SUMMARY OF THE ANNUAL REPORT

2021

MAY 2022

BANK OF GREECE
EUROSYSTEM

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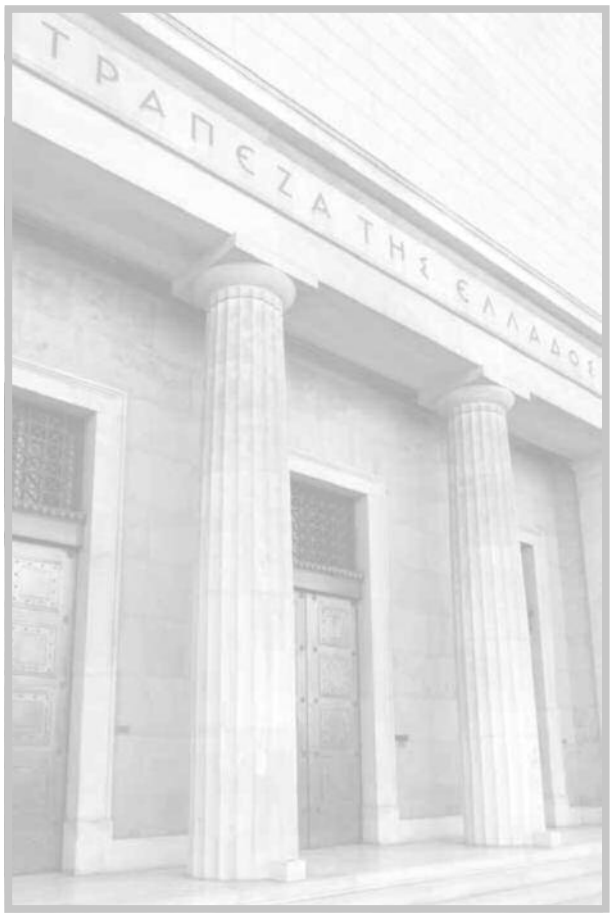
Presented to the General Meeting of Shareholders
by Governor Yannis Stournaras



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FOREWORD BY THE GOVERNOR

The Russian invasion of Ukraine is the greatest challenge facing the European Union (EU) since the end of the Cold War. It brings humankind once again in front of a war in Europe, upsets global geopolitical balances and causes a huge humanitarian crisis. Russia's war against Ukraine and the sanctions imposed lead to further rises in energy prices, fuel a wave of price hikes in foods and commodities, exacerbate inflationary pressures and have a negative effect on real disposable household income, thus curtailing private consumption and dampening growth dynamics in the EU. Moreover, the conflict slows global trade and disrupts supply chains. However, the situation is still unfolding, and the duration and outcome of the Ukrainian crisis are currently unknown. The intensity of the shock and the size of its impacts on the European and the global economy will depend on how soon the war ends, the persistence of inflationary pressures and the monetary and fiscal policy response at the European level.

In 2021, the Greek economy rebounded rapidly, as progress in vaccinations helped contain the pandemic and enabled a gradual lifting of social distancing measures and the reopening of the economy. Real GDP grew by 8.3%, driven by strong growth in exports of goods and services, tourism in particular, higher gross fixed capital formation and a recovery in private consumption. At the same time, labour market developments were favourable, and the unemployment rate declined. For 2022, the economic and financial outlook is inevitably surrounded by new, high uncertainties. However, despite increased energy costs and while the scars from the pandemic are still visible, other factors continue to have a positive effect, including employment growth and the earlier accumulation of savings, the financing of investment projects through the NGEU, and continued export growth, acting as the main drivers of the recovery.

Maintaining the growth momentum is the key challenge for the Greek economy. In the medium term, coping with headwinds and addressing problems –partly a legacy of the debt crisis– in order to achieve the transition to a sustainable, extrovert, high-growth production model, require the efficient use of European funds, the implementation of reforms as well as increased financing of the real economy. The pandemic-related surge in debt and the additional borrowing needed to finance the high deficits necessitate a return to primary surpluses and to fiscal sustainability. The latter is a prerequisite for a further upgrade of Greece's credit rating to investment grade.

1 January 2022 marked 20 years since the largest-ever currency changeover, when euro banknotes and coins were introduced simultaneously in Greece and 11 other euro area member countries. The anniversary of the euro circulation is a milestone in the history of the Bank of Greece. Admittedly, the first two decades of the euro have been eventful. The pandemic, however, has been a [real] game changer, highlighting both the high interdependence and the strong unity of the countries participating in the Monetary Union. It has therefore acted as a catalyst for the long advocated common economic policy response across the euro area. The lessons learnt from the pandemic are very relevant today, when the Ukrainian crisis is posing a new unprecedented challenge to European economies. The EU could emerge stronger and we could see significant steps towards further integration in key areas such as defence, energy and fiscal policy.

The ECB strategy review, covering all aspects of monetary policy, was completed in 2021. The Bank of Greece was actively involved in the individual workstreams set up for this purpose. Furthermore, aiming to maintain and increase its good reputation and citizens' trust, the Bank hosted for the first time a virtual listening event, inviting representatives of the civil society to contribute their views on the strategy review, and expanded its channels of engagement with the public. Amid the exceptional circumstances created by the pandemic and being aware of its important role, the Bank of Greece further strengthened its monitoring and analysis of economic developments and prospects, while continuing to provide the necessary research-based input to the monetary policy discussions of the ECB Governing Council.

As a way to maximise its contribution to financial innovation, the Bank launched a Regulatory Sandbox in 2021. Another significant development was the completion of the migration to the TARGET2 Instant Payment Settlement (TIPS) service. With a view to improving organisational efficiency, the first changes to the Bank's structure were implemented as part of the reorganisation project entitled "Future". The Bank has constantly invested in skill and competence building among its staff, fully respecting its employees and the environment. In keeping with its tradition of pioneering efforts to highlight the risks and opportunities associated with climate change, the Bank of Greece established the Centre for Climate Change and Sustainability. Furthermore, it inaugurated at its Museum a major exhibition on climate change, the first of its kind in Greece, and published an Environmental Report on its environmental footprint.

Numerous activities were carried out in 2021, which attested to the Bank's role in the social and cultural development of the country. Besides, the past year was of particular significance to all Greeks, as it marked 200 years since the Greek Revolution of 1821 that led to the creation of the modern Greek state. To honour this anniversary, the Bank of Greece joined and supported the national bicentennial celebration programme alongside other important institutions of the country.

Twenty years on since the introduction of the euro, we at the Bank of Greece continue to adhere to the same principles and values and to work with the same dedication for the currency that has brought Europeans closer. We shall continue to perform our tasks effectively, responsibly and impartially, in accordance with our Statute. The high skills, diligence and commitment of our staff are undoubtedly the best safeguards for our continued ability to successfully deliver on our mandate in the best interest of Greek citizens. Let me take this opportunity to express my gratitude to all the staff for their contribution over the past year. I would also like to thank the members of the General Council for their support and cooperation. Finally, we all wish that the conflict in Ukraine ends as soon as possible and in a manner that respects international law, the principles and values of democracy and –above all– the value of human life.

Yannis Stournaras

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THE ECONOMY IS FACED WITH MAJOR GLOBAL CHALLENGES

1 2022: EUROPE IS FACED WITH NEW, BIG CHALLENGES

The Russian invasion of Ukraine on 24 February 2022 has brought the European Union (EU) and the western developed world as a whole in front of perhaps the greatest challenge since the end of the Cold War. The military conflict has unpredictable consequences not only for the global and the European economies, but also for international geopolitical stability, security, peace and cooperation. It triggers tectonic shifts in world politics and urgently calls for an update of the EU's security architecture, as well as for action to defend European values and institutions. Shoring up the European economy against the effects of this new shock and preventing an interruption of the ongoing recovery are key priorities for the current economic policy at the European level. The magnitude and duration of these effects will depend on how the war unfolds, on the impact of the current sanctions and possible further measures and on the response of fiscal and monetary policies. The rupture in EU-Russia relations will inevitably have lasting and far-reaching impacts on the European economy, particularly in terms of energy, defence and security, while the largest refugee crisis since 2015 is unfolding, this time with flows coming from within the European continent.

Russia's war against Ukraine is heightening the geopolitical tensions between the US and the EU, on the one hand, and Russia, on the other. It is a new, major exogenous supply-side shock to the economies of the EU Member States that also affects, through various channels, aggregate active demand. It occurred at a very critical time, when economies were rebounding globally from the two-year health crisis and the ensuing severe recession. Apart from the incalculable human cost, the conflict has significant adverse effects not only on the economy in the wider region, but also on the global economy. It exacerbates the already strong inflationary pressures through further rises in energy prices and a new wave of medium-term price increases in metal commodities and basic consumer goods, notably in the food supply chain; it erodes investor and consumer confidence and disrupts global trade and the international financial system. Globalisation is in fact reversing. The result is a slowdown in the European and the global economy and rising prices and interest rates.

As far as the EU economy is concerned, a direct effect is higher inflationary pressures persisting for much longer than previously expected. The war and the associated economic sanctions have caused energy prices to soar from already high levels, on the back of the EU's very high energy dependency on Russia, as well as increases in the prices of metal and food commodities. Higher production and transport costs are passed through to final prices and feed into headline inflation, weighing on consumers' real disposable income. Lower consumer spending by households and declining corporate profitability, combined with heightened investor uncertainty entailing the risk of cancellation or postponement of investment decisions, all result in a slowdown in economic growth.

In other words, while European countries are gradually exiting the pandemic, they are faced with a new risk, that of inflation. Soaring energy and other commodity prices, as well as the actions necessary to meet the ambitious green transition targets set by the EU, could give rise to pressures for nominal wage increases in order to protect the purchasing power of household incomes. This could lead to an entrenchment of inflationary pressures and expectations, which, together with heightened uncertainty, are the most important short-term threats to the recovery of the European economy.

Against this background, the main challenge for economic policy currently is how to prevent a temporary inflation from becoming structural, which would create stagflationary pressures in the European economy, and how to mitigate the negative effects on households' purchasing power and on corporate profitability without jeopardising the ongoing economic recovery.

2 EXPECTATION OF A DEFINITIVE EXIT FROM THE HEALTH CRISIS, AND CONTINUED GROWTH AMID INTERNATIONAL INSECURITY AND HEIGHTENED UNCERTAINTY

The pandemic continued in 2021, causing heavy human losses across the globe, including Greece. The huge number of new infections and, most importantly, deaths was a tragic everyday fact, with social and economic consequences that cannot be ignored. The health crisis is perhaps the most severe humanitarian crisis in the history of the EU, as it affected the most precious good: human life. The EU addressed the adverse effects of the health crisis and the deep recession with courage, determination, unity, solidarity and economic realism. Building on the lessons learnt from previous crises, it promptly took action to strengthen European integration and economic governance, making changes that in normal conditions would have taken much longer to implement.

These efforts culminated in the agreement reached by EU leaders on the first-ever common European recovery instrument, the NextGenerationEU (NGEU), aimed primarily to support the convergence of Member States and increase resilience to negative shocks, especially of the more vulnerable economies. The first visible result has been the strong recovery of the European economy which started in 2021 and is expected to continue in 2022, albeit at a much slower pace mostly due to the impact of the war in Ukraine, thereby offsetting the economic losses recorded in 2020.

Over the past year, the global and the European economy were faced with successive waves of the pandemic. The emergence of new COVID-19 variants, including Omicron most recently, have pushed back expectations for an end to the health emergency. However, a remission of the pandemic is in sight, at least in advanced economies. Thus, EU economies one after the other are relaxing their containment measures with a view to ultimately lifting all restrictions and fully returning to economic and social normalcy. In this context and as the pressure on the public healthcare system has eased, Greece has also proceeded to a phasing out of containment measures.

Uncertainty about the evolution of the COVID-19 pandemic globally has declined but has not been eliminated. It remains uncertain how soon the global economy can fully reopen and global supply chains, transports and trade can be restored. This uncertainty is further compounded by the war in Ukraine, disrupting the global energy market and supply chains in food and other commodities.

Turning to the EU economy, uncertainties related to the pandemic have been contained so far, thanks to the high vaccination coverage of population and the flexibility shown by individual economies in adapting to the new circumstances. On the other hand, Russia's war on Ukraine poses persistent risks to the path of inflation, fuels inflationary expectations and negatively affects consumer and investment decisions, slowing the growth momentum.

Another significant risk stems from the sharp increase in global debt in 2020-21, the largest one-year debt surge since World War II. The unprecedented fiscal support measures have prevented the pandemic crisis from turning into a depression, but have inevitably accumulated large debts. Governments now have to manage a high stock of public debt, whose sharp increase, mostly in advanced economies and, to a lesser extent, in emerging and developing economies, was fa-

cilitated by historically low borrowing rates as a result of coordinated action by major central banks. However, as the risk of inflation mounts, central banks are shifting their focus to rising inflation and resurging inflationary expectations and are adjusting their monetary policy stance accordingly. Interest rate increases by the Bank of England and the Federal Reserve and a scaling down or discontinuation of net asset purchases, including under the ECB's Pandemic Emergency Purchase Programme, have increased the cost of money, while the need to restore fiscal sustainability has implications for the fiscal policy stance, particularly in the more vulnerable economies. At the same time, the upward trend in energy prices has a direct impact on public finances, as governments are implementing economic support measures in an effort to reduce the effect of inflation on households' disposable income and firms' production costs.

Global economic normality in the pre-pandemic period was marked by stable, albeit moderate, output growth rates, price stability and high yields in asset markets. The pandemic has changed all this. On the other hand, it has acted as an accelerator for the transformation of the global economy along two main axes: green transition and digitalisation. Meanwhile, economic convergence and tackling income inequality remain key challenges.

Exit from the health crisis and return to growth will be uneven across countries. Richer countries, thanks to easier access to vaccines and healthcare, are expected to fully offset their output losses in the course of 2022, despite headwinds from the new variant and from inflation. By contrast, emerging and developing economies with limited access to vaccines will continue to grapple with the health crisis and recession, while at the same time trying to control high inflation by raising interest rates, which could jeopardise their own recovery as well as that of developed economies.

The first post-pandemic period is characterised by greater macroeconomic instability worldwide, fuelled mainly by very high levels of private and public debt and financial market volatility. Moreover, shifting global geopolitical balances minimise the scope for economic cooperation at global level and intensify a retrenchment behind national borders, with adverse effects on global trade and activity. Protracted geopolitical instability in Eastern Europe would entail serious long-term consequences for world peace, security and cooperation, as well as for growth dynamics. The geopolitical crisis is, however, a historic opportunity for deeper economic and political union in Europe, with a view to strengthening EU institutions across all areas, including defence, security and energy autonomy.

The new economic reality will be characterised by higher public and private spending on health, clean energy, digitalisation and automation, but also on military equipment. Economic policy focus will shift to strengthening the productive base and functioning of economies to make them resilient to exogenous adverse shocks.

Scientific progress and, therefore, the upcoming technological developments will be centred around: (a) personalised healthcare, prevention and cure of genetic diseases, and more effective treatment; (b) providing affordable, sufficient and clean energy solutions, including nuclear fusion, green hydrogen and renewables; and (c) enhanced protection against cyber-attacks.

Although the transformation of the global economy is expected to increase total factor productivity and create new jobs, particularly in the Information and Communication Technology (ICT) sector, the benefits will not be evenly distributed across countries or across economic sectors and social groups within the same country, thereby widening income inequalities. Adaptability to the new global economic environment, fast integration of modern scientific achievements, continued investment in research, willingness to implement structural reforms, and specialisation advantage are key determinants of an economy's ability to participate in global value chains, as these will be reshaped by geopolitical challenges, and to maximise its gains from the new distribution of wealth.

3 THE GLOBAL AND THE EUROPEAN ECONOMY

The roll-out of effective vaccines and adequate immunisation of the population, at least in developed countries, enabled a return of the global economy to a functional normality. Thus, based on IMF data, global GDP grew by 5.9% in 2021, while a growth rate of 4.4% was foreseen for 2022. Inflation in 2022 is projected at 3.9% in advanced economies and 5.9% in developing economies. However, following the conflict in Ukraine, these figures are expected to be revised for the worse. More recent OECD forecasts (March 2022) suggest that global growth in 2022 will be one percentage point lower and inflation 2.5 percentage points higher than expected before the war.

In the euro area, real GDP grew by 5.3% in 2021, driven by increased private consumption on the back of higher household savings during pandemic-related restrictions on mobility, as well as rising asset values. The higher disposable income of households as a result of rising employment as the labour market recovers strongly, coupled with accumulated savings, are expected to partly offset the negative effect of inflation on private consumption and to sustain growth in the current year.

The new Omicron variant of the coronavirus, which led to the reintroduction of containment measures in the midst of the holiday season last December, disrupted the sectors of tourism, travel and food services and dampened consumer demand and economic growth in the fourth quarter of 2021 and possibly in the first quarter of 2022. The subsequent phasing out of restrictions and reopening of activities put the conditions in place for an acceleration of growth in the course of this year.

However, the war in Ukraine fundamentally changed the economic outlook. Growth is now projected to slow down further in 2022, due to the protracted energy crisis, worsening supply bottlenecks, heightened uncertainty, declining confidence and significantly higher and more persistent inflation than previously expected. Safe predictions cannot be made, only estimates based on scenarios, given that the extent of the effects of the war will depend on the duration of the geopolitical crisis and the impact of the EU sanctions against Russia. In any event, though, the economic consequences will be significant.

According to the baseline scenario of the ECB staff macroeconomic projections (March 2022), which includes an initial assessment of the impact of the war, growth in the euro area will continue, but at a clearly slower pace. Assuming that the war in Ukraine will end soon, that current disruptions to energy supplies and negative impacts on confidence linked to the conflict are temporary and that global supply chains are not significantly affected, euro area GDP is projected to grow by 3.7% in 2022, 2.8% in 2023 and 1.6% in 2024; the 2022 figure has been revised downwards from 4.2% in the December 2022 baseline projection. Growth will be driven by a strong labour market, the use of accumulated household savings to finance consumption, and the stimulus from the Recovery and Resilience Facility resources. Continued fiscal and monetary policy support remains a crucial factor, especially in the context of the current difficult geopolitical situation.

Given the high uncertainty surrounding the impact of the conflict in Ukraine on the euro area economy, the ECB has also considered two alternative macroeconomic scenarios assuming a longer duration of the war. Under the adverse scenario, which assumes worse impacts via the trade, commodity and confidence channels and constraints in the production capacity of the euro area, euro area GDP growth would be 2.5% in 2022. Under the severe scenario, which assumes a steeper and more persistent rise in prices as well, growth in 2022 would be even lower, 2.2%.

The recovery of the global and the European economies in 2021 was underpinned by the highly accommodative monetary policies pursued by major central banks, which led to very favourable

financial conditions, enabling governments to finance substantial fiscal support packages in response to the pandemic. On the other hand, the favourable financial conditions gave rise to a temporary euphoria in financial markets worldwide, resulting in a rally in asset prices, including risky assets, equities and property. Thus, negative news trigger a re-pricing of risks, increasing the possibility of sharp corrections in prices.

Moreover, the protracted energy crisis and the resurgence of inflationary pressures increase production costs and reduce corporate profitability, particularly for businesses facing elastic demand that choose not to pass higher costs to prices. Higher consumer prices for products with zero or low elasticity of demand could trigger a price-wage spiral.

Higher than projected inflation, in its early phase at least, stemmed from imbalances between temporarily constrained supply and pent-up demand, particularly for consumer durables and services, following the reopening of economies. Later on, the ramping up of production to meet higher demand brought about excessive demand for energy inputs. This, coupled with the recent extreme geopolitical developments in Europe and the acceleration of the green transition, has resulted in ongoing sharp increases in energy commodity prices.

The forecasts of all international organisations about the future course of the European economy are surrounded by significant uncertainties and mounting risks, which are primarily related to inflation developments and are exacerbated by the war in Ukraine. In the short term, the COVID-19 pandemic remains an additional risk to the global economy, as long as vaccination coverage in less developed countries is very low. Nevertheless, strong expectations of new vaccines becoming available next autumn and the high immunisation rates in the advanced world support hopes that the COVID-19 pandemic will eventually become an endemic seasonal disease that will not cause significant disruption in daily life or social and economic activity. By contrast, geopolitical confrontations and widespread uncertainty worldwide hamper the normalisation of supply chains, global transport and trade, while they further exacerbate inflationary pressures, thereby weakening the global growth momentum.

The pandemic had already exposed the weaknesses and fault lines of the global economic system. The severe disruptions in global supply chains, shortages in intermediate goods, as well as labour shortages in trade-related activities due to the containment measures, all contributed to unprecedented bottlenecks in large transit hubs, long delays in freight transport and increased transport costs, affecting industry in advanced economies. This situation has encouraged reshoring, whereby businesses based in advanced economies move production back to their home countries. This trend is likely to strengthen following the war in Ukraine, which has made global supply chains more precarious and costly, particularly for raw materials.

Moreover, the incomplete restoration of global goods trade flows, the energy crisis, the impact of climate change on crucial natural resources, as well as the war in Ukraine, all negatively affect primary production, causing long delays or shortages in food supply, pushing food prices upwards. The sharp increases in food commodity prices keep consumer price inflation elevated for longer, reducing the purchasing power of mostly medium- and low-income households and exacerbating economic inequalities.

Against this background, there is a risk of inflation exceeding the target in 2022 as a whole, mainly driven by energy prices and, to a lesser extent, food and metal commodity prices. In particular in the euro area, HICP inflation turned out at 2.6% in 2021 and is projected in the ECB's baseline scenario to increase further to 5.1% in 2022, before falling back to levels close to the medium-term target of 2% (2.1% in 2023 and 1.9% in 2024), as both inflation expectations and nominal wage growth remain contained so far. In other words, energy and food price increases are seen as reflecting conjunctural rather than structural factors, and thus they should gradually ease as the military conflict de-escalates and global supply chains are restored. In

the adverse scenario, associated with a more protracted war in Ukraine, inflation in 2022 would reach 5.9%; in the severe scenario, it would be 7.1%.

In order to control inflation and safeguard currency stability, major central banks are turning to less accommodative monetary policies. Increases in interest rates inevitably lead to a higher cost of money for banks and the private sector, as well as to higher production costs, with a dampening effect on growth. Furthermore, a monetary tightening is typically accompanied by corrections in asset markets, which suggest elevated risks for international capital and property markets.

In the area of government finances, high primary deficits and soaring public debt levels across the globe call for a shift from a strongly expansionary fiscal stance during the pandemic to a more contractionary one, with a significant reduction in public expenditure, mostly due to the phasing-out of emergency support measures. Moreover, tightening monetary conditions and rising borrowing costs as growth gains traction also support the case for restrictive fiscal policies, particularly in countries with high public debt.

For European economies in particular, the war amplifies the effects of higher energy and food prices amid generalised uncertainty. New support measures are therefore required to mitigate impacts on the available income of more vulnerable households. However, in countries with limited fiscal space and high public debt, such measures need to be appropriately targeted, temporary and reasonable. At the same time, the cost of admitting refugees from Ukraine puts an additional burden on government budgets.

Consequently, it becomes evident that striking a balance between (a) a gradual and cautious normalisation of highly accommodative monetary policy to cope with inflation; (b) a flexible fiscal policy, combining the withdrawal of pandemic-related emergency support measures with the adoption of temporary targeted measures to support the most vulnerable social groups; (c) adjustment to changing circumstances through the faster implementation of the envisaged reforms; and (d) credible commitment to the principles of fiscal responsibility, is vital for limiting the risk of stagflation and maintaining a brisk pace of growth, especially in countries with increased fiscal vulnerabilities and inherent weaknesses. Such a strategy would ensure the sustainability of public debt and facilitate the work of central banks in curbing inflation.

4 THE GREEK ECONOMY IS RECOVERING, BUT IS FACED WITH NEW CHALLENGES

The Greek economy is showing remarkable resilience, flexibility and dynamism, despite the protracted uncertainty due to the recurring waves of the pandemic worldwide, but also to the new challenges associated with the serious natural disasters that affected the country last year and the recent energy crisis. Currently, Greece is among the fastest growing euro area economies.

In 2021, GDP at constant prices grew by 8.3%, marking one of the best performances in the euro area, almost fully offsetting the 2020 contraction of 9% and confirming expectations of a U-shaped recovery. The high GDP growth rate in 2021 and the expectation of continued growth in 2022, along with the positive long-term economic outlook, have contributed to the recent upgrade of Greece's credit rating by DBRS to just one notch short of investment grade.

The main objectives of economic policy in 2022 should be to maintain the growth momentum, with a view to expanding the productive capacity of the economy, and to continue the efforts to regain investment grade; the latter should become a national goal.

After a long period of sluggish growth before the pandemic, the Greek economy needs to follow a growth path towards convergence with the euro area, changing its productive model and fo-

cusing on investment and extroversion. The experience of the pandemic as well as the current energy crisis suggest that enhancing the productive base, increasing investment and exports, improving the functioning of the public and private sectors and strengthening governance and institutions should be top policy priorities in the near term.

Reopening the economy with only few restrictions remaining in place, which has become possible thanks to a gradual easing of the pandemic on the back of high immunisation rates, and an improvement in economic expectations are supporting the recovery. It should be pointed out that, after an initial slowdown as a result of vaccination refusal by a part of the population (mostly vulnerable age groups) that led to a worsening in epidemiological data, immunisation coverage of adult and general population has increased in recent months (supported by mandatory vaccination), catching up with the EU average. However, the vaccination rate among vulnerable age groups is still lower than the EU average; this puts continued pressure on the healthcare system and is the main reason for the slow improvement of the pandemic situation in Greece.

The driving forces behind growth in 2021 were the better-than-expected performance of the tourism and the hospitality sector, along with positive developments in exports of goods; disposable income; private consumption expenditure financed by the earlier accumulation of private savings; government consumption; private and public investment; and a strong recovery in the labour market, as reflected in the large decline in the unemployment rate. However, the youth unemployment rate (15-24 years old), although declining, remains too high, at twice the EU average. Notable was also the recovery of industry and construction, whereas the large rise in imports of goods had a negative impact on GDP growth.

The estimated stronger-than-anticipated recovery in 2021 and the projected continuation of growth in 2022, albeit at a slower pace due to the impact of the war in Ukraine, are putting the economy on a new growth path, which is expected to continue in the coming years. They are also paving the way for an end to the pandemic-related support measures, thereby helping to drastically reduce the primary fiscal deficit and restore fiscal sustainability. The pandemic-related headwinds are expected to fade away, while the continued support from monetary policy in 2022 –despite the less accommodative stance of the ECB– coupled with the strong boost from the Recovery and Resilience Facility (RRF), should sustain the growth momentum. In particular, the National Recovery and Resilience Plan “Greece 2.0” for the first time includes an ex ante detailed and precise description of the investment projects to be financed under the RRF, while its objectives are designed to directly address the challenges of the Greek economy, ultimately aiming at its structural transformation.

Ongoing economic recovery in 2022 will crucially depend on the following: (a) continuation of reforms, with results already visible in areas such as digitalisation of the public sector, including tax administration; (b) a further decline in unemployment on the back of labour market reforms; (c) a rise in investment; (d) reduction of non-performing loans (NPLs); and (e) timely and efficient use of funds under the Recovery and Resilience Facility (RRF). These funds, expected to be disbursed at a faster rate between 2022 and 2026, combined with those available under the NSRF 2021-2027 will finance new public and private investment projects that are necessary for carrying through the transformation of the Greek economy with a focus on green and digital economy, employment and skills, and social cohesion. Moreover, pressing ahead with reforms, as described in the National Recovery and Resilience Plan, will help to build strong governance institutions in Greece and a business-friendly environment, which is indispensable for encouraging private investment initiatives. The strong growth outlook is supported not only by anticipated RRF-funded investment, but also by higher productivity as a result of the reforms envisaged in the National Recovery and Resilience Plan. Furthermore, ongoing NPL reduction efforts and sufficient liquidity should enable Greek banks to accelerate lending to businesses and households, thus contributing to GDP growth.

However, the surge in economic uncertainty due to high and persistent inflation as well as to the war in Ukraine weighs on economic agents' expectations and decisions. Against this background, the Greek economy is expected to keep growing in 2022, but at a clearly slower pace than the initial forecast of 4.8%. Real GDP growth is limited to 3.8% in the baseline scenario and 2.8% in the adverse scenario, depending on the size of the impacts via the commodity, confidence and financial channels.

Although the main drivers of growth this year are domestic demand and tourism, there is significant uncertainty: the negative impact of inflation on households' real disposable income will drag down private consumption expenditure. Higher production costs and lower consumption will weigh on firms' profitability and, together with widespread uncertainty, could lead to a postponement or cancellation of investment decisions. There is also uncertainty about tourism inflows, mainly from Europe and the United States, due to a decline in the purchasing power of households in the countries of origin, but also to a feeling of insecurity.

On the other hand, there are several countervailing forces at play, which mitigate the negative effects of the war in Ukraine and sustain the growth momentum. These include: the start of investment projects under the National Recovery and Resilience Plan; rising employment; accumulated savings; and continued growth in exports. These forecasts are subject to a number of conditions, including a complete elimination of the pandemic risk, a significant decline in geopolitical instability, a continued rise in international tourism, a recovery in the euro area, a faster pace of investment and a gradual easing of inflation.

In 2021, HICP inflation in Greece was 0.6%, mainly driven by rising energy and food prices. It was well below the euro area average. For 2022, inflation is projected at 5.2% in the baseline scenario, with positive contributions from all components, and at 7% in the adverse scenario. A de-escalation of inflation is expected in 2023, conditional on a restoration of global supply chains and a decline in energy prices. In the event of an exacerbation of the energy crisis and a faster growth in nominal wages relative to productivity growth, headline inflation in Greece, combined with the elevated cost of housing, would rise further, thus fuelling inflationary expectations.

A further upgrade in Greece's credit rating and the maintenance of a favourable growth outlook crucially hinge on a return to fiscal sustainability and to prudent and responsible fiscal management. The robust performance of tax revenues, in line with the trend observed in the last months of 2021 and the first two months of this year and as a result of the upturn in economic activity and higher private consumption and employment, along with a phasing-out of the pandemic-related support measures allow for a drastic reduction in the primary deficit in 2022.

In greater detail, the high growth rate achieved in 2021 and the projected continued growth momentum in 2022 and 2023 facilitate the conduct of a credible countercyclical fiscal policy in order to generate primary surpluses, which, coupled with low interest rates and higher nominal GDP growth, would put the debt-to-GDP ratio on a steady downward path. A consistent countercyclical fiscal policy would help create adequate fiscal space, required to cushion the economy against future recessions, provide targeted support to the more vulnerable and build a sufficient cash buffer enabling smooth debt servicing so as to mitigate country risk. In this regard, a further curbing of tax evasion would create additional fiscal space, which is of vital importance in the current circumstances.

Although the data so far available suggest that real GDP losses from COVID-19 are likely to be fully recouped in 2022, thereby eliminating the risk of lasting scars, the Greek economy is recovering against a backdrop of exceptionally high global uncertainty. The main sources of heightened uncertainty are: first, the possibility of the current acute geopolitical conflict becoming more permanent, which would pose risks to global security, prolong pressures on global supply chains, international transport and inflation and shadow the prospect of fully recouping tourist inflows;

second, a resurgence –even temporary– of the pandemic worldwide next autumn; third, a more severe and protracted energy crisis; and fourth, an entrenchment of higher inflation expectations among economic agents, with negative effects on consumption and investment.

In the new environment of extreme uncertainty, ensuring fiscal sustainability through the planned phasing-out of pandemic-related support measures proves to be a difficult balancing act between two policy objectives. On the one hand, the impact of high energy costs and inflation on household disposable income and corporate profitability needs to be mitigated in order to limit dampening effects on recovery and safeguard financial stability. On the other hand, support measures in 2022 need to have a small direct budgetary impact, so that the necessary fiscal policy tightening in the current year can facilitate a return to fiscal sustainability.

5 THE SINGLE MONETARY POLICY

In view of the progress of economic recovery and the need to rein in rising inflation, the Governing Council of the ECB has already embarked on a gradual and cautious normalisation of monetary policy. By the Governing Council's decision of 16 December 2021, confirmed in the meeting of 3 February 2022, net purchases of assets under the Pandemic Emergency Purchase Programme (PEPP) continued in the first quarter of 2022, although at a significantly lower pace, and the PEPP was terminated at the end of March 2022. Importantly, by that decision, the reinvestment horizon for the PEPP was extended until at least the end of 2024. This prevents the risk of market fragmentation and ensures a smooth transmission of monetary policy across all euro area countries for as long as their economies are still recovering from the fallout of the pandemic. The single monetary policy, although gradually becoming less accommodative, retains the necessary flexibility to cope with potential negative shocks, such as a resurgence of the pandemic, but also the recent geopolitical shock. Flexibility relates to the reinvestment horizon and asset classes, as well as the possibility of resuming net asset purchases, if necessary.

It is important to note that monetary policy flexibility includes the ability to purchase Greek government bonds, as part of PEPP reinvestments, over and above rollovers of redemptions, although they still lack investment grade and are therefore ineligible for the asset purchase programme (APP). This helps to contain the borrowing costs of Greek government and facilitates the smooth refinancing of public debt from the markets. By doing so, it gives time to the Greek authorities to make headway with the restoration of fiscal sustainability and the implementation of the necessary structural reforms, both of which are seen as essential prerequisites for an upgrade of Greece's credit rating.

By the decision of 10 March 2022, monthly net purchases under the standard asset purchase programme (APP) continue in the second quarter of 2022, with monthly volumes set at €40 billion in April, €30 billion in May and €20 billion in June. For the third quarter, the volume of purchases will depend on the path of inflation. In particular, if the medium-term inflation outlook can be maintained even after the end of its net asset purchases, net asset purchases will be ended in the third quarter of 2022. If the inflation outlook deteriorates or financing conditions become inconsistent with the 2% target, the Governing Council stands ready to revise the schedule for net asset purchases in terms of size and/or duration. The Governing Council also intends to continue reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it starts raising the key ECB interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.

According to its decision of 24 March 2022, the ECB Governing Council continues 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 under the PEPP continue.

The interest rates on the main refinancing operations, the marginal lending facility and the deposit facility have remained unchanged at 0.00%, 0.25% and -0.50%, respectively. Any adjustments to the key ECB interest rates will take place sometime after the end of net purchases under the APP and will be gradual. The path for the key ECB interest rates will continue to be determined by the Governing Council's forward guidance and by its strategic commitment to stabilising inflation at 2% over the medium term. Therefore, the Governing Council expects the key ECB interest rates to remain at their present levels until it sees inflation reaching 2% well ahead of the end of its projection horizon and durably for the rest of the projection horizon, and it judges that the path of inflation is consistent with the 2% target over the medium term.

In July 2021, the Governing Council concluded its monetary policy strategy review. The review took into account the fundamental changes in the global economic environment since the last strategy review, including the downward trend in the "natural" interest rate, the slowdown in productivity, the ageing of the population, the climate change-related risks, the digital transformation of the financial system and the interaction between fiscal and monetary policies. In this context, the medium-term inflation target has now been set at 2% annually, instead of "close to, but below, 2%". The target is symmetric, with deviations on both sides seen as equally undesirable. This allows more flexibility in the conduct of monetary policy by the ECB and enables it to adjust all of its instruments, as appropriate, to achieve its inflation target. In line with its new monetary policy strategy, the Governing Council also revised its forward guidance on the key ECB policy rates.

At the same time, the ECB announced an ambitious action plan to incorporate climate change considerations into its monetary policy framework. This plan ensures that the Eurosystem conducts its monetary policy taking into account the financial impacts of climate change, as well as the risks entailed by the transition to a lower-carbon economy.

6 FISCAL DEVELOPMENTS

In 2021, fiscal aggregates continued to be adversely affected, although to a lesser extent, due to ongoing support measures from the government amounting to around 9.4% of GDP. As the economy gradually reopened and started to recover, the support measures were more limited in scope and retargeted at the most vulnerable groups of society, with an emphasis on helping businesses to meet their working capital needs. A gradual restoration of fiscal sustainability should start from 2022 as the pandemic eases and the economy continues to grow. However, a resurgence of inflationary pressures on the back of soaring energy prices may be more persistent than initially expected, thus weakening economic growth. Against this background, the scope for fiscal policy intervention is limited. To avoid a negative effect on nominal fiscal aggregates, any further support measures should take into account the size of the available fiscal space and the broader macroeconomic uncertainties; they should be temporary and appropriately targeted, so as not to jeopardise the ongoing efforts to restore fiscal sustainability.

The incipient fiscal consolidation process, with a lower primary deficit in 2022 and a return to annual surpluses from 2023 onwards, needs to be preserved. Sound fiscal balances, coupled with continued structural reforms and optimal utilisation of RRF funds, would help to solidify growth and lead to an upgrade of Greece's credit rating, enabling Greek government bonds to regain investment grade.

In 2020, the general government primary deficit stood at 7.1% of GDP and the debt at 206.3% of GDP. For 2021, it is estimated that the primary deficit fell, on account of higher tax revenues

and lower non-productive expenditures. According to Bank of Greece forecasts, in 2021 the primary deficit declined to 6.2% of GDP and government debt to 193% of GDP.

The very low levels of borrowing costs throughout 2021 enabled the continued presence of Greek government bonds on international bond markets, ensuring the smooth and comfortable financing of public expenditure and the maintenance of a high cash buffer. The low implicit interest rate and strong nominal GDP growth are the most important factors that weaken public debt dynamics, having already put the debt-to-GDP ratio onto a downward path since 2021. While short-term risks to debt sustainability are contained, in the long run there are potential risks stemming from lower growth and/or higher borrowing costs as a result of higher interest rates.

7 THE BANKING SYSTEM

In 2021, bank credit to the private sector continued to increase, underpinned by the highly accommodative single monetary policy and the programmes of the Hellenic Development Bank (HDB) and the European Investment Bank (EIB) Group. Its growth rate stood at 3.7% year-on-year in December 2021, down from 10% in December 2020, and at 5.7% on average in the year as a whole, broadly unchanged from 2020. As business revenues recovered and firms had built up sufficient liquidity buffers already since 2020, their needs for bank credit declined. Therefore, the average net monthly flow of bank credit to non-financial corporations was lower than in 2020, but much higher compared with the pre-pandemic period. At the same time, the funds made available by the HDB and the EIB were lower than in 2020, but their impact was very significant, as they supported one-third of loans to businesses (mainly small and medium-sized enterprises) and the self-employed. The average annual rate of growth in lending to large enterprises decelerated, while the respective rate for SMEs accelerated. However, large enterprises continued to account for the bulk of new bank lending. Credit expansion to non-financial corporations was mainly channelled to the sectors of industry, trade and tourism. By contrast, the net flow of credit to households remained negative, despite an increase in disbursements of new housing and consumer loans increased.

Bank deposits by the private sector (businesses and households) continued to grow in 2021, by a cumulative €16.2 billion, which was lower than in 2020 (€20.6 billion) but much higher than the levels observed before the pandemic. Household deposits rose by €8.5 billion, driven by an increase in disposable income, on the back of the fiscal support measures, higher employment and forced savings in the context of the pandemic-related containment measures. Deposits by non-financial corporations increased by €7.8 billion, reflecting higher bank borrowing, direct State aid and a rebound in revenues after the reopening of the economy.

With regard to nominal bank interest rates, deposit rates in general and lending rates for non-financial corporations continued to decline. The decline in borrowing costs for SMEs was slightly larger. By contrast, interest rates on bank loans to households for house purchase remained virtually unchanged, while consumer credit rates increased. In real terms, however, lending rates for both non-financial corporations and households fell significantly on account of higher inflation.

Banks' operating income showed a small decline, mainly due to lower income from financial operations. Net interest income remained broadly unchanged, while operating expenses increased, leading to weaker results before provisions and taxes. Overall, partly reflecting impairment losses from NPL transactions and provisioning for credit risk, banks posted losses.

Turning to capital adequacy, both the common equity tier 1 ratio and the total capital ratio declined, mainly reflecting losses on NPL sales and securitisations. The relatively low quality of bank capital, given that deferred tax assets make up the largest part (64%) of total regulatory

capital, coupled with the impact of International Financial Reporting Standard 9 and the obligation to meet the Minimum Requirement for Equity and Eligible Liabilities (MREL), call for a qualitative and quantitative strengthening of the capital base and an improvement of core profitability. It is positive that banks have started efforts to strengthen their capital base through capital increases and bond issuance. Finally, it is worth pointing out a growing bank-sovereign nexus, as total exposure to central government stood at 22.5% of total bank assets and 38.7% of GDP at the end of 2021.

In the current environment of changing financial conditions, Greek banks are faced with major challenges, such as new NPLs that may arise after the expected withdrawal of support measures, but also as a result of high inflation; the obligation to meet the Minimum Requirement for Equity and Eligible Liabilities (MREL); the need to absorb the impact of International Financial Reporting Standard 9; the consequences of climate change; and the adoption of new, digital technologies. It is clear that these challenges call for continued vigilance and stronger actions on the part of banks to further reduce NPLs, strengthen their capital base and more effectively use their increased liquidity towards financing the economy.

Non-performing loans

According to available data, the stock of NPLs on Greek banks' balance sheets declined further in 2021, mostly through loan sales of €27.5 billion under the Hellenic Asset Protection Scheme. Smaller contributions to NPL reduction came from active NPL management and from the pandemic-related temporary borrower relief measures.

NPLs stood at €18.4 billion at end-December 2021, down by €28.8 billion from end-December 2020 and by €90.3 billion from their March 2016 peak. Of the total NPL stock, corporate loans account for about two-thirds, housing loans for one-fifth, while the remainder consists of consumer loans. Progress with NPL resolution has led to a significant improvement in bank asset quality, reducing risk costs and widening profit margins.

Nevertheless, the stock of NPLs as a percentage of total loans (12.8%) remains well above the EU average of 2.1%. About 39% of NPLs are subject to forbearance measures, but a high share of forborne loans has fallen back into arrears. It is estimated that, due to the pandemic and the impact of high inflation, an additional proportion of forborne loans might be classified as NPLs in 2022. Efforts should therefore be stepped up to further reduce NPLs, especially given that the full impact of the pandemic and inflation on bank asset quality is expected become visible with a lag.

As NPL reduction on bank balance sheets in 2021 was achieved mainly through securitisations and transfers to international investors, 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-core banks have made little progress with addressing their still high NPL stocks.

8 INSURANCE UNDERTAKINGS

In 2021, the Greek private insurance market saw significant developments, including consolidation through mergers and acquisitions; higher sales of unit-linked products, where investment risk is borne by the policyholder; and, in the context of low interest rates, a drop in sales of insurance contracts with profit participation clauses.

Overall, the Greek insurance sector weathered well the impact of the pandemic. In January-September 2021, total life, and to a lesser extent, non-life gross written premiums grew relative to the respective period of 2020. Currently, insurance undertakings increasingly focus on action to address the risks of climate change and adjust to new technological developments.

Regulatory developments in 2021 included: (a) a revision of the minimum coverage amounts for compulsory insurance against civil liability in respect of motor vehicles; and (b) the adoption of the guidelines of the European Insurance and Occupational Pensions Authority (EIOPA) regarding information and communication technology security and governance in order to ensure risk management in ICT systems.

The Greek insurance market is characterised by a high degree of concentration, in particular among insurers pursuing both life and non-life activities, where the top five undertakings hold an aggregate market share of 81% in terms of technical provisions.

Both total assets and total liabilities of insurance undertakings increased, while own funds remained unchanged. A substantial part of liabilities concerns life insurance. With regard to the quality of eligible own funds, 93% are classified in Tier 1, i.e. the highest quality level, and all supervised insurance undertakings have Solvency Capital Requirement coverage ratios of more than 100%.

The climate crisis and its non-linear nature pose serious challenges for insurance undertakings providing natural disaster damage coverage. The higher frequency and severity of extreme weather events, also given the increasing fiscal cost of loss coverage, point to a need to strengthen the role of private insurance protection. The implementation of best international practices, such as tax incentives for taking out insurance, and public-private partnerships are appropriate tools for ensuring adequate financial protection of citizens against natural disasters.

EIOPA has published a number of reports, consultation papers and opinions, such as the consultation paper on the application guidance on running climate change materiality assessment and using climate change scenarios in the Own Risk and Solvency Assessment (ORSA); the opinion on the supervision of the use of climate change risk scenarios in ORSa; the report on non-life underwriting and pricing in light of climate change; and the methodological paper on potential inclusion of climate change in the Nat Cat standard formula.

9 SOURCES OF RISK AND UNCERTAINTY

The Greek economy faces a number of risks, both exogenous and endogenous. Exogenous risks relate to: the extreme geopolitical tensions and their effects on the global and European economy and especially on inflation; ability to control COVID-19 variants and turn the pandemic into an endemic disease; and climate change.

Although not yet completely and definitely eradicated, the pandemic poses less of a risk to the Greek economy. However, the most significant exogenous risk in the short term arises from inflation persistence, which will chiefly depend on the evolution of the war in Ukraine and the ensuing geopolitical developments in the broader region. As inflationary pressures appear to be more permanent and persistent globally, they are propagated across the economy, negatively affecting disposable income, consumption and investment expenditure, profit margins, asset yields, real wealth, tourism inflows and ultimately growth. At the same time, the rise in inflation at the EU level will lead to a gradual normalisation of the single monetary policy and a tightening of financing conditions, affecting borrowing costs. Given the need to restore a sound fiscal position, there is little scope for an expansionary fiscal policy to counter the impact of economic slowdown.

However, Greece can turn the current energy crisis into a historic opportunity and become an energy hub in Southeast Europe. By building on its know-how in submarine electricity interconnection projects and by accelerating investment in renewable energy, it can enhance its energy security, speed up the energy transition and become a factor of energy stability in the EU.

In the medium-to-long term, perhaps the most important exogenous risk stems from the non-linearity of the climate crisis, which poses a serious threat to economic and financial stability. The frequent and more disruptive extreme weather events, combined with a delayed transition to a low-carbon economy, could negatively affect the transmission of monetary policy through the financial system and jeopardise price, financial and macroeconomic stability. For example, last summer's wildfires in Greece caused huge ecological and financial damage and highlight the vulnerability of the domestic economy to the impacts of climate change. The rise in temperature and the change in precipitation patterns have an effect on the quality and availability of national resources and thus on the economy's productive capacity. This explains why central banks have a keen interest in addressing the consequences of climate change on the financial system. In this regard, the ECB has launched a roadmap to further incorporate climate change considerations into macroeconomic modelling and monetary policy operations, in order to assess the climate risk exposure not only of banks and businesses, but also of its own balance sheet.

Specifically for banks, the risks of climate change are significant, including: credit risk related to defaults on loans; market risk, as asset valuations are negatively affected; liquidity risk insofar as the climate crisis affects banks' funding sources (deposits, assets); and operational risk due to infrastructure damage as a result of natural disasters.

Endogenous risks are linked both to chronic weaknesses in the structure and functioning of the economy and to issues as a legacy from the Greek sovereign debt crisis. These risks include:

(i) the possibility of hysteresis as a result of failure to achieve sustained strong growth and accelerate reforms;

(ii) a sharp increase in the already high government debt-to-GDP ratio. In the short term, debt sustainability is ensured. Ensuring also long-term sustainability would require primary surpluses, which, coupled with the projected high growth rates, low average interest rates and the favourable debt structure, should keep the debt ratio on a downward path;

(iii) the high stock of NPLs. Despite the great progress achieved, the stock of NPLs on bank balance sheets remains high and, as a percentage of GDP, well above the EU average. Moreover, there is a risk that new NPLs may emerge in the period ahead once the pandemic-related support measures are fully withdrawn. Key priorities include an improvement in banks' core profitability and a qualitative and quantitative strengthening of their capital base, especially given the large share of deferred tax credits (DTCs) in total regulatory capital;

(iv) private debt overhang;

(v) the low structural competitiveness of the Greek economy. It is essential to accelerate the necessary structural reforms, mainly in the goods and services markets, in order to strengthen competition and foster innovation;

(vi) the large investment gap, which is detrimental to the quantity and, more importantly, the quality of physical capital;

(vii) a failure of education to keep pace with international labour market trends, which affects the quality of human capital and exacerbates the already high youth unemployment rate. Today's uncertain and fluid labour market calls for constant evolution and adaptability;

(viii) a potential failure of public administration to ensure a timely disbursement of EU funds, and potential administrative obstacles to the implementation of investment projects;

(ix) the long delays in the administration of justice.

10 A ROADMAP FOR SUSTAINABLE STRONG GROWTH

Looking forward, a steady path of growth at an average annual rate of 3% calls for concrete and longer-term economic policy decisions as part of a clear roadmap towards:

- making markets for goods and services more extrovert and competitive, by exploiting technological advances to promote the presence of the Greek economy in global value chains;
- using available know-how to transform the country into an energy hub;
- protecting healthy entrepreneurship, by eliminating administrative obstacles in order to encourage private investment initiative;
- creating a more efficient and functional public sector by completing the digital transformation of public administration;
- digitalising the judicial system, to ensure speedier administration of justice and dispute resolution;
- addressing the problem of private debt overhang by using all available tools and fostering a payment culture;
- speeding up the privatisation programme to optimise the use of resources and infrastructures;
- financing by a robust banking system;
- creating hubs of excellence, innovation and technological progress; and
- focusing on critical thinking and adapting curricula across all levels of education to the current needs of the globalised labour market.

Moreover, the effectiveness of economic policy hinges crucially not only on the right policy choices, but also on their successful implementation. As the ten-year Greek crisis has shown, delays, missteps or incomplete implementation of economic policy actions have significantly reduced the effectiveness of stabilisation programmes and prolonged the crisis.

Given the adverse demographic trends, strong growth can be driven by increasing total factor productivity and expanding the productive capacity of the economy by improving the quantity and quality of physical and human capital through the integration of new technologies. The fourth industrial revolution is shaping a new production paradigm, shifting employment away from unskilled manual labour and menial tasks towards high-skill jobs demanding critical thinking and an open mind to evaluate and apply knowledge rather than just reproduce information. At the same time, social cohesion considerations imply that equal opportunities and inclusion should be ensured, so that the benefits of growth can be shared among all social groups.

Over the next eight years, the Greek economy will receive over €70 billion in EU financial support, available from the NGE (2021-2026) and the EU Multiannual Financial Framework 2021-2027. An appropriate prioritisation of reform actions, their implementation within the strict timeframes and complementarity between private and public investment will determine the pace of disbursement of the funds, which are seen as essential for a shift towards a modern, sustainable and extrovert economic model. Furthermore, the utilisation of EU funds can bring about considerable output gains, helping to generate primary surpluses and reduce public debt, thus ensuring long-term fiscal sustainability.

In the short term, cautious policy steps need to be taken to consolidate the recovery, especially as long as the risk from the health crisis has not been fully eliminated and the risk of stagflation is real. Such policy steps concern: (a) the appropriate phasing-out of all emergency support measures with a view to gradually restoring fiscal sustainability while preserving the recovery; (b) the smooth absorption of EU funds and their utilisation to finance new productive investment projects in export-oriented sectors in order to reduce the current account deficit; (c) a credible commitment to implementing the necessary reforms as described in the National Recovery and Resilience Plan; and (d) a definitive clean-up of bank balance sheets.

All in all, the key determinants of growth in 2022 and the next few years will be the following: a boost to (mostly private) investment, through a strong reform policy, necessary for attracting foreign businesses to invest in Greece; a rise in private consumption expenditure; and a reduction in the current account deficit. However, this crucially presupposes the termination of the war in Ukraine and the mitigation of its impact on the economy, as well as the restoration of a climate of international confidence, cooperation and peaceful resolution of conflicts.

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It has been more than two years since the COVID-19 pandemic broke out, causing irreparable human losses and social and economic costs that have been unprecedented in peacetime. Adequate vaccination coverage of population worldwide has been the only shield against the pandemic so that social and economic life can return to normal as soon as possible. Despite the successive and multiple crises faced over the past year (health-related, energy, climate and geopolitical), the Greek economy has shown functional adaptability and resilience, so that in only one year almost all economic losses have been recouped. Growing geopolitical instability, which peaked with the outbreak of the war in Ukraine, and the exacerbated energy crisis will slow but not halt the recovery path. 2022 marks the dawn of a new era, which will shape a new social and economic reality. The dominant features will be digitalisation and automation, green energy, scientific knowledge and specialisation, repatriation of international production to safer regions, but also the need to strengthen defence and energy security in view of new geopolitical crises and abrupt political changes. Greece has a historic opportunity to transform its economy and keep pace with developments. The positive economic momentum carried over from 2021 to 2022, the lessons learnt from the ten-year debt crisis, the important EU funding instruments, the political will to implement reforms, but above all the maturity of the Greek society and its ability to understand the new environment and accept structural changes, are factors that help to turn crises into opportunities, enabling the country to overcome once and for all its inherent chronic weaknesses, transform into a modern, sustainable, extrovert and competitive economy and show adaptability and resilience to a highly uncertain international environment. The ultimate goal of this effort is to consolidate sustainable and inclusive growth and improve social welfare.

