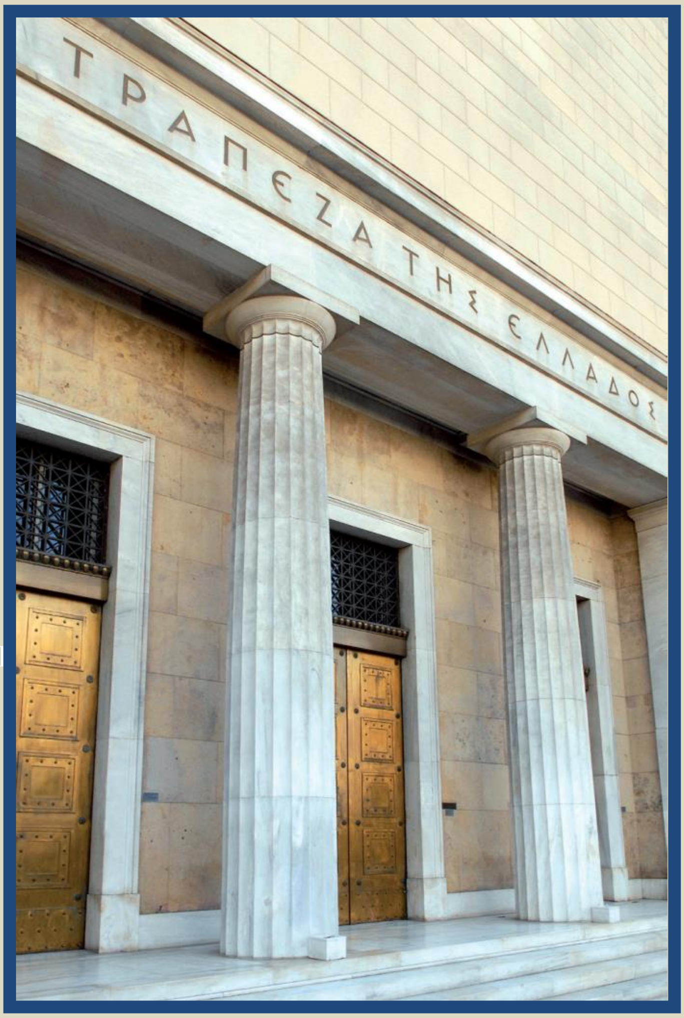
FINANCIAL STABILITY REVIEW



November
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BANK OF GREECE
EUROSYSTEM

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I. EXECUTIVE SUMMARY

In the first half of 2022, economic activity in Greece performed better than expected: real gross domestic product (GDP) grew by 7.8%, one of the highest growth rates in the European Union. This was mainly due to an improved performance of tourist receipts, as well as to strong increases in private consumption and investment, supported by pent-up demand following the lifting of the coronavirus (COVID-19) pandemic containment measures.

Strong economic growth has, to some extent, mitigated the adverse effects of uncertainty surrounding geopolitical and energy-related developments. However, the intensity and persistence of imported inflationary pressures, the deteriorating economic outlook, the heightened risk of an abrupt repricing of assets in international money and capital markets, as well as higher Greek government bond yields have led to increased risks to financial stability.

In the course of 2022, the Greek financial system continued to improve in terms of profitability, liquidity and asset quality. It is worth noting that all four significant banks have already achieved the operational target that they had set to reduce their non-performing loan (NPL) ratio to single digit by year-end. As regards liquidity, the deposit base was further strengthened in the first nine months of 2022, while the European Central Bank (ECB) Governing Council's decisions[1] to continue reinvesting, in full, the principal payments from maturing securities purchased under the asset purchase programme (APP) and the pandemic emergency purchase programme (PEPP) and, in particular, the introduction of a new transmission protection instrument (TPI)[2] have reinforced the tools available for the effective transmission of monetary policy and have contained the upward trend in bond yields. Against this background, an upgrade of the Greek sovereign to investment grade in the near future would be instrumental in easing funding cost pressures, as it would be a strong vote of confidence in the Greek economy and banking sector.

