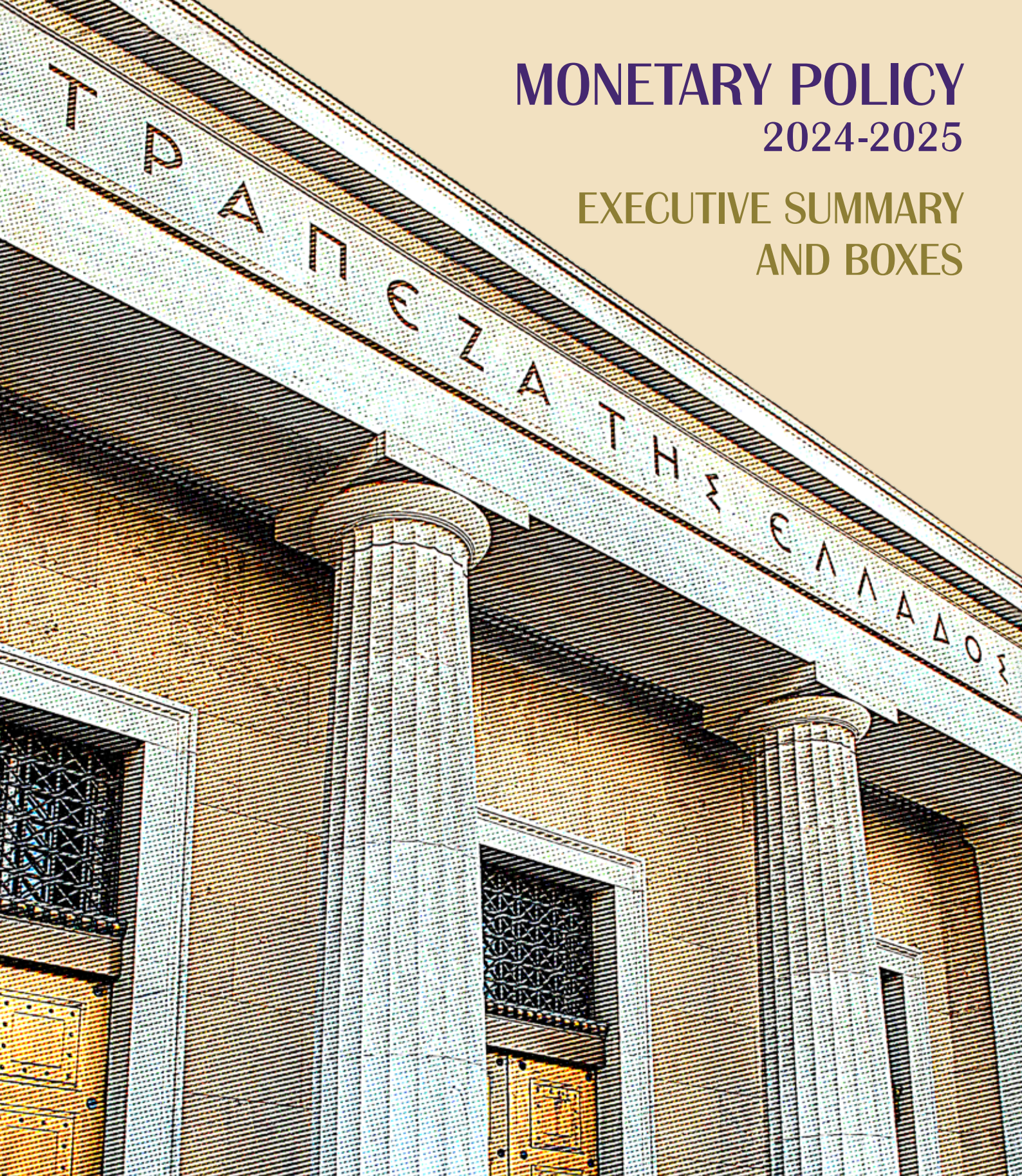# MONETARY POLICY
2024-2025

EXECUTIVE SUMMARY AND BOXES

JUNE
2025

BANK OF GREECE
EUROSYSTEM

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2024-2025

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EXECUTIVE SUMMARY

THE GREEK ECONOMY: ADDRESSING GLOBAL CHALLENGES AND ENSURING STABILITY

1   INTRODUCTION

The world economy is currently in transition, with the fundamental principles of the post-war international economic system being called into question. The United States have adopted protectionist policies, imposing historically high tariffs on strategic trading partners, including China, Mexico, Canada and the European Union (EU). These tariffs create an environment of increased global trade restrictions, forcing the affected economies to retaliate. Although the temporary de-escalation of tensions between the United States and China is encouraging, the overall setting continues to be highly volatile. Rising protectionist trends increase the risk of a full-blown and prolonged trade war, hampering economic policymaking at the global level.

The impacts of the trade war are already visible around the world, hurting demand, trade flows and financial market stability. Meanwhile, heightened uncertainty dents confidence and market sentiment.

The global economy is set to slow further in 2025, weighed down by a more restrictive environment for international trade and a sharp increase in uncertainty due to (mainly US) trade and economic policies, affecting not only exports, but also consumption and investment in many economies. The announcement of across-the-board "reciprocal" tariffs by the United States in early April 2025 sparked turmoil in international equity and bond markets. High uncertainty and worsened market sentiment have led to a considerable downward adjustment in investor expectations about economic activity in a number of major economies, especially the United States, where tariffs are expected to push up inflation.

In this context, for the first time since the 1970s, investors are increasingly wary of US federal bonds, as indicated by a Treasuries sell-off and flight-to-safety outflows. This is a momentous development that points to reduced investor confidence in US economic policy, reflecting deeper concerns about US macroeconomic stability and fiscal performance. This in itself acts as a catalyst in the international financial system, with the status of US federal bonds as a risk-free benchmark asset being eroded. At the same time, the euro area recorded net inflows into long-term bonds and the money market, while the euro appreciated, with European securities being seen as a safe haven, highlighting a significant opportunity for the European economy, with a possible strengthening of the euro's role as an international reserve currency.

The euro area economy has shown resilience in early 2025, but the growth outlook is subject to downside risks. The high degree of uncertainty, as a result of deteriorating international trade conditions, heightened geopolitical instability and financial market volatility, is weakening investment incentives and undermining consumer confidence. Despite the challenges stemming from the external environment, euro area economic activity accelerated in the first quarter of 2025, mainly due to a frontloading of investment and exports in anticipation of higher tariffs.

The process of disinflation in the euro area continued in the first five months of 2025. Most measures of underlying inflation suggest that headline inflation, after a temporary fall below target, will settle at around the 2% medium-term target on a sustained basis. Accordingly, the Governing Council of the European Central Bank (ECB) in January, March, April and June 2025 reduced the deposit facility rate (DFR) by 25 basis points each time.

In this external economic environment, the Greek economy continues to perform well despite mounting international uncertainty. Headline inflation shows signs of persistence, which delays its decline relative to inflation for the euro area as a whole. On the fiscal front, achievements in 2024 were remarkable, with an overperformance of public revenues, as structural reforms to combat tax evasion, strengthen the tax collection mechanism and improve tax compliance are now paying off on a sustainable basis, while public debt keeps declining visibly. At the same time, employment is increasing, the unemployment rate has fallen to single-digit levels and labour market tightness is easing. However, housing affordability remains a major concern for households, and the current account deficit widened further in the third quarter of 2025, reflecting deteriorations in the services balance, the secondary income account and the goods balance. On the other hand, bank lending rates fell, and the annual growth rate of bank lending to firms reached a post-2009 high at the end of the first four months of 2025, while banks' fundamentals have improved overall. Moreover, there were further credit rating upgrades of the Greek sovereign and Greek banks. Thus, positive domestic developments have acted as a bulwark against the heightened uncertainty prevailing in the international financial environment.

Amid heightened international uncertainty due to trade protectionism and geopolitical shifts, the top priority for the Greek economy is to increase its resilience and adaptability to the new conditions and challenges. Therefore, economic policy should remain committed to safeguarding financial and fiscal stability as well as the sustainable reduction of the debt-to-GDP ratio. Equally important are a continuation of reforms, faster implementation of the National Recovery and Resilience Plan – particularly with regard to investments in infrastructure to tackle the impacts of the climate crisis and to promote green and digital transitions – and increasing the economy's trade openness. All this will contribute to enhanced economic stability and resilience, further sovereign credit rating upgrades and sustainable growth rates.

2   THE GREEK ECONOMY: DEVELOPMENTS AND PROSPECTS

2.1   Real economy: Maintaining growth momentum despite increasing international uncertainty

Economic activity: Despite heightened uncertainty, the Greek economy grew by 2.2% year-on-year in the first quarter of 2025. Growth was mainly driven by private and public consumption and exports of goods, while the contribution of exports of services, investment and imports was negative.

Short-term indicators of economic activity in industry, construction and services, despite fluctuations, are still in expansionary territory. Business expectations remain high compared to the euro area, in contrast with consumer confidence, which seems to be affected by developments in the international environment. More specifically, the Purchasing Managers' Index (PMI) suggests strong growth for manufacturing output over the first five months of the year and continues to outperform the euro area PMI.

Inflation: Headline inflation remained close to 3% on average in the first five months of 2025, before rising to 3.3% in May (compared with 1.9% in the euro area), chiefly due to increases in the prices of food and non-energy industrial goods. Yet, the persistence of services inflation, due to wage growth, indirect taxes (on food and accommodation services) and high, mainly foreign, demand (tourism), prevents its rapid de-escalation.

Real estate market: In the housing market, the annual growth rate of apartment prices for the country as a whole declined slightly in the first quarter of 2025 relative to the fourth quarter of 2024. Overall, the Greek real estate market continues to attract investment interest and demand for all property uses, particularly housing and accommodation. However, mounting chal-

lenges in the international political and economic environment, as well as chronic red tape, cast doubt on the sustainability of this momentum. The recent Council of State rulings on the unconstitutionality of the New Building Regulation's incentive system, which directly affect building activity, add to already existing market-inhibiting factors – such as increased construction costs, labour shortages, complex procedures and delays in real estate transfers. Meanwhile, in the housing market, given that housing affordability is already a major concern for households, growing supply and demand mismatches are expected to further aggravate the problem in the period ahead, with housing shortage being more pronounced in metropolitan centres and tourist destinations.

Labour market: The labour market expanded further in the first quarter of 2025, while the unemployment rate has declined. More specifically, total employment grew by 1.0% in the first quarter of 2025 (compared with 1.8% in the first quarter of 2024) and the unemployment rate dropped to 10.4% from 12.1%, respectively. Private sector employment, based on dependent employment flows data from the ERGANI information system, remained broadly the same as in the first four months of 2024, on the back of a positive outlook for the forthcoming tourist season. Short-term employment prospects in the first five months of 2025 improved in construction and manufacturing, but deteriorated slightly in trade and services, although hovering in positive territory. Furthermore, labour market tightness, which characterises key sectors of the economy such as tourism, construction, manufacturing and the primary sector, appears to be easing over the past few quarters.

Competitiveness: After an almost continuous and visible improvement in the past several years, the international competitiveness of the Greek economy deteriorated somewhat in 2024, in terms of both relative prices and relative unit labour costs. Nevertheless, unit labour cost competitiveness relative to other euro area economies has improved remarkably over the past ten years. The deterioration in 2024 was mainly due to the appreciation of Greece's nominal effective exchange rate, which, despite signs of moderation in the last quarter, had an adverse effect on national competitiveness indicators for Greece and most euro area countries. The modest rise in Greece's real effective exchange rate indices since 2023 reflects not only the significant appreciation of the euro, but also the Greek economy's faster growth vis-à-vis major trading partners. During the first four months of 2025, geopolitical, trade and economic developments led to a renewed appreciation of the euro, which, coupled with the domestic inflation outlook, is expected to further weigh on competitiveness indicators for 2025.

In terms of structural competitiveness, despite recent substantial progress, Greece's comparative ranking among advanced economies remains low. Notwithstanding this, the improvement that was recorded resulted in higher foreign direct investment (FDI) in 2024, which rose to EUR 6.0 billion (2.5% of GDP) from 4.4 billion (1.9% of GDP) in 2023. FDI flows in the first quarter of 2025 were higher year-on-year and came to EUR 1.2 billion, reflecting investment in equities and real estate. The sectors of manufacturing, construction and real estate (management and private sales/purchases) attract the most FDI inflows.

Current account balance: In the first quarter of 2025, the current account deficit increased year-on-year, owing to deteriorations in the services balance, the secondary income account and the goods balance, which were partly offset by an improvement in the primary income account. The higher deficit of the goods balance chiefly reflects a worsening in the fuel balance, as exports fell more than the corresponding imports. The deficit of the non-fuel balance of goods also widened, as the value of imports grew more than the value of exports. Over the same period, the surplus of the services balance shrank, as a result of deteriorations in all individual components – mostly the transport balance and to a lesser extent the other services and travel balances. The surplus of the transport balance decreased due to negative developments in both of its main components (sea transport and other transport services). Compared with the first quarter of 2024, the rise of 4.4% in travel receipts in the first quarter of 2025 was attributable

to a 5.4% increase in inbound traveller flows, as average expenditure per trip dropped by 1.1% on the back of subdued economic growth and hence limited disposable income in the main countries of origin.

2.2 Fiscal developments: Efforts to tackle tax evasion led to sustainable overperformance of public revenues – Large decline in the public debt-to-GDP ratio

According to the first notification of fiscal data for 2021-2024 by the Hellenic Statistical Authority (ELSTAT) in the context of the Excessive Deficit Procedure in April 2025, the general government budget balance, for the first time since 2019, turned from a deficit of 1.4% of GDP in 2023 to a surplus of 1.3% of GDP in 2024. The primary balance of general government in 2024 turned out at a surplus of 4.8% of GDP, up from a surplus of 2.0% of GDP in 2023, significantly exceeding the 2025 Budget forecast (surplus of 2.5% of GDP). This performance marks a historic milestone for fiscal data in at least the last thirty years. In parallel, public debt declined sharply by 10.3 percentage points of GDP, from 163.9% of GDP in 2023 to 153.6% of GDP in 2024, reaching a post-2010 low. This decline reflects the rise in GDP as well as a decrease of EUR 4.2 billion in the absolute size of public debt. Among EU Member States, Greece achieved the largest debt reduction and the fourth highest primary surplus as a percentage of GDP and is one of only six countries with an overall budget surplus.

The better-than-projected fiscal outcomes in 2024 were due to the overperformance of tax revenues against the targets, as well as the containment of primary expenditure. The factors behind the overperformance against fiscal targets for 2024 are sustainable, creating larger fiscal space and allowing the adoption of new permanent fiscal measures, amounting to EUR 1.1 billion, as from 2025, in line with the new fiscal rules.

Fiscal policy is estimated to have remained contractionary in 2024, but is expected to turn expansionary in 2025, due to the fiscal stimulus from public investment financed by the Recovery and Resilience Facility (RRF).

With regard to the absorption of RRF funds, Greece has so far made satisfactory progress in fulfilling the relevant milestones and targets and in receiving payment requests. After the disbursement of the 5th payment request by the European Commission in May 2025, Greece has received a total of EUR 21.3 billion (59% of available funds), of which EUR 11.4 billion in loans (64.3% of total) and EUR 9.9 billion in grants (54.5% of total), having completed 35% of the agreed targets/milestones.

According to data for the first four months of 2025, the government budget balance improved year-on-year, recording a primary surplus of 2.1% of GDP, against 1.4% of GDP. This improvement is chiefly attributable to increased tax revenue.

2.3 Financial developments: Positive domestic developments act as a bulwark against increased international uncertainty

Financial conditions had been improving up until early 2025, mainly reflecting investor expectations of further interest rate cuts by central banks in large advanced economies. This improvement was also due to the fact that both current inflation readings and breakeven inflation rates in the euro area and the United States have declined overall, as a result of past policy rate hikes by major central banks.

However, since the first quarter of 2025, the successive US tariff announcements on major trading partners and on key production sectors, such as the steel and aluminium industries, have caused a surge in uncertainty and turmoil in equity and bond markets, primarily in the United States. Tariffs, heightened uncertainty and worsening market sentiment have forced investors to revise their expectations downwards about economic activity and upwards about inflation, mainly as regards the United States. In this environment, US federal bond yields rose sharply,

reflecting increased uncertainty about US economic policy, as well as a Treasuries sell-off and flight-to-safety outflows.

Although real bond yields in the United States have declined markedly, suggesting a weakening in investor expectations about activity in the US economy, this is not mirrored in a respective weakening for the euro area, where real yields increased following the announced intention to activate the national escape clause under the new EU fiscal rules with a view to enabling higher defence spending. Moreover, especially during the financial turmoil of April 2025 that was sparked by the announcement of new tariffs by the US administration, euro area government bond yields declined, offsetting the strong pressures on investment portfolios from higher bond yields and lower equity prices in the United States. This development is explained by sizeable inflows of investors' funds into, mainly, euro area bonds, as well as by concomitant outflows from US positions, also leading to an appreciation of the euro vis-à-vis the US dollar.

In 2025, Greek government bond yields have tracked developments in yields on other euro area government bonds. Thus, they increased in mid-March, due to the upward impact of rising German bond yields. However, during the April turmoil in international markets, they declined, closely in line with other euro area government bond yields. Greek bank and other corporate bond yields continued their downward path despite the April turmoil. These positive developments are being underpinned by the ongoing upgrades of the Greek government's credit rating. In particular, Morningstar DBRS upgraded the Greek economy from BBB (low) to BBB in early March 2025, while in mid-March Moody's upgraded Greece from Ba1 (equivalent to BB+) to Baa3 (equivalent to BBB-). Finally, in April S&P upgraded the Greek economy further from BBB- to BBB. In synch with the upgrades of the sovereign credit rating, the credit ratings of Greek banks continued to be upgraded.

According to international credit rating agencies, the drivers of such upgrades are Greece's stronger-than-anticipated economic growth, the overperformance of fiscal aggregates against the targets and a drastic reduction in the public debt-to-GDP ratio, as well as Greek banks' improved fundamentals. Greece's sovereign credit rating upgrades have broader positive effects, helping to lower borrowing costs for the Greek economy as a whole and attracting international flows to Greek equities and bonds. Thus, it becomes clear that positive domestic developments act as a bulwark against the heightened uncertainty prevailing in the international financial environment.

European equity prices are outperforming their US counterparts, in contrast with the previous years when US equities showed considerably stronger gains, mostly driven by the high-tech sector. Underlying this development was a reversal of the initially upward trend in US equities, with prices plummeting particularly during the April turmoil. But equity prices rebounded following the announcement of the 90-day tariff suspension, assisted by important announcements of share buybacks by US listed companies. Stock prices on the Athens Exchange broadly followed international developments, continuing the upward trend seen in early 2025, before falling sharply in early April amid the international market turmoil, but recouped most of their losses later. In this context of mounting uncertainty in international capital markets, volatility increased in the first five months of 2025. At a sectoral level, the positive performance of the composite share price index (Athex) since early 2025 was driven by the shares of Greek banks, while most sectoral indices showed gains.

2.4 Banking sector: Decline in deposits, reduction in lending rates and increase in loans

Interest rates on time deposits continued to decline in line with the Eurosystem's policy rate cuts, while rates on overnight deposits (current, sight and savings accounts) remained broadly unchanged. The weighted average interest rate on time deposits for households stood at 1.5% on average in the first four months of 2025 (Jan.-Apr. 2024: 1.8%) and the respective interest rate for non-financial corporations (NFCs) averaged 2.2% (Jan.-Apr. 2024: 3.2%). The reduction in household time deposit rates was more moderate, discouraging shifts of savings to alternative investments, given that household deposits represent a large share (around 75%) of total retail deposits.

After an overall annual increase of EUR 8.6 billion in 2024, in the first four months of 2025 the stock of private sector deposits fell by a cumulative EUR 4.9 billion year-on-year (Jan.-Apr. 2024: EUR -4.2 billion) to stand at EUR 198.4 billion in April 2025. The low level of deposit rates (both in nominal and in real terms) encouraged a significant shift of funds to other saving options that offer better returns. For instance, on the basis of financial accounts data, domestic households' net holdings of Greek Treasury bills and investment fund shares/units in 2024 amounted to about EUR 9 billion.

The cost of bank borrowing for businesses and households has generally declined this year, in line with the Eurosystem's monetary policy stance. For businesses, the cost of bank borrowing has declined somewhat more, as the majority of new loans carried a floating rate or a rate fixed for up to one year. As a result, the weighted average interest rate on bank loans to NFCs averaged 4.5% in the first four months of 2025, around 140 basis points below its year-on-year average level. For households, the pass-through of policy rate cuts into bank lending rates has been more limited than for businesses, as a larger share of new loans carries a fixed interest rate. The weighted average interest rate on bank loans to households stood at 5.8% on average in the first four months of 2025 (Jan.-Apr. 2024: 6.3%).

In April 2025, the year-on-year growth rate of credit to NFCs reached the highest level (17.2%) observed since early 2009. In January-April 2025, the average monthly net flow of bank credit to NFCs amounted to EUR 562 million, against a slightly negative flow in the first four months of 2024. The average monthly outstanding amount of bank loans without a defined maturity has also increased. Conversely, the average monthly gross flow of bank loans with a defined maturity to NFCs weakened to EUR 1.2 billion, from EUR 1.5 billion in January-April 2024. The provision of business credit was supported by the co-financing and guarantee instruments of development agencies, as well as by bank loans co-financing investment projects under the RRF. In particular, in the first four months of 2025, 17% of new credit to NFCs was backed by financial instruments and 13% by RRF loans. Small and medium-sized enterprises (SMEs) benefited the most, with their share in new credit associated with financial instruments or RRF loans exceeding 40%.

The growth rate of consumer loans in the first four months of 2025 slowed slightly. On the other hand, the rate of contraction in housing loans was weaker. The average monthly gross flow of both consumer loans with a defined maturity and housing loans rose year-on-year. Demand for housing loans has been bolstered by lower (year-on-year) mortgage rates, as well as by rising house prices. The "My Home II" and "Upgrade My Home" programmes also support the supply of housing loans by domestic banks.

The expected rise in GDP for 2025 is anticipated to boost credit expansion to NFCs. Besides, the lower level of lending rates, thanks to the pass-through of Eurosystem policy rate cuts into bank interest rates, will have a favourable effect on credit growth. The absorption of loan amounts under the RRF is expected to be higher in 2025-26, contributing to stronger NFC credit growth, as (i) several loan agreements have already been signed, with imminent disbursements, and (ii) new loan agreements are expected to be signed in anticipation of the end of the funding programme. Finally, the provision of new bank loans will be supported by the programmes of the European Investment Bank in the context of the MFF 2021-2027, as well as by the programmes of the Hellenic Development Bank.

Banking system: Improved fundamentals and credit rating upgrades of banks

In 2024 and in the first quarter of 2025, the credit rating upgrades of banks were still ongoing, reflecting banks' improved fundamentals, a strengthening of the macroprudential policy framework and the positive effects of the sovereign credit rating upgrades. As a result, the most favourable ratings assigned to the significant banks are now within investment grade territory.

In the first quarter of 2025, the profitability of Greek banks increased year-on-year, mainly driven by higher fee and commission income and lower loan loss provisioning. Net interest income re-

mained almost unchanged, despite the reductions in key Eurosystem interest rates, due to higher net funding.

As suggested by banks' data releases for the first quarter of 2025, the capital adequacy ratios of Greek banks continue to strengthen. This development, if confirmed by system-wide final data, is set to support the further convergence of capital adequacy ratios towards the respective European ratios. The capital adequacy of Greek banking groups is bolstered by issues of Additional Tier 1 (AT1) and Tier 2 bonds.

The quality of Greek banks' loan portfolios improved further in 2024. Against this background, Greek banks have largely converged towards their European peers, on average, in terms of asset quality. In greater detail, the non-performing loans ratio on a solo basis declined markedly in 2024, compared with 2023, and reached a historic low, where it remained in the first quarter of 2025. This was partly due to the securitisation of non-performing loans, under the "Hercules" government guarantee scheme, of the entity that emerged from the merger between Attica Bank and Pancreta Bank.

Bank liquidity remained at high levels, well above the supervisory requirement. The liquidity coverage ratio (LCR) declined slightly and the net stable funding ratio (NSFR) rose, both exceeding by far the respective euro area averages. In addition, the loan-to-deposit ratio continues to be significantly lower for Greek banks than for euro area banks overall.

Improvements in Greek banks' fundamentals create favourable conditions, enabling them not only to meet their operational targets for the financing of the real economy in the period ahead, but also to achieve further credit rating upgrades. However, the observed tightening in global financial conditions is a major challenge. Therefore, the solid performance of Greek banks needs to be sustained, so that continued improvements and potential new upgrades can act as a bulwark against heightened uncertainty.

2.5 Projections: Maintaining a positive outlook amid increased uncertainty – Further reduction in public debt

According to the current projections of the Bank of Greece, the GDP growth rate is expected to be 2.3% in 2025, before declining to 2.0% in 2026 and accelerating marginally to 2.1% in 2027. These growth rates are higher than the euro area average, contributing to the gradual convergence of Greece's real GDP per capita towards the EU average. The main driver of growth is expected to be consumption, with investment and exports continuing to make positive contributions.