Box 1

THE GLOBAL ECONOMIC IMPACT OF THE WAR IN UKRAINE

On 24 February 2022, Russia invaded Ukraine, a few days after it had recognised the non-government-controlled areas of the Donetsk and Luhansk oblasts as independent states and had sent Russian troops into these areas. The war in Ukraine continues unabated, and so does human suffering, causing growing uncertainty about its duration, outcome and political and economic impacts at the global and the European level.

The EU responded promptly, in close coordination with the US, the UK and other international partners, by imposing sanctions against Russia (and, later on, Belarus), which were gradually stepped up. Since 23 February 2022, the EU has adopted four packages of restrictive measures, which have included targeted sanctions against 877 individuals and 62 entities in the form of asset freezes, exclusion from funding and travel bans. It has also imposed sweeping economic sanctions, most notably: (a) a ban on all transactions with the central banks of Russia and Belarus and a freeze on a part of the foreign exchange reserves of the Russian government held abroad (about USD 300 billion out of a total of USD 640 billion, according to the Russian Minister of Finance); (b) exclusion of seven Russian and three Belarusian banks from SWIFT (see Box III.4); (c) exclusion of the Russian government and state-owned enterprises from EU capital markets; (d) a ban on the overflight of EU airspace and on access to EU airports by Russian carriers of all kinds (the UK also banned Russian ships from its ports); (e) restrictions on exports to Russia of certain goods, services and technologies in the sectors of oil refining, aviation and space, defence and security, maritime navigation and radio communication; and (f) further trade restrictions on iron, steel and luxury goods. With regard to Russia's external trade, the EU together with other WTO members decided to revoke Russia's "most favoured nation" status, paving the way for the imposition of higher tariffs on Russian exports. The official sanctions were accompanied by a number of private sector initiatives suspending the economic and trade relations of large enterprises with Russia.

The impact of the Ukraine war and the ensuing international sanctions on the Russian economy was immediate and significant. The exchange rate of the rouble against the euro and the US dollar collapsed, inflation surged, the key policy rate doubled to 20%, the stock exchange was closed and the risk of default for banks and enterprises increased. The suspension of trading of Russian government bonds on international regulated markets and the downgrades of Russia's credit rating have increased the risk of default on public debt. At the same time, shortages of goods and services were seen in the domestic market, as well as a rise in cryptocurrency transactions. Russian GDP is projected to fall steeply in 2022. Ukraine is also expected to face a deep recession and the high costs of rebuilding the country, amid a severe humanitarian crisis. The direct effect on global demand from the recession in Russia and Ukraine is assessed to be relatively small, as the two countries together represent only about 2% of global GDP.

Channels of transmission to the global and the European economies

With the military conflict escalating and economic volatility and uncertainty mounting, it is currently difficult to accurately assess the global economic impact of the war in Ukraine. Impacts can be direct or indirect, short-term or longer-term, local or geographically more widespread, and could be intensified by possible spillover effects or, conversely, mitigated by appropriate fiscal and monetary policy responses. Possible economic impacts can be transmitted via four main channels: (a) trade in goods and services; (b) financial transactions; (c) energy and other commodity prices; and (d) confidence. In general, the European economy is likely to be affected harder than other advanced economies due to geographical proximity and higher energy dependence on Russia. Moreover, impacts are expected to vary across the EU Member States according to the specificities of their economies, their energy intensity and dependence[1] and their direct exposure to trade and financial transactions with Russia.

1 Energy intensity is defined as the energy consumed per unit of output, and energy dependence is defined as the proportion of energy imports in total energy consumption.

(a) Bilateral trade between the EU and Russia represents a very small share of the EU's total external trade.[2] However, both the European and the global economy are vulnerable to possible disruptions in global supply chains due to delivery delays or shortages in essential inputs for industry, such as metals and rare gases (used, for example, in the production of semiconductors and batteries), but also for agricultural production, such as fertilisers, seeds and animal feed, of which Russia is a major producer and exporter. Also, Russia accounts for an important share of global exports of grain (about 30% together with Ukraine) and, among fossil fuels, coal, crude oil, refined petroleum products and natural gas. A total stop of grain in exports from Russia and Ukraine would entail severe shortages not only in many emerging and developing economies, but also in several advanced economies. Furthermore, cargo rerouting due to sanctions and geopolitical risks increases transport costs. The extent to which possible shortages in intermediate goods can affect production depends on inventories at country and enterprise level, as well as on the ease of substituting suppliers and transport routes in order to secure the necessary amounts of inputs at a reasonable cost.

(b) In the financial sector, the exposure of European banks to the Russian market, although uneven, has been low overall and systemically non-important,[3] particularly after 2014 and the annexation of Crimea by Russia. Moreover, according to estimates, US dollar-denominated Russian bonds held by foreign investors amount to some USD 170 billion. However, increased investor uncertainty surrounding the outlook for growth, inflation and interest rates, combined with a plausible repricing of risk premia on sovereign and corporate debt securities and the ensuing adjustments of asset valuations to the new reality, all increase the risk of shocks in global financial markets and of a tightening of financial conditions, with serious repercussions on the real economy, particularly in countries with high debt ratios and other macroeconomic imbalances.

(c) The most critical transmission channel of the impact of war is through commodity prices, particularly energy prices, which continue their steep rise to record highs. High energy prices further increase inflation and the cost of living, weakening household budgets and reducing the real disposable income of households. They also increase production and transport costs for enterprises, squeezing or eliminating profit margins, particularly when it is difficult to pass higher costs to final prices. This weighs on the financial condition of enterprises, affects investment and worsens their global competitiveness. In the first month of the Russo-Ukrainian war, price increases in Europe were about 20% for Brent crude oil, 25% for natural gas and 30% for coal (which is a substitute for oil in electricity production), thus reaching historic highs and triggering a knock-on effect on prices in many categories of goods and services. Important increases are also expected in the prices of industrial metals and agricultural products in general (in addition to grain), as their production is energy intensive and requires higher priced raw materials (fertilisers), respectively. Persistently high energy and/or food prices entail the risk of higher inflation expectations becoming entrenched, further curbing the post-pandemic rate of recovery and increasing the risk of stagflation trends. Finally, high energy prices, as a structural supply-side disruption, could erode the productive fabric (through below capacity operation or closure of businesses) and reduce production capacities in the medium term. Oil exporting countries in the Middle East or Africa may benefit from energy price rises, while developing economies in Latin America and Africa may face higher food insecurity and social unrest due to soaring food commodity prices. In China, where already during 2021 increased energy costs resulted in production cuts, the further increase in international commodity prices, as well as the risk of declining external demand from large western markets, have exacerbated both supply-side and demand-side concerns.

(d) Finally, reduced confidence as a result of heightened uncertainty and the worsened financial position of households, enterprises and governments are expected to be a major drag on economic activity (affecting both con-

2 Euro area exports to Russia account for about 3% of its total goods and services exports. However, the euro area imports around 20% of its oil and 35% of its natural gas from Russia. See Box 3 "The impact of the conflict in Ukraine on the euro area economy in the baseline and two alternative scenarios", ECB staff macroeconomic projections for the euro area, March 2022.

3 According to consolidated banking data from the Bank of International Settlements (BIS), by the third quarter of 2021, Austria, Italy and France had the highest exposures to Russia globally, but their banks' claims on Russia were only 1.6%, 0.6% and 0.2% of their assets respectively. In aggregate, the consolidated cross-border claims of BIS reporting banks on Russia accounted for less than 0.5% of their total international claims.

sumption and investment), which was in a phase of strong recovery from the pandemic prior to the Russia-Ukraine war.

Forecasts for weaker growth and higher inflation

Available forecasts of the economic impacts of the war in Ukraine vary in magnitude depending on their timing and underlying assumptions, and are subject to continuous revisions. Broadly speaking, all forecasts point to weaker growth and higher inflation, which, if they both persist in coming quarters, could lead several economies and economic regions to stagflation. The most important factors behind the projected slowdown in growth include higher energy prices, impaired confidence, weaker foreign demand and new disruptions in international trade and global supply chains, which were already experiencing difficulties due to the pandemic. The growth and the inflation outlook is subject to downside and upside risks, respectively and, in general, heightened uncertainty.

Thus, by mid-March, according to market analysts, global GDP growth was revised downwards by about 0.7-0.8 percentage point to 3.2%-3.4% for 2022,[4] quite lower than the pre-war estimates, which all exceeded 4%, including those by international organisations (IMF: 4.4% and European Commission: 4.3%).[5] On 17 March 2022, the OECD estimated that global growth could be more than 1 percentage point lower this year than pre-conflict projections, while global inflation, already elevated since the start of the year, could further rise by at least 2.5 percentage points.[6] These projections did not incorporate several factors that could intensify the impact of the conflict, including further sanctions or consumer and business boycotts, disruptions to shipping and air traffic, unavailability of basic commodities from Russia, trade restrictions (e.g. bans on food exports), or undermined consumer confidence.

With regard to individual economies, apart from Russia and Ukraine, that are expected to see a deep recession in 2022, the most severe impact on growth from the Russo-Ukrainian conflict was forecast for emerging European economies and the euro area, followed by the United Kingdom and, at a distance, the US, China and Japan. In particular with regard to the euro area, according to the baseline scenario of the ECB staff projections of March 2022, GDP growth has been revised downwards by -0.5 percentage point, to 3.7%. Under an adverse scenario entailing more negative economic impacts, the ECB projected a further weakening of GDP growth to 2.5%, i.e. 1.2 percentage points lower than the already revised baseline. Also under the adverse scenario, the large increases in energy prices would drive inflation to 5.9% in 2022, i.e. 0.8 percentage point higher than the baseline. Under the third, more severe scenario put forward by the ECB, GDP would slow down to 2.3% in 2022, while inflation would stand at 7.1%.[7]

Fiscal and monetary policy response

The economic impact of the war is expected to call for continued expansionary fiscal policies, at least during 2022 and where fiscal space allows this, as governments try to mitigate the negative effects on household and business incomes from price increases mostly in energy, as well as in other raw materials and foodcommodities. The emergency fiscal measures considered vary, from direct subsidisation of fuels and electricity/natural gas bills to more drastic market interventions, such as the imposition of temporary price caps. European governments, in particular, are expected to face additional fiscal pressures due to the higher expenditure required for energy security, the green transition, national defence and support to millions of refugees from Ukraine.[8] Indicatively, the OECD estimates that a rise in final government spending by 0.5% of GDP for one

4 S&P Global Ratings, "Global Macro Update: Preliminary Forecasts Reflecting The Russia-Ukraine Conflict", 8.3.2022, and Capital Economics, "World GDP forecast revised down due to Ukraine war", 16.3.2022.
5 IMF, *World Economic Outlook Update*, 25.1.2022, and European Commission, *Winter 2022 (Interim) Economic Forecast*, 10.2.2022.
6 OECD, *Economic Outlook, Interim Report: Economic and Social Impacts and Policy Implications of the War in Ukraine*, 17.3.2022.
7 See Box 3 "The impact of the conflict in Ukraine on the euro area economy in the baseline and two alternative scenarios", ECB staff macroeconomic projections for the euro area, March 2022.
8 Since the outbreak of the war, the UN has calculated Ukrainian refugees to over 3 million people.

year in all the OECD economies could offset around one-half of the estimated war-induced output losses without adding significantly to inflation.[9] Fiscal space varies significantly across emerging market and developing economies, with many facing difficult trade-offs between supporting incomes and ensuring debt sustainability and investor confidence.

Monetary policy is called upon to strike a balance between supporting recovery in the short term and addressing a higher and more persistent inflation. Against a background of elevated uncertainty regarding the magnitude and duration of the economic impacts from the war in Ukraine and the medium-term inflation outlook, it is essential that central banks maintain vigilance and flexibility in order to ensure well-anchored inflation expectations and favourable financial conditions. The smooth transmission of monetary policy could be disrupted by a more drastic reassessment of risks and a flight to safety, in the event of a prolonged or escalating conflict, thereby increasing the risk of fragmentation in government bond markets and financial instability. Similarly to the pandemic, coordinated support to banks and to the real economy is crucial for strengthening confidence and averting a derailment of economic recovery. A slower pace of monetary policy normalisation could be a policy choice in economies where underlying inflation remains low, wage pressures continue to be moderate and the adverse effects of the war on growth are more acute. In any event, new net asset purchases, the extension of currency swap lines and a temporary easing of macroprudential regulations could mitigate potential tensions and liquidity shortages in financial markets. Challenges are even greater for several emerging market economies, where rises in food and energy prices will likely require further interest rate hikes, given the higher weight of basic goods in inflation.

Longer-term challenges

In the medium term, the war in Ukraine has prompted far-reaching decisions towards higher strategic energy independence. This is expected to accelerate investment in renewable energy and storage technologies, as well as the EU's independence from Russian gas, oil and coal imports in the coming years and higher energy efficiency, as announced by EU leaders in March 2022. At the same time, it is expected to strengthen investment in innovation in order to ensure the strategic autonomy of countries with respect to cutting-edge technologies, defence and cyber-security. Also, the economic and financial uncertainties from the war in Ukraine could provide impetus to the EU enlargement process and accelerate European integration, in particular the banking union.

In the longer term, the war has the potential to fundamentally change the global balance of economic and geopolitical power by causing a dislocation of global energy trade, a restructuring of global value chains towards greater resilience and security, a fragmentation of payment networks and the international financial system and a change in large economies' currency composition of their reserve assets. Increased geopolitical tension raises further concerns of economic fragmentation, also in terms of the diffusion of information, technology and know-how.

To sum up, the war in Ukraine creates heightened uncertainties around the growth and inflation outlook. The short-term factors driving inflation upwards are likely to strengthen, while energy and possibly other commodity prices, including some metals and agricultural products, are expected to remain high for a longer period of time. Possible new disruptions in global supply chains could result in shortages and delays in deliveries of intermediate and final goods, with repercussions on production and business activity as a whole in many economies. The conflict can also impair household and business confidence and thus dampen consumption, increase precautionary savings and delay or limit investment. An immediate end to war and the restoration of peace with the smallest possible human and economic losses are everyone's wish and priority.

9 See footnote 6.

Box 2

DEBT AND ECONOMIC GROWTH IN THE POST-PANDEMIC PERIOD

The COVID-19 pandemic has led to a sharp increase in global debt. The deep recession, coupled with fiscal and monetary policy measures to support incomes and employment, has contributed to a deterioration of fiscal aggregates and a build-up of public and private debt in both advanced and emerging economies. While the non-financial sector's debt was already on the rise before the pandemic in most countries, the size and the unprecedented rate of its accumulation in 2020-2021, compounded by the likelihood of interest rate hikes in the post-pandemic period, have raised concerns about whether it can be financed as planned and about its impact on economic growth prospects. The strong rise in inflation in 2021 will reduce the debt-to-GDP ratio, so far as economic growth is higher than the increase in the borrowing rate. However, in countries with high levels of public debt, the favourable interest rate-growth differential can reverse quickly, especially after crises, thereby exacerbating the risks to growth dynamics stemming from high debt.[1]

This box describes pandemic-related global debt developments in the non-financial sector of the economy and analyses the impact of the substantial increase in public and private debt on economic growth, focusing on estimating the effects for the euro area. Lastly, it presents policy recommendations that can help de-escalate the accumulated public and private debt in advanced economies and support the momentum of economic recovery in the medium term.

Pandemic-related debt developments

In 2020, the global debt-to-GDP ratio rose by 44 percentage points to 289.4% (see Chart A),[2] the highest annual increase since World War II.[3] Half of this increase stemmed from the accumulation of public debt, which, for the first time in 20 years, stood above 100% of GDP. In absolute terms, in the first year of the pandemic the stock of global debt spiked to USD 221.6 trillion, of which 68% was owed by advanced economies.[4]

The increase in the debt ratio in advanced economies in 2020 was higher than in emerging economies, partly due to a larger fiscal space, coordinated support policies, particularly favourable financial conditions and deeper capital markets. As a result, the total debt-to-GDP ratio in advanced economies increased by around 47 percentage points, from 273.1% in 2019 to a record high of 320.3% in 2020, with public debt standing at 135.5% and private debt (households and non-financial corporations) at 184.8% of GDP. The share of public borrowing in the increase in total debt was higher (60%) than that of private borrowing (40%). In the private sector, the increase in the debt ratio was more pronounced in firms than in households. Firms faced liquidity problems, as some economic sectors were not fully operational or temporarily closed down due to pandemic-related containment measures (see Chart B).

Debt had already been on an upward path before the pandemic, in an environment of low bank interest rates and low cost of market-based financing. However, the increase in the debt-to-GDP ratio in 2020 appears to have been faster, larger and more broadly based across institutional sectors of the economy than in earlier economic crises, due to both further debt accumulation (numerator effect) and deeper recession (denominator effect). For example, in advanced economies, public debt increased in one year (2020) as much as it had increased cumulatively in the three-year period 2008-2010, while the debt of non-financial corporations was twice its level during the global financial crisis, reflecting the different nature of the two crises. During the pandemic, governments and central banks encouraged further private sector borrowing to support the economy and incomes, while during the global financial crisis the challenge had been the opposite, i.e. to limit excessive leverage of the private sector.

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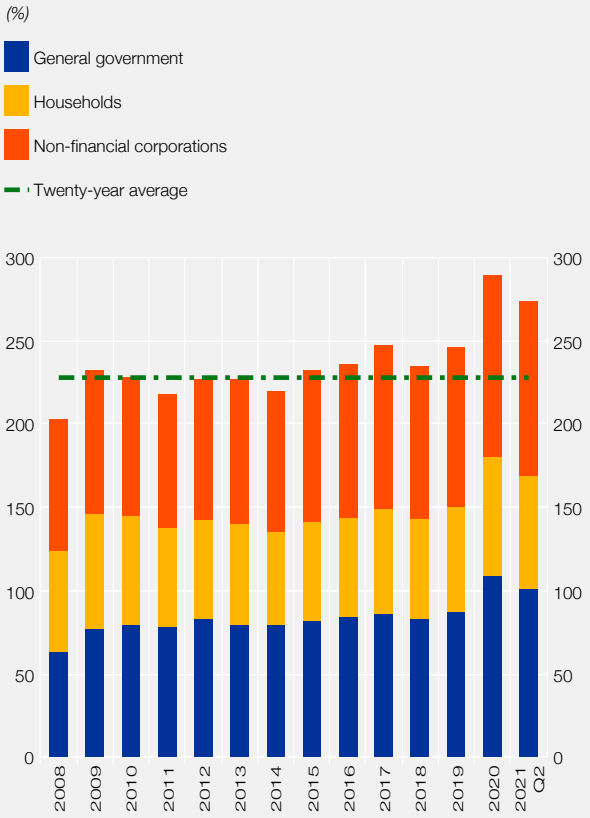
1 Weicheng, L., A.F. Presbitero and U. Wiriadinata (2020), "Public debt and r-g at risk", IMF Working Paper WP/20137.

2 The debt analysis in this box is based on statistical data from the Bank for International Settlements (BIS) up to Q2 2021; see https://www.bis.org/statistics/about_credit_stats.htm. Public debt is defined as the general government debt. Financial corporations are not included in private sector debt.

3 Buysse, K., F. De Sloover and D. Essers (2021), "Indebtedness around the world: Is the sky the limit?", National Bank of Belgium, *NBB Economic Review*, June, 69-105.

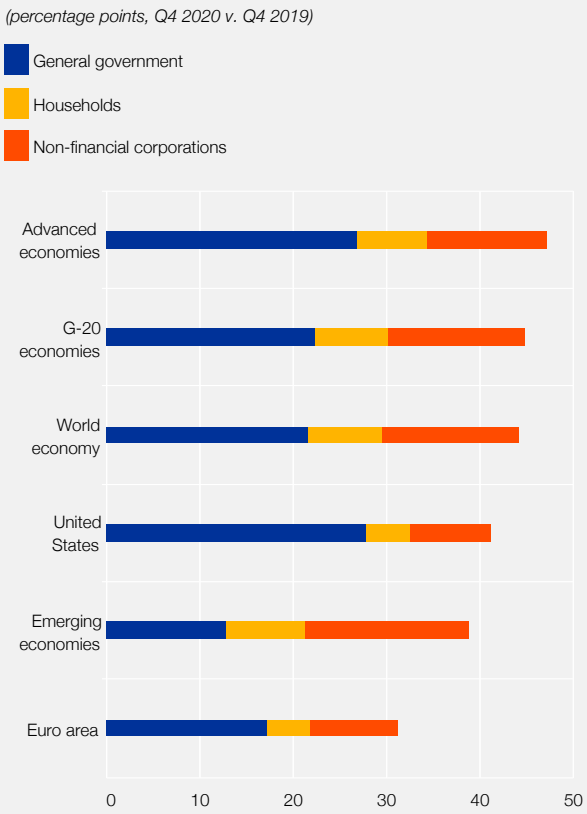
4 The share of advanced economies' debt has declined over time from 84% of global debt in 2008 to 66% in Q2 2021, mainly due to high debt accumulation by China.

Chart A Global debt-to-GDP ratio



Source: BIS, own calculations.

Chart B Change in the debt-to-GDP ratio during the pandemic



Source: BIS data, own calculations.

In the first half of 2021, global debt as a percentage of GDP de-escalated slightly, as economies started to recover and inflation picked up. However, quickly resolving the high level of debt of both the general government and the private sector, particularly non-financial corporations, is not expected to be easy amid heightened uncertainty about the evolution of the pandemic and economic growth dynamics, and amid conditions of a tighter monetary policy, which are expected to increase overall debt service costs.

Consequences and risks of high debt for economic growth

In the short term, an increase in public debt can boost domestic demand and incomes, as seen in the recent COVID-19 crisis.[5] At the same time, private debt growth is consistent with economic growth and increased productivity, reflecting *inter alia* the economic benefits of financial deepening, which facilitates a better distribution of savings towards productive investment.[6] However, in the long run, there is a negative correlation between debt and growth, as high debt hampers macroeconomic and financial stability.[7]

5 Public debt may have a temporary positive impact on economic growth, as well as a larger, more permanent, negative impact. See Abubakar, A.B. and O.S. Mamman (2020), "Permanent and transitory effect of public debt on economic growth", *Journal of Economic Studies*, 48(5), 1064-1083.

6 Verner, E. (2019), "Private debt booms and the real economy: Do the benefits outweigh the costs?" MIT, Sloan School of Management. See http://dx.doi.org/10.2139/ssrn.3441608.

7 For a review of the recent literature on the relationship between public debt and growth, see Salmon, J. (2021), "The impact of public debt on economic growth", *Cato Journal*, 40(3), 487-509. Recent discussions on the relationship between private debt and growth include: Mian, A., A. Sufi and E. Verner (2017), "Household debt and business cycles worldwide", *Quarterly Journal of Economics*, 132(4), 1755-1817, and Jorda, O., M. Kornejew, M. Schularick and A.M. Taylor (2020), "Zombies at large? Corporate debt overhang and the macroeconomy", Federal Reserve Bank of New York, Technical Report 951.

The channels through which the accumulation of high public and private debt respectively affect the economy differ. In the long run, high public debt increases interest rates and reduces public and private investment, thereby dampening economic growth.[8,9] At the same time, in advanced economies high public debt levels are associated with higher taxation and/or inflation in the future, limiting the available economic policy space required to address economic crises.[10] For the euro area in particular, high-debt countries appear to be experiencing a larger loss of output during crises than economies with low debt, mainly due to higher borrowing costs, as well as a decline in potential output.[11]

On the other hand, the negative impact of high private debt on economic activity over the medium term is more likely to go through the channel of reduced consumption and private investment,[12] but also through a possible decrease in productivity due to a distorted distribution of resources. High debt affects corporate and household balance sheets, increasing the need for deleveraging, while it limits the supply and demand for new loans. Borrowers may have to liquidate assets or even go bankrupt, impacting on lenders' profits and balance sheets. At the same time, adverse second-round effects due to problems in servicing such high debts, including lower collateral valuations, increased risk premia and heightened uncertainty, will exacerbate risks to the financial system and the economic outlook. High levels and/or rapid accumulation of private sector debt are also key predictors of both the likelihood and the severity and duration of future economic downturns and financial crises.[13] In particular, over-indebted households are more vulnerable to interest rate and income shocks and tend to invest less as their borrowing costs increase.[14] Similarly, in over-indebted corporations, shareholders have fewer incentives to take new investment initiatives, given that any increase in corporate value will be used to pay off the debt.[15] Lastly, the increased leverage of one economic sector often leads to spill-over effects to other sectors via lower investment and/or wage costs (investment and income channels), leading to lower economic growth.[16]

In addition, empirical studies on the relationship between debt and economic growth suggest a non-linear impact of debt accumulation on growth (debt threshold effect).[17] When the level of debt is low, an increase in debt may lead to higher economic growth by boosting incomes and investment, as well as by smoothing consumption. This positive relationship appears to reverse when debt exceeds a certain level.

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8 See, *inter alia*, Gomez-Puig, M. and S. Sosvilla-Rivero (2015), "Short-run and long-run effects of public debt on economic performance: Evidence from EMU countries", Research Institute of Applied Economics, Working Paper 2015/22, 1-37; Checherita-Westphal, C. and F. Rother (2010), "The impact of high and growing government debt on economic growth: an empirical investigation for the euro area", ECB Working Paper No. 1237; and Reinhart, C.M., V.R. Reinhart and K.S. Rogoff (2012), "Public debt overhangs: Advanced-economy episodes since 1800", *Journal of Economic Perspectives*, 26(3), 69-86.

9 A recent meta-analysis study shows that a 10 percentage point increase in the government debt-to-GDP ratio relates on average to a 0.14 percentage point decline in output growth. However, it should be noted that there is a relatively weak negative causal relationship between the two aggregates, considering the bias in publishing more statistically significant estimates (publication bias) and the endogeneity problems in empirical methodologies. See Heimberger, P. (2021), "Do higher public debt levels reduce economic growth?", The Vienna Institute for International Economic Studies, Working Paper 211.

10 Bouabdallah, O., C. Checherita-Westphal, N. de Vette and S. Gardo (2021), "Sensitivity of sovereign debt in the euro area to an interest rate-growth differential shock", ECB, *Financial Stability Review*, 24-27.

11 Burriel, P., C. Checherita-Westphal, P. Jacquinot, M. Schon and N. Stahler (2020), "Economic consequences of high public debt: evidence from three large scale DSGE models", ECB Working Paper No. 2450.

12 See e.g. Cevik, S. and F. Miryugin (2020), "Leverage shocks: Firm-level evidence on debt overhang and investment", IMF Working Paper WP/20/287, December.

13 Jorda, O., M. Schularick and A.M. Taylor (2013), "When credit bites back", *Journal of Money Credit and Banking*, 45(2), 3-28.

14 Ampudia, M., H. Van Vlokhoven and D. Żochowski (2016), "Financial fragility of euro area households", Journal of Financial Stability, 27, 250-262.

15 Kalemli-Ozcan, S., C. Reinhart and K. Rogoff (2016), "Sovereign debt and financial crises: theory and historical evidence", *Journal of the European Economic Association*, 14, 1-6.

16 Bricongn, J.C. and A. Mordonu (2017), "Interlinkages between household and corporate debt in advanced economies", *Open Economies Review*, 28, 1029-1055; and Caner, M., T.J. Grennes and F.N. Kohler-Geib (2010), "Finding the tipping point: When sovereign debt turns bad", in C.A. Primo Braga and G.A. Vincelette (eds.), *Sovereign Debt and the Financial Crisis*, World Bank, Washington, D.C.

17 For an overview of the literature on public debt, see De Rugy, V. and J. Salmon (2020), "Debt and growth: A decade of studies", George Mason University, *Policy Brief*.

Although in literature there is no universally acceptable debt threshold above which the debt-growth relation becomes negative,[18] these estimated thresholds seem to differ between public and private debt. While there are significant differences across advanced countries, in general, the debt threshold may be relatively lower for public debt than for private debt, especially corporate debt, suggesting possibly higher risks to macroeconomic stability from the accumulation of public debt beyond a certain level.[19] However, when private and public debt exceed their respective estimated thresholds, the impact of further credit accumulation on economic activity is negative and statistically significant for both types of debt.[20]

Empirical estimation of the impact of high debt on growth

With a view to assessing the potential risks to the economy in the post-pandemic period from the recent debt build-up, the impact of high public and private debt on anticipated euro area economic growth is examined empirically.[21] The dependent variable is defined as the average euro area growth rate two, four and eight quarters ahead, while (public or private) debt is calculated as the trend deviation in the current period. The trend deviation describes periods when debt moves strongly upwards or downwards and can therefore be used to assess whether excess debt accumulation is associated with lower growth in the future.

In addition, the impact of debt on anticipated growth may vary both along the economic growth distribution (i.e. between expected favourable and unfavourable economic prospects) and over the time horizon considered (i.e. short or medium term). The distinction of the impact of debt along the distribution of economic activity is significant because, if high debt is more associated with future recessions, this may contribute to the formulation of appropriate policies to address serious downside risks to growth.

The table reports results on the impact of high public and private debt on anticipated economic growth two, four and eight quarters ahead based on the quantile regression empirical method.[22] This method divides the dependent variable into quantiles, where Q5 marks low (mostly negative) projected economic growth, Q50 medium growth and Q90 high economic growth. This approach makes it possible to assess the impact of high debt on all future growth paths and at different projection horizons. Consistent with literature, the empirical results of the table show that there is a non-linear negative relationship between debt and anticipated economic activity. More specifically, the current accumulation of high public debt is associated with lower future growth, regardless of the anticipated economic outlook (i.e. across all quantiles of the economic growth distribution).[23] However, the

18 Eberhardt, M. and A.F. Presbitero (2015), "Public debt and growth: Heterogeneity and non-linearity", *Journal of International Economics*, 97(1), 45-58.

19 Given the significant differences in the sample and the empirical methodology among studies, the public debt thresholds for advanced economies range between around 70% and 90% of GDP. See *op. cit.* De Rugy and Salmon (2020) and Checherita-Westphal and Rother (2010). For private debt, the accumulation of borrowing by businesses and households, over 90% and 85% of GDP respectively, is associated with lower output growth. See, *inter alia*, Cecchetti, S.G., M.S Mohanty and F. Zampolli (2011), "The real effects of debt", Economic Symposium Conference Proceedings, Jackson Hole, 145-96; and Lombardi, M.J., M.S. Mohanty and I. Shim (2017), "The real effects of household debt in the short and long run", BIS Working Paper No. 607.

20 However, the actual impact of public and private debt may be underestimated if their interaction is not taken on account. See Caner, M., F. Qingliang and T. Grennes (2021), "Partners in debt: An endogenous non-linear analysis of the effects of public and private debt on growth", *International Review of Economics & Finance*, 76, 694-711.

21 The model is of the form of $\Delta GDP_{t+h} = \beta_{0\theta}+\beta_{1\theta}*DEBT_t+\beta_{2\theta}*X_t+\varepsilon_t$, where ΔGDP_{t+h} is the average growth rate h = 2, 4 and 8 quarters ahead respectively, DEBT is the percentage deviation of the ratio of (public or private) debt to GDP from its long-term trend and X is a matrix comprising other economic variables such as the current growth rate, annual HICP inflation, the long-term interest rate, as well as a dummy variable capturing sharp changes in the economic cycle, and taking a value of 1 if output growth in the current period lies in the two lowest quantiles of the economic growth distribution. The model is estimated using quantile regression for the period from the first quarter of 1999 to the fourth quarter of 2018, while parameter θ denotes the quantiles of the dependent variable. The long-term trend of (public or private) debt was estimated using the Hodrick-Prescott filter.

22 Koenker, R.W. and G. Bassett, Jr. (1978), "Regression Quantiles", *Econometrica*, 46(1), 33-50.

23 The main conclusions of the analysis remain unchanged if the dependent variable is defined as the anticipated economic growth two, four and eight quarters ahead (i.e. non-overlapping data) and if the level of debt is taken as a deviation from its long-term trend.

Impact of public and private debt on anticipated economic growth

Quantiles	Q5	Q10	Q25	Q50	Q75	Q90
			Two quarters ahead			
Public debt	-0.19*** (0.07)	-0.16*** (0.06)	-0.14*** (0.05)	-0.11*** (0.03)	-0.13*** (0.04)	-0.10*** (0.04)
Private debt	0.02 (0.09)	-0.03 (0.09)	-0.04 (0.11)	-0.14 (0.09)	-0.12 (0.16)	-0.18 (0.19)
			Four quarters ahead			
Public debt	-0.26*** (0.07)	-0.26*** (0.05)	-0.26*** (0.06)	-0.17*** (0.05)	-0.18*** (0.04)	-0.21*** (0.04)
Private debt	-0.10 (0.12)	-0.15 (0.12)	-0.01 (0.12)	-0.22** (0.10)	0.07 (0.20)	0.02 (0.20)
			Eight quarters ahead			
Public debt	-0.32*** (0.05)	-0.25*** (0.07)	-0.33*** (0.08)	-0.26*** (0.05)	-0.28*** (0.05)	-0.31*** (0.03)
Private debt	-0.62** (0.29)	-0.41** (0.20)	-0.11 (0.12)	-0.07 (0.12)	0.19 (0.21)	0.26 (0.18)

Notes: The dependent variable is the anticipated average annual rate of economic growth in the next two, four and eight quarters. Q5-Q90 are the 5th-90th quantile of the dependent variable respectively. Public and private debt are defined as a deviation from their long-term trend. Estimates are based on the quantile regression method (see footnote 21). In parentheses: bootstrapping standard errors with 1,000 repetitions. *, ** and *** statistical significance level of 10%, 5% and 1% respectively.

estimated impact of public debt is stronger at the tails, especially at the lower tails of the growth distribution (Q5 and Q10) than at the median of the distribution (Q50), reflecting the fact that high public debt further amplifies downside risks to economic growth. At the same time, high public debt is also associated with lower upside risks to growth, denting the growth momentum.[24]

The negative relationship between future growth and public debt is present both in the short and the medium term, i.e. two, four and eight quarters ahead. However, the effects of heightened leverage increase over time. Higher debt appears to be associated with a milder negative impact on economic activity in the short term. By contrast, the risk of lower future growth due to higher debt increases significantly eight quarters ahead, possibly because of the build-up of macroeconomic imbalances. In other words, the excessive debt accumulated during the pandemic will have a negative impact on the anticipated high economic growth rates in the post-pandemic period.

On the other hand, the accumulation of high private debt in the euro area does not seem to have a negative impact on growth in the near term. Nevertheless, the coefficient of the debt variable in the lower growth quantiles eight quarters ahead is negative and statistically significant, pointing to a marked increase in downside risks to economic growth over the medium term. This is in line with studies indicating that an increase in private debt can boost the economy in the short term, but the negative effects of high debt, such as higher risk premia and low long-term growth, become stronger over the medium term.[25]

Conclusions and policy implications

Fiscal expansion during the COVID-19 pandemic has been instrumental to limiting the economic impact of the crisis in 2020 and supporting the economic recovery in 2021. However, the rise in non-financial sector debt to historically high levels has shifted the focus of public debate from the benefits of increasing debt to support economies during crises to the potential costs of excessive debt accumulation. This analysis shows that persistently high debt levels in the post-pandemic period could be associated with lower economic activity in the future and, in particular, increased downside risks to growth, thereby making an adverse economic scenario more likely to materialise. The Russia-Ukraine war that started in early 2022 could exacerbate the risks to future growth because of further debt accumulation in some countries owing to increased defence spending and costs of weaning off Russian energy.

A critical challenge is to achieve the right mix of fiscal and monetary policy amid uncertainty about output growth, high debt and rising inflation. Fiscal and monetary policies complemented each other during the worst phase of

24 Increasing downside risks and reducing upside risks to growth imply a left-skewed conditional growth distribution.
25 IMF (2017), "Household debt and financial stability", *Global Financial Stability Report* (October), Chapter 2.

the pandemic. In the post-pandemic period, a gradual return to sound fiscal positions is essential as economic recovery gains traction, because high debt levels typically limit the ability of governments to effectively support recovery as well as the ability of the private sector to invest in the medium term while remaining solvent. Targeted fiscal support, as well as credible and sustainable medium-term fiscal frameworks, will contribute to addressing the short-term challenges of the pandemic crisis, but also to achieving longer-term economic policy objectives, such as digital and green growth.

Meanwhile, factors such as using loan resources for productive investment, diversifying the investment base of the debt portfolio, maintaining a favourable public debt structure (e.g. its repayment profile) and addressing macroeconomic imbalances and structural weaknesses (such as by strengthening institutions) will enable smooth debt servicing and limit the impact of high debt on growth dynamics.

Lastly, careful monitoring of high private debt is important, given the potential spillover effects on financial stability and public sector debt in the medium term. To mitigate corporate debt problems, policymakers should also consider a combination of tools, including reforms in corporate debt insolvency and restructuring frameworks, as well as in the regulatory framework to promote equity financing.

Box 3

INVESTMENT WITH A POSITIVE ENVIRONMENTAL IMPACT: CONCEPT AND FINANCING

Over the past decade, the concepts of sustainable finance, responsible investment and responsible banking have increasingly gained popularity around the world. Responsible investment is often associated with a positive environmental impact (green investing), in view of the global threat of climate change, environmental degradation and the need to address social and governance issues across economies.[1] The devastating potential consequences have motivated political will and mobilised the international community in joining efforts to address these challenges. The European Commission has formulated policies for sustainable finance based on the UN Sustainable Development Goals (SDGs) and the Paris Agreement,[2] with the ultimate objective of making Europe the first climate neutral economy by 2050. In 2018, a short-term action plan[3] was adopted, which focuses on "transforming finance to finance the transformation".[4] The goals are to reorient capital flows towards sustainable investments, to incorporate sustainability considerations into risk management and to foster transparency and long-termism in financial and economic activity. The long-term vision,[5] a clean planet for all, entails a radical transformation of the production model of the European economy.

To help put the action plan into practice, the European Commission adopted a package of measures, including the establishment of a common EU classification system for sustainable economic activities (Taxonomy Regu-

1 Although much of the attention is directed towards climate change, the traditional parameters of sustainability, i.e. the social and economic factors, cannot be ignored. Therefore, the modern concept of sustainability encompasses environmental, social, governance and economic issues, all considered equal, while some of them come into sharper focus depending on the circumstances. For instance, the pandemic has highlighted the urgent need to improve health systems and to address the problems that are affecting people's well-being, thus strengthening the social factor.

2 Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Under the Paris Agreement, the scientific community converged on the idea that a limit to the increase in average global temperature well below 2°C above pre-industrial levels, and preferably closer to 1.5°C, may prevent catastrophic consequences from climate change.

3 European Commission (2018), "Action Plan: Financing Sustainable Growth", COM(2018) 97 final.

4 "Sustainable finance: transforming finance to finance the transformation", speech by Fabio Panetta, Member of the Executive Board of the ECB, 25.1.2021, https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210125_1~2d98c11cf8.en.html.

5 European Commission (2018), "A Clean Planet for all. A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy", COM(2018) 773 final.

lation), so as to support their financing and to avert greenwashing. This allows the development of green-labelled instruments for financing investments with a positive environmental impact. Furthermore, the European Commission published a proposal for a regulation on green bond standards, which, when adopted, will make it easier for firms and public authorities to tap the capital markets for financing investment projects that meet sustainability criteria.

The EU taxonomy

The EU taxonomy aims to provide businesses and investors with a common language and a clear definition of what is "sustainable" and thus eligible for green financing. It also serves as a guide for economic sectors with smaller or greater negative environmental impacts. The six environmental objectives established by the Taxonomy Regulation are: (1) climate change mitigation; (2) climate change adaptation; (3) sustainable use and protection of water and marine resources; (4) transition to a circular economy; (5) pollution prevention and control; and (6) protection and restoration of biodiversity and ecosystems.

To qualify as taxonomy-aligned, an economic activity must contribute to one or more of the environmental objectives, cause no significant harm to any other environmental objective, comply with minimum social safeguards and comply with the relevant technical screening criteria.

The current taxonomy mainly focuses on environmental objectives, underplaying the social dimension of sustainability. Nevertheless, it makes explicit reference to social, human and labour rights, under the “do no significant harm” principle. Thus, an activity should have at least one positive environmental effect, without harming any of the other five, which means that an activity with a positive environmental effect but an adverse social impact does not qualify as taxonomy-aligned. To better clarify this, the European Commission intends to develop a social taxonomy system. Besides, an activity that it is not taxonomy-compliant is not necessarily unsustainable or “brown”; it is just outside the current scope of the taxonomy.[6]

Financing green investment

The exponential increase of financial products that incorporate directly or indirectly sustainability considerations and are used to finance investments with a positive environmental impact is an important step forward.[7] Such products are primarily debt instruments which are identified as "green" by one of the following approaches, namely the use of proceeds model, the counterparty profile model and the hybrid model.

(a) Use of proceeds model

According to the use of proceeds model, green bonds are issued for specific projects that are labelled environmentally-friendly[8] rather than for general financing purposes. Thus, the issuer may only use the funds raised to finance projects with an earmarked environmental purpose. Specific sustainability objectives, which should have a material impact on high-level objectives or particular areas of concern, must be determined and clearly described in legal documents, thereby allowing to evaluate eligibility and compatibility with the issuer’s strategy, policy or processes. Furthermore, the issuer must disclose details regarding the management of the proceeds, such as the degree of funds ring-fencing, a comparison of the amounts raised and used, and the environmental impact of the project.

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6 On 2 February 2022, the European Commission presented a draft Complementary Climate Delegated Act to accelerate decarbonisation, which proposes the inclusion, under strict conditions, of specific nuclear and gas energy activities in the list of economic activities covered by the EU taxonomy (see also Box II.4).

7 The European Commission decided to raise 30% of NGEU funds through the issuance of green bonds. Against this backdrop, in October 2021 the EU issued its first 15-year green bond of €12 billion, which was warmly received by the markets.

8 Such projects relate e.g. to renewable energy, green buildings or resource conservation. In a similar vein, social bonds finance projects that address social issues and/or seek to achieve positive social outcomes, especially for a targeted population, e.g. vulnerable groups, the unemployed and minorities. Sustainability bonds finance projects with a mix of green and social purposes. The pace of growth for social bonds is not similar to that for green bonds, although a new type of social bond has recently emerged in the form of COVID-19-related bonds. Such bonds have a use of proceeds specifically aimed at mitigating COVID-19-related social issues, targeting in particular the populations affected the most.

There are further sub-groupings according to more specific purposes, such as blue bonds, which are government bonds the proceeds of which are used to finance marine and ocean-based projects with positive environmental, economic and climate impacts, or green securitised bonds, which are backed by one or more specific green projects or provide for a green use of proceeds (i.e. for investment in green projects).

The "use of proceeds" logic embedded in green finance has greatly facilitated the greening of traditionally brown sectors and contributed to the emergence of a new market for green financial products available to investors. However, it has also given rise to allegations of greenwashing and concerns about the creation of a "market for virtue" without driving systemic changes in global business operations.

Several lending instruments offered by banks, such as green loans, also fall within the use of proceeds model. Green loans are instruments whose funds are committed exclusively to green projects, in key areas of environmental concern. As in the case of green bonds, borrowers are subject to a periodic reporting requirement regarding the actual use of proceeds.

(b) Counterparty profile model

The use of proceeds model was a useful starting point but has somehow reached its limits, since green activities cannot be indefinitely separated from the overall evaluation of the company. For instance, green bonds, although exclusively financing green projects, are not ring-fenced, as bond payments are not necessarily linked to proceeds from the green project. This means that their credit rating is similar to that of other bonds from the same issuer on the same terms and conditions. The main difference is the commitment to use the proceeds for green projects. Even if a market segment is prepared to pay a premium (the so-called greenium) and thus enjoy a lower yield, green bonds cannot be considered in isolation.

The design limitations of financial instruments according to the use of proceeds model led to an alternative approach, the counterparty profile model, and to a new generation of financial products, the sustainability-linked bonds. Sustainability-linked bonds do not finance specific projects but rather the general operations of an issuer with explicit sustainability targets that are linked with the financing conditions of the bond. The bonds are structurally linked with the issuer's achievement of climate-related or broader SDG goals. For instance, there are usually covenants that link the bond coupon to the progress, or lack thereof, towards the defined goal; the coupon increases or decreases accordingly.

There are three basic characteristics of sustainability-linked bonds. First, the selected key performance indicators (KPIs) should be relevant, core and material to the issuer's overall business, measurable, externally verifiable and benchmarkable. Second, the KPIs should be assessed against agreed sustainability performance targets (SPTs), which must represent a material improvement in the respective indicators, beyond a "business as usual" trajectory, and be determined on a predefined timeline set before (or concurrently with) the issuance of the bond. Third, depending on the performance, the bond characteristics, e.g. the coupon rate, should be subject to significant adjustment relative to its original features at issue. This mechanism provides a financial incentive associated with the attainment of the sustainability objectives.

In a similar vein, sustainability-linked loans are being developed, whereby the borrower is taken into account when assessing sustainability, on the basis of predefined criteria. Such loans are not project-specific but counterparty-specific. In the case of a company, it must either operate in a certain industry or sector focused on specific activities, or be assessed as overall sustainable or committed to improving its performance on certain sustainability indicators. In the case of private individuals, they often need to meet certain criteria, such as belonging to a vulnerable group affected by climate change. Their setting is fairly similar with that of sustainability-linked bonds. The SPTs specified should be linked with the company's environmental responsibility policy as well as with the loan terms and conditions. For instance, the interest rate of the loans is tied with the borrower's sustainability performance.

(c) Hybrid model

In certain cases, both the use of proceeds and the counterparty profile should be used to assess the impact. This applies to the so-called transition bonds, i.e. instruments designed to help companies that are considered

"brown" to become "greener". The proceeds from these bonds are used to improve the sustainability and environmental profile of the issuer. Thus, a twofold analysis is warranted, focused on both the issue (use of proceeds) and the issuer (counterparty profile), to ensure respectively the use of the funds for transition-eligible projects and the necessary strategy and business model adjustments for a smooth transition.

European green bond (EuGB)

To facilitate businesses that wish to issue bonds with a positive environmental impact, as well as protect investors from greenwashing practices, various private initiatives have been launched, such as that of the International Capital Market Association,[9] which published key principles to increase the transparency, integrity and acceptance of green bonds. The European Commission followed suit, in order to make the signalling effect more clear, and developed a proposal for a European green bond standard,[10] which is a voluntary set of rules but a requirement for issuers wishing to align with the "European green bond" or "EuGB" label.

Thus, the European Commission follows the use of proceeds approach, as the funds raised by the bond should be allocated fully to projects that are aligned with the EU taxonomy. Eligible expenditure should involve fixed capital formation, investment in financial instruments, capital expenditure and selected operating expenditure. Prior to issuance, the issuer must draft a Green Bond Framework outlining the type of investments, as well as the proceeds allocation and impact reporting methodologies. Post-issuance verification will be required annually in a report stating the alignment with EuGB standards, the breakdown of allocated amounts per project or portfolio and the geographical distribution of the projects. Moreover, impact reporting will be mandatory at least once during the lifetime of the bond. It should be noted that all disclosures must be verified by certified external reviewers.

Conclusions

The sharp rise in bond issues with a positive environmental impact (green bonds) has created the need for standardisation of their features, with a view to facilitating issuers and protecting investors. The European Union, being particularly sensitive to environmental issues, in order to finance its strategy for sustainable development has established a set of rules for the classification of green economic activities, as well as a standard for green financial products. At the same time, it has decided to finance its policy for the recovery from the pandemic through the issuance of green bonds. All these initiatives are expected to contribute significantly to the long-term objective of a clean planet for all.

9 International Capital Market Association − ICMA (2021), "Green Bond Principles", June.
10 The European green bond standard is an action in the context of the Capital Markets Union.

Box 4

EU AND EURO AREA POLICY RESPONSES

The Russian military attack on Ukraine

The European Union condemns Russia's unprovoked and unjustified military aggression against Ukraine, noting that Russia is grossly violating international law, undermining European and global security and stability and causing untold suffering to the Ukrainian people. Since the start of the invasion of eastern Ukraine on 22 February 2022, the EU has adopted sweeping and unprecedented packages of economic and individual sanctions against Russia and Belarus (see Box II.1) and has been providing political, material, financial and humanitarian support to Ukraine, while also granting temporary protection to all war refugees. On 10 March, the European Council invited the European Commission to submit its opinions on the applications of Ukraine, Moldova and Georgia for EU membership. At the same time, in view of the geopolitical and economic consequences of the Russo-Ukrainian war, the EU leaders reaffirmed their commitment to bolster the defence ca-

pabilities and reduce the energy and strategic dependencies of the European Union. Meanwhile, emergency measures are being considered at the EU level to mitigate the impact of higher energy prices on households and businesses, with a particular focus on the most vulnerable groups of the population and small and medium-sized enterprises.

20 years of the euro, and the road to a digital currency

The introduction of euro banknotes and coins in the euro area countries on 1 January 2002 marked the largest-ever currency changeover and a major milestone on the path towards European economic and political integration. Today, 20 years on, the euro is the official currency of 19 EU Member States, or 340 million European citizens, and the second most important currency in the world, accounting for around 40% of global cross-border payments. Alongside the European Commission's initiatives to strengthen the international role of the euro, including the issuance of a European green bond, the Eurosystem has been exploring the possibility of developing a digital euro and, in October 2021, launched the 24-month investigation phase of the project, aimed to address key issues (design, distribution, impact on markets, legislative changes needed, etc.). If introduced, a digital euro would function in parallel with euro banknotes and coins.

Pandemic, economic adjustment and resilience

The EU policy responses to the COVID-19 pandemic have been crucial and multifaceted over the past two years. On the public health front, following the authorisation of four vaccines, the EU achieved its target of full vaccination of 75% of adult population in October 2021. Also important was the agreement on a common EU Digital COVID-19 Certificate, which entered into force in July 2021 and facilitated the safe and free movement of citizens within the Single Market during the pandemic. In terms of international cooperation and solidarity, the EU Member States pledged to donate 700 million vaccine doses to support the goal of 70% global COVID-19 immunisation coverage by mid-2022 and were actively involved in the decision of the World Health Organisation in December 2021 to start the process of drafting and negotiating a new international treaty on pandemics.[1] Finally, to ensure better preparedness for and response to future health emergencies in the EU, the European Council of 21-22 October 2021 called for the conclusion of negotiations on the Health Union and for adequate involvement of Member States in the governance of the European Health Emergency Preparedness and Response Authority (HERA).

On the economic front, 2021 saw the establishment of the Recovery and Resilience Facility (RRF), the core of the NextGenerationEU recovery instrument, which entered into force in February 2021. By March 2022, the national recovery and resilience plans of 22 EU Member States had been approved, while 21 Member States had already received a total of EUR 54.2 billion in pre-financing equivalent to 13% of their RRF allocation. In addition, five Member States had submitted their first payment requests to the European Commission, and more than 30 further payment requests are expected in 2022. At the same time, discussions continued during 2021 and the first months of 2022 to strengthen the EU's preparedness, response capability and resilience to future crises caused by physical and digital threats. This is a major horizontal political priority for the EU.

Digital transformation and green transition

In 2021, the EU elaborated several policies towards digital transformation. In March, the European Commission presented the Digital Compass, which sets out a vision and concrete targets for Europe's digital transformation by 2030, with a particular focus on digital skills and literacy. The European Council of 21-22 October called for a swift examination of this proposal and also reviewed progress on a number of key legislative files regarding roaming (the current regulation expires at the end of June 2022), digital services, digital markets, network and information system security and artificial intelligence. Moreover, a provisional agreement on a Data Governance Act was reached between the Council of the EU and the European Parliament in November.

