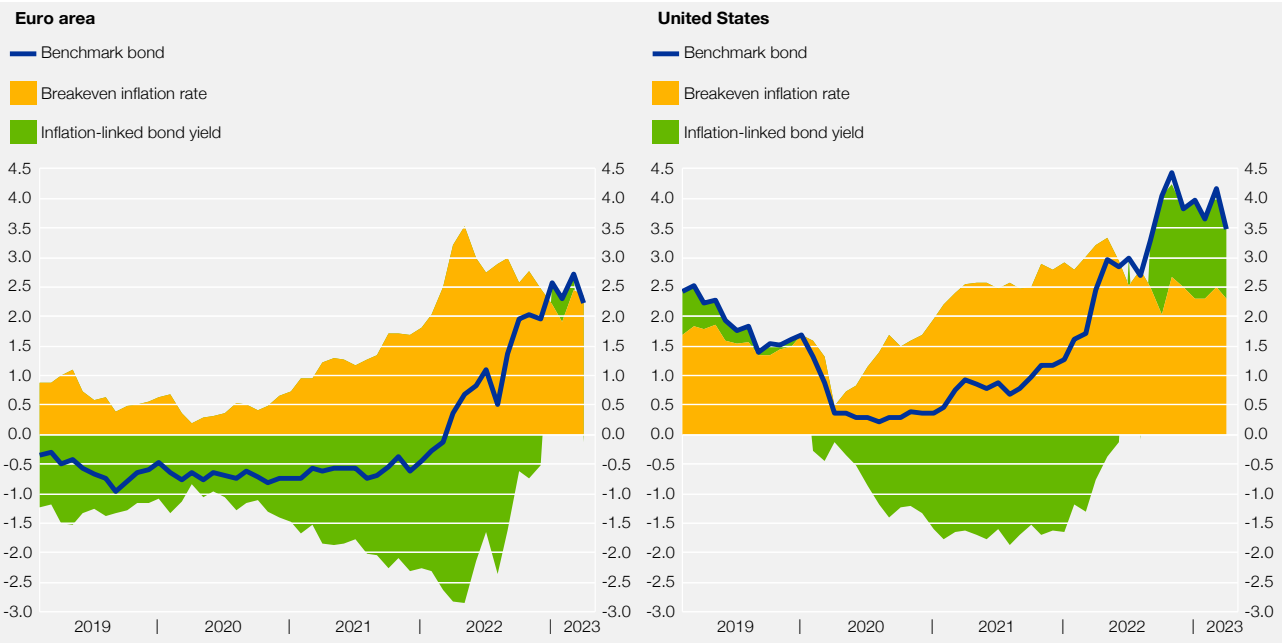
6 On 24 March 2023, the 5-year breakeven inflation rate was 2.28% in the euro area and 2.19% in the United States, which means that it had declined by 0.90 and 1.26 percentage points, respectively, year on year (from 2.20% and 2.63%, respectively).

7 Long-term inflation expectations, as reflected in the 5-year, 5-year forward inflation-linked swap rate, were 2.34% in the euro area and 2.54% in the United States on 24 March 2023 (compared with 2.20% and 2.63%, respectively, one year earlier).

8 On 24 March 2023, the yield of German 5-year inflation-linked bonds was -0.18% (+273 bps compared with one year earlier). In the same vein, the yield of US 5-year inflation-linked bonds was +1.22% (+229 bps).

Chart IX.3 Benchmark and inflation-linked bond yields and expected inflation

(percentages %)



Source: Refinitiv.
Notes: The chart shows the yields of 5-year government benchmark bonds, the yields of inflation-linked bonds with the same maturity and the breakeven inflation rates (difference between nominal and inflation-linked bond yields) for 5-year bonds. For the euro area, German bonds were taken into account. Data are monthly and refer to the period January 2019-March 2023.

tightening is affecting investor expectations about an economic slowdown in the United States, as well as in large euro area economies.

Against this backdrop, the expectation of interest rate stabilisation by the end of the year has dampened the earlier strong upward trend of long-term government bond yields in the United States and the euro area (see Chart IX.4).[9] On the other hand, the rise in shorter-term bond yields was comparatively more pronounced, resulting in negative yield spreads between long-term and short-term benchmark bonds.[10] This development further fuelled investors' concerns about a forthcoming recession in the US economy (see Chart IX.5 and the discussion in Box IX.1). However, in early 2023, signs that the global economic slowdown might not be as strong as initially expected led to a considerable rise in equity prices in major international markets.[11] Thus, in the first quarter of 2023, investors' concerns about the risk of a recession in the United States as well as in the euro area eased, and yield spreads between long-term and short-term bonds stabilised.[12]

The rise in high-rated government bond yields is smaller than the rise observed in the yields of lower-rated government bonds or in corporate bond yields. This can be explained by the greater sensitivity of lower-rated securities, including Greek government bonds, to changes in global monetary and financial conditions. Likewise, as corporate bonds are considered to be less safe

9 Changes in 10-year bond yields between 1.1.2022 and 30.9.2022: Germany: +229 bps; France: +253 bps; Italy: +332 bps; Spain: +271 bps; and Portugal: +270 bps. Changes between 30.9.2022 and 24.3.2023: Germany: +1 bp; France: -6 bps; Italy: -49 bps; Spain: -10 bps; and Portugal: -16 bps.

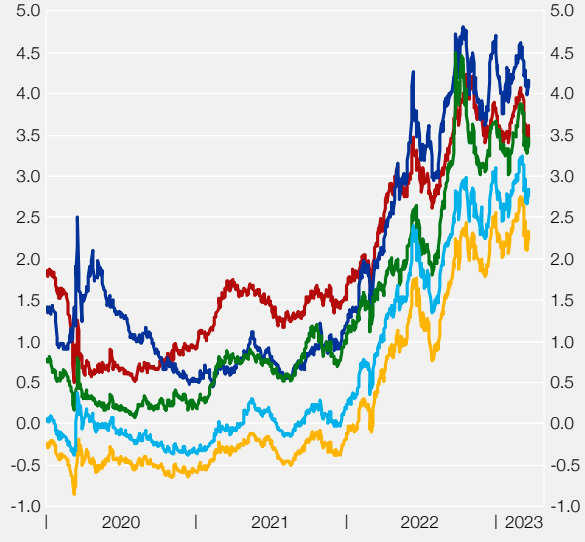
10 In particular, the yield spread between 10-year and 2-year US federal bonds has remained negative since July 2022 (as at 24.3.2023: -40 bps).

11 For instance, the IMF has revised upwards its 2023 forecast on global economic growth to 2.9%, from a previous estimate of 2.7% (see IMF, *World Economic Outlook*, January 2023 and October 2022, respectively).

12 Changes in yield spreads between 10-year and 2-year bonds from 1.1.2022 until 30.12.2022: USA: -134 bps; Germany: -63 bps; France: -54 bps; and from 1.1.2023 until 24.3.2023: USA: +17 bps; Germany: -9 bps; France: -11 bps.

Chart IX.4 Ten-year government bond yields (January 2020 - March 2023)

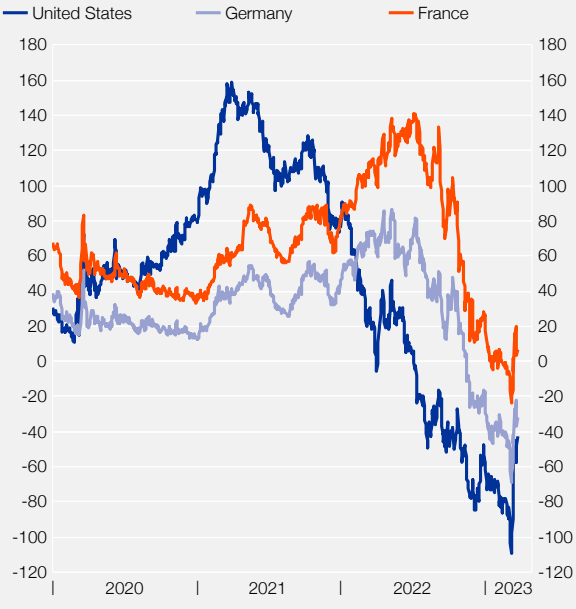
(daily yields in percentages %)



Source: Refinitiv.

Chart IX.5 Yield spreads between 10-year and 2-year benchmark bonds (January 2020 - March 2023)

(daily data, basis points)



Source: Refinitiv.

than government bonds, the increase in corporate bond yields was larger relative to government bonds of an equivalent credit rating. Following the failure of Silicon Valley Bank (SVB), the yields of corporate bonds issued by both financial and non-financial corporations, whether subordinated or low-rated, increased. Conversely, the yields of euro area government bonds trended down, as investors kept revising their expectations about a further hike in key interest rates.[13]

The lower-than-expected growth rates in major economies of the world, coupled with worsened leading indicators, have also negatively affected global equity markets, most of which performed poorly in 2022. In 2023, volatility in global equity markets, as measured by implied volatility indices, had been hovering around its long-run average levels until the receivership of SVB was announced, followed by the disclosure of financial difficulties in other banks as well (e.g. First Republic Bank and Credit Suisse). In this environment, investors' concerns regarding regional, mostly US, banks led to a surge in volatility and a sharp drop in equity prices, mainly of US and European banks.[14]

3 GREEK GOVERNMENT BONDS

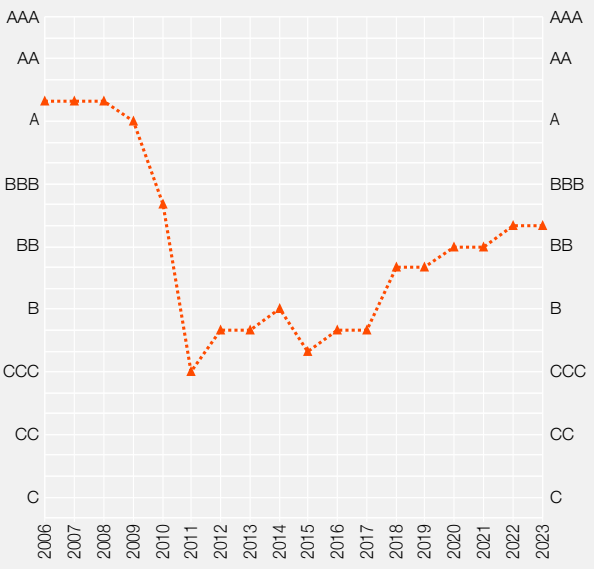
In line with the aforementioned international developments, Greek government bond yields rose substantially in 2022, while their movements over the first months of 2023 are consistent with those observed in the yields of other low-rated government bonds. At the same time, the upgrade of Greece's sovereign credit rating by two rating agencies in 2022 and by another

13 Euro area government bond yields declined after the failure of SVB (changes between 10.3.2023 and 24.3.2023: Germany: -37 bps; France: -35 bps; Italy: -31 bps; Spain: -35 bps; and Portugal: -37 bps).

14 Changes in bank equity prices between 9.3.2023 and 24.3.2023: S&P 500 Banks: -12.7%; EURO STOXX Banks: -17.6%). On 13 March 2023, i.e. the first trading day after the collapse of SVB, the implied volatility index for the US S&P 500 (VIX) increased by 38.8%, the corresponding index for the German stock market (VDAX) by 35.9% and that for European stocks (VSTOXX) by 43.2%. After the announcement of the interventions made by US financial authorities, volatility declined globally, but still remained higher than previously.

Chart IX.6 Greece's sovereign credit rating (2006 - 2023)

(annual data)



Sources: DBRS, Fitch, Moody's and S&P.
Notes: The triangles denote the level of the most favourable long-term sovereign credit rating for Greece at the end of each year. The latest available most favourable rating is reported for the current year.

one in early 2023 has narrowed the gap to investment grade.

In particular, during 2022 two major rating agencies (DBRS and S&P) upgraded Greece to BB+ from BB, with Fitch following suit in January 2023.[15] These upgrades have brought the country's credit rating to just one notch short of investment grade (see Chart IX.6). A further one-notch upgrade by any of these rating agencies would be a very favourable development, as it would bring the Greek economy into investment grade territory (see Box IX.2 on the drivers of upgrades).

Long-term Greek government bond yields in 2022 followed a strong upward path, which normalised towards the end of the year and in the beginning of 2023. Similarly, short-term bond yields trended upwards. Increases in long-term bond yields were smaller compared with short-term bond yields (see Chart IX.7). As a consequence, the yield curve of Greek government bonds shifted upwards and its slope flattened. The spread of the Greek 10-year bond vis-à-vis its German counterpart widened in 2022. As already mentioned, this is comparable with the widening spread between the Italian 10-year government bond and the German Bund, despite Greece's lower credit rating (see Chart IX.8). The finding that Greek government bond yields move closely in line with other euro area government bond yields was also confirmed during the market turmoil caused by recent developments in the US banking sector, with Greek government bond yields following the declining yields of other equally rated euro area bonds, as investors were revising their expectations of further hikes in key interest rates globally.

The Greek government limited its issuance activity in 2022, as rising yields implied higher borrowing costs through new issues.[16] In 2022, 3-, 6- and 12-month Treasury bills worth EUR 23.2 billion were issued, down from EUR 24.2 billion in 2021, with the weighted average cost of issues recording a sizeable increase (0.68%, from -0.35% in 2021). Issuance activity continued into the first months of 2023 with the issuance of Treasury bills, while the bulk of financing needs that were planned to be covered through issues on international markets has already been met with long-term bond issuance.[17]

15 On 18 March and 22 April 2022, respectively, DBRS and S&P upgraded the Greek economy by one notch to BB-high/BB+ from BB, while on 28 January 2023 Fitch also upgraded Greece's rating by one notch to BB+ from BB. Following the upgrades, Greece's rating is only 1 notch shy of investment grade according to Fitch, S&P and DBRS, or 3 notches according to Moody's. The latter, on 17 March 2023, changed the credit outlook for the Greek economy to positive from stable, signalling an upgrade in the near term. The upgrades of Greece's sovereign credit rating were followed by upgrades for the four Greek significant banks.

16 In 2022, fixed-rate bonds totalling EUR 6.1 billion, with a weighted average yield of 2.46%, as well as floating-rate (123 bps above EURIBOR) bonds totalling EUR 2.2 billion, were issued. Bonds amounting to EUR 8 billion matured during 2022, while bonds worth EUR 7.2 billion have matured so far in 2023.

17 In the first quarter of 2023, Treasury bills with maturities of 3, 6 and 12 months were issued, through which the Greek government raised EUR 6 billion at a weighted average interest rate of 2.8%. In January 2023, a 10-year bond issue of EUR 3.5 billion was launched, with a coupon rate of 4.25% (yield: 4.28%), while on 29 May a new 5-year bond issue of EUR 2.5 billion was launched, with a coupon rate of 3.875% (yield: 3.92%). By the end of the first quarter, the Greek government had covered 85% of its financing needs with market-based financing through medium-to-long-term bonds, as envisaged in the funding strategy of the Public Debt Management Agency (see PDMA, "Funding strategy for 2023").

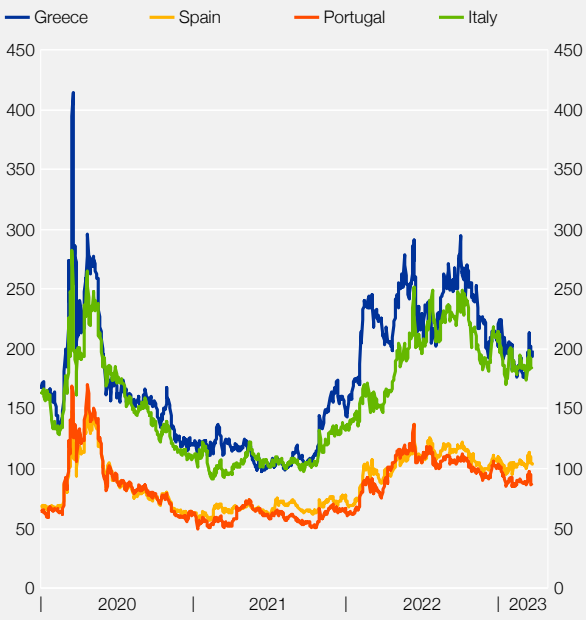
Chart IX.7 Greek government bond yields (January 2020 - March 2023)

(daily data, percentage yields %)

Source: Refinitiv.

Chart IX.8 Ten-year government bond yield spreads (January 2020 - March 2023)

(daily data, basis points)



Source: Refinitiv.
Note: The lines show the yield spreads of government bonds issued by the countries under review vis-à-vis the German Bund.

Lastly, transaction volumes on the secondary market for government bonds decreased in 2022 compared with 2021. In particular, the average daily value of transactions in HDAT (Electronic Secondary Securities Market) stood at about EUR 83.1 million in 2022, down from EUR 109.5 million in 2021. The average daily value of transactions in the Dematerialised Securities System (DSS), where domestic and international transactions are settled, amounted to EUR 475 million in 2022, compared with EUR 742 million in 2021. In 2023, by mid-March the average daily value of transactions had reached EUR 75.8 million on HDAT and EUR 413 million in DSS.