The direct impact on Greece's GDP from the imposition of tariffs is estimated to be limited, as the United States is not a significant market for Greek exports of goods, representing a share of less than 5% of total exports in 2024. The impact on Greece will be mainly indirect, primarily through lower euro area foreign demand and, secondarily, higher uncertainty. The impact is expected to stem primarily from reduced net exports and, to a lesser extent, from lower private investment and weaker private consumption.

The unemployment rate is projected to stand at 9.4% in 2025, before declining fast to 8.2% in 2027, reflecting the ongoing recovery of economic activity in the years ahead. With regard to labour costs, nominal compensation per employee should keep rising strongly at annual rates close to 5.0% in the coming years, mostly as a result of labour market tightening, but also pursuant to recent collective agreements in several private sector industries. It should be stressed that labour productivity in total economy is projected to grow at a weaker pace than real compensation per employee. This means that these trends, unless counteracted by similar developments in the country's trading partners, are expected to dent the international competitiveness of the Greek economy.

Headline inflation, as measured by the Harmonised Index of Consumer Prices (HICP), will continue to decline in the three years ahead. In 2025, it is projected to remain elevated, at 2.5%,

reflecting persistently high services inflation, mainly due to expected increases in wages and rental prices and pressures from high tourism demand. Headline inflation will fall to 2.1% in 2026, but a one-off rise to 2.4% is anticipated in 2027, due to the impact on the energy component from the expanded EU Emissions Trading System that will then become operational. Core inflation will remain high, well above the euro area average, partly reflecting the Greek economy's positive output gap. However, it is expected to decline markedly to 2.2% by 2027, driven down by falling non-energy industrial goods inflation.

For 2025, a number of factors is estimated to contribute to an improvement of the current account balance. Despite weak growth in non-fuel exports of goods in 2024, exports did not lose a sizeable market share, which augurs well for the years ahead. A higher surplus in the services balance is also anticipated, as travel receipts are expected to rise further – albeit moderately – in 2025, mainly on the back of an extended tourist season, a stronger cruise industry and higher tourist receipts across more domestic destinations. The expected downward course of interest rates is set to contribute to lower interest payments, improving the primary income account.

Turning to fiscal aggregates, based on available data and policy measures announced so far, the Bank of Greece projects that in 2025 the primary surplus will turn out at 3.2% of GDP and public debt will decrease further to 145.4% of GDP. Coupled with high primary surpluses, the ongoing recovery of economic activity is expected to maintain the strongly dampening effect of nominal GDP on the debt-to-GDP ratio in the years ahead, despite an anticipated decline in inflation. Over the medium term, the debt-to-GDP ratio is expected to decline faster than initially envisaged in the Annual Progress Report of the national medium-term fiscal-structural plan (MTP) 2025-2028, taking into account the recent announcement of the intended early repayment of the remaining amount (EUR 31.6 billion) of Greek Loan Facility (GLF) loans by 2031, i.e. ten years before their original maturity. This planning sends another positive signal at such a difficult juncture and is expected to lead to further improvements in Greece's sovereign credit rating.

2.6 Risks and uncertainties: Heightened external risks
The risks surrounding the Bank of Greece's growth forecasts are predominantly tilted to the downside. In more detail, risks to the short-term outlook for the Greek economy include: (a) a further rise in trade protectionism and a stronger-than-expected slowdown in the euro area economy; (b) stronger negative effects on the global economic environment and financial conditions from widespread uncertainty; (c) a tighter labour market and potential higher wage pressures; (d) potential natural disasters associated with the impacts of the climate crisis; (e) a lower-than-expected rate of absorption and utilisation of RRF funds; and (f) a slower-than-expected implementation of the necessary reforms, with adverse implications for the productivity of the Greek economy.

Risks to public debt sustainability are estimated to remain contained in the medium term, conditional upon safeguarding fiscal credibility and effectively absorbing EU resources. This is largely due to the favourable repayment profile of official sector debt, which accounts for the bulk of total debt, coupled with past hedging swap contracts, which locked in historically low interest rates. However, the current favourable characteristics of the debt stock are not of a permanent nature. They merely provide a unique window of opportunity for public debt to remain sustainable going forward, as the concession loans granted under the MoUs gradually mature and are replaced by new borrowing on market terms.

3 THE EXTERNAL ENVIRONMENT OF THE GREEK ECONOMY

3.1 Developments and prospects outside the euro area: Global trade and economic slowdown amid heightened uncertainty
World GDP grew by 3.3% in 2024, at a slightly lower rate than in 2023, but with lingering divergence across major economies due to the impact of both cyclical and structural factors. Leading activity

indicators and soft data in early 2025 point to global economic weakness, owing to the imposition of across-the-board tariffs by the United States and mounting uncertainty about possible retaliatory measures and the final outcome of trade negotiations between major economies. According to the IMF (April 2025), world GDP growth will slow by 0.5 percentage points to 2.8% in 2025, before rebounding slightly in 2026. In advanced economies, GDP growth is estimated to decline to 1.4% from 1.8% in 2024. Developing and emerging market economies as a whole are also expected to slow to 3.7% in 2025 from 4.3% in 2024. This estimate crucially hinges on the level of effective tariff rates, as well as on the ability of each large export economy to recoup the expected losses in its share of goods exports to the United States by redirecting exports to other markets.

Forecasts about world trade suggest lower growth in 2025 and 2026 than in 2024, actually much weaker than estimated earlier this year. The main factor behind this downward revision is higher uncertainty about trade policies worldwide and its direct consequences on the global economic outlook, after the announcement of near-universal US tariffs in early April 2025. According to IMF estimates, global trade growth in volume terms will slow to 1.7% in 2025, from 3.8% in 2024, well below its pre-pandemic historical average (2000-19: 4.9%).

Global consumer price inflation is expected to fall to 4.3% in 2025 from 5.7% in 2024. In advanced economies, inflation, after 2.6% in 2024, is estimated to stand at 2.5% in 2025, against a previous forecast of 2.1% just three months earlier, as the tariffs imposed are expected to pass through to a great extent to consumer prices and the substitution of imports of consumer and investment goods with domestically produced goods will be limited, at least in the short term. By contrast, inflation in developing and emerging market economies is set to decline to 5.5% in 2025 from 7.7% in 2024. Tariffs act as a supply-side shock in tariff-imposing countries, reducing productivity and increasing unit labour costs. Tariff-affected countries are faced with a negative demand-driven shock, as demand for exports declines, pushing prices downwards. At the same time, higher uncertainty leads to a postponement of investment and other expenditure by firms and households, dampening domestic demand. This is further aggravated by tighter financial conditions and increased exchange rate volatility.

It should be noted that the impact of tariffs on exchange rates is not straightforward and depends on trading partners' reaction, as well as on international investors' attitude towards the US dollar as a reserve currency. One would have expected that the United States, being the tariff-imposing economy, would see its currency appreciate. This would reflect reduced demand for foreign currency as a result of lower import demand, but also a likely easing of the monetary policy stance by tariff-affected countries in an effort to address the negative demand shock. However, rising political and economic uncertainty, the weaker growth outlook and capital outflows from the United States, as well as a correction in global demand for dollar-denominated assets, ultimately lead to a depreciation of the US dollar.

3.2 Euro area developments and prospects: Muted growth, disinflation

Euro area GDP is estimated to have increased by 0.6%, quarter on quarter, in the first quarter of 2025, after 0.3% in the last quarter of 2024. Short-term economic indicators paint a mixed picture, implying that the recovery seen in the first quarter risks being interrupted, especially amid adverse global conditions featuring tariffs, heightened uncertainty and financial market volatility. According to the June 2025 Eurosystem staff projections, real GDP growth is expected to average 0.9% in 2025, 1.1% in 2026 and 1.3% in 2027. The projections assume that the 10% US "reciprocal" tariffs on EU goods will remain in place after the end of the 90-day pause that was pledged for negotiations. The GDP growth projection for 2025, unrevised from the March projections, reflects stronger-than-expected outturns for the fourth quarter of 2024 and the first quarter of 2025, combined with weaker prospects for the remainder of the year. While the uncertainty surrounding trade policies is expected to weigh on business investment and exports, especially in the short term, rising government investment in defence and infrastructure will increasingly support growth over the medium term. Higher real incomes and a robust labour

market will allow households to spend more. Together with more favourable financing conditions, this should make the economy more resilient to global shocks.

HICP inflation stood at 1.9% in May 2025 (April 2025: 2.2%), marginally below the ECB's target, after a temporary slight pick-up in January (2.5%). Lower inflation was driven by a marked decline in the energy component and slower services inflation, which offset rising food prices. According to the June 2025 Eurosystem staff projections, HICP inflation will drop to 2.0% in 2025, 1.6% in 2026 and 2.0% in 2027, from 2.4% in 2024. The downward revisions compared with the March projections, by 0.3 percentage points for both 2025 and 2026, mainly reflect lower energy commodity price assumptions and a stronger euro. Euro area core inflation in 2025 is expected to moderate further, mainly owing to waning labour cost pressures as energy crisis-related wage pressures are easing, while labour productivity growth is gradually recovering. A downward impact on core inflation is also expected from the indirect effects of lower energy prices.

The nominal effective exchange rate of the euro appreciated by 3.5% in monthly averages between December 2024 and May 2025. In May, the euro appreciated considerably by 7.6% against the US dollar compared with December 2024 (monthly averages). The above developments reflect a milder deterioration in the outlook for the euro area economy than for the United States and other major economies due to the impact of tariffs and, particularly, reduced investor and consumer confidence.

3.3 Risks and uncertainties: Instability and unpredictability in trade relations and rising trade protectionism have added to uncertainty

A further escalation in global trade tensions and associated uncertainties is expected to dampen exports and drag down investment and consumption, lowering euro area growth. Furthermore, rising volatility in financial markets could lead to tighter financing conditions and greater risk aversion, thereby denting domestic demand. At the same time, the economic slowdown increases fiscal risks, particularly in countries with thin fiscal buffers.

As opposed to a possible escalation of trade disputes and renewed tightening of financial conditions, the best-case scenario would be the conclusion of a clear and definitive agreement between the EU and the United States, envisaging low or "zero-for-zero" tariffs, within a reasonable time, which would calm financial markets and reduce uncertainty. This could boost world trade and foreign euro area demand. Moreover, higher public expenditure on defence and infrastructure might, under certain conditions, provide an even stronger boost to domestic demand.

The inflation outlook remains uncertain. Falling energy prices, the appreciation of the euro and weaker foreign demand could exert a stronger-than-projected downward pressure on euro area inflation, whereas a fragmentation of global supply chains and increased public investment could lead to upward inflationary pressures. In parallel, extreme weather events, and the unfolding climate crisis more broadly, could drive up food prices by more than expected.

4 THE SINGLE MONETARY POLICY

Further easing of monetary policy and disinflation amid heightened uncertainty due to trade tensions

The Eurosystem policy rate cuts, which had started in June 2024, continued into the first half of 2025. Accordingly, in late January, early March, mid-April and early June, key interest rates were lowered by 25 basis points each time.

The Governing Council of the ECB is determined to ensure that inflation stabilises sustainably at its 2% medium-term target. As clearly stressed, it is not pre-committing to a particular rate path, but follows a meeting-by-meeting approach to determining the appropriate monetary policy stance based on its updated assessment of (i) the inflation outlook, (ii) the dynamics of underlying inflation and (iii) the strength of monetary policy transmission to the euro area real econ-

omy. Since March 2025 the Governing Council has been underscoring that the current conditions of rising uncertainty increase the need for a regularly updated assessment.

According to statements by the Governing Council of the ECB, most indicators of underlying inflation are pointing to a sustained return of inflation to the 2% medium-term target, as wage growth is moderating and, in any case, adjustments in profit margins have partially buffered its impact on inflation. The outlook for economic activity in the euro area has worsened amid growing global trade tensions. In June 2025, the Governing Council announced that inflation was at around the 2% target, while, as already mentioned, annual headline inflation is projected to average 2% this year. Given that lower energy prices and a stronger euro are putting downward pressure on inflation in the near term, inflation is expected to decline in the immediate future, before returning to target in 2027.

With regard to the upside risks surrounding the inflation outlook, the Governing Council of the ECB underlined that trade tensions are adding to uncertainty. On the other hand, the sharp decline in global energy prices this year, coupled with the appreciation of the euro exchange rate over the past few months, could put downward pressure on euro area inflation. This could be reinforced if higher tariffs led to lower demand for euro area exports and to countries with overcapacity rerouting their exports to the euro area. The observed adverse financial market reactions to trade tensions could weigh on domestic demand and thereby also lower inflation. By contrast, a fragmentation of global supply chains due to rising protectionism could raise inflation in the euro area by pushing up import prices and/or adding to capacity constraints in the domestic economy. The expected boost in defence and infrastructure spending could also raise inflation over the medium term. Finally, extreme weather events and the climate crisis overall might lead to larger than already projected increases in food prices.

5 THE GREEK ECONOMY: PROGRESS, CHALLENGES AND POLICY RECOMMENDATIONS

Progress

The Greek economy can boast remarkable achievements in recent years. It has proven resilient and continues to grow at satisfactory pace, despite the frequent and severe external shocks. Fiscal aggregates are improving in a sustained manner, and the public debt-to-GDP ratio is declining fast. Improvements in the fundamentals of the banking system are ongoing, and NFC financing has strengthened. On top of the favourable domestic macroeconomic and fiscal developments, the business environment has improved markedly, including by cutting red tape in transactions with public administration and reducing taxation on businesses. As a result, the credit ratings of the Greek sovereign and Greek banks have been upgraded.

Challenges

Nevertheless, there are still obstacles and challenges that act as a drag on the growth dynamics of the Greek economy. For instance, as noted in a recent report by the European Commission,[1] the domestic **business environment** is hampered by a relatively burdensome and frequently changing regulatory and administrative framework that lacks transparency and by a legal system that is not considered sufficiently effective and protective of property rights. Regulatory barriers, shadow economy and limited access to finance, especially for SMEs, still hinder competition, private investment and productivity growth. Skills mismatches, low educational outcomes, a gap in basic skills and a lack of appropriate incentives continue to discourage people from seeking work and obstruct innovation.

Furthermore, according to a recent survey by the European Investment Bank (EIB),[2] **barriers to investment** in Greece remain high. Greek firms are particularly concerned about energy

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1 European Commission (2024), "Commission Staff Working Document: Greece 2024 Country Report", June.
2 EIB (2024), *EIB Investment Survey 2024: Greece*.

costs, business regulations and uncertainty about the future. Specifically, in 2024 Greek firms reported more concerns about labour market regulations and access to digital infrastructure than in 2023. Moreover, their concerns over supply chain disruptions and recent changes in tariffs and customs are higher than the EU average.

Despite improved macroeconomic conditions, Greek firms continue to face **high borrowing costs and difficulties in accessing bank credit**. The share of finance-constrained firms in Greece (11.1%) increased above the EU average (6.8%) in 2024. Over the same year, 75% of business investment in Greece was financed internally, a higher share than the EU average (66%).

In spite of their efforts to respond to climate change and digital transition challenges, Greek firms are still lagging behind their EU counterparts in several areas. In particular, they are more focused on purchasing or renewing insurance products to hedge against climate change-related losses, whereas they are less likely to take preventive actions or reduce carbon emissions. **Investment in the green transition is also lower than across the EU**. Greek firms are much less likely than EU firms to have already invested in mitigating climate change impacts and less likely to plan future investment. At the same time, only a third of Greek firms reports investing in energy efficiency, compared with 50% of EU firms. Finally, **only 53% of firms in Greece, against 74% in the EU, is using digital technologies**, including the internet of things, big data, artificial intelligence (AI), 3D-printing, and augmented (AR) or virtual reality (VR).

Greece exhibits a **low degree of integration into EU value chains** and, therefore, does not reap the full benefits from its participation in the Single Market. By way of illustration, according to a recent European Commission study,[3] Greece is expected to be the smallest recipient of spillovers across the EU from the implementation of the RRF in other countries between 2020 and 2030. Spillover impacts, amounting to about 0.4% of 2023 GDP, arise from economic integration within the EU, as well as with key non-EU trading partners. The RRF-induced increase in demand in a country leads to higher demand for imported final and intermediate goods. This means that the benefits of the RRF extend beyond national borders, strengthening trade and economic linkages among EU Member States and with non-EU countries. The significance of spillover impacts highlights the role of the Single Market as an amplifier of the final positive economic impacts from the RRF in a country. For Greece, the low ratio of spillovers to GDP can be attributed to its low degree of integration into EU value chains, which considerably limits the country's benefits from the Single Market, in contrast with countries such as Slovakia, Slovenia, the Czech Republic, Hungary or Austria, whose spillover-to-GDP ratios reach 1.8%, 1.4%, 1.3%, 1.2% and 1.1%, respectively.

This is associated with the fact that **most of the goods and services produced in Greece are classified as low-skilled and low technology-intensive, implying that the country cannot benefit from higher RRF-induced EU demand for cutting-edge technology products in the context of the EU's green and digital transition**. It should be noted that the percentage of high-tech exports increased to 5% in 2022, but remains far below the EU average of 17.3%, while the relative knowledge intensity of Greek trade is estimated to be the lowest throughout the EU on the basis of the trade complexity index. Overall, Greek exports remain concentrated in a few low- and medium-technology product categories with low value added, which constrains their integration into global value chains. **Insufficient or outdated industrial port infrastructure also undermines Greece's export capacity.**[4] The above data partly explain Greece's high and persisting external deficits, which limit the substitutability of imports with domestically produced goods and hamper the expansion of exports to new, technologically upgraded products and services.

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3   Michels, A., D. Ciriaci, J.M. Rueda-Cantuche, L. Pedauga, V. Ferreira, Ch. Kattami, D. Schulz and M. Pilati (2025), "Economic impacts of the Recovery and Resilience Facility: new insights at sectoral level and the case of Germany", European Commission Discussion Paper No. 221, May.
4   See European Commission (2025), "In-Depth Review 2025: Greece", Institutional Paper 309, May.

Finally, despite some increase in disposable income achieved over the past years, there are still significant challenges to social cohesion, at the national and the regional level, as the population living at risk of poverty or social exclusion remains elevated, housing affordability has worsened from both an economic and a social perspective, and the unemployment rate – despite having decreased – is among the highest in the EU. Meanwhile, the consequences of population decline have already become felt, as considerable labour shortages are observed in activities related to tourism, construction and agriculture.

Policy recommendations

To address the challenges related to domestic structural weaknesses, as well as the uncertainties stemming from the global economic environment, and to ensure the stability and resilience of the Greek economy, the following reforms and policy interventions are proposed.

Safeguarding public debt sustainability must remain a priority for fiscal policy. In this regard, compliance with European fiscal rules is crucial. Meanwhile, the intended early repayment of the remaining amount of GLF loans, using cash reserves, will help achieve a faster public debt decline compared with the current medium-term target, lead to a significant decline in future gross financing needs, reduce debt servicing costs and enhance debt sustainability. This initiative conveys a strong message to markets and institutions that the country is committed to sustainable debt reduction.

On the other hand, **fiscal reforms** are also needed **to make fiscal policy more growth-friendly**. Priorities in this area include tax management reforms towards a more progressive tax system and a business-friendlier tax environment, coupled with elimination of distortions and reduction of the administrative burden, thereby leading to a more efficient allocation of resources, higher productivity and, in some cases, greater labour effectiveness. At the same time, reforms to enhance the quality and efficiency of public spending must be implemented. This requires a review of government resources and their re-orientation from less productive sectors to those offering multiple gains to the economy and society, as well as avoiding piecemeal and short-term fiscal measures on the expenditure side. Overall, a more efficient public sector leads to reduced public expenditure waste, lowers public debt and boosts economic growth and fiscal positions, leading to higher GDP per capita.[5] Besides, a more effective public sector provides enhanced services to citizens in areas such as healthcare, education and infrastructure, thereby increasing their productivity. In addition, it can foster the growth of private enterprises by providing a more business-friendly economic environment, e.g. by cutting red tape, which can stimulate business investment.

The **timely absorption and disbursement of RRF resources** in the private sector is crucial for achieving the projected growth rates of gross fixed capital formation in 2025-26. Effective use of EU funds will help accelerate the green and digital transitions, thereby increasing the medium-term growth rate of the Greek economy. It should be stressed that, according to a recent analysis by the European Commission,[6] Greece's GDP is projected to rise by EUR 29.6 billion (or 12.5% of 2024 nominal GDP) between 2020 and 2030. This is primarily due to the direct effects of the National Recovery and Resilience Plan "Greece 2.0", which take the form of higher output and employment in the direct recipient industries of the country and additional demand for intermediate inputs from domestic supplier industries.

At the same time, **further efforts** are needed **to improve the business environment** and support transition to a medium- and high-tech economy. This is expected to boost exports by better integrating Greek products into global value chains, but also to support import substitution and

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5 See Chrysanthakopoulos, Ch., P. Bouloumpasis, M. Skotoris and A. Tagkalakis (2025), "The macroeconomic effects of public sector efficiency in advanced economies", *International Economics*, 182 (100600).

6 Michels et al. (2025), op. cit.

help address the persistently high current account deficit, a serious vulnerability of the Greek economy.

A key priority is **productivity-enhancing reforms**, such as simplifying business regulations, deepening domestic credit and capital markets, strengthening innovation and improving government efficiency.[7]

Reforms aimed at **simplifying the regulatory framework for businesses** could include actions to cut red tape, reduce barriers to market entry and exit, improve spatial planning and simplify land use processes. Speeding up regulatory reforms is key to improving resource allocation, especially in non-tradable services.

Reforms to foster innovation, research and development (R&D) and digital transformation should rely on actions to improve infrastructure and workers' skills, so that digitalisation gains are more widely diffused across society and the economy, coupled with measures to finance R&D in cutting-edge technologies for the development of novel products and services. For example, such reforms should focus on providing targeted tax incentives for R&D, increasing public funding for R&D, promoting digital transformation across the public and private sectors and expanding the use of artificial intelligence.

An effective financial intermediation system can facilitate the implementation of reforms and increase their efficiency, as it ensures the mobilisation of domestic and foreign savings and contributes to a more efficient allocation of credit resources, thereby easing access to finance for newcomers after the removal of barriers to market entry.

The Greek banking system is now much stronger than before and has overcome its past weaknesses, while, on the basis of the latest available data on bank credit flows, it provides increased financing to Greek firms, supported by the co-financing and guarantee instruments of development agencies (such as the Hellenic Development Bank and the European Investment Bank), as well as by bank loans co-financing investment projects under the RRF. In spite of the progress achieved so far, **further improvements in banks' asset quality** are warranted, and new net inflows of non-performing loans (NPLs) must be avoided. Also important is the **diversification of financing sources**, through the newly established Microfinance Fund, as well as through access to market-based financing as an alternative to bank credit. This would facilitate access to finance for new innovative SMEs which lack access to bank credit.

Last but not least, reforms geared towards **improving government efficiency** are key to raising productivity. In this regard, top priorities involve strengthening the rule of law and **enhancing the efficiency of the judicial system** by speeding up the delivery of justice.

In spite of the progress achieved recently, Greece is one of the countries with the lowest judicial system efficiency across the EU, as court procedures take much more time to conclude than the average time needed in the EU for the resolution of disputes. There are various transmission channels through which judicial system efficiency can contribute to faster economic growth: (i) higher investment, which is linked to contract enforcement through a reduction in business uncertainty and a rise in expected returns; (ii) increased productivity, as it facilitates market entry and exit of firms, strengthening their dynamism, helping to increase their size and supporting innovation; and (iii) easier access to credit, as faster NPL resolution increases the supply of credit and improves bank loan terms and conditions for firms and households. Improved judicial system efficiency is set to deliver substantial benefits to the Greek economy, which features

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7   See Budina, N., O. Adilbish, D. Cerdeiro, R. Duval, B. Egert, D. Kovtun, A.T.N. Nguyen, A. Panton and M. Tejada (2025), "Europe's National-Level Structural Reform Priorities", IMF Working Paper 104.

small firm sizes, low private sector investment, a high stock of NPLs outside the banking system, low firm exit rates and deteriorating allocative efficiency.[8]

A well-functioning labour market and a larger and better-educated workforce can directly increase not only output through higher labour input, but also productivity, through a faster re-allocation of labour to growing industries and firms, enabling them to better exploit new technological opportunities. Reforms in this direction help to address labour shortages as well as challenges arising from adverse demographic trends and skills mismatches.[9] The main priorities concern the **upgrading of human capital** by improving the education system and by redesigning and expanding training programmes for the unemployed; the **provision of incentives for labour force participation**, primarily of women, youth, but also older workers; a brain regain; and the attraction and integration of foreign workers, especially those with valuable skills. In this context, targeted support for childcare and elderly care can enable women to work outside the home. All of the above should be complemented by measures that enhance workplace flexibility and reduce the tax wedge.