However, one cannot overlook the impact of the normalisation of monetary policy by gradually raising key ECB interest rates to levels that will ensure a timely return of inflation to its medium-term target of 2%. Higher interest rates undeniably make a positive contribution to tackling inflation, as well as to enhancing bank profitability in the short term. Nonetheless, the rise in firms' operating costs, the negative impact on household real disposable income and heightened funding costs, among other factors, could dampen bank profitability and would point to a weaker economic outlook. Moreover, the worsening financial condition of households and firms, combined with rising financing costs, could lead to a new wave of NPLs in the medium term, which would again affect banks' asset quality.

In the first half of 2022, capital adequacy developments were mainly driven by the phasing-in of International Financial Reporting Standard 9 (IFRS 9), profitability and an increase in risk-weighted assets. The low quality of prudential own funds, due to the high share of Deferred Tax Credits (DTCs), remains a challenge, whereas putting in place the right conditions for internal capital generation is now becoming a priority, given the increased cost of market-based funding. The bank-sovereign nexus is also a source of concern.

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[1] ECB, Monetary policy decisions - June 2022 and July 2022.

[2] TPI purchases will be focused on public sector securities (marketable debt securities issued by central and regional governments as well as agencies, as defined by the ECB), with a remaining maturity of between one and ten years (see https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220721~973e6e7273.en.html).

This Financial Stability Review covers the entire financial system, focusing on an analysis of banking developments, given the particular relevance of the banking sector for the Greek economy, and includes three Special Features.

Special Feature I provides a joint examination of the evolution and structure of GDP on the basis of gross value added by sector of economic activity, of respective bank credit to firms and of non-performing exposures.

Special Feature II presents the European and national regulatory framework for Information and Communications Technology (ICT) and security risk management by financial institutions.

Special Feature III explains the reforms to rationalise the channelling of public funds by the Bank of Greece through the System of Treasury Accounts, including digitalisation of procedures and services provided to general government entities.

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Liquidity conditions in the Greek banking sector in 2022 presented a mixed picture. Against the backdrop of rising Greek bond yields and expectations of a further increase in the key policy rates by the ECB, access to capital markets became more difficult for Greek banks. However, customer deposits continued their upward trend, albeit at a slower pace compared with the previous year, reflecting strong economic growth and credit expansion, notably to non-financial corporations.

The outstanding amount of business and household deposits reached a ten-year high of €185.5 billion in September 2022 (December 2021: €180 billion).[3] This rise was mainly driven by saving deposits, reflecting the strong growth of the Greek economy and an increase in bank lending, both of which enhanced depositors' saving capacity. In particular, the outstanding amount of deposits held by non-financial corporations stood at €41.9 billion in September 2022,[4] with a reduced growth rate since the beginning of the year, as businesses drew down on their deposits in the face of strong increases in energy prices and business operating costs. Meanwhile, banks' liquidity continued to be supported by their participation in the Eurosystem's Targeted Longer-Term Refinancing Operations (TLTROs III) and the acceptance of Greek government bonds as eligible collateral in Eurosystem refinancing operations, as well as by recent bond issuance on international markets.[5] It should be pointed out that the outstanding amount of financing of Greek banks by the Eurosystem remained at €50.7 billion during this period, unchanged from December 2021.

The first half of 2022 saw further improvements in the quality of credit institutions' loan portfolios. The NPL ratio stood at 10.1% in June 2022, down from 12.8% in December 2021. This reduction reflected the progress achieved towards cleaning up bank balance sheets. As already mentioned, all four significant banks have attained their operational target of a single-digit NPL ratio by end-2022. However, the NPL ratio of less significant banks is very high, at 49.7% (which also relates to the unsuitability of the government guarantee scheme for most smaller banks). In addition, the system-wide NPL ratio remains a multiple of the European average (June 2022:

[3] Source: Bank of Greece, Monetary financial institutions (MFI) assets and liabilities, https://www.bankofgreece.gr/en/statistics/monetary-and-banking-statistics/deposits

[4] Source: Bank of Greece, Monetary financial institutions (MFI) assets and liabilities, https://www.bankofgreece.gr/en/statistics/monetary-and-banking-statistics/deposits

[5] Eurobank launched a bond issue of €500 million in June and Alpha Bank a €400 million at end-October.