4 GREEK CORPORATE BONDS

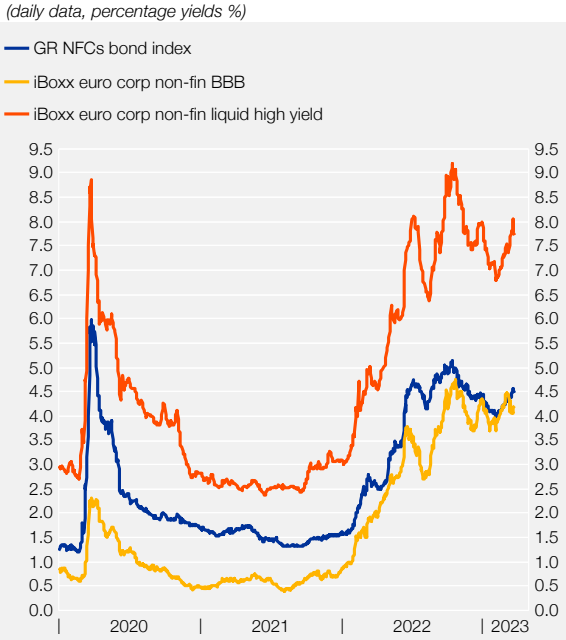
In 2022, developments in global corporate bond markets were adverse, due to rising yields, and issuance activity declined. Similarly, the yields of bonds issued by Greek non-financial corporations followed a strong upward trend (see Chart IX.9). The normalisation of corporate bond yields, which was observed towards the end of 2022 and in early 2023, was halted with the collapse of SVB, as the yields of global corporate bonds issued by financial or non-financial corporations, either subordinated or low-rated, rose.

Rising yields in 2022 affected the issuance activity of Greek non-financial corporations on bond markets, leading to a considerable reduction of new issues. As a result, in 2022 new issues of Greek corporate bonds were significantly reduced relative to 2021, in line with the worsening of the international financial environment.[18]

18 In 2022, four new issues totalling EUR 530 million were launched on the domestic market, with a weighted average coupon rate and a weighted average yield-at-issue of 3.95%. In 2021, five new issues totalling EUR 2.375 billion with a weighted average coupon rate of 2.86% (weighted average yield-at-issue: 2.88%) were launched on international markets, while seven new issues totalling EUR 1.42 billion, with a weighted average coupon rate and a weighted average yield-at-issue of 2.36%, were launched on the domestic market.

Chart IX.9 Yields of bonds issued by Greek and other European non-financial corporations (January 2020 - March 2023)

(daily data, percentage yields %)



Sources: Bank of Greece (GR NFCs bond index) and Datastream from Refinitiv (iBoxx euro corp non-fin BBB, iBoxx euro corp non-fin liquid high yield).
Notes: The GR NFCs bond index shows the weighted average yields of bonds of Greek non-financial corporations that have issued securities (Eurobonds) on international bond markets since December 2012. The iBoxx indices are weighted average indicators for bonds issued by non-financial corporations in euros. The "iBoxx euro corp non-fin BBB" index comprises BBB-rated corporate bonds, while the "iBoxx euro corp non-fin liquid high yield" index comprises high yield/non-investment grade corporate bonds.

reduced corporate profitability. In 2023, equity prices have recovered and volatility has subsided,[19] mainly as a result of more optimistic estimates about the path of world economic activity. Yet, the failure of SVB fuelled investors' concerns about the potential impact on banks' balance sheets from higher interest rates, triggering in March sharp falls in bank equity prices and an increase in volatility globally.[20]

Against this backdrop, share prices on the Athens Exchange rose slightly in 2022 (change in the Athex index: +4.1%; see Chart IX.10), faring considerably better than US and euro area share prices (2022: S&P 500: -19.4%; EURO STOXX: -14.4%). Over the first three months of 2023, share prices on the Greek stock market

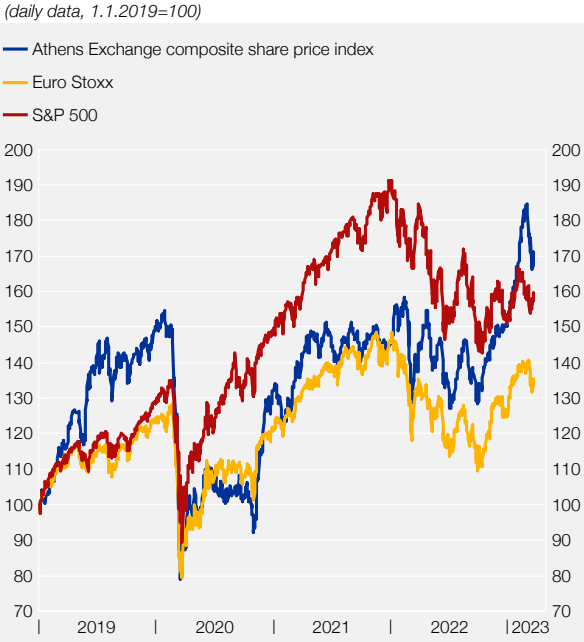
The total value of securities issued by Greek non-financial corporations through their subsidiaries on international markets from 2013 to this day stands at around EUR 12.6 billion, with outstanding amounts of EUR 5.2 billion. With regard to the domestic market, since it started operating in 2017 and until end-March 2023, bond issues by Greek non-financial corporations amount to about EUR 4.4 billion, with outstanding amounts of around EUR 3.7 billion. Finally, issues of sustainability-linked bonds were launched on the international and domestic markets, with an issue value of EUR 2.45 billion and EUR 1.1 billion, respectively.

5 THE STOCK MARKET

In 2022, equity prices dropped and volatility in international markets surged, in a context of downward revisions of the global economic outlook, higher interest rates and expectations of

Chart IX.10 Share price indices (January 2019 - March 2023)

(daily data, 1.1.2019=100)



Source: Refinitiv.
Note: The indices have been rebased on 1 January 2019, i.e. 1.1.2019=100 and all other observations capture the development of the indices relative to the reference value.

19 Year-on-year change in the averages of implied volatility indices for the period 1.1.2023-24.3.2023: VIX: -19%, VDAX: -30%, VSTOXX: -32%.

20 During the week that followed the collapse of SVB, the implied volatility indices VIX, VDAX and VSTOXX rose by 22%, 21% and 29%, respectively, compared with their averages since the beginning of 2023 (expressed as percentage changes in their averages from 9 to 16 March 2023, relative to their averages from 2 January to 8 March 2023).

rose (1.1.2023-24.3.2023: +9.8%), i.e. considerably more than share prices in the United States (S&P 500: +3.4%) and the euro area (EURO STOXX: +6.8%). During the turmoil in equity markets after the collapse of SVB, the Athex share price index dropped (change between 9 and 24 March 2023: -5.7%), also in line with the conditions that prevailed in global equity markets.

Trading activity (average daily trading volumes) in 2022 came to EUR 73.3 million, remaining relatively stable compared with 2021 (EUR 71.0 million), whereas between 1 January and 24 March 2023, it amounted to EUR 115.5 million, up by 24% year on year. In 2022, three companies were listed on the main market of the Athens Exchange, one of which was previously listed on the secondary market, two companies were listed on the secondary market, while five companies were delisted from the main market. Last but not least, share capital increases were carried out by listed non-financial companies, totalling about EUR 500 million, compared with around EUR 1.7 billion in 2021.

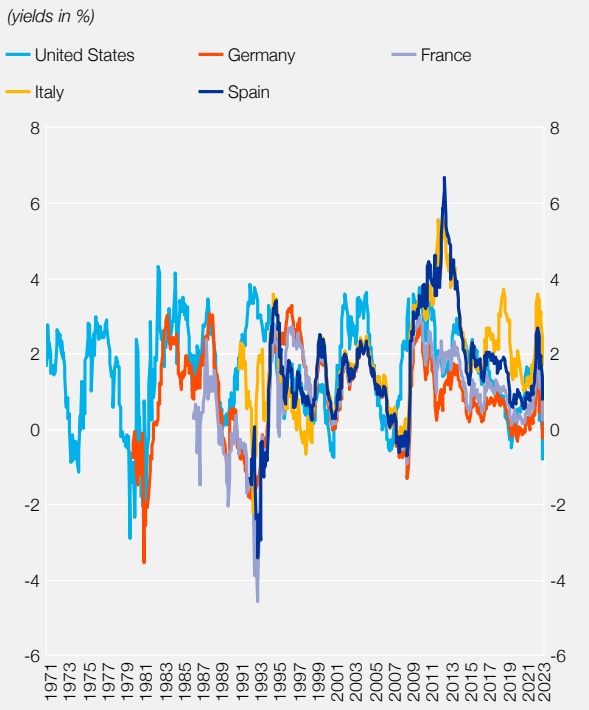
Box IX.1

LEADING FINANCIAL INDICATORS OF ECONOMIC ACTIVITY

The rise of inflation to levels last seen in the 1970s prompted a series of sharp and swift interest rate increases by central banks. Against this background, the debate on the economic impact of interest rate hikes has intensified, as have concerns of an imminent recession in major global economies, also as a result of the ongoing war in Ukraine.[1]

Because of the central role that the process of discounting plays in valuations, financial market indicators contain forward-looking information, which may be extracted by using appropriate econometric techniques to separate forward-looking information from other pricing factors. As a result, financial indicators may reflect investor expectations for global economic conditions in the remainder of 2023. In this box, we consider a set of financial variables from the bond and stock markets and assess their predictive power for economic activity. Finally, we econometrically analyse the forward-looking information they provide about economic activity in a number of major euro area economies and the United States.

Chart A Yield curve slope



Source: Refinitiv.
Note: Data shown for selected euro area economies and the US refer to spreads between yields of 10-year benchmark bonds and rates of 3-month notes.

The yield curve as a predictor of recessions

The slope of the yield curve, i.e. the difference between yields on long- and short-term securities, is an important leading indicator, frequently used to obtain forward-looking information about economic conditions. In particular, previous research, focusing on the US and other high-rated economies, has established the relationship of an inverted yield curve as a reliable indicator of impending recession.[2] The reason is that the mechanism for determining long-term yields is based on discounting the ex-

1 See e.g. "Slowing global economic growth is increasingly evident, high-frequency data show", *IMF Blog*, 13.11.2022 (retrieved on 26.1.2023).

2 See, among others, Estrella, A. and G.A. Hardouvelis (1991), "The term structure as a predictor of real economic activity", *Journal of Finance*, 46(2); and Estrella, A. and F. Mishkin (1996), "The yield curve as a predictor of recessions", *Current Issues in Economics and Finance*, 2(7).

pected path of short-term rates. So, an inverted yield curve is associated with an upcoming recession, as investors anticipate that, some time in the future, the monetary policy stance will become easier in order to support economic activity.[3]

Consequently, the observation of an inverted yield curve in the United States, but also in a number of major euro area economies such as Germany (see Chart A), is feeding concerns that a recession may be imminent. This is also corroborated by the downward revision of expected growth rates, as a result of the initial estimates of the economic impact of the war in Ukraine.[4] However, relying solely on yield curve signals to assess the probability of an impending recession would be precarious, considering the strong cyclicality of this indicator. Specifically, recent work has highlighted the need to take into consideration, in addition to the yield curve signals, the initial conditions of the economy.[5] For instance, when employment dynamics are strong, as is currently the case in the United States, a negative impact on economic activity, such as that caused by the rises of interest rates, will take some time before it is actually reflected as an increase in the unemployment rate, ultimately delaying the occurrence of a recession.

The relationship between the stock market and economic activity

Similar forward-looking information about economic conditions, although at shorter horizons than is the case for the yield curve, can also be extracted from stock markets. Equity returns are typically associated with the performance of the real economy, as the business cycle influences corporate profitability. The valuations of listed companies and the decisions of economic actors are then based on said profitability. Hence, this relationship is expected to be bidirectional, with stock returns being influenced by economic activity, due to the effect of the business cycle on listed firms' profitability, and stock prices acting as conveyors of forward-looking information on economic activity owing to their content embedded in expectations. Thus, while the separation of information from noise presents an important challenge to the modeller, especially for the analysis of stock market developments, it is possible to extract information from stock price movements about investor expectations of future economic conditions.

Recent work has highlighted the usefulness of listed firms' balance sheet data as leading indicators of economic activity.[6] At the same time, however, stock valuations are expected to be driven by the evolution of corporate profitability, as well as by a set of monetary and financial factors embedded in discount rates. Accordingly, a representative stock portfolio, such as the one that makes up a stock market index, can reflect systemic factors associated with listed firms' profitability, including the outlook for economic activity.[7]

Moreover, stock price movements may influence economic actors' decisions in different ways. For example, according to Tobin's Q model, the information contained in stock prices is useful for determining whether the com-

3 In the United States, each time the 10 year-3 month term spread has turned negative since 1973, a recession has ensued within the next two years (see Box A "Yield curve inversion and recession risk", *BIS Quarterly Review*, September 2019, 7-8).

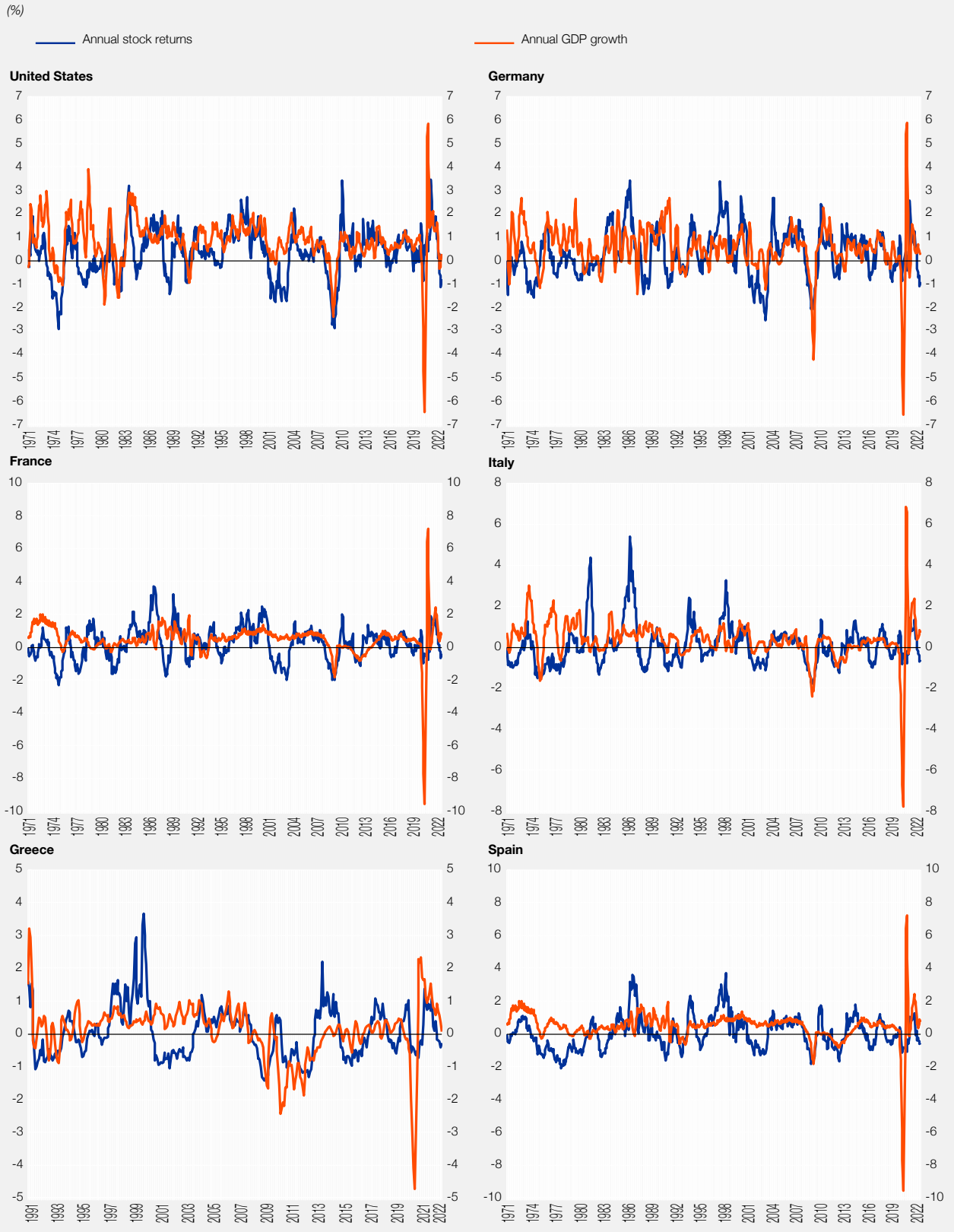
4 Indicatively, the European Commission's February 2022 forecast for Germany had been for a GDP growth rate of 3.6% in 2022; this fell to 1.6% in autumn 2022. For 2023, the November 2022 forecast projected a recession of 0.6% as opposed to the 2.6% economic growth assumed in the February 2022 forecast. Turning to the euro area as a whole, the February 2022 forecast had been for economic growth of 2.7% in 2023; this figure dropped to 0.3% in the November 2022 forecast.

5 See Kiley, M.T. (2023), "Recession signals and business cycle dynamics: tying the pieces together", Federal Reserve Board, *Finance and Economics Discussion Series*, No. 2023-008.

6 See e.g. Abdalla, A.M., J.M. Carabias and P.N. Patatoukas (2021), "The real-time macro content of corporate financial reports: a dynamic factor model approach", *Journal of Monetary Economics*, 118, 260-280; and Abdalla, A.M. and J.M. Carabias (2022), "From accounting to economics: the role of aggregate special items in gauging the state of the economy", *The Accounting Review*, 97(1), 1-27.