Overall, reforms in labour and product markets as well as institutional improvements in governance and access to credit and capital markets foster economic growth. At the same time, they increase public revenue and primary surpluses, contributing to fiscal sustainability.[10]

Given that domestic savings are not sufficient to finance the required investment, it is necessary to **continue attracting foreign direct investment (FDI)**, which rose by 27% over the period 2019-24. Economic theory and empirical data show that the aforementioned reforms and the improvement of institutions help attract more FDI. A strong impetus to FDI flows could come from the faster implementation of the **privatisation and public property development programme**. Above all, however, a key prerequisite for achieving higher investment is the maintenance of macroeconomic and political stability. For instance, high and volatile inflation distorts relative prices, creates uncertainty and contributes to ineffective allocation of resources, discouraging investment. Besides, in cases of fiscal instability, governments have increased financing needs, crowding out private investment. In parallel, the higher cost of public sector borrowing spills over into the entire economy, raising the cost of private investment financing. Finally, firms hesitate to invest in an environment of hazy or erratic future policies, or of low trust in institutions. **Therefore, maintaining macroeconomic, fiscal and political stability should be the main focus of economic policy.** But at the same time, heightened global uncertainty and trade conflicts are likely to lead to shifts not only in trade flows, but also in cross-border capital flows and FDI. Nevertheless, the negative impact from such an event could be contained if economic policy credibility and political stability are safeguarded, given that these factors enhance international investors' confidence in the Greek economy.

Boosting investment in the longer term also requires an **increase in private sector saving**. The introduction of a defined contribution funded scheme into supplementary insurance in 2021 is a policy that bolsters national saving. Strengthening the third pillar of the pension system, namely private insurance, as well as promoting financial literacy could help in this direction.

Given Greece's dependence on fossil fuels, there is an **urgent need for more investment in renewable energy sources and upgrades to the electricity grid**. Transition should be inclusive, with a view to averting an exacerbation of energy poverty. In the same vein, **additional actions** are needed **to reduce energy costs**, mostly affecting the energy-intensive sectors. Strengthening energy interconnections with neighbouring countries, increasing the capacity of electricity

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8   IMF (2025), "Greece: Selected Issues", IMF Country Report No. 2025/086.
9   Op. cit.
10 See Chrysanthakopoulos, Ch., Ch. Mavrogiannis and A. Tagkalakis (2025), "Fiscal Adjustments and Structural Reforms in OECD Countries", *International Journal of Finance & Economics*, https://doi.org/10.1002/ijfe.3176.

networks, improving the functioning of the energy market, reviewing regulated charges on energy bills and high energy taxation, as well as subsidising the implementation of the green transition are measures that could be considered.

The transition of the industrial sector to cleaner energy, greener production and new growth models, based primarily on the principles of circular economy and using innovation and digital technologies, is now more necessary than ever. The **employment of circular economy models** creates significant business opportunities and ample room for the development of innovative and environmentally sustainable (green) products. For businesses to make the best of these opportunities, industrial innovation in the area of green products must be furthered, the institutional framework must be enhanced, and new markets for such products should be developed.

Turning to the housing market, in order to tackle the problem of housing affordability that many households are facing, the government schemes subsidising housing loans or rents need to be complemented with bold **initiatives to stimulate the supply of real estate**. Above all, broader national strategic planning is needed, aiming, among other things, at strengthening economic activity in regional Greece and decongesting metropolitan centres, leading to a balanced dispersion of property demand across the country.

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The global economic environment is becoming increasingly uncertain, with growing challenges and continuous shifts. The most important development in the international economic environment is associated with the trade and foreign policy of the new US administration, which calls traditional alliances into question. The already announced policies of the US government lead to a resurgence in trade protectionism, forcing European countries to assume greater responsibility for their own security so as to ensure the EU's strategic autonomy.

In response to the new international challenges, the EU should remain united, strengthen coordination among its Member States and deepen economic cooperation and integration. The recent EU initiatives to enhance defence capabilities (ReArm Europe Plan/Readiness 2030) and stimulate investment in infrastructure and critical new technologies (the European Commission's Competitiveness Compass and Clean Industry Pact) represent a fundamental shift in EU policymaking, contributing to a deeper Single Market, and can provide a huge boost to the European economy, increasing its flexibility and resilience to external shocks.

Meanwhile, the completion of the banking union in areas related to crisis management and the establishment of a European deposit insurance scheme, as well as the creation of a European savings and investment union, will deliver economies of scale and streamline the flow of investments across the EU. This would allow for more effective risk management and sharing, as well as mobilisation of available savings, to the benefit of innovation, competitiveness, productivity and the green transition. Yet at the same time, joint European policies to boost investment and close the productivity gap vis-à-vis the United States are required. In this context, we can build on the successful experience with the NextGenerationEU recovery instrument to offer a common safe asset in euro (Eurobond) on a permanent basis. The above actions will strengthen the European economy and enhance the international role of the euro as an alternative reserve currency.

Taking account of overall uncertainties and risks as well as the challenges and weaknesses of the Greek economy, it is imperative to make full and effective use of available European resources under both the EU's NextGenerationEU and Multiannual Financial Framework 2021-2027. In parallel, economic policy should remain committed to the implementation of the required reforms and institutional changes. Such reforms will ensure a new sustainable growth model that will help the country to attract foreign investment. Meanwhile, the Greek economy

should take full advantage of the latest EU initiatives to bolster European defence. To this end, a more active participation of the domestic defence industry (where both the public and the private sector will jointly engage) in international military equipment programmes and partnerships should be pursued, with the aim of increasing the defence industry's value added in the total economy and ensuring a gradually greater coverage of the country's defence needs with own resources. Achieving the above objectives, along with safeguarding fiscal credibility and financial stability, will strengthen the resilience and the positive prospects of the Greek economy, thus supporting Greece's faster economic growth and securing further sovereign credit rating upgrades.

Box 1

DEFENCE SPENDING IN THE EU: INSTITUTIONAL INITIATIVES AND IMPLICATIONS

Strengthening European defence is emerging as a fundamental prerequisite for effectively addressing geopolitical challenges and ensuring the strategic autonomy of the European Union (EU). On 6 March 2025, the European Council[1] underscored the need to boost the competitiveness of the European defence industry, with a focus on increasing production capacity and facilitating joint procurement of military equipment by several EU Member States. EU Member States' high defence needs require better policy coordination and additional institutional initiatives to secure adequate resources in an efficient manner. The use of European financing instruments and the greater flexibility provided by the new fiscal framework create the preconditions for a coherent common European policy on defence and security.

This box discusses recent initiatives at the European level aimed at boosting defence spending and examines their potential impact on the European economy. More specifically, it presents the institutional initiatives to strengthen European defence and security, as well as the provisions of the new European fiscal framework concerning the national escape clause. It then assesses the anticipated effects of increased defence spending on European growth dynamics and public finances. Finally, it examines policy opportunities and challenges, as well as the risks of exempting defence spending from fiscal rules.

The new European defence plan

The White Paper for European defence, presented by the European Commission in March 2025,[2] identifies the EU's defence investment needs and sets out a new framework for European defence and readiness by 2030. The main pillars of the new plan include addressing critical defence capability gaps and supporting the European defence industry by aggregating demand and increasing joint public procurement. The plan also calls for a deepening of the European defence market, including through regulatory simplification, and the acceleration of the sector's technological transformation through innovations, such as artificial intelligence and quantum computing.

With a view to promoting the EU's defence autonomy, the European Council has taken initiatives to facilitate, under certain conditions, expansionary fiscal policies. The ReArm Europe / Readiness 2030 plan, which accompanies the White Paper, provides financial means to strengthen the EU's defence capabilities through significant investment and structural changes. It envisages the mobilisation of up to EUR 800 billion, of which EUR 150 billion will be financed by the new SAFE (Security and Action for Europe) instrument,[3] which will grant long-term loans on favourable terms to support joint defence procurement.[4] At the same time, the activation of the national escape clause of the Stability and Growth Pact (SGP) is proposed for the period 2025-28,[5] allowing Member States to increase their total defence spending (both investment and current) relative to 2021 levels[6] by up to

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1 [Main Results](#), Special European Council, 6 March 2025.
2 [Introducing the White Paper for European Defence and the ReArm Europe Plan – Readiness 2030](#), 12.3.2025.
3 Council [Regulation (EU) 2025/1106](#), OJ L, 28.5.2025.
4 The loans will have a maximum maturity of 45 years and a 10-year grace period for principal repayments. As a condition for accessing the new loans, EU Member States will have to purchase at least 65% of their defence equipment from suppliers in the EU, Norway or Ukraine. The allocation of funds to Member States will be demand-driven, without any predefined allocation criteria.
5 [Regulation (EU) 2024/1263](#), Article 26, OJ L, 30.4.2024.
6 Using 2021 as the reference year ensures equal treatment of Member States that have already increased their defence spending since Russia's invasion of Ukraine. For countries with lower defence spending in 2024 than in 2021 (such as Greece and Bulgaria), the reference year will be 2024 (Source: [2025 European Semester: Recommendations on activating the National Escape Clause](#), June 2024). It should be noted that defence spending is recorded differently by Eurostat and NATO, as Eurostat applies accrual accounting and the Classification of the Functions of Government (COFOG), while NATO mainly uses a cash basis methodology and records additional expenditure items, such as military pensions and certain police and coast guard expenditure. As a result, Eurostat data are more suitable for fiscal and economic analysis, while NATO data more accurately reflect the actual military burden and political commitment of Member States.

1.5% of GDP per year and deviate from the nationally financed net primary expenditure path – the growth rate of which is the operational indicator of compliance with the revised EU fiscal rules.[7,8] Deviation from the net expenditure path will only be possible when the medium-term fiscal sustainability of Member States is not put at risk. By end-April 2025, a total of 16 EU Member States, including Greece, had submitted requests to the European Commission for the activation of the national escape clause.

In addition, the plan aims to make existing EU financing instruments more flexible in order to achieve strategic priorities, such as defence. The relevant legislative proposal by the European Commission in April 2025 broadens the scope of funding programmes under the Strategic Technologies for Europe Platform (STEP) to include innovation, dual-use cutting-edge products and technologies (both military and commercial), as well as projects in the field of defence. Member States will also be able to reallocate resources under the Cohesion Policy to infrastructure projects that foster military mobility and to initiatives that support the production capacity and innovation of the European defence industry.[9]

Finally, the plan envisages the involvement of the European Investment Bank (EIB), along with the mobilisation of private funds, to support defence and security projects. The EIB will broaden the scope of its funding to cover defence and security-related projects, while the promotion of the Savings and Investments Union is expected to facilitate the channelling of private savings into investment in critical sectors of the economy, such as defence.

Macroeconomic effects of defence spending

In the empirical literature, there is broad consensus that an increase in defence spending in advanced economies has a positive impact on domestic demand in the short term, while its long-term effects on economic growth are limited, except in cases involving investment and R&D spending. The main transmission channels operate through higher government consumption and investment, which in turn boost income and employment. However, expansionary fiscal policy may partially crowd out private consumption and investment, due to expectations of future tax increases required to finance the additional defence expenditure. At the same time, higher domestic demand will increase inflationary pressures in the short term.

Estimates of the fiscal multiplier for defence spending, i.e. the degree of its impact on real GDP, vary widely across countries and over time, while they depend on the degree of openness of the economy.[10] For example, empirical evidence points to a higher positive macroeconomic impact in advanced economies or when including wartime periods, such as World War II.[11] In contrast, in developing and emerging market economies, the effect is negative because higher government spending on defence fully crowds out private

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7   See Communication from the Commission, C(2025) 2000 final, 19.3.2025.

8   The national escape clause concerns the flexibility in opening a debt-based excessive deficit procedure (EDP) in the cases of non-compliance with the expenditure rule. In addition, the new fiscal rules already include specific provisions on the treatment of defence spending. In particular, it is provided that a Member State's defence spending will be a relevant factor to be considered in the assessment for triggering a deficit-based EDP, taking into account its temporary nature, a comparison with the EU average and the growth rate of defence investment in that Member State. See Regulation (EU) 2024/1264, OJ L, 30.4.2024.

9   European Commission, Proposal for a Regulation, COM(2025) 188 final, 22.4.2025.

10 Increases in defence spending, given that they are not dependent on the economic cycle, constitute an exogenous fiscal shock. In particular, in empirical studies using narrative data – i.e. information derived from news reports about defence spending increases in the US – estimates of the fiscal multiplier range from 0.5 (Barro and Redlick 2011) to close to 1 (Ramey 2011). In other studies based on the distribution of military procurement across US states (local multiplier approach), the estimated multiplier reaches 1.5 (Nakamura and Steinsson 2014). See Ilzetzki, E., E.G. Mendoza and C.A. Végh (2013), "How big (small?) are fiscal multipliers?", *Journal of Monetary Economics*, 60(2), 239-254; Barro, R.J. and C.J. Redlick (2011), "Macroeconomic effects from government purchases and taxes", *The Quarterly Journal of Economics*, 26(1), 51102; Ramey, V.A. (2011), "Identifying government spending shocks: It's all in the timing", *The Quarterly Journal of Economics*, 126(1), 1-50; and Nakamura, E. and J. Steinsson (2014), "Fiscal Stimulus in a Monetary Union: Evidence from US Regions", *American Economic Review*, 104(3), 753-792.

11 Taking into account a long period since the early 20th century, the multiplier of defence spending for the US is estimated at up to 0.8. See Ramey, V.A. and S. Zubairy (2018), "Government spending multipliers in good times and in bad: evidence from US historical data", *Journal of Political Economy*, 126(2), 850-901.

consumption and investment. Lastly, relatively closed economies tend to exhibit higher multipliers compared to more open economies, where part of the increase in aggregate demand is offset by an appreciation of the domestic currency and a decline in net exports.[12]

In addition, the impact of defence spending on economic activity in advanced economies is associated with the degree of reliance on imported defence equipment, as well as on the available fiscal space and the monetary policy response. For example, countries with a dynamic domestic defence industry exhibit higher economic growth compared with countries that import defence equipment.[13] At the same time, lack of fiscal space and/or high public debt implies greater difficulty in financing an increase in defence spending, which in such cases would have to come primarily through tax increases, thereby reducing the positive impact of defence spending on the economy.[14] Finally, a potentially contractionary monetary policy response to fiscal expansion and rising inflation would dampen the positive impact of defence spending on real GDP growth.

There is also significant heterogeneity in the economic growth impact of different types of defence spending.[15] Defence expenditure on research and development (R&D) tends to have a stronger impact on long-term growth dynamics than other types of defence spending (such as personnel expenses), with a fiscal multiplier that in some cases exceeds one,[16] as it appears, inter alia, that public spending on defence R&D significantly boosts private R&D spending in the economy as a whole.[17]

On the other hand, periods of peace and low geopolitical tensions allow the reallocation of resources and investment to more productive public spending, which may have a higher growth impact. In particular, a decrease in defence spending would free up resources for other public investment and/or for reducing the budget deficit and public debt – the so-called "peace dividend" – thereby strengthening the positive effects on economic growth.[18] It should be noted, however, that the long-term productivity gains from R&D defence spending may be significant, thanks to the high returns in the wider economy. This benefit often exceeds the cost of the investment, mainly due to innovation diffusion into the private sector.[19] It is estimated that a temporary increase in public R&D defence spending by 1% of GDP could boost the overall productivity of the economy by 0.25 percentage points (pps) through both learning-by-doing and R&D activity.[20]

According to the European Commission, increased defence spending has a positive effect on economic growth, a muted impact on inflation, while it modestly increases public debt. Recent Commission simulations

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12 In more closed economies, the fiscal multiplier reaches 0.6 in the short term and 1 in the long term, whereas in highly open economies, the multipliers can be negative. See Ilzetzki et al. (2013), op. cit.

13 Overall, in 2023, the EU imported around 80% of its defence supplies; see Draghi, M. (2024), *The future of European competitiveness: A competitiveness strategy for Europe*, Policy Report. On the other hand, France, Germany and Italy are among the eight countries (along with the US, Russia, the UK, China and Israel) that supplied around 80% of total military equipment worldwide in the period 2020-2024; see SIPRI Fact sheet, "Trends in international arms transfers 2024", March 2025.

14 Ilzetzki, E. (2025), "Guns and Growth: The Economic Consequences of Defense Buildups", Kiel Report No. 2, February.

15 Becker, J. and J.P. Dunne (2023), "Military Spending Composition and Economic Growth", *Defence and Peace Economics*, 34(3), 259-271; and Ilzetzki (2025), op. cit.

16 In 2020, approximately 50% of the defence spending of EU Member States in NATO was directed towards personnel wages and pensions, while only 22% was invested in equipment and R&D – significantly lower than the corresponding 30% in the US. NATO estimates for 2024 show an improvement, with the European share of investment in equipment and R&D increasing to 32%, approaching US levels and strengthening the prospect of a more efficient and growth-oriented defence model.

17 On average, a 10% increase in public R&D in the defence sector increases private sector R&D by up to 6%. See Moretti, E., C. Steinwender and J. Van Reenen (2019), "The Intellectual Spoils of War? Defence R&D, Productivity, and International Spillovers", NBER Working Paper No. 26483. It should be noted that 16% of military spending in the US is on R&D, compared to just 4.5% in the EU; see Draghi (2024), op. cit.

18 See Knight, M., N. Loayza and D. Villanueva (1996), "The Peace Dividend: Military Spending Cuts and Economic Growth", *IMF Economic Review*, 43, 1-37.

19 The multiplier of R&D defence spending is estimated to exceed 1 in the long run. See Antolin-Diaz, J. and P. Surico (2022), "The Long-Run Effects of Government Spending", CEPR Discussion Paper No. 17433.

20 Ilzetzki (2025), op. cit.

Chart A Defence spending in EU and NATO Member States
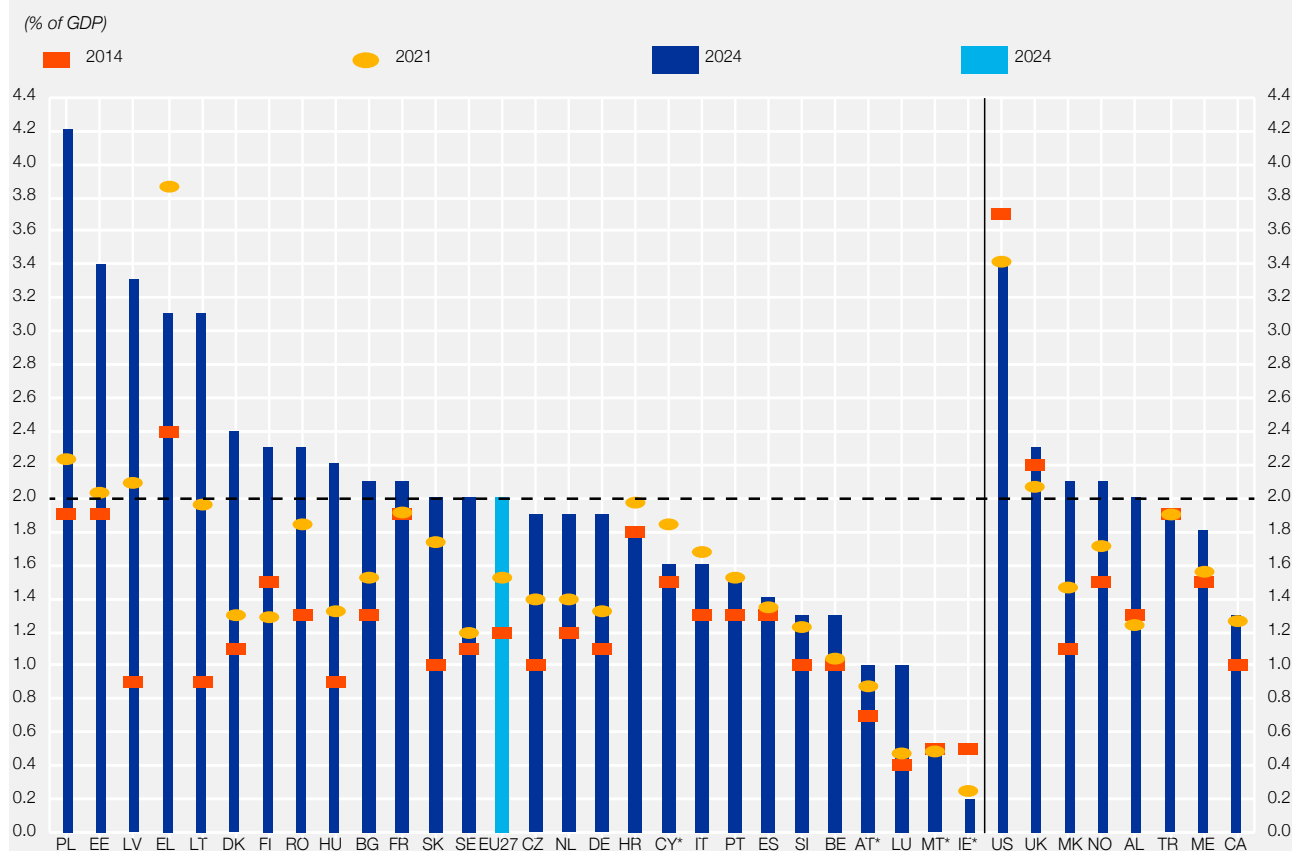
(% of GDP)

Source: SIPRI Military Expenditure Database.
* Non-NATO EU-27 countries.

indicate that an increase in EU defence spending by 1.5% of GDP cumulatively over the period 2025-28 could raise real GDP in the EU by 0.5% and public debt by 2 pps of GDP by 2028.[21] Inflationary pressures will remain relatively contained, with inflation expected to increase by 0.2 pps on average by 2028.
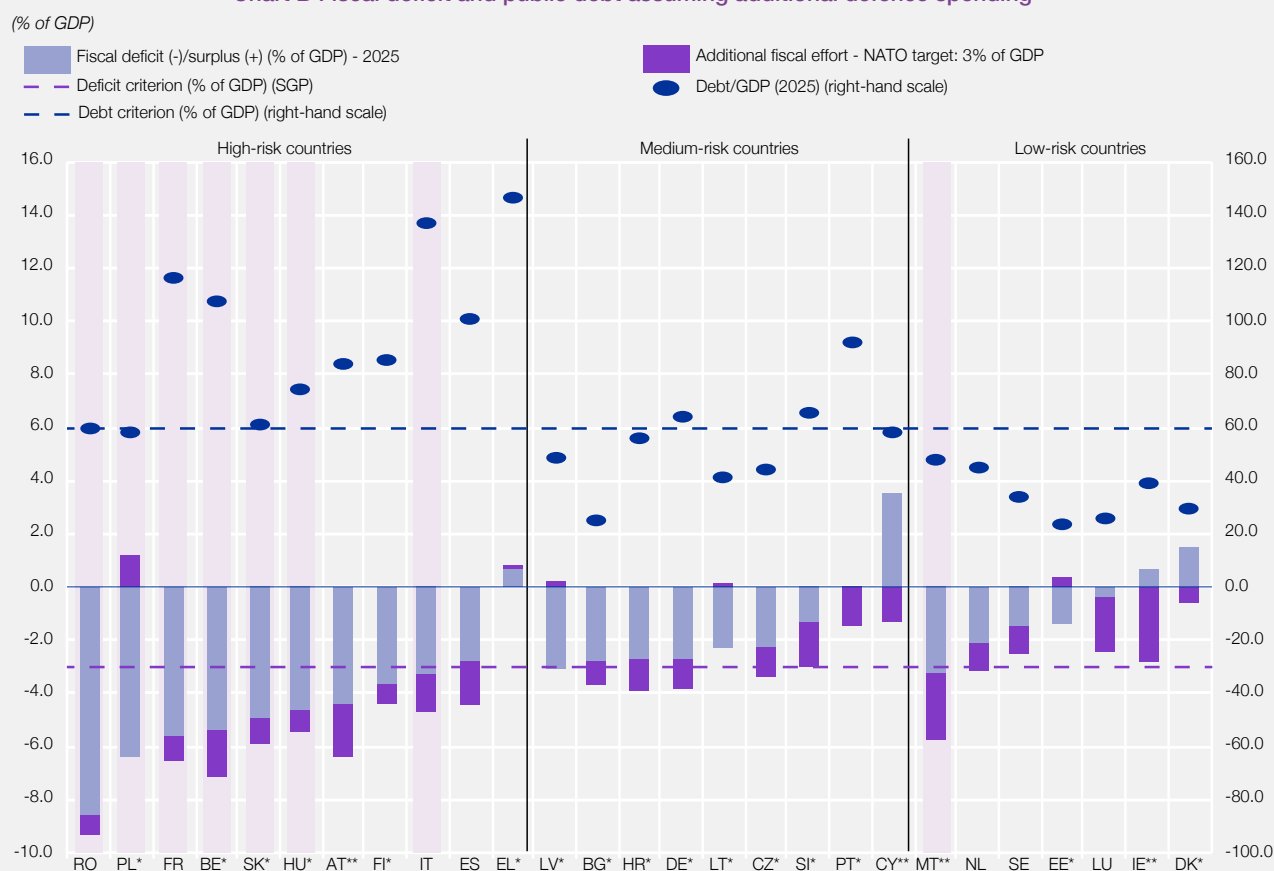
Fiscal impact of defence spending

The Russian invasion of Ukraine in 2022 triggered a fundamental shift in European defence policy, leading to a significant increase in military spending after decades of decline. During the Cold War (1950-1989), the US spent an average of 7.8% of its GDP on defence, and major European countries allocated around 4%, while after it ended, spending fell to historically low levels, coming to 4% in the US and below 2% in many European countries.[22] However, in response to the ongoing war in Ukraine and the new defence challenges, EU Member States within NATO gradually increased their defence spending to an average of 2% of GDP in 2024 (up from 1.2% in 2014 and 1.5% in 2021). In 2024, Poland, the Baltic states and Greece recorded the highest defence spending relative to their GDP, followed by Denmark, Finland and Romania (see Chart A). By contrast, non-NATO EU Member States maintained significantly lower levels (e.g. Ireland 0.2%, Malta 0.5%, Austria 1%, Cyprus 1.6% of GDP). Overall, compared to 2014, European NATO countries increased their defence expenditure by approximately 0.9 pps of GDP on average.