1.8%[6]), implying that banks must continue and step up their efforts to reduce their existing NPL stock, especially in the light of emerging challenges.

The protracted war in Ukraine, with the ensuing energy crisis, has been a crucial factor behind the increase in imported inflationary pressures, weighing heavily on household real disposable income and business operating costs. The strong economic growth recorded on the basis of data for the first half of 2022 has helped to alleviate pressures. However, the normalisation of ECB monetary policy, resulting in a higher interest rate environment, clearly indicates that both the cost of financing and the debt repayment capacity of households and corporations will be adversely affected. By contrast, a positive impact is expected on deposit interest rates via the partial pass-through of increased key rates. This environment, combined with weaker near-term economic growth prospects, would again affect the quality of banks' loan portfolios due to the creation of new NPLs. The amount of new NPLs is difficult to estimate though, amid uncertainty about the evolution of parameters related to the geopolitical and energy-related crisis, especially in the event that the crisis should prove more prolonged than expected or escalate further.

Finally, it should be noted that the transfer of NPLs out of the banking sector does not automatically mean the removal of debt from the economy. The debt remains and is now managed by credit servicing firms (CSFs). The smooth functioning of the NPL secondary market is therefore key to a definitive debt resolution and to this end the effective use of all available tools is a prerequisite. Rehabilitation of borrowers with viable and bankable investment plans should be put forward as an option that can help towards both a definitive resolution of private debt overhang and the growth of the real economy.

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In the first half of 2022, Greek banking groups posted profits, after tax and discontinued operations, amounting to €2.3 billion, compared with losses of €4.0 billion in the corresponding period of 2021, returning to profitability after two loss-making years. In more detail, in the first half of 2022 Greek banks' operating income increased year-on-year, mainly owing to an increase in non-recurring income, such as gains from financial operations and hedging instruments, as well as income from the separation and sale of the merchant acquiring business by three major banks. However, core income (i.e. net interest and fee income) decreased by 5%, as lower net interest income more than offset higher net fee income. Operating costs fell by 9.1%, mainly due to a reduction in staff costs via voluntary retirement schemes in previous years and one-off corporate transformation costs in the first half of 2021. The cost of credit risk fell significantly, as loan-loss provisions totalled €1.0 billion in the first half of 2022, compared with €6.4 billion in the first half of 2021.[7]

The capital adequacy of banking groups declined marginally in the first half of 2022, mainly owing to an increase in risk-weighted assets, as the negative impact from the phasing-in of International Financial Reporting Standard 9 (IFRS 9) on prudential own funds was offset by the positive impact of half-year profits. In particular, the Common Equity Tier 1 (CET1) ratio on a consolidated basis fell to 13.2% in June 2022 from 13.6% in December 2021, and the Total Capital Ratio (TCR) to 15.9% from 16.2%, respectively. These ratios are well below the average for credit institutions supervised directly by the ECB in the Banking Union (CET1 ratio 15% and TCR

[6] Source: European Banking Authority, Risk Dashboard, Q2 2022 [EBA Dashboard - Q2 2022.pdf (europa.eu)]

[7] It should be noted that a large part of loan-loss provisions in the first half of 2021 reflected NPL portfolio sales.

18.9% in June 2022). Taking into account the fully phased-in impact of IFRS 9, the fully loaded CET1 ratio of banking groups stood at 12.1% and the TCR at 14.8%.

Furthermore, the quality of Greek banks' prudential own funds remains low: in June 2022, deferred tax credits (DTCs) amounted to €14 billion, representing 58% of total prudential own funds (down from 59% in December 2021). Taking into account a fully phased-in impact of IFRS 9, this share comes to 63% of total prudential own funds (compared with 68% in December 2021). Finally, deferred tax assets (DTAs) of €2.2 billion are included in banking groups' prudential own funds (with a fully phased-in impact of IFRS 9), accounting for around 9% of their total prudential own funds. It should be pointed out that, although DTAs of €4.8 billion are not included in banks' prudential own funds, sufficient future profitability is needed in order for them not to pose risks to banks' capital base in the medium-to-long term.