As regards the EU's actions to tackle climate change and facilitate the green transition, in June 2021 the Council of the EU and the European Parliament adopted the European Climate Law, which is at the heart of

1 https://www.consilium.europa.eu/en/policies/coronavirus/pandemic-treaty/

the European Green Deal and sets out a binding objective of climate neutrality in the Union by 2050 and a binding Union climate target of a reduction of net greenhouse emissions (emissions after deduction of removals) by at least 55% by 2030 compared to 1990. In this context, in July the European Commission presented a package of legislative proposals and policy initiatives to support the EU's climate objectives ("Fit for 55"), the main points of which are the revision of the EU Emissions Trading System and the establishment of a Carbon Border Adjustment Mechanism (CBAM). This mechanism is expected to be adopted in the first half of 2022 and would take the form of an import carbon tax to apply as from 2026, on the basis of the carbon footprint of imported goods. By ensuring equivalent carbon pricing between imports and domestic products, the mechanism is designed to reduce the risk of carbon leakage resulting from the relocation of production of energy-intensive products form the EU to other countries with lower environmental compliance costs. Finally, a significant and controversial issue during 2021 was the integration of nuclear energy and gas (as a means of facilitating the green transition) into the EU Taxonomy, which aims to guide private investment to activities that are needed to achieve climate neutrality. On 2 February 2022, the European Commission reached a political agreement to add certain nuclear and gas activities to the EU Taxonomy under clear and strict conditions, while imposing specific disclosure requirements for businesses related to their activities in the gas and nuclear energy sectors.[2]

Banking Union and Capital Markets Union

On 27 January 2021, representatives of the EU Member States signed the amending agreements to the Treaty Establishing the European Stability Mechanism (ESM) and to the Intergovernmental Agreement on the Single Resolution Fund (SRF). This was followed by the ratification procedures in the Member States in accordance with their national constitutional requirements. At the Euro Summit in December, leaders stressed the importance of a completed Banking Union and a deep, integrated and well-functioning Capital Markets Union. On 17 January 2022, the Eurogroup reviewed progress in the ratification of the revised ESM Treaty. Following the ratification of the Treaty, the ESM will become the backstop for the Single Resolution Fund as soon as the beginning of 2022, two years ahead of the initial plan. Also, on 14 March 2022, the Eurogroup discussed the state of play on strengthening the Banking Union, focusing on the finalisation of a consensual, stepwise and time-bound work plan on all outstanding elements.

In 2021, the EU took measures to make it easier for capital markets to support economic recovery after the pandemic. On 15 February, the Council of the EU adopted targeted amendments to the Markets in Financial Instruments Directive (MiFID II) and the Prospectus Regulation in order to facilitate the recapitalisation of EU companies on financial markets. On 30 March, the Council of the EU approved adaptations to the EU securitisation framework. On 25 November, the European Commission presented a new package of four legislative proposals on the Capital Markets Union.[3] The legislative proposals are aimed to better connect EU companies and investors, to improve companies' access to funding, to broaden investment opportunities for retail investors and to further integrate capital markets.

EU economic governance review

On 19 October 2021, the European Commission relaunched the public debate on the review of the EU's economic governance framework. The debate was first launched in February 2020 but later suspended to focus on responding to the economic and social impact of the pandemic. The main objective of the review is to strike a balance between promoting growth-friendly investment and ensuring the sustainability of public finances taking into account future challenges, such as the high public debt in the post-pandemic period and an ageing population in the long term. On 17 January 2022, the Eurogroup discussed the euro area fiscal framework, as well as arrangements for financial assistance and post-programme surveillance.

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2 The relevant Complementary Delegated Act will soon be forwarded to the European Parliament and the Council of the EU for consideration and adoption, with a view to its entry into force on 1 January 2023.

3 The legislative proposals concern: (a) the review of the Alternative Investment Fund Managers Directive (AIFMD); (b) the review of the Regulation on European Long-term Investment Funds (ELTIF); (c) the creation of a European Single Access Point (ESAP); and (d) the review of the Markets in Financial Instruments Regulation and Directive (MiFIR/MiFID).

Box 5

INTERNATIONAL COOPERATION PROGRAMMES, THE CONTRIBUTION OF THE BANK OF GREECE AND THE PROGRESS MADE BY THE BENEFICIARY COUNTRIES

The European Union (EU) has been supporting its enlargement process and the smooth integration of candidate countries (Albania, Republic of North Macedonia, Serbia, Montenegro) and potential candidate countries (Kosovo and Bosnia and Herzegovina), by means of the Instrument of Pre-Accession Assistance (IPA), first introduced in 2007. This is a financial instrument that assists the beneficiaries[1] in adopting and implementing the political, institutional, legal, administrative, social and economic reforms to comply with EU values and to progressively align to its rules, standards, policies and practices with a view to becoming equal members.

According to the revised Multi-Country Indicative Strategy Paper 2014-2020,[2] the IPA, with an overall budget of €2.98 billion, pursues the following four specific objectives: (a) support for political reforms towards strengthening democratic institutions, the rule of law and protection of human rights; (b) support for economic, social and territorial development, with a view to smart, sustainable and inclusive growth; (c) strengthening the ability of the beneficiaries to fulfil the (future) obligations stemming from EU membership by supporting progressive alignment with the Union *acquis*; and (d) strengthening regional integration and territorial cooperation.

As specified in the relevant Regulation,[3] financial assistance under the IPA mainly addresses five policy areas: (a) reforms in preparation for EU membership; (b) socio-economic and regional development; (c) employment, social policies, education, promotion of gender equality, and human resources development; (d) agriculture and rural development; and (e) regional and territorial cooperation.

For the period 2021-27, the updated Instrument for Pre-Accession Assistance (IPA III) is part of the 2021-2027 Multiannual Financial Framework and, following the political agreement reached between the European Parliament and the Foreign Affairs Council on 2 June 2021, the next steps at technical level are expected to be clarified.

Forms of cooperation

The Instrument provides assistance to the national programmes of beneficiaries through four multi-country channels:[4]

1) Horizontal support: Providing technical assistance to the competent authorities of beneficiary countries, making available to them the know-how of EU and international organisations and best practices, including in the form of twinning programmes.[5]

2) Regional structures and networks: Regional cooperation, networking and sharing of best practices to help beneficiaries prepare for EU membership, align their national legislation with EU law and gradually adapt to EU standards and practices.[6]

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1 In addition to the Western Balkan states, beneficiaries of pre-accession assistance also include Turkey and Iceland.
2 http://integrimi-ne-be.punetejashtme.gov.al/wp-content/uploads/2020/05/Multi-country-strategy-paper-2014-2020.pdf.
3 Regulation (EU) No. 231/2014 of the European Parliament and of the Council of 11 March 2014 establishing an Instrument for Pre-accession Assistance (IPA II).
4 European Commission, "Multi-country financial assistance under IPA II", https://ec.europa.eu/neighbourhood-enlargement/enlargement-policy/overview-instrument-pre-accession-assistance/multi-country-financial-assistance-under-ipa-ii_en.
5 Twinning was first introduced by the European Commission in 1998, in preparation for EU enlargement. It was designed as a tool for institutional cooperation between EU Member States and candidate countries, assisting the latter to strengthen their administrative and judicial capacity to implement EU legislation as future Member States. In twinning projects, actions are jointly agreed on the basis of agreed policy objectives and should deliver concrete results as regards the Union acquis. Twinning projects involve mutual obligations, but the achievements are maintained as a permanent asset to the beneficiaries.
6 Support is implemented through several initiatives, such as the Environmental and Climate Regional Accession Network (ECRAN), which assists the beneficiaries in exchange of information and experience and in taking actions towards the transposition and implementation of the EU environmental and climate *acquis*.

3) Regional investment support: Targeting investment projects with a clear regional dimension that help socio-economic development in more than one IPA beneficiary countries by improving: (a) competitiveness of businesses; (b) connectivity between beneficiaries and EU countries; and (c) environmental protection & climate change mitigation/adaptation.[7]

4) Territorial cooperation: Promoting good neighbourly relations between border regions through cross-border programmes within the region and EU Member States, as well as transnational cooperation programmes and related macro-regional programmes.[8]

The contribution of the Bank of Greece

The Bank of Greece, in cooperation with other central banks, has been involved in many EU-funded programmes in recent years,[9] mainly by providing short-term experts (STEs), who have offered technical assistance on specialised topics or training in the fields of banking supervision and financial stability.

(a) Republic of North Macedonia

October 2019 saw the launch of the twinning project entitled "Strengthening the institutional capacity of the National Bank of the Republic of North Macedonia (NBRM) in the process of its accession to the ESCB", led by the Deutsche Bundesbank. The objective of the project was to support the NBRM in maintaining macroeconomic and financial stability through the harmonization of rules, policies and operations with the ESCB standards and best international practices. The project was structured into four components: (1) strengthening the institutional framework, organisation and capacity of the NBRM for harmonisation with the Union acquis and ESCB standards in the field of payment services and payment systems; (2) further alignment of the regulatory framework for the operation of banks with the relevant EU legislation and enhancement of current supervisory practices; (3) further alignment of NBRM's financial accounts statistics with ESCB/ECB standards; and (4) enhancement of NBRM's research-oriented know-how in the area policy analysis and decision-making with a focus on monetary and macroeconomic policy.

The contribution of the Bank of Greece related to component (3), in particular the topic "Developing conditions for improved collection of claims, improved NPL management and resolution and improved overall risk management in banks". Following in-depth discussions with NBRM staff, differences from best practices were identified, and proposals were presented at a dedicated workshop.

(b) Western Balkans

In March 2019, the "Programme for strengthening the central bank capacities in the Western Balkans with a view to the integration to the European System of Central Banks" was launched, coordinated by the Deutsche Bundesbank and bringing together 20 central banks of EU countries, including the Bank of Greece. The objective of the programme was to further strengthen the institutional capacities of the beneficiary institutions,[10] notably

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7 Support is implemented through various instruments, such as the Western Balkans Investment Framework, a joint initiative of the European Commission, supranational financial institutions, bilateral donors and the governments of the Western Balkans which supports socio-economic development and EU accession across the Western Balkans by providing financing and technical assistance for strategic investments in the energy, environment, social, transport and digital infrastructure sectors.

8 Support is implemented through several programmes, such as the Interreg V-B Adriatic-Ionian programme (ADRION), which promotes cooperation and solidarity between eight partner states, including Greece, on matters of common interest, e.g. sustainable tourism, environmental quality, interregional connectivity and a sustainable marine and maritime economy.

9 The Bank of Greece was also actively involved in international programmes in the more distant past: including two major technical assistance programmes organised by the ECB in the late 2000s, one for the Central Bank of Egypt as part of the MEDA programme, which supports the reform of economic and social structures in Euro-Mediterranean Partnership countries, and one for the Central Bank of Russia under the TACIS initiative for countries of the former Soviet Union; in both cases, the Bank of Greece's contribution was in the area of banking supervision. Also, in 2015 it participated in the Eurosystem's technical cooperation programme with the Central Bank of Montenegro in the context of its preparations for joining the ESCB, and its contribution focused on micro and macro stress testing.

10 The national banks of Albania, Bosnia & Herzegovina, Kosovo, Republic of North Macedonia, Montenegro and Servia and two supervisory authorities (Federal Banking Agency of the Federation of Bosnia and Herzegovina and Banking Agency of Republika Srpska).

by enhancing their analytical and policy tools and by transferring the best international and European standards into national practices. The programme was implemented through training activities in the areas of banking supervision, financial stability, financial consumer protection, financial inclusion, monetary policy, payment systems, statistics, recovery and resolution, EU integration, compliance and governance issues, internal audit and accounting.

The Bank of Greece took part in this programme through its experts, who contributed to three training events on banking supervision and financial stability. The first contribution was in the context of the High-Level Policy Workshop on NPLs, sharing Greece's experience with the management of non-performing loans; the second focused on supervisory issues and featured an analysis on regulatory capital, as well as the Supervisory Review Process (SREP) as implemented by the ECB. The third covered financial stability issues, in particular micro and macro stress testing.

(c) Ukraine

In December 2020, a twinning project[11] was launched, entitled "Strengthening the institutional and regulatory capacity of the National Bank of Ukraine (NBU) to implement the EU-Ukraine Association Agreement".[12] The general aim of the project, implemented by the central banks of Poland and Lithuania, is to promote the macroeconomic stability of Ukraine by strengthening the NBU's institutional capacity and establishing a reliable banking and payment infrastructure. In particular, the project focuses on four components: (1) strengthening the NBU's capacity in terms of the supervisory review and evaluation process (SREP) and banking risk and capital adequacy assessment; (2) implementing instant payments in accordance with PSD 2; (3) institutional strengthening through the establishment of an integrated system of strategic planning, execution and monitoring, process-based model of planning and management; and (4) strengthening the NBU international cooperation function and capacity in the area of European integration of Ukraine.

The Bank of Greece's contribution is on component (1), in particular on issues related to the adaptation of the regulatory framework in the area of internal capital adequacy assessment process (ICAAP), internal liquidity adequacy assessment (ILAAP), as well as stress testing and assessment of banks' risk profiles through a pilot SREP. A series of training events on these topics are also planned.

The progress made

The overall objective of all programmes in any form is the alignment and convergence of candidate countries (Albania, Republic of North Macedonia, Serbia, Montenegro) and potential candidate countries (Kosovo and Bosnia & Herzegovina) with the EU *acquis*. In November 2021, the European Commission published progress reports[13] on political, economic and legal reforms in the aforementioned countries in line with the EU membership criteria implemented as a result of the Instrument for Pre-Accession Assistance 2014-2020. At the EU-Western Balkans Summit in Slovenia on 6 October 2021, EU leaders reaffirmed their commitment to the enlargement process, while the Western Balkans leaders reiterated their dedication to European values and principles.[14]

According to the Commission's reports, the countries under review have made progress towards the required reforms recommended by the European Commission, but to varying degrees. In particular:

Albania has made some progress in terms of its capacity to cope with competitive pressure and market forces within the EU. The energy sector, transport infrastructure and the use of digital communication have improved, but significant gaps remain compared to EU levels. Albania's competitiveness is hindered by a lack of entrepreneurial and technological know-how, low spending on R&D, as well as skills and education gaps.

11 The project is implemented as part of the European Neighbourhood Policy and is funded by the European Neighbourhood Instrument (ENI).
12 The project is ongoing and, following the recent events, a decision has been taken to continue it, but it is yet unknown how.
13 European Commission (2021), "Progress on Meeting the Economic Criteria for EU Accession, The EU Commission's 2021 Assessments", Institutional Paper 161, November.
14 Bank of Greece, *Monetary Policy – Interim Report 2021*, December 2021, Section II (in Greek).

Montenegro's economy proved vulnerable to shocks following its sharp recession in 2020 due to the health crisis. It remains moderately prepared to cope with competitive pressure and market forces within the EU, as its economy relies entirely on tourism, the quality of the education system and curricula preferences appear inadequate, while some efforts have been made to improve innovation capacities and to introduce EU standards at local companies thanks to public grants.

The **Republic of North Macedonia** has taken steps towards modernisation, by further improving fiscal transparency and liberalising the electricity market. Nevertheless, the country remains moderately prepared to cope competitive pressure and market forces within the EU, as the economy's spending on research and innovation remains below the EU average, private companies are reluctant to adopt new technologies and reforms of the education system and transports as well as digitalisation are slowly implemented.

Serbia has made some progress and is at a good level of preparation, as fiscal management improved and privatisation of state-owned banks advanced, but the private sector is still underdeveloped. Digitalisation has progressed, and public investment has continued to increase. The energy sector remains largely inefficient and highly polluting, although some regulatory reform steps have been taken that may have helped attract investments in the energy, energy efficiency, renewables and mining sectors.

Bosnia and Herzegovina has made limited progress in addressing the European Commission's recommendations mainly as regards education and is at an early stage of the accession process. Similar progress has been made by **Kosovo**, which is also at a similar stage, mainly improving road infrastructures and the digitalisation of the economy.

Finally, **Turkey** did not make any progress over the reporting period and has yet to fully implement the Commission's recommendations from 2020, therefore serious concerns persist. The government adopted a Human Rights Action Plan and an Economic Reform Package in March 2021, envisaging a number of actions, including the strengthening of specialised courts and reviewing public procurement legislation. Spending on research and innovation continues to grow, but falls significantly short of the government's target, while progress has been made in the development of the renewable energy sector.

Concluding remarks

EU enlargement and the implementation of reforms by candidate and potential candidate countries with a view to their smooth integration into the EU is an ongoing and long process that brings qualitative and quantitative benefits. The EU Member States have reaffirmed their commitment to this process and support these countries by establishing cooperation programmes, under which they provide resources via a wide variety of channels. For a given EU Member State, its involvement in such programmes is of undeniable importance, as it offers opportunities to share know-how, tools and best practices; for the beneficiaries, the usefulness of the programmes is clearly reflected in the progress made by each country, as assessed in the recently published European Commission reports. The Bank of Greece, for its part, supports this process and has been participating in several cooperation programmes and providing expertise in specialised areas.

Box 6

THE NEW MONETARY POLICY STRATEGY OF THE ECB

In July 2021, the Governing Council of the European Central Bank (ECB) concluded the review of the monetary policy strategy of the Eurosystem.[1] The aim of the new strategy is to ensure that monetary policy re-

1 For a more comprehensive and detailed analysis, see Argiri, E. and I. Skotida (2021), "The 2021 review of the monetary policy strategy of the Eurosystem: an economy of forces", Bank of Greece, *Economic Bulletin*, No. 54 (https://www.bankofgreece.gr/Publications/oikodelt202112.pdf).

mains fit for purpose both today and in the future, in pursuit of the Eurosystem's primary objective of price stability, as established in Article 127(1) of the Treaty on the Functioning of the European Union. Price stability supports economic growth and job creation, promotes social welfare and cohesion, and preserves the value of the euro.

During the review, which started in January 2020, the Governing Council reflected upon the profound changes in the global economic landscape that had taken place over the 18 years since the previous strategy review in 2003. Such changes include the fall in the natural rate of interest, which limits the scope for conventional interest rate policy by central banks, as well as slowing productivity growth and a declining labour supply due to population ageing. In addition, the new strategy took into account the challenges for the conduct of monetary policy posed by climate change, globalisation, digitalisation and further structural changes in the financial landscape.

The review delved into all aspects of monetary policy. During the review process, comprehensive analyses and studies were carried out by separate Eurosystem work streams, to which Bank of Greece staff also contributed. The output of this work has been published in a series of ECB Occasional Papers,[2] which look at the following key topics: price stability objective; inflation measurement; framework for economic, monetary and financial analysis; macroprudential policy and financial stability; climate change; digitalisation; fiscal and monetary policy interactions; globalisation; employment, productivity and innovation; financial system structure; inflation expectations; and the communication of monetary policy decisions.

The new strategy lays down the key principles that guide the Governing Council in steering the appropriate monetary policy stance with the aim to achieve its primary objective of price stability. At the same time, the strategy provides a clear anchor for communicating with the public and for steering expectations of consumers and businesses about the future price level, allowing them to make well-informed economic decisions.

The key elements of the new strategy are the following:

- Price stability is best maintained by aiming for an inflation rate of 2% over the medium term. Compared with the previous formulation that aimed for inflation levels of "below, but close to, 2%", the new approach provides clarity that the 2% level should not be interpreted as a ceiling on the inflation aim, but as the ECB's symmetric target. This means that both negative and positive deviations of inflation from its target are equally undesirable.

- A wider positive inflation buffer is sought, so as to enlarge the space available for monetary policy easing through the conventional interest rate policy tool in the event of deflationary pressures and avert the incidence of effective lower bound episodes. The facilitation of macroeconomic adjustment across euro area countries, the presence of downward nominal wage rigidities and the measurement bias of inflation are further factors that call for the adoption of a wider inflation buffer.

- The Harmonised Index of Consumer Prices (HICP) has been reconfirmed as the appropriate measure for assessing the achievement of the price stability objective. Moreover, it is acknowledged that the inclusion of owner-occupied housing costs in the HICP could better capture inflation relevant for households. The Governing Council has therefore recommended a roadmap to Eurostat, while acknowledging that this process will require multi-year preparatory work. In the meantime, the Governing Council will complement the wider set of inflation indicators that it typically looks at with measures that include initial estimates of owner-occupied housing cost.

- When the economy operates close to the effective lower bound of interest rates, this requires especially forceful or persistent monetary policy measures to avoid negative deviations from the inflation target of

2 See the ECB webpage Strategy review (https://www.ecb.europa.eu/pub/html/strategy_review.en.html).

2% becoming entrenched. This may also imply a transitory period in which inflation is moderately above the 2% target.

- The set of policy rates is the primary monetary policy instrument. Additional monetary policy tools, which during past crises contributed to overcoming the effective lower bound constraint, will continue to be implemented by the ECB, where appropriate. Such tools are forward guidance, asset purchase programmes and longer-term refinancing operations. The ECB's monetary policy will continue to respond flexibly to new challenges and consider employing new policy instruments, if warranted.

- The medium-term orientation of monetary policy allows the Governing Council to react flexibly and with a forward-looking perspective in making its monetary policy decisions, but also to cater for other considerations relevant to the pursuit of price stability. It is thereby acknowledged that the transmission of monetary policy to the economy and to inflation is subject to considerable time lags and that the appropriate monetary policy response to a deviation of inflation from its target depends on the prevailing conditions, as well as on the origin, size and persistence of such deviation.

- The decisions on monetary policy are based on the assessment of all relevant factors, while drawing at the same time on two interdependent types of analysis: the economic analysis, which focuses on economic developments and contains the macroeconomic projections; and the monetary and financial analysis, which examines monetary aggregates and financial indicators, placing emphasis on the functioning of the transmission mechanism of monetary policy and assigning a specific role to financial stability in pursuit of the Eurosystem's primary objective.

- Without prejudice to its primary objective of price stability, the Governing Council takes into consideration in its monetary policy decision making the objectives of the European Union for balanced economic growth, full employment and social welfare. Furthermore, it safeguards financial stability and contributes to mitigating the impact of climate change.

- Climate change constitutes a significant challenge for price stability via its effects on the structure and dynamics of the economy and the financial system. Within its mandate and in line with the EU's climate goals, the Governing Council takes into account the implications of climate change and the transition to a carbon neutral economy for its monetary policy making. Moreover, it has committed to an ambitious climate-related action plan. With this plan, the Governing Council aims to adapt the operational framework of its monetary policy in relation to environmental sustainability disclosures, risk assessment methodology, corporate sector asset purchases and collateral framework.

- The effectiveness of monetary policy must continue to be complemented with targeted and coordinated fiscal measures to achieve macroeconomic stabilisation, especially when nominal interest rates are close to their effective lower bound. The Governing Council recognises the importance of countercyclical fiscal policies during deep recessions, as well as the need to ensure public debt sustainability.

The new strategy has been reflected in the reformulated communication with the public, as the communication of the monetary policy decisions was adapted to enhance citizens' understanding of and trust in the ECB's actions. In a constantly changing environment, the monetary policy strategy needs to be regularly reviewed, in order to effectively address any emerging new challenges. Against this background, the next review is expected to take place in 2025.

The reformulated strategy provides a solid framework within which the Governing Council determines the monetary policy of the euro area, with a view to responding to shocks in the most appropriate way, maintaining price stability and contributing to robust and sustainable growth in the euro area.

Box 7

FINANCING CONDITIONS FOR SMEs IN THE EURO AREA: INSIGHTS FROM THE SURVEY ON THE ACCESS TO FINANCE OF ENTERPRISES (SAFE)

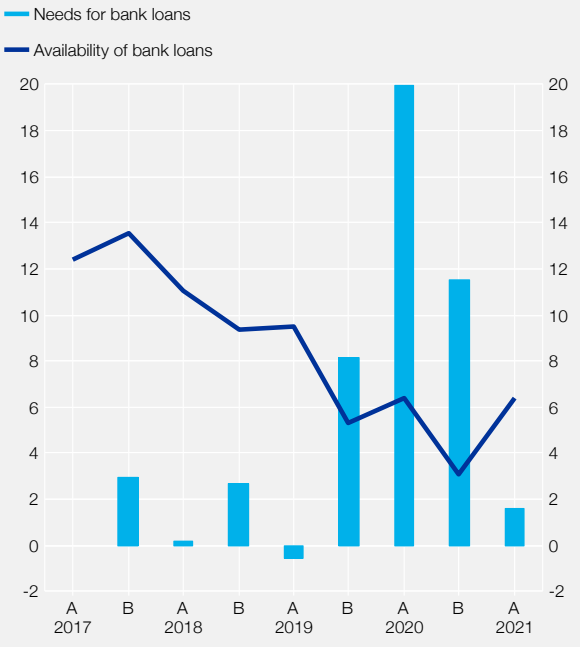
The results of the last two rounds of the Survey on the Access to Finance of Enterprises (SAFE) show that the October 2020-March 2021 period (period "2020B") and the April-September 2021 period (period "2021A") saw a gradual normalisation of bank financing conditions for SMEs in the euro area. Initially, firms recorded a smaller increase in the availability of bank credit in 2020B, but this rose significantly in 2021A, supported by banks' willingness to provide credit, as well as by improved corporate solvency. For a third consecutive round, businesses reported that the public financial support measures taken by Member State governments to address the effects of the pandemic contributed to enhancing the availability of external financing. These developments reflect the effectiveness of the single monetary policy as well as of the economic policies adopted by Member States and European institutions with a view to cushioning the negative economic impact of the pandemic.

Results from the Survey on the Access to Finance of Enterprises (SAFE)

After a deterioration in 2020B, firms' access to external financing normalised in 2021A, as businesses reported higher positive net percentages[1] as regards the evolution

Chart A Changes in the availability of bank loans and financing needs for euro area SMEs

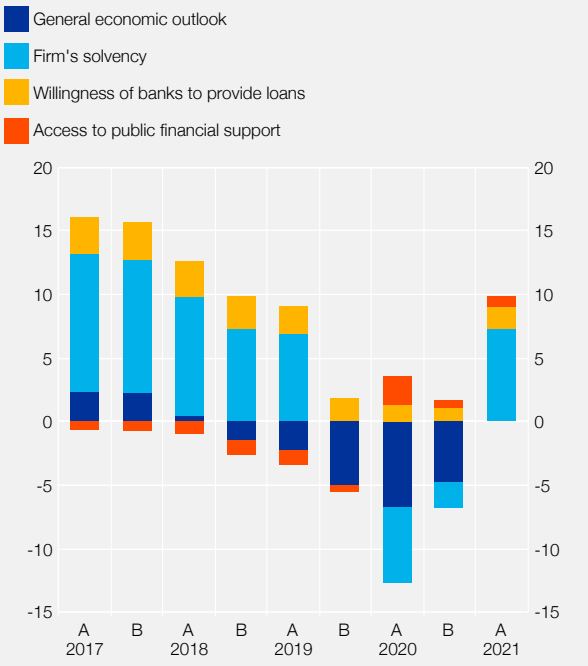
(in the corresponding six months,[1] net percentages of respondents[2])



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 net percentage is the percentage of firms reporting that a particular index (e.g. availability of bank loans) increased, less the percentage of firms reporting that the index decreased.

Chart B Factors that have an impact on the availability of external financing to euro area SMEs

(in the corresponding six months,[1] weighted net percentage of respondents[2])



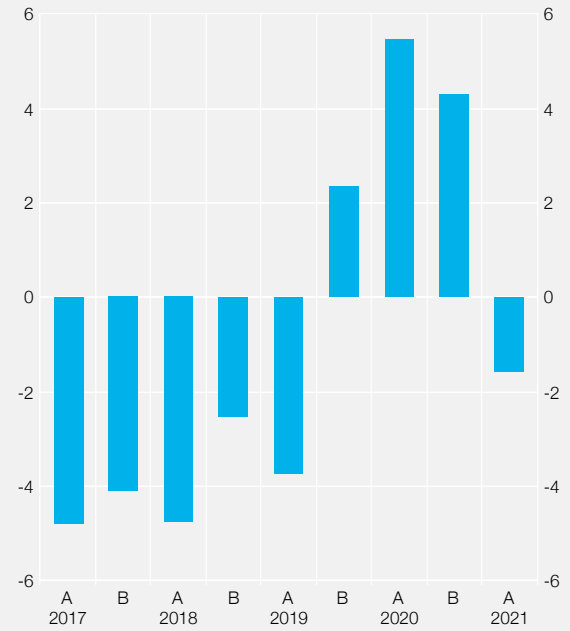
Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted every six months and covers the periods of April-September (round A) and October-March (round B).

2 The change in the impact of each factor is described in terms of weighted net percentage of firms in order to facilitate comparisons between the evolution of the total impact of the factors and the change in the availability of sources of external financing (e.g. availability of bank loans). The weighted net percentage of firms is calculated by dividing the initial net percentage of firms with the number of factors (six). In addition, the percentage for "firm's solvency" is calculated as the sum of weighted net percentages of three factors: a) the firm's credit history, b) the firm's own capital, and c) the firm's outlook.

1 The results refer to net percentages of respondents, which are defined as the difference between the percentage of enterprises reporting that a given factor (e.g. availability of bank loans) has increased and the percentage of those reporting that it has declined.

Chart C Changes in the composite external financing gap indicator reported by euro area SMEs

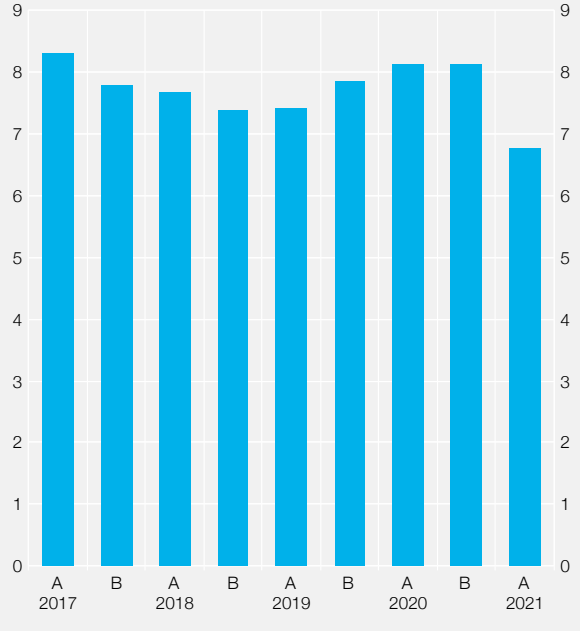
(in the corresponding six months,[1] net percentages of enterprises[2])



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 composite external financing gap indicator is calculated as the weighted average of the financing gaps (needs minus availability) for each of the five sources of external financing: a) bank loans, b) credit lines or bank overdrafts, c) trade credit, d) equity, and e) debt securities.

Chart D Change in the overall financing obstacles indicator for euro area SMEs

(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 total 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, and loan applications that resulted in an offer that was declined by the enterprise because the borrowing costs were too high or a decision not to apply for a loan for fear of rejection.

of bank loan availability (2021A: 6%, against 2020B: 3%) (see Chart A) and leasing or hire-purchase[2] (2021A: 10%, against 2020B: 6%). In addition, following a stagnation in 2020B, companies reported an increase in the availability of credit lines or overdrafts in the most recent round of the survey (2021A: 5%, against 2020B: 0%) and trade credit (2021A: 7%, against 2020B: 0%).

As regards the factors that affect availability of external financing, businesses kept on assessing banks' willingness to provide credit as positive (2021A: 11% and 2020B: 6%) (see Chart B). In the most recent round of the survey, firms felt that changes in the general economic outlook had had no impact on their access to finance, whereas in the previous five iterations they had reported a significant negative impact.[3] Similarly, in the most recent round, the overall impact of the factors determining the solvency[4] of enterprises was positive, as opposed to the previous two reporting periods. In addition, contrary to past findings, for the third consecutive round, SMEs mentioned that the public financial support measures[5] supported the availability of external financing (2021A: 5%, 2020B: 4% and 2020A: 14%).

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, vehicles or machinery) in exchange for regular payments, but without the immediate ownership of the asset.
3 Net negative impact means that the enterprises reporting that macroeconomic developments favourably affected the availability of external financing are less than those reporting a negative impact.
4 The percentage for "firm's solvency" is a sum of the net percentages of three factors: (a) firm's credit history; (b) firm's own capital; and (c) firm-specific outlook.
5 Access to the public financial support measures includes, *inter alia*, public co-financing or guarantee schemes for bank loans.

In the most recent round of the survey, companies reported a considerable moderation of their needs (i.e. demand) for bank loans (2021A: 2%, against 2020B: 12%) (see Chart A), as well as for credit lines or overdrafts (2021A: 4%, against 2020B: 10%). At the same time, businesses reported slightly smaller increases in their needs for trade credit (2021A: 7%, against 2020B: 8%) and leasing or hire-purchase (2021A: 9%, against 2020B: 10%).

The decrease in enterprises' external financing needs is also reflected in the simultaneous change in the composite external financing gap indicator (2021A: -2%, against 2020B: 4%) (see Chart C). At the same time, the overall financing obstacles indicator remained low (2021A: 7%, against 2020B: 5%) (see Chart D).

When asked about terms and conditions for bank financing, SMEs continued to report an increase in bank interest rates[6] (2021A: 4% and 2020B: 2%), while the percentage of SMEs reporting an increase in other financing costs, such as charges, fees and commissions, became even higher (2021A: 33% and 2020B: 28%).

6 Respondents were asked whether the level of interest rates on bank loans, overdrafts and credit lines increased.

Box 8

EURO AREA BANK LENDING SURVEY (BLS)[1]

The latest rounds of the BLS provide evidence that the set of monetary policy measures employed by the ECB to mitigate the impact of the COVID-19 pandemic in 2021, and the corresponding policy responses by individual Member States, have contributed to a normalisation of euro area financial conditions.

Loan demand

At the beginning of 2021, BLS banks reported a net decline in firms' demand for loans[2] (Q1: -14%) (see Chart A), reflecting mainly the impact of measures taken by euro area governments in response to the coronavirus pandemic. Thereafter, firms' demand for loans was reported to have rebounded again in net terms (Q2: 12%; Q3: 8%; Q4: 18%). As regards the factors affecting firms' demand for loans, firms' higher debt refinancing/restructuring/renegotiation needs, as well as increased financing needs for fixed investment, inventories and working capital were reported as the main factors contributing to the observed rebound, while the low general level of interest rates contributed to a lesser extent (see Chart A).

Demand for housing loans developed positively over most of 2021 (Q1: -2%; Q2: 29%; Q3: 11%; Q4: 8%), mainly supported by improving consumer confidence, housing market prospects and the low general level of interest rates and, to a lesser degree, higher demand for household debt refinancing/restructuring/renegotiation. Likewise, the net fall in demand for consumer credit in the first quarter of 2021 was gradually offset by positive developments over the following three quarters.

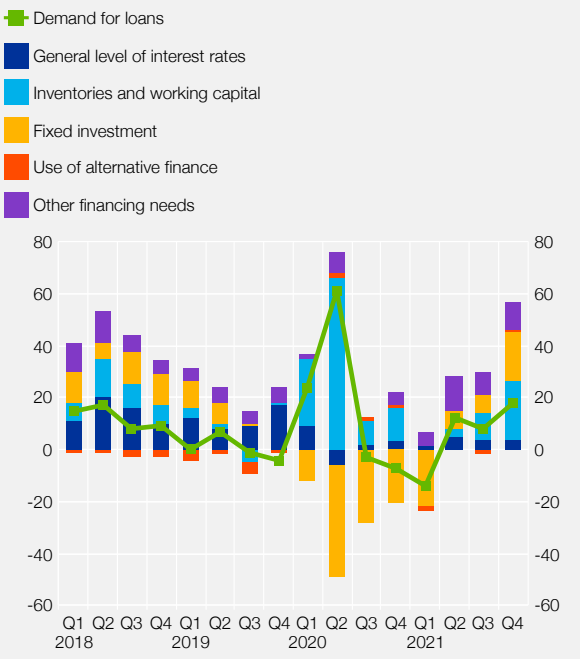
Loan supply

Credit standards[3] on loans to euro area firms tightened in net terms at the beginning of 2021 (Q1: 7%), reflecting mainly banks' risk perceptions concerning both the general economic and the industry- or firm-specific situation

1 The survey is conducted by the Eurosystem on a quarterly basis, using a sample of about 140 banks across the euro area ("BLS banks").
2 The results of the survey are discussed based on the notion of the "net percentage", which concerning demand for loans is defined as the difference between the sum of the percentages of banks responding "increased considerably" and "increased somewhat" and the sum of the percentages of banks responding "decreased somewhat" and "decreased considerably".
3 With regard to credit standards, the net percentage is defined as the difference between the sum of the percentages of banks responding "tightened considerably" and "tightened somewhat" and the sum of the percentages of banks responding "eased somewhat" and "eased considerably".

Chart A Change in demand for loans by euro area non-financial corporations (NFCs) and contributing factors[1]

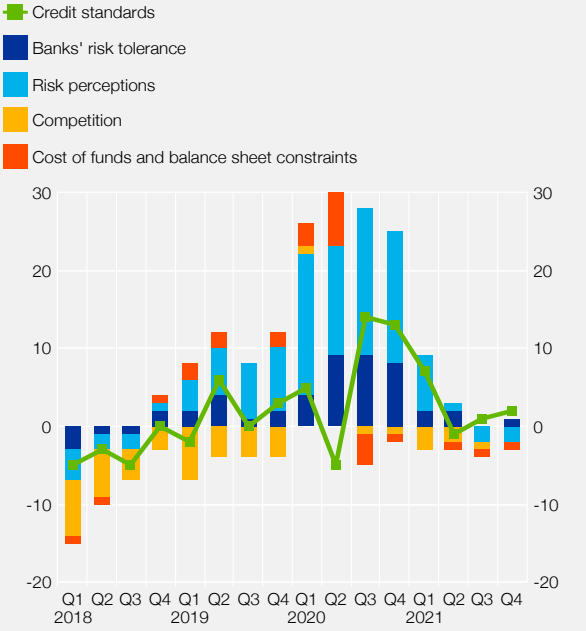
(net percentage of banks,[2] average of net percentages of banks[3])



Source: ECB, Bank Lending Survey.
1 The sum of the impacts of all contributing factors may not add up to the total reported for demand for loans to NFCs, as changes at factor level are derived from banks' replies to two successive questions, namely, whether or not demand for loans has changed, and, if so, how the evolution of any given factor has affected this change.
2 As regards demand for loans to firms, the net percentage of banks is defined as the difference between the sum of the percentages of banks responding "increased considerably" and "increased somewhat" and the sum of the percentages of banks responding "decreased somewhat" and "decreased considerably". With respect to the factors that affect demand for loans to firms, the net percentage is defined as the difference between the sum of the percentages of banks responding that a given factor contributed to higher demand and the sum of the percentages of banks responding that same factor contributed to lower demand.
3 The percentage of "Other financing needs" is an unweighted average of the net percentages of "M&A and corporate restructuring" and "debt refinancing/restructuring and renegotiation". Likewise, the percentage of "Use of alternative finance" is an unweighted average of the net percentages of "internal financing", "loans from other banks", "loans from non-banks", "issuance of bonds" and "issuance of equity".

Chart B Change in credit standards on loans to non-financial corporations (NFCs) and contributing factors[1]

(net percentage of banks,[2] average of net percentages of banks[3])



Source: ECB, Bank Lending Survey.
1 The sum of the impacts of all contributing factors may not add up to the total reported for credit standards on loans to NFCs, as changes at factor level are derived from banks' replies to two successive questions, namely, whether or not credit standards have changed, and, if so, how the evolution of any given factor has affected this change.
2 As regards credit standards on loans to firms, the net percentage of banks is defined as the difference between the sum of the percentages of banks responding "tightened considerably" and "tightened somewhat" and the sum of the percentages of banks responding "eased somewhat" and "eased considerably. With respect to the factors affecting credit standards on loans to firms, the net percentage is defined as the difference between the sum of the percentages of banks responding that a given factor contributed to the tightening of credit standards and the sum of the percentages of banks responding that the same factor contributed to their easing.
3 The percentage of "Cost of funds and balance sheet constraints" is an unweighted average of the net percentages of "capital position", "access to market financing" and "liquidity position". Likewise, the percentage of "Risk perceptions" is an unweighted average of the net percentages of "general economic situation and outlook", "industry- or firm-specific situation and outlook" and "risk related to the collateral demanded". Also, the percentage of "Competition" is an unweighted average of the net percentages of "competition from other banks", "competition from non-banks" and "competition from market financing".

and outlook and collateral demanded in the first quarter. To a lesser extent, they reflected the impact of banks' capital position and lower risk tolerance (see Chart B). Credit standards on loans to euro area firms remained broadly unchanged for the rest of the year (Q2: -1%; Q3: 1%; Q4: 2%), but banks reported a slight net easing impact (see Chart B) from an improvement in banks' perception of both the general economic outlook and their own liquidity situation, and competition from other banks.

For housing loans, credit standards relatively eased in net terms in the first half of the year (Q1: -2%; Q2: -2%), reflecting mainly the impact of competition from other lenders and the favourable outlook of the housing market, as well as a more general improvement in the overall economic outlook in the second quarter of the year. By contrast, at the beginning of the second half of the year, there was a small net tightening (Q3: 2%; Q4: 0%), reflecting the negative impact of banks' cost of funds and balance sheet constraints, as well as of lower risk tolerance. Turning to consumer credit, a net tightening of credit standards in the first quarter of 2021 was gradually offset by a net easing over the following three quarters.

The sample of BLS banks indicated a relative net easing of overall terms and conditions on loans to firms (Q1: 0%; Q2: -5%; Q3: -2%: Q4: 0%), mainly driven by banks' perception of competition from other lenders and the narrowing of margins on average loans, while developments in risk tolerance had an opposite (tightening) effect. Likewise, BLS banks reported a relative net easing of overall terms and conditions on consumer credit (Q1: 0%; Q2: -4%; Q3: 0%; Q4: -1%) and a somewhat greater net easing of overall terms and conditions on housing loans (Q1: -10%; Q2: -2%; Q3: 0%; Q4: -1%).

In their replies to the ad hoc questions of the survey, BLS banks indicated that the APP and the PEPP had a positive effect on both their liquidity position and funding conditions, while also bringing about an increase in their lending volumes and a net easing of their overall terms and conditions for loans to firms. As regards funding obtained through TLTRO III operations, BLS banks continued to mention TLTRO III take-up as having a positive net impact on their financial situation and lending volumes, accompanied by a net easing impact on their overall terms and conditions across all loan categories.

In addition, BLS banks indicated a positive impact on their capital position as a result of the regulatory and supervisory measures taken in 2021. Regarding the effectiveness of the pandemic-related measures taken by euro area governments to support banks' access to funding, BLS banks reported that COVID-19-related government guarantees had a substantial net easing impact on both their credit standards and their overall terms and conditions for loans to firms. For 2021, BLS banks indicated a net decline in demand for loans or credit lines with COVID-19-related government guarantees. By contrast, after having decreased initially, demand for loans or credit lines without such guarantees was reported to have risen significantly in the second half of the 2021, which is consistent with the initially discussed simultaneous increase in overall loan demand by firms, and reflects the normalisation of euro area financial conditions.

Box 9

ORDER TRANSMISSION MECHANISMS IN THE FINANCIAL SYSTEM – THE SWIFT SYSTEM

Transaction order transmission mechanisms are key infrastructures of the international financial system. They constitute networks providing messaging services ("specialised financial messaging services", as established in the relevant regulatory framework) and have developed a high degree of standardisation and specialisation according to the type of transaction and the individual markets in which they operate. Their operations are supported by the information systems of the institutions using them and are integrated into their transaction processes and security policies.

Messaging services –primarily the SWIFT system– were initially developed in the context of bilateral transactions between credit institutions with the main purpose of serving the conduct of payments. The increasing use of SWIFT in these transactions gradually led to a standardisation of the relevant procedures, particularly in the case of bilateral payments to correspondent banking services between different countries and, through the establishment of specific internationally recognised standards, has helped to speed up, facilitate and secure cross-border payments.

Payment systems – Central banks

With the subsequent development of Large Value Payment Systems (LVPS) and, in particular, Real-Time Gross Settlement Systems (RTGS), various applications and standards were created by SWIFT and integrated into the operational structure of these systems; as a result, the use of SWIFT in the financial sector has expanded massively.

With regard to the role of SWIFT in central bank operations, it is important to highlight SWIFT's critical contribution to key infrastructures set up for the functioning of the Eurosystem, such as the TARGET services and the new

products offered in the context of these services (e.g. the TARGET Instant Payment Settlement (TIPS) system). SWIFT is also used in the CLS (Continuous Linked Settlement) system, which is the most important foreign exchange settlement platform for major currencies.

SWIFT has become the main order transfer network also for securities settlement, which now accounts for half of the system's total international activity (the corresponding share of messaging for payments has now contracted to around 45%). Eurosystem collateral operations, in the context of monetary policy implementation, are primarily conducted using SWIFT.

Data on activity

Based on 2021 data, SWIFT provides services to over 11,600 active users (mainly financial sector institutions) and over 100 central payment and securities settlement infrastructures in 202 countries. 86% of its use is allocated almost equally between the American continent and the EMEA region (Europe, the Middle East and Africa). It is the dominant international system for order transfers with a leading role in the creation of market standards and the technological evolution of the relevant services in terms of efficiency, speed and security. The annual volume of messages transmitted by SWIFT worldwide is almost 11 billion, with a daily average of around 42 million messages.

Company set up

SWIFT (Society for Worldwide Interbank Financial Telecommunication) is based in Belgium under a cooperative form with around 2,400 participant institutions that hold a corresponding number of shares. Participants represent also their national communities, while the governance of the cooperative structure is designed to take into account the positions and interests of individual members and communities in decision-making. The allocation of shares reflects the relative messaging volumes and usage of the network by each community and is subject to relevant adjustment every three years. SWIFT's functions comprise various working groups on technical and business issues, while numerous communications and collaborations take place between participants and educational activities are carried out at national, regional and international level.

International cooperation – Oversight

As a critical international market infrastructure, SWIFT is under the overall responsibility of G20, while oversight tasks are carried out on a cooperative basis by competent authorities of the G10 countries, with the involvement also of the ECB. SWIFT is subject to the legislation and regulatory framework of its home country (Belgium), with the central bank of Belgium playing a key role among the other central banks of the G10 countries with regard to SWIFT matters.

The oversight of SWIFT aims to ensure the smooth and uninterrupted functioning of the whole system, the integrity of processes, the confidentiality of transactions and the prevention of risks. The monitoring and oversight framework provides for the operation of four working groups with distinct responsibilities: the Cooperative Oversight Group, the Executive Group, the Technical Group and the SWIFT Oversight Forum. As regards the Forum in particular, a larger number of central banks (15 central banks in addition to those of the G10 countries) is involved, with a view to providing broader information and exchange of views, as well as a more effective communication and coordination in crisis situations. Expanded participation was foreseen in response to IMF recommendations in 2018 to enhance transparency and information-sharing. Forum participants also deal with specific SWIFT topics, such as important technical and cybersecurity issues.

SWIFT's oversight objectives have developed along five pillars (defined as "High Level Expectations" − HLEs): (a) risk identification and management; (b) information security; (c) reliability and resilience; (d) technology planning; and (e) communication with users. The five expectations that first applied to SWIFT are now the basis for oversight and evaluation of other critical mechanisms in the context of market infrastructures. Moreover, they have become part of the relevant internationally applicable regulatory framework and, in particular, they constitute a special annex to the CPMI-IOSCO Principles for FMIs (Committee on Payment and Market Infrastructures & International Organization of Securities Commissions: *Principles for Financial Market Infrastructures*, Annex F on

Critical Service Providers, April 2012). SWIFT and other order transfer networks operating in the European Union (EU) are also subject to the institutional and regulatory framework applicable in the EU, as well as to agreements concluded between the EU and third countries for combating money laundering and terrorist financing.

Implementation of sanctions

SWIFT came into sharp focus with regard to the implementation of sanctions on Iran in 2012 and Russia in March 2022. In these cases, EU regulations and relevant decisions (mainly Council Regulations (EU) No 2012/267 of 23 March 2012 and No 2022/345 of 1 March 2022) were applied, which provide for the exclusion of specific institutions or a group of institutions from the provision of order transfer services.

Disconnecting a member from a network such as SWIFT, effected in practice by deactivating the member's electronic identity (in the case of SWIFT, the BIC − Business Identifier Code), directly results in preventing that member from carrying out transactions in payment and securities settlement systems that use the network, as well as a wide range of direct bilateral transactions, especially in the area of correspondent banking. It should be noted that the inability to execute transactions in practice also extends to retail payment systems or schemes (e.g. credit and debit card schemes) if their transactions are settled centrally in large-value payment systems.

As far as euro area credit institutions are concerned, given that messaging applications, such as SWIFT, are integrated into the processes of monetary, refinancing and collateral operations established by the Eurosystem on the basis of TARGET services, the entire functioning of a credit institution is, in practice, technically feasible only in connection with those applications.

Box 10

THE IMPLICATIONS OF THE WAR IN UKRAINE FOR THE GREEK ECONOMY

For the Greek economy, the war in Ukraine represents a severe negative supply-side shock, expected to dampen economic activity in the short term and to further increase inflation. In particular, the rise in energy, food and other commodity prices has heightened inflationary pressures and is anticipated to slow down economic expansion. Moreover, the imposition of severe economic sanctions on Russia threatens energy supply and international trade, while major disruptions in global value chains are generated, due to problems in the delivery of raw materials in key industrial sectors. As geopolitical tensions escalate, uncertainty is mounting and financial conditions are deteriorating, thereby increasing downside risks to growth. Since the war is in progress, it is difficult to accurately assess the economic implications of the Russia-Ukraine conflict, as these will depend on the duration of the conflict, its final outcome and fiscal and monetary policy decisions at European level.

Transmission channels of the impacts of the Russo-Ukrainian war on the Greek economy

The impact of the Russo-Ukrainian crisis on the Greek economy can be both direct –in so far as it affects Greece's bilateral economic relations with each of the two belligerent countries and dampens demand for Greek exports– and indirect, attributable to rising energy and other goods prices, as well as growing uncertainty worldwide. There are three main transmission channels of these impacts to the Greek economy: (a) rising energy and other commodity prices; (b) falling external demand for Greek goods and services; and (c) growing uncertainty and deteriorating financial conditions.

(a) Rising energy and other commodity prices

Greece's energy dependency is particularly high. Specifically, despite attempts to change the energy mix in favour of renewable energy sources, Greece continues to import more than 2/3 of its energy consumption, mainly oil and gas. 20% of oil imports and 40% of natural gas imports originate from Russia. Additionally, imports of intermediate goods directed to the food and basic metals industries are substantial. Surges in energy and other commodity prices exacerbate inflationary pressures, increasing the cost of living and reducing households' real disposable income. Moreover, there are significant disruptions in production, caused

by higher production and transportation costs, with negative consequences for business investment (see Box II.1).

Supply chain disruptions could also affect the supply of intermediate and capital goods –with adverse effects on domestic economic activity– and generate further inflationary pressures.

Therefore, increases in energy and other commodity prices, the resulting supply chain disruptions and the slowdown in the global economy and international trade are expected to have a significant impact on economic activity in Greece. The magnitude of these effects will depend on how much and how fast domestic firms can source the above goods from markets other than Russia and Ukraine, as well as on globally available stocks to meet demand.

(b) Decrease in external demand for Greek goods and services

The direct impact on the Greek economy from the disruption –or even suspension– of trade between Greece and the belligerent countries will be limited, given that, excluding Greece's dependence on gas and oil imports from Russia, these transactions have a small share in Greece's total trade in goods and services.

According to data on trade in goods over the past four years (2018-21), Greece's exports to Russia have not exceeded 1% of total Greek exports, while imports from Russia –excluding fuel– account for a mere 1.4% of total Greek imports. Trade with Ukraine is even smaller (0.7% and 0.3% of total Greek exports and imports, respectively).

In total receipts from services, Russia's share was around 2%, while Ukraine only accounted for 0.6% in the four years before the pandemic (2016-19). In the case of Russia, over 50% of the exports of services referred to travel services and around 40% to transport (mainly sea transport) services. Regarding travel services, the overall share of Russia and Ukraine in 2019 stood below 3.5%, while in 2021 it was much lower. The negative impact from the suspension of trade with Russia on sea transport services is expected to be limited, as Russia accounts for a small share also in this sector (around 2%).