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21 The analysis assumes that the increase in defence spending is financed exclusively through borrowing, while R&D spending accounts for only 10% of total defence outlays and the import content reaches 20%. See European Commission, "The economic impact of higher defence spending", *Spring 2025 Economic Forecast*, 19.5.2025.

22 Source: SIPRI Military Expenditure Database.

Chart B Fiscal deficit and public debt assuming additional defence spending

(% of GDP)

Legend:
- Fiscal deficit (-)/surplus (+) (% of GDP) - 2025
- Deficit criterion (% of GDP) (SGP)
- Debt criterion (% of GDP) (right-hand scale)
- Additional fiscal effort - NATO target: 3% of GDP
- Debt/GDP (2025) (right-hand scale)

High-risk countries | Medium-risk countries | Low-risk countries

Countries (left to right): RO, PL*, FR, BE*, SK*, HU*, AT**, FI*, IT, ES, EL* | LV*, BG*, HR*, DE*, LT*, CZ*, SI*, PT*, CY** | MT**, NL, SE, EE*, LU, IE**, DK*

Sources: AMECO database, European Commission Spring 2025 Economic Forecast (19.5.2025) and NATO.
Notes: (1) Shaded countries are in EDP (see 2025 European Semester: bringing the new economic governance framework to life, European Commission, 26.11.2024), (2) Countries' classification according to medium-term fiscal risk is based on the European Commission's annual Debt Sustainability Monitor, which is incorporated in the new fiscal rules. See European Commission (2024), "Debt Sustainability Monitor 2024", Institutional Paper No. 306, 30-52. (3) The "additional fiscal effort" is defined as the difference between the level of defence spending (as % of GDP, according to NATO data) in 2024 and the NATO target of 3% of GDP. A positive (negative) value implies that 2024 spending is higher (lower) than the target.

The increase in defence spending in Europe is putting pressure on national budgets and weighs on fiscal adjustment in an already challenging macroeconomic environment. Several EU Member States are required to undertake additional defence expenditure while already facing high fiscal deficits, and some of them are subject to an Excessive Deficit Procedure. The fiscal effort required to achieve a potential higher NATO defence expenditure target of 3% of GDP implies an increase in spending that often exceeds 1 pp of GDP. The extent to which countries can make use of the flexibility provided by the activation of the escape clause is expected to vary depending on each country's fiscal space: countries with high debt-to-GDP ratios or large deficits will be constrained by elevated fiscal risks, while countries with more favourable fiscal positions (medium/low risk) have more room for manoeuvre (see Chart B).

The increase in defence spending during the activation period of the national escape clause implies higher adjustment needs in the future to ensure fiscal sustainability. According to the European Commission,[23] the fiscal flexibility provided by the activation of the national escape clause in countries for which a temporary deviation from the agreed spending limits has been approved, is expected to lead to an average increase in fiscal deficits and debt by 1.3 and 2.6 pps of GDP respectively in 2028, provided that the maximum allowed increase in defence spending (1.5% of GDP) is implemented gradually over the period 2025-28. As a result, the higher spen-

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23 European Commission (DG-ECFIN), "Assessment of the Fiscal Sustainability Condition for Member States Requesting the Activation of the National Escape Clause", Institutional Paper No. 321, 5.6.2025.

ding in 2025-28 could entail an additional fiscal effort[24] of 0.4 pps of GDP[25] on average in the second cycle of the Medium-Term Fiscal-Structural Plans (MTPs) starting in 2029, in order to meet the debt sustainability criteria and the deficit limit.[26]

Financing higher defence spending through borrowing poses serious risks to public debt sustainability. If the additional expenditure is not accompanied by spending cuts or revenue-increasing measures, it will lead to higher debt levels and interest payments. According to an ECB analysis,[27] activating the national escape clause would result in a temporary deterioration in the public debt trajectory for high-debt euro area countries. Although full compliance with the SGP over the second planning period (after 2028) could bring debt back onto a declining path, the level of debt in 2035 is estimated to be around 10 pps of GDP higher than in the baseline scenario. Postponing fiscal adjustment increases risks, especially for countries with limited fiscal space, and underscores the need for careful planning to ensure that short-term flexibility does not turn into long-term fiscal pressure. Therefore, even if Member States secure greater flexibility under the fiscal rules, they will be required to make difficult decisions to counterbalance such fiscal pressures.

Policy opportunities and challenges

The EU's recent institutional initiatives in the defence field represent a key opportunity for further European integration and for strengthening the EU's strategic autonomy, resilience and readiness. Although the technical details of the European defence plan have not yet been clarified, the first steps towards implementing the new political and legislative commitments on defence have already been taken at both the national and the EU level. These developments reflect a shared recognition that security is a fundamental prerequisite for economic stability and the prosperity of European citizens.

The prospect of joint procurement of defence equipment in the EU, with the participation of a large number of Member States – rather than just two or three as has typically been the case so far – introduces a new dynamic in terms of both demand and supply of defence equipment. Joint procurement ensures the interoperability and greater effectiveness of defence systems and infrastructure, as well as the predictability of demand, thereby reducing unit costs through economies of scale. At the same time, closer coordination of defence spending helps the European defence industry to improve its production and technological capabilities and thus its international competitiveness. The creation of large European defence companies through mergers and acquisitions, following the model of the US defence industry, would significantly strengthen the European defence sector. This would also be supported by better interconnectivity between the 2,500 small and medium-sized enterprises that supply goods and services for land, air and naval defence, as well as cybersecurity and space systems.[28]

The activation of the national escape clause allows for the financing of additional defence spending without immediate violation of the EU's new fiscal rules, by providing temporary flexibility. This initiative was deemed necessary to prevent many Member States from coming under the Excessive Deficit Procedure due to a sharp increase in defence spending, which is hampering fiscal adjustment efforts, especially in countries with already high deficits. The implementation of the clause provides necessary flexibility by enabling governments to manage extraordinary fiscal pressures without immediate sanctions, thereby helping to maintain market confidence. This

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24 In terms of change in the structural primary balance.

25 Or 0.25 pps of GDP if the adjustment period is extended to seven years.

26 For Greece, the European Commission estimates that full use of the allowed increase in public spending by 2028 will lead to an increase in deficit and debt by 1.2 and 1.8 pps of GDP, respectively, in 2028 compared to the baseline scenario of the MTP. This would likely require additional fiscal adjustment after 2029 (amounting to approximately 0.2 pps of GDP) in order to comply with the requirements of the fiscal framework (Source: European Commission, Council Recommendation allowing Greece to deviate from the maximum growth rates of net expenditure as set by the Council under Regulation (EU) 2024/1263 (Activation of the national escape clause), Brussels, 4.6.2025).

27 See Box 1 in the article entitled "Flexibility in the reformed EU governance framework: implications for government debt", *ECB Economic Bulletin*, Issue 3, 2025.

28 European Commission, Joint Communication, JOIN(2022) 24 final, 18.5.2022.

flexibility is particularly important for countries seeking to increase their defence spending but are constrained by EU rules (e.g. Germany), as well as for countries that had already budgeted for an increase in defence spending in their MTPs (e.g. Greece). By contrast, the activation of the clause is expected to be of limited practical use in countries that are not subject to adjustment requirements (e.g. Bulgaria, Denmark, Croatia, Latvia, Lithuania, the Netherlands, Czechia and Sweden).[29] Furthermore, the additional flexibility is unlikely to be used by countries already facing high deficits and debt levels (e.g. France, Italy, Spain) in an effort to avoid a deterioration of their fiscal sustainability.

The SAFE financing instrument can provide support to countries facing debt sustainability challenges or already having high defence spending by offering favourable financing terms for defence equipment projects. Countries that already allocate a significant share of their budget to defence (e.g. Greece, Poland, Finland) may benefit the most from this instrument, since it effectively acts as a form of debt refinancing under more favourable terms. The SAFE instrument allows the use of resources raised through common European borrowing to support defence spending, which can ease pressure on national budgets and strengthen defence capabilities and participation in joint European defence programmes without additional borrowing costs. The fiscal benefits of this mechanism depend on the financing cost through SAFE being lower than the national borrowing cost. Therefore, the effectiveness of the instrument depends on the specific fiscal conditions of each Member State and whether it faces a relatively higher borrowing cost in the market than the European Commission.

The lack of sufficiently large common financing mechanisms increases the risk of uneven growth and limits the beneficial multiplier effects of cooperation and innovation. The fragmentation of the defence market and "procurement competition" intensify when each country bears the burden of defence spending alone. Strengthening common financing mechanisms would therefore represent an important step towards deeper European integration. Furthermore, depending on the design of the financing instrument, the issuance of common debt (Eurobonds) could also contribute to a permanent increase in the supply of European safe assets, thereby strengthening the international role of the euro and supporting financial stability.

As far as Greece is concerned, utilising the European rearmament plan presents an opportunity that could bring multiple potential benefits. Greece could benefit from common European financing of defence programmes and equipment to finance its already high defence spending.[30] At the same time, the activation of the national escape clause under the SGP creates additional fiscal space of around 0.2% of GDP per year, further increasing the medium-term spending ceiling. Finally, gains could accrue through the active participation of the Greek defence industry in transnational co-production projects, which would strengthen the country's self-sufficiency, boost exports of defence equipment and further enhance Greece's geopolitical importance as a hub in the European security architecture. In order to maximise the benefits, higher defence spending should be directed towards well-designed investment with a high growth impact, such as infrastructure projects, energy, and research and innovation, so as to boost other sectors of the economy and contribute to the development of a stronger and more resilient productive base overall.

Conclusion

The increase in defence spending in Europe, aside from enhancing defence capabilities, is expected to have positive effects on economic growth, accompanied by mild inflationary pressures and a short-term deterioration of fiscal indicators. Investment in the defence sector contributes to economic growth by increasing demand for military equipment, stimulating domestic industries and boosting employment, especially when coupled with policies that promote innovation and enhance productivity across the economy through technology spillovers and dual-use goods. A shift towards meeting defence needs through greater reliance on domestic production rather than imports would be especially beneficial for the domestic production base. In the current international context, where Europe's rearmament coincides with rising trade protectionism and uncertainty, potential supply chain bottlenecks or disruptions, combined with higher demand for raw materials and defence

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29 These are countries with a deficit below 3% of GDP and a public debt below 60% of GDP.
30 Approximately 3% of GDP, as recorded by NATO, above its official threshold.

equipment, could amplify inflationary pressures in the medium term. From a fiscal perspective, higher defence spending is expected to add to public debt. However, the temporary flexibility provided by the EU fiscal rules and the availability of European co-financing will partly mitigate market reaction, particularly for countries facing heightened fiscal sustainability challenges.

Box 2

ECONOMETRIC ESTIMATION OF THE NATURAL INTEREST RATE IN THE EURO AREA

Natural rate of interest (r-star) means the real short-term interest rate that is consistent with absence of both inflationary and deflationary pressures in an economy. Although alternative definitions of the natural interest rate can be found in literature, the above definition stresses the significance of r-star for formulating and assessing the stance of monetary policy.[1] In more detail, if the short-term real market interest rate lies below (above) the natural interest rate, monetary policy is expansionary (contractionary). Thus, r-star can serve as a lodestar indicating the path (upward, downward or stable) that central banks' key interest rates should follow to achieve their quantitative inflation target and, in general, ensure price stability in an economy.[2] However, it should be noted that in formulating monetary policy, central banks take into account a broad set of factors that often go beyond r-star.

Although r-star has featured in several theoretical models for over a century and remains an attractive concept,[3] its use as a practical tool for monetary policymaking faces challenges. One such challenge is that r-star is "unobservable", hence unmeasurable, and therefore economists have to estimate it using econometric models that rely on information drawn from other "observable" variables. Additionally, empirical findings suggest that alternative model-based estimates of r-star can vary substantially.[4] Therefore, apart from estimation uncertainty, a high degree of model uncertainty is also present.[5] Despite these challenges, r-star econometric estimates appear to be a significant component of modern central banks' toolkits for assessing the monetary policy stance.[6]

In addition to quantitatively assessing r-star, examining its determinants is also important, as this deepens our understanding of its evolution over time and also helps us interpret potential future changes. In general, the persistent downward trend of real interest rates over the past 40 years, up to and including the COVID-19 pandemic, is attributed to long-term factors that have increased saving and reduced investment over time.[7] According to literature, key factors include lower rates of economic and labour productivity growth, an ageing population, high saving rates – particularly in developing countries – which led to the so-called "saving glut" in the modern globa-

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1   In this box, the terms *natural interest rate* and *r-star* are used interchangeably. The symbol r* is also widely used in literature. Moreover, we take the concepts of natural and neutral interest rate to be identical. In this regard, see also Brand, C., N. Lisack and F. Mazelis (2024), "Estimates of the natural interest rate for the euro area: an update", ECB, *Economic Bulletin*, Issue 1/2024. Lastly, for alternative definitions of r-star, see Bonam, D., P. van Els, J.W. van den End, L. de Haan and I. Hindrayanto (2018), "The natural rate of interest from a monetary and financial perspective", De Nederlandsche Bank, *Occasional Studies*, No. 16-3.
2   For insights on r-star and monetary policy, see also Nagel, J. (2025), "r* in the monetary policy universe: navigational star or dark matter?", Lecture at the London School of Economics and Political Science.
3   See Wicksell, K. (1898), *Interest and Prices: A Study of the Causes Regulating the Value of Money*, English translation, London: Macmillan and Company, 1936, p. 102.
4   The main categories of models for estimating r-star are: (a) dynamic stochastic general equilibrium (DSGE) models, (b) semi-structural models and (c) time-series models. See also Benigno, G., B. Hofmann, G. Nuño and D. Sandri (2024), "Quo vadis, r*? The natural rate of interest after the pandemic", *BIS Quarterly Review*, March.
5   See Brand, C., N. Lisack and F. Mazelis (2025), "Natural rate estimates for the euro area: insights, uncertainties and shortcomings", ECB, *Economic Bulletin*, Issue 1/2025.
6   E.g., see Federal Reserve Bank of New York, "Measuring the Natural Rate of Interest" on how r-star econometric estimates are used in monetary policy.
7   See Benigno et al. (2024), op. cit.

lised economy,[8] as well as secular stagnation, which is primarily driven by weak demand for new investment.[9] Moreover, the growing demand for safe assets has significantly contributed to a decline in interest rates, especially after the 2008 global financial crisis, due to rising risk aversion among investors.[10]

In this box, econometric multivariate time series models have been developed to estimate the natural rate of interest in the euro area over the past 55 years and to examine the role of economic growth as a determinant of r-star. Building on recent literature,[11] the analysis is enriched by the inclusion of new variables which further allow the identification of labour productivity as a determinant of the natural interest rate.[12]

Econometric model

The model employed to estimate r-star is a Bayesian common trend vector autoregressive model (common trend BVAR),[13] which has been appropriately modified to generate more accurate estimates by accounting for both fluctuations in macroeconomic volatility and the impact of outliers during the COVID-19 pandemic.[14] Briefly, in these models the natural interest rate is proxied by the long-term trend of the short-term real market interest rate. The rationale behind this approach is that the long-run trend reflects, in a way, the equilibrium state of the multivariable system after filtering out cyclical components.

The main variables used to estimate r-star in the euro area include: the nominal short-term interest rate, i.e. the 3-month Euribor; the annualised growth rate of the Harmonised Index of Consumer Prices (HICP); inflation expectations as captured by the ECB's Survey of Professional Forecasters (SPF); and the yields of the 10-year benchmark sovereign bond for the euro area.[15] The empirical analysis also incorporates annualised rates of change in gross domestic product (GDP) per capita, private consumption per capita and total real hours worked. This approach allows for the identification of the long-term trend of labour productivity growth as a determinant of the natural rate of interest.[16] More specifically, the natural rate of interest is the sum of three components, namely the long-run trend of (a) labour productivity growth, (b) working hours and (c) other determinants which, however, cannot be further identified under this model.[17] Moreover, using per capita figures helps us capture the indirect effect of demographic changes.

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8   On "saving glut", see Bernanke, B. (2005), "The global saving glut and the U.S. current account deficit", Sandridge Lecture, Virginia Association of Economists, Richmond, Virginia, 10 March.

9   See e.g. Boocker, S., M. Ng and D. Wessel (2023), "What is the neutral rate of interest?", *Brookings Commentary*, 3 October.

10 See Del Negro, M., D. Giannone, M.P. Giannoni and A. Tambalotti (2017), "Safety, liquidity, and the natural rate of interest", *Brookings Papers on Economic Activity*, 48(1), 235-316.

11 See Bank of Greece (2025), *Annual Report 2024*, Box IV.1 "Econometric estimation of long-term trends in the Greek economy".

12 See also Rachel, L. and T.D. Smith (2015), "Secular drivers of the global interest rate", Staff Working Paper No. 571, Bank of England.
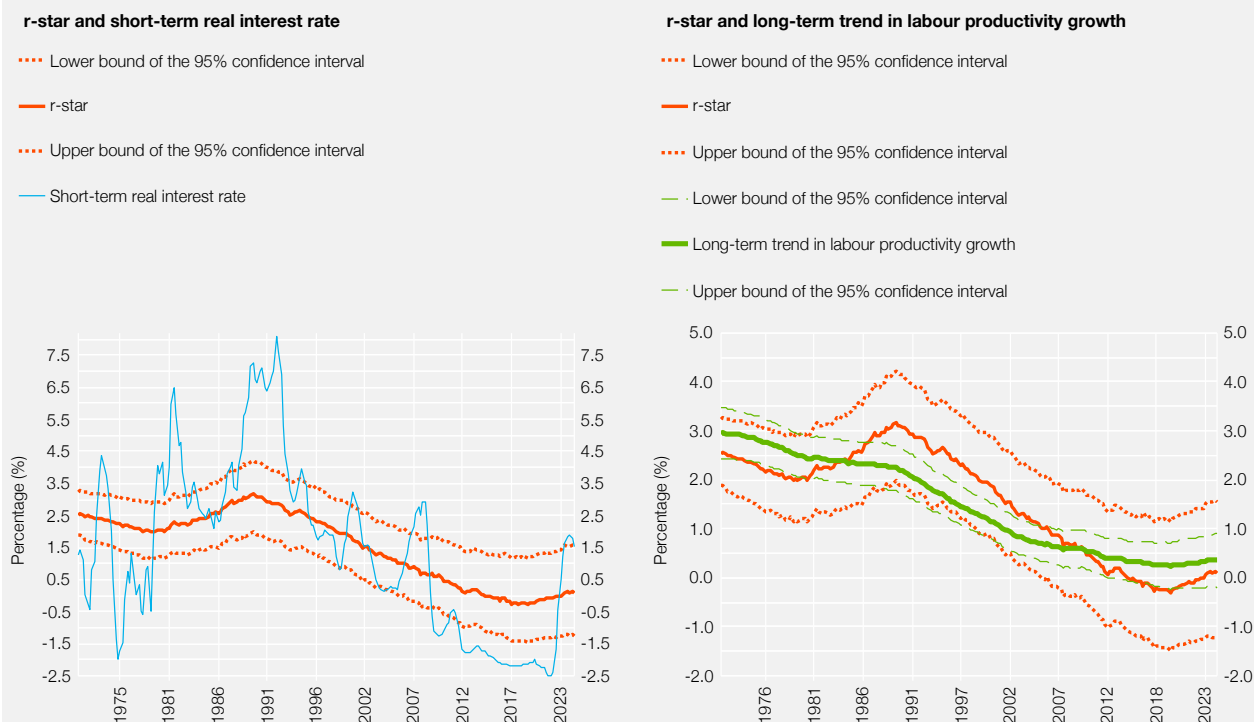
13 See Del Negro et al. (2017), op. cit.

14 The model has been modified compared to that of Del Negro et al. (2017) as follows: (a) we use stochastic variability in the residuals to avoid potential model misspecification that could bias our estimates; (b) we apply the t-student distribution to the residuals to account for outliers during the pandemic period, (c) we expand the model to incorporate the long-run trend of labour productivity as a determinant of r-star; and (d) we estimate the model using computationally efficient methods that allow us to utilise the information content of a large set of variables. See also footnotes 10 and 11.

15 In accordance with literature, the above-mentioned variables are sufficient to identify the natural rate of interest, but do not offer deeper insights into its potential determinants. See also footnote 10.

16 For more detail, see Antolin-Diaz, J., T. Drechsel and I. Petrella (2017), "Tracking the Slowdown in Long-Run GDP Growth", *The Review of Economics and Statistics*, 99(2), 343-356. In summary, using total hours worked allows us to identify and estimate the long-term trend of labour productivity, which in this model includes technological and other contributing factors. However, a more detailed analysis of the long-term trend of labour productivity, as well as identifying its possible technological and non-technological determinants would require introducing variables such as total factor productivity (TFP), etc. (see also Appendix K to the aforementioned paper). Such an analysis is not possible under this model and lies beyond the scope of this box.

17 The sum of the first two components, namely the long-term trend of growth in labour productivity and in hours worked, equals the total impact of the long-term trend of GDP growth on r-star. In this box, labour productivity means output per hour worked.

Econometric estimates of the natural interest rate (r-star) and the long-term trend in labour productivity growth in the euro area

r-star and short-term real interest rate

···· Lower bound of the 95% confidence interval

— r-star

···· Upper bound of the 95% confidence interval

— Short-term real interest rate

r-star and long-term trend in labour productivity growth

···· Lower bound of the 95% confidence interval

— r-star

···· Upper bound of the 95% confidence interval

– – Lower bound of the 95% confidence interval

— Long-term trend in labour productivity growth

– – Upper bound of the 95% confidence interval

Source: Econometric estimates of the Bank of Greece.
Note: The short-term real interest rate is calculated by subtracting inflation expectations from the 3-month Euribor.

But what is the mechanism through which labour productivity affects real interest rates? A decline in labour productivity can lead to lower expected future wages, prompting households to increase saving in order to maintain their standard of living despite anticipated reduced income (consumption smoothing). In the long run, an increase in saving leads to higher available capital, lower returns on new investment – since firms will undertake increasingly less profitable investment projects due to an excess of capital – and finally to lower real interest rates.[18] Reduced labour productivity could also exert downward pressure on real interest rates by dampening business investment. Low productivity typically translates into low returns on capital, making firms reluctant to invest at certain interest rate levels, thus pushing real interest rates toward a lower equilibrium level.[19]

Empirical analysis

The chart presents the empirical results of the econometric analysis covering the period from Q2 1970 to Q3 2024.[20] Specifically, the left-hand panel of the chart shows the estimated natural interest rate for the euro area, alongside the short-term real interest rate, as calculated by subtracting inflation expectations from the 3-month Euribor. The r-star estimates display significantly less fluctuations than the short-term real

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18 For a more technical analysis, see Ramsey, F.P. (1928), "A Mathematical Theory of Saving", *The Economic Journal*, 38(152), 543-559. In short, a rise in saving increases the capital-to-output ratio in the long run, resulting in a decrease in the marginal product of capital, which (according to the model) equals the real interest rate.

19 See footnote 12.

20 In the model we use 4 time lags, the data are quarterly and available since 1970. For more information on the data, see İpek, M.S. and B. Kısacıkoğlu (2025), "Estimating Euro Area Output Gap Dynamics: Evidence from the Updated Area-Wide Model Database", CEPR Discussion Paper No. 19913. On model estimation, see Louzis, D.P. (2023), "Trend inflation and inflation expectations in high dimensional vector autoregressions", Conference on Research on Economic Theory and Econometrics (CRETE) 2023.

interest rate, since, as mentioned above, they reflect its long-term trend, net of the impact of the business cycle.

Moreover, the model estimates indicate that, until the late 1980s, the real natural interest rate ranged between 2% and 3%, while from 1990 to 2020 r-star decreased, almost linearly, from 3% to -0.3% (Q3 2019). Since 2020, there has been a mild upward trend, bringing the real r-star back into positive territory, though not exceeding 0.1% by the end of the sample period (Q3 2024). It should be noted that the above-mentioned empirical findings are consistent with those reported in the international literature, as well as with the ECB's estimates.[21] Also, the 95% confidence interval reveals the relatively high uncertainty inherent in the r-star estimates, a finding which, as noted above, is to be expected, but at the same time reminds us that these estimates should be used with caution in monetary policymaking.