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The Bank of Greece, in its capacity as macroprudential authority, monitors and assesses developments in the financial system and implements measures to reduce the build-up of systemic risks and strengthen the resilience of the financial system. Specifically, it conducts a quarterly assessment of the intensity of cyclical systemic risk and the appropriateness of the Countercyclical Capital Buffer (CCyB) rate for Greece and sets or adjusts it, if necessary. In the course of 2022 this rate was maintained at 0%, i.e. the minimum level, in the absence of excessive credit growth signals. Also, the Bank of Greece identified Other Systemically Important Institutions (O-SIIs) in Greece for 2022 in accordance with the relevant EBA guidelines and set the O-SII buffer rate at 1% for 2023.

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In the first half of 2022, the key financial aggregates of the Greek private insurance market showed no significant change. While their capital adequacy remained broadly unchanged from 2021 levels, insurance undertakings continued their efforts to adjust their business models and review their pricing and investment policies. The continued viability of their portfolios will hinge on the macroeconomic environment and the ability to tackle climate change.

The smooth operation of financial market infrastructures, i.e. payment, clearing and settlement systems, contributed positively to the stability of the domestic financial system through the efficient processing of transactions. It should be pointed out that energy derivatives have caused significant volatility in the European energy market as, amid the surge in gas and electricity prices, energy companies have had to deposit increasing amounts of collateral with central counterparties.

The use of electronic means of payment rose significantly in the first half of 2022, in terms of both volume and value.

Based on June 2022 data, total exposures managed by CSFs amounted to €92.7 billion, excluding accrued interest and write-offs. In the first half of 2022, there was an increase in debt repayments, collateral liquidations and write-offs on exposures managed by CSFs on behalf of credit acquiring firms, while between 2019 and June 2022 loan portfolios totalling €1.15 billion were sold on the secondary market. The ability of CSFs to manage loans on behalf of credit acquiring firms and credit institutions is hampered by the recent Supreme Court judgment no. 822/2022[8] that upheld

[8] Supreme Court of Greece – Court Decision 822/2022 (CIVIL CASES - A2) (areiospagos.gr)

the relevant appellate rulings regarding their standing to institute and participate in enforcement proceedings entailing auctions of foreclosed properties. However, the effectiveness of CSFs is expected to become visible in the coming months with the lifting of the above restrictions, along with the recent launch of the digital auction platform for the principal residence of vulnerable households, which will apply until its transfer to the Sale and Lease Back Organisation.[9]

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For 2022, the Greek economy, based on the latest Bank of Greece projections, is estimated to grow at 6.2%, much higher than initially forecast. Combined with high inflation, nominal GDP growth is expected to stand well above the implicit interest rate on government debt, thereby helping to significantly reduce the government debt-to-GDP ratio. For the euro area, GDP growth in 2022 is projected at 3.1%. For the following year, increased flows expected from the European recovery instrument Next Generation EU (NGEU) will finance the implementation of major investment projects and structural reforms, thus helping to sustain positive growth in Greece.

However, lower economic growth prospects, higher inflation and tighter financing conditions put strain on the debt servicing capacity of non-financial corporations and households. At the same time, any further geopolitical or economic shocks would represent additional downside risks to the economic outlook.

The growing uncertainties and challenges in the macroeconomic and financial environment, both at European and domestic level, have highlighted the importance of macroprudential policy, which was reflected in the September 2022 "Warning of the European Systemic Risk Board on vulnerabilities in the Union financial system".[10] In particular, this general warning identified three main sources of systemic risk: (a) the deterioration in the macroeconomic outlook; (b) risks to financial stability stemming from a sharp fall in asset prices; and (c) the impact of these developments on the asset quality of credit institutions. In this context and over the medium term, the implementation of the appropriate macroprudential policy measures, notably in the form of capital buffers, can contribute to the creation of sufficient macroprudential space that will have a positive effect on financial stability.