7 In the standard Capital Asset Pricing model (CAPM), it is expected that security returns will be affected by market returns and the risk-free rate with some sensitivity coefficient *(β)*. This relationship, together with each firm's accounting data, seems to explain between 70% and 90% of stock returns (see Fama, E.F. and K.R. French (1993), "Common risk factors in the returns on stocks and bonds", *Journal of Financial Economics*, 33, 3-56; and Fama, E.F. and K.R. French (1993), "A-five factor asset pricing model", *Journal of Financial Economics*, 116, 1-22). Valuation factors associated with a firm's accounting data have been shown to incorporate information pertaining mostly to GDP growth expectations (see Vassalou, M. (2003), "News related to future GDP growth as a risk factor in equity returns", *Journal of Financial Economics*, 68, 47-73).

Chart B Real stock returns and real GDP growth



Sources: Refinitiv data and Bank of Greece calculations.
Note: For each country, the blue lines represent the time-series of annual stock returns, after adjusting for annual inflation, while the orange lines represent the time-series of annual GDP growth (at constant prices), with a conversion from quarterly to monthly data. All time-series are normalised by their respective standard deviations.

pany can profit by expanding its business (e.g. by raising capital in order to proceed to investments). In this context, in an environment of high stock market valuations, corporate investments are enabled and economic activity is enhanced. Also, this relationship can be bidirectional, given that expected profitability influences listed firms' investment decisions, and ultimately also influences economic growth.[8]

Chart B illustrates the relationship between real stock returns and real economic growth rates by showing annual stock market index returns and annual GDP growth rates (at constant prices) for five selected euro area economies (France, Germany, Greece, Italy and Spain) and the United States over the period from 1.1.1971 to 1.1.2023.[9] As shown by the various panels of the chart, negative annual real stock market returns are very likely to precede negative annual real GDP growth. This, in turn, seems to confirm the existence of a strong link between investors' growth expectations and stock returns: during periods in which investors expect an economic slowdown, stock prices fall and negative stock returns are realised.

However, on the one hand, falling stock prices can reflect other factors as well, including negative spillover effects within an integrated financial system. On the other hand, in an environment of imperfect predictability, investor expectations may not materialise. In this respect, as shown in the panels of Chart B, there are cases of negative stock market returns that have not been followed by a downturn in economic activity. As a result, the monitoring of stock returns needs to be combined with additional information, before conclusions about the information content of stock market movements can be drawn with a high degree of confidence.

Estimation of recession probabilities

Bearing in mind the above-mentioned considerations already identified in previous studies, we estimate a discrete variable (ordered probit) model to predict the probability of a recession.[10] This model has as its dependent variable a discrete variable (recession) and as explanatory variables the term spread (with a three-to-four quarter lag) and annual stock market index return (with a one-quarter lag).[11] Chart C shows the predicted probabilities of recession in each economy for which the model was estimated.[12]

The panels of Chart C show that our estimated model is quite accurate in predicting recessions and has good predictive power for recessions 3 to 6 months ahead. For instance, in the United States each time the US economy had two or more consecutive quarters of negative GDP growth, the model-implied recession probability had exceeded 50% at least 3 months earlier. For Germany, our model gave earlier signs of recession in 7 of the 10 cases, when the predicted recession probability exceeded 30% up to 6 months in advance of the actual recession. An equally good predictive power is found for France. Turning to Italy and Spain, although increases in the respective model-implied recession probabilities appear to have predicted actual recessions, especially those that occurred after the 1980s, they also appear to give more "false-positive" recession signals than the average for the other countries.

8 This relationship is described in Allen, F. (1993), "Stock markets and resource allocation", Chapter 4, 81-108, in Mayer, C. and X. Vives (eds.), *Capital Markets and Financial Intermediation*, Cambridge University Press.

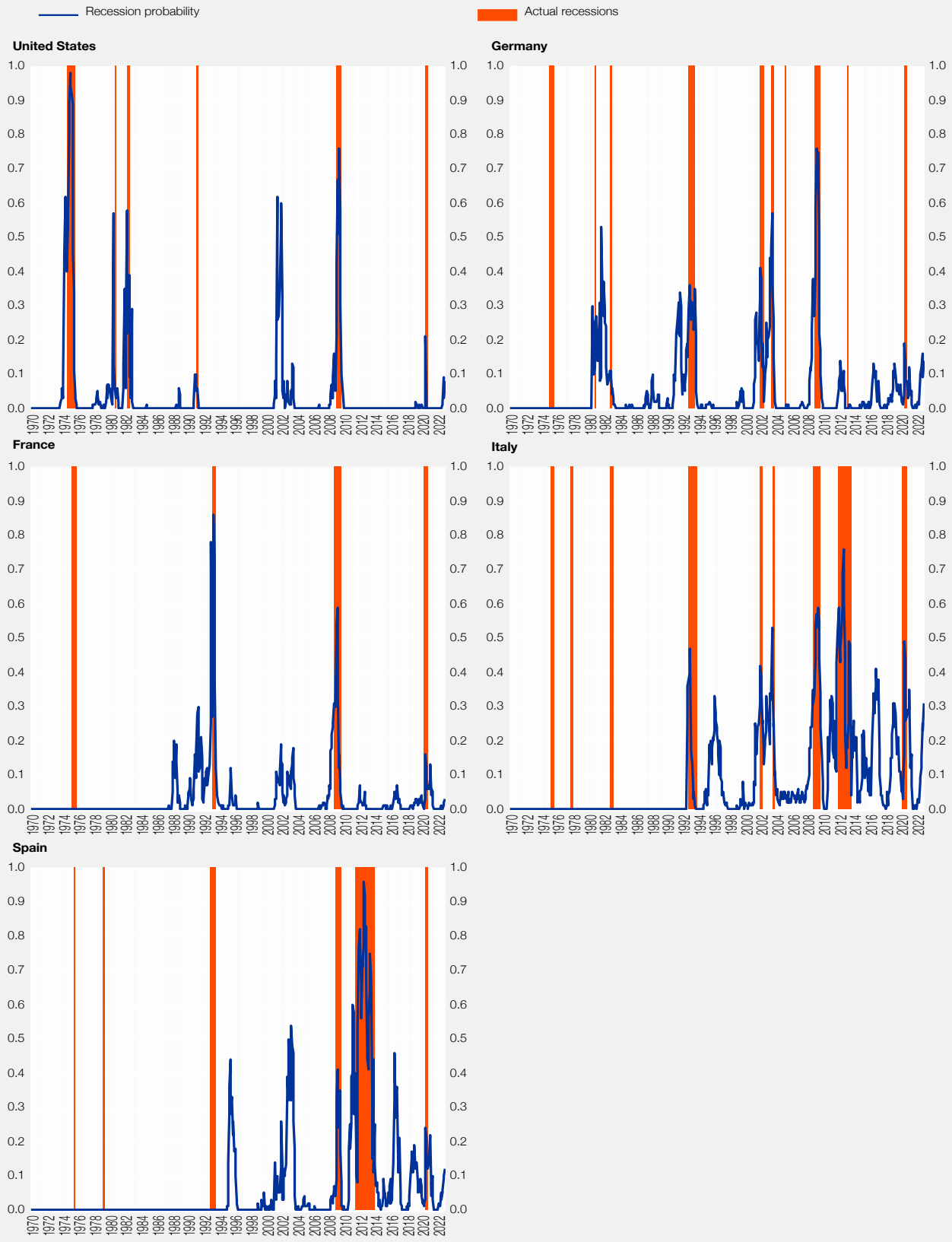
9 The real stock return is the return on a country's main stock market index from one year to the next, adjusting for inflation. The real economic growth rate is the rate at which a country's GDP (at constant prices) changes from one year to another. The methodology of calculation of real returns is described in Jorda, O., K. Knoll, D. Kuvshinov, M. Schularick and A. Taylor (2019), "The rate of return of everything, 1870-2015", *Quarterly Journal of Economics*, 134(3), 1225-1298.

10 For the purposes of this estimate, a recession is defined as two consecutive quarters of negative GDP growth. Since the data are at a monthly frequency, this definition is applied by assigning a value of 1 to the first month of each sixth-month period of continuous negative annual GDP growth (at constant prices) and a value of 0 to the remaining months. The sample period used for the estimation was from 1971:1 through 2022:9. The last three months of 2022 were used as an out-of-sample forecasting period to assess the model's out-of-sample performance.

11 We also examined the performance of a simpler model that excluded the variable of real stock returns. In each case, the Root Mean Squared Error (RMSE) of the forecast was significantly lower when the model included both the slope variable and the real stock returns. Listed companies' realised and expected profitability measures were also used as alternative explanatory variables for real stock returns, without significantly improving the model's predictive power.

12 Greece is excluded due to lack of past data on short-term interest rates.

Chart C Recession probabilities for selected euro area economies and the United States



Source: Refinitiv data and Bank of Greece econometric estimates.
Note: For each country, the blue lines show the recession probability predicted by a probit model that uses financial variables, while the orange shaded areas show actual recessions.

Overall, our model is found to have a good predictive power for actual recessions, especially in a predictive horizon of 3 to 6 months and in particular for major global economies, such as the United States and Germany. Its error distribution tends to be skewed towards predicting recessions more frequently than they occur, i.e. it is asymmetric, with a longer tail in the direction of false-positive recession signals. All in all, according to our empirical results, the likelihood of a recession occurring within the next few quarters in the economies considered is low.

Conclusions

The implied probabilities of two consecutive quarters of negative GDP growth in the United States, or in any of the major euro area economies considered herein are low. The financial variables examined do not provide signals for an upcoming recession during the first half of 2023. This bodes well for Greece as demand for Greek exports would remain unaffected.

Box IX.2

THE DRIVERS OF AN UPGRADE IN GREECE'S SOVEREIGN CREDIT RATING

Sovereign credit ratings are determined on the basis of information about the creditworthiness of the assessed issuers, as captured by a combination of their economic fundamentals and outlooks.[1] Thus, credit ratings are important inputs to portfolio allocation decisions.[2] As a matter of fact, in recent years their use as a valuable tool for making investment decisions has increased considerably, in line with the surge in debt issuance by sovereigns and corporations. Moreover, investment funds' mandates usually limit risk-taking in portfolios, so that their holdings consist to a great extent, reaching up to 90%, of debt securities that belong to the Investment Grade (IG).[3]

In the second quarter of 2022, international investment funds holding bonds managed assets worth around USD 28 trillion.[4] In this regard, it is evident that, if a bond issuer, e.g. the Greek government, has a sovereign rating in the Investment Grade, a vast pool of funds may invest in its bonds. Besides, it is easily understood that the broadening of the investment base that would result from Greece's upgrade to the IG would counterbalance the upward pressures on Greek government bond yields exerted by the tighter global monetary and financial conditions. This event would have considerable positive spillovers to the credit ratings of corporations and banks in the Greek economy, thereby attracting new capital and leading to lower borrowing costs.

Developments in the determinants of Greece's credit ratings

Against this backdrop, the upgrades of Greece's credit rating in 2022 by DBRS and S&P and by Fitch in early 2023 have been important developments, as Greece's sovereign credit rating is now marginally lower than the

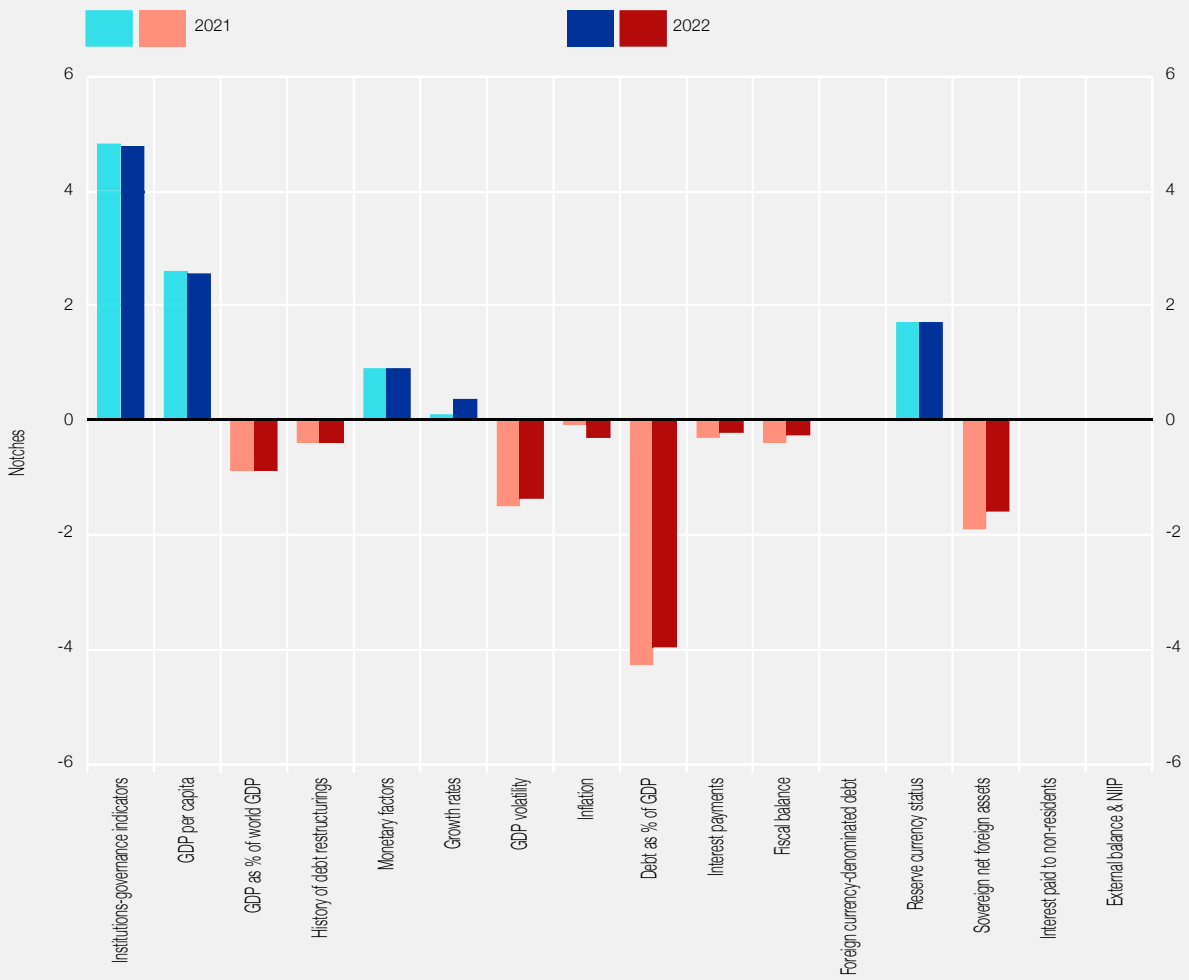
1 See IMF, *Global Financial Stability Report*, October 2010, Chapter 3: "The uses and abuses of sovereign credit ratings". Of course, the analysis of the economic outlook is based on expectations, which are subject to uncertainty, with several *ex post* studies, especially in the wake of financial crises, calling into question the accuracy of credit ratings (see *inter alia* Skreta, V. and L. Veldkamp (2009), "Ratings shopping and asset complexity: a theory of ratings inflation", *Journal of Monetary Economics*, 56:5, 678-695; and Heshki, B.I. and J. Shapiro (2011), "Credit ratings accuracy and analyst incentives", *American Economic Review*: 101:3, 120-124).

2 See U.S. Securities and Exchange Commission (2003), "*Report on the Role and Function of Credit Rating Agencies in the Operation of the Securities Markets*".

3 See Baghai, R., B. Becker and S. Pitschner (2020), "The use of credit ratings in financial markets", European Corporate Governance Institute Working Paper No. 612/2019. As suggested by the findings of the study, funds extensively use in their investment policies legally binding terms vis-à-vis investors, which refer to IG ratings. Specifically, 93% of US funds' investment policy mandates refer to credit ratings as a portfolio allocation criterion, and 88% refer to the IG threshold. Lastly, bonds that are rated BBB-/Baa3 or better account for 90% of the portfolios that are managed by investment funds bound by the IG threshold in their mandates.

4 Referring to bond funds, mixed fund and money market funds. Out of a total amount of USD 28 trillion, around USD 14 trillion is managed by US investment funds and USD 9 trillion by European funds. Data refer to the second quarter of 2022 and are drawn from the International Investment Funds Association (see "Worldwide Regulated Open-End Fund Assets and Flows Second Quarter 2022").