The right-hand panel of the chart shows the r-star estimates combined with the model estimates of the long-run trend of labour productivity growth. The graphical representation of the econometric estimates shows that the long-run trend of labour productivity growth explains much of the change in r-star. In more detail, from Q2 1999 to Q2 2019, i.e. the first 20 years of the euro, r-star declined by 2.17 percentage points (pps), of which 44% (0.97 pps) is attributed to a decline in the trend of labour productivity growth. Both of the afore-mentioned decreases are statistically significant at the 95% confidence level, unlike the other determinants, which may explain approximately 41% (0.90 pps) of r-star's downward trend, but this contribution is not statistically significant.[22]

Conclusions

In conclusion, this box highlights the importance of developing econometric models to estimate the natural rate of interest in the euro area and to identify its determinants from a monetary policy perspective. The main findings of the empirical analysis can be summarised as follows: (a) the real natural interest rate in the euro area declined significantly, by approximately 2.17 pps, from the creation of the euro area to the end of the 2010s; (b) since 2020 a weak upward trend has emerged, bringing r-star just above 0% by Q3 2024; and (c) the downward trend of labour productivity growth explains almost 45% of the decline in r-star in the period 2000-2020.

Although, as mentioned previously, r-star estimates are generally subject to a high degree of uncertainty and depend heavily on the type of model applied, a careful study of the empirical results could help monetary authorities in evaluating current monetary policy, as well as reaching a common understanding of possible future changes in r-star. For instance, the r-star estimate in nominal terms[23] was close to 2% for Q3 2024, which was lower than the ECB's deposit facility rate in the corresponding period (3% as from 18 December 2024). This practically means that monetary authorities have been implementing a restrictive monetary policy in order to reduce inflation toward the 2% medium-term target.

Finally, an increase in labour productivity that may result from rapid technological developments in the field of artificial intelligence and industrial robotics could potentially, as also suggested by the empirical findings of this box, lead to an increase in the natural rate of interest in the medium term. Although forecasting the trajectory of the natural rate of interest remains highly uncertain and complex, identifying the key determinants of r-star is crucial for monetary authorities, as it helps them make timely policy decisions.

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21 For example, see footnotes 5 and 6.

22 The remaining 15% is due to a fall in the long-term trend of working hours growth, which is likewise not statistically significant at the 95% confidence level.

23 Adding up inflation expectations, which were around 2% in Q3 2024.

Box 3

THE POTENTIAL IMPACT OF US TARIFFS ON THE GREEK ECONOMY

This box aims to investigate the potential impact on the Greek economy from the imposition of tariffs by the United States on goods imports from the European Union (EU), for the period 2025-2027. Three scenarios (baseline, mild and severe) are examined, which vary in the intensity and persistence of tariff policies.[1]

In the baseline scenario, the main assumptions include 10% tariffs on goods and 25% tariffs on metal and automotive imports to the United States from the EU. Additionally, it is assumed that the EU does not retaliate. Trade policy uncertainty is expected to remain elevated throughout the projection horizon (2025-2027) but will decline to 2018 levels by the end of the projection horizon. The mild scenario assumes that the EU and the United States would reach a deal on zero-for-zero tariffs, effective from the third quarter of 2025. Additionally, it is assumed that trade policy uncertainty unwinds faster than in the baseline. In the severe scenario, the United States would levy 20% tariffs on imports of goods from EU countries, with the EU retaliating symmetrically. Furthermore, US reciprocal tariffs on the rest of the world would stay at high levels. Finally, uncertainty would remain higher than in the baseline throughout the projection horizon.

For our analysis, we use the dynamic stochastic general equilibrium (DSGE) model of the Bank of Greece, where the scenario assumptions have been mapped to the model's exogenous variables.[2]

The results suggest that the direct impact on the Greek economy through its bilateral trade with the United States would be limited. The Greek economy is expected to be mostly indirectly affected as a fall in euro area countries' foreign demand would decrease demand for Greek exports and elevated uncertainty would weigh on investment.

Transmission channels of the impact of the US administration's tariff policies on the Greek economy
A substantial proportion (around 50%) of Greek exports are services (ELSTAT data), while United States tariffs only target goods. Moreover, the United States is not a major destination for Greek goods exports, accounting on average for only 4.1% of the total in 2020-2024 (see Box 4).[3] For all these reasons, the direct impact on the Greek economy is expected to be limited and will depend on both the magnitude of tariffs and the price elasticity of the goods affected.

The Greek economy would likely be indirectly affected though, as a fall in foreign demand for euro area goods and services could dampen demand for Greek exports, reducing the country's GDP. It should be noted that about 9% of euro area exports of goods go to the United States. The main (indirect) channels through which tariffs are expected to affect the Greek economy relate to:

(1) A presumed decline in foreign demand for Greek goods, especially from within the euro area, due to a potential slowdown of euro area economies. This constitutes one of the main channels through which US tariffs are expected to affect the Greek economy. It should be noted that about 42% of Greece's goods exports and 34% of its services exports go to euro area countries. Should US protectionist policies lead to a reduction in euro area foreign demand and GDP, the Greek economy would be affected through (i) a decline in demand for Greek intermediate goods used as inputs for euro area exports of final products to the United States; and (ii) a decrease

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1 For detailed information on the scenario assumptions, see Box 2 of the June 2025 BMPE report. It should be noted that the scenario assumptions follow as closely as possible those used in the June 2025 Eurosystem staff Broad Macroeconomic Projection Exercise (BMPE).
2 See Papageorgiou, D. and E. Vourvachaki (2017), "Macroeconomic effects of structural reforms and fiscal consolidations: Trade-offs and complementarities", *European Journal of Political Economy*, 48, 54-73.
3 In 2024, the United States accounted for 4.8% (EUR 2.4 million at current prices) of Greek goods exports (COMEXT data), with the tariff-exempted oil products component of Greek exports representing around a quarter of this subtotal. It is also noted that around 2.6% of Greek goods imports in 2024 originated in the United States, while the country's share in Greece's total tourism receipts in the same year was a little over 7%.

in foreign demand for Greek final goods and services, including tourism, due to the slowdown of the euro area and the global economy.

(2) A presumed rise in uncertainty. If the tariffs are eventually imposed, and especially if US trading partners retaliate, trade policy uncertainty would increase further. This would raise Greece's risk premium, discouraging investment and inducing households to reduce or postpone their consumption.

(3) Finally, if the tariffs lead to a deceleration in global trade, accompanied by a decline in freight rates, Greek shipping could also be affected. Transport (mainly shipping) receipts constitute around 40% of Greece's total services receipts. The presumed negative effects on deep-sea shipping, where receipt dynamics are mainly driven by freight rate developments, tend to largely follow variations in trade.[4] Nonetheless, during the first Trump administration, US restrictive trade policies – mostly targeting China – had led to a re-routing of trade, without a negative effect on the overall global trade volume.

An empirical assessment of the impact of the US administration's tariff policies on the Greek economy
The impact of tariffs on the Greek economy is modelled by mapping the assumptions to the DSGE model's exogenous variables. Specifically, the impact of tariffs on the Greek economy is simulated through two temporary shocks: one to foreign demand for Greek exports and another capturing economic uncertainty. Within our framework, uncertainty is proxied by changes in the country's risk premium. The size and persistence of the shocks differ according to the assumptions of each scenario. Specifically, compared with the baseline scenario, the shocks are assumed to be less persistent in the mild scenario and larger and more persistent in the severe scenario.

Regarding the shock size, the shocks are assumed to lead to a 0.5 percentage point reduction in the growth rate of foreign export demand and a 200 basis points increase in the risk premium in both the baseline and mild scenarios. In the mild scenario, however, the shock to the risk premium is less persistent than in the baseline, resulting in a faster easing of uncertainty.

In the severe scenario, shocks are assumed to be larger. Specifically, foreign demand growth falls by 1.25 percentage points (pps), while the risk premium increases by 200 basis points. Here, the risk premium shock is more persistent than in the baseline scenario, which translates into a much slower unwinding of economic uncertainty.

The main channels through which the shocks are transmitted to the Greek economy are as follows: reduced foreign demand leads to lower exports and thereby a contraction in aggregate demand. As foreign demand weakens, firms respond by cutting back on production, which reduces real GDP. The decrease in output, in turn, leads to lower labour demand, putting downward pressure on private sector wages, labour costs and capital demand. Meanwhile, lower aggregate demand drives down inflation, as firms cut prices in response to the fall in labour costs. In addition, diminishing household income weighs on private consumption, further exacerbating the contraction in aggregate demand.

As regards the effects of uncertainty, elevated economic uncertainty dampens investment and consumption demand. The reduced domestic demand depresses employment and wages, which in turn allows firms to lower their prices, giving rise to deflationary pressures.

The main quantitative findings of our model-based analysis are summarised in the table below, reported as cumulative percentage point deviations from the baseline for the period 2025-2027:

(a) Real GDP is expected to be 0.5 pps lower in the severe scenario and 0.3 pps higher in the mild scenario.

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4 See Bragoudakis, Z. and S. Panagiotou (2010), "Determinants of the receipts from shipping services: the case of Greece", Bank of Greece, *Economic Bulletin*, 34, 41-55.

(b) Private consumption is expected to be 0.7 pps lower in the severe scenario and 0.5 pps higher in the mild scenario.

(c) Private investment is found to be 4.5 pps lower in the severe scenario and 2.2 pps higher in the mild scenario.

(d) Employment is projected to decline by 0.4 pps in the severe scenario and to increase by 0.2 pps in the mild scenario.

(e) The trade balance of goods (exports minus imports) is expected to improve by 0.3 pps in the severe scenario, due to a sharp fall in imports stemming from reduced domestic demand, especially for investment; by contrast, it is expected to worsen by 0.3 pps in the mild scenario.

(f) CPI inflation is estimated to be 0.3 pps lower in the severe scenario and 0.1 pps higher in the mild scenario.

Macroeconomic impact on the Greek economy under the severe and mild scenarios, 2025-2027

(cumulative percentage point deviations from the baseline)

2025-2027	Severe scenario	Mild scenario
Real GDP	-0.5	0.3
Total consumption	-0.7	0.5
Investment	-4.5	2.2
Employment	-0.4	0.2
Trade balance	0.3	-0.3
Inflation	-0.3	0.1

Source: Bank of Greece calculations.

The above results, which are based on the dynamic stochastic general equilibrium (DSGE) model of the Bank of Greece, are consistent with those obtained by the Bank's macro model for the Greek economy.[5] They demonstrate that the imposition of tariffs would have a significant negative effect on Greece's real GDP under the severe scenario, where the persistence of uncertainty plays a crucial role.

Conclusions

To sum up, the results from the simulation of the impact on the Greek economy from the US administration's tariff policies show that it would likely lead to a deceleration in GDP growth. The magnitude of this impact would crucially depend on the intensity of the demand and uncertainty shocks. The implications for economic activity are expected to be particularly pronounced in the severe scenario, where the impact of elevated uncertainty has a prominent role.

Even so, despite the frequent changes in tariff announcements, no significant changes have been observed in Greek government bond yields, which reflect the country's risk premium. This may indicate that the positive momentum of the Greek economy largely counteracts the possible negative effects of tariff imposition.

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5   Zonzilos, N. (2004), "Econometric modelling at the Bank of Greece", Bank of Greece Working Paper No. 14.
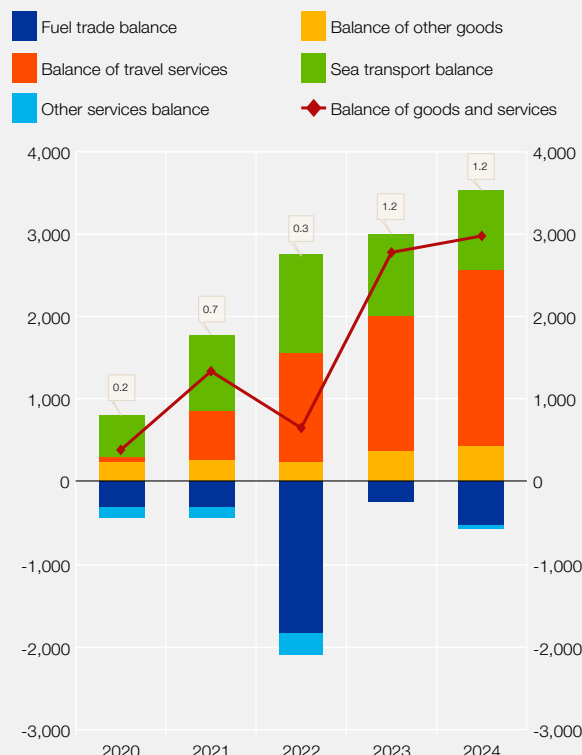
Box 4

THE IMPACT OF US TARIFFS ON GREECE'S TRADE IN GOODS AND SERVICES

The imposition of tariffs by the United States, reflecting a revision of its trade policy, not only affects its direct trading partners, but also has broader implications for the global economy. For Greece, the direct impact from the imposition of tariffs is estimated to be limited, but the potential indirect effects through a slowdown in global trade, growth and disposable income could be stronger. This box discusses the direct impact on Greece's goods exports to the United States, as well as on its services exports, mainly through the effects on Greek shipping from US port fees. Finally, it examines the nature of the indirect effects of US tariffs on Greece's trade, with a view to highlighting the challenges for the Greek economy (see also Box 3).

According to balance of payments data from the Bank of Greece, bilateral Greece-US trade in goods recorded a small deficit of EUR 101 million in 2024, compared with a surplus of EUR 128 million in 2023, as a surplus in the non-fuel balance of goods was more than offset by the fuel deficit. Actually, in 2022 and to a lesser extent in 2024, the value of fuel imports (mainly natural gas) from the United States was the highest of the 2020-2024 period. On the other hand, the services balance has been in surplus, primarily stemming from travel services and secondarily from sea transport. Thanks mainly to receipts from services, Greece's overall balance of goods and services with the United States has recorded a surplus, which came to 1.2% of GDP in 2024 (see Chart A).

Chart A Greece-USA goods and services balance (2020-2024)

(EUR millions and % of GDP)

Legend:
- Fuel trade balance
- Balance of travel services
- Other services balance
- Balance of other goods
- Sea transport balance
- Balance of goods and services

Sources: Bank of Greece and ELSTAT (for GDP).
Note: The percentages above the bars show the bilateral balance of goods and services in relation to Greece's GDP.

Direct impact on exports of goods and services

Greece's goods exports to the United States, in value terms, account for around 4.8% of total goods exports and about 1% of GDP. The goods exported to the United States predominantly consist in food (mainly fruit and vegetables, as well as cheese and cereals preparations), olive oil, fuels, industrial products (e.g. non-metallic minerals such as cement, non-ferrous metals such as aluminium) and electrical machinery and switches (see Chart B).[1]

A breakdown of goods exported by Greece to the United States shows that almost 25% primarily concerns fuel and secondarily pharmaceuticals and copper products, all of which have been exempted from tariffs.[2] Around 10% of exports is accounted for by aluminium, iron and steel products, which face a 50% tariff as from early June 2025,[3] while the remaining almost 65% of Greek exports of goods face the basic duty of 10% until early July 2025.[4]

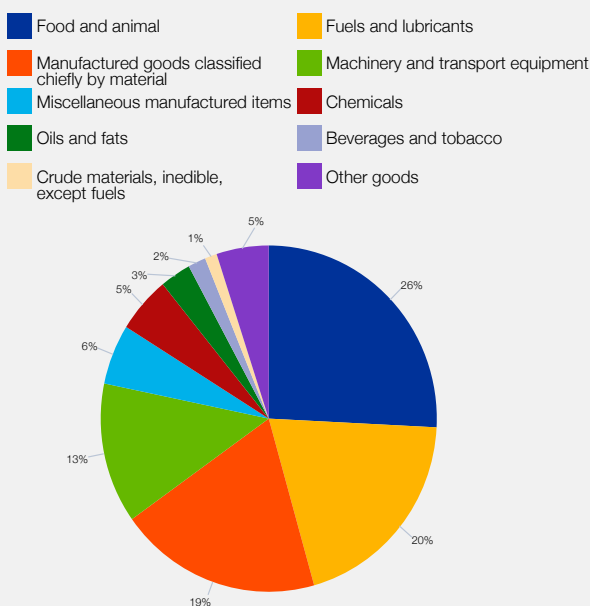1 According to merchandise trade statistics (COMEXT database) for 2024.
2 See Executive order – Regulating Imports with a Reciprocal Tariff to Rectify Trade Practices that Contribute to Large and Persistent Annual United States Goods Trade Deficits, Annex II (2.4.2025).
3 See Proclamation – Adjusting imports of aluminum and steel into the United States (3.6.2025).
4 Initially, the EU as a whole was subject to a tariff rate of 20% on the value of goods, which was suspended for 90 days until early July 2025 (see Executive order – Modifying reciprocal Customs Rates to reflect Trading Partner Retaliation and Alignment, 9.4.2025), giving time for an EU-US trade deal to be reached; in the meantime, a baseline tariff of 10% applies to all EU goods. It should be noted that in the Eurosystem's baseline scenario, US tariffs on EU goods are assumed to remain at 10% over the entire projection horizon (see Box 2 in "Eurosystem staff macroeconomic projections for the euro area", June 2025).

Chart B Breakdown of Greek exports of goods to the United States

(2022-2024 average)

- ■ Food and animal
- ■ Fuels and lubricants
- ■ Manufactured goods classified chiefly by material
- ■ Machinery and transport equipment
- ■ Miscellaneous manufactured items
- ■ Chemicals
- ■ Oils and fats
- ■ Beverages and tobacco
- ■ Crude materials, inedible, except fuels
- ■ Other goods

Source: Eurostat trade statistics, COMEXT database.

The announcement of tariffs by the United States was accompanied by the adoption of measures following an investigation into China's maritime and shipbuilding practices in mid-April 2025.[5,6] These measures, which will enter into force in mid-October 2025, include:

1. fees on vessel owners and operators of China based on net tonnage per US voyage;

2. fees on operators of Chinese-built ships based on net tonnage or containers;

3. fees on foreign-built car carrier vessels based on their capacity; and

4. incentives to US-built car carrier vessels and liquified natural gas (LNG) vessels.

These maritime fees, increasing incrementally over the next three years, are expected to hit mainly China-based container ship operators,[7] as well as non-US-built car carrier vessels. For Greek-owned shipping, the impact is expected to be limited, as its activity is mainly focused on dry bulk carriers and oil tankers. Also, it is estimated that less than half of the Greek-owned dry cargo fleet (in tonnage terms) is China-built, while the respective shares are about 20% for oil tankers and 30% for container ships. This enables operators of Greek-owned vessels to run routes to US ports by chartering non-Chinese ships, which are not subject to the relevant fees.[8] Thus, this situation could – under certain conditions – provide a comparative advantage to Greek-owned shipping.

Accordingly, the direct impact of tariffs on Greek exports to the United States is expected to be limited, owing to both the small share of the United States in Greece's total goods exports and the tariff exemption for almost a quarter of Greek goods. In addition, the imposition of rising fees on Chinese-built ships is likely to have only a small negative impact on the Greek-owned fleet, hence on sea transport receipts.

Indirect impact on exports of goods and services
On the other hand, the indirect impact of tariffs could be larger and is associated with the following factors:

1. **Loss of competitiveness due to a deterioration in relative prices of goods:** Higher tariffs on the EU compared with other competitors for the same goods could contribute to a deterioration in the relative prices of Greek products on the US market;[9] countries facing lower tariffs would thus gain a comparative advantage vis-à-vis EU countries. This effect is further exacerbated by the recent strengthening of the euro against the US dollar.

2. **Slowdown in global growth and trade:** Although Greece's exports to the United States account for about 1% of GDP, for the euro area or the EU-27 this share is higher (around 3%). The negative effects on disposable

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5   Office of the United States Trade Representative, Press Release, 17.4.2025.
6   It should be noted that the SHIPS for America Act, designed to strengthen US shipbuilding and expand the US commercial fleet, is under consultation.
7   Including Hong Kong and Macao.
8   It should be noted that some exemptions apply for certain ship types and sizes.
9   For example, in the initial announcement of tariffs, the EU faced tariffs of 20%, while Türkiye 10%.

income in these trading partners, which absorb more than 50% of Greek goods exports, will also weigh on Greece's exports of goods. Moreover, the decline in international trade volumes will adversely affect demand for sea transport and related receipts in Greece's services balance.

3. **Growing competition in existing markets:** The imposition of US tariffs could divert merchandise trade flows from the United States to other markets. Greek goods that already compete in such other markets (e.g. metal products and machinery) could face increased price competition.

4. **Drop in disposable income in the EU and the United States:** A decline in disposable income in the EU, which accounts for more than 55% of Greece's travel receipts, is likely to contribute to lower spending by EU travellers in Greece. A similar impact could also emerge for US travellers. Specifically, in 2024, travellers from the United States reached 1.55 million or 3.8% of total arrivals (compared with 3.9% in 2023), with the corresponding receipts amounting to EUR 1.6 billion or 7.3% of total receipts (up from 6.7% in 2023). Moreover, US traveller expenditure per overnight stay showed the strongest growth among the main countries of origin, while average expenditure per trip also increased.[10]

In conclusion, the imposition of tariffs by the United States has created new conditions in Greece's trade, with impacts in both the short and the longer term.[11] The direct impact of US tariffs on Greek goods exports is not expected to be significant, as the share of exports to the United States is not high. However, the indirect effects – associated with the slowdown in the growth rates of international trade volumes and of disposable income in Greece's major trading partners – on both goods and services exports could be stronger and become gradually visible in line with economic developments in such trading partner countries.

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10 Among the main countries of origin outside the EU, travellers from the United States spent EUR 1,023.5 per trip on average, compared with EUR 695.1 for visitors from the United Kingdom – a figure close to that for Germany (EUR 685.3) or France (EUR 632.2). Travellers from expatriate countries such as Australia and Canada also recorded average expenditure per trip of over EUR 1,000.

11 It should be noted that a decline in Greece's goods and services export volumes and disposable income would contribute to lower imports.

Box 5

FISCAL DRAG IN GREECE

Fiscal drag refers to an increase in tax revenues that arises when the tax base (e.g. income) increases in nominal terms, but the parameters of tax legislation (e.g. tax brackets, deductions/exemptions) are not adjusted accordingly. This leads to a rise in the average effective tax rate.[1] Fiscal drag mainly concerns personal income tax (PIT) and is of particular importance for fiscal policy, as it affects: (1) tax revenue forecasts;[2] (2) the estimation of the available fiscal space under the new fiscal rules;[3] (3) income distribution and, consequently,

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1 The average effective tax rate is the share of total income paid in taxes (i.e. the ratio of total tax liability to total income).

2 See Creedy, J. and N. Gemmell (2004), "The income elasticity of tax revenue: Estimates for income and consumption taxes in the United Kingdom", *Fiscal Studies*, 25(1), 55-77; and Belinga, V., D. Benedek, R. de Mooij and J. Norregaard (2014), "Tax buoyancy in OECD countries", IMF Working Paper No. 14/110.

3 Under the new EU economic governance framework, additional revenues resulting from taxpayers moving into higher tax brackets (bracket creep) are considered as *discretionary revenue measures*. An increase in such revenues expands the limit on the growth rate of net nationally financed primary expenditure, thereby creating additional fiscal space. For the role of fiscal drag as an automatic stabiliser, see Immervoll, H. (2006), "Fiscal drag – an automatic stabiliser?", in: Bargain, O. (ed.), *Micro-Simulation in Action (Research in Labor Economics)*, Vol. 25, 141-163, Emerald Group Publishing Limited, Leeds; and Paulus, A. and I.V. Tasseva (2020), "Europe through the crisis: Discretionary policy changes and automatic stabilizers", *Oxford Bulletin of Economics and Statistics*, 82(4), 864-888.

optimal tax design.[4] Especially during periods of high inflation and rapid nominal income growth, fiscal drag increases the tax burden without a corresponding increase in taxpayers' real tax-paying capacity.

The purpose of this box is to analyse fiscal drag in the PIT system in Greece during 2019-23, in order to highlight its significance for the design of fair and effective tax policy interventions. First, the box examines the impact of fiscal drag from a theoretical perspective, assuming income increases without changes in tax policy or indexation practices. Next, it assesses the actual fiscal drag during the 2019-23 period, while also considering alternative tax revenue scenarios. The analysis focuses on the implications for taxpayer incomes, fiscal revenues and tax fairness (with a special focus on the progressivity of the tax system and inequality). This provides a basis for evaluating alternative policy responses to address fiscal drag.[5]

The analysis uses the EU's tax-benefit microsimulation model (EUROMOD).[6] The model draws on microdata from the European Union Statistics on Income and Living Conditions (EU-SILC).[7] EUROMOD allows the simulation of baseline scenarios based on current legislation and reported incomes in the microdata, as well as the estimation of counterfactual scenarios under hypothetical changes either in tax legislation or in the underlying data.