The Greek financial system needs to promptly adjust to the emerging conditions. The uninterrupted flow of credit to the Greek economy presupposes a strong banking sector, so action to enhance its resilience is necessary. Undoubtedly, the progress made in the past few years towards cleaning up bank balance sheets has been instrumental in improving the aggregates of the banking sector. However, uncertainty about the inflation trajectory and the effects of monetary policy normalisation, the weaker growth prospects of the Greek economy, the risk of a sharp repricing of assets and the escalating geopolitical and energy crisis leave no room for complacency. In this context, the following challenges can be identified, calling for action on the part of the banking sector:

First, the high stock of NPLs. Progress towards NPL reduction in the Greek banking sector has been remarkable, with the NPL ratio standing at 10.1% in June 2022. However, the NPL ratio

[9] Sale and Lease Back Organisation as referred to in Article 218 of the new Bankruptcy Law 4738/2020 (Government Gazette A 207).

[10] This is the first such warning by the ESRB, which is responsible for monitoring and preventing risks to the financial system in Europe, since its creation in 2010, shortly before the euro area debt crisis. https://www.esrb.europa.eu/pub/pdf/warnings/esrb.warning220929_on_vulnerabilities_union_financial_system~6ae5572939.en.pdf.

remains high and a multiple of the respective EU average of 1.8%[11]. It should be noted that the implementation of banks' NPL reduction strategies has largely relied on securitisations, making use of the Hellenic Asset Protection Scheme (HAPS), and on outright sales of loans on the secondary market, which makes the continuation of these actions more difficult in light of emerging pressures on capital adequacy. Moreover, given the ongoing normalisation of monetary policy with interest rate increases, the impact on firms' operating costs and on household real disposable income could also affect borrowers' debt servicing capacity. Combined with the emerging lower economic growth prospects, this could lead to the creation of new NPLs, with adverse implications for banks' asset quality. The ultimate impact cannot be precisely assessed at present, but is a source of concern.

Second, low core profitability. The increase in key ECB interest rates will boost banks' net interest income in the short term, as a very large part of existing loans carry floating rates. In the medium term, however, a potential slowdown in economic activity, rising production costs and a decline in household real disposable income, combined with an increase in debt servicing costs for existing loans, would put strain on the financial condition of households and businesses, and banks' credit risk costs could increase as a result. In addition, banks' interest expenses are expected to grow due to the phasing out of favourable TLTRO funding rates and of other pandemic-related accommodative monetary policy measures, as well as due to increased debt issuance needs to meet prudential capital requirements, notably the Minimum Requirement for own funds and Eligible Liabilities (MREL).

Third, banks' capital adequacy level. Currently, the capital adequacy of the banking sector is satisfactory. In the short term, however, it will be affected by a number of factors: (a) possible constraints on internal capital generation capacity amid growing macroeconomic challenges and monetary policy normalisation; (b) the costs of implementing NPL reduction strategies and sufficient provisioning for credit risk, particularly in light of the potential emergence of new NPLs; (c) the implementation of capital-enhancement actions (e.g. synthetic securitisations) and the cost of issuing capital instruments (Additional Tier 1, Tier 2) to meet regulatory capital requirements, including the cost of issuing MREL-eligible bonds; and (d) the evolution of new loan disbursements to households and non-financial corporations. Against this background, there is a risk of a further increase in the existing share of DTCs in banks' regulatory capital.

Safeguarding financial stability in an international environment of mounting risks requires vigilance from all stakeholders. As monetary policy is normalised, risks of fragmentation could arise in the euro area. For this reason, the ECB adopted the TPI. However, complementary action, particularly in the areas of energy and fiscal policies, is needed to reduce risks to financial stability. At the same time, banks should continue to clean up their balance sheets and further step up the financing of healthy and export-oriented businesses so that, together with the funds available under the Recovery and Resilience Facility, the Greek economy can be shielded against mounting risks (both domestic and imported). In this context, improving banks' core profitability, by speeding up digitalisation and cutting down operating expenses, will contribute to strengthening their resilience.

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[11] Source: European Banking Authority, Risk Dashboard, EBA Dashboard - Q4 2021 for publication.pdf (europa.eu)

II. MACROECONOMIC ENVIRONMENT, MONEY AND CAPITAL MARKETS

1. ECONOMIC ACTIVITY: DEVELOPMENTS AND PROSPECTS

The Greek economy grew rapidly in the first half of 2022, after all COVID-19 containment measures had been lifted. The main driver of growth for the Greek economy was private consumption, which rose at a double-digit rate. Gross fixed capital formation also contributed positively, while net exports made a negative contribution. On the supply side, industries most affected by the pandemic, such as tourism, arts, entertainment and recreation, recorded the strongest growth, while construction, manufacturing and trade also made a significant contribution.