Chart A Determinants of Greece's sovereign credit rating



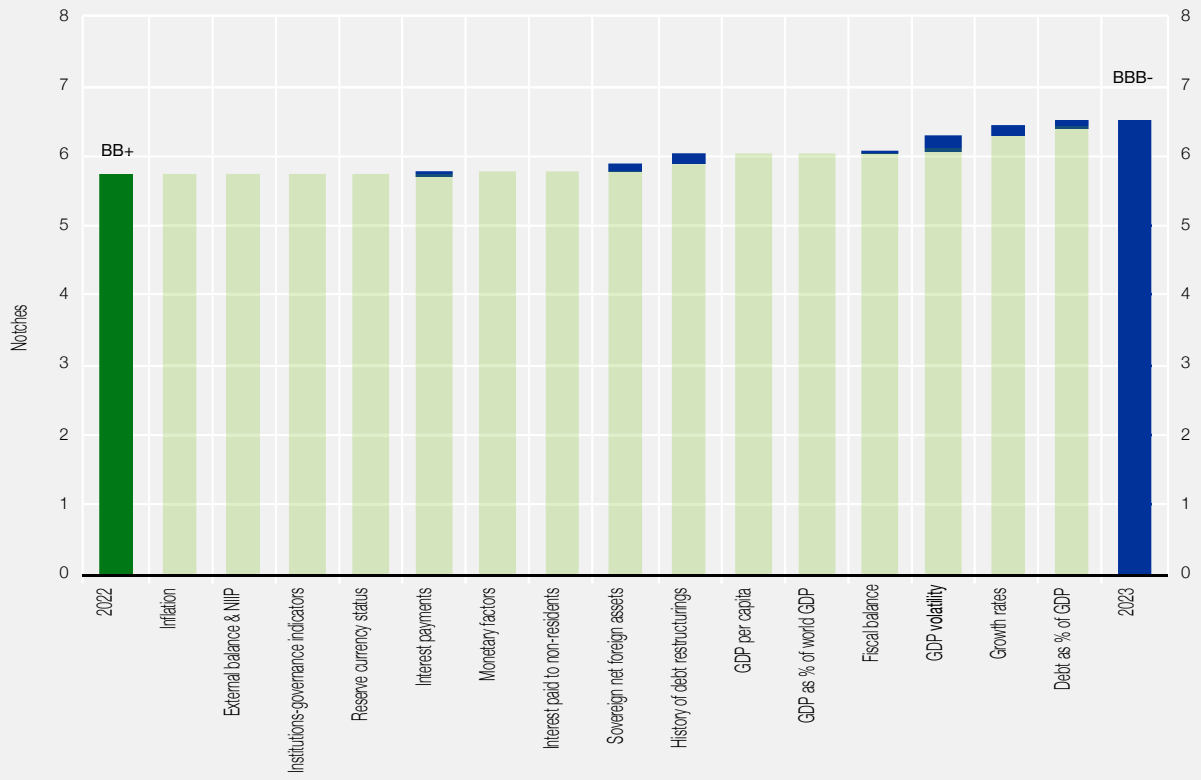
Sources: Credit rating agencies and Bank of Greece.
Note: The blue bars denote the factors with an upward effect on the quantitative component of the Greek economy's credit rating assessment, whereas the red bars denote the factors with a downward effect.

Investment Grade. In particular, the ratings assigned by the aforementioned credit rating agencies (CRAs) are currently BB+/BB-high, i.e. just one notch below the IG threshold (which is set at BBB-/Baa3/BBB-low), with all ratings beyond this threshold belonging to the investment category. According to reports published by these three CRAs, the developments that contributed to Greece's upgrade in 2022 and early 2023 mainly related to (a) the reduction in public debt as a percentage of GDP, (b) the robust performance of the Greek economy, given that its growth rate outperformed both expectations and the respective growth rates of most euro area economies, and (c) the decreasing stock of Greek banks' non-performing loans.

It is worth noting that this development has been anticipated[5] by the Bank of Greece econometric model of the parameters of sovereign credit ratings.[6] The application of the model to the fundamentals of the Greek economy for 2021 and 2022 can lead to conclusions regarding the contributions of fiscal aggregates, economic activity, external balance and structural factors.

5 See Bank of Greece, *Monetary Policy – Interim Report 2021. Executive Summary and Boxes*, Box 10 "Determinants of Greece's sovereign credit rating", pp. 59-63, December 2021.
6 See Malliaropulos, D. and P. Migiakis (2020) "Sovereign credit ratings and the fundamentals of the Greek economy", Bank of Greece, *Economic Bulletin*, No. 51, 43-72.

Chart B The contribution of the expected aggregates for 2023 to Greece's sovereign credit rating



Source: Bank of Greece.
Notes: The green bar denotes the initial rating, based on the fundamentals of the Greek economy in 2022, from the quantitative assessment performed by DBRS, Fitch and S&P. The blue bar denotes the final rating from the quantification of the expected outcomes after their realisation in 2023. The bars in between denote the contribution of each determinant by aggregating its previous contributions.

Chart A shows the contribution of each variable of the quantitative assessment underlying the Greek economy's credit ratings in 2021 and 2022.[7] A comparison between these two years reveals that the recent upgrades have come mainly as a result of improvements in fiscal fundamentals, such as debt and budget balance. Specifically, the expected decline in public debt to 169% of GDP during 2022, from 193% of GDP in 2021, led to an increase of around 0.5 notches in the respective quantitative variable, and at the same time drove upwards by 0.4 notches the variable of sovereign net foreign assets, as a result of Greece's reduced liabilities to non-residents. In addition, the further improvement of the budget balance made a contribution of 0.15 notches. Thus, the positive development of public finances in 2022 fully accounts for the one-notch upgrade, i.e. from BB to BB+.

The outlook for 2023

The parameters of credit ratings for Greece, on the one hand, provide an ex post validation of the ratings reported by CRAs, while on the other hand they can help formulate expectations about upcoming developments. In this regard, using the above model, it is possible to quantify the contribution of the expected macroeconomic and other developments for 2023 to the determination of credit ratings. Chart B illustrates the numerical changes that are expected to occur in each of the parameters of Greece's sovereign credit rating, on the basis of expected outcomes for GDP growth, fiscal balance and public debt in 2023.[8]

7 CRAs' assessment for assigning a credit rating to an issuer entails two stages, a quantitative and a qualitative one. The qualitative assessment refers to non-quantifiable factors, e.g. a country's EU/euro area membership, and its contribution to the final rating may have an upward or downward effect on the score resulting from the quantitative assessment.

8 Data sources are the Introductory Report on the 2023 Budget and the Bank of Greece forecasts – see Chapter I herein.

In particular, changes are calculated assuming that in 2023 GDP will grow by 2.2%, public debt will decrease to about 159% of GDP and a primary surplus of 0.7% of GDP will be achieved. These developments also affect other variables of the quantitative assessment towards the same direction. For instance, a positive growth rate is expected to raise GDP per capita, as well as the share of Greek GDP in world GDP, while a further reduction in public debt is set to further improve Greece's sovereign net foreign assets.

As shown in Chart B, the achievement of fiscal targets and the expected macroeconomic outcomes for 2023 is set to increase the score resulting from the quantitative component of the Greek economy's assessment by about 0.8 notches. The chart shows that the expected fiscal developments and the expected macroeconomic performance contribute almost equally to this development (by 0.32 and 0.33 notches, respectively). All in all, these expected outcomes are signalling a one-notch upgrade in Greece' sovereign credit rating, which in turn will lead to the ultimate goal of the IG rating.

Therefore, an upgrade to Investment Grade in 2023 is feasible. Nevertheless, this upgrade is not to be taken for granted, particularly in the light of concerns about an upcoming global economic slowdown in 2023 accompanied by deteriorating financial conditions globally, which contribute to a credit rating cycle of downgrades rather than upgrades.[9] As a result, CRAs are likely to incorporate any positive developments into their credit ratings only after these have materialised, i.e. once the fiscal targets and the macroeconomic outcomes have been achieved. Of course, any better-than-expected macroeconomic and fiscal outcomes for the Greek economy, or a further improvement in factors such as its institutional environment, will strengthen the outlook for upgrades.

Conclusions

After successive upgrades, Greece's sovereign credit rating is very close to the Investment Grade. The outlook for further upgrades, which will result in obtaining an IG rating, is favourable, especially if the primary surplus target is met and the economic growth forecasts are confirmed in 2023. Such an upgrade would be of critical importance, as it would lead to a much broader investment base for Greek government bonds, containing the upward pressure exerted on yields by the tightening of global monetary and financial conditions. It would also have a positive impact on Greek businesses and banks by reducing their funding costs and attracting new capital.

Yet, as a result of an economic slowdown globally and a worsening outlook for sovereign and corporate credit ratings, owing to increased borrowing costs, it should not be expected that the upgrade to Investment Grade will occur automatically with the attainment of some fiscal or macroeconomic targets. Furthermore, it should also be taken into consideration that the determinants of credit ratings affect them only after the expected outcomes have materialised. Against this background, the upgrade of Greece's sovereign credit rating to Investment Grade is very likely once it becomes apparent that the path of macroeconomic and fiscal aggregates in 2023 confirms the positive outlook.

9 For instance, in its report on global credit rating outlook for 2023, S&P notes that downward pressures on credit ratings are expected to intensify, mainly as a result of slowing economic growth rates and higher borrowing costs (see "Global credit outlook 2023: no easy way out", S&P, 1.12.2022).

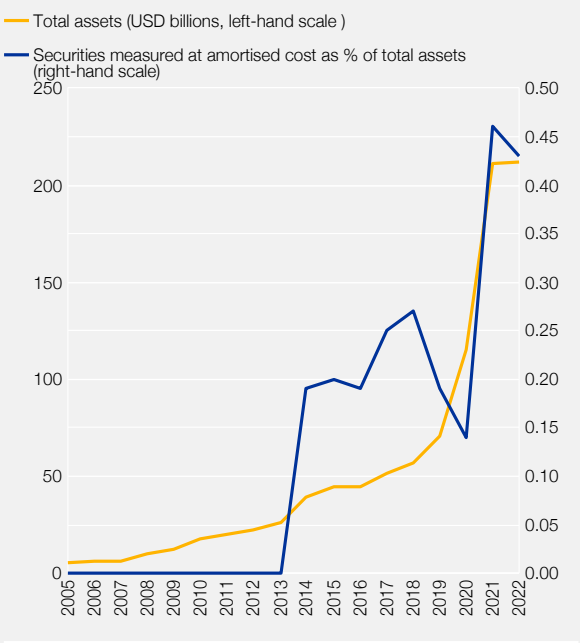
Box IX.3

THE FAILURE OF SILICON VALLEY BANK (SVB)

On 10 March 2023, the regulatory authority of California placed Silicon Valley Bank (SVB) into receivership, following a massive outflow of deposits by the bank's customers. The crisis was triggered by news that SVB had suffered heavy losses on its bond portfolio, putting its non-guaranteed deposits at risk. In response, US authorities announced a blanket guarantee of all SVB deposits[1] to preserve public confidence in the domestic banking sy-

1 The guarantee also applied to deposits at Signature Bank, which US regulators closed on 12 March 2023, just two days after SVB's failure.

Chart A SVB balance sheet data



Sources: Refinitiv and Bank of Greece calculations.

stem. The main purpose of this box is to briefly describe the conditions that led to SVB's collapse, the systemic implications for the United States and beyond, and what this may mean for monetary policy going forward.

Silicon Valley Bank was the 16th largest bank in the United States based on total assets and was heavily focused on catering to the high-tech sector.[2] Although the bank was founded in 1983, its balance sheet remained below USD 10 billion until the global financial crisis, when it started to grow, reaching USD 211 billion by 2021 (see Chart A). The high-tech boom during the COVID-19 pandemic and the consequent increase in funding for companies in the industry, together with the dominant position of the bank in the Silicon Valley ecosystem, led to a further growth of the bank, through a trebling of its customer deposits between 2019 and 2021. With deposits being a valuable funding source for any bank, three-quarters of this deposit growth was invested in long-term debt such as US Treasuries and, to a lesser extent, US agency securities, which, in an environment of low interest rates in 2021, offered more attractive yields.

However, rising interest rates brought about severe losses on SVB's bond portfolio. With higher interest rates, the prices of existing bonds fall, and this fall is greater for long-term bonds. By the end of 2022, unrealised losses had reached 8.5% of total assets, making SVB more vulnerable to a bank run. Amid signs of recession in the high-tech sector during 2022, SVB's customers increasingly drew down their deposits to finance their operations. At the same time, a further rise in short-term interest rates, which resulted in an inverted yield curve, triggered shifts out of SVB deposits towards higher-yield assets, such as government bonds or money market funds.

As bonds in SVB's portfolio had long maturities, their prices fell substantially following increases in policy rates. Valuation losses on securities affect a bank's profit and loss account when the securities are sold or when they are measured at fair value, but not when they are valued at amortised cost. SVB's securities were classified as "held-to-maturity" and valued at amortised cost; so, under normal conditions, the decline in their market value would not have impacted on the bank's financial results.

The need for a recapitalisation of SVB arose because the bank liquidated part of these positions to meet liquidity needs, resulting in realised losses of about USD 1.8 billion. Thus, SVB had to increase its capital. On 8 March 2023, SVB announced plans for a USD 1.75 billion capital increase. It soon became obvious, however, that this amount would be hard to cover, as investors were unwilling to participate. This triggered a massive run on the bank's deposits.

Deposits are typically a valuable funding source for banks, as they are not subject to large short-term fluctuations. In the United States, they are insured up to USD 250,000 per depositor, per bank. However, given SVB's unusual business model, the majority of customer deposits were corporate deposits (which are less stable than household deposits, especially as SVB's corporate customers were active in a recession-hit high-tech sector) largely exceeding the deposit insurance ceiling. The bank's failure to raise new capital so as to meet deposit outflows led to its closure.

Consequently, SVB's collapse, although it is the biggest bank failure in the United States since 2008 and the second largest in US history (measured in nominal value terms), has different qualitative characteristics compared

2 See FRB: Large Commercial Banks – December 31, 2022 (federalreserve.gov).

with the bank failures that occurred during the global financial crisis. There was no lending to high-risk borrowers, nor exposures to opaque and risky products. Rather, it was due to an underestimation of portfolio risk, as high exposure to long-term bonds was not hedged by swap contracts, thereby exposing SVB's assets to interest rate risk, while its liabilities had already been exposed to such risk, as the high-tech sector, which had thrived amid the low interest rate environment of the previous few years, was the almost exclusive source of deposits for SVB. At the same time, as a result of too little diversification, SVB could not benefit from a commensurate decline in the value of its liabilities, as would have had with a higher share of long-term liabilities. Therefore, SVB's problems may not be relevant for banks with more diversified portfolios.

Systemic implications and institutional responses

The likelihood of systemic implications from SVB's collapse was initially small, as this bank did not have significant ownership or other links with other banks. Notwithstanding that, the US Treasury, the Federal Reserve and the Federal Deposit Insurance Corporation (FDIC) jointly stated that all SVB depositors would be satisfied for the total of their deposits, while they also announced the launch of a new lending facility encompassing depositors across all credit institutions. In this manner, the US financial authorities in effect provided an ex-post guarantee for all depositors, aiming to bolster confidence in the US banking system and prevent a new bank run episode.[3] Under normal conditions, deposits are insured and protected by the FDIC up to USD 250,000 only. Any amounts in excess of this ceiling are subject to the regular insolvency proceedings and are only compensated if the failed bank's assets are sufficient, with depositors still enjoying priority ranking over bondholders and shareholders.

A new Bank Term Funding Program (BTFP)[4] is based on funding from the Fed and provides liquidity for up to one year to financial institutions against collateral of high-quality bonds. The unique feature of the BTFP is that lending is based on the par value of collateral rather than market value. This is particularly important for banks that, like SVB, had suffered losses on their balance sheets due to the increase in interest rates and the resulting decline in the value of their long-term fixed-rate bond portfolios.

An important lesson from SVB's failure is the significant role of the regulatory policies developed in the wake of the global financial crisis to reduce systemic risk in the financial system. In 2018, the threshold for a bank to be considered systemically significant was raised from USD 50 billion to USD 250 billion. These policies included, among other things, a requirement on regulators and supervisors to conduct periodic stress tests of banks' balance sheets, so that appropriate measures can be implemented should risks be identified. If SVB had been subject to the more stringent regulatory regime, it might have been forced to hedge its interest rate risk exposure, thereby offsetting the losses resulting from rising interest rates.

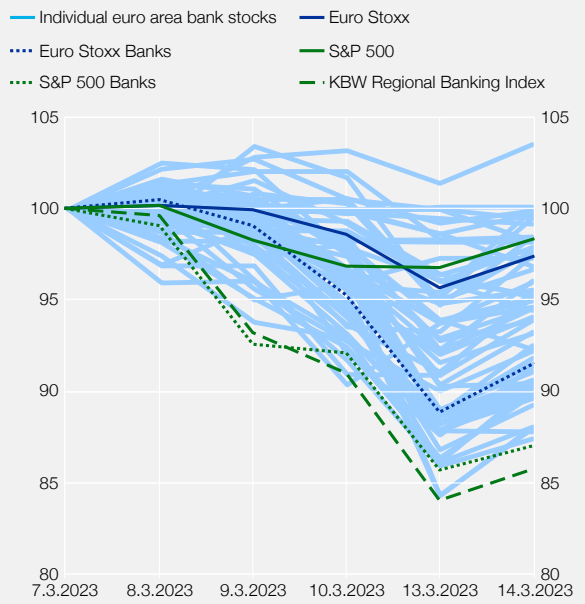
The impact of SVB's failure on international capital markets

The developments at SVB affected global financial markets, with a decline in stock prices and a bout of volatility as soon as the bank announced realised losses and the need for a capital increase, which seemed doomed to fail amid widespread risk aversion among investors. As can be seen in Chart B, bank stock prices fell sharply in the United States between 9 and 13 March 2023. On 14 March, stock prices recorded positive returns, implying that FDIC's ex-post guarantee of all deposits at SVB was effective in smoothing out the strong negative initial reaction. A comparison between the KBW Bank Index, which tracks regional US banks, and the S&P 500 Banks Index, which is used as a proxy for the US banking industry, shows that stock prices for regional banks fell more than those for global systemically important banks (G-SIBs), suggesting that markets have priced in a greater risk of an SVB-like episode occurring in one or more of the regional US banks.

The collapse of SVB and the response of US authorities to bolster depositor confidence in the financial system have also influenced market expectations of the future path of monetary policy (see Chart C). In greater detail, high uncertainty is observed in investor expectations regarding the next moves of central banks, particularly the Fed, in the meetings of 2023.