However, it should be noted that the drag from trade disruptions will be greater on certain sectors or activities with relatively heavier reliance on imports from Russia and Ukraine; these sectors should face shortages and increased import prices.[1,2]

(c) Heightened uncertainty and deteriorating international and domestic financial conditions

The war between Russia and Ukraine weighs on global confidence, driving up volatility in both the real and the financial sector. Heightened uncertainty is fuelling significant turbulence in international financial markets; as a result, financing conditions have deteriorated and investment positions are being reviewed worldwide, with potential negative consequences for investment projects underway, but also for liquidity in the Greek economy. Moreover, an increase in funding costs amid global repricing of risks leads to tighter financing conditions for banks, businesses and households, as well as for the Greek sovereign. Especially in the event of a protracted conflict, business confidence will be severely harmed, putting a hold on the implementation of investment plans.

Empirical assessment of the impact of the war in Ukraine on the Greek economy

The growth rate of the Greek economy in 2022, without taking into account the effects of the war in Ukraine, was initially projected to stand at 4.8%. A first assessment of the possible impact of the Ukrainian crisis on economic growth in Greece in 2022 is based on the Bank of Greece's annual macroeconomic model, through the application

1 In particular, in the metal product industries Greece relies heavily on aluminium and copper imports from Russia, which account for 22% and 27% of total relevant imports (but remain below 2.5% of total Greek imports). Moreover, imports of wheat from Russia and barley from Ukraine account for 22% and 12% of relevant imports (below 0.5% of total Greek imports). Overall, imports of intermediate goods from Ukraine and Russia directed to food industries represent around 10% of relevant imports and 2% of Greece's total imports.

2 Travel receipts from Russia are higher in some regions of the country (e.g. Central Macedonia) compared with the country average. However, even in these cases, the share does not exceed 5% of total travel receipts in these regions, according to 2019 data.

of shocks to exogenous variables of the model, which correspond, to the extent possible, to the above transmission channels. However, it should be noted that the implications of the war in Ukraine are difficult to assess with any accuracy, given the great uncertainty surrounding its severity and, above all, its duration.

To this end, two alternative scenarios are considered: (a) a baseline scenario and (b) an adverse scenario. The two scenarios differ in terms of shock intensity in 2022. Both the baseline and the adverse scenarios take into account assumptions of rising oil and gas prices, the direct and indirect negative effects on external demand for Greek goods and services and the impact of uncertainty on investment and consumption.

In particular, the baseline scenario assumes no permanent disruption in the euro area's energy supply and growing uncertainty in the economy, which negatively affects investment and consumption expenditure.

The adverse scenario assumes a more protracted disruption in the euro area's energy supply and in international supply chains in general, which also has a heavier impact on the Greek economy, and incorporates a stronger increase in uncertainty both in the real economy and in the financial sector, with even worse effects on investment and consumption expenditure.

The results of the simulations show that the Ukrainian crisis is expected to negatively affect GDP growth in 2022, which, according to the baseline scenario, could decelerate by up to 1 percentage point compared to the initial forecast, to stand at 3.8%, while under the adverse scenario it could slow by up to 2 percentage points to stand at 2.8%. Moreover, higher oil and gas prices are expected to lead to increased production costs and an elevated general level of prices. Under the baseline scenario, inflation in 2022 is projected to increase to 5.2%, while under the adverse scenario it is expected not to exceed 7.0%.

Specifically, the impact on economic activity should mainly originate from a drop in total exports and a decline in private consumption. The decrease in total exports mainly comes indirectly, driven by negative effects on the euro area economy that reduce external demand. The decrease in private consumption is due to a fall in real disposable income, owing to strong price increases and a deterioration in consumer confidence. Further negative effects stem from a decline in private investment, as a result of heightened uncertainty, disruptions in supply chains and a possible deterioration of financing conditions. Nevertheless, the decline in private investment is projected to have a relatively limited impact on economic activity, given the low weight of business investment in aggregate domestic demand. It should be noted that the negative implications on GDP are also mitigated by a drop in imports due to weaker domestic demand.

However, several uncertainties surround the two above scenarios, entailing a risk of additional negative effects on GDP and even higher inflation. Regarding trade in particular, fresh disruptions in global production chains that rely on Russian inputs could further reduce foreign demand from euro area countries, leading to less favourable conditions for the Greek economy. As regards commodities, there is always a risk of a larger disruption in the supply of Russian gas and oil to European countries. Given Russia's central role in Europe's energy supply, the impact could be significant, further strengthening upward trends in international gas and oil prices. Besides energy, which will be directly affected, this could also have an impact on other sectors that directly or indirectly rely heavily on commodities, such as base metals, mining industries, paper and printing, as well as chemicals. In this case, greater supply chain constraints and significant second-round supply side effects should be expected. Lastly, global confidence could take another hit if more severe sanctions were imposed on Russian banks, causing significant problems to the western banks most exposed to Russia and Ukraine. In turn, this could lead to an increase in risk premia and push up interest rates on bank loans, further weighing on the euro area and the Greek economy.

Conclusions

The economic implications of the war in Ukraine are particularly difficult to assess due to the current high uncertainty. This analysis identifies and assesses the main transmission channels of the crisis to the Greek economy and distinguishes between direct and indirect impacts. The former primarily concern bilateral economic relations

and are relatively small (excluding Greece's reliance on natural gas and oil imports from Russia) in terms of both total Greek exports to Russia and travel receipts from Russia.

However, indirect impacts appear to be more substantial, as they are associated with growing energy and other commodity prices, as well as with a slowdown in global trade and supply chain disruptions. Indirect impacts also include higher uncertainty and its contribution to a deterioration of lending conditions. Elevated energy prices feed into inflation, leading to a decline in the purchasing power of households and a drop in consumption. In addition, a high uncertainty environment may potentially push firms to cancel investment initiatives.

In the empirical assessment of possible macroeconomic consequences of the war for the Greek economy, two alternative scenarios were used, a baseline and an adverse one. Importantly, even under the adverse scenario, the Greek economy maintains a sufficiently strong growth rate close to 3% for 2022.

Fiscal policy could –under certain conditions– contribute to supporting the real disposable income of households affected by high energy costs and the resulting rise in inflation. Targeted extraordinary policy measures should take into account the existence of sufficient fiscal space, factoring in the uncertainties that surround both budget implementation and the growth momentum of the economy. In the present environment, targeted and temporary measures in the form of benefits could be more effective in boosting disposable income than horizontal tax cuts, as they would lend more support to low-income households, which have a higher marginal propensity to consume (see Chapter V).

Box 11

THE EFFECTS OF THE PANDEMIC ON GREEK HOUSEHOLD SAVINGS

To address the economic impact of the COVID-19 pandemic, governments, notably in developed economies, have used a wide range of fiscal measures to support businesses and employees in affected sectors so as to preserve existing jobs and disposable income. The implementation of lockdown measures during the pandemic forced households to abstain from consumption, which, coupled with government income support measures, has led to a large increase in private savings.[1]

This box aims to examine the evolution of Greek households' savings during the pandemic, as well as their allocation among different forms of wealth. We also analyse the reasons for increased savings, focusing on two key factors. First, the implementation of containment measures has led to an abrupt interruption of economic activity in various sectors, thereby increasing employees' uncertainty about their employment in the future. Increased uncertainty has led to decreased consumption since, in times of crisis and severe disruptions, employees usually prefer to hold precautionary savings in order to protect themselves from a future drop in their income.[2] Second, because of the containment measures, consumers were forced to reduce many of their activities, which resulted in an involuntary decrease in consumption and inevitably in forced savings. The distinction between the two is important, as literature shows that an increase in precautionary savings has negative and long-term consequences.[3]

1 See Dossche, M. and S. Zlatanos (2020), "COVID-19 and the increase in household savings: precautionary or forced?", ECB Economic Bulletin, Issue 6, and Smith, A.L. (2020), "Why are Americans saving so much of their income?", Kansas City FED Economic Bulletin.

2 See Skinner, J. (1988), "Risky income, life cycle consumption, and precautionary savings", *Journal of Monetary Economics*, 22(2), 237-255, and Hurst, E., A. Lusardi, A. Kennickell and F. Torralba (2005), "Precautionary Savings and Entrepreneurship", NBER Working Paper No. 11731.

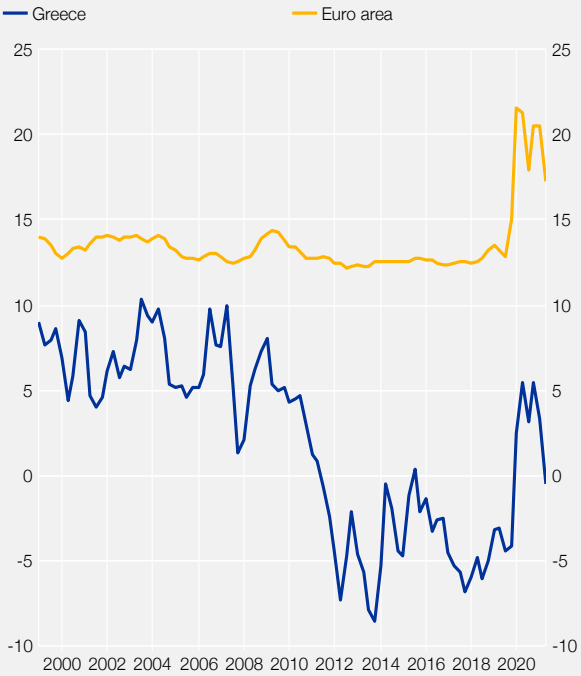
3 See Guerrieri, V. and G. Lorenzoni (2017), *Quarterly Journal of Economics,* 132(3), 1427-1467, and Degorce, V. & E. Monnet (2021), "The Great Depression as a Saving Glut", CEPR Discussion Paper No. 15287.

Savings during the pandemic

Chart A shows the pattern of savings in Greece and the euro area between 1999 and Q3 2021. Though Greek households' savings as a percentage of disposable income have been below the euro area average over time, they fell very strongly during the sovereign debt crisis and remained at negative levels between 2011 and 2020. Although the debt crisis led to a major adjustment in household behaviour, consumption expenditure fell less than disposable income, as Greek households used their savings to finance part of their consumption.[4] This household reaction is known in literature as "habit persistence" and stems from households' tendency to avoid major changes in their consumption habits.

Chart A Household savings

(% of disposable income, Q2 1999 - Q3 2021)



Sources: ELSTAT, Eurostat and Bank of Greece calculations.

Chart B1 shows the contribution of consumption and disposable income to the change in savings, as a percentage of disposable income, vis-à-vis Q4 2019. In 2020, the increase in savings was almost exclusively attributable to reduced consumption compared to the pre-pandemic period. Income growth only started to play a role in 2021. Characteristically, in Q1 2021, before consumption increased significantly in Q2, income was 3% higher than in Q4 2019, but consumption was 8.7% lower. The picture is very similar in the rest of the euro area.[5] It started to change in Q2 2021, when savings became negative for the first time since the onset of the pandemic, and was fully reversed in Q3 2021, when disposable income increased significantly, but consumption exceeded pre-pandemic levels.

Chart B2 shows the uses of Greek households' savings vis-à-vis the 2019 average based on the financial definition of savings, i.e. the interaction of investment and household debt.[6] It can be observed that the increase in savings mainly relates to increased deposits (including banknote holdings) and, to a much lesser extent, other assets (bonds, shares or non-financial assets, such as real estate). Liabilities mainly relate to borrowing.

Savings ratio assessment model

In order to assess the factors that led to an increase in the savings ratio of Greek households during the pandemic, we construct an econometric model using quarterly data for the period Q1 1999 – Q3 2021, according to the equation:

$$SR_t = \alpha_0 + \alpha_1 UE_{12m} + \alpha_2 MOB_t + \alpha_3 \Delta \ln INC_{t+1} + \alpha_4 NFW_{t-1} + \alpha_5 Y_{1999\text{-}2009t} + \varepsilon_t$$

The savings ratio (SR), the dependent variable, is defined as gross savings (difference between disposable income and consumption) as a percentage of gross disposable income. The first independent variable, UE_{12m}, is household unemployment expectations over the next 12 months and is used as a measure of employment income

4 The estimation of consumption is presumed to be more accurate than the estimation of income, so savings are also likely to be underestimated. However, any measurement error relates to the level, and not the evolution of savings, and does not change the qualitative characteristics of the data presented.

5 See Dossche, M., G. Kurstev and S. Zlatanos (2021), "COVID-19 and the increase in household savings: an update", ECB, *Economic Bulletin*, Issue 5.

6 The financial definition of savings is derived from the financial accounts as follows: Savings = financial investment – borrowing + non-financial investment.

Chart B Sources and uses of savings

Sources: ELSTAT and Bank of Greece, Financial accounts. Bank of Greece calculations.

uncertainty, i.e. it enables the estimation of households' precautionary savings.[7] The model comprises the expected rate of change in gross disposable income in the ensuing period t+1 ($\Delta \ln INC_{t+1}$) and the net financial wealth ratio in the previous period t-1 (NFW_{t-1}) as additional explanatory variables for the savings ratio. To estimate forced household savings during the pandemic, we use mobility (MOB) data during the pandemic (source: COVID-19 Google Community Mobility Reports), specifically data on citizens' movements to public transport hubs (available on a daily basis for 2020). As data for 2021 are not available, we apply a dynamic MOBt forecasting model.[8] The MOBt variable of the model is derived from the average weekly movements of passengers on public transport for each quarter.[9] Lastly, ε_t identifies the error.

The results obtained from the model estimation are presented in the table below and show the relative importance of precautionary and forced savings respectively. The UE_{12m} coefficient is positive and statistically significant, while passenger movements on public transport during the pandemic (MOBt) have a negative correlation with consumers' savings. Also, as expected, a decline in the expected growth rate of disposable income ($\Delta \ln INC_{t+1}$) leads households to save more. The financial wealth coefficient (NFW_{t-1}) is positive, but not statistically significant.[10]

7 See Carroll, C.D., J. Slacalek and M. Sommer (2019), "Dissecting saving dynamics: Measuring wealth, precautionary and credit effects", NBER Working Paper No. 26131.

8 Specifically, the forecast is made using the Oxford Government Response Tracker sub-index, which records the stringency index. Weekly 2020 data are used, integrating two time lags of the MOBt and the two sub-indices.

9 The model's pseudo-variable $Y_{1999\text{-}2009t}$ takes the value of 1 for the period 1999-2009, i.e. before the financial crisis, and 0 for the period 2010-2021. The rate of change in income is added to isolate income uncertainty in the variable UE_{12m}.

10 The pseudo-variable $Y_{1999\text{-}2009t}$ coefficient is positive and statistically significant, since Greek households have substantially reduced their savings during the financial crisis; see Charalambakis, E. (2017), "How did the Greek financial crisis impact on households? A comparison between the two waves of the HFCS", Bank of Greece, *Economic Bulletin*, 45, 37-53.

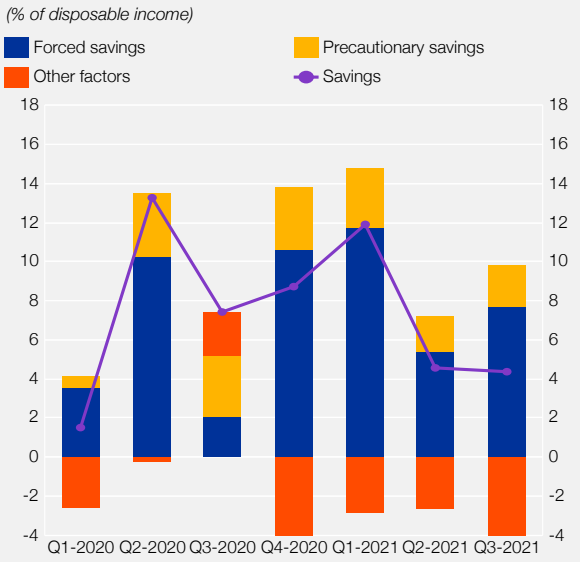
Results from the savings ratio assessment model

Determinants of the savings rate

Dependent variable	UE_{12m}	MOB_t	NFW_{t-1}	$\Delta lnINC_{t+1}$	$Y_{1999\text{-}2009t}$
SR_t	0.0414***	-0.2650***	0.1831	-0.5104***	0.1079***
	(2.64)	(-6.86)	(1.18)	(-5.91)	(17.17)
N	89				
R^2	0.78				

Notes: Quarterly ELSTAT data are used for gross savings, gross disposable income and net financial wealth. Household unemployment expectations in the coming 12 months (UE_{12m}) are derived from the EU Consumer Survey. Passenger movements on public transport MOB_t were compiled from the COVID-19 Google Community Mobility Reports. In parentheses: T-statistics. ***, ** and * indicate a level of significance of 1%, 5% and 10% respectively.

Chart C Contribution of forced and precautionary savings



Sources: ELSTAT and Bank of Greece Calculations.

This model helps us distinguish the respective contribution of precautionary and forced savings to the Greek households' savings ratio during the pandemic. As shown in Chart C, these are the two main factors that contributed more to the increase in the savings ratio throughout the pandemic compared to Q4 2019. In particular, the bulk of the sizeable increase in the savings ratio in Q2 2020, immediately after the outbreak of the pandemic, is attributed to the forced decrease in consumption due to lockdown and social distancing measures. The other factors, depicted in the red part of the bar, relate to the effect of the expected rate of change in disposable income, net financial wealth, as well as εt, i.e. all other factors that cannot be interpreted by the model.

In Q3 2020, the picture is reversed, with precautionary savings having a more decisive impact than forced savings.[11] From Q4 2020 to Q3 2021, forced savings had a greater impact than precautionary savings, and this relationship is maintained in Q3 2021, when the savings ratio declined significantly. Overall, around 70% of the total increase in savings during the pandemic is attributed to forced savings and 30% to precautionary savings (without taking other factors into account). The impact of the other factors is significant, especially in Q4 2020 and Q3 2021. The bulk of this impact stems from the anticipated rate of change in disposable income.

Conclusions

The increase in savings during the pandemic is, from an accounting point of view, mainly due to decreased consumption and, secondarily, to increased disposable income. A simple linear model has shown that around 70% of the overall increase in savings during the pandemic is attributable to forced savings and 30% to precautionary savings. The smaller role of precautionary savings is likely to be due to the crucial role of fiscal measures to support businesses and households, which have preserved existing jobs by reducing the risk of future income loss and the households' need for precautionary savings.

11 This may be due to the fact that household concerns about potential loss of employment in the future remained high, possibly due to the uncertainty at the time about whether pandemic-related measures to support the Greek economy would continue.

The decline in private consumption during the pandemic was largely due to the lockdown measures. On the other hand, the large contribution of forced savings to the households' savings ratio throughout the pandemic is an encouraging signal of the potential of private consumption to support growth in the medium term, especially since disposable income has been rising significantly since Q2 2021. Increasing private consumption in the medium term will be of paramount importance, especially when support measures are withdrawn, including through the provision of incentives to firms in order to prevent layoffs.

Box 12

HOUSEHOLDS' CONSUMPTION BEHAVIOUR DURING THE PANDEMIC

Depending on the phase of the economic cycle, consumer spending components (durable, semidurable goods and services)[1] exhibit a different financial behaviour.[2] Spending on durables plays a key role in total consumption developments, as apparently it functions as a leading indicator for economic activity and is associated with the concept of pent-up demand.[3] Nevertheless, in countries that rely heavily on tourism, such as Greece, spending on services is a decisive factor in shaping total consumption.

This box analyses the components of domestic consumer spending in Greece, i.e. on goods and services, during the COVID-19 pandemic. It is a valuable analysis, as it highlights the relative contributions of individual components to changes in consumption and indicates the special role played by durables.

During the pandemic, owing to the extraordinary conditions prevailing and heightened uncertainty, consumption behaviour changed, reflecting changes in consumption patterns.[4] A study of the characteristics of the current crisis established that, in contrast with previous economic crises, (a) consumer spending registered a remarkable shift towards goods (with a focus on durables) at the expense of services and (b) there was an unusually strong increase in savings, due to fiscal income support measures and an involuntary cutback of consumption during the lockdown, which however mostly concerned higherincome households with a lower marginal propensity to consume.[5]

Nevertheless, during the ongoing pandemic savings continue to increase and are expected to support consumption when pent-up demand is released. Several studies highlight the fact that excess savings are extremely heterogeneous across the income distribution, with the largest part of excess wealth concentrating in the top quartile. In the United Kingdom,[6] almost half of the increase in savings during the pandemic stemmed from well-off house-

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1 Households' domestic consumer spending includes consumption expenditure of non-resident households (tourists) in the economic territory of Greece, while excluding consumption expenditure of resident households abroad. Thus, it is not equal to national consumption, a GDP component net of tourists' consumer spending. Domestic consumption is the sum of services and nondurable and semidurable goods (breakdown by purpose). Durables and nondurables are distinguished on the basis of service life and purchase price. Durable goods (automobiles, furniture, computers, jewellery, etc.) can be used repeatedly or continuously for over 5 years and are more expensive; by contrast, nondurables can be used only once and their purchase price is lower (food, hygiene-related products, detergents, fuel, tobacco, newspapers, pets, plants, etc.) Semidurable goods differ from durable goods in that their expected service life lies between 1 and 5 years and their purchase price is lower (clothes, games and toys, books, electrical appliances for personal use, etc.).

2 Christelis, D., D. Georgarakos, T. Jappelli and G. Kenny (2020), "The Covid-19 crisis and consumption: survey evidence from six EU countries", ECB Working Paper No. 2507, December.

3 Beraja, M. and C.K. Wolf (2021), "Demand composition and the strength of recoveries", National Bureau of Economic Research, NBER Working Paper No. 29304.

4 ECB (2020), "Consumption of durable goods in the euro area", *Economic Bulletin*, Issue 5, and Farrokhnia, R.A., S.R. Baker, M. Pagel, C. Yannelis and S. Meyer (2020), "How does household spending respond to an epidemic? Consumption during the 2020 COVID-19 pandemic", National Bureau of Economic Research, NBER Working Paper No. 26949.

5 Levell, P. (2021), *Consumption spending in the wake of the pandemic*, The Institute for Fiscal Studies.

6 HacıoğluHoke, S., D.R. Känzig and P. Surico (2021), "The distributional impact of the pandemic", *European Economic Review*, 134.

holds, while in the European Union and in France,[7] worse-off households saw a decrease in consumption and savings and an increase in debt. Lastly, other surveys suggest that households are likely to draw down excess savings gradually rather than suddenly[8] as the economy recovers.

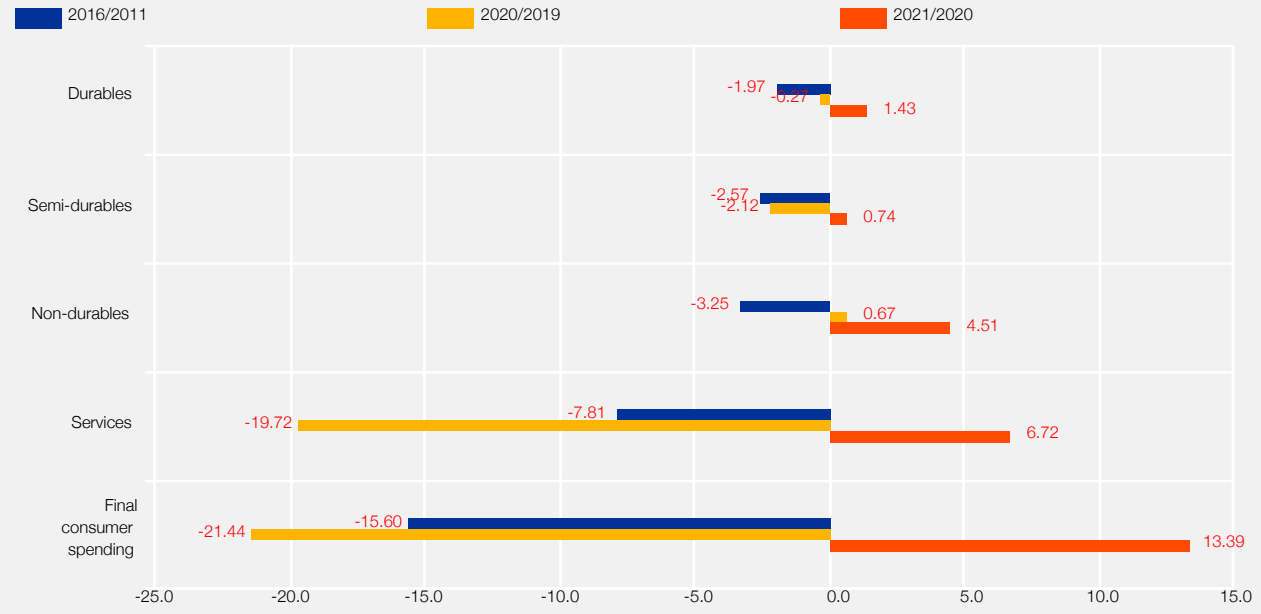
Developments in consumer spending by purpose during the pandemic

Despite the fact that real disposable income in Greece grew by 1.3%[9] in 2020, consumer spending at constant previous year prices fell by €21.4 billion or by 15.4% (see Chart A). A key feature of this period both in Greece and internationally was a substantial decrease in spending mostly on services (€19.7 billion), which accounted for 92% of the total decline in consumer spending, against 50% during the previous financial crisis (between 2011 and 2016).[10] The strict lockdown measures implemented to contain the spread of the pandemic led to a drop in consumer spending, mostly in sectors such as tourism, travel, transport, food services and entertainment.

During the same period, a slight rise (of €0.7 billion) in spending on nondurables was recorded, as many households increased specific inelastic expenses, such as food, detergents etc., owing to the particular nature of the health crisis, which called for staying at home as a result of the lockdown and the implementation of teleworking. This, combined with household income support measures and households' familiarity with online shopping, explains the resilience of durables, which only recorded a slight decrease (€0.3 billion), compared with the sharp drop they registered during earlier recessions. Specifically, significant changes brought about by the pandemic in labour and education pushed some households to purchase or upgrade technological and household equipment in order to cope with the new requirements and set up special athome office spaces. Lastly, semidurables, which are not included in necessities, dropped by €2.1 billion in 2020.

Chart A Change in consumer expenditure over 2021-2020, 2020-2019 and 2016-2011

(at constant previous year prices; billion euro)



Source: ELSTAT.

7 European Commission (2021), *European Economic Forecast,* Spring 2021, Institutional Paper No. 149, p. 53, and Bounie, D., Y. Camara, E. Fize, J. Galbraith, C. Landais, C. Lavest, T. Pazem and B. Savatier (2020), "Consumption Dynamics in the COVID Crisis: Real Time Insights from French Transaction & Bank Data", *Covid Economics, Vetted and RealTime Papers,* Issue 59.

8 Bank of England (2021), "How have households' spending expectations changed since last year?" and European Commission (2021), "Will consumers save the EU recovery? Insights from the Commission's consumer survey", SUERF Policy Note No. 237.

9 At constant 2015 prices =100.

10 In the period 2011-16, GDP fell by 9.6% in real terms.

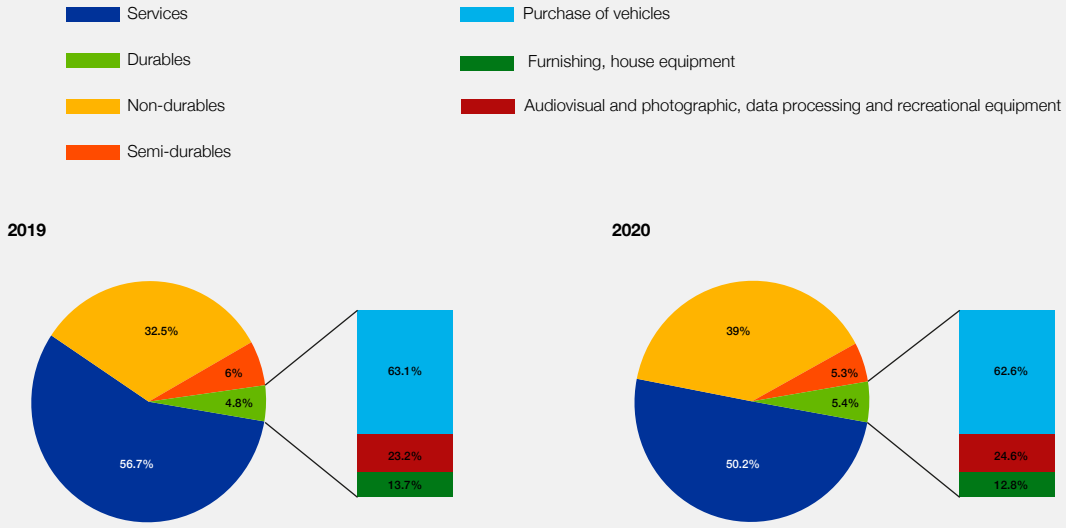
In 2021, as the Greek economy rebounded strongly, posting an annual growth rate of 8.3%, consumer spending at constant previous year prices increased by €13.4 billion or 11.4%, falling short of pre-pandemic levels by 5.8%. Consumption growth was primarily fuelled by a substantial recovery in tourism, which led to an increase in spending on services (€6.7 billion or 11.4%) compared with 2020. Moreover, the reopening of the economy in May, when travel restrictions were lifted and food services reopened, boosted consumption of nondurables, which grew by €4.5 billion or 9.8%. The strong increase in durables (€1.4 billion or 22.3%) was particularly interesting, reflecting the release of significant part of the previous year's pent-up demand for these goods. It should be noted that this represented almost 11% of consumption growth in 2021, despite the very small share of durables (6.0%) in total consumer spending. Lastly, semidurables also registered a substantial increase (€0.7 billion or 11.8%), following a similar pattern as durables and also releasing part of the previous year's pent-up demand.

Change in the composition of consumer spending

A shift of consumer spending towards goods at the expense of services reflects a change in households' consumption patterns during the pandemic. In 2020, the share of services in total expenditure fell to 50.2% (from 56.7% in 2019), while the share of nondurables grew remarkably to 39% (from 32.5% in 2019) and the share of durables rose to 5.4% (from 4.8% in 2019) (see Chart B).[11]

Between 2019 and 2020, the share of audio-visual equipment grew from 23.2% to 24.6%, reflecting the purchases of technology, e.g. computers and printers, which became necessary owing to the particular conditions prevailing during the pandemic. By contrast, the share of purchases of both motor vehicles and home appliances declined slightly (from 63.1% to 62.6% and from 13.7% to 12.8%, respectively), while only specific products of the latter category showed an increase (such as washing machines and dishwashers), which covered special needs due to the protracted staying-at-home conditions (see Chart B). In 2021, i.e. the year when economic activity recovered, the percentage shares in consumer spending were almost unchanged compared with 2020. The shares of services and semidurable goods in total spending remained the same. By contrast, an increase in the share of durables to 6% was noted (from 5.4% in 2020), at the expense of nondurables (which dropped to 38.5%, from 39.0% in 2020).

Chart B Percentage composition of consumer spending by purpose and composition of durables

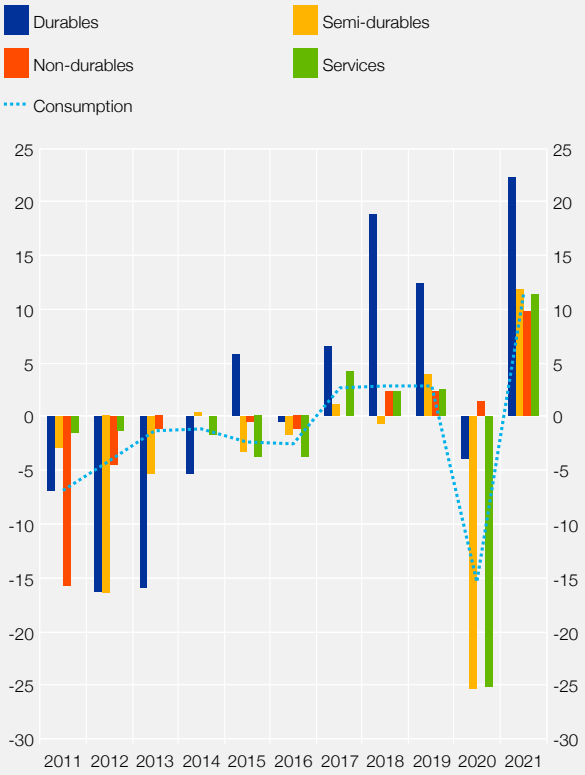


Source: ELSTAT.

11 In the euro area, in 2018, the share of both services (53.7%) and nondurables (29.1%) was smaller compared with the respective shares for Greece, while the share of durables was almost double that of Greece (9%). ECB (2020), "Consumption of durable goods in the euro area", Economic Bulletin, Issue 5.

Chart C Consumer spending components

(at constant previous year prices; annual percentage changes)



Source: ELSTAT.

Durables are the most volatile and procyclical component of consumption, due to their unique characteristics, which render them similar to investment. These goods feature high purchase prices and a long-lasting nature, yielding utility over time, while their purchase may be postponed in times of great uncertainty.[12] Chart C shows that durables are more volatile, presenting significant variations throughout the year compared with other consumer spending components. Specifically, consumer spending on durables grew faster than total consumption during periods of economic expansion (20172019)[13] and declined more than consumption during recessions (20122013). However, owing to the unique conditions prevailing in the current health crisis and contrary to the past, consumption of durables was resilient, falling markedly less (4.0%) than total consumer spending. By contrast, services and semidurables dropped by 25.1% and 25.4%, respectively, while nondurables registered a small increase (1.5%). In 2020, the annual decrease of consumer spending by 15.4% was mainly attributable to services (by 14.2 pp) and secondarily to semidurables (by 1.5 pp), while durables had a very small negative contribution (0.2 pp). By contrast, nondurables had a countervailing effect, with a 0.5 pp positive contribution. In 2021, durables grew much faster (22.3%) than total consumption (11.4%) and other consumption components, with a positive contribution of 1.2 pp to this increase. Lastly, the contribution of other components to consumption spending growth was 5.7 pp for services, 3.8 pp for nondurables and 0.6 pp for semidurables.

Durable goods and pent-up demand

Consumer durables are more closely linked with the concept of pent-up demand compared with services.[14] This is because in periods of economic uncertainty, spending on durables is put off (intertemporal substitution), to be realised when economic conditions allow, while unrealised spending on services is either lost, i.e. it cannot be made up for or replaced by other spending (e.g. eating in restaurants is replaced by eating at home). In the fourth quarter of 2020, spending on durables in Greece started to recover, releasing part of the two previous quarters' pent-up demand (see Chart D). In fact, this recovery preceded the rebound in total consumption and GDP by half a year. Subsequently, in the second quarter of 2021, the recovery in spending on durables accelerated and was clearly stronger than total consumer spending, while in the third and fourth quarters it settled at higher rates compared with prepandemic levels.

The positive course of durables was boosted by households' improved confidence and optimism, as reflected in households' intentions regarding major purchases over the next twelve months[15] (see Chart D). This im-

12 ECB (2014), "Recent developments in the consumption of durable goods in the euro area", *Monthly Bulletin*, Box 6, May.
13 In the 201819 period, on average, durables represented almost 1/4 of the increase in consumption, despite their small share (4.6%) in total consumer spending.
14 ECB (2021), "The implications of savings accumulated during the pandemic for the global economic outlook", *Economic Bulletin*, Issue 5.
15 Households' intentions regarding major purchases over the next twelve months is a household consumer confidence subindicator, under the European Commission's consumer survey, with good predictive accuracy for future spending on durables in the euro area. See ECB (2015), "Recent developments in the consumption of durable goods in the euro area", *Monthly Bulletin*, Issue 3.

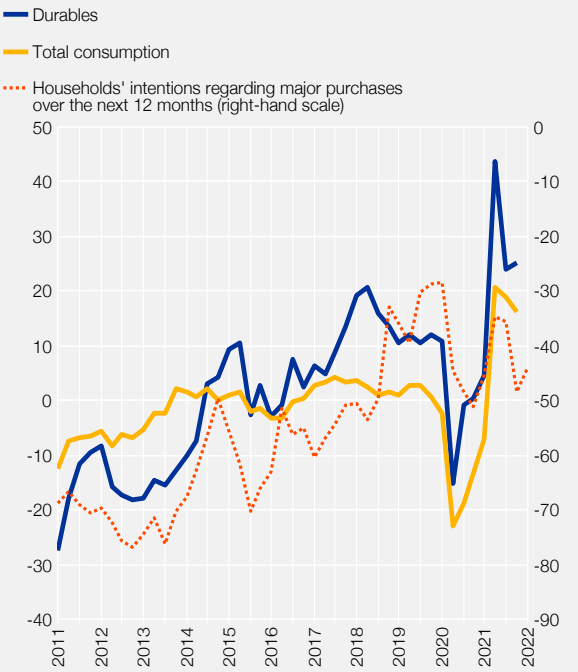
proved substantially in January-September 2021, before falling again in the fourth quarter, reflecting a deterioration in household confidence and an increase in uncertainty, due to the resurgence of the pandemic, with the emergence of the Omicron variant, and inflationary pressures.

Conclusions

In 2020, the year that saw the onset of the pandemic, consumer spending at constant prices in Greece dropped substantially by 15.4% or €21.4 billion. A distinct feature of this period was a strong decline in spending on services, due to the lockdown measures implemented to contain the spread of the pandemic, while at the same time spending shifted towards goods. Specifically, spending on nondurable goods increased, while on durable goods it was resilient and registered a remarkably smaller decline compared with the previous financial crisis. In 2021, the Greek economy rebounded strongly, largely reflecting the growth momentum of consumption, on the back of increases in services and all categories of goods (durables, semidurables, nondurables). Specifically, the upward course of services was fuelled by a recovery of a substantial part of losses in tourism, while the increase in durables and semidurables was supported by a release of a substantial part of the previous year's pent-up demand.

Chart D Total consumption, consumption of durables in Greece and intentions regarding major purchases over the next 12 months

(annual % change at constant 2015 prices=100 and balance of responses; quarterly data)



Sources: ELSTAT, Eurostat and European Commission.

However, pent-up demand underpinning services consumption is relatively limited compared to pent-up demand for durables. For Greece, which is highly reliant on services, a full rebound of this component would be key to further consumption growth. Within this context, excess savings created by the pandemic are expected to gradually rather than suddenly translate into higher consumption.

Box 13

MACROECONOMIC EFFECTS OF SHOCKS TO IMPORT AND SERVICES SECTOR PRICES

In Greece, like in most advanced economies, the import price index in industry, as well as the import price index of goods and services, has increased since mid-2021.[1] To the extent that rising import prices drive up the cost of inputs used in domestic production, it is likely that firms will pass some of the costs to output prices in order to protect their margins, thereby generating inflationary pressures.[2] As regards the services sector, activity in Greece expanded significantly following the easing of pandemicrelated restrictions. While pricing pressures in the services sector were muted until mid-2021, due to the implementation of strict containment measures, the

1 For a description of the recent evolution of these indicators for the Greek economy, see Papageorgiou, D. (2021), "Macroeconomic effects of shocks to import and services sector prices", Bank of Greece, *Economic Bulletin*, No. 54.

2 See Schnabel, I. (2021), "Escaping low inflation?", Speech at the Petersberger Sommerdialog, 3 July. The Consumer Price Index for goods in Greece has been increasing since mid2021, which indicates a partial passthrough of higher input costs to consumer prices (see Papageorgiou (2021), op. cit.).

relatively high mark-ups in the services sector in Greece, combined with rising demand, raise concerns about stronger inflationary pressures in the future.[3]

Against this background, the aim of this box is to investigate the macroeconomic effects of inflationary cost-push shocks that originate from the imports and services sectors. The analysis is based on the Dynamic Stochastic General Equilibrium (DSGE) model of the Bank of Greece, which incorporates key features of the Greek economy.[4] More specifically, the following scenarios are examined: (a) a temporary costpush shock to the import sector that increases the inflation rate of imports by 1 percentage point (pp) and (b) a temporary cost-push shock to the services sector that increases the inflation rate of this sector by 1 pp. To account for the uncertainty surrounding the persistence of the inflation drivers, the analysis investigates the effects for different degrees of persistence of the inflationary shocks. In the "baseline" scenario, the persistence of the shocks is set so that the respective inflation rates gradually return to their initial levels after four quarters. In the "high-persistence" scenario, the persistence of the shocks is set so that the respective inflation rates gradually return to their initial levels after five quarters.[5] The calibration of the size and persistence of the shocks is indicative and aims to draw conclusions about the sensitivity of macroeconomic variables to price developments in the imports and services sectors.

The effects of import price increases

Chart A shows the effects of the import price inflation shock on the domestic Consumer Price Index (CPI) and GDP under the baseline and the high-persistence scenarios. Real GDP is expressed as percentage deviations from the steady state and CPI inflation is expressed as percentage point changes (annualised) from the steady state. Regarding the propagation mechanism following the shock, the results suggest:

First, an increase in import prices causes a rise in the production costs of domestically produced consumption and investment goods, which in turn triggers an increase in the respective prices, resulting in higher CPI inflation. As regards the pass-through to domestic prices in the impact period, it is estimated that a 1 pp increase of import price inflation raises domestic CPI and the GDP deflator by 0.147 pp and 0.1 pp, respectively.[6]

Second, turning to the impact on GDP, the largest losses occur in the medium term, since in the short run the adverse effects are dampened by: (a) the presence of price rigidities in domestic markets, which result in a gradual and incomplete pass-through of import prices to domestic prices, and (b) an import substitution effect. More specifically, imported goods are more expensive in the short run, which leads to expenditure shifting towards domestically produced consumption and investment goods and reduces the negative effects on domestic demand and GDP. In the medium term, the pass-through of import prices to domestic prices increases, dampening the demand for consumption, investment and exports and causing a decline in GDP.[7] In particular, real GDP declines by around 0.02% and 0.06% after four and eight quarters, respectively.

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3 For the recent developments in the services sector, see *Monetary Policy – Interim Report 2021*, Chapter IV, December 2021 [in Greek]. For an estimation of profit mark-ups in the services sector, see ThumThysen, A. and E. Canton (2015), "Estimation of service sector markups determined by structural reform indicators", European Commission, *European Economy*, Economic Paper No. 547.

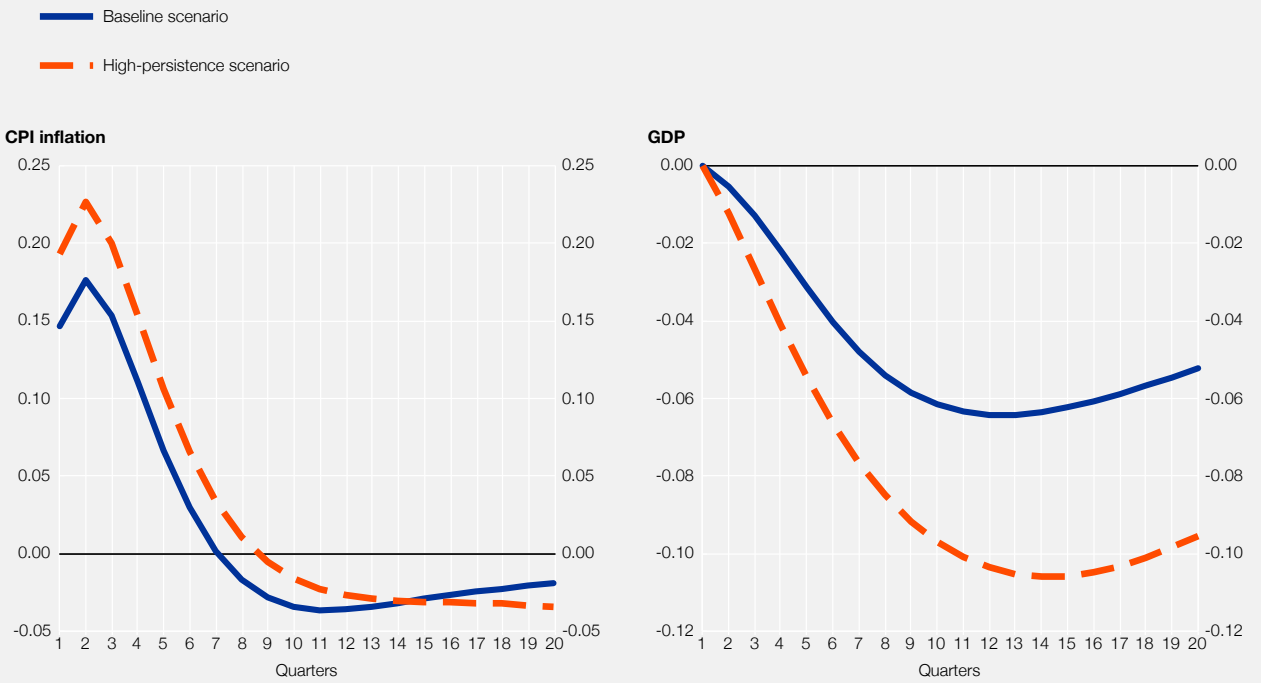
4 The model incorporates an import sector and two sectors of production, namely a tradeable and a nontradeable (services) sector, which allows examining the implications of sector-specific shocks. As regards imports, the model assumes that the imported intermediate goods are supplied as inputs to the production of domestic goods. Therefore, any changes in import prices affect the production costs of domestically produced goods and the prices set by firms. For a detailed description of the model, see Papageorgiou, D. and E. Vourvachaki (2017), "Macroeconomic effects of structural reforms and fiscal consolidations: Tradeoffs and complementarities", *European Journal of Political Economy*, 48, 5473; and Papageorgiou, D. (2014), "BoGGEM: A dynamic stochastic general equilibrium model for policy simulations", Bank of Greece Working Paper No. 182.

5 The shocks examined are cost-push shocks that affect the relationship between marginal cost and the output gap in the Phillips curves of the imports and services sectors, thereby leading to price and inflation changes in the respective sectors.

6 These results are consistent with previous findings in the relevant literature. See e.g. Ortega, E. and C. Osbat (eds.) (2020), "Exchange rate passthrough in the euro area and EU countries", ECB, *Occasional Paper Series*, No. 241, who use a DSGE model calibrated for the euro area and find that an increase of around 4 pp in import prices is followed by an increase of approximately 0.5 pp in consumer prices.

7 The increase in prices induces a negative wealth effect on households, leading them to reduce consumption and investment demand. At the same time, it reduces the competitiveness of the economy, dampening exports.

Chart A Dynamic effects of an increase in import prices



Source: Bank of Greece estimates.
Note: GDP: percentage deviations from the steady state; CPI inflation: percentage point changes (annualised) from the steady state.

Third, the persistence of the rise in the price of imports matters decisively for the macroeconomic effects. The higher the persistence of import price inflation (see high-persistency scenario), the larger the output losses in the medium term. An increase in the persistence of import inflation by one more quarter relative to the baseline scenario produces an additional cumulative loss in output equal to around 0.14% in the first eight quarters. This is because the pass-through of import price increases to domestic prices is higher relative to the baseline scenario, inducing a larger decline in domestic demand and exports in the medium term.[8]

Effects of price increases in the services sector

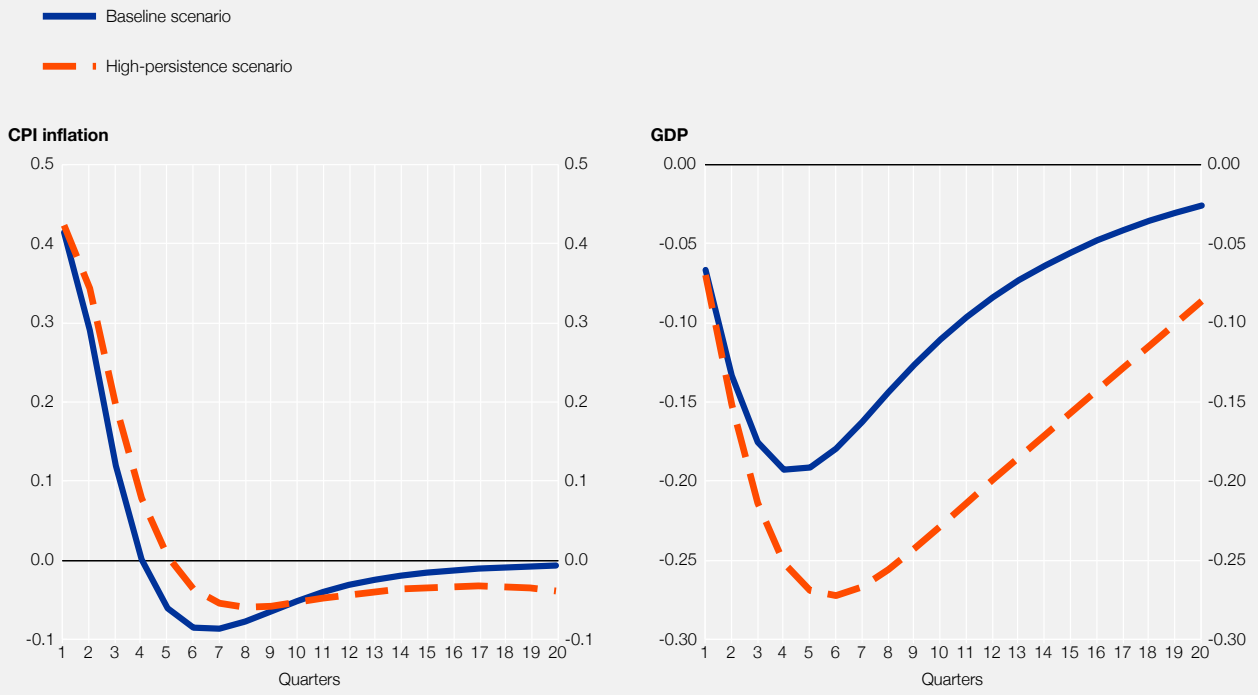
Chart B shows the effects of a shock that increases the inflation rate of the services sector under the baseline scenario and the high-persistence scenario. The results suggest the following:

First, the pass-through of higher services sector prices to the CPI is much stronger than that of the import price shock. It is estimated that an increase of 1 pp in the inflation rate of the services sector raises domestic CPI inflation and the GDP deflator by 0.414 and 0.573 pp, respectively. The higher prices have a negative effect on the income of households, forcing them to reduce demand for consumption and investment. In turn, the rise in domestic prices has an adverse effect on the country's competitiveness, leading to a reduction in demand for exports and a deterioration in the trade balance. Consequently, real GDP falls by 0.2% after four quarters. It is worth noting that lower aggregate demand forces firms to reduce labour demand, thereby generating downward wage pressures.

Second, a more persistent increase in the prices of the services sector (see the high-persistence scenario) has a stronger negative effect on GDP as compared to the baseline scenario. This is mainly explained by the larger decline in investment and exports, which results in a 0.25% decrease in GDP after four quarters. An increase in

8 Firms expect that their future marginal costs will be higher than in the baseline scenario and choose to set higher prices. The increase in CPI is estimated at 0.194 pp in the impact period.

Chart B Dynamic effects of an increase in services prices



Source: Bank of Greece estimates.
Note: GDP: percentage deviations from the steady state; CPI inflation: percentage point changes (annualised) from the steady state.

the persistence of the inflation rate by one more quarter relative to the baseline scenario produces an additional cumulative loss in output equal to around 0.49% in the first eight quarters.[9]

Conclusions and policy proposals

The results suggest that, if the observed import price inflation in Greece persists, it might force domestic firms to pass on the higher costs to consumer prices in order to protect their profit margins, thereby triggering further inflationary pressures. While the adverse effects on economic activity appear to be limited in the short run, a more persistent rise in import price inflation may cause significant losses in economic activity in the medium term. Moreover, the results highlight the need to contain rising inflationary pressures in sectors featuring high profit margins, such as the services sector, to avoid dampening the ongoing economic recovery.

On the basis of our findings, measures aiming to reduce firms' production and operating costs can stem domestic inflationary pressures by limiting firms' incentives to pass on higher production costs to consumer prices. The promotion and timely implementation of the structural reforms included in the Greek Recovery and Resilience Plan can also help control inflationary pressures. Specifically, structural reforms on the supply side can enhance competitiveness in the product and services markets and spur productivity growth in the medium term, thus allowing for increased production at a lower cost. An important advantage of these reforms is that

9 It is worth mentioning that a possible contributor to future price developments in the services sector is the growing demand for services observed after the easing of the pandemicrelated restrictions. Model-based estimates suggest that a shock that increases demand for services has a positive effect on GDP and generates inflationary pressures. This is explained by the fact that firms in the services sector, in order to meet higher demand, increase employment, which results in a rise in wage costs, part of which passes through to consumer prices. For instance, a 1% rise in demand for services causes a 0.12 pp increase in the CPI. These results are consistent with the study of Bobeica, E., M. Ciccarelli and I. Vansteenkiste (2019), "The link between labour cost and inflation in the euro area", ECB Working Paper No. 2235.

they entail no budgetary costs; on the contrary, they may also generate tax revenues.[10] Finally, it is important to adopt targeted fiscal measures to support the income of households that are most affected by inflation –especially low-income households with a high marginal propensity to consume– in order to alleviate the adverse effects on domestic demand.