Table II.1 GDP and its main components (2018-Q2 2022)

Percentage changes (at constant market prices of 2015)
Annual data: Non-seasonally adjusted. Quarterly data: seasonally adjusted

	2018	2019	2020	2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022
Private consumption	1.7	1.9	-7.7	5.8	12.0	12.0	11.9	11.0
Public consumption	-3.5	2.1	2.6	2.2	4.2	-0.2	-0.1	0.8
Gross fixed capital formation	-4.3	-2.2	1.1	20.0	19.4	24.2	13.0	8.7
Residential investment	22.5	12.6	19.0	27.3	70.7	6.5	18.6	16.0
Other construction	-15.9	-20.4	0.1	10.8	13.8	0.4	17.0	10.2
Equipment	-0.4	2.5	-4.2	33.2	23.1	69.3	30.5	18.0
Domestic demand	**1.4**	**1.2**	**-3.5**	**7.2**	**11.2**	**10.8**	**9.5**	**8.6**
Exports of goods and services	9.1	4.9	-21.5	24.1	49.6	24.0	9.8	20.8
Exports of goods	9.7	2.0	4.2	13.8	9.6	4.1	2.9	3.3
Exports of services	8.6	7.4	-42.6	37.7	97.9	63.2	22.8	47.4
Imports of goods and services	8.1	2.9	-7.3	17.7	19.5	33.3	18.1	15.5
Imports of goods	7.1	1.8	-3.8	16.8	12.1	29.8	18.4	17.5
Imports of services	11.1	6.2	-17.2	20.2	41.7	43.5	16.0	9.3
GDP at market prices	**1.7**	**1.9**	**-9.0**	**8.4**	**11.7**	**8.3**	**8.0**	**7.7**

Sources: Hellenic Statistical Authority (ELSTAT) and Bank of Greece.

Business confidence deteriorated in Q2 and Q3 as compared with Q1, mainly due to high inflation and the ongoing war in Ukraine, while consumer confidence also fell below its Q1 level. The Purchasing Managers' Index (PMI) has recorded a decline in manufacturing activity in recent months on the back of weaker demand.

Employment experienced particularly strong growth rates in the first half of the year, which appear to be weakening in the second half. Inflation remains at high levels, mainly driven by energy prices, while core inflation is also on a strong upward trend.

In more detail, GDP grew by 7.8% year-on-year in the first half of 2022, as domestic demand strengthened significantly despite the uncertainty created by the war in Ukraine. Private consumption grew strongly by 11.4%, as consumers seem to have accelerated purchases of goods and mainly services, which had been largely postponed during the pandemic crisis, also using their pent-up savings. By contrast, public consumption increased marginally by 0.3%, as public spending for addressing the impact of the pandemic weakened significantly.

Gross fixed capital formation rose by 19.6% in the first half of 2022, as a result of a significant increase in investment in machinery and weapon systems by 32.8%. By contrast, the other two categories of fixed assets declined (transport equipment and weapon systems: -4.0%, ICT equipment: -25.9%). Residential investment rose significantly by 17.3%, while other construction also increased, by 13.5%.

The contribution of net exports in the first half of 2022 was negative, as imports grew more strongly than exports. Exports rose by 15.1%, mainly on account of a 34.4% increase in services exports due to the recovery in tourism, while exports of goods also picked up by 3.1%. Imports rose more strongly, by 16.8% on the back of increased demand for consumer products and investment in machinery and transport equipment.

On the supply side, total gross value added rose by 6.4% in the first half of 2022, mainly driven by growth in business services. At the sectoral level, the strongest growth rates were recorded in "wholesale and retail trade services, repair services of motor vehicles and motorcycles, transportation and storage, accommodation and food services" (20.3%), "arts, entertainment and recreation services" (37.7%,) "construction" (16.0%) and "professional, scientific and technical services, administrative and support services" (9.2%), while industry grew by 4.3%.