Significant reforms in the PIT system were implemented during the 2019-23 period. These included an overhaul of the tax schedule with the introduction of an additional tax band featuring a lower tax rate (for incomes up to EUR 10,000) and with marginal reductions in tax rates for higher income brackets. Furthermore, the employment and pensions income tax credit became less generous. At the same time, employees' and employers' social insurance contribution rates were lowered and a new schedule of social insurance classes was introduced for the self-employed and farmers (i.e. lump sum amounts irrespective of self-employment/farming income), with annual adjustments based on inflation from 2023 onwards. Additionally, the minimum wage increased in both 2022 and 2023, affecting the level of the unemployment insurance benefit, which is connected to it, as well as the upper and lower earnings limits for the social insurance contribution base. In Greece, there is no automatic indexation of tax parameters.[8]

Fiscal drag "in theory"

The progressive nature of PIT implies a relatively high tax-to-base elasticity, indicating significant potential for fiscal drag when tax parameters are not adjusted. Tax-to-base (TTB) elasticity is a static measure, calculated at a given point in time under the prevailing tax regime, that captures the percentage change in PIT revenues resulting from a 1% increase in taxpayers' taxable income. Fiscal drag is defined as the disproportionate (i.e. greater than 1%) increase in tax revenues resulting from a 1% nominal increase in income. The size of the elasticity depends both on the design of the PIT legislation (such as tax brackets, tax deductions, etc.) and on the income distribution and demographic characteristics of taxpayers, which affect their final tax liability.

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4   See Immervoll, H. (2005), "Falling up the stairs: the effects of 'bracket creep' on household incomes", *Review of Income and Wealth*, 51(1), 37-62; and Sutherland, H., R. Hancock, J. Hills and F. Zantomio (2008), "Keeping up or falling behind? The impact of benefit and tax uprating on incomes and poverty", *Fiscal Studies*, 29(4), 467-498.
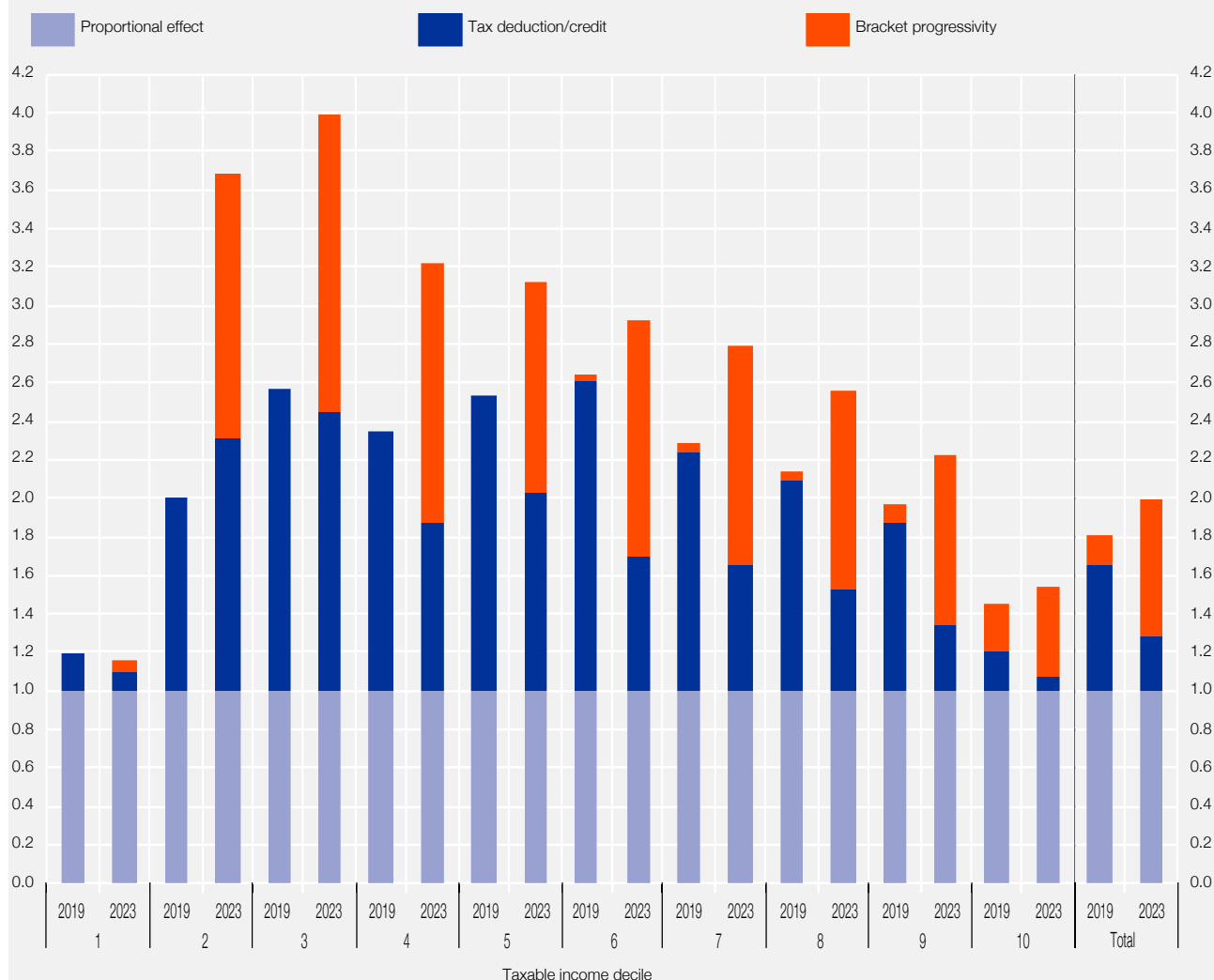
5   The results presented for Greece are part of the study by García-Miralles, E., M. Freier, S. Riscado, C. Leventi, A. Mazzon, G. Abela, L. Boyd, B. Brusbārde, M. Cochard, D. Cornille, E. Dicarlo, I. Debattista, M. Delgado-Téllez, M. Dolls, L. Fadejeva, M. Flevotomou, F. Henne, A. Harrer-Bachleitner, V. Jaszberenyi-Kiraly, M. Lay, L. Lehtonen, M. Mastrogiacomo, T. McIndoe-Calder, M. Moser, M. Nevicky, A. Peichl Pidkuyko, M. Roter, F. Savignac, A. Strojan Kastelec, V. Tuzikas, N. Ventouris and L. Wemans (forthcoming), "Fiscal Drag in Theory and in Practice: a European Perspective", ECB, *Working Paper Series*.

6   See Sutherland, H. and F. Figari (2013), "EUROMOD: the European Union tax-benefit microsimulation model", *International Journal of Microsimulation*, 6(1), 4-26; and Bornukova, K., F. Picos et al. (2024), "EUROMOD baseline report", Joint Research Centre, JRC Working Paper on Taxation and Structural Reforms No. 03/2024, European Commission. It is noted that EUROMOD is a static model, which does not incorporate second-round responses to policy changes.

7   The simulations are based on EU-SILC 2020 (2019 incomes). For 2023, incomes are adjusted using the cumulative change over the 2019-23 period on the basis of appropriate indices (uprating factors). The year 2019 is chosen as the reference point, as it represents the last period reflecting pre-crisis (normal) conditions, before the exogenous shock of the pandemic and the subsequent rise in inflation.

8   For more details, see Bank of Greece, *Annual Reports 2019* (pp. 158-159 and 186-187) and *2020* (pp. 202-203), as well as Ministerial Decisions Nos. 107675/29.12.2021, 38866/21.4.2022 and 31986/24.3.2023 (in Greek).

Chart A Composition of tax-to-base (TTB) elasticity by income decile (2019, 2023)

Legend: Proportional effect · Tax deduction/credit · Bracket progressivity

Taxable income decile

Source: Bank of Greece calculations.

TTB elasticity is estimated to have increased in 2023 compared with 2019, leading to a corresponding rise in theoretical fiscal drag. Overall, TTB elasticity rose from 1.8 in 2019 to 2.0 in 2023, implying that a 1% income increase results in an even more disproportionate rise in tax revenues in 2023 (assuming unchanged tax parameters).

The PIT reforms implemented during 2019-23 altered the contribution of specific tax parameters to fiscal drag (see Chart A). In 2019, the key determinant of TTB elasticity was the effect of tax credits,[9] which accounted for approximately 80% of fiscal drag,[10] while the progressivity of the tax schedule contributed the remaining 20%. In 2023, this pattern was reversed, with bracket progressivity becoming the dominant mechanism, now explaining around 70% of fiscal drag. This is expected, given the increase in the system's progressivity (e.g. through the introduction of new brackets and lower rates), combined with the reduction in tax credits that occurred in Greece over this period.

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9 Among these, the tax credit for income from employment and pensions has the greatest impact on elasticity, as it increases with the number of dependent children, applies up to a specific income threshold and is limited to the amount of actual tax liability. For higher incomes, the credit is gradually phased out. Tax credits for disability and charitable donations are also taken into account.

10 I.e. the proportion of total elasticity exceeding one.

TTB elasticity varies across income deciles, and these variations became more pronounced after the reforms implemented during 2019-23, affecting both the level of elasticity and the composition of its determinants (see Chart A). The relative contribution of mechanisms influencing the elasticity and its magnitude differ significantly across the income distribution. In the lowest income decile, elasticity remains low, as most individuals in this category do not incur any tax liability. In contrast, elasticity is substantially higher among the lower- and middle-income deciles. In 2019, this was mainly due to the gradual reduction of tax credits, which affected the overall tax burden. In 2023, the progressivity of the tax schedule became the dominant factor, as rising incomes pushed taxpayers into higher tax brackets. The data show that the increase in elasticity between 2019 and 2023 is particularly pronounced for low and middle incomes, suggesting that (theoretical) fiscal drag has intensified for these taxpayer groups. For higher incomes, elasticity is lower since taxpayers tend to remain in the same brackets or the impact of tax credits becomes negligible.

Fiscal drag "in practice" during 2019-23

This section analyses fiscal drag "in practice", incorporating the tax reforms adopted and the income increases over the 2019-23 period. First, PIT revenue for 2019-23 is estimated based on the applicable legislation during each year (Baseline Scenario).[11] Additionally, for 2023, four alternative counterfactual scenarios are examined, applying the 2019 legislation under different assumptions of automatic indexation: (a) Scenario 1: No indexation; (b) Scenario 2: Indexation based on the Harmonised Index of Consumer Prices (HICP) of the previous year; (c) Scenario 3: Indexation based on the HICP of the current year; and (d) Scenario 4: Indexation based on tax base growth (in nominal terms). Through this analysis, "*actual fiscal drag*" is calculated as the difference in PIT revenue (as % of GDP) between the 2023 Baseline Scenario and the average of the indexation scenarios (2, 3, 4). "*Potential fiscal drag*" is also estimated as the difference in PIT revenue between Scenario 1 (No indexation) and the average of the three indexation scenarios (2, 3, 4). Potential fiscal drag represents the additional revenues that could have been collected had tax legislation remained unchanged during the period under review, compared to a scenario of full indexation (average of Scenarios 2, 3, 4). By comparing these two figures, it is possible to assess the extent to which tax policy changes fully or partially offset the mechanical increase in revenue resulting from the erosion of the tax base.[12]

The tax policy pursued during 2019-23 fully compensated for the effects of fiscal drag, keeping PIT revenues (as % of GDP) broadly constant (see Chart B). Specifically, PIT revenues remained almost unchanged at 5.9% of GDP. This development reflects the structural tax reforms in the PIT system, combined with the absence of statutory indexation of tax parameters. According to Scenario 1, maintaining the 2019 tax legislation without indexation would have increased PIT revenues in 2023 by 0.61 percentage points (pps) of GDP. In contrast, Scenarios 4 and 2 would have resulted in smaller increases (0.1 and 0.2 pps of GDP, respectively), while Scenario 3 would have slightly reduced revenues compared to the Baseline Scenario. The simulation results show that the structural reforms during the examined period have not only fully offset potential fiscal drag, but have also in fact overcompensated for it (by approximately 10%), keeping tax revenue (as % of GDP) constant in an environment of strong inflationary pressures and rising nominal incomes.[13]
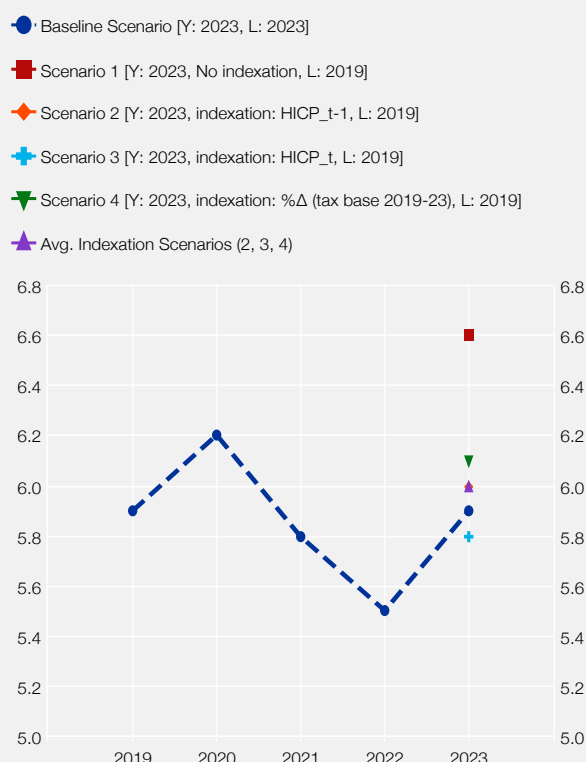
At the same time, the tax policy pursued in the period under review led to a modest reduction in the average effective tax rate, reflecting a decrease in the real tax burden on individuals, without losses in tax revenue. Specifically, the average effective PIT rate declined slightly by 0.15 pps to 8.7% (see Chart C). This reflects the positive impact of the tax policy pursued during the period, as the full compensation of potential fiscal drag – through the aforementioned reforms – resulted in a reduction in the tax burden, without undermining the revenue performance of the system, which benefited from rising real incomes.

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11 The estimated tax revenues differ from the official figures due to methodological limitations. For this reason, a rescaling is applied to the simulation scenarios.

12 The degree of offset fiscal drag is derived by subtracting the ratio of actual to potential fiscal drag from one. The methodology is based on the analysis of Balladares, S. and E. García-Miralles (2024), "Fiscal drag: the heterogeneous impact of inflation on personal income tax revenue", Banco de España, *Documentos Ocasionales*, No. 2422
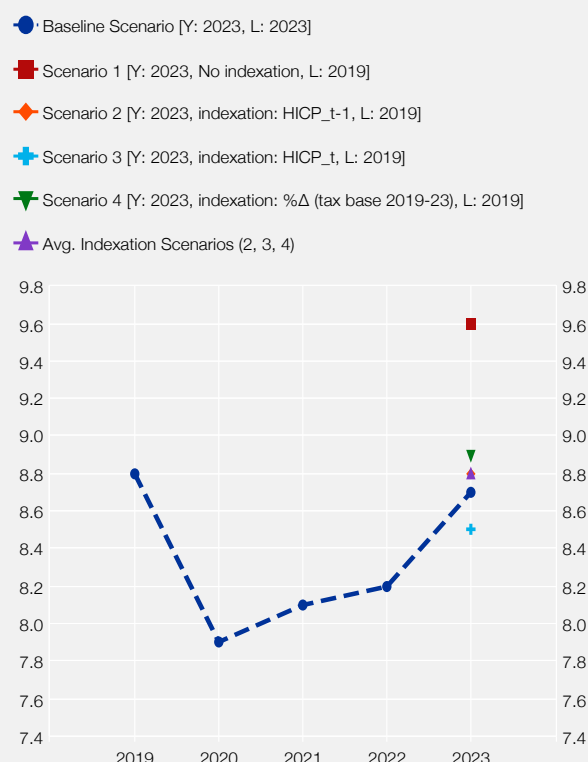
13 Potential fiscal drag is estimated at 0.56% of GDP, while actual fiscal drag at -0.05% of GDP, implying a compensation ratio of 1.10. It should be noted that deviations of less than 20% from perfect offset are classified as "full compensation".

Chart B PIT revenues (as % of GDP) – Simulation scenarios

- ● Baseline Scenario [Y: 2023, L: 2023]
- ■ Scenario 1 [Y: 2023, No indexation, L: 2019]
- ◆ Scenario 2 [Y: 2023, indexation: HICP_t-1, L: 2019]
- ✚ Scenario 3 [Y: 2023, indexation: HICP_t, L: 2019]
- ▼ Scenario 4 [Y: 2023, indexation: %Δ (tax base 2019-23), L: 2019]
- ▲ Avg. Indexation Scenarios (2, 3, 4)

Source: Bank of Greece calculations.
Notes: Y: income, L: tax legislation.

Chart C Average effective tax rate (%) – Simulation scenarios

- ● Baseline Scenario [Y: 2023, L: 2023]
- ■ Scenario 1 [Y: 2023, No indexation, L: 2019]
- ◆ Scenario 2 [Y: 2023, indexation: HICP_t-1, L: 2019]
- ✚ Scenario 3 [Y: 2023, indexation: HICP_t, L: 2019]
- ▼ Scenario 4 [Y: 2023, indexation: %Δ (tax base 2019-23), L: 2019]
- ▲ Avg. Indexation Scenarios (2, 3, 4)

Source: Bank of Greece calculations.
Notes: Y: income, L: tax legislation.

Lastly, the tax reforms implemented during the 2019-23 period – primarily the restructuring of the tax schedule and the reductions in rates and social security contributions – are estimated to have improved the redistributive capacity of the tax system more effectively than the counterfactual scenarios considered, thereby enhancing the system's progressivity and reducing inequality. The findings of the analysis (see the table) show that the 2023 Baseline Scenario leads to a greater reduction in the Gini index (based on taxable income) compared to the tax parameter indexation scenarios. At the same time, the Kakwani index[14] posts a comparatively more sizeable increase under the Baseline Scenario, indicating the enhanced progressivity of the PIT. Increased progressivity translates into a fairer distribution of the tax burden, as the burden rises proportionally more for higher incomes, thereby enhancing the redistributive function of the tax system and contributing substantially to post-tax inequality reduction.

Inequality, redistributive capacity and progressivity of the tax system – Simulation scenarios

	Baseline Scenario	Indexation Scenario 2	Indexation Scenario 3	Indexation Scenario 4
Gini index: taxable income (pre-tax)	0.3778	0.3766	0.3766	0.3766
Gini index: taxable income (post-tax)	0.3474	0.3500	0.3504	0.3499
Gini index: difference (post-tax - pre-tax)	-0.0304	-0.0266	-0.0261	-0.0267
Kakwani index	0.3211	0.2817	0.2876	0.2796

Source: Bank of Greece calculations.

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14 Kakwani, N.C. (1977), "Measurement of tax progressivity: An international comparison", *The Economic Journal*, 87(345), 71-80.

Conclusions

Fiscal drag is a critical issue for the fairness and sustainability of tax policy, as it leads to an increase in the tax burden without a corresponding improvement in taxpayers' ability to pay. As such, fiscal drag has significant implications for the equitable distribution of the tax burden – especially when incomes rise in nominal terms due to inflation, without a matching increase in purchasing power.[15] The tax policy implemented in Greece during the 2019-23 period managed to fully compensate for the effects of fiscal drag, reducing the real tax burden while maintaining revenue stability and contributing more effectively to a reduction in income inequality than alternative counterfactual scenarios involving an indexation of tax parameters.

Overall, fiscal drag can have significant effects on tax revenue collection, average tax rates and income distribution, with crucial implications for inequality and optimal tax design. Given the limited fiscal space, policymakers are called upon to strike the right balance between the need to ease the tax burden on taxpayers and the goal of safeguarding tax revenues. Quantifying fiscal drag and incorporating it into the formulation of medium-term fiscal strategies can enhance the accuracy of revenue forecasts and support the design of better-targeted policy interventions. At the same time, the mechanisms through which fiscal drag operates across the income distribution require the adoption of tailored policy responses. This insight is key to determining whether indexation of tax parameters should be pursued or not. Recent experience in Greece shows that enhancing the progressivity of tax policy can offset fiscal drag, while also contributing to a fairer distribution of the tax burden and improved tax compliance.

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15 Due to widespread underreporting of income in Greece, the observed income distribution is subject to significant uncertainty, hampering the design and evaluation of effective policy responses.

Box 6

KEY FEATURES OF BANK LENDING TO GREEK ENTERPRISES IN 2024 BASED ON ANACREDIT DATA

This box highlights the key features of new business loans granted by banks in 2024, as reflected in the AnaCredit database (analytical credit datasets). The database includes microdata on bank credit to non-financial corporations (NFCs), applying a reporting threshold of EUR 5,000 per debtor and per credit institution. According to AnaCredit data, bank credit to NFCs strengthened throughout 2024 compared to 2023, with improved borrowing terms and conditions in line with the Eurosystem's monetary policy stance.

Outstanding amounts of loans[1]
Bank business loan agreements signed in 2024 totalled EUR 28 billion, slightly lower than in 2023.[2] However, banks' claims related to these agreements, i.e. the value of loans signed and disbursed within the same year, rose significantly to EUR 20.6 billion, up from EUR 12.8 billion a year earlier (see Chart A).

Among the individual categories of credit instruments, the largest share in terms of loan disbursements (62%) is held by "credit lines"[3] – credit limits received mainly in instalments over a period that may exceed one year. Next category, reflecting 28% of new loans, are loans with a defined maturity, essentially loans fully disbursed

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1 The reported amounts include on-balance-sheet claims of credit institutions on domestic NFCs, as recorded in AnaCredit (reference month: February 2025). NFCs' non-bank debt is not included (e.g. to credit servicers, the government, etc.).
2 The amounts slightly underestimate the total value of new loan agreements, as the database includes around 90% of the population of new agreements for the years under review.
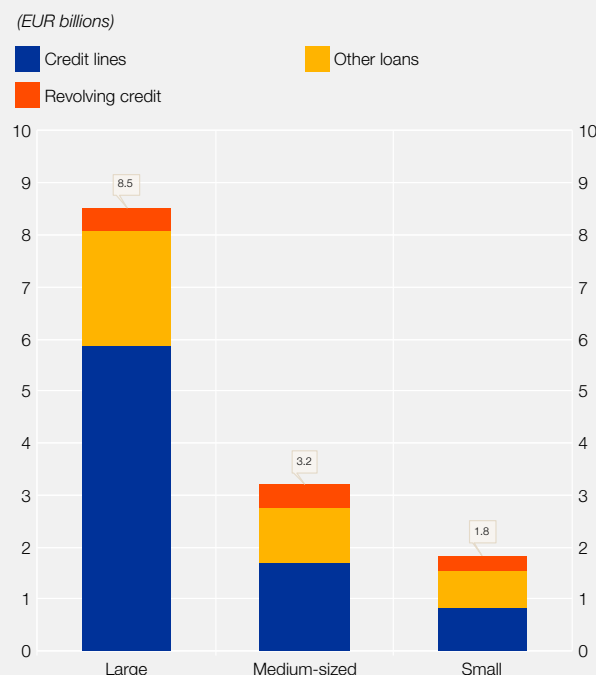3 Loans with a defined maturity (other than revolving credit, credit card debt or overdraft) whereby the debtor may draw on the credit, repay it and then borrow again up to a pre-approved credit limit.

Chart A New loan agreements and disbursements to NFCs
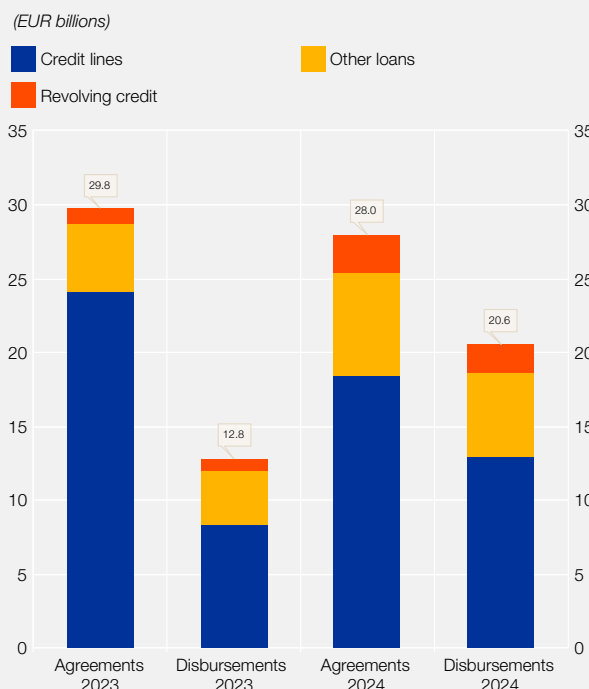
(EUR billions)

- Credit lines
- Revolving credit
- Other loans

Source: Bank of Greece.
Note: Other loans mainly consist of loans with a defined maturity that are fully disbursed.