10 For estimates on the impact of the structural reforms included in the Greek Recovery and Resilience Plan on the Greek economy, see Malliaropulos, D., D. Papageorgiou, M. Vasardani and E. Vourvachaki (2021), "The impact of the recovery and resilience facility on the Greek economy", Bank of Greece, *Economic Bulletin*, No. 53.

Box 14

TWIN DEFICITS DURING THE PANDEMIC: A TEMPORARY OR PERMANENT RE-EMERGENCE?

Over the past ten years in Greece, a considerable effort was undertaken to reduce the fiscal and the current account deficit. The fiscal deficit, which stood at 10.2% of GDP in 2008, turned into a surplus of 1.1% of GDP by 2019, while the current account deficit decreased from 15.1% of GDP in 2008 to 1.5% of GDP at end-2019. However, the outbreak of the COVID-19 pandemic in 2020 abruptly halted the ongoing improvement. The emergency fiscal policy response to the pandemic with the introduction of support measures, which started in 2020 and continued into 2021, finally weighed on the budget balance in both years. More specifically, the general government budget balance, according to the 2022 Budget Report, turned into a deficit of 10.1% of GDP in 2020 and remained elevated at around 9.6% of GDP in 2021. Meanwhile, the current account deficit widened sharply to above 6.6% of Greece's GDP in 2020, mainly on account of reduced travel receipts, and remained high at around 6% of GDP in 2021. Against this backdrop, the recent re-emergence of the twin deficits, i.e. the external deficit and the fiscal deficit, inevitably raises the question whether the Greek economy will return to its pre-pandemic state and resume its path to further improvement once the pandemic is over.

The current analysis presents the main factors behind the re-emergence of the twin deficits during the pandemic and explores the extent to which they are temporary. In this respect, an empirical investigation of the twin deficits hypothesis is presented for the Greek economy, which examines to what extent the fiscal deficit is contributing to the current account deficit, quantifying also how this correlation evolved, before and during the pandemic, based on the latest available data.

The twin deficits

According to the system of national accounts, the current account deficit can be associated with the general government deficit via the gap between saving and investment as follows:[1,2]

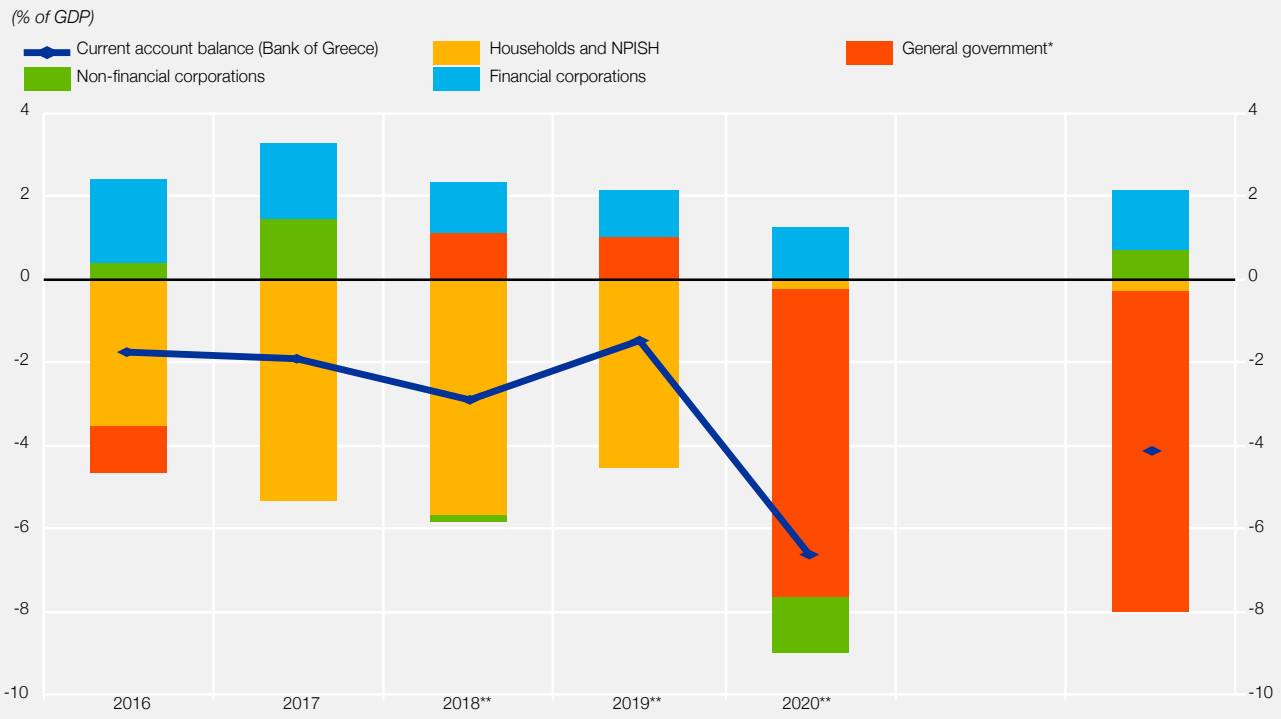
$$CA = S - I = (S_p - I_p) + (S_g - I_g) \quad (1)$$

where S is gross saving and I is gross capital formation (investment) of the private (p) and the public (g) sector.

1 For an analysis of developments in the current account balance from a saving and investment perspective over the 2000-18 period, see Bank of Greece, *Annual Report 2019*, Box IV.4.

2 Gross domestic product (GDP) is defined as: GDP = C + G + I + X - M, where C and G are private and public consumer spending, respectively, I is the gross capital formation (investment) of the private and the public sector, X and M are exports and imports of goods and services, respectively, with the differential X - M reflecting the goods and services balance. The current account balance (CA) is defined as: CA = X - M + NY + NCT, where NY and NCT are net income and net current transfers from abroad. Given that gross national disposable income (GNDI) is defined as: GNDI = C + G + I + CA and gross saving is defined as: S = GNDI - C - G, CA can be expressed as the difference between saving and investment. For a detailed calculation of CA based on equation (1), see IMF (2009), *Balance of Payments and International Investment Position Manual*, Sixth edition (BPM6), Chapter 14.

Chart A The evolution of the current account balance and the saving gap (S-I)



Sources: Bank of Greece for b.o.p. data, ELSTAT for saving-investment data and Bank of Greece calculations.
* The saving gap of general government aproximates the budget balance.
** Provisional data.
*** Provisional data, referring to the first three quarters of 2021.
Note: Due to different data sources, the saving gap is not identical to the current account balance.

The two terms of the sum denote the saving gap of the private sector (households and firms) and of general government, respectively. Thus, equation (1) links the budget balance, (Sg - Ig), with the current account balance (CA).[3] More specifically, a widening in the saving gap of general government, unless covered by the private sector, will lead to a worsening in the current account balance.

In 2020 the saving-investment gap of general government turned negative, from positive over 2018-19. This development is almost entirely due to lower general government saving and reflects the fiscal measures in response to the COVID-19 pandemic, as well as reduced tax revenue as a result of weaker economic activity. The saving gap of households followed an opposite path and, albeit still negative, narrowed considerably in 2020, since household saving increased. This is primarily associated with lower consumption and higher household savings on account of the lockdown measures, coupled with the fiscal policy measures that from the outset aimed at maintaining disposable income and employment. The increase in household saving, which was also observed across the euro area,[4] is linked on the one hand with forced saving, as households during lockdowns could not consume certain goods and services (e.g. food services, travel and entertainment), and on the other hand with precautionary saving amid uncertainty related to the pandemic (see also Box IV.2). Overall, the widening of the general government saving gap was offset only in part by the narrowing of the household saving gap, leading to a deterioration in the current account balance and therefore

3 Following the saving-investment gap-based approach, saving takes a positive sign and investment takes a negative sign. However, this does not mean that higher investment has a negative impact on the economy, given that investment is a positive component of GDP and disposable income, as defined above. The equation implies that if domestic saving does not meet investment activity, the current account balance is negatively affected, as this gap must be covered by the external sector of the economy.

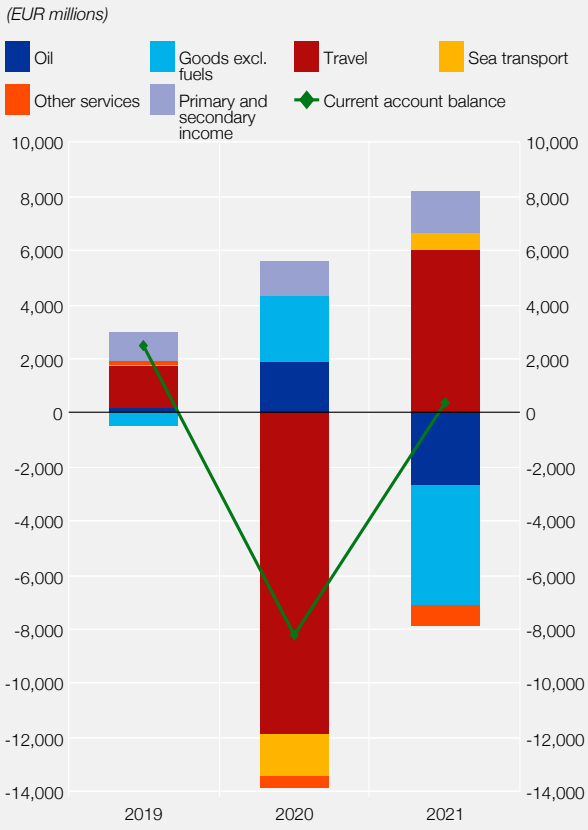
4 See ECB (2021), *Economic Bulletin*, Issue 5, Box 4 "COVID-19 and the increase in household savings: an update".

to the return of the twin deficits. The above developments continued into the first three quarters of 2021 (see Chart A).[5]

The impact of the pandemic on the current account balance

The outbreak of the COVID-19 pandemic in 2020 halted the ongoing improvement of Greece's current account balance. In particular, the deterioration that was recorded in 2020 was largely due to a drop in travel receipts, owing to mobility restrictions. By contrast, the improvement of the current account balance in 2021 –despite the negative effect from higher imports of goods– is mainly associated with a rise in travel receipts, as the pandemic-induced travel restrictions eased. This development highlights the –mostly– temporary nature of the worsening of external imbalances. With travel services returning to their pre-pandemic level, the current account balance is expected to improve further (see Chart B). In addition, the improvement of the country's international competitiveness observed during the past ten years, coupled with the resilience of Greek exports of goods, as mirrored in their rise (at constant prices) both in 2020 and 2021, acts as a catalyst for a further shift of the Greek economy to exports. Yet, rising fuel prices and higher imports of non-fuel (mostly intermediate) goods since late 2021 are expected to weigh on the current account balance. The expected increase in imports of –capital and intermediate– goods for investment purposes in the context of the NGEU, although partly counterbalanced by the corresponding receipts in the form of direct transfers in the secondary income account, will have a negative effect on the current account balance in the short term. However, the improved competitiveness of the Greek economy, driven by investment, in tandem with the continuation of structural reforms for supporting the export orientation of Greek businesses,[6] is expected to contribute to higher exports and a subsequent improvement of the current account balance over the medium term (see Section IV.7).[7]

Chart B Contributions to the annual change in the current account balance



Source: Bank of Greece.

The emergency fiscal policy response during the pandemic

In order to mitigate the negative effects of the pandemic on the real economy in 2020 and 2021, fiscal policy became expansionary. Given the high reliance of the Greek economy on tourism, compared to other European economies, and the pandemic-induced downturn, a sizeable –temporary– fiscal support package (amounting to around 10.8% of GDP in 2020 and 9.5% of GDP in 2021) was deemed necessary to contain the adverse economic effects. As a result, sizeable primary deficits were generated (7.1% of GDP in 2020 and an estimated 7%

5 The data used in the analysis are drawn from the annual non-financial accounts of institutional sectors (published by ELSTAT), i.e. the household sector (households and non-profit institutions serving households (NPISH) – S.1M); the corporate sector (non-financial corporations – S.11 and financial corporations – S.12); general government (S.13); and the external sector (rest of the world – S.2).

6 See for instance the Growth Plan for the Greek Economy (final report by the Pissarides Committee), 14.11.2020.

7 According to the estimation of the Dynamic Stochastic General Equilibrium (DSGE) model of the Bank of Greece (see Malliaropulos, D. et al. (2021), "The impact of the Recovery and Resilience Facility on the Greek economy", Bank of Greece, *Economic Bulletin*, No. 53), the implementation of the National Recovery and Resilience Plan will have a positive impact on the balance of goods and the overall current account balance over the medium term.

of GDP for 2021).[8] In 2020, the EU-level decisions on the suspension of fiscal rules until the end of 2022 have provided all euro area country-members with the fiscal space needed.

The orientation and timing of the government response had the ultimate objective of minimising the impact of the pandemic on both the demand and the supply side. This was pursued mainly by schemes to support workers' disposable income[9] and firms' liquidity, for as long as economic activity was subject to restrictions, and by ensuring the reopening of businesses once the restrictive measures were lifted, so as to avert any scarring effects on business activity (see Chapter V).

With the easing of the pandemic and the recovery of the economy, the support measures are being withdrawn, while fiscal neutrality is expected to start gradually being restored from 2022, as the primary deficit in Greece is estimated to reach 1.4% of GDP according to the 2022 Budget. The recent geopolitical crisis should be expected to delay this rebalancing process (see Box IV.1).

An empirical investigation of the twin deficits hypothesis

The twin deficits hypothesis explores the extent to which the fiscal deficit contributes to a deterioration of the current account deficit. The investigation is based on equation (1) above. Previous studies on the Greek economy empirically confirm the validity of the twin deficits hypothesis, examining different periods in time.[10] Nevertheless, it should be noted that, as suggested by those studies, the estimated long-run correlation of the two deficits proves to be positive, yet not too high (around 0.25).[11]

An updated estimation of a VECM, which covers the period before and during the pandemic for the Greek economy, reveals that the long-run correlation of the two deficits is slightly higher and stands at 0.4. Furthermore, a fiscal balance shock of one standard deviation is estimated to lead, in the short term, to a higher impact and statistically significant responses of the current account balance (see Chart C).[12,13] These short-term estimates are broadly confirmed by a similar BVAR model, under which the estimated current account responses are slightly weaker. Under the same model, it is estimated that, starting from 2022, the partial withdrawal of the fiscal measures that were adopted during the pandemic will lead to an improvement in the current account bal-

8 In terms of enhanced surveillance, the general government primary balance for 2020, 2021 and 2022 amounts to 7.9%, 7.3% (estimate) and 1.2% (forecast) of GDP, respectively.

9 According to available data, households' disposable income in 2020 stood at a similar level as in 2019.

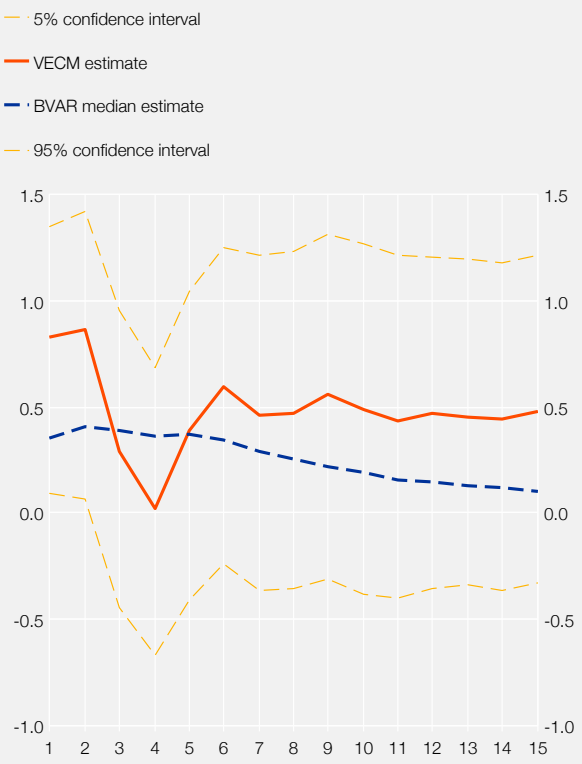
10 See Chronis, P. and G. Palaiodimos (2014), "Optimal Fiscal Policy Mix and Current Account Imbalances: the case of Greek Economy", *Fiscal Policy and Macroeconomic Imbalances*, 285-307; Paparas, D., C. Richter and H. Mu (2016), "An econometric analysis of the twin deficits hypothesis in Greece during the period 1960-2014", *Applied Economics Quarterly*, 62(4), 341-360; Litsios, I. and K. Pilbeam (2017), "An empirical analysis of the nexus between investment, fiscal balances and current account balances in Greece, Portugal and Spain", *Economic Modelling*, 63, 143-152; and Trachanas, E. and C. Katrakilidis (2013), "The dynamic linkages of fiscal and current account deficits: New evidence from five highly indebted European countries accounting for regime shifts and asymmetries", *Economic Modelling*, 31, 502-510.

11 The estimated pass-through is about 0.25, i.e. an improvement (deterioration) of 1 percentage point (pp) of GDP in the fiscal balance leads to an improvement (deterioration) of 0.25 pp in the current account balance.

12 A small-scale vector error correction model (VECM) was employed with four lags across the quarterly variables of: current account balance (% of GDP); budget balance (% of GDP); credit to the private sector (% of GDP); and real effective exchange rate, covering the period from the first quarter of 2002 to the third quarter of 2021. Net private saving has been omitted, as it is a function of credit to the private sector that has already been included in the model (see Chronis and Palaiodimos 2014). The variables under review prove to be cointegrated, with the first two variables adjusted for seasonality. The above impacts were computed using a Generalised Impulse Response analysis. On the basis of this model, a budget balance shock of one standard deviation leads in the short term to statistically significant shocks –equal to about 0.8 times the standard deviations– for a period of up to two quarters, which quickly revert to their long-run level.

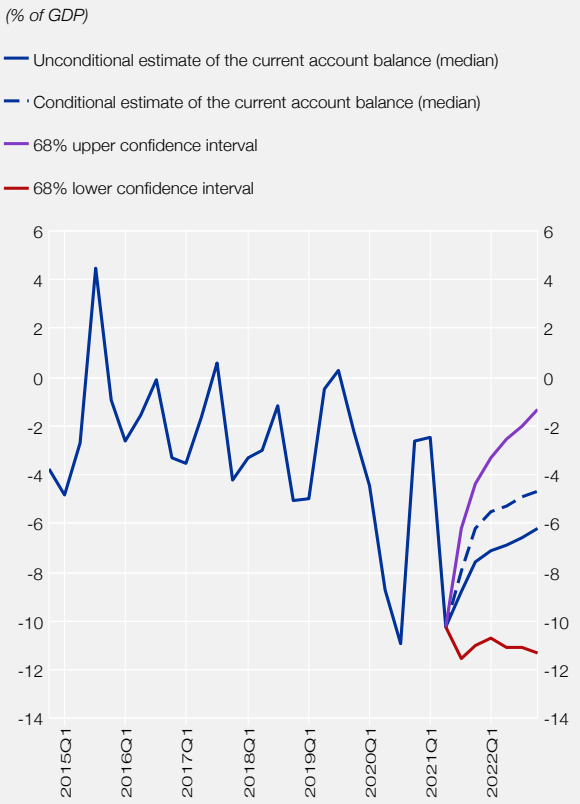
13 These estimates are also confirmed by similar Bayesian Vector Autoregressive (BVAR) models using the same variables and time lags. Namely, a BVAR model with four time lags across the quarterly variables of: current account balance (% of GDP); fiscal balance (% of GDP); credit to the private sector (% of GDP); and real effective exchange rate. Likewise, the above impacts were estimated using a Generalised Impulse Response analysis and Normal-Wishart priors.

Chart C Impact on the current account balance from a budget balance shock (of one standard deviation) over a time horizon of 15 quarters



Source: Bank of Greece calculations.

Chart D Estimation of the current account balance, assuming that part of the support measures adopted during the pandemic is withdrawn in 2022



Source: Bank of Greece calculations.

ance on the back of an improved fiscal balance (see Chart D).[14] Finally, using an alternative linear time series model,[15] it is estimated that, after the initial strong correlation between the fiscal deficit and the current account deficit seen in the first phase of the pandemic, some early signs of convergence towards historical averages emerge thereafter (see Chart E).

Overall, the above empirical findings are supportive of the temporary nature of the twin deficits observed in the Greek economy during the pandemic. From the analysis it also transpires that the withdrawal of the temporary fiscal measures and the return of the Greek economy to primary fiscal surpluses will lead, *ceteris paribus*, to a corresponding improvement in the current account balance both in the short and in the long run. Conversely, the prolongation of these measures is expected to contribute to persistent current account deficits.

Conclusions

The outbreak of the COVID-19 pandemic has contributed to a re-surfacing of the twin deficits, which, on the basis of recent data releases, should be seen as temporary, as it is largely associated with the fiscal expansion

14 The conditional forecast of the current account balance rests on the assumption that the fiscal deficit declines and stabilises at 1.4% of GDP from the third quarter of 2021 until the fourth quarter of 2022.

15 A linear autoregressive model for the quarterly variables of: current account balance (% of GDP); fiscal balance (% of GDP); credit to the private sector (% of GDP); and real effective exchange rate, is employed assuming causality from the fiscal balance to the current account balance using Fully Modified OLS estimators (given that the series are non-stationary and cointegrated). The rolling-window estimates of this model suggest that the period following the adoption of the economic adjustment programme was accompanied by a lower correlation between the fiscal and the external balance, namely the current account balance.

Chart E Estimated impact of the budget balance on the current account balance using a 6-year and an 8-year rolling window

Source: Bank of Greece.

that took place over that same period. This conclusion is confirmed by the empirical analysis, which reveals that the withdrawal of the emergency fiscal policy measures during 2022 and the gradual return to fiscal sustainability will lead, *ceteris paribus*, to a corresponding improvement in the current account balance. On the other hand, any delays in the withdrawal of the fiscal measures are set to stall the anticipated improvement of the current account balance in the following quarters. In this direction, the adoption of further structural policies, aimed at maintaining high and rising fiscal surpluses over the medium term through an effective control on spending and a broadening of the tax base, will also help to improve the current account balance.

The easing of mobility restrictions in 2021 has already contributed to a considerable rise in travel receipts, which came to about 60% of the 2019 travel receipts, thereby leading to a concomitant reduction in the current account deficit. The outlook for travel receipts in 2022 is positive and therefore an improvement can be expected in the current account balance, although the Russian invasion of Ukraine should have a negative effect (see Box IV.1). With regard to the other factors affecting the current account balance, despite the fact that the structural reforms in the context of the economic adjustment programmes have borne fruit and indeed raised the international competitiveness of the Greek economy, there is no room for complacency once the fiscal deficits start improving on the back of fiscal policy tightening. In particular, raising the competitiveness and trade openness of the Greek economy calls for the continuation of structural reforms, with a view to enhancing the competitiveness of Greek businesses and the share of Greek goods and services in foreign markets. The effective and timely utilisation of the NGEU funds, even though it may weigh on the current account balance in the short term via imports of capital goods for investment purposes, should be in line with the objective of improving Greece's international competitiveness and trade openness.

Box 15

THE IMPORTANCE OF OPEN DATA

In the era of digital transformation and Open Information, "Open Data"[1] are a driver of economic growth and provide great economic and social benefits. They promote system interoperability, ensure transparency of decisions, generate new innovative ideas and enhance efficiency in the use of resources.

Open Data in Europe and Greece for 2021

Open data availability is a European priority in the context of digital transformation and many EU Member States are moving in this direction. According to the open data maturity report,[2] European countries (34 in total, including

1 Data made available under a certain licence so that anyone can use, re-use, modify and share them, subject only to requirements that preserve provenance and openness under the same terms as the original (https://opendefinition.org/).
2 https://data.europa.eu/en/impact-studies/open-data-maturity.

the EU-27 Member States) are classified in four categories according to the degree of open data availability as follows: “trend-setters”, “fast-trackers”, “followers” and “beginners”.

According to the 2021 report,[3] most European countries rank in the higher end of the spectrum. In particular, “trend-setters” comprise France, Ireland, Spain, Poland, Estonia and Ukraine. The nine countries included in the fast-tracker cluster show highly similar scores, as the cluster is concentrated on a range of 3%. Greece scored 82% on the open data maturity index for 2021 and ranked as a “follower”.

Among the countries participating in the maturity survey, 85% report that open data are used in the policy-making processes in their country and 89% report that open data are used in decision-making processes, for example public administrations making use of open data in their daily operations.

It was clear in 2021 that many Member States seek to implement the European Open Data Directive.[4] Coupled with actions to provide information about the COVID-19 pandemic, the merits of open data for society are continuously highlighted. Many EU countries, including Greece,[5] have developed national dashboards to record the evolution of the pandemic and vaccinations.

The Open Data Portal of the Bank of Greece

The Bank of Greece launched its Open Data Portal (opendata.bankofgreece.gr) in 2018. It was one of the first central banks to realise early on that it was important to provide researchers and the public at large with data in a format that can be easily read and processed by computers, in conformity with international open data standards. Through the Portal, information is available in the form of “Open Data”, thereby facilitating its use and processing, allowing interested parties easy, fast and efficient access to the information they are looking for.

Since the launch of the Portal in July 2018, 51 datasets have been made available and more than 3,000 files have been uploaded. Currently available datasets are provided by the Departments of Statistics, Economic Analysis and Research, and Financial Operations and the Bank’s Centre for Culture, Research and Documentation, accredited with the Silver Certificate by the Open Data Institute. By July 2021, the Portal has had 40,000 visits and over 11,000 file downloads. According to estimates using special software,[6] over 30% of the visitors came from abroad.

The Portal enables users to have access not only to the most recent update of the data they are interested in, but also to complete historical datasets, i.e. from earlier dates.[7]

In the near future, the Bank plans to further enrich the Open Data Portal with new datasets.

“Open Banking Technologies” conference

As part of its outward-looking activity, in March 2022 the Bank of Greece and the Open Technologies Alliance (GFOSS) jointly organised an online conference on “Open Banking Technologies: FinTech – Open Banking Protocols”, whose topics comprised the Open Data Portal. The speakers were important business executives and academics involved in the field of Open Data and innovation, as well as Bank of Greece officials.

Among the next steps, the Bank intends to organise a Datathon to gather and develop innovative ideas and solutions by liaising the Bank’s Open Data with other open data and systems.

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3 *Open Data Maturity Report 2021*, p. 5.

4 Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information, OJ L 172/56 https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32019L1024&from=EN.

5 For instance, https://covid19.gov.gr/covid19-live-analytics and https://covid19.gov.gr/covid-map.

6 SmarterStats and Google Analytics.

7 This is particularly important for data provided at short intervals, such as the Price Bulletins for Gold and Gold Coins that are issued daily, as users can consult any date to find valid prices for any legitimate use and rely on the validity of a certain price.

Box 16

VAT REVENUE LOSS: KEY INSIGHTS AND POLICY IMPLICATIONS

One of the major causes of systematic loss of tax revenue worldwide is tax evasion.[1] In Greece, the problem of tax evasion is substantial and chronic.[2] It is associated with low levels of tax compliance and tax administration efficiency. The problem is particularly acute in the field of VAT, although the widespread use of electronic payment instruments since 2015 has reduced it and has boosted tax revenues. However, it has not been able to eliminate it.[3] Specific features of the structure of the Greek economy, such as the very large number of small enterprises and self-employed, create a heavy administrative burden. In addition, shortcomings in the technological infrastructures of audit mechanisms provide more opportunities for tax evasion. Moreover, institutional factors –such as the large number and complexity of tax laws, which undergo frequent amendments and envisage multiple tax rates– cause administrative difficulties and provide taxpayers with incentives not to comply. Lastly, very high tax rates provide more incentives to shift to the shadow economy. The end result is a large loss of VAT revenue, described by the VAT gap.

This box seeks to highlight the importance of the problem of the VAT gap in Greece. It is of particular importance because, on the one hand, VAT accounts for a large share of total tax revenue and, on the other, the loss recorded is historically one of the largest among the EU-28 Member States. To this end, we present the extent of the problem using the indicator applied by the European Commission,[4] analyse its determinants and propose ways to tackle it.

Definition and measurement

The VAT gap measures the VAT revenue loss. It reflects the degree of tax compliance and tax administration efficiency. In other words, it incorporates all factors contributing to the loss of tax revenue, such as cross-border fraud, tax evasion, financial insolvency, bankruptcy or maladministration, as well as miscalculations, administrative errors and legal tax optimisation (legally optimising and reducing the tax burden for business and personal finances). Based on the European Commission's indicator, the VAT gap is defined as the difference between VAT collections and the amount theoretically due, i.e. VAT Total Tax Liability (VTTL).[5]

VAT is an important source of revenue for the EU economies.[6] It is an indirect consumption tax levied on the value added at each stage of production and applies to the majority of goods and services intended for consumption. As European VAT laws are complicated, including many amendments and exceptions and multiple rates, the assessment and collection of VAT is an extremely difficult process, whose effectiveness depends on the quality of tax accounting systems.

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1 See *The State of Tax Justice 2021*, Tax Justice Network, PSI, Global Alliance for Tax Justice, November; and Medina, L. and F. Schneider (2017), "Shadow economies around the world: New results for 158 countries over 1992-2015", Johannes Kepler University of Linz, Working Paper No. 1710, July, http://www.econ.jku.at/papers/2017/wp1710.pdf.

2 For the case of Greece, see diaNEOsis (2016), "Tax evasion in Greece. Causes, extent and proposals to combat it" (in Greek), Ernst & Young, https://www.dianeosis.org/wp-content/uploads/2016/06/tex_evasion_version_240616_2.pdf.

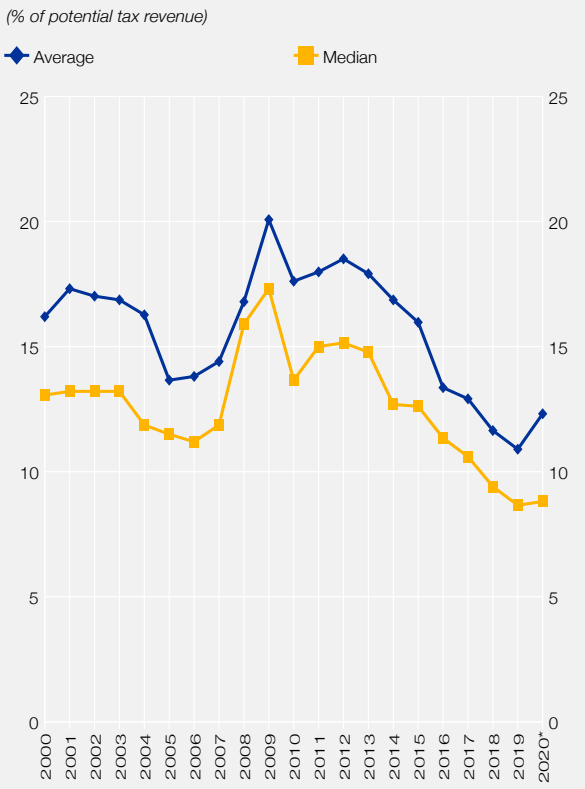
3 See Hondroyiannis, G. and D. Papaoikonomou (2017), "The effect of card payments on VAT revenue: New evidence from Greece", *Economic Letters*, 157, 17-20.

4 See European Commission (2021), *VAT Gap in the EU: Report 2021, DG Taxation and Customs Union*, September.

5 The VAT total tax liability (VTTL), or potential or theoretical revenue, is the total amount of estimated VAT payments on the basis of national accounts aggregates and the existing structure of rates and exemptions. It is composed of four separate components: Household Consumption Liability (the amount of VAT that is due on account of household and NPISH consumption); Unrecoverable VAT on Intermediate Consumption (the amount of VAT paid on inputs by industries that cannot claim a credit because their sales are exempt from VAT); Unrecoverable VAT on inputs to Gross Fixed Capital Formation (GFCF) (the amount of VAT paid on inputs to GFCF activities of industries that cannot claim a credit because their sales are exempt from VAT); and Unrecoverable VAT on Government Consumption (amount of VAT on inputs on government consumption that cannot be recovered because most government activities are exempt from VAT). . In other words, For details, see European Commission (2013), *Study to quantify and analyse the VAT Gap in the EU-27 Member States. Final Report*, Box 3.1, p. 27, and Appendix A, pp. 101-105, DGTAXUD/2012/DE/316, CASE and CPB, July.

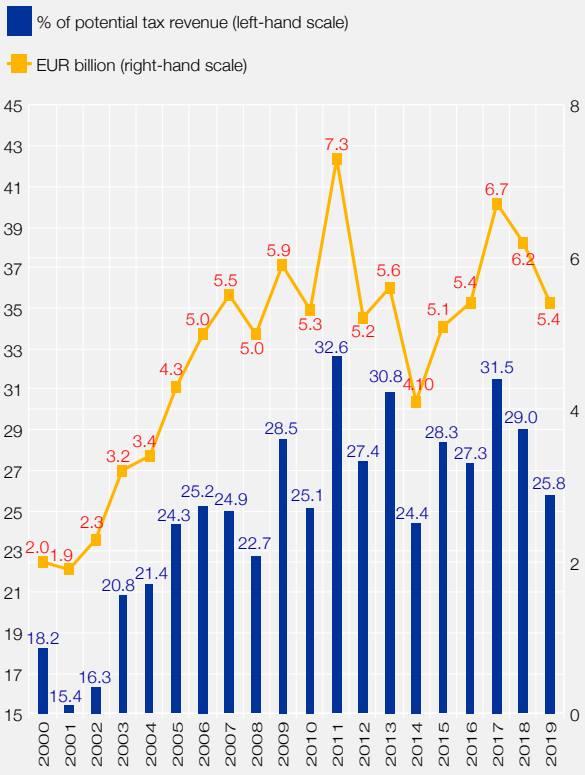
6 In 2019, VAT revenue accounted for 17% of total general government tax revenue in the EU-28 and 20% in Greece.

Chart A VAT gap in the EU



Source: Bank of Greece calculations based on European Commission data (VAT Gap in the EU: Report 2021).
Note: Up to and including 2014: EU26, 2015-2019: EU28.
* Indicative estimate for 18 EU countries only.

Chart B VAT gap in Greece



Source: European Commission.

At the EU level, the VAT gap has narrowed in recent years, although it remains high and shows upward trends for 2020 (see Chart A). In 2019, the average VAT gap in the EU-28 was 10.9% of potential revenues, i.e. for every €10 due under the current tax system, more than €1 was not collected.

In Greece, the VAT gap, though on a declining path in recent years, has been one of the largest in the EU-28 over time (see Chart B). In 2019, it was almost 2.5 times the EU-28 average (25.8% vs. 10.9%), i.e. for every €3 due, almost €1 was not collected.

An example of the magnitude of the problem is that, if the VAT gap converged with the EU-28 average, VAT revenues –at the existing rates and under the current system– would increase by €3.2 billion.

Determinants

In general, the VAT gap determinants are institutional and macroeconomic.[7] Institutional determinants comprise all factors that shape the taxpayer's compliance costs and determine the administrative tax collection costs, i.e. the quality of the tax administration, the complexity of laws and frequent changes thereto, transparency in tax audits, as well as the lack of tax compliance culture. Macroeconomic factors relate to the position of the economy in the economic cycle and its structure, which largely determine the size of the shadow economy.[8]

7 See Agha, A. and J. Haughton (1996), "Designing VAT systems: Some efficiency considerations", *Review of Economics and Statistics*, 78, 303-308.

8 For details on how the structure of the economy affects the size of the VAT gap, see Ueda, J. (2017), "The Evolution of Potential VAT Revenues and C-Efficiency in Advanced Economies", IMF, WP/17/158. For the case of Greece in particular, see Missiakoulis, E., S. Papadakis and D. Vassiliou (2021), "Greek tax reality and the VAT gap: Influential factors", *Journal of Accounting and Taxation*, 13, 28-44.

Proposals to reduce the VAT gap

As regards the institutional framework, the VAT gap can be reduced in three ways: (i) tax legislation and tax system simplification to reduce administrative and compliance costs; (ii) digitalisation of procedures and payments; and (iii) closer cooperation between the tax authorities of the EU Member States to detect fraud in cross-border transactions.

The process of filling out documents, calculating tax and refunds, as well as compliance during the tax audit are the two major interactions between taxpayers and the tax authority, which determine the degree of efficiency and transparency of the tax system. The latter is negatively affected by the complexity of the procedure, the long waiting period for tax refunds, the lack of transparency during the audit and the long delay in obtaining the audit outcome. Therefore, adopting an automated tax refund process, ensuring tax audit transparency and fast processing are key to improving compliance. In addition, reducing the variance of tax rates across geographical areas and categories of goods and services (other than necessities) would reduce both compliance costs and distortions in the consumption of specific goods and services and would foster healthy competition.[9]

The digital transformation of tax administration by using new technologies, such as artificial intelligence, big data and blockchain, would simplify and accelerate the tax return filing process and significantly reduce compliance costs.[10,11] In particular, the use of advanced tax software, real-time reporting systems and data analytics would enhance the capacities of the tax administration. A more functional tax system would reduce the time needed to meet tax liabilities, i.e. the hours needed to prepare and file tax returns and make tax payments, as well as the number of payments within one year, and would contribute to citizens' tax compliance. At the same time, it would enhance the effectiveness of audits while improving the skills of the tax administration's human resources. This includes the recently imposed obligation to maintain online tax records and invoices through the AADE MyData application. This digital service allows the tax administration to automatically check and cross-check invoices, as it enables daily, real-time VAT recording. In addition, it reduces taxpayers' compliance costs by relieving them of bureaucratic procedures, such as filing aggregated statements.

In addition, the widespread use of electronic means of payment in all areas of economic activity, coupled with the completion of the cash registers/tax administration interface, will broaden the tax base and help reduce the VAT gap.[12]

At the same time, enhanced administrative collaboration in the field of VAT between the tax authorities of the EU Member States will help identify businesses that commit fraud in cross-border transactions. Closer cooperation in collecting and exchanging payment data will contribute to addressing fraud in cross-border retail transactions and in the import of goods through e-commerce.[13]

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9 See European Parliament (2021), *VAT gap, reduced VAT rates and their impact on compliance costs for businesses and on consumers. European Implementation Assessment*, European Parliamentary Research Service, https://www.europarl.europa.eu/RegData/etudes/STUD/2021/694215/EPRS_STU(2021)694215_EN.pdf.

10 For instance, with the adoption of online document filing for tax purposes, the time required to fill out and file tax statements decreased from 193 to 143 hours on average between 2006-19 in developed high-income countries. There was a corresponding decrease in Greece: from 264 hours in 2006 to 193 hours in 2019. See PwC (2020), "Paying taxes 2020. The changing landscape of tax policy and administration across 190 economies", PwC and World Bank Group, https://www.pwc.com/gx/en/paying-taxes/pdf/pwc-paying-taxes-2020.pdf.

11 On the benefits of the digital State for public finances, see Bank of Greece (2021), *Monetary Policy – Interim Report 2021*, Box V.2, "The digital transformation of public administration: recent Greek experience and the outlook for NextGeneration EU", December.

12 See e.g. Alognon, A., A. Koumpias and J. Martínez-Vázquez (2020), "The Impact of Plastic Money Use on VAT Compliance: Evidence from EU Countries", International Center for Public Policy, Working paper 20-04, March, https://icepp.gsu.edu/files/2020/04/paper2004.pdf; and Hondroyiannis, G. and D. Papaoikonomou (2020), "The effect of card payments on VAT revenue in the euro area: evidence from a panel VECM", *Journal of Economic Studies*, 47, 1281-1306.

13 By means of various directives, the EU has taken important steps to enhance administrative cooperation to combat fraud. See European Commission (2020), "Action plan for fair and simple taxation supporting the recovery strategy", COM(2020) 312 final; and the recent European Commission initiative "Communication on the VAT Gap: Mind the VAT Gap", Staff working document, to be published in 2022.

Box 17

PROPOSALS FOR THE REFORM OF THE EU FISCAL RULES

The objective of fiscal rules is to introduce incentives and restrictions on discretionary fiscal policy in order to promote policies that ensure the sustainability of public finances. The main reasons for using fiscal rules are: (1) the increase in budget deficits and public debt recorded in most advanced economies in recent decades and (2) the tendency of economic policymakers to implement procyclical fiscal policies leading to instability and significant macroeconomic imbalances. Ideally, fiscal rules should be designed to promote in tandem fiscal discipline and macroeconomic stabilisation. Their design should also include key elements such as monitoring and compliance mechanisms, a framework of sanctions and appropriate procedures for correcting potential deviations in order to ensure their credibility and effectiveness.

The consultation on the reform of the EU fiscal rules is a process initiated before the outbreak of the pandemic. The pandemic crisis prompted a temporary suspension of the Stability and Growth Pact (SGP) rules and the activation of the General Escape Clause, leading to a sharp increase in public debt due to the expansionary fiscal policy and the increased borrowing required to finance emergency measures, coupled with a decline in economic activity. A prompt return to the strict implementation of the current European fiscal framework would require excessive fiscal consolidation, especially in countries with high debt levels, in order to avoid entering the Excessive Deficit Procedure. Therefore, following the lifting of the SGP General Escape Clause, it is necessary to adapt the current fiscal rules to the new economic conditions.

This Special Feature contributes to the ongoing debate regarding the reform of the EU fiscal framework, drawing on lessons learnt from past experience, the conclusions of relevant studies and the analysis of future economic challenges.[1] To this end, the key principles of the current SGP are presented (section 1) and then assessed (section 2), with particular focus on compliance with the existing fiscal rules (section 3). Follows a summary of the main public proposals for the reform of the SGP (section 4). In the longer term, there is an urgent need to strengthen public debt sustainability, and the outlook for Greece vis-à-vis other high-debt euro area countries is analysed in this respect (section 5). In addition, a similar comparison is made as regards the implications of applying the current debt rule in these countries (section 6). The combined results of this analysis lead to proposed guidelines for the reform of the European fiscal rules (section 7).

1 KEY PRINCIPLES OF THE CURRENT STABILITY AND GROWTH PACT (SGP)

The SGP was introduced at the same time as the single currency, with a view to ensuring sound public finances in the euro area. However, before the financial crisis it had limited success in preventing the emergence of severe fiscal imbalances in some Member States. During the euro area debt crisis, the SGP was reformed by introducing a stricter framework of common rules through the Six Pack (2011) and the Two Pack (2013), which brought significant changes to the fiscal framework and the way these rules were enforced.[2] These rules were further enhanced by the Fiscal Compact,[3] introduced in 2013. The current SGP includes five main restrictions and rules and a monitoring framework:

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1 For a similar analysis, see the Special Feature "European fiscal rules: achievements, weaknesses and proposal for their improvement", Bank of Greece, *Annual Report* 2019, March 2020.

2 For more details, see European Commission, EU Economic governance: monitoring, prevention, correction, and Legal basis of the Stability and Growth Pact.

3 Treaty on Stability, Coordination and Governance in the Economic and Monetary Union, TSCG. According to this Treaty, the medium-term budgetary objectives (MTOs) should be transposed into national law with a clear structural deficit limit of 0.5% of GDP (or 1% of GDP in exceptional circumstances). The MTOs are different for each country, depending on the level of debt and the estimated cost of population ageing. The Treaty also provides for automatic correction mechanisms in case the structural deficit threshold is breached. The MTOs may be revised when a major structural reform is undertaken or every 3 years, on the occasion of the publication of projections allowing for an update of the estimated population ageing costs. For Greece, the MTO is set at 0.25% of GDP.

1) Two medium-term targets: budget deficit of less than 3% of GDP and debt of less than 60% of GDP.

2) Two fiscal rules relating to the "Preventive Arm" of the SGP: (i) The first is the Structural Budget Balance Rule.[4] It concerns the convergence of the structural balance towards the Medium-Term Budgetary Objective (MTO), i.e. a relatively balanced budget in structural terms, giving Member States sufficient flexibility to use the available fiscal space without exceeding the deficit threshold of 3% of GDP. For convergence towards the MTO, the structural budget balance should improve by 0.5% of GDP per year or by the remaining distance from the MTO if this is less than 0.5% of GDP. If a country's fiscal position is above its MTO, then the structural balance cannot fall short of the MTO. (ii) The second is the Debt Rule, which was introduced to ensure convergence of debt-to-GDP ratios towards the medium-term benchmark. According to the debt rule, the debt-to-GDP ratio should decrease by 1/20 of the distance between the current debt/GDP level and the benchmark value per year, on average over a 3-year period.[5]

3) A ceiling on the increase in primary expenditure. The European expenditure rule provides that the annual growth rate of primary government expenditure must not exceed the medium-term growth rate of potential GDP in nominal terms (10-year average) minus the margin necessary for the adjustment of the structural budget balance (in line with the corresponding rule), unless the excess is combined with revenue measures. The current 'expenditure limit' is not a "rule" in the sense of other budgetary constraints, but is primarily designed to indicate to government authorities what is needed in order to meet the requirements based on the MTO.[6]

4) Fiscal policies are monitored using multiple indicators, which inevitably often lead to conflicting conclusions. Compliance is therefore assessed using a critical approach, weighing the strengths and weaknesses of the various indicators.

5) A complex regulatory framework allows for Member State flexibility (depending on the cyclical fluctuations of the economy), enabling them to negotiate the size of the required fiscal adjustment.

6) An escalating system of warnings and sanctions for non-compliance. This is the "Corrective Arm" of the SGP, which sets out two procedures: (i) the Significant Deviation Procedure (SDP) and (ii) the Excessive Deficit Procedure (EDP). These procedures are triggered when a country breaches the Preventive Arm or the fiscal targets of the SGP respectively and indicate concrete actions that countries need to take to correct their fiscal imbalances and avoid sanctions.

2 ASSESSMENT OF THE CURRENT SGP

Before the pandemic crisis, fiscal performance in the euro area as a whole showed that the reformed fiscal framework contributed to the sustainability of public finances, leading to lower deficits and improved debt dynamics. The achievement of the MTOs created fiscal buffers in most Member States. At the same time, it has been possible to identify fiscal risks early and coordinate fiscal policies through the European Semester process, in which Member States' Stability and National Reform Programmes are submitted and assessed, and the resulting recommendations are taken into account in the preparation of the Draft Budgetary Plans.

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4 In 2005, a cyclically-adjusted operational indicator, the structural budget balance, was introduced into the SGP, which removes from the fiscal balance the effects of both the economic cycle and one-off measures. It is therefore a measure of the intensity of the fiscal adjustment effort. Its level is a target in the SGP's preventive arm and indicates whether there is need for fiscal adjustment.

5 In practice, the activation of the Excessive Deficit Procedure was based more on the structural budget balance rule and convergence towards the MTO, rather than on the debt rule.

6 Although the European Commission is carrying out a comprehensive assessment based on both the structural budget balance rule and the expenditure rule to determine whether or not a country complies with the SGP preventive arm, significantly less attention has so far been paid to the expenditure rule than to the structural budget balance rule. The Vade Mecum on the SGP describes the expenditure rule as a "complement to structural fiscal adjustment", suggesting a kind of implicit hierarchy between the rules within the preventive arm.

The consultation on the reform of fiscal rules in the EU is a process initiated before the pandemic, since some weaknesses of the current fiscal framework were already evident, despite the progress in strengthening economic governance[7]. These weaknesses included:

(i) The procyclicality of fiscal policy, especially in countries with high public debt.[8] Procyclicality led to limited accumulation of fiscal buffers in good times on the one hand and, on the other hand, to self-defeating effects on public debt dynamics as the size of the recession caused by the required sharp fiscal adjustment cancelled part of the positive contribution of the budget balance, weighing on its dynamics.[9] At the same time, procyclical national fiscal policies have resulted in a number of countries marginally complying with the 3% deficit criterion, but not converging in structural terms towards the MTOs.[10]

(ii) The fact that the SGP has become a complex and confusing set of rules. Through the various revisions of the SGP, the number of monitoring rules and indicators, together with the implementation procedures and exceptions, increased significantly, making the fiscal framework complex and onerous. In addition, the national fiscal rules linked to the Fiscal Compact were found to be inconsistent.[11] Lastly, the use of non-observable variables, such as the output gap, has been accompanied by frequent revisions, complicating the comprehension and, thus, the political ownership of fiscal rules.[12]

(iii) The difficulty of practical implementation and compliance by Member States, undermining the credibility of the fiscal framework. Compliance with the fiscal framework has been largely heterogeneous across countries, periods and rules, including compliance with the MTOs, even in good times. According to the European Network of EU Independent Fiscal Institutions, the revision of some SGP rules was seen as optimistic, the main example being the debt rule. While the SGP's debt rule was initially designed as a counterbalance to the observed fiscal policy procyclicality in the euro area, ultimately it led to limited compliance by Member States with high debt, which resorted to the available flexibility as a way to avoid an EDP.[13]

3 COMPLIANCE WITH THE CURRENT FISCAL RULES[14]

- **Deficit rule:** The assessment of the fiscal performance of EU Member States in recent years has mainly focused on the deficit rule,[15] in order to avoid sanctions and country surveillance. According to the European Commission's indicators, compliance with this fiscal rule increased significantly in 2015-19 compared with the previous period 2010-14 on average in the euro area (EA-19), with all high-debt countries improving their performance due to fiscal adjustment (see Chart A). Among the high-debt countries, Greece recorded on av-

7 European Commission (2020), "European governance review", Staff Working Document; Pisani-Ferry, J. (2018), "Euro area reform: An Anatomy of the debate", VoxEU.org; Feld, L., C. Schmidt, I. Schnabel and V. Wieland (2018), "Refocusing the European fiscal framework", VoxEU.org; and Blanchard, O., A. Leandro and J. Zettelmeyer (2021), "Redesigning EU fiscal rules: from rules to standards", Peterson Institute for International Economics, Working Paper 21-1.

8 European Fiscal Board (2019), Assessment of EU fiscal rules with a focus on the six and two-pack legislation.

9 Attinasi, M.G. and L. Metelli (2016), "Is fiscal consolidation self-defeating? A panel-VAR analysis for the euro area countries", ECB Working Paper No. 1883.

10 Mainly countries with high public debt or countries subject to Excessive Deficit Procedure (EDP). See European Commission (2020), op. cit., footnote 7, and Caselli, F. and P. Wingender (2018), 'Bunching at 3 Percent: The Maastricht Fiscal Criterion and Government Deficits', IMF Working Paper No. 18/182.