The current account deficit increased by €4.2 billion year-on-year in the period from January to August 2022 to stand at €10.0 billion, mainly due to a deterioration in the balance of goods and the income account, which was to some extent offset by an improvement in the services balance. Foreign direct investment in Greece rose by €4,678 million between January and August 2022, compared with an increase of €3,862 million in the same period of 2021.

The labour market improved significantly in the first half of 2022. More specifically, total employment increased by 9.0%, the best performance in 24 years. Dependent employment rose further by 12.0%, while the self-employed also increased by 2.0%. The unemployment rate fell to 13.1%, from 16.5% in the same period of 2021. A significant improvement in the unemployment rate was observed for both women (17.3%, from 20.6% in the first half of 2021) and youth aged 20-29 years (23.5%, from 32.0% in the first half of 2021). By contrast, the long-term unemployment rate increased slightly to 60.7%, from 59.7%. The latest available data (September 2022) point to a slowdown in employment growth as the tourist season is coming to an end.

Inflation, as measured by the Harmonised Index of Consumer Prices (HICP), recorded a significant increase in the first nine months of 2022, up by 9.5%, mainly on account of strong hikes in energy goods. In September 2022, the HICP spiked by 12.1% year-on-year, while core HICP (which excludes unprocessed food and energy) rose by 8.1%, indicating that increases in energy goods prices have been passed through to other goods prices.

According to the most recent projections by the Bank of Greece, GDP is expected to grow by 6.2% in 2022 and 1.5% in 2023. Inflation is projected to remain elevated over the medium term, owing to the slow decline in food prices and the continued high levels of core inflation components.

2. FISCAL DEVELOPMENTS

Between July and October 2022, there was a further increase in energy prices, forcing the government to maintain and expand energy-related fiscal measures to support the real economy. Fiscal support continued in various forms, including subsidies on electricity and natural gas consumption to households and businesses; an increase in the heating allowance and an expansion of eligibility; direct subsidies for diesel and heating oil "at the pump"; provision of a fuel pass; and support for low-income pensioners, vulnerable social groups and farmers through tax exemptions and subsidies. The higher revenue of the Just Transition Fund, which was achieved by taxing energy producers' windfall revenue and gaining increased revenue from emissions allowances trading, as well as higher tax revenue facilitated the financing of these measures. The overachievement of the tax revenue target resulted both from higher inflation and increased on-line transactions, which had a positive effect on indirect tax revenue, and from a higher-than-expected increase in economic activity in the first half of 2022, which led to higher total tax revenue.

These developments were incorporated into the projections of the 2023 Draft Budgetary Plan, published on 3 October 2022 and submitted to the European Commission on 15 October 2022 under the European Semester process. According to the 2022 draft budgetary plan, the general government primary balance according to ESA is projected to turn out a deficit of 1.7% of GDP, compared with a Stability Programme forecast of a primary deficit of 2.0% of GDP. Total energy measures are estimated at around €12 billion in 2022, of which only €4.7 billion (or 2.2% of GDP) affects the fiscal balance, as for the most part these measures will be financed by the additional revenue of the Just Transition Fund without burdening the State Budget.

In 2022, the general government debt is projected to decline to 169.1% of GDP, from 193.3% of GDP in 2021. The decline by 24.2 percentage points reflects the denominator effect due to an estimated 14.8% increase in (nominal) GDP, which more than offsets the nominal increase in debt by 0.5% (or €1.6 billion). This nominal increase in debt is a result of a rise in the stock of Greek government bonds (€5.1 billion), part of which will refinance loans (amounting to €3.2 billion).