Chart B New loan disbursements to NFCs by enterprise size, 2024

(EUR billions)

- Credit lines
- Revolving credit
- Other loans

Source: Bank of Greece.
Note: Other loans mainly consist of loans with a defined maturity that are fully disbursed.

in a lump sum. Finally, revolving credit, which allows funds to be repeatedly repaid and drawn by the borrower up to a pre-approved limit, accounts for 9% of new loans. Together, these three categories make up nearly the entire value of new bank loans disbursed to domestic NFCs in 2024. The remaining forms of credit (credit cards, overdrafts, trade receivables, etc.) account for less than 1% of the total value of new loans disbursed in 2024.

Out of the total amount of new loans disbursed, the greatest value (EUR 8.5 billion) targeted large enterprises[4] (see Chart B). Medium-sized and small enterprises received EUR 3.2 billion and EUR 1.8 billion, respectively. A substantial amount (around EUR 3 billion) was directed to enterprises established in 2024, for which no financial or employee headcount data were available up to the reference month (February 2025) to allow their classification by size.[5] In addition, a remarkable volume of loans was granted to enterprises that are classified as micro but are not typical micro enterprises. Due to the specific nature of their activities, these firms tend to have a small number of employees (e.g. holding companies) or very low turnover. In terms of the number of loans disbursed, more than half were allocated to micro enterprises. This can be plausibly explained by the large number of enterprises that fall under this category, as well as the fact that they typically receive smaller-sized loans.
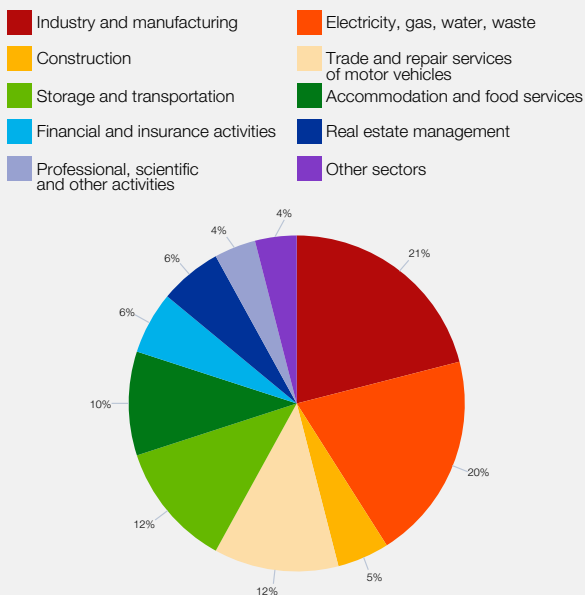
According to AnaCredit data, new loan agreements with NFCs in 2024 were mainly associated with firms active in industry and manufacturing, as well as electricity or renewable energy. Specifically, in terms of value of loan agreements: 21% was associated with industrial and manufacturing firms, 20% with electricity, gas, water and waste, 12% with wholesale and retail trade, 12% with transport and storage and 10% with accommodation and food services (see Chart C).

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4   For a definition of micro, small and medium-sized enterprises, see Commission Recommendation 2003/361/EC.
5   Mainly individual large transactions referring to simple and syndicated loans.

Chart C Shares of new loans to NFCs by economic activity sector, 2024

(percentage of the total)

- Industry and manufacturing
- Electricity, gas, water, waste
- Construction
- Trade and repair services of motor vehicles
- Storage and transportation
- Accommodation and food services
- Financial and insurance activities
- Real estate management
- Professional, scientific and other activities
- Other sectors

Source: Bank of Greece.

Chart D Percentage of the value of new business loan agreements disbursed within 2024 by enterprise size
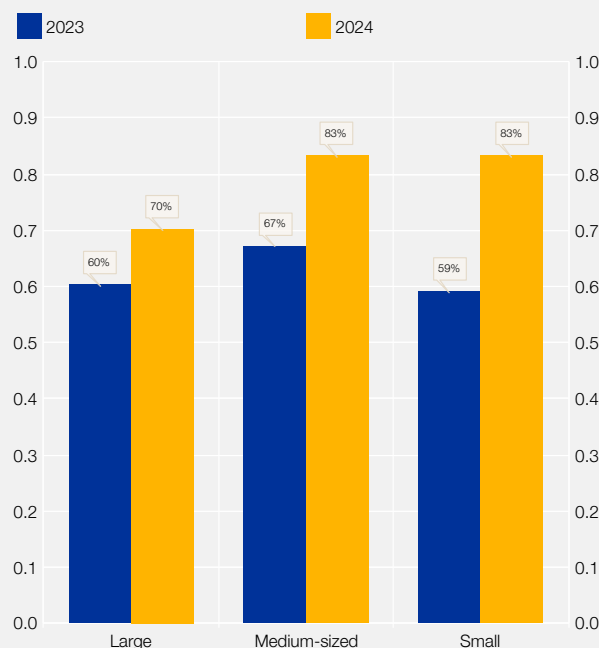
Source: Bank of Greece.

Working capital credit accounted for 45% of disbursement value, with small enterprises presenting slightly higher working capital needs in proportion to their total borrowing.

In 2024, the share of the value of new loan agreements that led to disbursements within the year increased significantly compared to 2023, irrespective of firm size (see Chart D). Disbursements as a percentage of the value of the corresponding agreements provide useful information on future credit growth, as the smaller the percentage, the larger the amount expected to be disbursed in the coming years. In 2024, disbursements as a percentage of loan agreement value exceeded 70% across all enterprise size categories. Large enterprises registered a slightly smaller percentage, as their financing is typically linked to investment-related loans, which are disbursed in larger amounts and in tranches. Compared to 2023, the percentages were significantly higher across all enterprise size categories. This is believed to reflect the fact that a substantial number of loan agreements concluded under the Recovery and Resilience Facility (RRF) in 2023 provided for gradual disbursement conditional on the progress of the investment projects funded.

Nominal lending rates

The cost of bank lending for domestic NFCs declined over 2024, in line with the declines in Eurosystem monetary policy rates and euro interbank market rates. This was also associated with the fact that almost all new agreements involved loans denominated in euro, as well as that the majority of new loans carry variable rates. In particular, the median of the distribution for lending rates in 2024 stood at 5.0%, against 5.5% in 2023 (see Chart E). The inter-quartile range −i.e. the range between minimum and maximum borrowing rates for half of the loans granted (after excluding the lower 25% and the higher 25% of lending rates)− amounted to 160 basis points, ranging between 4.3% and 5.9%. The respective range for 2023 was 4.6%-6.8%.
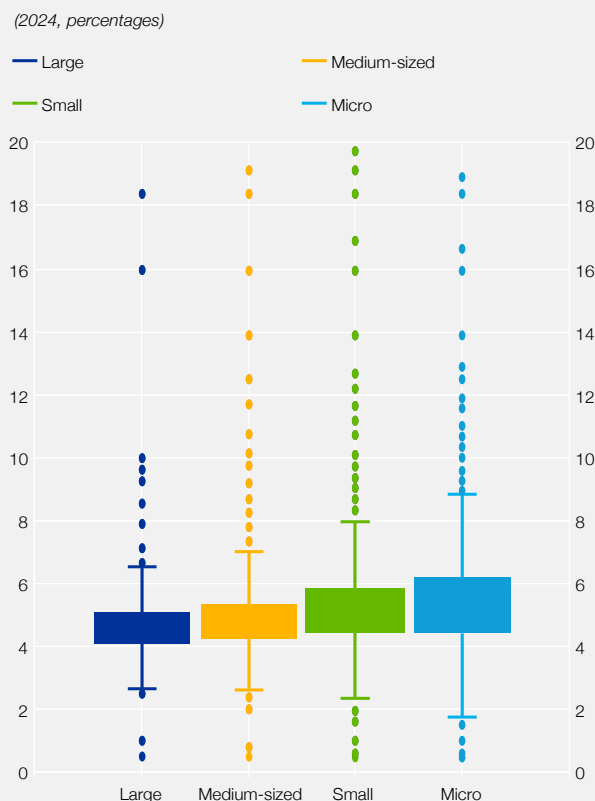
The higher lending rates to NFCs involved corporate credit cards, which have a negligible share in corporate finance. Excluding credit cards, it appears that the overall distribution of corporate lending rates in 2024 shifted to the left compared to 2023, i.e. there was a broad-based decline in lending rates in 2024 compared to the previous year. Moreover, less dispersion is observed as, with the exception of the top and bottom deciles of the

Chart E Interest rates on new loans to NFCs

(percentages)

— 2023
— 2024

5.5%

5.0%
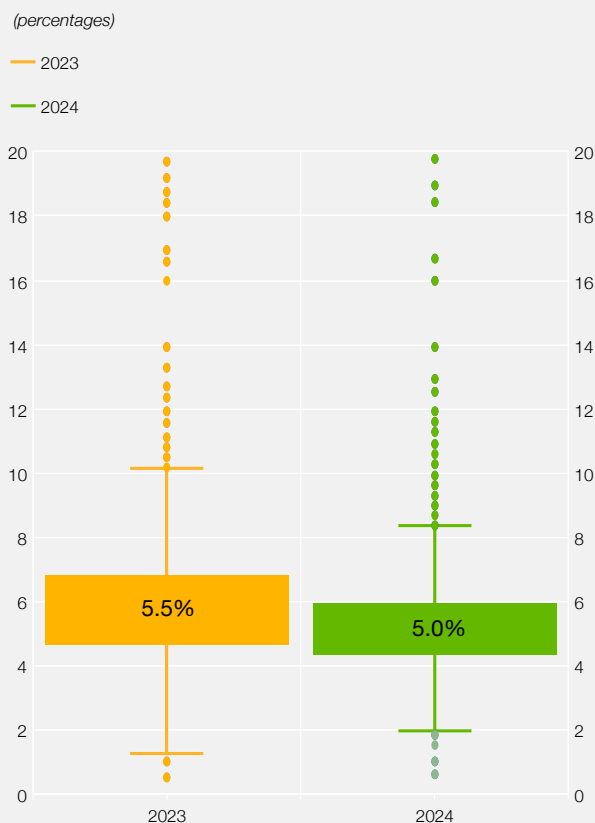
Source: Bank of Greece.

Chart F Interest rates on new loans to NFCs by enterprise size

(2024, percentages)

— Large   — Medium-sized
— Small   — Micro

Source: Bank of Greece.

distribution (10% of the lower-cost loans and 10% of the higher-cost loans), interest rates on the remaining 80% of the concluded loans ranged between 3.8% and 7.3%, compared with 4% and 8.2%, respectively, in 2023.

In terms of enterprise size, large firms benefited from lower borrowing rates (see Chart F). As widely acknowledged in the literature, such firms are, among other things, more creditworthy than smaller ones and possess greater negotiating power in terms of borrowing conditions. According to AnaCredit data, the median nominal interest rate on new loans in 2024 was 4.5% for large enterprises, 4.7% for medium-sized enterprises, and 5.0% and 5.2% for small and micro enterprises, respectively. However, many domestic businesses actually enjoyed even more favourable pricing terms, as they participated in schemes under the modern funding instruments of the European Investment Bank (EIB) Group and the Hellenic Development Bank or obtained loans under the Recovery and Resilience Facility (RRF). Low-interest or interest-free loans linked to co-financing programmes of development agencies or the RRF —specifically the portion funded by public resources— are off-balance sheet items and as thus reported to AnaCredit.

With respect to lending rates by credit instrument, loans without a defined maturity appear to be costlier than credit lines and loans with a defined maturity. This is probably attributable to the higher credit risk and administrative costs these products entail for banks. As a result, the median interest rate stood at 4.7% for credit lines and at 5.3% for loans with a defined maturity, while the median rate on revolving credit was 5.5%, approximately 80 basis points higher than that on credit lines.

Conclusions

To sum up, the value of new bank credit to NFCs in 2024, compared to 2023, was slightly lower in terms of loan agreements, but significantly higher in terms of actual disbursements. Around 40% of the disbursed amount was directed to firms active in industry, manufacturing and energy production. The largest share of the funds targeted

large enterprises, while nearly half of the total amount addressed working capital needs. Corporate lending rates were lower than in 2023 across all firm sizes, while nominal interest rate was inversely related to firm size.

Box 7

## TRANSMISSION EFFECTS ON US AND EURO AREA GOVERNMENT BONDS

US Treasury (UST) bonds are considered benchmarks for the international bond market. Because of their high liquidity and safety, UST bond yields are lower than what would be warranted by their credit ratings and the fundamentals of the US economy.[1] Demand for UST bonds, as well as their status as benchmark bonds in international capital markets, were enhanced as a result of the global financial crisis of 2007-2009.[2] That said, the monetary policy conducted by the Federal Reserve (Fed) can have a significant global impact, largely shaping financial conditions worldwide.[3]

In particular, the Fed's monetary policy is transmitted to UST bond yields through the expectations mechanism, which affects the yield curve as bond yields reflect expected policy rates for the horizon of the bond, along with other factors.[4] Recent studies on the parameters affecting bond yields across the maturity spectrum point to the existence of two components: (i) an expected rates component (the "expectations component") and (ii) a component reflecting uncertainty as regards the path of policy rates until the maturity of the bond (the "term premium component"). The latter increases with a bond's life and is affected by investors' preferences with respect to the maturity of bonds.[5]

Against this background, an interest rate cut by the Fed, such as that of 18 September 2024, is expected to lower US federal bond yields. In fact, experience since the 1960s has shown that interest rate cuts by the Fed of at

Chart A Changes in 10-year US federal bond yields following interest rate cuts by the Fed (1962-2025)

(days after interest rate cuts; basis points)

- Yield changes: September 2024
- Yield changes: median value
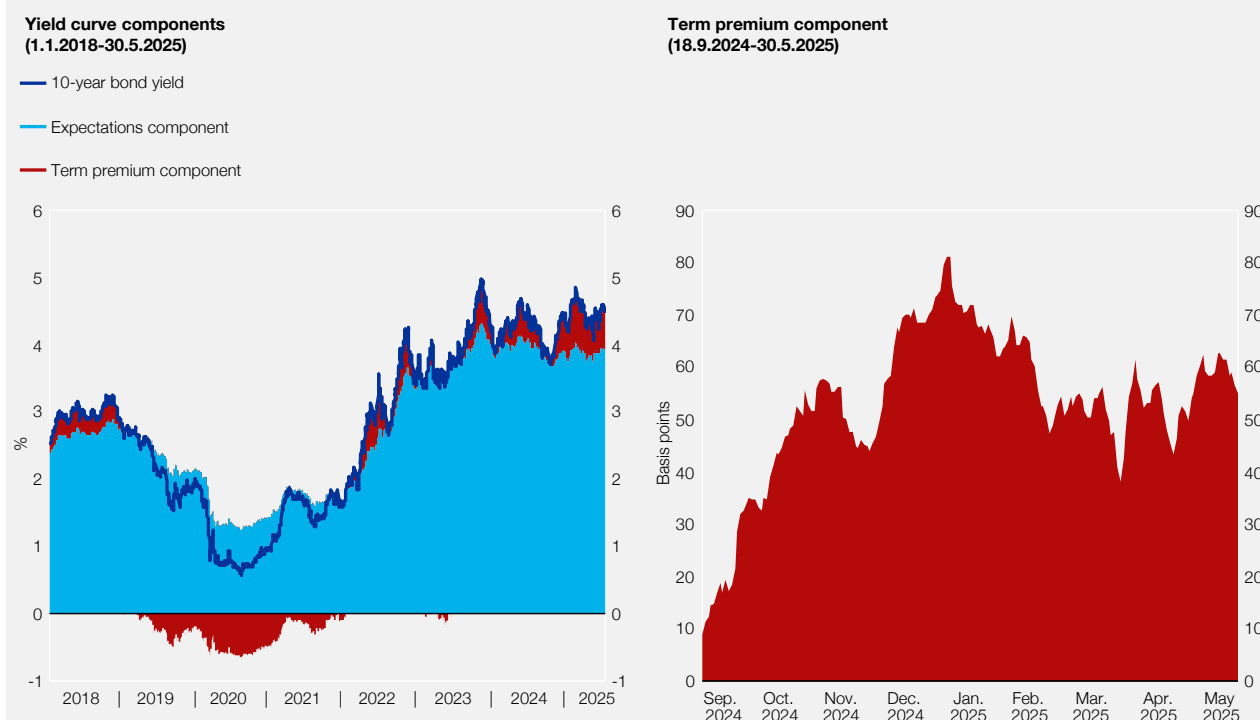- Yield changes: arithmetic average
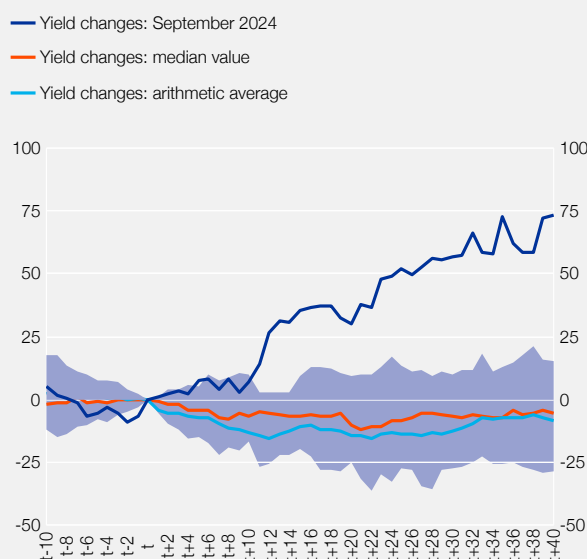
Sources: Federal Reserve Bank of Saint Louis and LSEG; Bank of Greece calculations.
Notes: The chart presents changes in 10-year US Federal bond yields for a period from 10 days before to 40 days after a Fed rate cut announcement. The blue line plots yield changes around the announcement in September 2024; the light blue and the orange lines represent the arithmetic average and the median value, respectively, of historical data. The shaded area shows the range of values between the top and bottom quartiles (i.e. the spread between the top 25% and the bottom 25% of the distribution). Data refer to the period from 1.1.1962 to 30.4.2025.

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1   The lower premium on US Treasury bond yields, also known as "convenience yield", reflects the extra premium investors are willing to pay on account of safety and liquidity considerations (see Krishnamurthy, A. and A. Vissing-Jorgensen (2012), "The aggregate demand for Treasury debt", *Journal of Political Economy*, 120(2), 233-267). As a result, US Treasury bond yields are lower than those on other highly rated bonds. Along these lines, it has been argued that the safety and liquidity features of US bonds are quite similar to those of money (see Nagel, S. (2016), "The liquidity premium of near-money assets", *The Quarterly Journal of Economics*, 131(4), 1927-1972).
2   See Du, W., J. Im and J. Schreger (2018), "The U.S. Treasury premium", *Journal of International Economics*, 112, 167-181.
3   See Miranda-Agrippino, S. and H. Rey (2020), "U.S. monetary policy and the global financial cycle", *The Review of Economic Studies*, 87(6), 2754-2776.
4   See *inter alia* Evans, C. L. and D. A. Marshall (1998), "Monetary policy and the term structure of nominal interest rates: Evidence and theory", *Carnegie-Rochester Conference Series on Public Policy*, 49, 53-111, and Ang, A., J. Boivin, S. Dong and R. Loo-Kung (2011), "Monetary policy shifts and the term structure", *The Review of Economic Studies*, 78(2), 429-457.
5   See for instance Adrian, T., R. Crump and E. Moench (2013), "Pricing the term structure with linear regressions", *Journal of Financial Economics*, 110(1), 110-138, and Gürkaynak, R.S., B. Sack and J.H. Wright (2007), "The U.S. Treasury yield curve: 1961 to the present", *Journal of Monetary Economics*, 54(8), 2291-2304.

Chart B Evolution of the components of the 10-year US federal bond yield

Yield curve components
(1.1.2018-30.5.2025)

— 10-year bond yield
— Expectations component
— Term premium component

Term premium component
(18.9.2024-30.5.2025)

Source: Bank of Greece econometric estimates, based on data from LSEG-Workspace.
Notes: The blue line plots the 10-year US federal bond yield. The light blue area reflects the expectations component and the red area the term premium component.

least 25 basis points (bps) are typically followed by an average decline in long-term bond yields of between 10 and 16 bps, which takes place over the following calendar month, before stabilising at that lower level (see Chart A). More recently, however, the initial interest rate cuts by the Fed in September 2024 were followed by a significant rise (of more than 70 bps) in the yields of 10-year federal bonds over the subsequent two-month period. This is particularly unusual by historical standards: this event belongs to the upper decile of the distribution of changes in US federal bond yields around the announcements of rate cuts by the Fed (i.e. prices above 90% of historical observations).

Since then, the rise in US bond yields, especially those with longer maturities, has not been fully reversed: On 2.9.2024, i.e. shortly before the first interest rate cut by the Fed, the 10-year US bond yield stood at 3.91%, while by 5.6.2025 it had risen to 4.41%, namely 51 bps higher, in spite of the fact that the Fed had in the meantime cut interest rates by a cumulative 100 basis points. Calibrating the US bond yield curve provides insight into the factors behind this development.[6] In particular, as shown in Chart B, the expectations component has remained broadly stable since September 2024. By contrast, the term premium component has risen by 45 basis points, i.e. about the same as the cumulative increase in US bond yields over the same period. This development is largely attributable to uncertainty surrounding the US economic policy, which was heightened by recent tariff announcements and a general shift in the policy approach that affects the international economic environment, pushing up the returns required by investors for holding US Treasury bonds.[7]
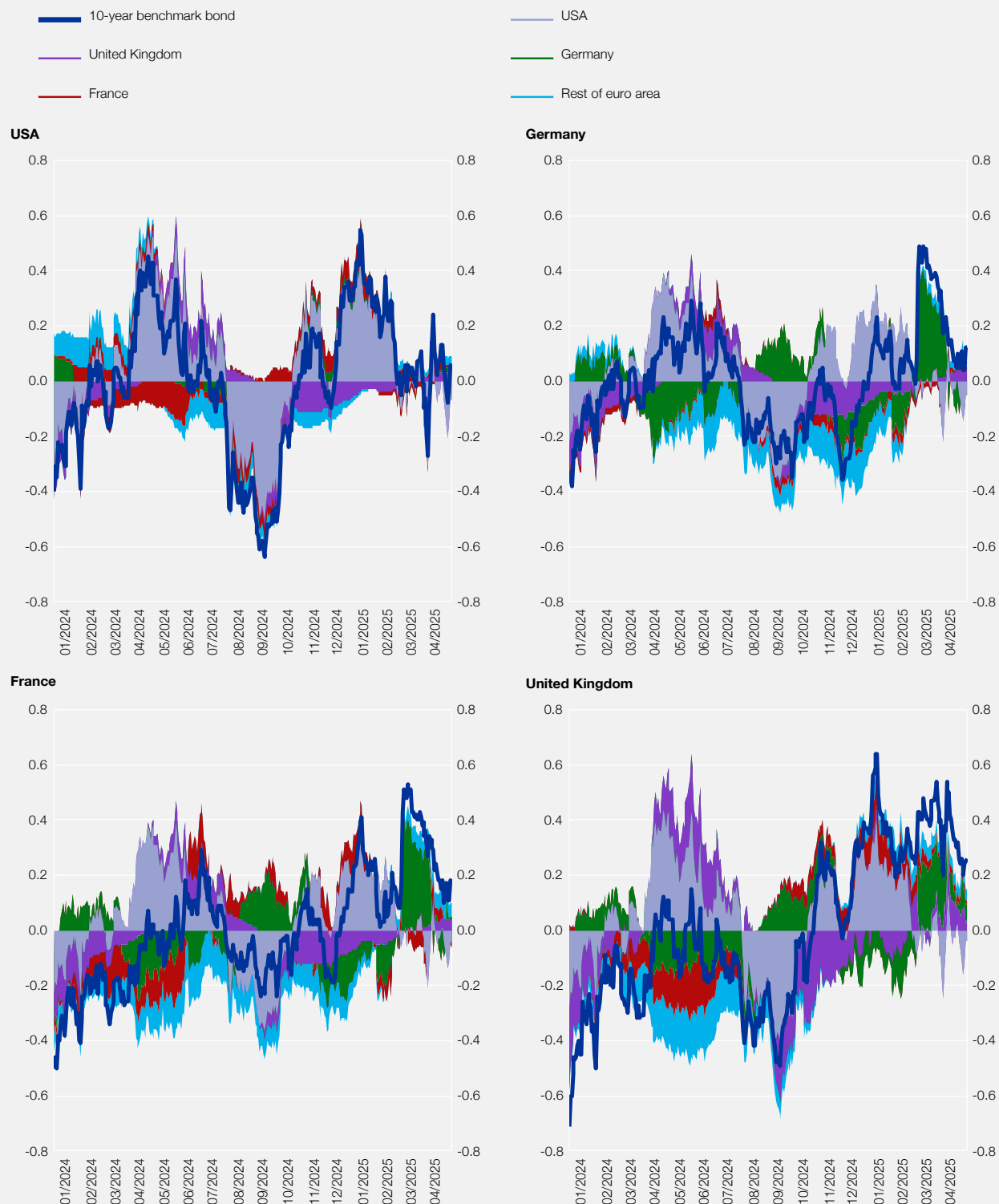
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6   Estimated on the basis of a Nelson-Siegel model to capture dynamic parameters (see Nelson, C.R. and A.F. Siegel (1987), "Parsimonious modeling of yield curves", *The Journal of Business*, 60(4), 473-489, and Svensson, L.E.O. (1994), "Estimating and interpreting forward interest rates: Sweden 1992-1994", NBER Working Paper No. 4871). The estimation is based on daily data for the yields of Treasury bills with maturities of 3, 9 and 12 months and of zero-coupon bonds with a maturity of 2-30 years for the period from 14.3.1990 to 30.5.2025.
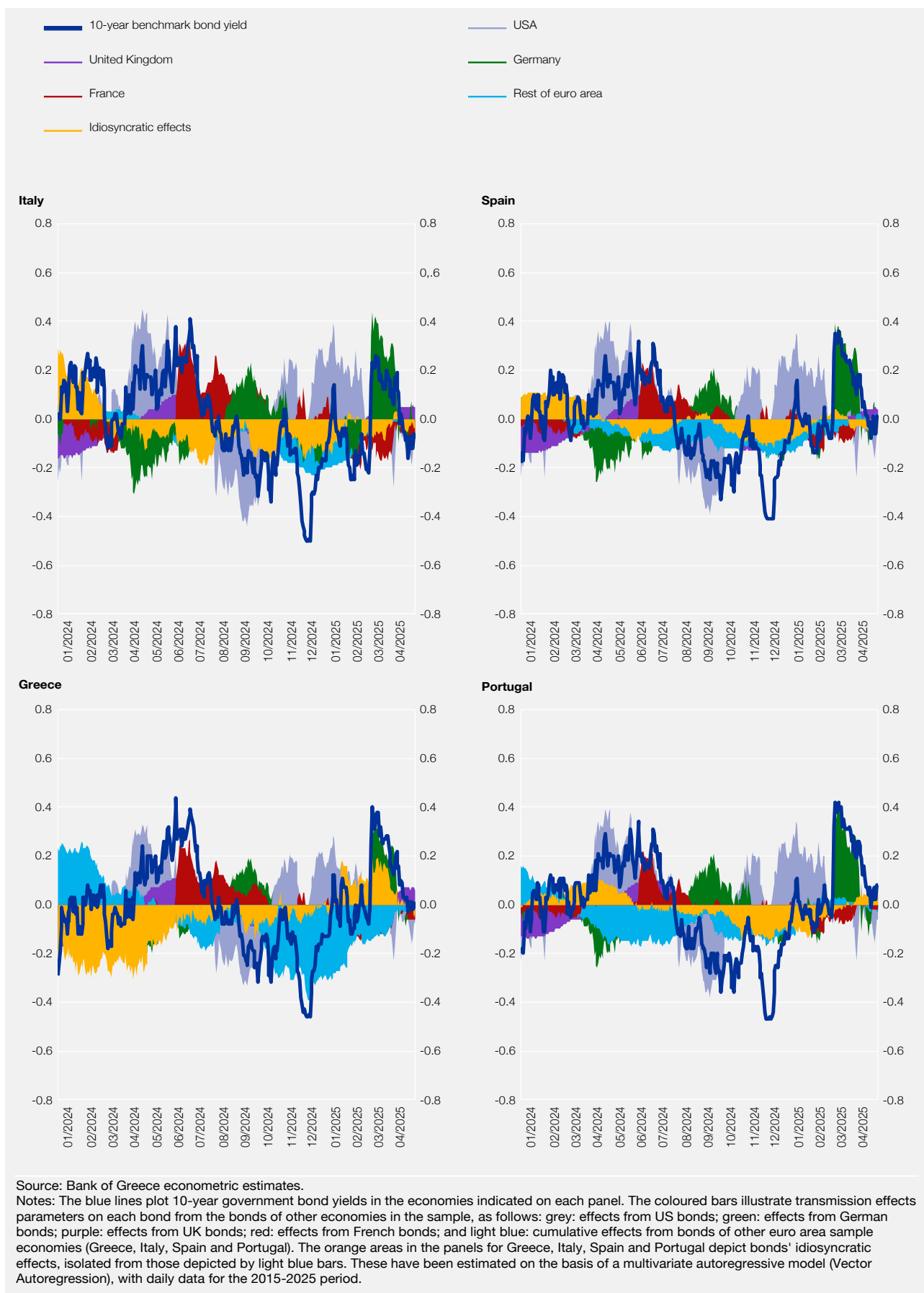7   See Acharya, V. and T. Laarits (2025), "Tariff war shock and the convenience yield of US Treasuries – a hedging perspective", SSRN working paper.