11 Deroose, S., N. Carnot, L.R. Pench and G. Mourre (2018), "EU fiscal rules: Root causes of its complexity", VoxEU.org.

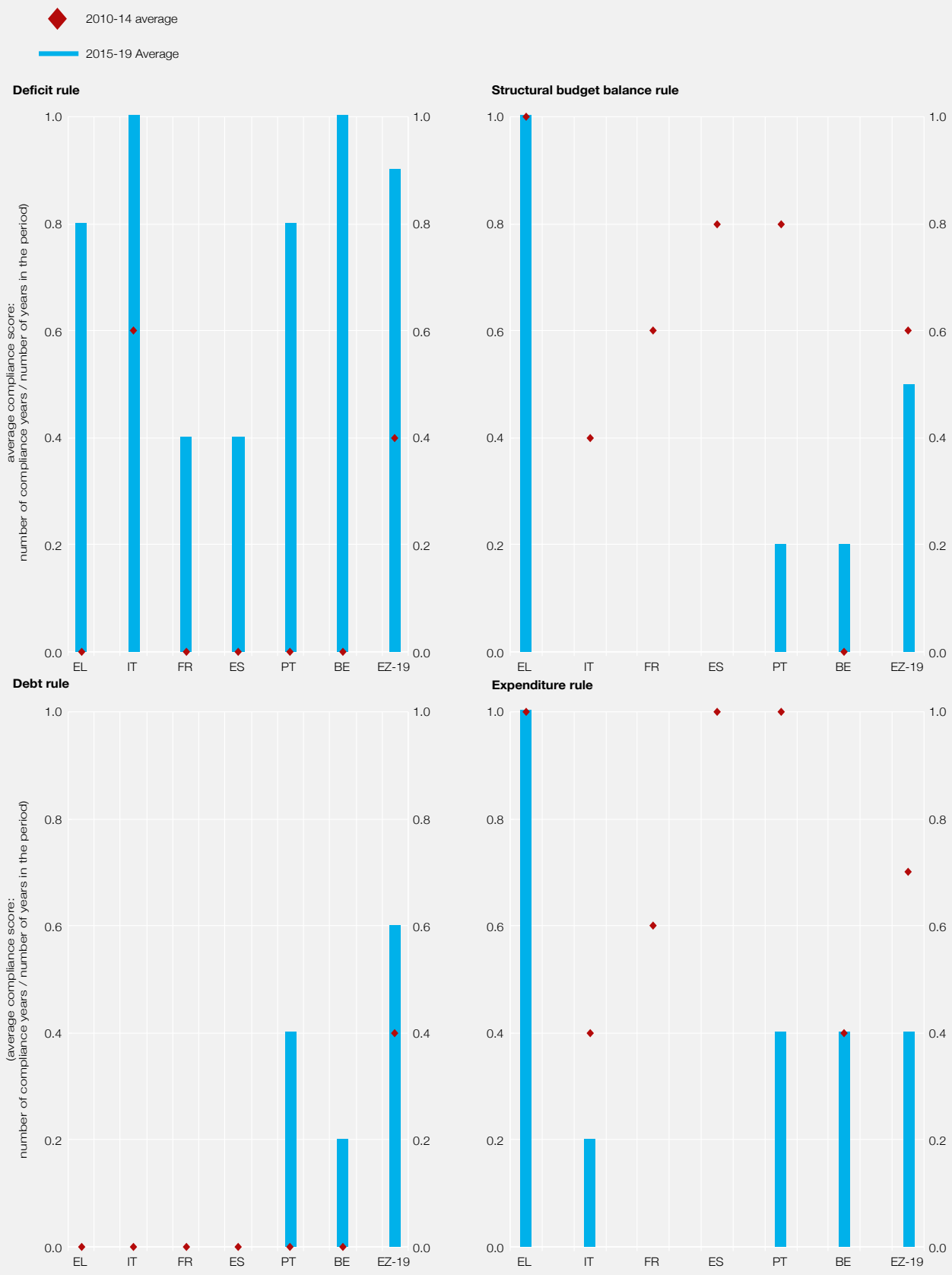
12 European Commission (2020), op. cit., footnote 7.

13 Larch, M. and S. Santacroce (2020), "Numerical compliance with EU fiscal rules: The compliance database of the Secretariat of the European Fiscal Board"; May, Darvas, Z., P. Martin and X. Ragot (2018), "European fiscal rules require a major overhaul", Policy Contribution, No. 18; and De Jong, J. and N.D. Gilbert (2018), "Fiscal Discipline in EMU? Testing the Effectiveness of the Excessive Deficit Procedure", De Nederlandsche Bank Working Paper No. 607.

14 The fiscal rules Compliance Scores (see Chart A) are compiled by the European Fiscal Board. These are dummy variables that take the value of 1 for each year if a country is compliant with each EU fiscal rule and 0 if it is not.

15 A country is deemed to comply with the deficit rule if: (i) the general government deficit is equal to or below 3% of GDP or (ii) the 3% of GDP threshold has been exceeded, but the deviation remains small (up to 0.5% of GDP) and is limited to a single year.

Chart A Compliance scores - Fiscal rules (EA-19, selected countries)



Source: EFB Compliance Tracker Datasett.

erage the largest annual target overachievement during the 2015-19 period (by around 2 p.p. of GDP), the second largest improvement at EU level compared to 2010-14.

- **Structural budget balance rule:** Fiscal adjustment in most countries mainly relied on one-off measures, as compliance with the structural budget balance rule in 2015-19 remained moderate and marginally deteriorated compared to 2010-14 on average in the EA-19. Among high-debt countries with increased debt sustainability risks, Greece is an exception due to the large structural fiscal adjustment in 2010-19, fully complying with this fiscal rule (see Chart A) and even recording the largest target overachievement (by 4 p.p. of GDP) among all EA-19 countries on average per year.

- **Debt rule:** Compliance with the deficit rule resulted in greater compliance with the debt rule at EA-19 level, but not in most countries with high debt/GDP levels and high sustainability risks. On average, high-debt countries have breached this fiscal rule, showing significant underperformance, which means that they have not managed to reduce the debt-to-GDP ratio at the required pace (see Chart A).[16] Over time, Greece has the largest negative deviations from this rule on average per year, despite some improvement in 2015-19.

- **Expenditure rule:** The compliance score for the expenditure rule shows that, on average, compliance deteriorated in 2015-19 (compared to fiscal performance in 2010-14) for most EA-19 countries. From 2011 onwards, the balance between the EA-19 compliant and non-compliant countries with regard to this fiscal rule started to deteriorate in favour of the latter, while in 2016-19 non-compliant countries outnumbered compliant countries. Greece is one of only two EU countries that fully complied with this rule throughout the period 2010-19, while the other high-debt euro area countries saw a sharp deterioration in their compliance. It is worth noting that Greece had the highest target overachievement among EA-19 countries as a result of the strong fiscal adjustment during this period.[17]

4 MAIN PROPOSALS FOR THE REFORM OF THE SGP

In order to be more effective and resilient, the fiscal governance framework in the post-pandemic period must not only correct pre-existing failings, but also adapt to the new macroeconomic and fiscal reality. It should therefore address a number of crucial issues for the euro area, such as high public debt levels, the need to finance investment for the green and digital transformation of the economy, and the prevention of economic divergence among Member States. With the publication of the European Commission's views in the first half of 2022, many authors and researchers propose concrete changes to the SGP, aiming to reduce the number of rules and revise the debt rule, with stronger emphasis on the growth rate of primary expenditure as the main operational tool to achieve the fiscal targets.

The European Fiscal Board (EFB) (2018, 2019, 2020)[18] recommends setting country-specific debt adjustment rates towards a long-term target (debt rule). The rate of convergence towards the long-term target[19] will depend on a set of fundamental variables,[20] promoting debt reduction in good times. The EFB's proposals are also based on a ceiling on government expenditure growth (expenditure rule) to strengthen fiscal policy countercyclicality, which is equal to the 3-year average growth rate of potential output.

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16 This is because (i) some countries did not carry out the required fiscal adjustment; (ii) the implementation of fiscal rules and, in some cases, large overachievement of the targets set in the SGP have led to procyclical policies. As a result, debt dynamics deteriorated, as the recessionary impact of excessively tight fiscal policy in downturns effectively cancelled part of the positive contribution of primary deficit reduction; and (iii) support to the financial sector in 2010-19 weighed heavily on public debt dynamics in some countries.

17 Specifically, in Greece the average annual rate of reduction in primary expenditure over the period 2010-14 was around 6% (6.2 p.p. higher than the "expenditure limit" set by the fiscal rule), whereas in 2015-19 this rate remained unchanged (3.9 p.p. higher than the "expenditure limit" set by the fiscal rule).

18 European Fiscal Board, *Annual Reports* 2018, 2019, 2020.

19 Although the EFB proposal is 60% of GDP as a benchmark for debt convergence, it is explicitly stated that, after the end of the pandemic, this threshold has become impracticable.

20 For instance, the level of government debt as a percentage of GDP or the difference between the servicing costs of public debt and the growth rate (r-g).

The European Stability Mechanism (ESM),[21] with a view to simplifying fiscal rules, proposes a two-pillar approach, the first one relating to the 3% of GDP deficit threshold and the second one setting a new debt benchmark of 100% of GDP. The proposal includes a debt rule whereby countries with public debt over 100% of GDP would have to converge towards this benchmark ratio by 1/20 of their deviation annually, and an operational expenditure rule to replace the MTO (in structural terms), setting the 3-year trend in nominal GDP growth as their growth limit. Exceptions to the debt rule are allowed in cases of major crises, recessions and significant investment gaps. The 3% of GDP budget deficit threshold remains binding and the EDP is maintained, while stressing the need for a stronger focus on public investment in the light of the green transition needs. This proposal differs from that of the EFB in that it sets a common rate of government debt reduction for all countries but suggests a new debt benchmark value.

5 THE NEED TO STRENGTHEN THE SUSTAINABILITY OF PUBLIC DEBT

In the post-pandemic period, the adoption of credible and effective fiscal policies aimed at public debt sustainability is more urgent than ever. One of the fundamental weaknesses of the European economy is the high level of public debt, which: (i) limits the room for flexibility to address future challenges, (ii) makes public finances vulnerable to interest rate increases and (iii) undermines the ECB's ability to respond to rising inflationary pressures. Lower public debt also contributes to reducing divergences between Member States, as debt ratio differentials lead to variations in the fiscal space available to each country to stabilise the economy after a shock and to finance growth-enhancing expenditure. Therefore, in such an uncertain economic environment, it is imperative to strengthen fiscal sustainability and increase the resilience of public finances to adverse shocks.

Greece's public debt, despite its high level, displays increased resilience over the medium term (until around 2030) under several adverse macroeconomic and fiscal scenarios, much higher than in other high-debt euro area countries. According to Eurosystem analyses, the Greek public debt is stabilising and is expected to reach pre-crisis levels earlier than in other high-debt countries, recording the largest drop in the debt-to-GDP ratio by 2030, both in the baseline and in various alternative scenarios. The strong resilience of Greek public debt dynamics vis-à-vis other countries is attributed to the following factors:

(i) The specific characteristics of the Greek public debt,[22] which ensure relatively low interest rate and refinancing risks over the next ten years.

(ii) Greece's fiscal position, as a result of structural fiscal surpluses. This means that, after the pandemic-related emergency support measures are lifted and in the absence of new permanent expansionary fiscal measures, Greece will return to structural primary surpluses, which will reinforce downward public debt dynamics without a need for further fiscal adjustment measures. This is the outcome of the structural fiscal adjustment that has taken place in previous years, as a result of which Greece has outperformed other high-debt countries.

(iii) The positive contribution of the snowball effect, i.e. the difference between the implicit borrowing rate and the nominal GDP growth rate. The snowball effect is a key driver of the rate of change in the debt-to-GDP ratio and reflects, *inter alia*, the impact of the macroeconomic environment on debt dynamics. Compared with other countries, the contribution of this effect to debt reduction is expected to be more than double in

21 See Francová, O, E. Hitaj, J. Goossen, R. Kraemer, A. Lenarčič and G. Palaiodimos (2021), "EU fiscal rules: reform considerations", ESM Discussion Paper No. 17.

22 Specifically, according to the latest available data (PDMA February 2022), in December 2021: (a) 77% of public debt consisted of liabilities to the official sector (including ESM/EFSF loans and GLF loans under the first economic adjustment programme); (b) the share of fixed-rate liabilities amounted to 98.9% of central government debt; (c) the weighted average remaining maturity of the general government debt is 20.58 years; (d) the effect of the two previous indicators is that the weighted average time to the next re-fixing of general government debt is 19.76 years; (e) the estimated implicit interest rate of 1.4%, one of the lowest among euro area countries, will therefore remain essentially unchanged over the next 20 years.

the case of Greece, because of the disproportionally high debt level[23] and due to the anticipated large GDP gains from the utilisation of the Recovery and Resilience Facility (RRF) resources.[24]

However, improving the sustainability of public debt and reinforcing its downward trend should be a priority of fiscal policy in the coming years in order to prevent another debt crisis. Besides, the long maturity of EFSF and ESM loans (over 30 years) calls for a long-term perspective on Greek public debt sustainability, well beyond the medium-term 10-year horizon. It should also be taken into account that the stock of public debt is projected to slightly increase after 2032, once the interest deferral period on the EFSF loan has expired. The main reason for fiscal policy focusing on accelerating debt reduction is that the debt's resilience to future adverse shocks will be comparatively weaker, despite its projected lower level. More specifically:

(i) The current favourable characteristics of Greek debt are not of a permanent nature. In the coming years, official sector debt (which is not marketable and thus not exposed to market volatility, has long maturity and carries low interest rates) will be gradually replaced by marketable debt to the private sector, with relatively shorter maturities and higher interest rates. Thus, despite its expected significant de-escalation as a share of GDP, the factors that make Greek debt resilient to negative shocks will gradually weaken in 10 years, as an increasing part of the debt will be subject to market risk.

(ii) The focus should be on annual gross financing needs. In the case of Greece, where the bulk of the debt has not been accumulated on market terms, but rather through official sector low-interest loans with a very long repayment period, a grace period and deferral of interest payments for many years, focusing exclusively on the debt-to-GDP ratio would be misleading. As a result, the sustainability of public finances is also assessed on the basis of the annual gross financing needs criterion for the period up to 2060. In particular, a cap of 15% of GDP in the medium term and 20% of GDP in the long term were introduced.[25] Despite the expected steady de-escalation of the debt-to-GDP ratio in the coming years, gross financing needs are estimated to remain significantly higher in the medium term vis-à-vis pre-pandemic levels, due to the additional borrowing that was required to finance the fiscal deficits during the health crisis.

(iii) The significant debt-reducing contribution of the snowball effect is expected to decrease over time. The key factors underlying this development will be both the changing macroeconomic environment, with more moderate growth and higher borrowing rates expected in the long term, and the mechanical effect of gradually decreasing debt levels. Accordingly, in the long run, fiscal policy will face growing pressures to contribute more to debt reduction by achieving primary surpluses.

Therefore, in the context of the upcoming reform of the fiscal rules, regardless of the direction it may take, Greece should put particular emphasis on reducing public debt through sustainable budget surpluses in order to make it less vulnerable to future crises. The favourable economic environment in the post-pandemic period makes fiscal adjustment easier, while preserving its countercyclicality and strengthening fiscal credibility.

6 THE APPLICATION OF THE CURRENT DEBT RULE IN GREECE AND COMPARISON WITH OTHER HIGH-DEBT EURO AREA COUNTRIES[26]

According to the baseline scenario of the Bank of Greece's public debt sustainability analysis, which assumes a primary surplus of 2.2% of GDP on average over the period 2024-60 according to the Eurogroup decisions of

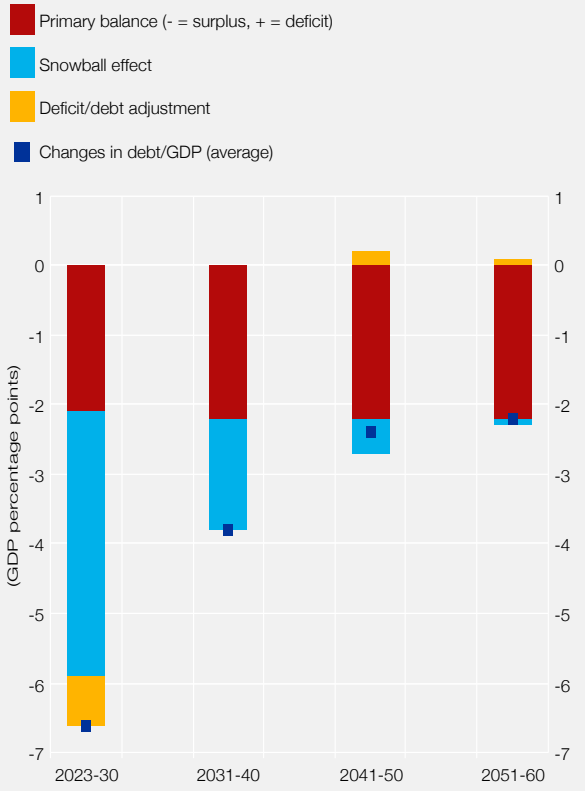
23 The size of government debt algebraically amplifies the impact of the difference between the implicit nominal interest rate and the nominal GDP growth rate.

24 The output gap in the economy, i.e. the difference between actual and potential output, is estimated to be positive over the 10-year projection period.

25 The criteria for annual gross financing needs were also confirmed in the Eurogroup communication of 22 June 2018 on Greece.

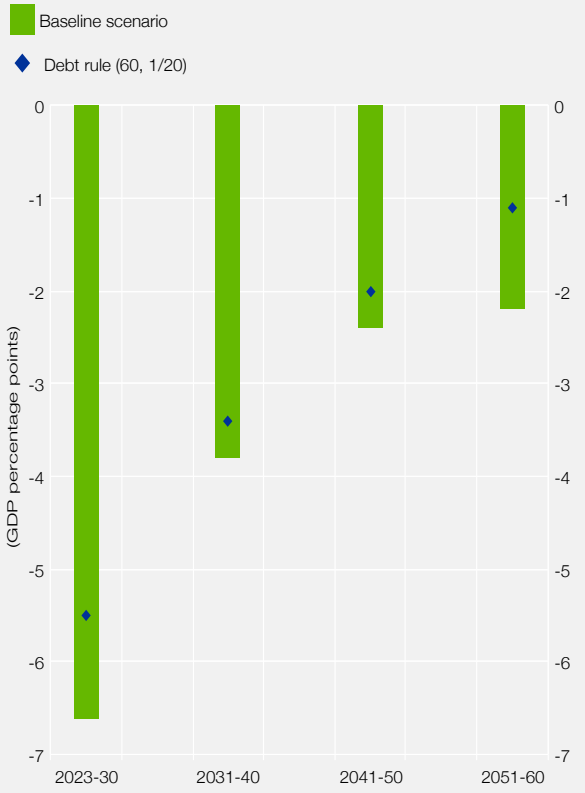
26 The following analysis relies on sovereign debt sustainability analysis models, which are partial equilibrium models and tend to underestimate the interaction between macroeconomic and fiscal variables. However, these models are a key tool for designing fiscal strategies and are widely used by public, private and credit rating agencies to identify and assess macroeconomic and fiscal risks.

Chart B Drivers of annual rate of change in debt/GDP (2023-60 average) (Greece) – Baseline scenario



Source: Bank of Greece estimates.

Chart C Annual rate of change in debt/GDP (2023-60 average) - Baseline scenario and debt rule (Greece)



Source: Bank of Greece estimates.

June 2018,[27] the average annual rate of public debt reduction is around 6.6 p.p. of GDP in 2023-30 (see Chart B). When comparing the respective variables for other high-debt euro area countries,[28] we observe that for 2023-30 the average annual rate of public debt reduction in Greece is much higher than that of the other countries, with a much larger positive contribution from both the broader macroeconomic environment and budgetary surpluses. According to the Bank of Greece's long-term projections, the rate of reduction in the Greek debt ratio gradually decelerates over the coming decades. However, the share of the fiscal balance in debt downward dynamics gradually increases, as the contribution of the snowball effect is fading. This means that, from 2030 onwards, although debt will decrease as a percentage of GDP, its downward dynamics will increasingly rely on the build-up of fiscal surpluses.

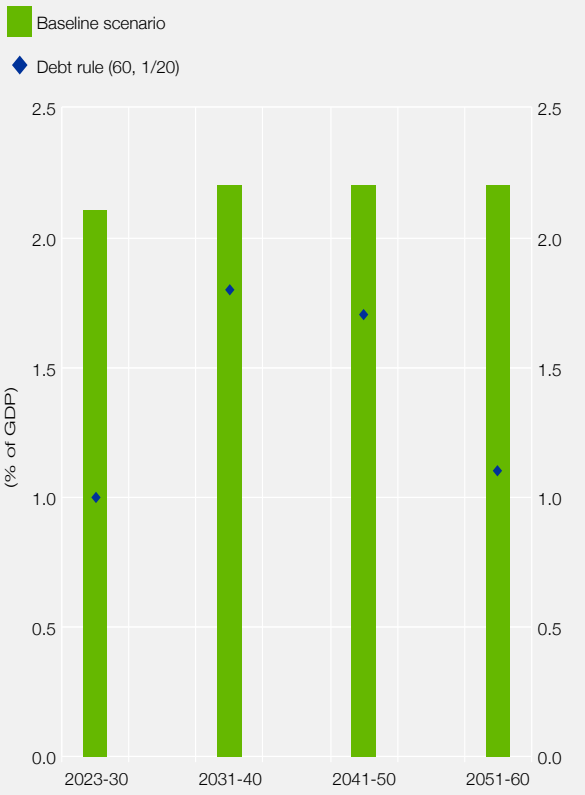
The implementation of the current debt rule (60, 1/20 hereafter)[29] in high-debt euro area countries implies a strengthening of downward debt dynamics, increasing the requirements for fiscal primary surpluses for all countries except

27 The analysis takes into account the updated macroeconomic and fiscal assumptions of the Bank of Greece. In particular, the baseline scenario incorporates the impact of the pandemic on fiscal aggregates and economic activity. The general government primary balance is assumed to turn to surplus in 2023 and come to 2.2% of GDP on average in 2024-60 (assuming broad compliance with the SGP's structural budget balance rule). The real GDP growth rate converges to 1.7% over the long term, incorporating the positive impact of the utilisation of NGEU funds on the potential growth rate of the Greek economy. The refinancing rate is 2.8% on average in 2023-60 and the weighted average maturity of new issues is around 7 years.

28 Comparison is made with Belgium, Spain, Italy, France and Portugal.

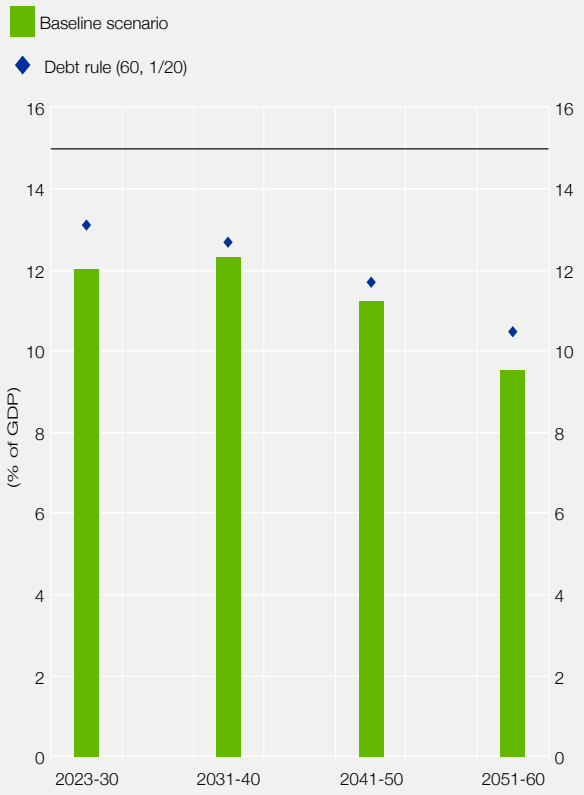
29 For the implementation of the debt rule, the following assumptions are made: The annual rate of reduction in the debt-to-GDP ratio is 1/20 of the distance between the ratio of the previous period and the 60% benchmark level and is revised every three years. By maintaining the baseline assumptions on the snowball effect, we use the debt accumulation accounting equation to calculate the primary surplus requirements to comply with this rule.

Chart D Primary surplus (annual basis) (2023-60 average)- Baseline scenario and debt rule (Greece)



Source: Bank of Greece estimates.

Chart E Gross financing needs (2023-60 average) - Baseline scenario and debt rule (Greece)



Source: Bank of Greece estimates.

Greece. According to the baseline assumptions, Greece will comply with the current debt rule until 2060. The required primary surpluses come to around 2% of GDP on average annually[30] (see Charts C, D and E), while gross financing needs remain manageable, below the 15% of GDP benchmark. On the other hand, the application of the current debt rule is likely to lead to significant fiscal adjustment needs for countries such as Spain, Italy, France and Belgium, as the primary balance requirement compared to the baseline scenario is significantly higher.

In conclusion, according to the above analysis, Greece appears to comply with the current debt rule foreseen in the SGP over the medium term. In the long term, however, it could benefit from any flexibility, observing under all circumstances the principle of countercyclicality. Any easing of fiscal targets over the medium term will worsen its debt dynamics, increasing future sustainability risks, gross financing needs and market refinancing risk. By contrast, in the medium term, efforts should be made to strengthen the country's fiscal credibility by reducing the distance from other euro area countries as quickly as possible. The favourable macroeconomic environment of the next decade would accommodate a further strengthening of fiscal consolidation, provided that the principle of countercyclicality is not breached. On the contrary, over a long-term horizon, when fiscal performance will play a more prominent role in debt-reducing dynamics, Greece could benefit from a possible flexibility of the debt rule to avoid a procyclical fiscal policy.

7 PROPOSED GUIDELINES FOR THE REFORM OF THE EUROPEAN FISCAL RULES

The fiscal footprint of the pandemic crisis and the threat of increased divergence among euro area economies warrant a reform of the European fiscal rules, with debt sustainability as a priority. The new fiscal framework should aim at increasing the capacity of fiscal policies to stabilise the economic cycle, thereby contributing to monetary

30 At the level foreseen in the Eurogroup decisions of June 2018.

policy normalisation. Therefore, the new rules should take into account the new macroeconomic environment and the uncertainties that accompany it, in order to achieve a more effective coordination of national fiscal policies.

The fiscal framework could be revised towards:

(i) Strengthening the countercyclicality of fiscal policy.[31] Retrenchment in good times and expansion in downturns are particularly important for both macroeconomic stabilisation and fiscal sustainability.

(ii) Setting a debt anchor as a medium-term fiscal objective, combined with a single operational expenditure rule: At the current conjuncture, as shown by the above analysis, ensuring public debt sustainability becomes a key medium- to long-term fiscal policy objective. The operational rule to achieve this objective should be to control the rate of change in government primary expenditure, since it has been regarded as a rule of fiscal discipline that enhances the countercyclicality of fiscal policy and promotes an effective mix of adjustment measures when necessary.[32] However, an expenditure rule alone is not capable of preventing deficits and increases in public debt originating on the revenue side. This is why it should apply alongside other rules (e.g. minimum revenue thresholds) to ensure fiscal discipline.

(iii) Maintaining current benchmark levels,[33] with flexibility in the rate of adjustment where appropriate: Although they seem outdated in the current economic context, current benchmark levels are enshrined in European treaties, which are difficult to amend and require broader consensus among Member States and lengthy procedures. The pace of debt reduction is easier to modify, so as to ensure a sustainable downward path through a realistic and credible fiscal adjustment, which would take into account the broader macroeconomic environment and fiscal position of each country, while maintaining the principle of countercyclicality. Changing the reduction rate of public debt would require unanimity on amendments to secondary EU legislation, through a set of agreements among countries.

Changes in the pace of adjustment to the current debt rule could be limited, as its application already assumes a differentiated fiscal path for each country, depending on the different economic conditions and fiscal position of each Member State (heterogeneity across countries).[34] Furthermore, differentiated rules and various exceptions

31 Larch, M., E. Orseau and W. van der Wielen (2021), "Do EU fiscal rules support or hinder counter-cyclical fiscal policy?", Journal of International Money and Finance, 112; Debrun, X., L. Moulin, A. Turrini, J. Ayuso-i-Casals and M. Kumar (2008), "Tied to the mast? The role of national fiscal rules in the European Union", Economic Policy, 23, 298-362; and Thygesen, N., R. Beetsma, M. Bordignon, X. Debrun, M. Szczurek, M. Larch, M. Busse, M. Gabrijelcic, L. Jankovics and J. Malzubris (2021), "The EU fiscal framework: A flanking reform is more preferable than quick fixes", VoxEU.org.

32 European Fiscal Board (2018), Annual Report, και European Fiscal Board (2019), Assessment of European fiscal rules with a focus on the six and two-pack legislation. The expenditure rule has also been favoured by other economists in the public debate on the reform of the SGP: Barnes, S. and E. Casey (2019), "Euro area budget rules on spending must avoid the pro-cyclicality trap", VoxEU.org; Bénassy-Quéré, A., M. Brunnermeier, H. Enderlein, E. Farhi, M. Fratzscher, C. Fuest, P. Gourinchas, P. Martin, J. Pisani-Ferry, H. Rey, I. Schnabel, N. Véron, B. Weder di Mauro and J. Zettelmeyer (2018), "How to reconcile risk sharing and market discipline in the euro area", VoxEU.org; and Darvas, Z., P. Martin and X. Ragot (2018), "The economic case for an expenditure rule in Europe", VoxEU.org.

33 Deficit: 3% of GDP, debt: 60% of GDP. Although there are many studies suggesting that there is no single "public debt limit" for all countries beyond which economic growth is slowing, most agree that high debt levels are associated with low growth and increased volatility. For more details, see Caner, M., T. Grennes and F. Koehler-Geib (2010), "Finding the Tipping Point – When Sovereign Debt turns Bad", World Bank, Policy Research Working Paper 5391; and Pescatori, A., D. Sandri and J. Simon (2014), 'Debt and Growth: Is There a Magic Threshold?", IMF Working Paper No. 14/34.

34 The smaller the snowball effect, the larger the primary surplus needed to achieve the same debt reduction and thus the need for fiscal adjustment (depending on the fiscal position of each country). Therefore, the primary surplus requirement needed to comply with the current rule in high-debt countries may be lower than in countries with relatively lower debt levels if the contribution of the snowball effect in the former is significantly higher than in the latter. Therefore, countries with a high debt level do not necessarily require a high primary surplus to comply with this rule. Also, the fiscal adjustment needs of countries with a structural fiscal position in surplus are smaller than those with structural primary deficits. Lastly, when the current debt rule was introduced, it did not aim at the convergence of Member States' debt-to-GDP ratios to 60% of GDP in 20 years (since the adjustment rate is revised every 3 years, depending on the debt level and its distance from the benchmark), but mainly at promoting fiscal adjustment in high-debt countries, ensuring a permanent debt-reducing path and asymptomatic convergence to the benchmark.

do not help simplify and enhance the credibility of the fiscal framework. Therefore, flexibility should depend on whether the fiscal adjustment required to comply with the debt rule is procyclical.

(iv) Simplification: The structure of the new framework should be simple and transparent. To this end, the new rules should be less dependent on non-observable variables that complicate their comprehension and effective monitoring. The proposed operational expenditure rule relies on the rate of change in potential output, which is less subject to measurement problems.

(v) An effective and reliable mechanism for surveilling the implementation of the new framework: Governments' compliance with the new rules is essential for their sustainable implementation and credibility. Improving the institutional set-up for surveilling compliance with fiscal rules is all the more necessary if more flexibility is granted to take into account country-specific circumstances. It is therefore proposed to strengthen national independent fiscal institutions (e.g. fiscal councils). Alongside the European institutions, national fiscal councils could contribute to better compliance with the rules and to more effective policy surveillance and evaluation, strengthening fiscal credibility and ownership of the new fiscal framework.

(vi) Safeguarding public investment: Given the pressing needs for green and digital transformation of the economies in the coming years, the practice of cutting investment spending as a means of achieving fiscal targets should come to an end.[35] The priority given to public debt reduction as a fiscal policy objective does not allow for investment expenditure financed by new borrowing to be excluded from the new fiscal rules and, in particular, from the debt rule. Targeted investment expenditure could be financed through a system of transfers, which would be financed through the issuance of common European debt by a permanent European mechanism (see below). In any case, excluding various expenditure categories –the classification of which is complex in any event– from the fiscal rules would hamper the simplification and credibility of the fiscal framework.

(vii) The new NGEU instrument should become permanent so as to function as central fiscal capacity to increase public investment. By issuing common European debt, the NGEU is instrumental to creating fiscal space and enhancing convergence among European economies, as the high-debt countries benefit more from the available funds. NGEU financial support will help reduce the investment gap and support the growth of European economies in the coming years. Combined with a low interest-rate environment in the medium term, NGEU resources will help countries improve their debt dynamics by making the required fiscal adjustment easier.

Therefore, the objective of boosting (green, digital) public investment could be achieved by making the NGEU a permanent central mechanism for fiscal transfers beyond 2026. Although it is still developing, its operational design is a model for the future of economic governance of the euro area by combining fiscal transfers with fiscal responsibility at a transnational level.[36]

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35 The practice of cutting public investment in the past, with negative effects on the growth rate of the economy, is not a weakness of the current fiscal rules, but a common policy option for governments that refused to promote structural fiscal measures to achieve the targets.

36 As the NGEU is centrally organised, there are fewer incentives to classify all investments as "green" or "digital" in order to be exempt from fiscal rules

Box 18

CONTRIBUTION OF FINANCIAL INSTRUMENTS TO SUPPORTING THE EXTERNAL FINANCING OF DOMESTIC BUSINESSES AND PROFESSIONALS

Financial instruments help channel resources from the European Structural Funds to the real economy, with a view to the implementation of sustainable projects supporting economic, social and regional cohesion. The need to address the economic impact of the pandemic led in 2020 to simplifications in the operational

framework governing the deployment of financial tools, as well as to a significant reinforcement of the relevant resources.[1]

Advantages and types of financial instruments

Compared to grants, financial instruments contribute to stimulating private investment with significantly less government support due to the recyclability and leverage of public funds. They are repayable in nature, thus providing beneficiaries with incentives for greater financial discipline and better performance, while the amounts repaid are re-allocated to national authorities to be reinvested in other projects. Lastly, financial instruments are recognised as a cost-effective policy mechanism, due to low management fees and costs.[2]

Financial instruments include, among other things: (a) debt schemes, such as co-financing or refinancing programmes, where part (or even the whole) of the loan is financed by public funds on favourable pricing terms; and (b) guarantee schemes, under which public funds are committed to guarantee bank loans or credit lines.

Contribution of financial instruments to the liquidity of domestic businesses in 2021

In Greece, the liquidity of domestic companies was supported in 2021, as in the previous year, mainly through debt and guarantee instruments. These instruments were created by utilising public national and European resources and were deployed with the intermediation of the domestic banking system. In more detail, in 2021, non-financial corporations and professionals received new loans amounting to €2.9 billion through programmes managed by the Hellenic Development Bank (HDB), the European Investment Bank (EIB) and the European Investment Fund (EIF) (see Chart A). Compared with 2020, 2021 saw a significant decrease in disbursements of bank loans related to financial instruments, which is attributable to the exhaustion of available resources owing to the high degree of absorption. Moreover, in 2020, the resources offered were much larger, due to emergency support measures in the early stages of the pandemic.

The importance of financial instruments is illustrated by the fact that in 2021 around 1/4 of new euro-denominated bank loans to non-financial corporations and professionals were associated with HDB or EIB Group programmes (compared with around 2/5 in 2020, see Chart B). The share for micro, small and medium-sized enterprises (SMEs) was even higher. Indicatively, over the period under review, all HDB programmes supported 12% of bank loan disbursements to non-financial corporations and professionals (€1.5 billion out of a total of €12.4 billion[3]) and more than double that percentage (28%) of loan disbursements to SMEs and professionals (€1.14 billion out of a total of €3.9 billion).

The greater contribution of financial instruments to the liquidity of SMEs is primarily due to quotas related to the allocation of resources by enterprise size. Moreover, SMEs' demand for cheaper borrowing through financial instruments is expected to be comparatively higher, on the one hand due to their limited access to alternative sources of finance and on the other as a result of higher borrowing costs compared with large firms.[4]

Out of the bank loan disbursements associated with financial instruments, the largest share (81%) referred to guarantee programmes. In terms of volume, the most significant disbursements were related to the HDB's "COVID-19 Enterprise Guarantee Fund" and the European Investment Fund (EIF) "COSME" programme. Under guarantee programmes, the State assumes part of the credit risk which would otherwise 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 limited compared with typical lending without State guarantees.

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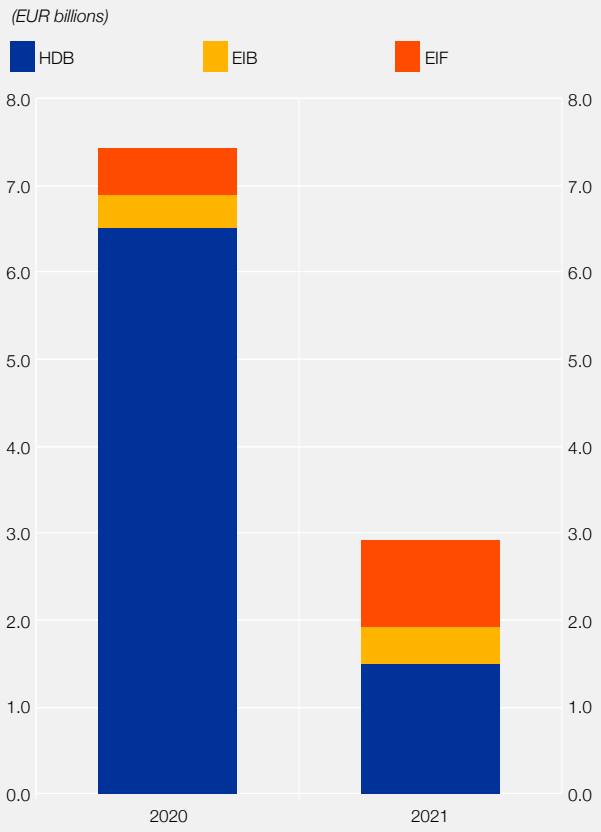
1 See European Commission, Coronavirus Response Investment Initiative (CRII), March 2020; and Coronavirus Response Investment Initiative Plus (CRII+), April 2020.

2 For further details on management fees and costs, see European Commission, *Annual Summary Report on the implementation of financial instruments*, December 2021, p. 7.

3 The amount includes financing covered by public funds, for which the credit risk is carried by the State ("fiduciary loans").

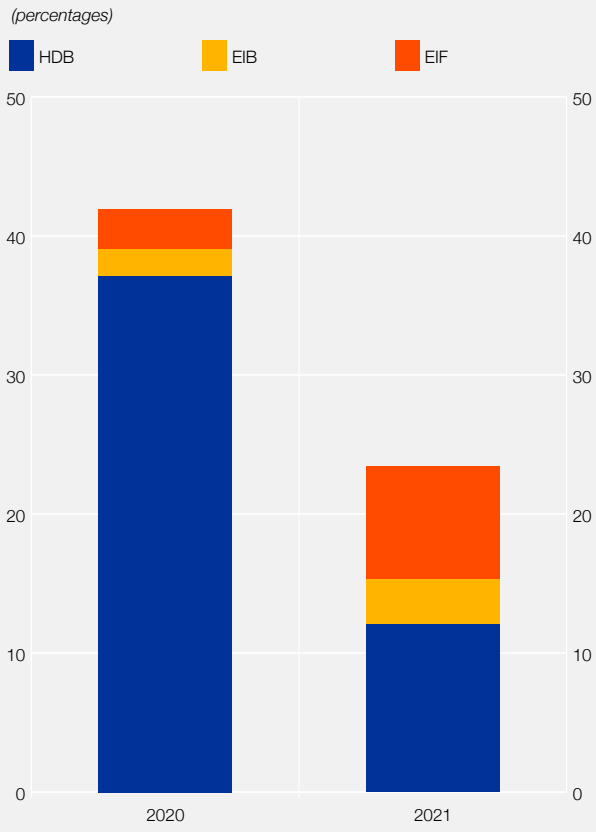
4 Indicatively, the difference in the weighted average cost between bank loans of over €1 million and those below €250,000 (which are presumed to be typically granted to larger and smaller enterprises, respectively) has been around 200 basis points in recent years.

Chart A Disbursements of bank loans to non-financial corporations and professionals associated with financial instruments



Sources: Hellenic Development Bank, Hellenic Bank Association and Bank of Greece calculations.
Note: HDB: Hellenic Development Bank; EIB: European Investment Bank; and EIF: European Investment Fund.

Chart B Share of financial instruments in new bank loans to non-financial corporations



Sources: Hellenic Development Bank, Hellenic Bank Association and Bank of Greece calculations.
Note: HDB: Hellenic Development Bank; EIB: European Investment Bank; and EIF: European Investment Fund.

As regards the co-financing and refinancing measures, most importantly the HDB's "Entrepreneurship Fund II" and the EIB's "Global Loans" programmes, respectively, a part or the total amount of the loan is financed by public funds on favourable terms, which translate into lower borrowing rates for businesses and, at times, an exemption from the levy under Law 128/1975.[5] It is worth noting that the amount of the loan granted through public funds is recorded neither under the BSI statistics nor under the MIR statistics; as a result, the reported bank credit flows may underestimate the total business loans granted and the reported bank lending rates may overestimate the borrowing costs of enterprises.

Repayable advances programme

In addition to financial instruments, the liquidity of domestic businesses and professionals has been greatly assisted by the repayable advances scheme. This was activated in 2020 as part of the emergency measures in response to the pandemic[6] and refers to the supply of particularly lowinterest loans directly from the State to businesses and professionals. In total, €2.8 billion were granted to beneficiaries in 2021 (compared with €5.5 billion in 2020). During the seven rounds of the programme, numerous favourable modifications were made, the most important being an increase to up to 75% in the grant rates for all rounds, depending on the decline in gross revenue of the applying enterprise. Moreover, an additional 15% discount on the repayable

5 The nominal interest rates on bank business loans are subject to a levy of 0.6% per annum (Law 128/1975).
6 See Article 3 of the Legislative Act dated 30.3.2020 "Measures to tackle the coronavirus COVID-19 pandemic and other emergency provisions".

part is provided for in the event of one-off repayment of the loan. The repayment scheme of the repayable amount was successively expanded to 96 interest-free instalments and the start of loan repayments was deferred by six months.[7]

7 The one-off payment date with a 15% discount was deferred to 31.3.2022 and the starting date of instalment payments was pushed forward from 31.12.2021 to 31.6.2022.

Box 19

SUPPORT TO CORPORATE FINANCING THROUGH RRF LENDING ON THE BASIS OF THE NATIONAL RECOVERY AND RESILIENCE PLAN

The NGEU and, in particular, the European Recovery and Resilience Facility (RRF) provide *inter alia* for loan support to Greece, which amounts to €12.7 billion for the period 2021-26. These funds should help deploy the development objectives outlined in the National Recovery and Resilience Plan "Greece 2.0".[1] Investments are private and aim at restructuring the Greek economy in five directions: (a) digital transformation; (b) green transition; (c) extroversion; (d) achieving economies of scale through collaborations, acquisitions and mergers; and (e) innovation-research and development.

The RRF loan support will be the basis for the provision of credit to enterprises by the Greek banking system and European financial institutions, i.e. the European Investment Bank and the European Bank for Reconstruction and Development, as well as for the participation of the Hellenic Development Bank of Investments[2] in equity financing.

Greece is also to utilise €500 million (out a €12.7 billion total of RRF loans), under the InvestEU programme, as guarantees (at the EU's higher credit rating), which should contribute to the implementation of private investment plans and, *inter alia*, SME equity financing.

I. Part of the RRF loan support will be allocated by the Greek government (a) to the domestic commercial banks, which should in turn channel it towards businesses in the form of loans. Another part will be directed by the Greek government (b) to European financial institutions, as set out below, which will also channel it to Greek non-financial corporations (NFCs) in the form of loans.

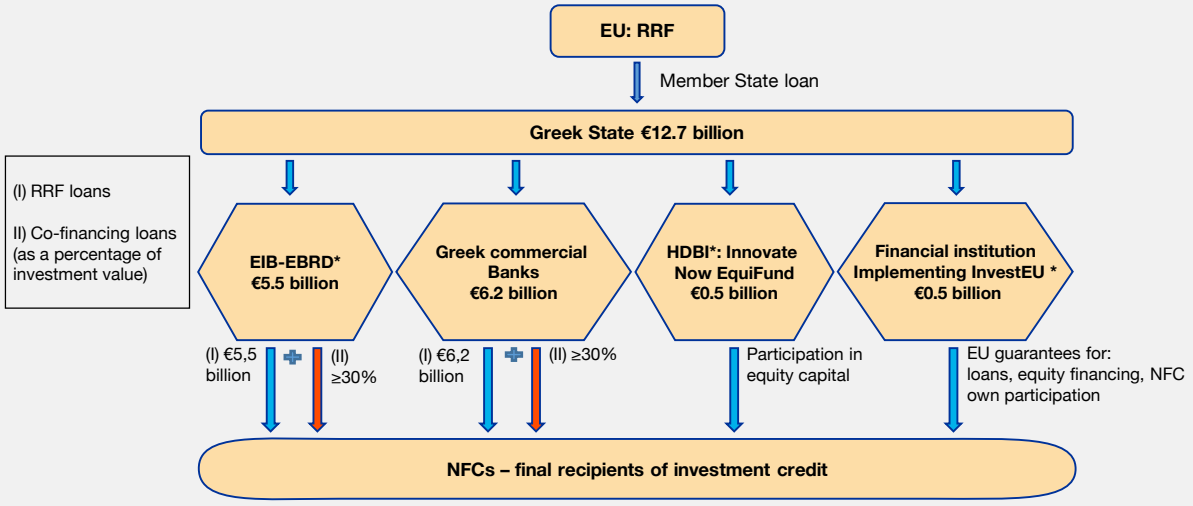
II. In addition to the credit funds to enterprises under point I above –which should not exceed half of an investment's value– co-financing is also required, in the form of loans (of at least 30% of total investment value) from: (a) domestic credit institutions or (b) European financial institutions, as well as (c) own contribution (at least 20%) of the investing enterprises. The interest rate on loans to enterprises that co-finance the investment plans (in addition to RRF credit under point I above) will be set by Greek credit institutions/European financial institutions on the basis of market rates and individual institutions' standard practices. On the other hand, the RRF loan support to be channelled by Greek banks under point I above represents low-cost credit for investing NFCs. Specifically, the interest rate on RRF loans to NFCs (via domestic banks) is set by ministerial decision at a minimum of 0.35%.

In more detail:

Ia. Out of the RRF loan support, €6.2 billion should be directed to Greek banks to be channelled to the real economy (see figure). RRF resources are managed by domestic banks –i.e. in terms of selection of the borrowing

1 The European Commission borrows on the markets at low cost (due to the EU's highest AAA rating), which it then passes on with low-interest loans to Member States. Greece's loans from the EU will have a maturity of 30 years and a grace period of 10 years.
2 A subsidiary of the Hellenic Development Bank.

RRF loan resources allocation



Sources: "Greece 2.0, National Recovery and Resilience Plan: detailed description of actions" (2.4.2021) and "Invitation to credit institutions for cooperation with a view to jointly providing loans to finance eligible investments" (30.9.2021).
* EIB = European Investment Bank; EBRD = European Bank for Reconstruction and Development; HDBI = Hellenic Development Bank for Investment; Financial institution implementing InvestEU = EIB Group and/or other institutions, possibly via commercial banks.

NFCs, monitoring of loan servicing, etc.– which shall not carry any responsibility if a company fails to pay. The credit risk of loans to NFCs, the cost of relevant losses and the resolution of loans shall be borne by the Greek State as the original borrower of the Community funds.

IIa. Domestic banks shall co-finance investment projects with additional own resources, in which case they will bear the credit risk. For example, if a bank's contribution to financing an investment project exceeds the required minimum of 30% of the investment value and reaches on average 40% of that value (share of RRF resources: 40%, own participation: 20%),[3] new credit generated by Greek banks up to 2026 could be close to €6.2 billion.[4] This means that, over the 2022-26 period, the average annual growth rate of credit from the domestic banking system to NFCs should increase by up to 2.0 percentage points.

Bank credit under Ia and IIa is expected to be granted to enterprises of all sizes,[5] some of which lack easy access to bank credit. Sharing credit risk between banks and the Greek State, as mentioned above, should help reduce the cost of debt from the perspective of NFCs.

Ib & IIb. The European Investment Bank shall re-distribute to Greek NFCs (in line with Ib above) an amount of €5 billion from loan support provided by the RRF and shall also add own loans (in line with IIb above) to co-finance high and medium-value investment (see figure). The European Bank for Reconstruction and Development is to draw from the RRF up to €500 million, channel it to Greek NFCs in line with Ib above and co-finance (in line with IIb above) –along with an almost equal amount of own credit combined with private funds– investment of over €1 billion.

III. The Hellenic Development Bank of Investmetns (see the figure) shall manage a newly-created venture capital fund, the "Innovate Now EquiFund", which shall receive €500 million of the loan support to be provided by the

3 It should be noted that the final total contribution of RRF loans (and of credit institution loans, respectively) to co-financing will depend on the percentage of individual participations in investment projects to be deployed, according to the type of investment under each of the five directions defined in the national plan (and may amount to e.g. 30%, 40%, 50% of the investment value).
4 That is, same as the RRF loan support resources directed to the banks, as mentioned previously.
5 For instance, the National Recovery and Resilience Plan prioritises, among other things, investment and reforms to promote adoption of digital technologies by SMEs (e.g. deployment of cybersecurity technologies, participation in e-commerce platforms, etc.).

RRF. The EquiFund aims to finance SMEs investment (to 70% of their value) through participation in investment fund management companies (Mezzanine Fund of Funds). The investing SME is required to participate by 30%.

Total lending to the NFCs from RRF resources (i.e. €11.7 billion[6] earmarked for lending through Greek credit institutions and European financial institutions) plus additional cofunding by Greek banks and the two European financial institutions should reach around €23 billion in 2022-26.

Lastly, it should be noted that the loan funds to the NFCs that can be mobilised by the Greek commercial banks on the back of the RRF loan support should be even higher than the amounts described under IIa above, provided that the banks finance investment projects that can be implemented irrespective of the RRF loan support. Those could be investment projects falling under (1) RRF grants (in particular, financing through public-private partnership grants); (2) the NSRF and Invest EU; and (3) state aid under the Development Law.

6 These funds will also cover fees associated with the relevant management costs of credit institutions.

Box 20

FINANCING CONDITIONS FOR SMES IN GREECE: INSIGHTS FROM THE SURVEY ON THE ACCESS TO FINANCE OF ENTERPRISES (SAFE)

The results from the two most recent rounds of the Survey on the Access to Finance of Enterprises (SAFE) show that, during the periods of October 2020-March 2021 (period "2020B") and April-September 2021 (period "2021A"), SMEs in Greece reported improved availability of bank loans, supported by the increasing willingness of banks to provide credit and, in particular during the period 2021A, by improvements in firms' solvency, as well as in the general economic outlook. Furthermore, for the third consecutive survey round, SMEs continued to see the public financial support measures as a factor improving the availability of external financing.

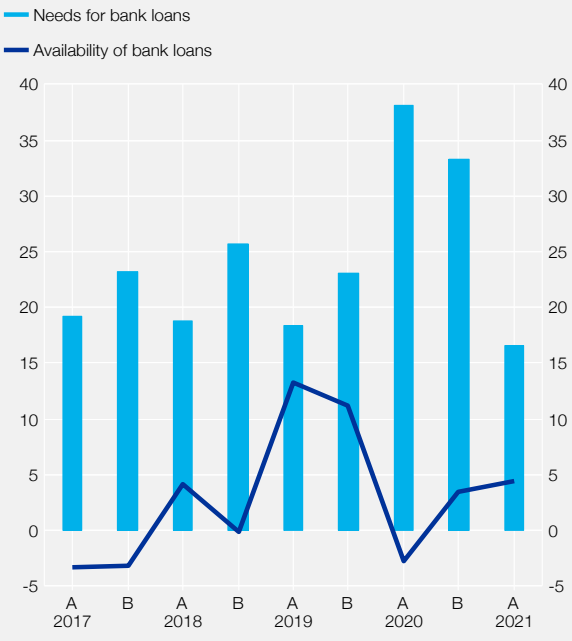
Results from the Survey on the Access to Finance of Enterprises (SAFE)

SMEs reported positive net percentages[1] regarding the availability of bank loans (2021A: 4% and 2020B: 3%, against 2020A: -3%) (see Chart A). With regard to their access to other sources of external financing, after a worsening over the period 2020B, in the latest survey round, SMEs signalled increases in the availability of leasing or hire-purchase[2] (2021A: 8%, against 2020B: -6% and 2020A: -16%) and trade credit (2021A: 8%, against 2020B: 6% and 2020A: -7%).

1 The results refer to net percentages of respondents, which are defined as the difference between the percentage of enterprises reporting that a given factor (e.g. availability of bank loans) has increased and the percentage of those reporting that it has 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 the immediate ownership of the asset.

Chart A Changes in bank loan availability for SMEs in Greece

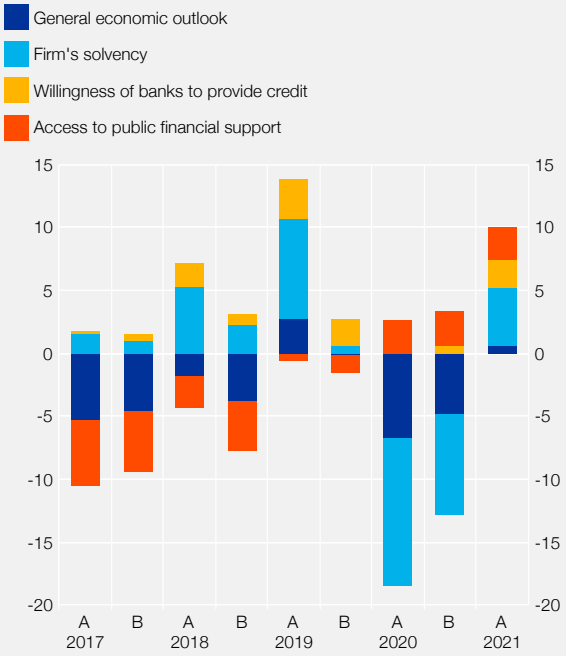
(over the respective six-month period,[1] net percentages of enterprises[2])



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted twice a year. The first round refers to the period from April to September (period A) and the second round covers the period from October to March (period B).
2 Net percentages are defined as the difference between the percentage of enterprises reporting that a given factor (e.g. availability of bank loans) has increased and the percentage of those reporting that it has declined.