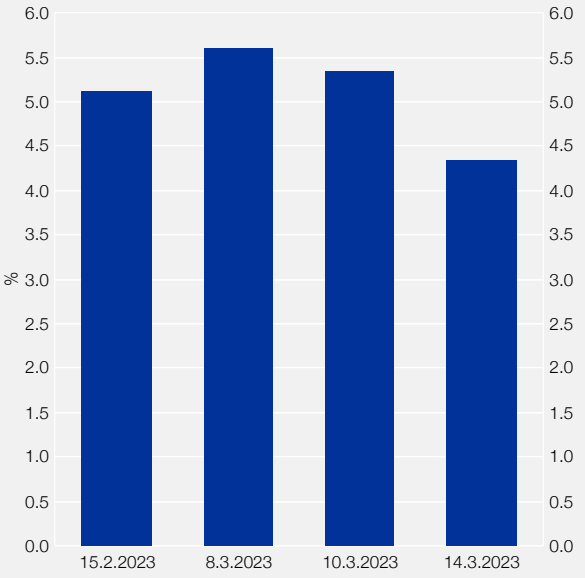
3 See Joint Statement by Treasury, Federal Reserve, and FDIC, 12.3.2023.
4 See Fed press release, 12.3.2023.

Chart B Change in bank stock prices during the SVB episode



Sources: Refinitiv and Bank of Greece calculations.
Note: The stock indices have been rebased to 100 on 7.3.2023, i.e. the day before SVB announced the need for a capital raise and losses on its bond portfolio. Observations after that day reflect the evolution of the stock indices until 14.3.2023. In addition to the Euro Stoxx, Euro Stoxx Banks, S&P 500 and S&P 500 Banks indices, the chart shows the performance of 63 euro area bank stocks, the total assets of which accounted for 64% of the total assets of banks supervised by the Single Supervisory Mechanism (SSM) as of the end of September 2022.

Chart C Expected interest rates in the US



Sources: Refinitiv and Bank of Greece calculations.
Note: The bars show, at four different dates, the expected level of the federal funds rate at the FOMC's December 2023 meeting, as inferred by CME futures contracts.

The measures taken by central banks to stem the nascent crisis have helped shore up market sentiment. However, the significant increase in the MOVE implied volatility index for US Treasuries (see Chart D) suggests ongoing investor concerns about the impact of rising interest rates on bond prices. Investor concerns were initially reflected to a lesser extent in the implied volatility indices for stocks, with VIX and VDAX increasing with a few days' delay to levels well above their long-term averages, indicating persisting investor concerns. Of course, the observed pick-up in volatility may be unrelated to the SVB case but rather it may reflect concerns that the combination of low-yielding assets and rising interest rates could affect more banks.

In the euro area, the prices of bank shares fell as well, albeit less than in the United States, with the biggest euro area losers recording similar returns to US banking stock indices. In both economic areas, general stock market indices were far less affected than the banking sub-indices. Finally, in the euro area market for corporate bonds issued by financial corporations, yields increased for subordinated and lower-rated bonds, which exhibit greater sensitivity to changes in monetary and financial conditions (see Chart E).

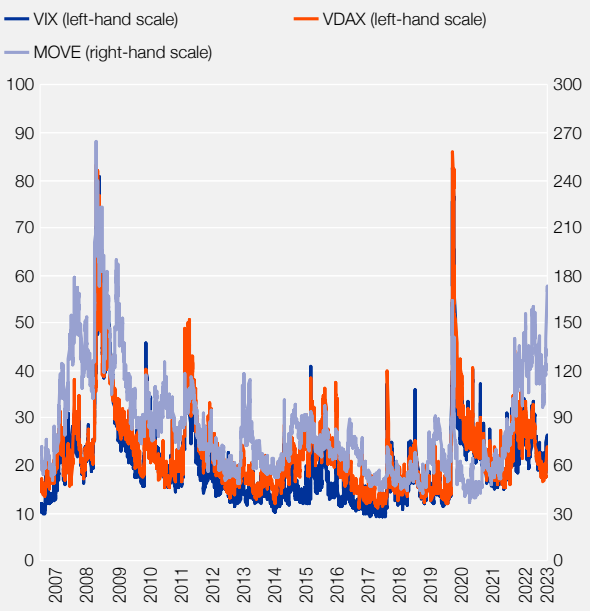
Conclusions

Following interventions by US financial authorities to contain the impact of SVB's collapse, the risk of contagion has diminished, as has the risk of a confidence crisis. However, the case of SVB is indicative of the impact of rising interest rates on both the asset and liability sides of bank balance sheets. In SVB's case, the fall in the value of its bond portfolio and the forced selling to meet liquidity needs in the face of mass withdrawal of deposits resulted in losses and the need for a capital increase. Given that the same factors may be at play in other US regional banks, the interventions of US financial authorities have bolstered depositors' confidence and staved off the risk of a confidence crisis in other banks.

Of particular interest are also the possible implications of the BTFP. Central banks traditionally provide liquidity against high-quality collateral, valued at market prices. Instead, the BTFP values collateral at par, which means that it removes duration risk from bank balance sheets, while at the same time it enables the Fed to pursue its monetary policy objectives without having to worry about financial stability; this greatly facilitates the tightening of monetary policy.

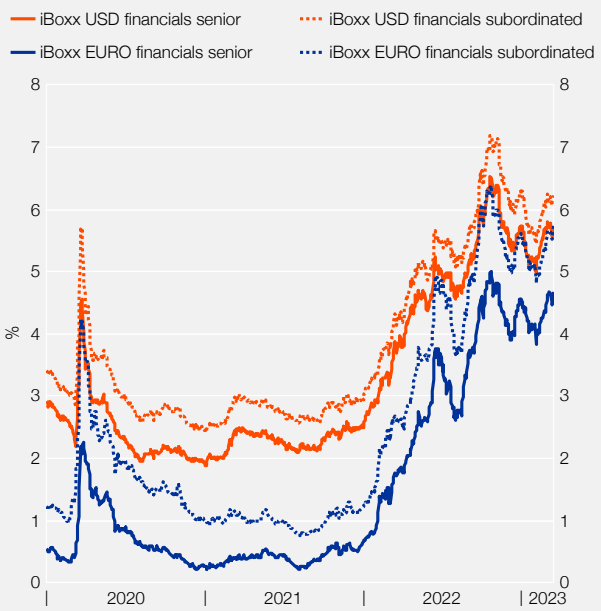
The case of SVB may also impact on the financing of intangible assets. A key feature of the digital economy is

Chart D Implied volatility indices



Source: Refinitiv.

Chart E Funding costs



Source: Refinitiv.

the central role of intangible capital, whose share has risen rapidly in recent decades. Intangible capital (ideas, software, etc.) is hard to value and to resell, so it is more difficult for firms with more intangible assets to borrow from traditional banks. This explains the important role of specialised firms providing venture capital (VC) financing to the high-tech sector, supporting business ideas based on complex technologies. Financial companies have tried to address this issue through venture debt (VD), a financial product pioneered by SVB. VD involves lending to startups with venture capital backing – the presence of VC backing is a sign to the bank that the project has a positive net present value (NPV). Such networks are hard to build, so SVB's collapse will probably be a setback to the development of VD.

This business model was expensive to run, because it relied on customer service, and became profitable by combining VD with other banking products. But this was not sufficient to cover the costs, so the bank sought moderate returns by investing in long-term bonds. Large banks do not offer venture debt, so it is unclear whether this model can coexist with the risk management benefits of a typical bank. The failure of this model could be especially troubling for Europe, where innovative debt financing ideas are needed, but the United States' depth of VC is lacking.

X ENVIRONMENT, ENERGY AND CLIMATE CHANGE

2022 and the first months of 2023 were marked by the direct and indirect impact of the war in Ukraine and its synergies with developments in the energy sector as well as with climate change. One visible outcome has been the worsening of economic inequality within countries, but also between developed and developing countries (with severe famine, mainly in African regions). Another was a halt (to some extent) to the progress in tackling climate change, whenever it was considered that ensuring energy sufficiency was in conflict with the decarbonisation policy. However, at the 27th Conference of the Parties to the UN Convention on Climate Change (COP 27, November 2022) and at the 15th Conference of the Parties on Biodiversity (COP 15, December 2022) some important steps were taken, albeit less than required by the current situation and projections. Some positive developments in policy measures have taken place in the EU, the United States, Brazil, as well as in Greece.

In the period under review, central banks and supervising authorities continued within their mandate to act towards further integrating climate issues into their functions, thus contributing to addressing climate risks and meeting governments' sustainability objectives.

In the scientific field, a major breakthrough in nuclear fusion reaction research was achieved at a California laboratory in December 2022, but it will take further efforts and several decades before fusion is commercialised for electricity generation. Important studies and reports were also published on the economic policies required to tackle climate change and its health implications. The latest report from the UN Intergovernmental Panel is a desperate call for coordinated, massive and rapid action by all countries to limit global warming to 1.5°C. Failure to do so would have catastrophic and irreversible consequences.

Finally, during the period under review, extreme weather events were particularly frequent worldwide: floods in Asia, Australia and Europe; droughts and falling river levels in Europe and the United States; heatwaves in Europe; melting of ice in Antarctica, the Arctic and Greenland; as well as severe bad weather and storms in the United States.

1 GLOBAL REAL DEVELOPMENTS AND POLICIES ON CLIMATE CHANGE AND ENERGY, MAJOR SCIENTIFIC FINDINGS AND REPORTS[1]

Following Russia's invasion of Ukraine on 24 February 2022, ensuring energy has become crucial, especially for European countries. In some cases, however, this was seen as conflicting with rapid decarbonisation (see Box X.1). It is worth noting that at the 27th UN Climate Change Conference of the Parties (COP 27, held in Sharm El-Sheikh, 6-20 November 2022) no agreement was reached on accelerating the reduction of greenhouse gas emissions or phasing out all fossil fuels, despite reliable UN reports[2] having predicted earlier that the commitments of the signatories to the Paris Agreement would result in a devastating increase in global average

1 The cut-off date for information and data used in this chapter is 22 March 2023.

2 See UNFCCC, *Nationally determined contributions under the Paris Agreement – Synthesis report by the secretariat*, 26.10.2022, and UN Environment Programme, *Too Late, Too Slow – Climate adaptation puts the world at risk*, 27.10.2022. Also: IPCC, *Climate Change 2022*: *Mitigation of Climate Change – Summary for Policymakers*, Working Group III contribution to the Sixth Assessment Report, 4.4.2022. See also the IPCC report that followed on 20 March 2023 entitled *Synthesis Report of the IPCC Sixth Assessment Report (AR6) – Summary for Policymakers*, the key message of which is summarised in the introduction to this chapter.

temperature by 2.5°C by the end of the century, versus a target of 1.5°C.[3] It is also indicative that Germany, despite having planned to shut down its last three nuclear power plants at the end of 2022, announced on 5 September that two of them would remain operational as a backup option. Furthermore, Sweden has been implementing a policy for gradually phasing out nuclear power plants since the 1990s. However, the newly elected government in September 2022 is now offering incentives to promote the construction and operation of new nuclear reactors. (It should be recalled that in February 2022 the European Commission had proposed including nuclear energy and natural gas in the investments eligible for funding on a transitional basis and under strict conditions. The European Parliament adopted this proposal on 6 July 2022, against strong objections. However, Austria and Luxembourg have taken legal action against it, while several large non-governmental environmental organisations have announced their intention to appeal against this decision before the European Court of Justice.)

The COP 27 decision[4] had a positive outcome, as it laid the groundwork for rich polluters to finance a new loss-and-damage fund to compensate poor countries for damages caused by climate change. Further details will be determined at the next Conference of the Parties.

At the EU level, the REPowerEU plan was presented, while many governments implemented measures to tackle the severe energy crisis resulting from the war in Ukraine (see Box X.1 in more detail). In December 2022, a provisional and conditional political agreement was reached between the Council of the EU and the European Parliament regarding the Carbon Border Adjustment Mechanism (CBAM), laying the foundation for carbon market reform. This agreement provides for the introduction of a carbon tax on imports of products from countries with less stringent standards. The agreement will be implemented gradually, starting from 1 October 2023 and ending on 31 December 2025, subject to reporting on imported products.

The US government passed the Inflation Reduction Act in August 2022, allocating a budget of USD 370 billion for subsidies to invest in energy and tackling climate change, with the aim to reduce emissions by 40% by 2030 (compared to 2005).[5] Although this law is undoubtedly a positive step towards addressing climate change, it has been strongly criticised by the EU for protectionism, as it grants preferential treatment to US-based businesses and could potentially drive investment from EU countries to the United States. In response, the European Commission proposed two legislative measures in March 2023: one seeks to "strengthen Europe's net-zero technology manufacturing products ecosystem" and the other to ensure the supply of critical raw materials.[6] Additionally, in the same month, after a meeting between the President of the European Commission and the President of the United States, discussions have started, which are expected to be long, but will hopefully lead to a trade deal regarding critical raw materials and to a possibility of European enterprises benefiting from the US Inflation Reduction Act.

Turning to other countries, Brazil serves as a prime example, as the election of a new president in October 2022 resulted in a commitment to climate change policies and a radical shift towards preserving the Amazon rainforest, which is considered as the Earth's lungs. Latin America is generally seen as a region that can make a significant contribution to the global transition to-

3 See also the forecasts included in the report: David I. Armstrong McKay et al., "Exceeding 1.5° C global warming could trigger multiple climate tipping points", *Science*, Vol. 377, No. 6611, 9.9.2022.

4 See: Decision -/CMA.4 Sharm el-Sheikh Implementation Plan and Funding arrangements for responding to loss and damage associated with the adverse effects of climate change, including a focus on addressing loss and damage.

5 See also the relevant report from Brookings Institution: Sud, R., S. Patnaik and R.L. Glicksman, "How to reform federal permitting to accelerate clean energy infrastructure – A non-partisan way forward", *Brookings Policy Brief*, February 2023. Also: Jacob Funk Kirkegaard, "The US-EU race for green subsidies can help fight climate change", *Realtime Economics*, Peterson Institute for International Economics (PIIE), 14.2.2023.

6 See (i) Proposal for a Regulation on Establishing a framework of measures for strengthening Europe's net-zero technology manufacturing products ecosystem (Net zero Industry Act), 16.3.2023, and (ii) Proposal for a Regulation on Establishing a framework for ensuring a secure and sustainable supply of critical raw materials, 16.3.2023.

wards renewable energy sources (RES). Brazil, Mexico and Chile are rich in RES and are among the 15 countries participating in the UN's RELAC initiative (Renewable Energy for Latin America and the Caribbean),[7] launched in 2019. The aim of this initiative is to achieve a minimum of 70% renewable energy participation in the region's electricity matrix by 2030.[8]

Recently, Greece passed a climate law (Law 4936/2022; see also Box X.2) in May 2022. Like in other countries, a panoply of measures has been deployed to assist households and businesses in response to the surge in energy costs (see Annex to Chapter V and Box II.3).[9] Due to unforeseen circumstances, some countries have resorted to providing subsidies for fossil fuels, the use of which reached record highs in 2022, in direct contrast to the decisions taken at COP 26 in Glasgow in 2021.[10]

The 15th UN biodiversity conference was held in 2022 (COP 15, Montreal, 7-9.12.2022), after a two-year break due to the pandemic. Despite some pessimistic forecasts, the international press described the outcome of the Conference as historic. Its decision foresees (despite some ambiguities) a target of preserving 30% of land and seas by 2030, protecting indigenous rights and doubling the resources for nature conservation over the next eight years. In many respects, protecting biodiversity and tackling climate change are seen as interdependent or "twin" goals.[11]

As regards climate actions of the ECB, there has been significant progress since the ECB's commitments in July 2021.[12] These actions relate to three pillars: managing climate risks; supporting the transition to a green economy; and promoting further action (see also Box X.3).[13] In its effort to enhance climate-related information communication, the Eurosystem started publishing this information as of the first quarter of 2023, as well as the first statistics on sustainable finance debt securities.[14] Box X.4 reports central bank disclosures in response to the recommendations of the Financial Stability Board (FSB), while the last part of this section outlines the activities, research papers and other publications related to the integration of climate change issues into the institutional and supervisory framework of credit institutions.