At the same time, over the same period (i.e. from 2.9.2024 to 5.6.2025) euro area government bond yields also rose. In fact, the rise in yields in the euro area was more pronounced for highly rated bonds, such as the 10-year German and French government bonds, than for lower-rated bonds like those of Italy or Greece (changes in 10-year government bond yields from 2.9.2024 to 5.6.2025: German: +25 bps, French: +22 bps, Italian: -16 bps,

Chart C Transmission effects on the yields of 10-year US and euro area government bonds

(yields in % and contribution to yields, right-hand scale)

Legend:
- 10-year benchmark bond
- USA
- United Kingdom
- Germany
- France
- Rest of euro area

Italy

Spain

Greece

Portugal

Legend: 10-year benchmark bond yield; USA; United Kingdom; Germany; France; Rest of euro area; Idiosyncratic effects

Source: Bank of Greece econometric estimates.

Notes: The blue lines plot 10-year government bond yields in the economies indicated on each panel. The coloured bars illustrate transmission effects parameters on each bond from the bonds of other economies in the sample, as follows: grey: effects from US bonds; green: effects from German bonds; purple: effects from UK bonds; red: effects from French bonds; and light blue: cumulative effects from bonds of other euro area sample economies (Greece, Italy, Spain and Portugal). The orange areas in the panels for Greece, Italy, Spain and Portugal depict bonds' idiosyncratic effects, isolated from those depicted by light blue bars. These have been estimated on the basis of a multivariate autoregressive model (Vector Autoregression), with daily data for the 2015-2025 period.

Greek: -8 bps, Spanish: +2 bps and Portuguese: +14 bps). Of course, this period is quite extensive and eventful, as it was marked by the US elections in November 2024, political developments in several European countries, the implementation of a new fiscal policy framework in euro area economies and the announcement of tariffs by the US President in early February and April.

In order to decompose the factors driving euro area sovereign bond yields to those reflecting domestic developments and those reflecting spillover effects from other bonds, a small-scale vector autoregression with macro-finance determinants, has been used for selected euro area economies, the United States and the United Kingdom.[8] The econometric analysis (see Chart C) shows that higher US Treasury bond yields have had a significant rising effect (of approximately 11 to 14 bps) on euro area sovereign bond yields. At the same time, developments in euro area countries have exerted a reduction effect on euro area yields (of 10-15 bps), largely reflecting the gradual cuts of key policy rates by the ECB. On the other hand, German bond yields rose significantly in early March, pushing up other euro area bond yields as well. This rise was temporary though, as it was driven by higher real yields −reflecting expectations of higher growth rates− as a result of the relaxation of the fiscal framework in Germany.

Finally, during the market turmoil in April, US Treasury bond yields rose by around 35 bps between 1.4.2025 and 11.4.2025, which had a dampening effect on German and (less) on French government bond yields. This opposite effect of US yields on European yields at that juncture is consistent with the appreciation of the euro against the US dollar, as investors liquidated positions in US bonds and equities, while the euro area saw flight-to-safety capital inflows. Consequently, the significant decline in core euro area bond yields led to a decline in the yields of other euro area sovereign bonds.

Conclusions

Uncertainty surrounding US economic policy has pushed upwards US Treasury bond yields, increasing the term premium in the UST yield curve. This increase also spilled over to euro area government bonds. One exception is the impact of the recent market turmoil in April, amid high policy uncertainty in the United States, triggered by the announcement of tariffs on trading partners. During that period, the rise in US Treasury bond yields was accompanied by declining yields on euro area sovereign bonds, as a result of capital inflows into the euro area amid outflows from investment positions in the United States. These developments largely explain the appreciation of the euro vis-à-vis the US dollar. As a consequence, the recent turbulence highlights an opportunity for the European economy to attract inflows from investors, especially as there are few destinations that offer satisfactory risk-adjusted returns. An improved outlook for economic activity in euro area countries – alongside further deepening of the single market and integration of capital markets in the EU – will enhance the attractiveness of European assets in the present turbulent environment.

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8   See Favero, C. (2013), "Modelling and forecasting government bond spreads in the euro area: A GVAR model", *Journal of Econometrics*, 177(2), 343-356. Daily frequency data from 1.1.2022 to 30.5.2025, source: LSEG-Datastream.

Box 8

FINANCIAL INDICATORS AS PREDICTORS OF US ECONOMIC CONDITIONS

The global economy is facing increased challenges, after the new US administration announced its intention to raise the tariff rates it imposes on imports. This event led to mounting policy uncertainty and an episode of market turbulence. Uncertainty over trade policy has further added to concerns which had already been formed due to declining US consumer and business confidence since early 2025.[1] This uncertainty may lead to delays in or

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1   The US Conference Board's Consumer Confidence Index, for example, fell to 98.0 in May 2025, against 124.7 in December 2024, while the NFIB Small Business Optimism Index fell to 95.8, against 105.1, respectively.

cancellations of investment projects, as businesses find it difficult to predict future commercial and pricing conditions. The expected negative impact on economic activity adds to the signs of a slowdown in the US economy – signs that were already present before the announcement of the recent trade measures, as evidenced by releases of lower-than-expected data on retail sales and consumer confidence.[2] As a result, international organisations and major investment banks expect a slowdown in economic activity both in the United States and worldwide.[3]

In this environment of heightened uncertainty, the analysis of the information contained in financial indicators is of particular importance to form expectations about the prospects of economic activity. This box uses leading indicators on economic activity, namely market-based indicators and measures of market uncertainty, to infer, by means of econometric analysis, the upcoming economic conditions in the United States.

Equity returns and bond yields in the current macroeconomic environment

Stock market indices reflect systemic factors related to the expected profitability of listed companies, thereby capturing expected developments in economic activity in real time.[4] This relationship can be bidirectional, given that expected profitability influences listed firms' investment decisions and ultimately also influences economic growth.[5]

In early 2025, the upward trend in equity markets in the United States and the euro area recorded in 2024 continued. Since mid-February, however, US stock markets have started to show negative returns, a result consistent with the growing uncertainty about trade policy and the worse-than-expected development of economic activity in the United States, as evidenced by the PMI and consumer confidence indicators. Uncertainty about trade policy intensified in early April this year when the United States announced the increase or the imposition of tariff rates on a wide range of imports from many countries. Equity markets fell significantly in both the United States and the euro area (see Chart A), while implied volatility indices spiked.[6]

Based on previous studies, we expect that there exists a link between falling stock prices, amid high volatility, and

Chart A Stock price indices

(1.1.2024=100, daily data)

— Euro Stoxx
— S&P 500
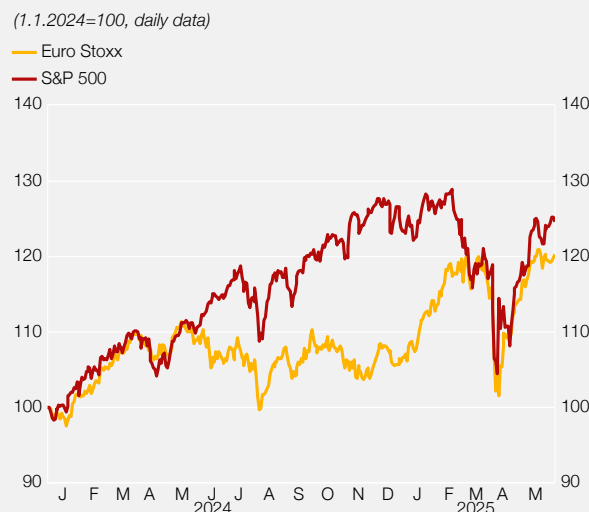
Sources: LSEG and Bank of Greece calculations.
Note: Indices have been recalculated using the beginning of 2024 as reference date (1.1.2024=100) and the remaining observations reflect the evolution of the indices in relation to the reference value.

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2 Indicatively, on 30 January 2025, the GDP data release for Q4 2024 showed that economic activity in the United States initially slowed more than expected. This was also signalled by consumer confidence indicators, as well as manufacturing indicators (PMI manufacturing for February and March, and FRB-NY Manufacturing Index for January and March). Finally, the GDP estimate release for Q1 2025 showed a decline of 0.3%, against an expected positive annual positive growth rate of 0.3% for the same quarter.

3 For example, see IMF, *World Economic Outlook*, April 2025.

4 Returns on securities are considered to be affected by overall market returns and the risk-free (one-month T-bill) rate, with a beta *(β)* measure of market sensitivity. Empirical studies have shown that this relationship, together with each firm's book-to-market equity (B/M), seems to explain between 70% and 90% of stock returns (see Fama, E.F. and K.R. French (1993), "Common risk factors in the returns on stocks and bonds", *Journal of Financial Economics*, 33(1), 3-56, and Fama, E.F. and K.R. French (2015), "A five-factor asset pricing model", *Journal of Financial Economics*, 116(1), 1-22). At the same time, the B/M factor has been shown to provide information on GDP growth expectations (see Vassalou, M. (2003), "News related to future GDP growth as a risk factor in equity returns", *Journal of Financial Economics*, 68(1), 47-73).

5 See Allen, F. (1993), "Stock markets and resource allocation", Chapter 4, 81-108, in: Mayer, C. and X. Vives (eds.), *Capital Markets and Financial Intermediation*, Cambridge University Press.

6 Indicatively, in early April the S&P 500 recorded one of the largest losses in its history, with prices falling by more than 4% in two consecutive days. Such decreases have been recorded only at four other instances, i.e. on Black Monday, twice during the global financial crisis and once during the COVID-19 pandemic.

Chart B Real GDP growth expectations in 2025

(%)

■ January 2025 ■ May 2025
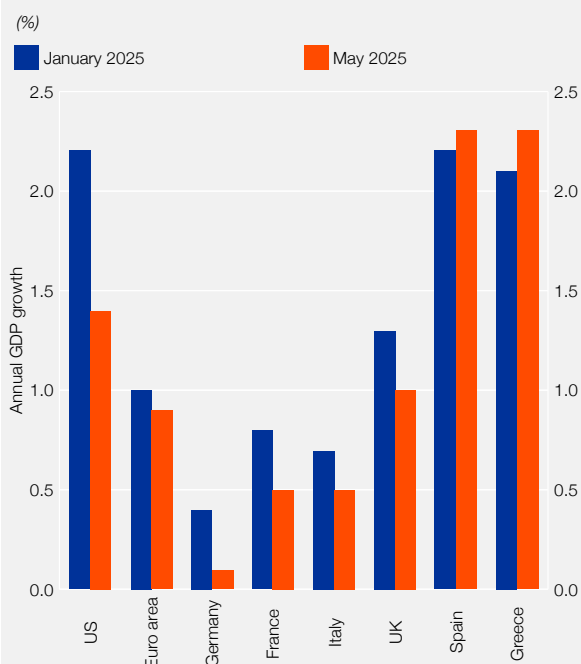
Source: Reuters opinion surveys.

a slowdown in economic activity.[7] Already in early March, for instance, the nowcasting model of the Federal Reserve Bank of Atlanta provided a forecast of negative real GDP growth in the United States for Q1 2025. In this regard, investors are gradually revising downwards their forecasts for global economic growth. For example, Chart B shows that, in May 2025, the average expected annual real GDP growth rate for 2025 was 1.4% in the United States – significantly revised downwards from 2.2% expected four months earlier. As regards the euro area, the median forecast for the average growth rate for 2025, derived from the May analyst survey, was lower by 0.1% compared with January (see Chart B).

In this context, despite the moderation of stock price losses in the United States – partly because the US administration postponed the implementation of tariffs for 90 days – uncertainty about economic policy is expected to have a negative impact on economic activity. Economic policy uncertainty indicators in the United States in particular have been at historically high levels since early April.[8] Currently, a significant increase in the Economic Policy Uncertainty Indicator is also observed in euro area economies. This is perceived as a sign of escalating downside risks to the economy, as the uncertainty captured by these indicators is expected to dampen investor and economic sentiment.[9]

In addition to the information that can be extracted from equity returns, bond yields also contain information about the anticipated, by bond-market investors, economic conditions. The slope of the yield curve in particular, i.e. the spread between long-term and short-term bonds, has been shown to incorporate forward-looking information on economic activity. More specifically, previous research, focusing on the US and other highly rated economies, has established that an inverted yield curve is a reliable indicator of impending recession.[10]

Currently, investors expect interest rates to fall in the United States as well. In 2025, 2-year bond yields have fallen more than 10-year bond yields in the United States (by -33 basis points and -18 basis points respectively), reflecting market expectations of key interest rate cuts by central banks (see Chart C).[11] This is in line with de-

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7 Empirical literature has shown that stock prices often lead GDP change, reflecting, among other parameters, shocks affecting the real economy (see Claessens, S. and M.A. Kose (2018), "Frontiers of macrofinancial linkages", BIS Paper No. 95, Bank for International Settlements).

8 The Economic Policy Uncertainty Index (EPU) increased as early as in January 2025 and rose sharply in late March and early April, following the announcement of US tariffs. See Baker, S.R., N. Bloom and S.J. Davis (2016), "Measuring economic policy uncertainty", *The Quarterly Journal of Economics*, 131(4), 1593-1636.

9 The link between the EPU index and economic activity is presumably associated with the adoption of more defensive strategies by businesses, as the latter delay investment projects or disinvest (see e.g. Gulen, H. and M. Ion (2016), "Policy uncertainty and corporate investment", *The Review of Financial Studies*, 29(3), pp. 523-564, and Bloom, N., S. Bond and J.V. Reenen (2007), "Uncertainty and investment dynamics", *The Review of Economic Studies*, 74(2), 391-415) and increase holdings of liquid assets (see e.g. Demir, E. and O. Ersan (2017), "Economic policy uncertainty and cash holdings: Evidence from BRIC countries", *Emerging Markets Review*, 33, 189-200).

10 See *inter alia* Estrella A. and G.A. Hardouvelis (1991), "The term structure as a predictor of real economic activity", *The Journal of Finance*, 46(2), 555-576, and Estrella A. and F.S. Mishkin (1996), "The yield curve as a predictor of U.S. recessions", Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, 2(7).

11 Similar signals come from financial indicators, which reflect expectations about key interest rates in the United States and the euro area (futures and OIS respectively). More specifically, in early June investors, based on these indicators, expected that the Fed would cut interest rates by a cumulative 50 basis points by the end of 2025.

velopments in the euro area bond market, where 2-year benchmark bond yields have declined in 2025, while 10-year benchmark bond yields have increased. The recent steeper slope of the yield curve, however, only partly signals expectations of lower key interest rates, as it also incorporates uncertainty parameters, the so-called term premium, which has increased significantly (see Box 7).[12]

Estimating the probability of a decline in real GDP
To analyse the impact of current developments, a model was estimated for the probability of a decline in US real GDP over at least two quarters, compared to 12 months earlier. This model provides forward-looking information on two consecutive quarters of negative growth rates over a time horizon of 9-12 months. The model aims to derive information on economic activity from equity and bond indices, by also including variables relating to initial economic conditions and uncertainty about economic policy.[13] Thus, this model captures all the expected effects of US tariff policy, as well as the surrounding uncertainty, through movements in financial variables.

Chart C Spread between 10-year and 2-year benchmark bond yields, 31.12.2024-5.6.2025

(basis points)
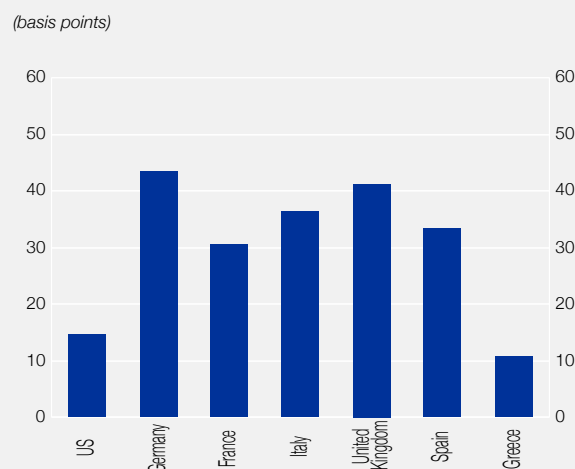
Sources: LSEG and Bank of Greece calculations.

Chart D shows that there is a strong probability of a decline in US GDP as from the end of Q3 2025. This stems both from the negative impact of the tariff announcement on real stock returns in the United States and from a

Chart D Probability of a decline in US real GDP
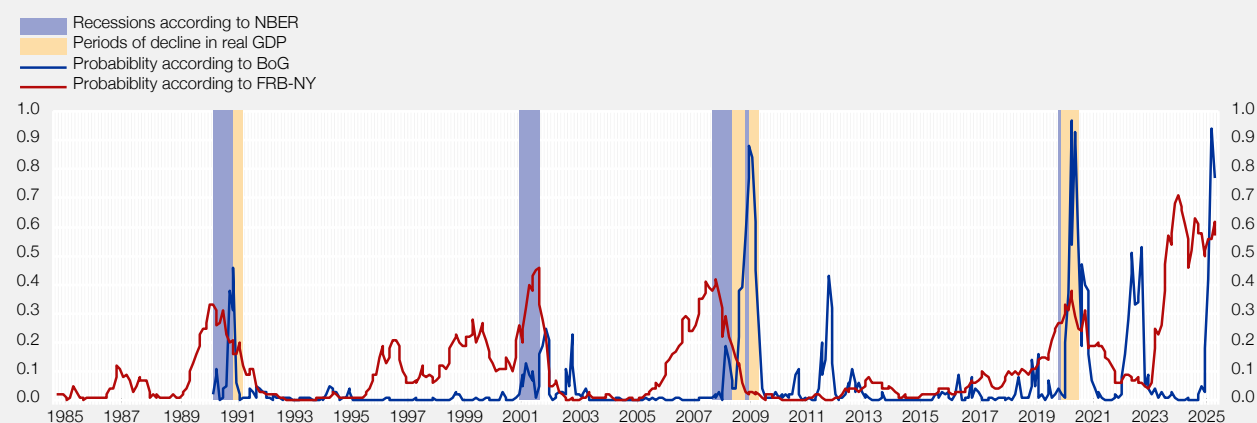
Source: Econometric estimates by the Bank of Greece and FRB-NY.
Note: The blue line shows the estimated probability of negative growth rates for two consecutive quarters in the US based on the Bank of Greece model. The red line shows the probability of a recession in the US based on the FRB-NY model. The shaded areas show recessions based on the NBER (light grey) and two-quarter periods with negative real US real GDP.

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12 It should be noted that the term premium embedded in bond yields is driven by both monetary policy uncertainties and investor preferences (see Gürkaynak, R.S., B. Sack and J.H. Wright (2007), "The U.S. Treasury yield curve: 1961 to the present", *Journal of Monetary Economics*, 54(8), 2291-2304, and Adrian, T., R.K. Crump and E. Moench (2013), "Pricing the term structure with linear regressions", *Journal of Financial Economics*, 110(1), 110-138).

13 Real monthly stock market index returns, expectations of interest rate developments over the short term (between 3 months and 2 years), the Economic Policy Uncertainty Index and past real GDP growth rates are used as explanatory variables in this model. All variables have been orthogonalised against the Economic Policy Uncertainty Index. The estimate employs Ordered Probit estimation techniques, with monthly data for the period between January 1985 and May 2025. Data sources include LSEG-Datastream for financial variables and GDP growth rates at constant prices, and the website www.policyuncertainty.com for the Economic Policy Uncertainty Index.

substantial increase in US economic policy uncertainty. On the other hand, potential interest rate cuts by the Fed are expected to have a dampening effect on the estimated probability of a decline in US GDP. Consequently, interest rate cuts exceeding those currently expected – which would be reflected in revised expectations of more interest rate cuts – will have a dampening effect on the probability of a decline in GDP.

The above estimates are subject to uncertainties, as they relate to variables that may change significantly. This observation is particularly important in the current highly volatile environment, as possible changes in economic policy, which would improve the investment and economic sentiment, are likely to change the outlook of the econometric analysis in this box. In any case, this analysis clearly indicates that the US policies imposing tariffs on its trading partners, and in particular the ensuing investment uncertainty and turmoil, are an important factor weighing on US economic activity.

Conclusion

The announcement that the United States would impose tariffs on its trading partners in early February and, later, in early April 2025 added to the uncertainty about economic policy, which in turn led to increased volatility and a worsening investor sentiment in international financial markets. Forward-looking information drawn from stock prices and government bond yields indicates that uncertainty and the resulting deterioration in investor sentiment, following the announcement of US tariffs, are accompanied by an increase in the probability of a decline in US GDP from Q3 2025 onwards. It is worth noting that the announcement of a negative annual growth rate outcome for Q1 2025 in the United States is consistent with the findings of this analysis and in fact corroborates them. Therefore, uncertainty surrounding the US economic policy and the resulting deterioration in the economic and investor sentiment are likely to lead to an economic downturn in the United States.