Chart B Changes in factors with an impact on the availability of external financing for SMEs in Greece

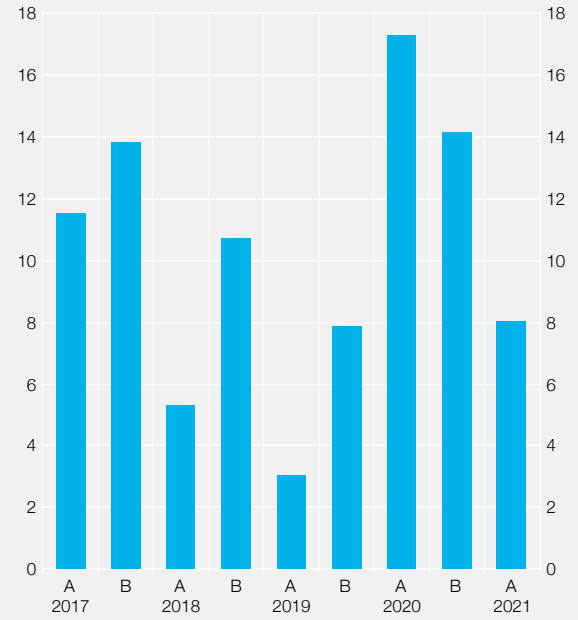
(over the respective six-month period,[1] weighted net percentages of enterprises[2])



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted twice a year. The first round refers to the period from April to September (period A) and the second round covers the period from October to March (period B).
2 Changes in the impact of each factor are described in terms of weighted net percentages of enterprises for reasons of comparability between the development of the overall impact of the factors and the change in the availability of external financing sources (e.g. availability of bank loans). The weighted net percentage of enterprises is calculated by dividing the net percentage of respondents by the number of the factors (six). "Firm's solvency" is a sum of the weighted net percentages of three factors: (a) firm's credit history; (b) firm's own capital; and (c) firm-specific outlook.

Chart C Changes in the composite external financing gap indicator for SMEs in Greece

(over the respective six-month period,[1] weighted net percentages of enterprises[2])



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted twice a year. The first round refers to the period from April to September (period A) and the second round covers the period from October to March (period B).
2 The composite external financing gap indicator is the weighted average of the financing gaps (needs minus availability) related to each of the five instruments: (a) bank loans with agreed maturity; (b) credit lines or bank overdrafts; (c) trade credit; (d) equity; and (e) debt securities.

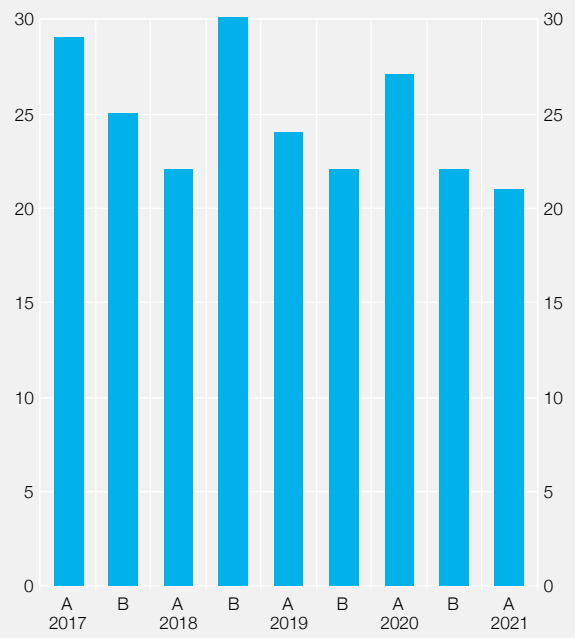
Regarding the factors with an impact on the availability of external financing, SMEs indicated banks' increasing willingness to provide credit (2021A: 14% and 2020B: 3%, against 2020A: 0%) (see Chart B). In the most recent survey round, the overall impact of the factors determining the solvency[3] of enterprises was positive, as opposed to the previous two reporting periods. Furthermore, in contrast with the findings of the previous three consecutive rounds of the survey, SMEs reported a positive impact from the general economic outlook[4] (2021A: 3%). Contrary to past findings, for the third consecutive round, SMEs mentioned that the public financial support measures[5] supported the availability of external financing (2021A: 15%, 2020B: 17% and 2020A: 15%), suggesting that the emergency fiscal stimulus measures have an ample scope and a wide outreach.

Compared with the findings of the first survey round after the outbreak of the COVID-19 pandemic, SMEs reported a relative decline in their needs (i.e. demand) for bank loans (2021A: 17% and 2020B: 33%, against 2020A: 38%) (see Chart A), as well as for credit lines or overdrafts (2021A: 22% and 2020B: 21%, against 2020A: 34%).

3 The percentage for "firm's solvency" is a sum of the net percentages of three factors: (a) firm's credit history; (b) firm's own capital; and (c) firm-specific outlook.
4 The enterprises reporting that macroeconomic developments favourably affected the availability of external finance during the current six-month period were more than those reporting a negative impact from macroeconomic conditions.
5 SMEs' access to the public financial support measures includes, among other things, public co-financing or guarantee schemes for bank loans.

Chart D Changes in the overall financing obstacles indicator for SMEs in Greece

(over the respective six-month period,[1] sum of net percentages of enterprises[2])



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
1 The survey is conducted twice a year. The first round refers to the period from April to September (period A) and the second round covers the period from October to March (period B).
2 The overall financing obstacles indicator is the sum of the percentages of enterprises reporting rejections of loan applications, loan applications for which only a limited amount was granted, and loan applications which resulted in an offer that was declined by the enterprise because the borrowing costs were too high, as well as the percentage of enterprises that did not apply for a loan for fear of rejection.

At the same time, SMEs reported increasing needs for trade credit (2021A: 23% and 2020B: 17%) and leasing or hire-purchase (2021A: 16% and 2020B: 10%).

Improvements in the availability of bank loans, coupled with decreases in the external financing needs of SMEs, contributed to a decline in the composite external financing gap indicator (2021A: 8% and 2020B: 14%, against 2020A: 17%) (see Chart C), while the overall financing obstacles indicator also declined (2021A: 21% and 2020B: 22%, against 2020A: 27%) (see Chart D).

During the reviewed period, a relative decline was observed in the percentage of SMEs applying for bank loans (2021A: 25% and 2020B: 31%, against 2020A: 49%), while the percentage of SMEs that were discouraged from applying for fear of being rejected by the bank remained low (2021A: 13% and 2020B: 13%, against 2020A: 12%) and the percentage of SMEs that did not apply because of sufficient internal funds rose (2021A: 34% and 2020B: 22%, against 2020A: 15%). With regard to the outcome of loan applications, the percentage of applications that received the whole amount requested or part of it increased considerably (2021A: 49% and 2020B: 48%, against 2020A: 36%), whereas in the latest survey round the rejection rate returned to high levels (2021A: 21% and 2020B: 12%, against 2020A: 20%).

In the most recent round of the survey, most SMEs in Greece perceived as their main concerns the lack of skilled labour (2021A: 18%), along with access to external finance (2021A: 16%).

When asked about terms and conditions for bank financing, SMEs continued to report a decrease in bank interest rates[6] (2021A: -8% and 2020B: -11%), while the percentage of SMEs reporting an increase in other financing costs, such as charges, fees and commissions, remained high (2021A: 39% and 2020B: 22%).

6 Respondents were asked whether the level of interest rates on bank loans, overdrafts and credit lines increased.

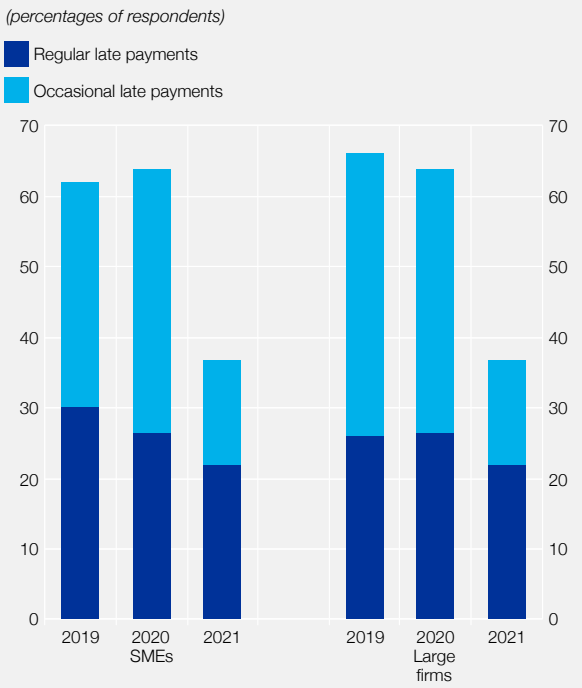
Box 21

LATE PAYMENTS TO NON-FINANCIAL CORPORATIONS IN GREECE: INSIGHTS FROM THE SURVEY ON THE ACCESS TO FINANCE OF ENTERPRISES (SAFE)

For the third year in a row, in the context of the Survey on the Access to Finance of Enterprises (SAFE), firms in Greece were asked special questions about the extent to which they perceived late payments[1] as a problem, and what impact these had had on their business activity. Special questions are included in the survey question-

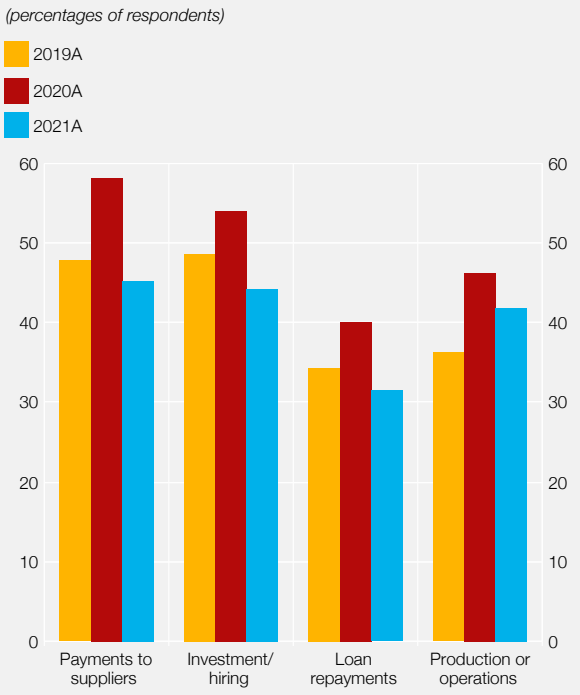
1 A late payment is defined as a payment not made within the contractual or statutory period of payment, unless the debtor is not responsible for the delay, and when the creditor has fulfilled all its legal and contractual obligations.

Chart A Late payments to non-financial corporations in Greece



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
Note: 2019A, 2020A and 2021A: period of April-September for the years 2019, 2020 and 2021, respectively.

Chart B Impact of late payments on SMEs in Greece



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
Note: 2019A, 2020A και 2021A: period of April-September for the years 2019, 2020 and 2021, respectively.

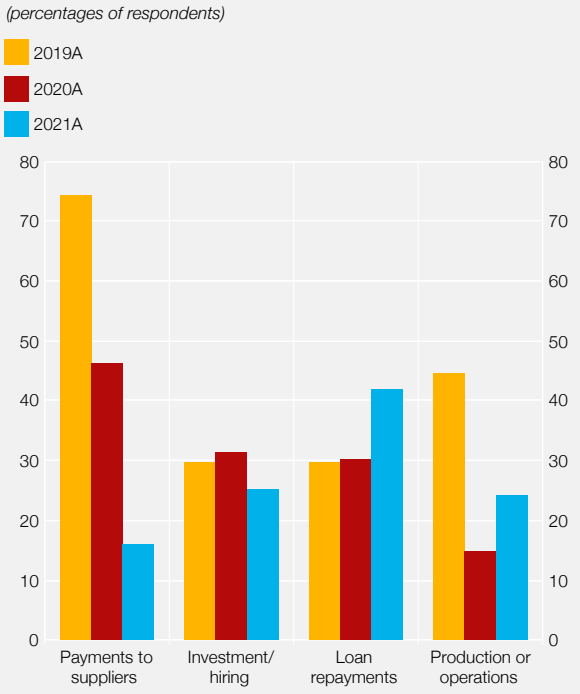
naire once a year and only refer to the period of April-September[2] (period "A"). The analysis of developments in late payments is of particular relevance, as these may affect crucial business decisions such as investing or new hiring and payments to suppliers. The payments that are expected by a firm but are late may increase its external financing needs and affect its loan repayment ability, as well as its production or other business operations.

In the latest survey round, firms reported a decline in the incidence of late payments, especially occasional ones, which reflects the effectiveness of the emergency fiscal support measures that contributed to enhancing liquidity and supporting economic recovery in Greece. More specifically, after a temporary worsening that was observed at the onset of the pandemic, in the latest survey round, SMEs indicated a considerable decrease in the problems resulting from occasional late payments (2021A: 15%, against 2020A: 37% and 2019A: 32%) (see Chart A). At the same time, they also reported a decline in regular late payments (2021A: 22%, against 2020A: 26% and 2019A: 30%). Over that same period (see Chart A), large[3] firms in Greece reported a considerably lower incidence of occasional late payments (2021A: 15%, against 2020A: 37% and 2019A: 40%), while the incidence of regular late payments also declined, albeit to a lesser extent (2021A: 22%, against 2020A: 26% and 2019A: 26%).

Furthermore, the findings of the survey suggest that the emergency fiscal policy response to the economic fallout from the pandemic was supportive of SMEs' liquidity condition. In particular, fewer SMEs mentioned that late payments adversely affected their payments to suppliers (2021A: 45%, against 2020A: 58% and 2019A: 48%), as well as their investment or hiring decisions (2021A: 44%, against 2020A: 54% and 2019A: 48%) (see Chart B). Similarly, a smaller percentage of SMEs reported that late payments worsened their loan servicing ability or

2 The Survey on the Access to Finance of Enterprises (SAFE) is conducted twice a year. The first round refers to the period from April to September (period A) and the second round covers the period from October to March (period B).
3 Large firms employ 250 or more persons, whereas small and medium-sized enterprises (SMEs) have fewer than 250 employees.

Chart C Impact of late payments on large firms in Greece



Source: EC/ECB, Survey on the access to finance of enterprises in the euro area (SAFE).
Note: 2019A, 2020A and 2021A: period of April-September for the years 2019, 2020 and 2021.

exacerbated their financing needs (2021A: 31%, against 2020A: 40% and 2019A: 34%). At the same time, fewer SMEs mentioned that late payments had a negative impact on their production or other business operations (2021A: 42%, against 2020A: 46% and 2019A: 36%).

Turning to large firms, a smaller percentage reported a negative impact of late payments on payments to suppliers (2021A: 16%, against 2020A: 46% and 2019A: 74%), as well as on their investment or recruitment decisions (2021A: 25%, against 2020A: 31% and 2019A: 30%) (see Chart C). Conversely, as suggested by the findings of the survey, possibly because of their broader business networks, larger firms were more impacted by the pandemic-related supply chain disruptions and, as a result, are experiencing difficulties in meeting pent-up demand for goods and services as the economy recovers. More specifically, some negative effects are more persistent for larger firms, given that the percentage of those reporting that late payments constrained their loan repayment ability or increased their financing needs rose in the latest survey round (2021A: 42%, against 2020A: 30% and 2019A: 30%). Besides, a higher number of large firms mentioned that late payments had a negative impact on their production or other business operations (2021A: 24%, against 2020A: 15% and 2019A: 45%).

Box 22

THE BANK LENDING SURVEY IN GREECE[1]

The latest rounds of the Bank Lending Survey (BLS) in Greece provide evidence of a considerable increase in demand across all loan categories in 2021, which is consistent with the concurrent recovery of economic activity in Greece. On the loan supply side, banks reported broadly unchanged credit standards, but an easing of overall terms and conditions on lending.

Loan demand

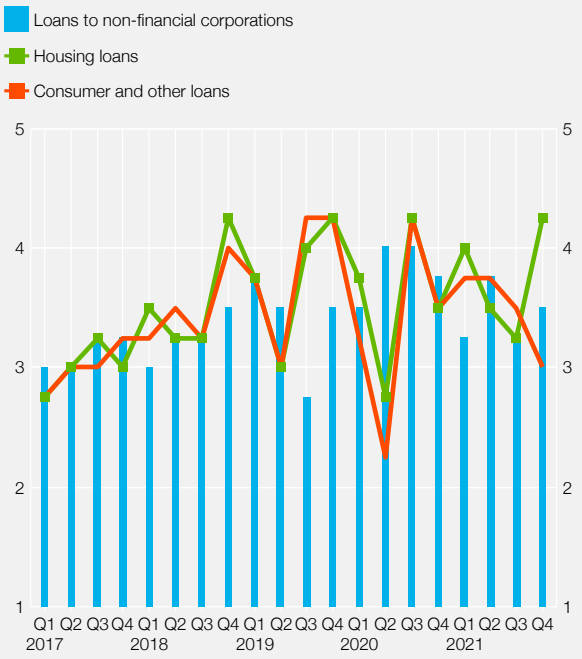
Banks in Greece indicated that firms' demand for loans[2] increased in 2021 (Q1: 3.25; Q2: 3.75; Q3: 3.25; Q4: 3.5) (see Chart A). Regarding the factors contributing to this development, banks reported a favourable impact, mainly from firms' increased needs for inventories and working capital, as well as for fixed investment, while the general level of interest rates contributed to a lesser extent.

Banks also reported increased demand for loans to households. More specifically, the increase in demand for housing loans (Q1: 4; Q2: 3.5; Q3: 3.25; Q4: 4.25) was mainly supported by improved consumer confidence

1 The survey is conducted by the Eurosystem on a quarterly basis, using a sample of about 140 banks across the euro area. In Greece, the survey is conducted by the Bank of Greece and comprises the four Greek core banks.
2 The discussion of the results is based on banks' average responses on a scale of 1 to 5, with 1 corresponding to banks responding that loan demand "decreased considerably", 2 to banks responding "decreased somewhat", 3 to banks responding "remained broadly unchanged", 4 to banks responding "increased somewhat" and 5 to banks responding "increased considerably".

Chart A Changes in demand for loans to non-financial corporations and households in Greece[1]

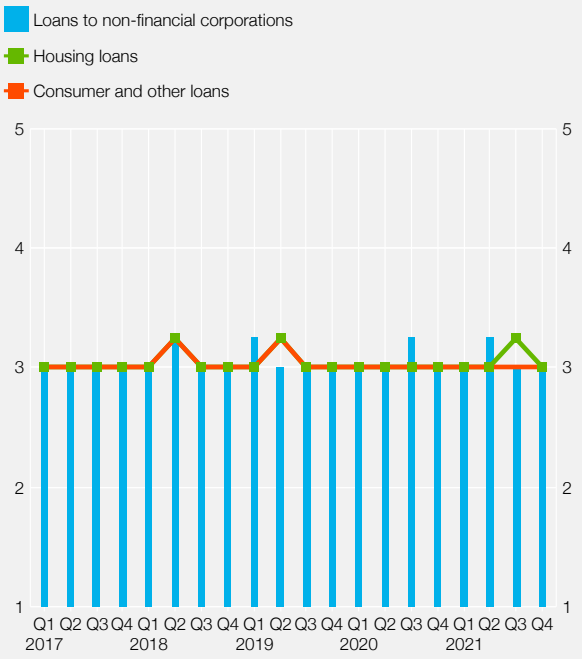
(over the corresponding calendar quarter; averages[2])



Source: ECB/Bank of Greece, Bank Lending Survey.
1 Banks' perceptions of changes in loan demand over the corresponding calendar quarter.
2 Average of banks' responses using a five-point scale, where 1 = "decreased considerably", 2 = "decreased somewhat", 3 = "basically no change", 4 = "increased somewhat" and 5 = "increased considerably".

Chart B Changes in terms and conditions on loans to non-financial corporations and households in Greece[1]

(over the corresponding calendar quarter; averages[2])



Bank: 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 1 = "tightened considerably", 2 = "tightened somewhat", 3 = "basically no change", 4 = "eased somewhat" and 5 = "eased considerably".

and better housing market prospects, while the increase in demand for consumer credit and other loans (Q1: 3.75; Q2: 3.75; Q3: 3.5; Q4: 3) was underpinned by higher consumer confidence and increased spending on durables.

Loan supply

According to the banks surveyed, credit standards[3] remained unchanged across all loan categories. Regarding the terms and conditions[4] on lending to enterprises, the sample reported a relative easing in the second quarter (see Chart B), which was primarily driven by competition and the subsequent narrowing of margins on average loans, as well as on riskier loans. With respect to housing loans, the sample reported a relative easing for terms and conditions in the third quarter, due to the narrowing of margins on average loans and on riskier loans.

Finally, banks in Greece indicated that the share of rejected applications for loans to firms remained unchanged in the first half of 2021, but increased somewhat in the second half. As for loans to households, the share of rejected applications remained unchanged for consumer credit and other loans, whereas for housing loans it increased somewhat in the fourth quarter.

3 For credit standards, banks' responses correspond to 1 if they report that these "tightened considerably", 2 if they report "tightened somewhat", 3 if they report "remained broadly unchanged", 4 if they report "eased somewhat" and 5 if they report "eased considerably".

4 For terms and conditions on lending, banks' responses correspond to 1 if they report that these "tightened considerably", 2 if they report "tightened somewhat", 3 if they report "remained broadly unchanged", 4 if they report "eased somewhat" and 5 if they report "eased considerably".

Box 23

THE ROLE OF PRIVATE INSURANCE IN NATURAL DISASTER PROTECTION

Insurance undertakings provide coverage against different insurance risks in exchange for a premium. Given that Greece is among the most earthquake-prone regions in the European Union and natural disasters are quite frequent, insurance coverage for such perils as earthquakes, wildfires, hail storms, flooding, landslides, etc. is the core of insurance activity. Furthermore, climate change does not expose insurers to new, unknown types of risk, since what is mainly changing is the frequency and the magnitude of potential losses.

The financial cost of natural disasters in Greece is fairly high. For instance, it is noted that in 1999, i.e. the year with the highest costs from natural disasters to date, mainly on account of an earthquake, costs exceeded €4 billion, amounting to about 3% of Greece's total GDP. The second year with the highest financial costs associated with natural disasters was 2007, when costs amounted to above €1.7 billion, mainly on account of wildfires, followed by the year 1990, with the related financial costs, primarily attributed to drought, exceeding €1 billion.[1]

It should be stressed that the bulk of the aforementioned financial losses was uninsured and the affected population was largely indemnified with government budget funds. Over the 1980-2018 period, according to estimates,[2] the claims paid by insurance undertakings as a result of earthquakes, flooding and storms covered for a mere 2% of total losses.

As the impact of the climate crisis in Greece is closely linked with a higher incidence of wildfires and floods (the occurrence of earthquakes is not expected to be affected by climate change) and the role of the private insurance market in related loss coverage is modest, it is understandable that the fiscal cost will keep increasing.

Against this backdrop, and given the government's responsibility to protect all citizens, financial support to affected parties should reach an appropriately large share of the population and be independent from economic conditions, without however placing a systematic burden on taxpayers. One of the most effective ways to achieve this is to enhance the role of private insurance in the area of natural disaster protection. This can be achieved by providing Greek citizens with tax incentives to buy insurance, but most importantly by promoting public-private partnerships (PPPs), a policy that is already pursued in other European countries.

European experience has shown that designing such tools as PPPs with regard to natural disaster issues relies on a pre-defined set of principles, which should include at least the following:

1. Decisions are made and actions are coordinated through a single central mechanism bringing together government bodies and private insurance undertakings.

2. The participation of natural and legal persons, who will practically be the beneficiaries, should be as broad as possible.

3. The responsibility for, as well as the total cost of, indemnities are shared in a transparent manner between the private and the public sector, so as to avoid indemnification gaps or overlaps.

4. The implementation of preventive and adaptation measures against such risks are sine qua non for such tools.

Last but not least, it is worth noting that only a meaningful dialogue between all stakeholders, public and private, can lead to a sustainable and efficient solution in the long run, which will provide Greek citizens with adequate protection from natural disasters and risks stemming from the climate crisis.

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1 The International Disaster Database, www.emdat.be.
2 NatCatSERVICE, MunichRe, 2018.

Box 24

CONDUCT RISKS FROM THE PERSPECTIVE OF INSURANCE POLICYHOLDERS

Private insurance is among the few business activities in which the consumer/policyholder pays in advance (in the form of an insurance premium) to purchase a product in exchange for a promise of a future benefit/compensation upon the occurrence of the insured event. This promise involves the payment of a much higher amount of money than the insurance premium at an unknown yet critical time in the future, i.e. when the policyholder will be most vulnerable and in need of compensation in order to address the financial consequences from the occurrence of the insured risk.

In this context, it is crucial that consumers/policyholders enjoy value for money, in the sense that the insurance product offered is affordable and best meets customer needs. The protection of policyholders lies at the heart of the insurance supervisory framework and is achieved in two ways. First, by strengthening the solvency of insurance undertakings, in order to ensure, to the extent possible, that they will fulfil their obligations and that consumers/policyholders will indeed receive what they were promised. And second, by improving customer satisfaction, as well as the overall credibility of the insurance market, as a result of insurers' behaviour vis-à-vis policyholders. The solvency of insurance undertakings is ensured by compliance with the provisions of the prudential supervision framework (Solvency II), while insurers' behaviour vis-à-vis consumers is enhanced by compliance with the relevant legislation on conduct of business (in particular Directive (EU) 2016/97 on insurance distribution).

Insurers' business practices go beyond the narrowly defined insurance contract; they cover all stages of the product lifecycle, i.e. from the point before even such a product exists up to the termination of the insurance contract. The key drivers of insurance conduct risk, i.e. the risks arising from business practices that affect consumers/policyholders, are the following:[1]

– The **business model** of the insurance undertaking: Referring to the customer-centric culture that permeates the entire structure and hierarchy, internal organisation and operating model of an insurance undertaking.

– The **development and design** of insurance products: Referring to the ability of insurance undertakings to take into account the characteristics, needs, objectives and preferences (investment, saving, etc.) of targeted customers. Product testing before a product is launched to the market and constant monitoring to assess whether a product meets over its whole lifecycle the identified customer-centric objectives are at the heart of this process.

– The **pricing** of insurance products: Referring mainly to the assessment of a reasonable and fair price for customers (value for money), while aggressive pricing strategies (such as price discrimination for reasons not associated with insurance risk) should be avoided in any event. To better protect insurance policyholders, due costs should be charged and made known to customers in advance. Furthermore, the pursuit of profit should not overlook that customers pay a price in anticipation of a gratifying return, especially in the event of a long-term contract. Mismatches between actual returns or benefits and customers' expectations, in the long run, lead to the dissatisfaction of good payers, while undermining the credibility of the insurance market.[2]

– The **marketing** of insurance products: To better protect policyholders, the overall promotional strategy should be clear, while generalities and exaggerations/overstatements regarding the coverage offered must be avoided to eliminate the risk of under-insurance or over-insurance.

1 EIOPA, "Framework for assessing conduct risk through the product lifecycle", 15.2.2019, https://www.eiopa.europa.eu/document-library/report/framework-assessing-conduct-risk-through-product-lifecycle_en?source=search.

2 EIOPA, "Supervisory statement on assessment of value for money of unit-linked insurance products under product oversight and governance", 30.11.2021, https://www.eiopa.europa.eu/document-library/supervisory-statement/supervisory-statement-assessment-of-value-money-of-unit_en.

– The **distribution and sales** of insurance products: Insurance distributors must be skilled and trained professionals always acting in the best interest of their customers. Providing insufficient or inadequate disclosures without any explanation on their content does not help customers understand the obligations and the rights arising from the signing of an application for insurance. Beyond insurance intermediaries' apparent obligations and own responsibility, insurance undertakings must pursue policies that are not limited to performance criteria for the selection and assessment of their intermediaries, ensure ongoing training and monitor compliance with the applicable rules of professional ethics and disclosure.

– **Claims handling:** The avoidance of unreasonably long and burdensome claims handling procedures and the payment of claims without unjustified delays and unfair rejections are warranted and are constantly reviewed for further improvements.

All of the above areas are subject to constant supervisory review, aimed at the timely identification of problems that may prejudice the interests of current or prospective policyholders, as well as at minimising the possible emergence of similar problems in the future. In a similar vein, new EU-wide legislative initiatives are expected in the area of unit-linked insurance products,[3] which will clarify and simplify several current obligations of insurance undertakings, with a view to further enhancing consumers' confidence in the single European insurance market.

3 Action 8, p. 11 in https://eur-lex.europa.eu/resource.html?uri=cellar:61042990-fe46-11ea-b44f-01aa75ed71a1.0001.02/DOC_1&format=PDF.

Box 25

IMPLEMENTATION OF THE RECOMMENDATION OF THE EUROPEAN SYSTEMIC RISK BOARD OF 31 OCTOBER 2016 ON CLOSING REAL ESTATE DATA GAPS (ESRB/2016/14)

In 2020, the Executive Committee of the Bank of Greece approved Act 175/1/29.7.2020 (hereinafter the "Act") adopting Recommendation ESRB/2016/14 of the European Systemic Risk Board of 31 October 2016 on closing real estate data gaps (hereinafter the "Recommendation"), as amended by Recommendation ESRB/2019/3 of the European Systemic Risk Board of 21 March 2019.

The main objective of the Recommendation is to establish a harmonised EU framework for monitoring developments in residential real estate (RRE) and commercial real estate (CRE) markets, the segments of the real estate sector most relevant for financial stability purposes. The proposed framework will involve the regular monitoring of a set of reliable and comparable key RRE/CRE loan and investment indicators to help identify the build-up of systemic risks and assess the potential need for macroprudential intervention. These indicators will provide useful information to ensure that lender-based macroprudential instruments (such as sectoral capital requirements, including those related to the real estate sector) are selected and calibrated in the most efficient way to prevent future occurrences of excessive credit growth that could lead to a possible resurgence of NPLs. In addition, they will also be used to guide national authorities in the use of borrower-based macroprudential policy instruments, such as limits on the loan-to-value ratio, the loan-to-income ratio, the debt-to-income ratio, the interest coverage ratio, the debt service-to-income ratio or the debt service coverage ratio.

The Act is fully aligned with the definitions and calculation methodology of the indicators proposed in the Recommendation, with the triple goal of enhancing the reliability of financial stability analyses, increasing the indicators' ability to provide early warnings against the build-up of systemic risks, and enabling a more accurate comparison of risks across the domestic markets of the EU. Nevertheless, bearing in mind the principle of proportionality and the characteristics of the Greek market, the scope of the Recommendation was limited to credit

institutions established and operating in Greece, branches of foreign banks operating in Greece, and leasing companies established and operating in Greece. Furthermore, during the Act's implementation, in 2021, consultations were held with the reporting institutions, both on a bilateral basis and collectively through the Hellenic Bank Association. During these consultations, the Bank of Greece offered clarifications with a view to ensuring the correct and consistent implementation of the Act's reporting requirements, while a set of calculation approaches was agreed in relation to the indicators, which was tailored to the specificities of the Greek market and the way raw data are kept by institutions.

The Act contains detailed information on the definitions of the data and indicators to be reported, accompanied by guidance on the methods for calculating these indicators, and the templates and timeline for the submission of the relevant reports – the latter already underway on a quarterly basis since the beginning of 2021. A page dedicated to the monitoring framework is also now available on the Bank of Greece website.[1]

In more detail, where RRE indebtedness is concerned, data, weighted ratio averages and indicator distributions are all monitored in terms of flows and stocks of the corresponding loans. For the flows of RRE loans, the data required include, in particular, the number and amount of loans disbursed, the loan-to-value ratio at origination (LTV-O), the loan service-to-income ratio at origination (LSTI-O), the loan-to-income ratio at origination (LTI-O), the debt-to-income ratio at origination (DTI-O), the debt service-to-income ratio at origination (DSTI-O) and the maturity of the loans at origination. For the stocks of such loans, the data required include, again, the number and amount of loans disbursed and the current loan-to-value ratio (LTV-C).

CRE indebtedness and CRE investment are monitored by tracking a similar set of indicators. These include, indicatively, direct and indirect CRE investment flows/stocks, valuation adjustments flows/stocks on CRE investments, CRE lending flows/stocks (including CRE property under development or construction), flows/stocks of non-performing CRE loans (including CRE property under development or construction), and flows/stocks of loan loss provisions on CRE lending (including CRE property under development or construction). Furthermore, for the flows of CRE loans, the following data are required: weighted average of the LTV-O, weighted average of the interest coverage ratio at origination (ICR-O), weighted average of the debt service coverage ratio at origination (DSCR-O). For the stocks of CRE loans, the additional data required include: weighted average of the current loan-to-value ratio (LTV-C); weighted average of the current interest coverage ratio (ICR-C); and weighted average of the current debt service coverage ratio (DSCR-C).

1 https://www.bankofgreece.gr/en/main-tasks/financial-stability/submission-of-data-on-real-estate-debt-and-investment.

Box 26

GLOBAL FINANCIAL CONDITIONS AND GREEK SOVEREIGN BONDS

The yield differentials (spreads) between 10-year Greek and other euro area government bonds are determined by: (a) common factors, which affect all bonds, but not necessarily in a uniform way or to the same extent; and (b) the so-called "idiosyncratic" factors, such as risks relating to specific economies. Common factors may refer to global monetary conditions, while market expectations about Greece's potential exit from the euro area (Grexit) can be seen as a past example of idiosyncratic factors.

Recently, from mid-October 2021 to date, a surge has been observed in the spreads of Greek sovereign bonds vis-à-vis the German Bund. During the same period, the yield spreads of the sovereign bonds of other euro area economies, including the so-called "core" economies such as France, Austria and Belgium, vis-à-vis the Bund have also risen, while the magnitude of the rise differs across economies (see Chart A).

Chart A Spreads between euro area sovereign bonds and the German Bund

Sources: Refinitiv and Bank of Greece.
Notes: The chart shows the yield differentials (spreads) of the 10-year sovereign bonds of Greece and selected euro area economies relative to the German Bund. The left-hand panel shows the evolution of yields from the beginning of 2021 until 15 march 2022, while the right-hand panel focuses on the 1.10.2021-15.3.2022 period. Spreads are measured in basis points.

For instance, in the period after the prospect of an interest rate lift-off by the Fed emerged as a factor affecting investor expectations and up until Russia's invasion of Ukraine (i.e. between 22 September 2021[1] and 23 February 2022), the spread of the 10-year French sovereign bond vis-à-vis the German Bund widened by about 17 basis points (bps). Likewise, the Austrian spreads widened by 13 bps, the Belgian spreads by 22 bps, the Spanish spreads by 40 bps and the Italian spreads by 72 bps. Over that same period, the spread of Greece's 10-year benchmark bond relative to the Bund widened by as much as 133 bps.

Of course, this period is characterised by large fluctuations, with high volatility being its main characteristic. For example, sovereign spreads stabilised after the ECB meeting of 17 December 2021, whereas the announcement of a higher-than-expected inflation rate for the euro area, on 7 January 2022, was followed by a renewed upward trend (changes in spreads: between 17.12.2021 and 6.1.2022: Greece: -7 bps, Italy: +2 bps, Spain: -3 bps, Belgium: -4 bps, Austria: -3 bps and France: -2 bps; between 7.1.2022 and 23.2.2022: Greece: +89 bps, Italy: +29 bps, Spain: +32 bps, Belgium: +20 bps, Austria: +18 bps and France: +17 bps). So, given that the rise of yields and spreads is persistent, it is important to investigate the determinants of Greek government bond yields, in order to find out whether they are idiosyncratic or common.

1 At the Federal Open Market Committee (FOMC) meeting of 21-22 September 2021, the likelihood of a 2022 increase in the federal funds rate was signalled, given that the number of FOMC members favouring a policy rate hike during 2022 had grown, as evidenced by the accompanying documents of the meeting (see Projection Materials). This signal was confirmed by the minutes of the meeting released on 13 October 2021.

Expectations of an interest rate hike raise sovereign yields globally

To investigate whether the rise in yields is a country/economy-specific or a global phenomenon, the equilibrium relationship of the government sovereign bond yields, globally, with their credit ratings is employed. In particular, the relevant literature has established that credit ratings are a key determinant of sovereign bond yields, as shown in Chart B.[2,3]

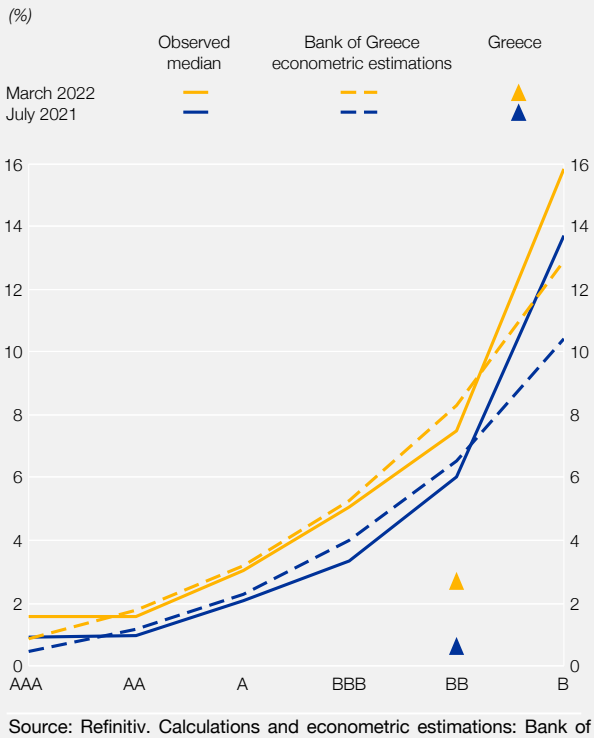
In this respect, the level of yields is determined in close connection with sovereign credit ratings, because the latter are derived from a combination of various criteria relating to the underlying economies and not merely on the basis of a limited set of fundamentals. Thus, differences in the cost of borrowing may be observed even for economies with relatively similar levels of debt by the standards of each economy, as different ratings reflect differences in structural, macroeconomic or other parameters of the underlying economies. For example, while Spain and Belgium have almost the same debt-to-GDP ratio (estimates for 2021[4]: Spain: 120.6%, Belgium: 112.7%), because of their different credit ratings (highest current rating of each economy: Spain A (S&P), Belgium AA (S&P)), the yields of Spain's 10-year bonds (1.315% on 15.3.2022) are higher than those of Belgium's (0.875% on 15.3.2022).

Accordingly, the cross-section relationship of yields with sovereign credit rating categories explains the different reactions of euro area bond yields to the same factors. This appears to be the case especially at the current juncture, as the yields of lower-rated bonds are more sensitive to the common factor of expectations about a monetary policy tightening by major central banks.

Specifically, from the third quarter of 2021 until recently, a surge in sovereign yields has been observed across all credit rating categories, which is more pronounced for bonds with lower credit ratings (see Chart C). In fact, the upward trend in lower-rated bond yields intensified after the FOMC meeting in September. Since 13 October 2021, when the minutes of the meeting were published and it became evident that several members of the committee had turned around and were now in favour of a 2022 interest rate lift-off, a rise in yields has also been observed for the high-rated bonds. Consequently, this suggests that expectations of an interest rate hike by major central banks during 2022 are driving upwards sovereign yields globally.

After Russia's invasion of Ukraine, a decline in euro area sovereign bond yields was observed, particularly for

Chart B Sovereign yields by credit rating category



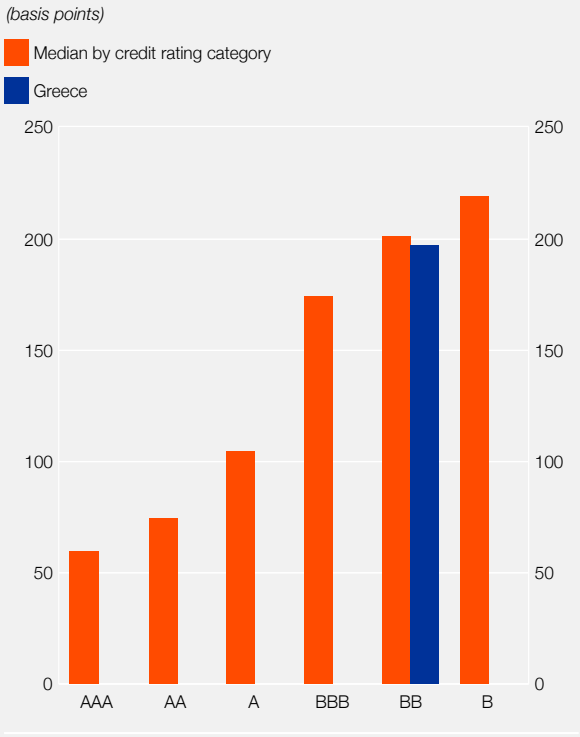
Source: Refinitiv. Calculations and econometric estimations: Bank of Greece. Notes: The solid lines show the median 10-year bond yield, for each credit rating category. Medians have been calculated based on data from 70 economies around the world. Dashed lines show the estimated level, by credit rating category, on the basis of the Bank of Greece model (see D. Malliaropulos and P. Migiakis (2018), "The re-pricing of sovereign risks following the Global Financial Crisis", Journal of Empirical Finance, 49C, 39-56). The triangles denote the level of the 10-year Greek sovereign bond yield on the respective dates.

2 See for instance Aizenmann J., M. Binici and M. Hutchinson (2013), "Credit ratings and the pricing of sovereign debt during the euro crisis", *Oxford Review of Economic Policy*, 29, 582-609; De Santis, R. (2012), "The euro area sovereign debt crisis: safe haven, credit rating agencies and the spread of the fever from Greece, Ireland and Portugal", ECB Working Paper No. 1419; and Georgoutsos, D. and P. Migiakis (2018), "Risk perceptions and fundamental effects on sovereign spreads", Bank of Greece Working Paper No. 250.

3 Chart B also shows that markets are overpricing Greek government bonds, perceiving a higher credit rating than their current one (BB). More precisely, it appears that the market pricing of Greek government bonds now ranges between BBB and BBB+.

4 Source: *Economic Forecast, Autumn 2021*, European Commission, 11.11.2021.

Chart C Changes in sovereign yields since the third quarter of 2021



Source: Refinitiv and Bank of Greece calculations.
Notes: The orange bars show the observed changes (in basis points) in 10-year sovereign bond yields, by credit rating category, for 70 economies wordlwide between 1.7.2021 and 15.3.2022. The bue bar shows the respective change in the 10-year Greek government bond yield. In calculating the change for the BB category, the change in the Greek sovereign bond yield was not taken into account.

bonds with high credit ratings. Meanwhile, heightened volatility in bond and equity markets, as well as rising yields on bonds with lower credit ratings (i.e. BBB and below) worldwide point to investors' increased preference for safe assets (flight-to-safety). Against this background, Greek government bond yields have increased further, in line with the average increase in BB-rated bond yields.

Conclusions

Changes in global monetary and financial conditions strongly affect Greek sovereign bonds as well. In particular, market expectations about an upcoming monetary policy tightening and interest rate hikes have led to a surge in bond yields, which is more pronounced for lower-rated sovereign bonds. Additionally, the higher volatility ensuing from the recent geopolitical developments leads to flight-to-safety, i.e. portfolio shifts away from low-rated into "safe haven" assets, such as bonds with a high credit rating.

All in all, the factors pushing sovereign yields upwards globally, such as the expectations of higher interest rates and the prevailing uncertainty due to the current geopolitical developments, also drive the yield rise of Greek sovereign bonds. In this regard, a potential upgrade of Greece's credit rating by major rating agencies would be very important, as it could strengthen the resilience of Greek bonds to the changes in financial conditions brought about by the shift of global monetary conditions and elevated volatility. Finally, this highlights the need to continue and step up the ongoing reform effort, as well as to achieve or even overshoot the agreed fiscal and economic growth targets.[5]

5 The drivers of the Greek economy's upgrade to the investment-grade category are discussed in Box VII.1 of the Bank of Greece *Monetary Policy Interim Report* published in December 2021.

Box 27

BOND MARKET FINANCING OF GREEK ENTERPRISES AND ITS RELEVANCE FOR THE GREEK ECONOMY

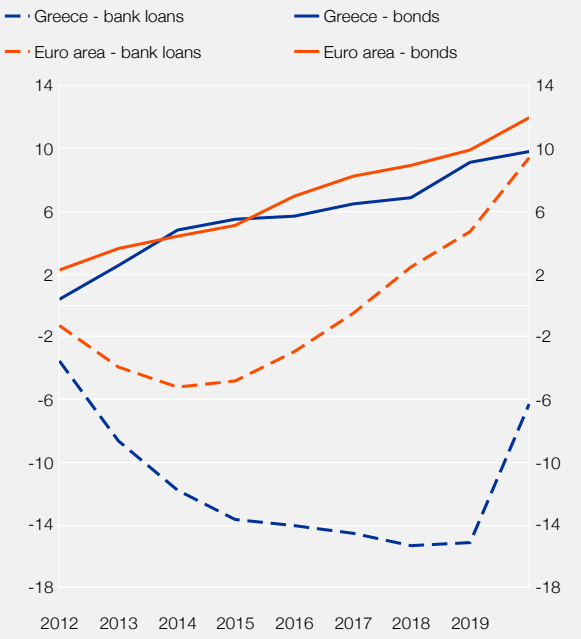
The corporate bond market is an important source of financing, which can render the allocation of production factors more efficient, thus increasing the productivity of the economy. In recent years, around thirty major Greek non-financial corporations (NFCs) have gained access to external financing through the issuance of corporate bonds, either on international markets or on the domestic market. An examination of the evolution of bond market financing of Greek enterprises allows us to draw conclusions concerning both the financing of the Greek private sector and the economic activity of these enterprises.

Bank lending is the main source of external financing for domestic firms. Of course, in the period from 2012 to 2015, the cumulative net flow of loans to Greek NFCs was negative, reflecting the significant shortfall in new

credit by banks compared to loan maturities, amid deleveraging of the domestic banking sector (see Chart A). Over the same period, the net flow of bank loans to NFCs in the euro area was also negative. At the same time, however, financing from the corporate bond market was on the rise both in the euro area and in Greece.

Since end-2012, Greek NFCs have been continuously present in the international bond markets, raising significant amounts, while funding raised from the domestic market, which has been operating in the Athens Exchange since mid-2016, exhibits an upward trend. In line with international developments, Greek companies borrowed about €3.8 billion in 2021, the largest amount since 2012. At the same time, the cost of bond issuing by Greek NFCs on international markets has dropped from around 9% in 2012 and 2013 to around 2.8% in 2021, converging with that of comparable corporate bonds issued by similarly rated euro area firms[1] (see Chart B1). A similar picture is also seen in the domestic market, where the cost of bond issuing has decreased from close to 5% in 2016 to around 2.4% in 2021 (see Chart B2). Accommodative international financial conditions, combined with a better than expected performance of the Greek economy and a gradual improvement of the

Chart A Sources of financing of non-financial corporations

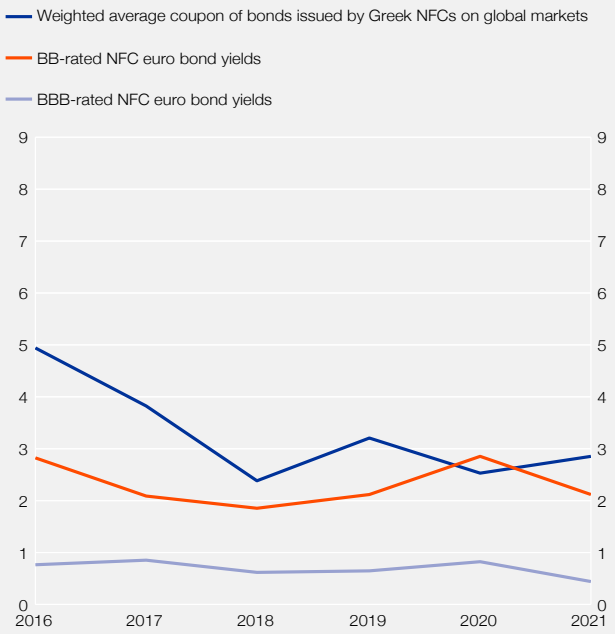


Sources: Eurostat, ECB and Bank of Greece.
Note: The curves show the ratio of cumulative net flow of bank loans/bonds to the sum of the balance of bank loans and bonds. Ratios are taken separately for non-financial corporations in Greece and the euro area. Cumulative net flows are calculated as the sum of annual net flows of bank loans/bonds since 2012.

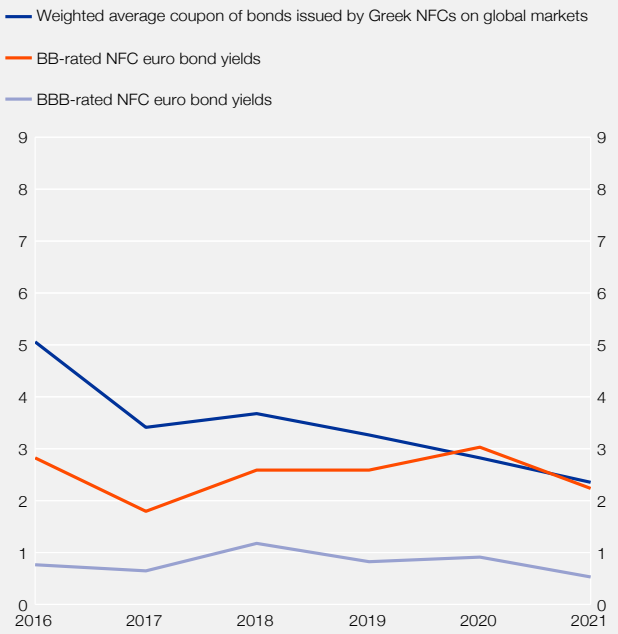
Chart B Borrowing costs for new issues by Greek non-financial corporations and corporate bond yields in euro of non-financial corporations with BB and BBB credit rating

(yields in %)

B1. Global markets



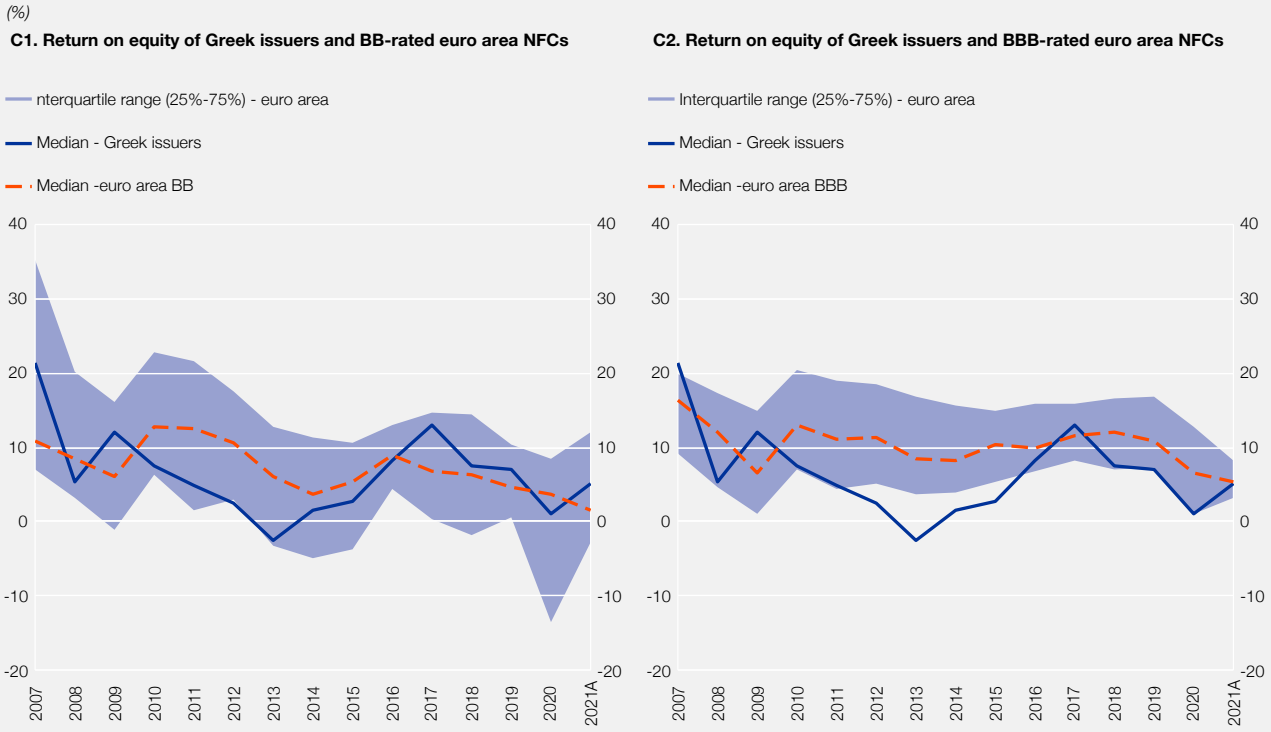
B2. Domestic market



Sources: Refinitiv and Bank of Greece.
Notes: The curves show yields of euro bonds issued by BB- and BBB-rated non-financial corporations (NFCs), as well as weighted average bond coupons issued by Greek NFCs. Each year shows BB and BBB-rated bonds with the same maturity as the weighted average maturity of Greek bonds.