The growing need to address both the climate and energy crises has resulted in the production of valuable documents outlining the necessary economic policies,[15] while particular consideration has been given to the impact on inequality within countries and between the North and the

7 See IRENA, "Renewable energy in Latin America and the Caribbean – Towards a regional energy transition", 16.6.2022.
8 Chile had already reached 31% in November 2022.
9 It should also be noted that (i) the most recent OECD report on Greece contains a chapter on the green transition in the country: "Transitioning to a green economy", *OECD Surveys – Greece*, 10.1.2023; and (ii) the Foundation for Economic and Industrial Research (IOBE), with the support of the Bank of Greece, published *Adaptation to climate change – challenges and opportunities for the Greek economy*, February 2023 (see also Section 3 below).
10 See (i) "The global energy crisis pushed fossil fuel consumption subsidies to an all-time high in 2022", commentary, International Energy Agency (IEA), 16.2.2023, and (ii) *Fossil Fuels Consumption Subsidies 2022*, IEA Policy Report, February 2023.
11 See Institute for European Environmental Policy (IEEP), "Synergising climate and biodiversity agendas is an important challenge for the century", *blog*, 18.1.2023. See also the report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, *Sustainable Use Assessment*, 8.7.2022.
12 Climate change and the ECB, and press release "ECB presents action plan to include climate change considerations in its monetary policy strategy", 8.7.2021.
13 ECB climate agenda 2022, 4.7.2022.
14 "ECB publishes new climate-related statistical indicators to narrow climate data gap", ECB press release, 24.1.2023.
15 See (i) Airaudo, F.S., E. Pappa and H.D. Seoane, "The green metamorphosis of a small open economy", 31 January 2023 (presented at a Bank of Greece seminar on 23.2.2023); (ii) Bofinger, P. (2022), "Public debt in the 'new normal' – A Schumpeterian perspective on fiscal policy", Hans-Bockler-Stiftung Working Paper No. 215; (iii) "L'action climatique: un enjeu macroéconomique", *France Strategie*, Nov. 2022 (submitted to the prime minister of France); (iv) Blanchard, O., C. Gollier and J. Tirole (2022), "The portfolio of economic policies needed to fight climate change", PIIE Working Paper; (v) *Geneva reports on the world economy*, *Climate and Debt*, No. 25, 14.10.2022; and (vi) Agliardi, E. and A. Xepapadeas, "Temperature targets, deep uncertainty and extreme events in the design of optimal climate policy", *Journal of Economic Dynamics and Control*, Vol. 139, June 2022, 104425. At least three of the papers examine the use of fiscal policy (and especially in terms of public debt) to tackle climate change.

South.[16] (See also Boxes IV.2 and V.1 herein). Several significant reports have been released regarding the impact of climate change on health – especially of children.[17]

Research on new technologies, which is particularly relevant for promoting clean energy production and supply, thus reducing emissions in the future, was marked by the breakthrough achieved at the Lawrence Livermore National Laboratory of California regarding nuclear fusion reactors, which was announced (jointly with the US Department of Energy) on 13 December 2022.[18] Certainly, as stressed by experts, it will take a lot of effort and several decades before nuclear fusion is commercialised for electricity generation.

The following is a list of important activities, studies and other publications on mainstreaming climate change issues into institutional and supervisory frameworks:

– Network of Central Banks and Supervisors for Greening the Financial System (NGFS): (a) a new work programme extending to 2024, which builds on previous initiatives as well as new ones;[19] (b) research papers focusing on progress made by central banks and supervisory authorities in climate scenario analysis exercises,[20] analysing risks to the financial system due to biodiversity loss,[21] analysis of climate change data challenges,[22] as well as increasing market transparency in green and transition finance;[23] and (c) updated tools, such as new scenario narratives for climate stress testing[24] and a dashboard for scaling up green finance.[25]

– Basel Committee on Banking Supervision (BCBS): principles for effective management and supervision of climate-related financial risks[26] and FAQs on how to incorporate climate-related financial risks into the existing Basel framework.[27]

– European Banking Authority (EBA): release of an updated roadmap on sustainable finance;[28] a discussion paper on the role of ESG risks in the prudential framework for credit institutions and investment firms and how these risks are to be incorporated in the Pillar 1 prudential framework.[29] EBA also published (jointly with ESMA and EIOPA) a final draft of regulatory technical standards regarding the Regulation on sustainability-related disclosures in the financial services sector, fossil gas and nuclear energy investments,[30] and a call for evidence from stakeholders on greenwashing.[31] Finally, EBA issued an opinion on the revision of the macroprudential framework and suggestions for incorporating environmental risks into the relevant capital buffers.[32]

– Single Supervisory Mechanism (SSM): a report regarding the results of the European supervisory climate change stress testing;[33] a report on credit institutions' practices and progress in

16 *Climate Inequality Report 2023 – Fair Taxes for a Sustainable Future in the Global South*, World Inequality Lab, 30.1.2023.
17 (i) *The coldest year of the rest of their lives: Protecting children from the escalating impacts of heatwaves*, UNICEF, 25.10.2022; and (ii) *The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels*, 25.10.2022.
18 "National Ignition Facility achieves fusion ignition", Lawrence Livermore National Laboratory, press release, 14.12.2022.
19 NGFS, press release, 30.5.2022.
20 NGFS, Climate Scenario Analysis by Jurisdictions: Initial findings and lessons, 15.11.2022.
21 NGFS, Statement on Nature-related Financial Risks, 24.3.2022.
22 NGFS, Final report on bridging data gaps, 6.7.2022.
23 NGFS, "Enhancing market transparency in green and transition finance", Technical document, April 2022.
24 NGFS, NGFS Climate Scenarios for central banks and supervisors, 6.9.2022.
25 NGFS, Dashboard on scaling up green finance, October 2022.
26 BIS, Principles for the effective management and supervision of climate-related financial risks, 15.6.2022.
27 BIS, press release, 8.12.2022.
28 The EBA roadmap on sustainable finance, December 2022.
29 EBA launches discussion on the role of environmental risks in the prudential framework, 2.5.2022.
30 ESAs propose disclosures for fossil gas and nuclear energy investments, 30.9.2022.
31 ESAs launch joint Call for Evidence on greenwashing, 15.11.2022.
32 EBA proposes to simplify and improve the macroprudential framework, 29.4.2022.
33 ECB Banking Supervision, *2022 climate risk stress test,* 8.7.2022.

incorporating climate change risks into their operations and in meeting the relevant supervisory expectations;[34] a report on good practices for climate change stress testing[35] and integrating climate change risks into credit institutions' operations.[36]

– European Insurance and Occupational Pensions Authority (EIOPA): a guidance on integrating climate change scenarios into the Own Risk and Solvency Assessment Report[37] (ORSA) and customer sustainability preferences under the Insurance Distribution Directive (IDD);[38] the results of the stress test regarding the impact of environmental risks on institutions for the occupational pension funds in the European Union;[39] re-evaluation of the exposure of the insurance sector to physical risks related to climate change;[40] and, finally, a consultation on the issue of the prudential treatment of insurers' sustainable assets and activities[41] and analysis of the insurance of private projects on adaptation to climate change.[42]

– European Securities and Markets Authority (ESMA): guidance on the supervision of the documentation and marketing material of sustainability-related funds and guiding principles on the use of sustainability-related terms in funds' names, and guidance on convergent supervision of the integration of sustainability risks by AIFMs and UCITS managers.[43]

– European Commission: technical standards to be used by financial market participants when disclosing sustainability-related information under the Sustainable Finance Disclosures Regulation (SFDR) and amendments to the Regulation on disclosures of gas and nuclear-related activities.[44]

34 ECB Banking Supervision, *Walking the talk – Banks gearing up to manage risks from climate change and environmental degradation,* 2.11.2022.
35 *ECB report on good practices for climate stress testing,* 19.12.2022.
36 ECB Banking Supervision, *Good practices for climate-related and environmental risk management,* 2.11.2022.
37 EIOPA publishes application guidance on how to reflect climate change in ORSA, 2.8.2022.
38 EIOPA, *Guidance on the integration of the customer's sustainability preferences in the suitability assessment under IDD,* 20.7.2022.
39 EIOPA, Climate stress test for the occupational pensions sector 2022, 16.12.2022.
40 EIOPA, Discussion paper on physical climate change risks, 20.5.2022.
41 EIOPA, Discussion paper on the Prudential Treatment of Sustainability Risks, 5.12.2022.
42 Impact underwriting: EIOPA reports on insurers' use of climate-related adaptation measures in non-life underwriting practices, 6.2.2023.
43 ESMA provides supervisors with guidance on the integration of sustainability risks and disclosures in the area of asset management, 31.5.2022.
44 Regulation on sustainability-related disclosure in the financial services sector.

Box X.1

THE IMPACT OF THE CURRENT ENERGY CRISIS ON CLIMATE CHANGE AND THE ENVIRONMENT

The health and energy crises have affected climate and the environment, both directly and indirectly. Energy and environment issues are interrelated, as it is almost impossible to generate, transport or consume energy without significant environmental impact. Environment issues related to energy production and consumption include air pollution, climate change, water pollution, thermal pollution and solid waste disposal.[1] Moreover, the energy sector is the largest source of greenhouse gas emissions, in particular carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O),[2] accounting for almost 3/4 of global greenhouse gas emissions,[3] with multiple negative

1 See https://www.eea.europa.eu/help/glossary/eea-glossary/environmental-impact-of-energy.
2 International Energy Agency (2021), *Net Zero by 2050: A Roadmap for the Global Energy Sector*.
3 World Meteorological Organization (2022), *2022 State of Climate Services: Energy*.

effects, including climate change and environmental destruction. The present box examines the impact of the current energy crisis on climate change and the environment.

Impact

Just as the COVID-19 pandemic was getting under control in mid-2021, the energy crisis broke out, primarily due to the reopening of the global economy. The energy crisis worsened and was prolonged after the Russian invasion of Ukraine in 2022.

Initially, the reopening of industries worldwide after the pandemic led to higher demand for energy. In 2021, global carbon dioxide (CO_2) emissions from the energy sector and industrial processes recorded their highest rise so far (6% y-o-y), pushing greenhouse gas emissions to 36.4 gigatons (Gt).[4,5] This resulted in a slowdown of the effort to reduce greenhouse gas emissions, while the share of renewable energy sources (RES) remained virtually unchanged.[6] Burning fossil fuels (oil, natural gas and coal) is the main cause of global warming, as greenhouse gases released into the atmosphere trap the sun's ultraviolet rays, thereby increasing average global temperature, fuelling extreme weather, causing biodiversity losses and generally having a negative impact on ecosystems and living conditions.[7] As a result, the years 2015-21 have been the seven warmest consecutive years on record, while 2018-22 is the fourth warmest five-year period on record. The global warming outlook in the coming years is nothing but bleak. There is a 48% chance that the annual mean global temperature will temporarily be 1.5°C above pre-industrial levels (1850-1900) for at least one of the next five years (2022-26) and a 93% chance that at least one year out of these five years will see a higher temperature increase than in 2016 (which has been the hottest on record).[8] At the beginning of 2023, the European Copernicus Climate Change Service announced that 2022 has been the second warmest year in Europe and the fifth worldwide.[9]

Subsequently, the war in Ukraine caused problems and generated uncertainty regarding the supply of energy in Europe, leading to increases in energy prices. Energy insecurity directly affects the European Union (EU) energy and climate policy and targets.[10] For the EU, the implementation of the UN 2030 Agenda for Sustainable Development and in particular the fulfilment of Goal 7 "Ensuring access to affordable, reliable, sustainable and modern energy for all" is a top priority. Some European countries (Iceland, Sweden, Finland, Denmark, Estonia,[11] but also Germany, France and Italy[12]), in response to the energy crisis, are accelerating the transition to and are investing in renewable energy. In addition, Austria, Germany, the Netherlands, the United Kingdom and Greece[13,14] are planning – in order to mitigate uncertainty and secure the required volume of energy – to restore or prolong the operation of lignite plants in the short term, thereby changing their energy transition plans.[15]

As Europe tries to prevent a widespread energy crisis, higher energy prices, among other things, made many European households turn to wood as a complementary or primary source of heating. However, this has negative

4 International Energy Agency (2022), *Global Energy Review: CO2 Emissions in 2021*.
5 See https://www.icos-cp.eu/science-and-impact/global-carbon-budget/2021 and carbon dioxide emissions chart from 1990 to 2021 (https://www.icos-cp.eu/sites/default/files/inline-images/essd2021_FossilFuel_and_Cement_emissions_1959.png).
6 European Environment Agency (2022), *Trends and Projections in Europe 2022*, EEA Report 10/2022.
7 Sengupta, S. and M. Edy, "War and warming up end global energy supplies and amplify suffering", *The New York Times*, 20.7.2022.
8 WMO, UNEP, GCP, UK Met Office, IPCC and UNDRR (2022), *United in Science 2022*.
9 Copernicus Climate Change Service (2022), *Global Climate Highlights 2022*.
10 See footnote 6.
11 European Environment Agency (2022), *Share of energy consumption from renewable sources in Europe*.
12 See https://www.statista.com/statistics/267233/renewable-energy-capacity-worldwide-by-country/.
13 International Institute for Strategic Studies – IISS (2022), *Europe's energy crisis and the pace of transition*.
14 Business News, "Ministry of Environment and Energy: Three-year extension to PPC's lignite-fired plants, due to the energy crisis" (in Greek), 16.12.2022.
15 UN Department of Economic and Social Affairs (DESA) – Sustainable Development Goal 7.

consequences on the environment, air quality and human health.[16] Last autumn, the National Observatory conducted a simulation for the city of Athens, where it isolated the particulate matter pollution from domestic heating and found a 10-20 mg higher concentration per cubic metre during evening hours, aggravating the already existing air pollution load.[17] This forecast is also in line with the strong demand for firewood observed this autumn in the Greek and the European market. Furthermore, burning wood for home heating creates additional problems of illegal and arbitrary logging, which in turn causes pressure and losses on European forests. Many European governments (Poland, Romania, Lithuania and Hungary) are relaxing their forest protection rules, in an effort to provide households with alternative and cheaper forms of heating.[18] Illegal logging contributes to deforestation, loss of biodiversity and, in particular, to reduced capacity of forests to bind and store carbon and thus contribute to climate change mitigation. Moreover, existing forests currently reduce greenhouse gas emissions generated by human activities by around one-third.[19] But in 2021, burning wood released more carbon dioxide than would have been released if fossil fuels had been used.[20]

Conclusions

A critical challenge of the current energy crisis is to avoid a direct confrontation between the two targets: ensuring low-priced supply of energy on the one hand and transition to renewable energy on the other. Environmental awareness and willingness to mitigate climate change were a prerequisite for the most basic needs: living and security. If these were called into question, then the social consensus currently in favour of energy transition would be undermined.[21] In response to the difficulties and disruptions in the global energy market and seeking to support its climate target as part of the "Fit for 55" package, the EU proposed, by means of the REPowerEU Action Plan, a number of measures. The measures include an increase of the target for RES participation in the energy mix to 45% (from 40%) by 2030.[22]

In recent years, alongside climate change, one global crisis has been followed by another. The health crisis that broke out at the end of 2019 and the energy crisis of 2021 have put their own mark on climate and the environment. Undoubtedly, the manifestations of the current energy crisis are particularly noticeable. The increase in global greenhouse gas emissions resulting in higher temperatures and climate change, both detrimental to natural ecosystems and the anthropogenic environment, has adverse effects *inter alia* on human health and causes forest losses that negatively affect biodiversity.

Climate change is a real threat linked to various environmental issues and tipping points. It triggers and exacerbates economic and social problems, disproportionately burdening less developed countries. Global action is urgently needed, as today's actions will determine not only the future of the global climate system, but also the lives and livelihoods of all humanity for the decades to come.[23] After all, climate change is perhaps the longest-lasting crisis and the question of whether it will be overcome, or at least mitigated, cannot be answered with certainty.

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16 Öztürk, Y., "Escalating concern about air pollution with energy crisis in Europe", *Synergy*, 3.10.2022.
17 Athanasopoulou, E. and E. Gerasopoulos "What will we inhale this year in Athens atmosphere if we massively turn to burning wood for our heating?" (in Greek), *Kosmos*, 30.11.2022.
18 Olden, M. and M. Pigeon (2022), "Europe's Dark Winter: How will people and forests survive the energy crisis?", Fern, *Briefing Notes*.
19 Ceurstemont, S. (2022), "Protecting forests on the front line of the climate-change battle", European Commission, *Horizon*, The EU Research & Innovation Magazine.
20 Hurtes, S. and W. Cai, "Europe is sacrificing its ancient forests for energy", *The New York Times*, 7.9.2022.
21 Makantasi, F. and I. Valentis, "The energy crisis in Greece: what is happening exactly with energy costs, what are their origins, how should they be addressed and what lessons are to be learned?" (in Greek), *diaNEOsis*, November 2022.
22 See footnote 6.
23 OECD (2022), *The Climate Action Monitor 2022: Helping Countries Advance Towards Net Zero*, Paris (https://doi.org/10.1787/43730392-en).

Box X.2

NATIONAL CLIMATE LAW

In May 2022, the first climate law[1] was passed in Greece, establishing, among other things, the framework for the adaptation to climate change and the gradual mitigation of anthropogenic greenhouse gas emissions. In order to achieve the long-term objective of carbon neutrality[2] by 2050, intermediate emission reduction targets are set for the years 2030 and 2040 (a reduction of 55% and 80%, respectively) relative to 1990 levels.

Successfully implementing the measures and achieving the objectives of the new law is crucial for limiting the temperature increase to 1.5°C above pre-industrial levels, pursuant to the Paris Agreement, which was ratified by Law 4426/2016 (Government Gazette A 187), and in accordance with the climate-neutrality objective of the European Union (EU).

The climate law strengthens considerably the pre-existing institutional framework for tackling climate change, also in line with the provisions in force at the European level, setting national climate targets, a system of governance and implementation measures. In particular, the new law includes:

Measures and policies to enhance mitigation and adaptation

– A National Adaptation Strategy to Climate Change (NASCC), prepared by the Ministry for Climate Crisis and Civil Protection, which spans ten years and is subject to review and/or revision every five years at least. The NASCC is further specified by the Regional Adaptation Action Plans (RAAPs), which define and prioritise the necessary adaptation measures and actions at the regional level.

– Adoption of five-year sectoral carbon budgets for specific sectors[3] of the economy. The drafting of the first sectoral budgets is planned for 2024 (for the period 1.1.2026-31.12.2030), and it will thereafter be repeated every five years.