1 The weighted average credit rating of Greek issuers at the date of bond issue stands at BB.

Chart C Return on equity of Greek issuers and euro area non-financial corporations



Sources: Refinitiv and Bank of Greece.
Notes: The chart shows the median of return on equity of Greek issuers and the median of return on equity of similar euro area NFCs with BB (left-hand side) and BBB (right-hand side) credit rating. Shaded areas show the interquartile range of return on equity of euro area NFCs. Euro area peers rated BB and BBB were collected from Refinitiv (21 and 81 listed groups respectively). The ratio of net profits to average equity was used to measure return on equity.

credit rating of the Greek government, have contributed to a gradual reduction of yields on Greek government and corporate bonds.

An analysis of the fundamentals of Greek issuers and a comparison with similar firms abroad provide useful information on their profitability and solvency, in addition to their current credit rating, which is affected by the credit rating of the Greek sovereign. The fundamentals of Greek issuers compare favourably with those of similar NFCs that have issued euro-denominated bonds with a credit rating equal to that most common among Greek issuers (i.e. BB), while often standing close to the fundamentals of companies with a higher credit rating (BBB). Return on equity (RoE) of Greek issuers was negatively affected during the debt crisis, before returning to levels better than for BB-rated peers, and often to levels equivalent to those of peers within the investment class (BBB) (see Chart C). Similar conclusions can be drawn from the examination of other indicators, such as the debt-to-equity ratio and the interest coverage ratio.

Gross value added of Greek issuers

The contribution of issuing enterprises to the Greek economy can be proxied by comparing their gross value added (GVA) with total GVA of Greek NFCs. Greek NFCs were represented by the total number of enterprises included in the institutional sector of non-financial corporations (S.11) in accordance with the European System of National and Regional Accounts (ESA 2010).[2] Data on the GVA of NFCs were taken from the Hellenic Statistical Authority (ELSTAT) and are based on the ESA 2010 statistical standard. A corresponding methodology, which is

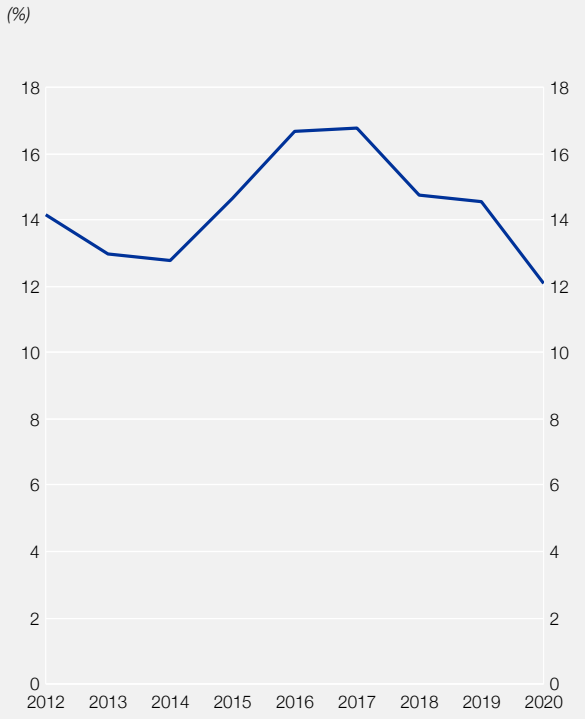
2 Total economy (S.1) consists of the following institutional sectors: non-financial corporations (S.11), financial corporations (S.12), general government (S.13), households and non-profit institutions serving households (NPISHs) (S.1M) and rest of the world (S.2). This analysis is limited to the category of non-financial corporations (S.11).

also in line with literature, was used to calculate GVA of issuing firms.

As shown in Chart D, over the 2012-2020 period, GVA of issuing enterprises represented on average around 14% of GVA of Greek NFCs, which demonstrates the strength of their contribution to the Greek economy. The significant role of issuing firms is also reflected in the allocation of funds raised. According to the prospectuses and balance sheets of these firms, around 3/4 of funding was used for the repayment of previous bank lending and working capital, while 13% (in total around €2.2 billion in the years 2012 to 2021 inclusive) was channelled towards the companies' investment plans.

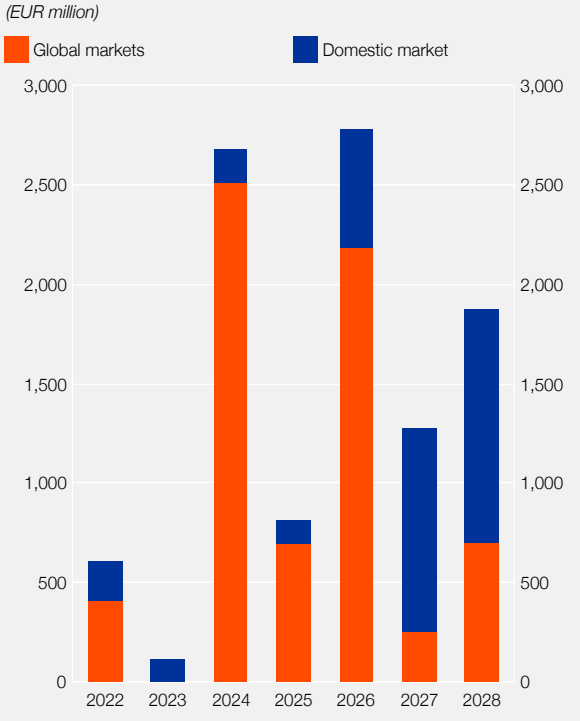
In summary, Greek NFCs that have issued securities either on international markets or on the domestic market are capital intensive, export-oriented and mostly profitable, having a significant footprint in the Greek economy. In addition, they are large in size and have been operating for many years, which makes them more resilient to fluctuations in demand, gives them access to more sources of finance, as well as the possibility to exploit economies of scale and develop stable relationships with their business partners through participation in international production chains.[3]

Chart D Share of Greek issuers in the gross value added of Greek non-financial corporations



Sources: ELSTAT, Orbis Europe, issuers' financial statements and Bank of Greece.
Notes: The curve shows the ratio of gross value added (GVA) of Greek issuers to the GVA of Greek NFCs. Issuers' GVA is calculated as the sum of compensation of employees, net profits, depreciations, taxes and net financial expenditure, minus subsidies. GVA of Greek NFCs is calculated as the sum of compensation of employees, gross operating surplus and taxes on production and imports, minus subsidies.

Chart E Maturities of Greek corporate bonds per year



Sources: Refinitiv and Bank of Greece.

Conclusions

In conclusion, the increase in market financing of large Greek non-financial corporations is in line with international developments and constitutes an alternative channel for raising capital. Greek non-financial corporations that have issued securities are not many, but have a significant footprint in the Greek economy, with a strong contribution to the gross value added of the Greek economy. Finally, as shown in Chart E, the refinancing needs of Greek corporate bonds are rather limited up to end-2023, adding some flexibility.

3 See for instance Fort, T., J. Hartiwanger, R. Jarmin and J. Miranda (2013), "How Firms Respond to Business Cycles: The Role of Firm Age and Firm Size", IMF Economic Review, 61, 520-559, and Ferrando, A. and K. Mulier (2015), "'Firms' financing constraints: do perceptions match the actual situation?", The Economic and Social Review, 46(1), 87-117.

Box 28

FROM GLOBAL WARMING TO CLIMATE CRISIS: REVIEWING THE TERMINOLOGY OF CLIMATE CHANGE

Several different terms have been used to describe climate change and its impact on the planet. The terms that have made their way into our everyday vocabulary are "global warming" and "climate change". Other terms used less frequently and emphatically include climate catastrophe, climate disruption, climate chaos, ecological breakdown, climate deregulation, climate war, global heating and climate apocalypse. Advocacy groups, media organisations, local governments (including in Australia), UN institutions and the UK parliament are shifting their language on climate change to become more powerful and emotive. Conventional terminology is being superseded by expressions such as climate emergency, climate crisis and climate breakdown, which are seen as more accurately describing what is happening around us.[1] However, of all the above-mentioned new terms, the one we come across and listen more often today is "climate crisis".

Global warming

19th century scientists Jean-Baptiste Fourier, Eunice Foote and John Tyndall were the first to investigate the role of greenhouse gases in warming the Earth's surface.[2] Nobel Laureate Svante Arrhenius continued their work, claiming in 1897 that the burning of fossil fuels may lead to global warming. His calculations led him to the conclusion that, as a result of human activity, carbon dioxide is added to the atmosphere, which could increase the Earth's temperature.[3] At that time, however, human influences were considered insignificant and the oceans were considered to be large "carbon sinks", automatically eliminating pollution. As a result, his warning went unheard and the matter was forgotten until 1975, when the scientific study by Wallace Broecker was published, using for the first time the term "global warming".[4]

In the late 1980s, the issue of global warming came to the fore in politics and the media, as the average annual temperature rose sharply. Global warming became the dominant popular term in June 1988, when NASA scientist James Hansen testified to Congress that "global warming has reached a level such that we can ascribe with a high degree of confidence a cause and effect relationship between the greenhouse effect and the observed warming".[5] His testimony received broad coverage in the US media, making the term very popular.[6] Also worldwide, global warming became a daily topic in the news, in an effort to communicate that the planet is experiencing a change in climate due to global warming.

The term "global warming" was formalised in the 1980s to describe the impact on the earth's surface temperature from the increased level of heat-trapping gasses in the atmosphere. However, when discussions about global warming intensified and moved from the scientific realm to the public arena, it was seen that it was not a helpful description and decades later the term "climate change" prevailed among scientists, politicians and their institutions.[7] The term "climate change" has become more common as it reflects the long-term change in the Earth's climate. However, the term "global warming" remains valuable and is commonly used by scientists and the public, as it is a straightforward and accurate description of what is happening in global temperatures over time.[8]

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1 Bedi, G. (2020), "Is it time to rethink our language on climate change?", Lens, Monash University (https://lens.monash.edu/@environment/2020/01/03/1379384/is-it-time-to-rethink-our-language-on-climate-change).
2 Tisher, S.S. (2021), "A climate chronology", University of Maine (https://umaine.edu/climatechronology/wp-content/uploads/sites/575/2022/02/Climate-Chronology-January-2021-212022-1.pdf).
3 Arrhenius, S. and E.S. Holden (1897), "On the influence of carbonic acid in the air upon the temperature of the earth", *Publications of the Astronomical Society of the Pacific,* 9 (54), 14-24.
4 Broecker, W.S. (1975), "Climatic Change: Are We on the Brink of a Pronounced Global Warming?", *Science New Series,* 189 (4201), 460-463.
5 See http://image.guardian.co.uk/sys-files/Environment/documents/2008/06/23/ClimateChangeHearing1988.pdf.
6 See https://www.nasa.gov/topics/earth/features/climate_by_any_other_name.html.
7 See https://www.rte.ie/brainstorm/2021/0708/1233848-climate-change-terminology-global-warming-greenhouse-gas/.
8 Samenow, J., "Debunking the claim 'they' changed 'global warming' to 'climate change' because warming stopped", *The Washington Post,* 29.1.2018 (https://www.washingtonpost.com/news/capital-weather-gang/wp/2018/01/29/debunking-the-claim-they-changed-global-warming-to-climate-change-because-its-cooling/).

Climate change

By the time of Hansen's testimony, international organisations had paved the way for "climate change" to eventually become the most popular term. The World Meteorological Organisation and the United Nations Environment Programme established in 1988 the Intergovernmental Panel on Climate Change (IPCC), which in 1992 published the UN Framework Convention on Climate Change.[9] According to Article 1 thereof, "climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere". The term "global warming" is not used in the Framework Convention. These events were milestones for the universal prevalence and use of the term "climate change" in the years that followed.

In 2002, Frank Luntz, a political consultant, advised Republicans to start using the term "climate change" as it suggests a more controllable and less emotional challenge, while "global warming" has catastrophic connotations attached to it.[10] After that, the term "global warming" more or less disappeared from US President George H.W. Bush's speeches on the environment, and was replaced by the term "climate change".[11] Furthermore, in 2005 the US National Academies published a brochure expressing the view that "climate change" was a more comprehensive scientific description of what is happening on the planet because, as opposed to "global warming", it helps convey that there are other changes in addition to rising temperatures.[12]

Nowadays, according to a growing number of reputable media, the phrase "climate change" does not cut it anymore, as it is too neutral, too worn-out and too nice-sounding to describe the crisis facing the planet.[13] According to The Guardian, the phrase "climate change" sounds rather passive and mild at a time that scientists warn about a catastrophe for humanity. In fact, it has updated its style guide to introduce new terms describing more accurately the environmental crises facing the planet, such as "climate emergency", "climate crisis" or "climate breakdown".[14] The Observer and other media, such as the BBC and the US Associated Press, have also amended their internal rules for climate reporting.[15]

Climate crisis

Nowadays, the use of the term "climate crisis" is widespread in both international and domestic media. "Climate crisis" is not a scientific term and thus does not feature in scientific dictionaries and glossaries of international environmental organisations. In prestigious English dictionaries (such as Cambridge, Collins and Oxford)[16] the definition of climate crisis varies, as it describes the current situation rather than a climatic term. It is therefore no coincidence that "climate crisis" tends to become the prevalent term in public discourse, since it describes more emphatically and clearly the consequences of climate change, which are the result of extreme weather events such as floods, prolonged heat waves and wildfires.

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9 United Nations (1992), *United Nations Framework Convention on Climate Change,* Bonn, Germany.

10 See http://www.exponentialimprovement.com/cms/uploads/a-cleaner-safer-healthier.pdf.

11 Lee, J., "A call for softer, greener language", *The New York Times,* 2.3.2003 (https://www.nytimes.com/2003/03/02/us/a-call-for-softer-greener-language.html).

12 National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council (2005), *Understanding and responding to climate change:* highlights of National Academy Reports, Washington DC: National Academy of Sciences.

13 Yoder, K., "Is it time to retire 'climate change'?", Grist Magazine, 17.6.2019 (https://grist.org/article/is-it-time-to-retire-climate-change-for-climate-crisis/).

14 Carrington, D., "Why the Guardian is changing the language it uses about the environment", *The Guardian,* 17.5.2019 (https://www.theguardian.com/environment/2019/may/17/why-the-guardian-is-changing-the-language-it-uses-about-the-environment).

15 See https://www.cleanenergywire.org/blog/climate-change-or-climate-crisis-whats-right-lingo.

16 The definition of climate crisis is as follows: (a) In the Cambridge dictionary: serious problems that are being caused or likely to be caused by changes in the world's weather, in particular the world getting warmer as a result of human activity increasing the level of carbon dioxide in the atmosphere (see https://dictionary.cambridge.org/dictionary/english/climate-crisis). (b) In the Collins dictionary, as a situation of imminent environmental catastrophe brought about by climate change (see https://www.collinsdictionary.com/dictionary/english/climate-crisis). (c) In the Oxford dictionary, as a situation in which immediate action is needed to reduce or stop climate change and prevent serious and permanent damage to the environment (see https://www.oxfordlearnersdictionaries.com/definition/english/climate-crisis?q=climate+crisis).

Al Gore, US Vice-President from 1993 to 2001, is credited with coining the term "climate crisis". Twenty years ago, he had stated that "climate crisis" is the most appropriate term to signal the urgency of the issue, considering that the language we use when discussing the climate crisis is of paramount importance not only to trigger an emotional response, but also to incite to action. The Nobel Peace Prize 2007 was awarded jointly to Al Gore and the Intergovernmental Panel on Climate Change (IPCC) for their global climate action. In his Nobel Lecture he stated: "We must understand the connections between the climate crisis and the afflictions of poverty, hunger, HIV-Aids and other pandemics. As these problems are linked, so too must be their solutions".[17] Environmental organisations and Democratic lawmakers believe it evokes emphatically the gravity of the threats facing the planet from continued greenhouse gas emissions and can help spur the political willpower that has long been missing from climate advocacy.[18]

In November 2019, eleven thousand scientists from all over the world signed a declaration on the climate entitled "Warning of a Climate Emergency", stating that the Earth is facing a climate emergency due to insufficient efforts to tackle the climate crisis on an international scale.[19]

Conclusions

The climate is changing and so is the name describing this change. The terminology used is evolving in line with developments, highlighting the fact that climate change has hardened into a climate crisis and emphasising the huge impact that climate change already has on human life, ecosystems and biodiversity. Mustering the communicative power of words in the fight against climate change indicates the seriousness of the issue. The European Commission's European Green Deal provides recommendations on education and training as part of the solution for the changes required for a successful transition to a greener life.[20] The issue is not only how climate change is put in words, but also to whom it is addressed and how it is conveyed. Climate change coverage in news footage, newspapers and their websites could target more the youth. Education and environmental literacy can communicate climate change; the origin of greenhouse gas emissions; the benefits of circular economy, reusing and recycling; existing and future solutions; and, above all, what small things can be done by groups and individuals alongside action at global, national and local level.

17 See https://www.nobelprize.org/prizes/peace/2007/gore/26118-al-gore-nobel-lecture-2007/.
18 Sobczyk, N., "How climate change got labeled a 'crisis'", *Energy & Environmental News,* 10.7.2019.
19 The declaration was published in January 2020. See Ripple, W.J., C. Wolf, T.M. Newsome, P. Barnard, W.R. Moomaw (2020), "Warning of a climate emergency", *BioScience,* 70 (1), 8-12.
20 European Commission (2019), *The European Green Deal,* Brussels.

Box 29

THE CONTRIBUTION OF THE GREEN CAPITAL MARKETS UNION TO THE EUROPEAN ECONOMY

Achieving the goals of the European Green Deal[1] on sustainable development and net-zero greenhouse gas emissions by 2050, as well as the intermediate goals for 2030 ("Fit for 55"),[2] creates new challenges, but also opportunities, as it is linked to a need for additional investment. In particular, Europe will need an estimated €350 billion in additional investment per year over this decade to meet its 2030 emissions-reduction target in energy systems alone, alongside the €130 billion it will need for other environmental goals.[3] Meanwhile, a faster shift to clean energy has become more urgently necessary in the new geopolitical context following Russia's invasion of Ukraine.[4] The size of the investment needed implies that a combination of funds from the EU budget and public and private in-

1 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640.
2 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0550&from=EN.
3 https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021DC0390&from=EN.
4 In their recent Versailles Declaration (11 March 2022), EU leaders recognised that the current situation calls for a thorough reassessment of how the EU ensures the security of its energy supplies and highlighted the need to reduce energy dependencies.

vestments will be required. The European Commission has stated that it will continue to work on how to further mobilise resources to achieve the objectives of the Green Deal. The Sustainable Europe Investment Plan will mobilise sustainable investment of at least €1 trillion over the next decade, through the EU budget, while it will also crowd in private funding through guarantees under the InvestEU Programme.[5] In this direction, under the 2021-2027 Multiannual Financial Framework and NextGenerationEU (NGEU), the EU aims to spend up to EUR 605 billion on projects addressing the climate crisis and €100 billion on projects supporting biodiversity. Of the €750 billion allocated for NGEU, 30% will be raised through issuance of green bonds.

Financing in the EU is characterised by greater reliance on bank lending, among other things due to the more favourable tax treatment of debt compared to equity investment, as well as a preference for shorter-term assets rather than the placements. Moreover, investments in the EU are usually within the borders of Member States (home bias), mainly due to differences in the legal framework of national markets, e.g. in corporate insolvency rules. The expansion of green finance can be a driving force towards a carbon-neutral economy, financial integration and stability in the euro area.

Markets are an important source of funding for the economy and can play a crucial role in economic growth in the post-pandemic period, reducing the risk of uneven recovery across Member States. A healthy and dynamic capital market, which provides an alternative for raising funds to promote green innovation and finance long-term projects, is expected to support the transition to a low-carbon economy and, at the same time, the digital transition. The green transition offers the opportunity to build a truly pan-European capital market – in other words, a green capital markets union.[6] The development of a green capital markets union can support the completion of the Capital Markets Union by adding depth and diversification to the financial instruments available, while also enhancing the risk sharing capacity of the EU financial system.[7]

The green bond market in the EU

Achieving EU policy goals focusing on the green and digital transition requires the mobilisation of investment resources and the development of appropriate finance instruments. The EU is a global leader in the development of green capital markets. At present, the green bond market displays a higher degree of integration across the euro area than the aggregate bond market, with green bonds being roughly twice as likely as other types of bonds to be held cross-border within the euro area.[8]

Green capital markets are dynamic and rapidly growing, which bodes well for more sustainable investment and green bond financing. From 2007 to the end of 2021, green bonds[9] worth €1.43 trillion were issued at a global level, of which €429 billion in 2007-2018 and the remaining €997 billion in the period from 2019 onwards (see Chart A). It is worth noting that, in 2021 alone, green bond issuance came to €496 billion. The strong growth of the green bond market and the acceleration of green bond issuance activity are developments that are particularly relevant for the European capital markets. Green bonds totalling €804 billion have been issued on euro area capital markets, of which €645 billion by entities established in a euro area Member State.

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5 See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0021. The plan is accompanied by a Just Transition Mechanism, which will mobilise investments of at least €143 billion and help the shift of highly carbon-dependent regions to new types of economic activity, as it is important to make sure that no one is left behind in the transition towards a climate-neutral economy by 2050.

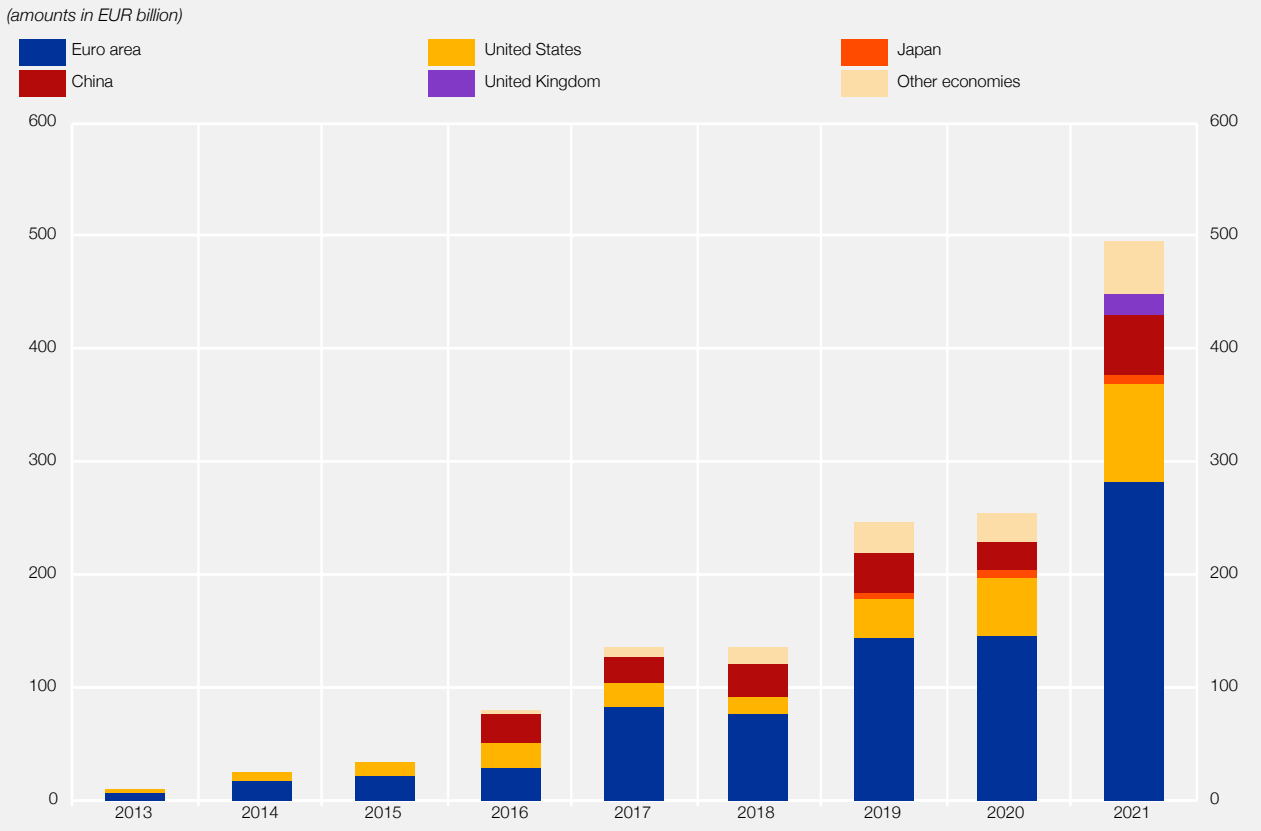
6 https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210506~4ec98730ee.en.html.

7 Green bond markets are characterised by a higher degree of integration and relatively low home bias. Therefore, encouraging green finance is a very effective way to strengthen financial integration. Also, investment funds that meet environmental, social and governance (ESG) criteria appear to be more stable, as their investors are less likely to withdraw following negative performance than non-ESG investors – see Capota, L., M. Giuzio, S. Kapadia and D. Salakhova (2021), "Are ethical and green investment funds more resilient?", mimeo; and Alogoskoufis et al. (2021), "Climate-related risks to financial stability", Special Feature, ECB, *Financial Stability Review*, May 2021.

8 https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/focus/2021/html/ecb.mpbu_focus202110_3.en.html. See also Box II.2 in this Report.

9 The analysis covered about 5,500 issues of securities identified as "green bonds" on the Refinitiv platform, based on the use of proceeds in sustainable projects according to the prospectus of the issue.

Chart A Green bond issuance



Source: Refinitiv and Bank of Greece calculations.
Note: The chart shows green bond issuance per year for the period 2013-2021. These bonds were selected on the basis of Refinitiv financial market data. Bonds characterised as green were selected and classified by issuing country and year. The countries were then aggregated to sum up the issuing activity of euro area countries.

Green bond issues are increasingly launched by the private sector, while issues by the public sector (sovereigns, local and regional authorities and related entities) continue to raise funding for projects and investment programmes linked to sustainability goals (see Chart B). It is encouraging that European companies so far seem to lead the way in the issuance of instruments that finance sustainable activities. Should this trend continue, it could point to a stepping-up of private sector engagement in the sustainability agenda going forward. Consequently, the deepening and further integration of euro area capital markets, with a focus on financing sustainable investments, will contribute to the creation of a single European capital market for green financial instruments.

Strengthening of the EU institutional framework for sustainable finance and the Capital Markets Union

The renewed EU strategy on sustainable finance identifies four main areas where additional action is needed for the financial system to fully support the transition of the economy towards sustainability: (a) financing the path of the real economy towards sustainability; (b) more inclusive sustainable finance; (c) improving the financial sector's resilience and contribution to sustainability; and (d) fostering global ambition.[10] At the same time, recognising that a well-functioning Capital Markets Union can have a significant stabilising effect and help the EU re-

10 Actions that are identified as important for financing the transition and are relevant to capital markets include: adoption of legislation to support the financing of certain economic activities that help to reduce greenhouse gas emissions; extending the EU Taxonomy framework and developing a general framework of standards and labels for sustainable financial instruments; leveraging the opportunities offered by digital technologies; reflecting sustainability risks in financial reporting standards and accounting; improving transparency of credit ratings; developing appropriate micro- and macro-prudential tools for sustainability risks, etc. See Communication from the Commission "Strategy for Financing the Transition to a Sustainable Economy", 6.7.2021, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0390.

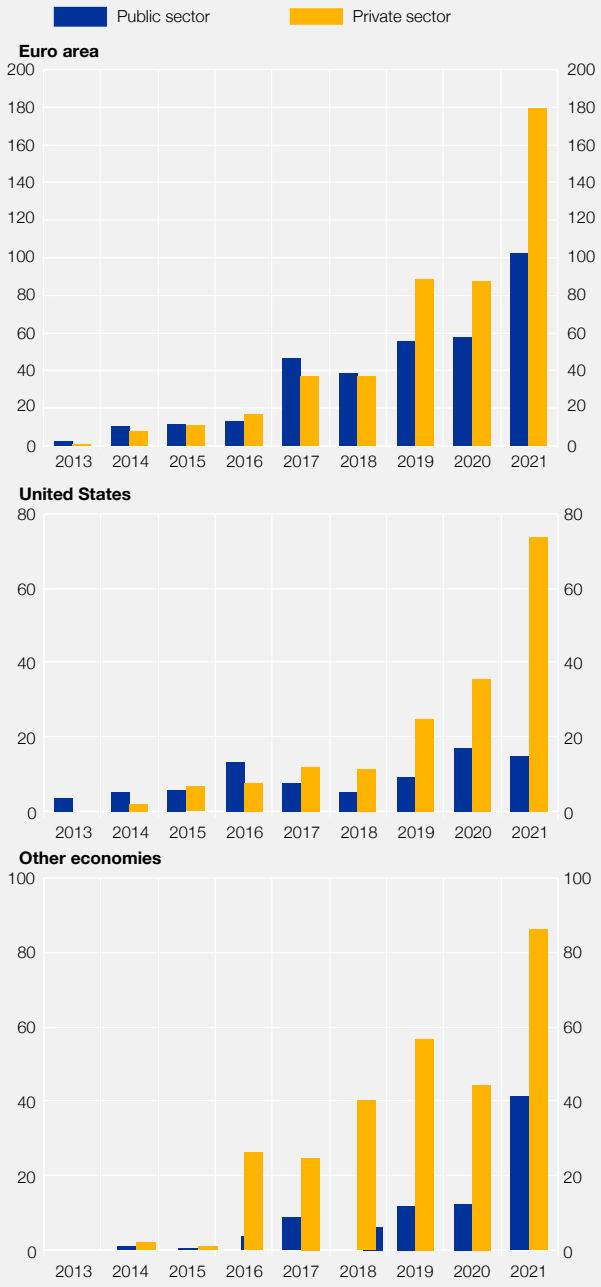
cover from the COVID-19 pandemic, the European Commission presented a plan in 2020, comprising 16 actions aimed to address key remaining challenges on the path towards the Capital Markets Union.[11] The plan identifies a need for deep and liquid capital markets, as well as the opportunity for the EU financial system to attract more investors and issuers globally to euro-denominated financial instruments, thereby strengthening the international role of the euro. One of the three key objectives of the new plan is to support a green and digital economic recovery by making financing more accessible to European businesses, through improved availability and accessibility to sustainability-related data.

Meanwhile, the EU has taken legislative initiatives for the financial system that support the financing of sustainable development through capital markets.[12] The introduction of common standards, labels and credit rating criteria will contribute to adequate and targeted financing and enhance the credibility of markets. Furthermore, the improvement of corporate sustainability practices for and relevant disclosures, e.g. the obligation of companies to publicly disclose their greenhouse gas emissions reduction targets and performance against the targets, will help to channel investments into financing the transition to a low-emission economy. These actions could also strengthen the integrity of the EU financial system and markets and reduce the risk of greenwashing.

The development of a green capital markets union is linked to further progress in addressing the shortcomings of the EU Capital Markets Union, to the harmonisation of corporate insolvency legislation and investor protection rules, as well as to the strengthening of integrated cross-border market supervision. Important elements of a green capital markets union include transparency standards (according to which companies are required to disclose sustainability data), EU-certified green financial products such as the proposed Green Bond EU Standard, and a harmonised regulatory and supervisory framework for sustainable finance. The completion of the EU's strategic actions and the creation of the necessary legal framework for the financial sector will put in place the enabling conditions for financing the transition to a sustainable European economy and for increasing the participation of capital markets in financing. The European Commission's proposal for a voluntary Green Bond

Chart B Green bond issuance by the public and the private sector in the euro area, the United States and other economies

(amounts in EUR billion)



Source: Refinitiv and Bank of Greece calculations.
Note: The charts show the value of Greek green bond issues in the period 2013-2021 in capital markets of the euro area, the United States and other economies, by issuers of the private sector (financial institutions and non-financial corporations) and the public sector (supranational organisations, federal states and public sector corporations).

11 Communication from the Commission "A Capital Markets Union for people and businesses", 24.9.2020, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2020%3A590%3AFIN.

12 Such as the Sustainable Finance Disclosure Regulation, the (amended) Regulation on EU Climate Transition and Paris-aligned Benchmarks, the proposal for a Regulation on European Green Bonds, and the proposal for a Directive on sustainability reporting by companies.

Standard based on the EU Taxonomy is a positive step in this direction. However, making this standard mandatory within a reasonable period of time would enhance the credibility of green investments. Similar initiatives are also necessary for instruments that finance other aspects of sustainable development (e.g. sustainable bonds or social bonds). Finally, the legislative framework will need to be sufficiently flexible to accommodate financial innovation, helping to meet funding needs.

The role of central banks

Physical risks, such as the higher frequency and severity of extreme weather events, as well as transition risks, e.g. from a late and abrupt transition to a low-carbon economy, could affect the transmission of monetary policy and jeopardize price, financial and economic stability. Central banks around the world are already considering how the physical and transition impact of climate change can be included in macroeconomic forecasting and financial stability monitoring. Also, they have been undertaking work to integrate climate-related risks into prudential regulation and supervision, engaging with rating agencies and financial firms s to ensure that climate-related risks are understood, disclosed and incorporated in risk assessment and in credit provision decisions.

In the summer of 2021, the Governing Council of the ECB approved a comprehensive action plan, with an ambitious roadmap to further incorporate climate change considerations into the ECB's policy framework to more systematically reflect environmental sustainability criteria in monetary policy. The ECB supports ongoing EU initiatives to improve the disclosure of climate data, in order to enhance transparency and promote a market for green financial instruments.[13]

13 See the article by the Governor of the Bank of Greece entitled "Central banks and climate change", *Handelsblatt,* 29.9.2021.

Box 30

CLIMATE CHANGE AND THE BANKING ENVIRONMENT[1]

Climate change, i.e. the change in the global climate as a result of human activity (anthropogenic climate change), caused mainly by an increase in the concentration of greenhouse gases (GHG) in the atmosphere, affects the natural environment, and thereby the economy and the financial system. The impact of climate change on financial stability is associated with the distribution and types of financial assets exposed to climate-related and environmental risks. These risks relate to the physical impacts of climate change (physical risks) and to the process of transition to a low emissions economy (transition risks), while the cost is significantly reduced by implementing the necessary measures in a timely and orderly manner. Therefore, climate change falls directly within the mandate of central banks –including the Bank of Greece– to, *inter alia*, ensure financial stability.

Climate change and the banking system: risks and interconnection

The main cause of climate change is the increase in global average temperature, which can lead to, among other things, sea level rise, floods, droughts, extreme weather events and extinction of species and ecosystems.[2] Damage from extreme weather events and the disruption of production processes is one example of the direct consequences of changes in weather patterns, along with the effects of long-term climate changes. These effects will in turn lead to a slowdown in productivity (e.g. declining crop yields, damages to businesses and infrastructure, loss of working hours and health problems due to extreme weather events), capital losses and additional expenditure for damage repair. As regards transition risks, businesses are faced with rising gas emission costs and compliance costs. The development of new green technologies, the improvement of energy efficiency and a potential decrease in the demand for environmentally harmful products may further weigh on the financial situation

1 Summary of Special Feature I: "Climate change and the banking environment", *Financial Stability Review,* December 2021 (in Greek).
2 Bank of Greece, *The environmental, economic and social impacts of climate change in Greece*, June 2011.

of some businesses and on households' disposable income. These impacts on the real economy are expected to affect the banking system; however, identifying and measuring the related risks in banks' risk assessment models is a challenge. The connection between climate-related risks and traditional banking risks mainly refers to:[3]

a) credit risk, since borrowers' debt-servicing capacity and/or banks' ability to fully recover the value of a loan in the event of a borrower's default are impaired (e.g. potential impact on the borrower's income and capital and/or the value of collateral due to extreme weather events and disruption of production processes);

b) market risk, in terms of adjustments in the value of financial assets when climate risk has not yet been fully reflected into the pricing of exposures (e.g. losses from declining prices of corporate bonds after a natural disaster);

c) liquidity risk, as banks' access to stable sources of funding is affected, given that climate change may impact on deposit/credit flows (e.g. when credit lines and deposits are used and withdrawn, respectively, to address damages from natural disasters) and securities holdings (fire sales); and

d) operational risk, as natural disasters (e.g. floods, wildfires) may cause damages that directly affect the operation of banks' facilities (e.g. branches, central units) and also companies with which a bank cooperates in providing services to its customers and which may be exposed to natural hazards.

Moreover, a bank's legal and reputational risk may increase where it finances activities with a high level of GHG emissions or promotes products as sustainable while in reality they are not environmentally friendly ("greenwashing", see also Box II.3).

The complexity of the climate change challenge and our still incomplete understanding of its impacts on macroeconomic indicators such as inflation and interest rates make further research necessary, and to this end, central banks are already developing particular actions.[4] On the other hand, climate change could create new opportunities to develop a bank business model that is geared towards financing of sustainable activities, innovative products and projects for climate change adaptation, in order to promote transition towards a low-emissions economy. It should be noted, however, that the growth of the necessary financing is hampered by the lack of definitions and criteria commonly accepted and widely used by stakeholders and markets, which would enable a reliable identification and assessment of those investments that are aligned with greenhouse gas emission reduction targets.

Climate change and global initiatives

The Paris Agreement (2015) set out goals and a framework to strengthen countries' ability to deal with the impacts of climate change. Similarly, as most central banks acknowledged in time climate change as a challenge for the financial system, they have undertaken and continue to undertake important actions to address it within their competences and in line with their mandate. Furthermore, the Basel Committee on Banking Supervision (BCBS), in the context of its relevant actions on climate change,[5] has been assessing the extent to which climate-related financial risks can be addressed within the framework of existing rules. Furthermore, the Network of Central Banks and Supervisors for Greening the Financial System (NGFS), of which the Bank of Greece is a member, in order to contribute towards achieving the objectives of the Paris Agreement, among other things published in May 2020 a Guide with recommendations and best practices for the integration of climate-related and environmental risks into supervisory activities.[6] One of these recommendations is to develop a clear strategy and establish internal arrangements to address climate-related issues.

3 ECB (2021), "Climate-related risk and financial stability", July 2021, and "Climate change and monetary policy in the euro area" September 2021, and Papandreou, A.A. (2019), "Stranded assets and the financial system", Bank of Greece, Working Paper No. 272.
4 ECB press release, "ECB's Governing Council approves its new monetary policy strategy", 8.7.2021.
5 BIS, "Basel Committee advances work on addressing climate-related financial risks", November 2021.
6 NGFS, "Guide for Supervisors: Integrating climate-related and environmental risks into prudential supervision", May 2020, and "Progress report on the Guide for Supervisors", October 2021.

At the 26th United Nations Climate Change Conference of the Parties (COP26) in Glasgow (October-November 2021), countries further committed to reducing greenhouse gas emissions (mainly carbon dioxide and methane) and to addressing deforestation by financing actions.[7] In the context of this conference, the NGFS, the ECB and 68 central banks that are members of the NGFS –including the Bank of Greece[8]– committed to take further actions to facilitate the transition to a carbon-neutral economy and achieve the objectives of the Paris Agreement. In addition, major banking groups that control around 40% of the world's financial assets reiterated in a joint statement their readiness to substantially support green growth through targeted lending.

EU initiatives on tackling climate change and protecting the financial system

The European Union, under the European Green Deal and the plan to achieve interim emissions' reduction targets by 2030,[9] aims at a growth model that is based on sustainable economic activities, as these will be defined in the relevant classification system currently under development (EU Taxonomy Regulation[10]). In addition, the proposal for an EU Regulation[11] on European green bonds could support the financing of sustainable growth and further deepen the green bonds markets, also by enhancing the credibility of these bonds while reducing the risk of greenwashing. The recent proposal of the "Banking Package 2021"[12] includes sustainability issues in banks' regulatory and supervisory framework, by integrating climate-related and environmental risks into banks' risk management framework and supervisory process. Furthermore, in November 2021, the ECB's Single Supervisory Mechanism (SSM) published a report[13] on banks' approaches and progress on integrating climate-related risks into their practices and meeting the relevant supervisory expectations published one year ago.[14] The report recognises that efforts to meet the supervisory expectations are under way and most banks have prepared plans to meet them in the near future.

In terms of climate risk analysis, in September 2021,[15] the ECB published the results of its first economy-wide climate stress test, an exercise that assessed the impact of climate change under three different climate policy scenarios. In Greece, while the share of firms subject to transition risk is close to the EU average, the share of firms exposed to physical risks is much higher compared with other countries. This is due to many reasons and, according to the methodology followed, it may be attributed *inter alia* to Greece's geographical location (and its vulnerability to climate change), the exposure of Greek banks to domestic firms (mainly based in Greece) and adaptation measures that have or have not been implemented. In addition, the ongoing European stress test on climate-related risks, a learning exercise to assess banks' climate-risk preparedness conducted in the first half of 2022,[16] aims to contribute to better understanding of the challenges that banks face in managing climate-related risks. The benchmark analysis to assess the sustainability of banks' business models and their exposure to emission-intensive companies by comparing them through a common set of climate risk metrics could also help identify vulnerabilities faced by banks and appropriately integrate the insights into the Supervisory Review and Evaluation Process (SREP).

The Bank of Greece's initiatives to tackle climate change and safeguard financial stability

The Bank of Greece was among the first central banks to systematically engage with the analysis of the economic, social and environmental impacts of climate change, undertaking initiatives such as the establishment of the Climate Change Impacts Study Committee (CCISC) in 2009 and contributing to the design of policy measures to limit the adverse impacts of climate change and to facilitate adaptation. The Bank of Greece was the first central

7 Glasgow Climate Change Conference, October-November 2021.
8 Bank of Greece COP26 pledge, 3.11.2021.
9 European Commission, European Green Deal.
10 EU Taxonomy for sustainable activities.
11 Regulation of the European Parliament and of the Council on European green bonds, July 2021.
12 European Commission, "Banking Package 2021: new EU rules to strengthen banks' resilience and better prepare for the future", October 2021.
13 ECB, "The state of climate and environmental risk management in the banking sector", November 2021.
14 ECB, "Guide on climate-related and environmental risks", November 2020.
15 ECB press release, "Firms and banks to benefit from early adoption of green policies, ECB's economy-wide climate stress test shows", September 2021.
16 ECB Press Release, "ECB Banking Supervision launches 2022 climate risk stress test", 27.1.2022.

bank to endorse the Principles for Responsible Banking of the United Nations Environment Programme Finance Initiative (2019) and is also a member of the NGFS and other international working groups (e.g. ECB or European Banking Authority groups). In addition, in 2021, the Bank of Greece set up the Climate Change and Sustainability Centre, whose main task is to coordinate the Bank's actions on climate and sustainability issues.

Conclusions – recommendations and prospects

Climate change requires multi-level cooperation in order to be addressed and to achieve the goals for green growth, as it is expected to have significant environmental, social and economic impacts. Central banks, within their remit, play an important role in facilitating the transition to a sustainable low-emissions economy, while at the same time safeguarding financial stability. With the development of methodologies, data availability, research and analysis and policymaking, central banks can contribute to address the impacts of climate change and financing sustainable growth. At the same time, commercial banks need to develop a modern business model, which is capable of managing the risks of climate change in their financial exposures as well as financing green growth. The benefits are expected to be significant in terms of improving their assets through new exposures to sustainable projects and activities, but also in terms of reducing non-performing loan ratios. The financing strategy of projects (through green loans) for the transition to a new energy model based on the use of renewables, high energy efficiency and net-zero greenhouse gas emissions (sustainable finance) will contribute to meeting the goals for limiting global warming, adapting to the changing climate and strengthening resilience.

Box 31

GREEN FINTECH

Achieving the goals of the European Green Deal for sustainable growth and net-zero greenhouse gas emissions by 2050 creates new opportunities as well as challenges because of the substantial additional investment needed. Green finance can foster investment in green innovative projects, thus supporting both the transition to a low-carbon economy and digital transition.[1] The 26th UN Climate Change Conference of the Parties (COP26) in 2021 brought together world leaders and climate experts to agree on the measures needed to tackle climate change and keep temperature increase ideally below 1.5°C. As highlighted by the COP26 objectives and conclusions, there is a clear link between sustainable finance and technological innovation.[2] While the Action Plan on Financing Sustainable Growth[3] and the Action Plan on Fintech[4] have been developed as separate initiatives, the European Commission, in its Strategy for Financing the Transition to a Sustainable Economy,[5] has highlighted the need to seize the opportunities offered by digital technologies for sustainable finance. In 2018, the G20 Sustainable Finance Study Group examined the potential benefits of applying digital technology on sustainable finance.[6]

Green financial technology

Green financial technology (green fintech) is defined as "technology-enabled innovations applied to any kind of financial processes and products all while intentionally supporting Sustainable Development Goals or reducing sustainability risks".[7] The application of digital technologies in green finance is perceived as beneficial for its po-

1 See also Box 29.
2 The global debate on how emerging technological innovations could be used to support green finance started in 2014, when the United Nations Environment Programme (UNEP) launched the "Inquiry: Design of a Sustainable Financial System". In 2016, green finance was very much under the radar of G20 leaders, with the launch of the Green Finance Study Group during China's G20 presidency.
3 https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52018DC0097.
4 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0109.
5 https://eur-lex.europa.eu/resource.html?uri=cellar:9f5e7e95-df06-11eb-895a-01aa75ed71a1.0001.02/DOC_1&format= PDF.
6 See https://g20sfwg.org/wp-content/uploads/2021/06/G20_Sustainable_Finance_Synthesis_Report_2018.pdf.
7 For green fintech taxonomy, see https://www.greenfinanceplatform.org/sites/default/files/downloads/resource/GreenFintechTaxonomyDataLandscaping-v5%20.pdf.

tential to make large amounts of data available at a lower price and at a fast pace, improving the pricing of environmental risks and opportunities, reducing search costs for information as well as improving the measuring and tracking of sustainability criteria. In such a way, green fintech facilitates access to sustainable finance options, unlocks new sources of finance and enables new business models.[8] For example, the use of blockchain for the automation of processes in bond issuance, although not yet widely adopted, has the potential to reduce the costs of design and financing of green bonds. Big data, machine learning and artificial intelligence would allow the collection from disparate sources, processing of large amount of data about companies' social and environmental impacts as well as translation into more standardized and comparable data for investment decision-making.[9] These digital technologies are already being used by organisations in disaster risk management.[10] Blockchain technology allows also the greenness of investments to be verified in a secure and transparent manner, increasing confidence and lowering costs associated with green labelling. Fintech solutions facilitate access to green finance for start-ups, e.g. through peer-to-peer (P2P) solutions. "Green" crowdfunding platforms enable investors to directly participate in the financial system unlocking new sources of sustainable finance.

Fintech can be considered in part as a more environmentally friendly alternative to the traditional financial sector. For example, cloud computing technologies, in addition to consumer benefits such as increased convenience and more clarity in personal finance management, can contribute considerably to reducing the carbon footprint through energy savings. In addition, as the average consumer is growing more environmentally conscious, some fintech companies seize the opportunity to invest in green initiatives to grow their market share and give a strong incentive to investors who are willing to allocate resources to projects aligned with the relevant sustainability goals.[11] The fintech sector continues to grow rapidly[12] and to make considerable efforts to become "greener".[13] However, it should be noted that the use of digital technologies, such as artificial intelligence and blockchain, implies a high carbon footprint.[14] The European Commission has stressed that while digital technologies are important in the transition process, there are concerns about the environmental impact and growing energy needs of data centres and distributed ledger technology, especially as regards crypto-assets.[15] Furthermore, regulators and supervisors, in cooperation with central banks, should establish the appropriate framework to ensure the safety and protection of users, the financial system and the economy, in line with sustainable development goals and the transition towards an economy with net-zero greenhouse gas emissions.

Conclusions and challenges

Digital transformation and climate neutrality are the two mega-trends that will shape our future. The challenges that are related to leveraging the full potential of digital finance to mobilize sustainable finance include, among other things, the high energy footprint of digital technologies, the weak digital infrastructure as well as the high costs of newer technologies, the quality and use of sustainability-related data for financial decision-making, the limited awareness and understanding of sustainable digital finance. There is a need to further understand the interaction of sustainable finance, which is a relatively new concept, with digital finance, which is rapidly changing. The effective use of fintech products and services requires, *inter alia*, high levels of digital financial

8 https://g20sfwg.org/wp-content/uploads/2021/06/G20_Sustainable_Finance_Synthesis_Report_2018.pdf.
9 The interest in sustainable financial products has led the largest credit rating agencies to revise methodologies and establish credit rating standards to incorporate climate and environmental risks. It is therefore necessary for investors to have reliable and comparable data in order to make informed decisions on environmental risks. See Bank of Greece, *Monetary Policy Interim Report* 2021, Box VII.2.
10 The World Bank uses machine learning techniques in its disaster management strategy: https://documents1.worldbank.org/curated/en/503591547666118137/pdf/133787-WorldBank-DisasterRiskManagement-Ebook-D6.pdf.
11 For example, by planting trees and funding projects related to clean energy and solar energy, etc. See, *inter alia*, https://www.finextra.com/blogposting/20197/the-5-green-fintechs-you-need-to-watch-in-2021.
12 In the first half of 2021, global fintech investment reached USD 98 billion through 2,456 agreements. See KPMG, Pulse of Fintech H1 2021.
13 Further digital transformation and delivering the sustainable development goals are the two top trends in the financial sector for 2022. See Capgemini (2022), *Top Trends in Banking* 2022 (eBook).
14 See Alonso, A. and J.M. Marqués (2019), "Financial Innovation for a Sustainable Economy", Banco de España, *Documentos Ocasionales*, No. 1916.
15 https://eur-lex.europa.eu/resource.html?uri=cellar:9f5e7e95-df06-11eb-895a-01aa75ed71a1.0001.02/DOC_1&format= PDF.

literacy.[16] At the same time, the European Commission and the OECD have stressed the need to promote shared understanding of the financial competences individuals need in order to make sound decisions on personal finance while also supporting sustainability.[17] As regards Greece, there is a strong digital divide, with significant socioeconomic differences in access to and use of digital technologies. It is therefore necessary to set up a system of continuous education and training. Moreover, investment in innovation and infrastructure is required for Greece to become a technology hub.[18]

16 In 2016, leaders endorsed the high-level principles on digital financial inclusion, which involved the strengthening of digital and financial education and awareness raising. See GPFI (2016), "G20 High-Level Principles for Digital Financial Inclusion, Global Partnership for Financial Inclusion". Moreover, the European Commission has recognised the importance of financial literacy for consumers in the context of their greater participation in the capital market and for small- and medium-sized enterprises in the context of the Capital Markets Union. See European Commission (2020), *A new Vision for Europe's capital markets: Final Report of the High-Level Forum on the Capital Markets Union*.

17 For example, individuals should understand and take into account the environmental impacts of their purchases, be able to assess sustainable investments, identify cases of greenwashing, climate-related risks and sustainability labels. See also European Union/OECD (2022), "Financial competence framework for adults in the European Union".

18 See Bank of Greece, *Annual Report* 2020, Box X.3, for further analysis of the factors that may fuel the risk of technological lags in Greece.

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