– Regular assessment of the progress towards climate neutrality on the basis of the latest available scientific data and annual progress reports, with the possibility to review and/or set new intermediate climate targets.

General and specific measures and policies to reduce emissions

– Implementation of general measures aimed at: (a) saving the greatest possible amount of energy and increasing energy efficiency; (b) attaining the greatest possible penetration of renewable energy sources (RES); (c) phasing out all fossil fuels and substituting them for RES, with a view to securing energy supply and in line with technological advances; (d) gradually substituting natural gas for renewable gases, such as biomethane and green hydrogen, particularly in transport and industry; (e) promoting electromobility; (f) promoting sustainable urban mobility and the use of means of public transport; (g) improving the carbon footprint of buildings and infrastructures; (h) reducing greenhouse gas emissions; (i) increasing the greenhouse gas removal; and (j) fostering synergy between policies that are jointly related to the mitigation of the impacts of climate change and to the improvement of air quality.

– Permanent withdrawal of lignite-fired plants and a ban on electricity generation from solid fossil fuels. The implementation of the measure will start as of 31 December 2028, with a specific clause for the review of delignitisation in 2025, should the above date be brought forward.

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1 Law 4936/2022 "National Climate Law – Transition to climate neutrality and adaptation to climate change, emergency provisions to address the energy crisis and protect the environment" (in Greek).

2 Climate neutrality or net-zero greenhouse gas emissions: the balance between anthropogenic greenhouse gas emissions from sources and their removal by sinks. Sinks include any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.

3 (a) Electric power and heat generation; (b) transport; (c) industry; (d) buildings; (e) farming and livestock breeding; (f) waste and (g) land use activities and land use change, and forestry.

– Faster penetration of electromobility to reduce air pollution, by implementing measures to promote the use of very low- or zero-emission vehicles, with a focus on specific sectors. As of 2026, new passenger cars for public use (taxis) and one-third of new vehicles for rental/leasing purposes will be zero-emission vehicles. In addition, as of 2024, at least a quarter of new private company cars will be purely electric or hybrid electric vehicles.

– Ban on the sale and installation of heating oil burners as of 2025. Sale, exclusively, of heating oil blended with renewable liquid fuels at a percentage of 30% by volume as of 2030. Applications for the issue of building permits for specific types of buildings (with coverage >500 m^2) with an obligation to install electric power generation systems from photovoltaic or thermal solar systems corresponding to at least 30% of the coverage as of 2023.

– A quantitative emission reduction target of at least 30% by 2030 relative to 2019 is set for specific types of activities[4] and an annual reporting requirement is introduced from 2026 onwards in order to monitor compliance with the defined target.

– An annual reporting requirement is introduced for specific types of undertakings[5] regarding their carbon footprint (as of 2023, with 2022 as the reference year). The report will include voluntary emission reduction or offsetting targets and actions, verified by a certified body and updated annually.

– Speeding up the interconnection with the mainland electricity grid of the non-interconnected islands, as well as the substitution of liquid fossil fuel power plants by plants using RES and storage systems. An 80% reduction in the emissions of non-interconnected islands by 2030 compared with 2019. As of 2030, the use of fuel oils (mazut) for electricity generation on non-interconnected islands will be prohibited.

System of governance and participation of the public for engaging in climate action

Governance and public participation system for climate action

– Establishment of a National Observatory for Climate Change Adaptation, under the Ministry for Climate Crisis and Civil Protection, with a view to supporting the national adaptation policy.

– Creation of an online climate discussion forum by the Natural Environment and Climate Change Agency (NECCA[6]) for consultation on the main results of the proposal submitted by the Minister of the Environment and Energy to the Governmental Committee for Climate Neutrality[7] as regards the sectoral carbon budgets, the assessment of progress towards the achievement of goals and the annual progress report.

– Preparation of an annual progress report on climate change mitigation and adaptation issues by the Ministry of the Environment and Energy, the Ministry for Climate Crisis and Civil Protection, and the NECCA, comprising, among other things, national data on emissions and greenhouse gas removal by sector of economic activity, as well as a description of climate change actions and progress by sector of economic activity.

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4 Type of activity: (a) environmental infrastructure systems; (b) tourist facilities and urban development projects; building projects, sports and recreation projects; (c) poultry-livestock establishments; (d) aquaculture; and (e) industrial activities and relevant facilities.

5 These include (a) listed companies; (b) credit institutions; (c) insurance undertakings; (d) investment firms; (e) fixed and mobile telephony companies; (f) water supply and sewerage companies; (g) couriers; (h) electricity and natural gas supply companies; (i) retail chains; (j) logistics companies; and (k) civil transport companies.

6 The NECCA was founded in 2021 as the sole successor of the National Centre for Environment and Sustainable Development (NCESD). It is a legal person governed by private law, which aims at implementing the policy formulated by the Ministry of the Environment and Energy for the management of protected areas in Greece, biodiversity conservation and the promotion and implementation of sustainable development actions and climate change mitigation.

7 Governmental committee established pursuant to Article 8 of Law 4622/2019 to act as a coordinator on issues related to emissions reduction and adaptation to climate change.

– Establishment of a National Climate Change Adaptation Council under the Ministry for Climate Crisis and Civil Protection to act as the main advisory body of the State for the coordination, monitoring, adoption and evaluation of climate change adaptation policy actions.

– Establishment of a Scientific Climate Change Committee (SCCC) under the Ministry of the Environment and Energy, which will be responsible, among others, for proposing and developing science-based climate change policies, issuing opinions to the Governmental Committee for Climate Neutrality on the five-year carbon budgets for all sectors of the economy, assessing whether it is needed to update the long-term and intermediate climate targets, or the actions and methods to achieve these targets, and for any issue related to tackling climate change.

Box X.3

FURTHER STEPS BY THE ECB TO INCORPORATE CLIMATE CHANGE INTO ITS MONETARY POLICY OPERATIONS

In July 2022, the Governing Council of the European Central Bank (ECB) decided to take further measures to include climate change considerations in the Eurosystem's monetary policy framework.[1] These measures follow up on the actions announced in 2021 as part of the ECB's strategy review[2] and are designed in full accordance with the Eurosystem's objective of maintaining price stability.[3] They aim to reduce climate-related financial risk in the Eurosystem balance sheet, encourage transparency and support the green transition of the economy in line with the European Union's (EU) climate neutrality objectives.

Briefly, the ECB decided to: (i) take into account the climate performance of corporate bond holdings in the Eurosystem's monetary policy portfolios; (ii) adjust its collateral framework; (iii) introduce climate-related disclosure requirements; and (iv) enhance its risk management practices. In more detail:

(a) Corporate bonds: The Eurosystem aims to gradually decarbonise its corporate bond holdings, along a path aligned with the goals of the Paris Agreement. Starting from October 2022, the Eurosystem has been tilting reinvestments of principal payments from maturing corporate securities purchased under its asset purchase programmes[4] towards better climate-performing issuers. In September 2022, the ECB announced further details on the implementation of this measure.[5] Effectively, the assessment of the performance of corporate bond issuers in relation to climate change considerations will be based on a score calculated as the sum of three individual scores, involving: (i) the historical greenhouse gas emissions of each issuer; (ii) the issuer's greenhouse gas emission reduction targets; and (iii) the quality of the issuer's greenhouse gas emission disclosures. In any event, the level of corporate bond purchases will continue to be driven by monetary policy considerations and the achievement of the price stability objective. The ECB started in the first quarter of 2023 to publish, on a regular basis, climate-related information on its corporate bond holdings.

(b) Collateral framework: The Eurosystem will limit the share of assets issued by entities with a high carbon footprint that can be pledged as collateral by counterparties when borrowing from the Eurosystem. In addition, the Eurosystem will consider climate change risks when reviewing haircuts applied to corporate bonds used as collateral. In any case, all measures will ensure that ample eligible collateral remains available, allowing monetary policy to continue to be implemented effectively.

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1 "ECB takes further steps to incorporate climate change into its monetary policy operations", press release, 4.7.2022.
2 "ECB presents action plan to include climate change considerations in its monetary policy strategy", press release, 8.7.2021.
3 For more information on initial initiatives to integrate the impact of climate change into the Eurosystem's operational framework, see Bank of Greece (2021), *Monetary Policy 2020-2021*, Box III.1.
4 In particular, under the Corporate Sector Purchase Programme (CSPP) and the Pandemic Emergency Purchase Programme (PEPP).
5 "ECB provides details on how it is intended to decarbonise its corporate bond holdings", press release, 19.9.2022.

(c) Climate-related disclosure requirements for collateral: The Eurosystem will only accept marketable assets and credit claims from companies and debtors that comply with the Corporate Sustainability Reporting Directive (CSRD) as collateral in Eurosystem credit operations, once the directive is fully implemented.

(d) Risk assessment and management: The Eurosystem will further enhance its risk assessment tools and capabilities to better include climate-related risks. It will encourage credit rating agencies to more transparently disclose how they integrate climate-related risks into their ratings and to take more ambitious steps with regard to climate risk disclosure requirements. In addition, the Eurosystem agreed on a set of common minimum standards for integrating climate risks into the ratings provided by the national central banks' internal credit assessment systems (ICASs).

These decisions are part of the climate action plan announced in July 2021. The ECB's work is progressing as outlined in the climate roadmap[6] and may have to be aligned if and when the timetable in EU legislation changes. In addition, the ECB will regularly review the above methodologies and criteria, which are likely to be adjusted as available data, analytical tools, legislation and risk assessment capabilities are enhanced and enriched over time.

6 "Detailed roadmap of climate change-related actions", July 2021.

2 GREENHOUSE GAS EMISSIONS IN THE EU AND GREECE

Greenhouse gas emissions in 2020 for the EU-28 as a whole and Iceland stood at 3,707.6 million tonnes of CO_2 equivalent (MtCO2e), the lowest level since 1990 (down by 34.3%), despite GDP growth of 54% over the same period (see Table X.1). After a dramatic decline in emissions in 2020, in part due to the COVID-19 impact on economic activity, 2021 saw increased emissions. However, despite this increase, emissions levels are still lower than those recorded in 2019. More specifically, in 2021, total EU-27 emissions (excluding the UK) rose by 4.8% compared to 2020 and stood around 28.7% below the 1990 level. Compared to 1990, emissions were lower for most EU Member States, with the exception of Cyprus and Ireland, which recorded higher emissions. There were several factors behind changes in 2021, including a notable increase in total energy consumption.[45] Specifically, there was a 6% rise in primary energy consumption and a 5% increase in final energy consumption compared to 2020.[46]

Greenhouse gas (GHG) emissions decreased in most sectors between 1990 and 2020, with the notable exception of transport, cooling and air conditioning. Emissions reductions have been larger for manufacturing and construction, households, electricity and heat production, as well as iron and steel production. In addition to the 2020 economic downturn, lower emissions in industrial sectors are also attributed to a combination of factors, such as improved energy efficiency and structural changes in the economy, implying a higher share of services and a lower share of more energy-intensive industries in total GDP. Emissions from electricity and heat production decreased sharply compared to 1990. In addition to improved energy efficiency, this development is also due to an observed shift towards less carbon-intensive fuels: between 1990 and 2020, the use of solid and liquid fossil fuels in thermal power plants decreased significantly, gas consumption more than doubled, coal use decreased by three times, while RES use has increased significantly in the EU since 1990. Improved energy efficiency and a less carbon-intensive fuel mix have led to reduced CO_2 emissions per unit of energy produced by fossil fuels. Emissions in the household sector also recorded one of the largest decreases. Improvements in energy efficiency owing to optimised insulation standards in buildings, but also the broadly milder winters in Europe over the past three decades, can partly explain lower demand for heating in the EU over the past 30 years. The agricultural and environmental policies

45 European Environment Agency, *Approximated EU greenhouse gas inventory – Proxy GHG emission estimates for 2021*, ETC CM Report 2022/4.

46 European Environment Agency, *Trends and projections in Europe 2022*, EEA Report No. 10/2022.

Table X.1 Greenhouse gas emissions[1]

(in million tonnes of CO_2 equivalent)

	1990	2020	Change 2019-2020	Change 2020-2021*	Change 1990-2020	Change 1990-2021*
Country	(MtCO2e)			(percentage changes)		
Austria	78.4	73.6	-7.7	4.8	-6.2	-1.7
Belgium	145.7	106.4	-8.6	4.2	-26.9	-23.9
Bulgaria	98.4	49.2	-17.3	10.6	-50.0	-44.7
Croatia	31.4	23.8	-3.5	-2.1	-24.4	-26.0
Cyprus	5.6	8.9	-0.3	0.5	59.0	59.8
Czech Republic	198.8	113.3	-8.3	5.6	-43.0	-39.8
Denmark	71.1	41.7	-6.2	-1.6	-41.3	-42.2
Estonia	40.2	11.6	-21.0	12.4	-71.2	-67.7
Finland	71.2	47.8	-9.5	-0.1	-32.9	-33.0
France	544.1	393.0	-9.6	6.4	-27.8	-23.1
Germany	1241.9	728.7	-8.9	4.5	-41.3	-38.7
Greece	103.5	74.8	-12.6	1.9	-27.7	-26.3
Hungary	94.8	62.8	-2.7	1.4	-33.8	-32.8
Iceland	290.1	274.7	-12.5	5.1	-5.3	-0.5
Ireland	54.4	57.7	-3.6	4.8	6.1	11.2
Italy	519.9	381.2	-8.9	6.2	-26.7	-22.1
Latvia	25.9	10.5	-5.9	2.4	-59.6	-58.7
Lithuania	47.9	20.2	-0.9	2.1	-57.8	-57.0
Luxembourg	12.7	9.1	-15.5	3.5	-28.8	-26.3
Malta	2.6	2.1	-0.5	-1.9	-18.4	-19.9
Netherlands	220.5	164.3	-8.8	1.5	-25.5	-24.4
Poland	475.9	376.0	-3.7	6.7	-21.0	-15.7
Portugal	58.5	57.6	-9.5	-1.3	-1.5	-2.8
Romania	249.7	109.9	-3.5	4.4	-56.0	-54.1
Slovakia	73.5	37.0	-7.0	10.3	-49.6	-44.4
Slovenia	18.6	15.9	-7.2	-1.5	-14.8	-16.1
Spain	3.7	4.5	-4.3	3.0	22.7	26.5
Sweden	71.4	46.3	-8.9	3.7	-35.2	-32.8
United Kingdom	796.2	404.8	-9.5	-	-49.2	-
EU plus Iceland[2]	**5646,5**	**3707,6**	**-8.5**	**4.8**	**-34.3**	**-28.7**

Sources: European Environment Agency, *Annual European Union greenhouse gas inventory 1990-2020 and inventory report 2022*, May 2022. For 2021: European Environment Agency, *Approximated EU greenhouse gas inventory — Proxy GHG emission estimates for 2021*, April 2022.
* Figures in these columns refer to the EU without the UK (EU-27).
1 Total GHG emissions, excluding land use, land-use changes and forestry.
2 The EU and Iceland jointly report their national GHG emissions during the second commitment period of the Kyoto Protocol, reflected in the Doha Amendment.

of the 1990s and energy and climate policies since 2005 have also contributed to lower total emissions, both at the European and national levels.[47]

In 2020, the largest emitters in the EU were Germany (20%), the UK (11%) and France (11%), followed by Italy (10%), Poland (10%) and Spain (7%). However, Germany and the UK

47 European Environment Agency, *Annual European Union greenhouse gas inventory 1990-2020 and inventory report 2022*, 27.5.2022.

accounted for 47% of the total emissions reduction between 1990 and 2020 (see Table X.1). France, Romania, Italy, Poland and the Czech Republic together have contributed to almost one-third of total EU GHG emission reductions since 1990. The main reasons for the significant emissions reduction in Germany were the increased efficiency of power and heating plants and the economic restructuring, particularly in the iron and steel sector. Other important reasons include the decrease in the carbon intensity of fossil fuels with the switch from coal to natural gas, a strong increase in RES, and waste management measures that reduced the landfilling of organic waste. Lower GHG emissions in the UK were primarily attributed to the liberalisation of energy markets and the fuel switch from oil and coal to gas in electricity production, as well as to decreasing iron and steel production and the implementation of methane recovery systems at landfill sites.[48]

As regards the percentage distribution of the six greenhouse gases in the EU in 2020, carbon dioxide (CO_2) accounts for the largest share (79.9%, compared with 79.3% in 1990) and is responsible for the largest reduction in emissions since 1990. It is followed by methane (CH_4) and nitrogen oxide (N_2O) at 11.3% and 6.1% respectively, down from 12.6% and 6.8% in 1990. Lower methane and nitrogen oxide emissions reflect a decline of mining activities, decreasing livestock breeding, reduced production of adipic and nitric acid (i.e. from fertiliser use in agriculture) and lower emissions attributed to improved waste management.

In 2020, the biggest contributor to greenhouse gas emissions was energy-related activities, accounting for 75.5% or 2.801 MtCO2e in the EU (as shown in Table X.2). Agriculture followed with 11.4% or 424 MtCO2e, while industrial processes and waste had shares of 9.5% (351 MtCO2e) and 3.5% (130 MtCO2e) respectively.[49]

Greenhouse gas emissions in Greece totalled 74.8 MtCO2e, reflecting a considerable decrease of 27.7% compared to 1990, largely driven by mitigation measures such as increased RES use and improved energy efficiency.[50] The decrease in emissions primarily resulted from energy-related activities. Emissions from this industry in 2020 accounted for 69.0% of total emissions (1990: 74.5%), down by 33.0% compared to 1990. Industrial processes are the second most important source of greenhouse gases, with a share of 14.0%. Agriculture (including livestock) follows with a share of 10.5%. Emissions have decreased significantly (-23.6%) compared to 1990, mainly owing to a reduction of nitrogen oxide (N_2O) emissions from agricultural soils, due to reduced use of synthetic nitrogen fertilisers and a decline in the livestock population. Reduced use of synthetic nitrogen fertilisers is attributable to an increase in organic farming, high fertiliser prices and improved practices in fertiliser use. Turning to waste, its share in GHG emissions reached 6.5% in 2020, with emissions marginally increasing by 0.3% compared to 1990. As regards the percentage distribution of individual GHGs, in 2020 carbon dioxide accounted for 74.3% of total emissions, down by 33.4% compared to 1990, mainly reflecting the introduction of natural gas and renewables into the electricity generation system, the actions to improve energy efficiency and the gradual reduction of lignite combustion. It is worth noting that the high availability of hydroelectric power has made a significant contribution to the downward trend in emissions. This is followed by methane emissions with a share of 12.9%, reduced by 13.2% compared to 1990.[51]

48 European Environment Agency, *op. cit*.

49 The annual changes relative to 1990 were: -35.2% for energy-related activities, -20.3% for agriculture, -35.9% for industrial processes and -45.4% for waste.

50 Specifically in Greece, the upward trend in emissions over the period 1990-2007, which was due to improved living standards and the significant expansion of the services sector, was followed by a declining trend in 2008-19. This development is mainly due to the economic recession, but also to an increase in RES and improved energy efficiency, as well as to a reduction of emissions from public transport. Moreover, the major decrease in 2020 compared to 2019 can be mainly attributed to the decreased operation of lignite-fired plants, which were replaced with a higher percentage of natural gas and RES than in past years, as well as to COVID-19 restrictions in the transport sector (Ministry of Environment and Energy, *National Inventory Report of Greece for greenhouse and other gases for the years 1990-2020*, April 2022).

51 *Greece – National Inventory Report 2022*, Ministry of Environment and Energy, April 2022.

Table X.2 Greenhouse gas emissions by source category in the EU[1] and Greece

(in million tonnes of CO_2 equivalent)

	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
					EU						
Energy	4,323	4,062	3,995	4,108	3,795	3,364	3,348	3,351	3,270	3,113	2,801
Industrial processes	548	523	480	487	407	393	391	400	392	382	351
Agriculture	532	466	457	434	419	428	430	433	429	425	424
Waste	238	244	227	199	166	141	137	136	135	133	130
Other	0	0	0	0	0	0	0	0	0	0	0
Indirect CO_2 emissions	4.00	4.00	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00
Total*	5,647	5,299	5,162	5,231	4,789	4,329	4,308	4,322	4,228	4,054	3,708
					Greece						
Energy	77	81	97	107	93	71	67	70	67	61	52
Industrial processes	11	14	15	15	12	12	12	13	12	12	10
Agriculture	10	10	9	9	9	8	8	8	8	8	8
Waste	5	5	5	5	5	4	5	5	5	5	5
Total*	103.5	109.4	126.5	136.4	118.5	95.4	91.8	95.6	92.3	85.6	74.8

Sources: European Environment Agency, *Annual European Union greenhouse gas inventory 1990-2020 and inventory report 2022*, May 2022. For Greece: Ministry of Environment and Energy, *Climate Change Emissions Inventory*, April 2022.
* Total GHG emissions, excluding land use, land-use changes and forestry.
1 The EU and Iceland jointly report their national GHG emissions during the second commitment period of the Kyoto Protocol, reflected in the Doha Amendment. The EU aggregate therefore includes Iceland.

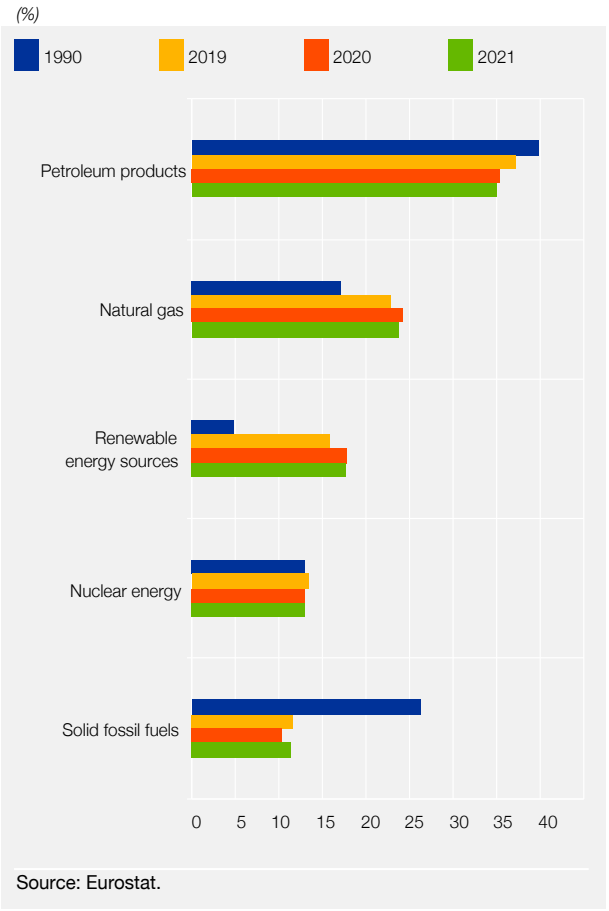
Today, Europe is facing an energy crisis that has halted its GHG emissions reduction path. Emissions increased in 2021, after the pandemic, especially in transport, industry and energy supply. With the energy crisis and in particular the high price of natural gas, the energy supply sector has partly turned to more carbon-intensive energy fuels, while the strong growth of renewables observed in previous years slowed down in 2021. The short-term measures deemed necessary to boost energy supply in the winter of 2022 should not trap Europe into reliance on fossil fuels for many years to come. Energy savings and support for renewables are crucial not only to tackling the current energy crisis and ensuring energy sufficiency, but also to achieving climate neutrality. Educating people, which is inextricably linked to environmental protection and contributes to reducing dependence on conventional energy products, can play an important role in this regard, since the development of human capital, including raising environmental awareness, leads to a reduction in energy consumption and CO_2 emissions.[52]

According to European climate legislation, the GHG emission reduction target has been raised to 55% compared to 1990 levels by 2030. To reach this target, emissions need to decrease by an average of 134 MtCO2e per year from the estimated 2021 levels. This is more than double the average annual reduction between 1990 and 2020. Additionally, to meet the initial target of 32% of total energy consumption from RES (now revised to 40%[53]) by 2030, their share should increase by 1.1 percentage points per year on average from 2021 levels. In order to achieve this, it is important to focus on improving energy efficiency and increasing the use of renewables in electricity generation.

It should be noted that the evolution of the EU's energy mix between 1990 and 2021 highlights the progress already achieved in RES penetration. According to Eurostat data, the energy mix

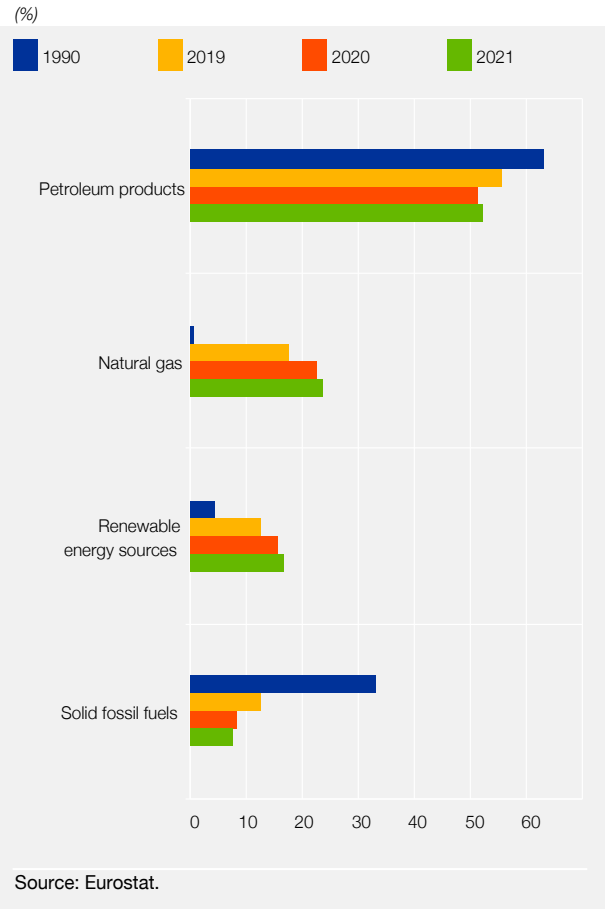
52 Hondroyiannis, G., E. Papapetrou and P. Tsalaporta (2022), "New insights on the contribution of human capital to environmentaldegradation: Evidence from holiday and cross-correlated countries", *Energy Economics*, 116, Article 106416.
53 Decision of the EU Council; see press release, 27.6.2022.

Chart X.1 Shares of energy products in total available energy in the EU



Source: Eurostat.

Chart X.2 Shares of energy products in total available energy in Greece



Source: Eurostat.

in the EU for 2021 (see Chart X.1) consisted mainly of five sources: petroleum products including crude oil (34% of total available energy, against 39% in 1990), natural gas (23%, against 17% in 1990), RES (17%, against 5% in 1990), nuclear energy (13%, the same as in 1990) and solid fossil fuels (11%, against 26% in 1990). For Greece (see Chart X.2) the corresponding shares were 51% for petroleum products (1990: 62%), 23% for natural gas (1990: 0.6%), 16% for RES (1990: 4%) and 7% for solid fossil fuels (1990: 33%).

At the international level, both the targets and the evolution of greenhouse gas emissions fall significantly short of what is needed to achieve the Paris Agreement's goal of keeping the global average temperature rise below 1.5°C. According to a UN report,[54] current commitments by countries could reduce in part the global average temperature rise to 2.4-2.6°C by the end of the century; therefore, a systemic and far-reaching transformation is urgently needed to secure the path towards the Paris Agreement.

3 THE BANK OF GREECE'S SUSTAINABILITY AND CLIMATE ACTIONS IN 2022

Over the past year, the Bank of Greece further promoted its climate change and sustainability agenda, as outlined in its Annual Financial Report 2022. The key actions are presented below.

54 United Nations, *Emissions Gap Report 2022*.

In the context of the Bank's contribution to the project "LIFE-IP AdaptInGreece: Boosting the implementation of adaptation policy across Greece (2019-2026)", the update of the studies on the economic, environmental and social impacts of climate change in Greece is ongoing. In addition, the Climate Change and Sustainability Centre of the Bank of Greece co-organised with the Ministry of Environment and Energy and the Green Fund an online event entitled "Adaptation Finance in Greece: Current challenges and the role of the financial sector".[55]

In cooperation with INSPIRE (International Network for Sustainable Financial Policy Insights, Research and Exchange), Bank of Greece staff participated in the preparation of a handbook on central bank disclosures regarding climate change issues (see Box X.4).

The two issues of the Bank of Greece's *Economic Bulletin* released in 2022 (No. 55 and No. 56 in July and December respectively) include studies by the Bank's staff on green finance ("Green finance in Europe: actors and challenges")[56] and energy consumption ("Energy consumption by energy type and exports of goods in Greece: a comparative analysis in relation to the euro area").[57]

Members of the Bank's staff also participated in the Ministry of Finance Working Group on Sustainable Finance and Green Economic Transition.

In addition, the Bank supported the preparation of a specific study by the Foundation for Economic and Industrial Research (IOBE) on the state of play of climate change adaptation actions, entitled *Adaptation to climate change – challenges and opportunities for the Greek economy*.[58]

Moreover, in February 2023 the Bank published its first monthly statistics on sustainable debt securities issuance,[59] while in March climate change data on the Bank's euro-denominated portfolios, other than those held for monetary policy purposes, are expected to be published for the first time (see Box X.4).

55 See Bank of Greece, press release (in Greek), 24.5.2022, and an introductory speech by the Governor.
56 Bank of Greece, *Economic Bulletin*, No. 55, July 2022.
57 Bank of Greece, *Economic Bulletin*, No. 56, December 2022.
58 See Bank of Greece, press release (in Greek), 14.2.2023.
59 See Bank of Greece, press release, 21.2.2023.

Box X.4

CENTRAL BANK DISCLOSURES ON ISSUES RELATED TO CLIMATE CHANGE IN APPLICATION OF THE TCFD RECOMMENDATIONS

Central banks are constantly stepping up their efforts to find ways to integrate the impact of climate change in the development and implementation of monetary policy, in supervisory practices as well as in the processes for safeguarding financial stability.

Measuring and reporting information on climate change-related risks and opportunities is an important step in this direction. The Recommendations of the Task Force on Climate-related Financial Disclosures (hereinafter the "TCFD recommendations")[1], which was created by the Financial Stability Board, form a basic framework for

1 Recommendations of the Task Force of the Financial Stability Board on the disclosure of climate-related financial information: Recommendations on Climate-Related Financial Disclosures.

the disclosure of climate change-related information and are already being implemented by governments, central banks, public organisations and corporations.[2]

Summary of the TCFD recommendations

The TCFD recommendations are based on a set of principles that, among other things, allow for flexibility in their implementation. The recommended disclosures can be applied to central bank portfolios (both monetary policy portfolios and other portfolios), to the provision of credit facilities as well as to issues of financial stability and central bank operations.[3] The TCFD recommendations are implemented on a voluntary basis (except in the event of their transposition into national legislation) and in any case they do not prevail over any disclosures set out in the legislation in force. Finally, the recommended disclosures are structured around four interrelated thematic pillars that represent the core elements of how organisations operate: a) Governance, b) Strategy, c) Risk Management and d) Metrics and Targets.

As early as 2019, the European Commission published guidelines on the disclosure of climate-related information by firms, incorporating the TCFD recommendations.[4] The NGFS (Network of Central Banks and Supervisors for Greening the Financial System) emphasises the importance of a robust and internationally consistent climate and environment-related disclosure framework and its members have collectively pledged their support for the TCFD recommendations.[5] At the same time, since December 2021, the NGFS has incorporated the TCFD recommendations into a guide for central banks on how to make climate-related disclosures.[6]

Implementation of the TCFD recommendations by the Eurosystem and the Bank of Greece

In February 2021, the Eurosystem committed to start making climate change-related disclosures, aligned with the TCFD recommendations for its non-monetary policy portfolios, comprising bonds[7] and equities. This was followed by the ECB's commitment in July 2022 for similar disclosures for corporate bonds held under the CSPP and the PEPP. The disclosures will be annual and will start at the end of the first quarter of 2023 at the latest.[8] According to the Eurosystem's common stance, which was finalised in November 2022, Eurosystem NCBs are required, as a minimum, to proceed to the disclosures mentioned in the thematic area "Metrics and Targets". At this early stage, in particular, they are required to disclose the climate footprint of euro-denominated non-monetary policy portfolios and to commit to the alignment of their investment policy with the goals of the Paris Agreement and the EU objectives for carbon neutrality by 2050. Disclosures relating to portfolios invested in foreign currency or to the other thematic pillars of the TCFD recommendations (Governance, Strategy and Risk Management) are currently optional.

The Bank of Greece, in line with the Eurosystem's common stance, is expected to disclose for the first time at end-March 2023 the climate footprint of its euro-denominated non-monetary policy portfolios for the financial year 2022, incorporating the TCFD recommendations outlined in the "Metrics and Targets" pillar.[9]

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2 As evidenced by the list of supporters of disclosures in accordance with the TCFD recommendations and the alignment of their formal reports with the requirements, this applies to a wide geographical and sectoral scale worldwide. The list comprises central banks, including the Bank of Greece.

3 In addition, a relevant guide was published by INSPIRE (International Network for Sustainable Financial Policy Insights, Research and Exchange), tailored to central banks' specificities, containing practical advice and guidance on the implementation of the TCFD framework. The Bank of Greece contributed to the writing of the guide, in cooperation with distinguished scientists from INSPIRE.

4 Communication from the Commission – Guidelines on non-financial reporting: Supplement on reporting climate-related information (2019/C 209/01), June 2019.

5 NGFS, *A call for action: Climate change as a source of financial risk*, April 2019.

6 NGFS, *Guide on climate-related disclosure for central banks*, December 2021.

7 These include: sovereign bonds, corporate bonds, covered bonds, and supranational and agency bonds.

8 Members of the Eurosystem that face legal and operational constraints in disclosing information prior to their relevant annual report for 2022 have the option of making the disclosures during the second quarter of 2023.

9 The key metrics of portfolios' climate footprint, as recommended by the TCFD, are the following: (1) Weighted Average Carbon Intensity, (2) Total Carbon Emissions, (3) Carbon Footprint and (4) Carbon Intensity. In accordance with the common minimum disclosure framework approved at the Eurosystem level, disclosure of the first three metrics is mandatory, while the fourth is optional.

Disclosures under the TCFD recommendations mark an important step towards understanding climate-related risks to which central bank investment portfolios are exposed and providing information about their environmental footprint.

By continuously pursuing enhanced transparency about their investment activities, central banks can help improve the quality and availability of climate-related data and provide knowledge leading to a better understanding of the risks and opportunities that may arise due to climate change. In addition, all relevant actions are aimed at reducing the environmental footprint and more broadly at raising awareness of climate action.

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