In 2023, the general government primary balance according to ESA is expected to improve by 2.4 percentage points of GDP compared with 2022, turning out a surplus of 0.7% of GDP. Underlying the projected improvement will be an expected increase in tax revenue driven by stronger economic activity –mainly from indirect taxes and the corporate income tax– as well as to a reduction in the State Budget primary expenditure (by €4 billion) coming as a result of the phasing out of measures to tackle the pandemic and the energy crisis, as well as lower deliveries of military equipment. In addition, the projection assumes that tax exemptions will become permanent and that targeted fiscal measures to boost economic activity and support household budgets affected by high inflation will amount to €3.5 billion (or 1.6% of GDP). These include a permanent waiver of the special solidarity levy for public and private sector employees and pensioners; continuation of reduced VAT rates on specific services and tourist packages in 2023; and maintenance of the 3% reduction of social security contributions for private sector employees. Finally, the projection includes increased pension expenditure (by €1,227 million) owing mainly to: (i) an adjustment of pensions based on a coefficient obtained by adding the annual rate of change in GDP and the rate of change in the average annual consumer price index for the previous year (which will cost €830 million); and (ii) a projected faster processing of pension applications.

General government debt in 2023 is projected to decline further to 161.6% of GDP. The decline by 7.5 percentage points compared with 2022 reflects the denominator effect due to a projected 5.3% increase in (nominal) GDP, which more than offsets the nominal increase in debt by 0.6% (or €2 billion). This nominal increase in debt results from an increase in the stock of Greek government bonds (€3.5 billion), part of which will refinance loans of €0.8 billion.

In the second half of 2022, interest rates continued to rise globally, as a result of monetary policy normalisation by most central banks, in an effort to rein in inflation. As a result of this general trend, Greek government bond yields stood high, having increased year-on-year, and were more sensitive to international market volatility than other European sovereign bonds, given their lower credit rating and the shallowness of the Greek bond market. Nevertheless, the Greek government continued to tap the markets in Q3 2022, while four credit rating agencies (DBRS, Moody's, Fitch and S&P) kept their credit ratings for Greece unchanged, underlining the resilience of the Greek economy in spite of the deterioration of the international environment and heightened uncertainty.

In August 2022, Greece exited the enhanced surveillance regime and became subject to regular post-programme surveillance, under which it will remain until it has repaid at least 75% of its financial assistance.[12] Greece's becoming subject to the new regime of normal post-programme surveillance automatically implies that it will also be subject to the fiscal rules of the Stability and Growth Pact (SGP), as these rules will be finalised following the completion of the public consultation launched in October 2021. Preserving the fiscal credibility achieved before the outbreak of the pandemic is important. This is so because Greece's fiscal performance and the sustainability of its public finances are crucial factors for the credit rating of the Greek economy, much more than for other European countries, as Greece is still below investment grade and is therefore comparatively more sensitive to market volatility. However, the country's ability to comply with the rules of the existing European fiscal framework has been significantly strengthened over the past decade as a result of the structural fiscal reforms implemented.

In the post-pandemic period, restoring fiscal equilibrium by eliminating large primary deficits and reducing public debt should be key priorities for the governments of EU Member States. Therefore, the new EU fiscal governance framework needs to be more effective in terms of achieving these targets, by allowing more flexibility for Member States to avoid procyclical fiscal adjustment measures that exacerbate rather than smoothen the business cycle.

The persistence of inflation in the second half of 2022 increased pressure for additional fiscal measures aimed at further strengthening households' disposable income in order to mitigate the impact of higher (in particular energy) prices on the most vulnerable households. In view of the above, and given that inflation mostly affects low-income households, which have a higher propensity to consume, measures should be more targeted on the basis of income criteria. Moreover, to the extent that a subsidies policy is financed with additional borrowing, support measures are of a short-term nature and should be temporary. Therefore, subsidies should be complemented with energy-saving actions and incentives to reduce energy consumption. Overall, fiscal consolidation signals that policy-makers are coordinated in their efforts to curb inflation. This implies

[12] Regulation (EU) No 472/2013 of the European Parliament and of the Council of 21 May 2013.

that lower interest rate hikes will be needed to anchor inflation expectations and drives down public debt servicing cost.

The most effective and sustainable way to boost incomes in the medium to long term is economic growth through investment and structural reforms. Therefore, in order to strengthen the resilience of the economy, efforts should focus on the implementation of actions envisaged in the "Greece 2.0" plan, with the use of the Recovery and Resilience Facility resources. The implementation of the plan's projects will strengthen the structural features of the Greek economy, with a positive impact on disposable income and fiscal sustainability.

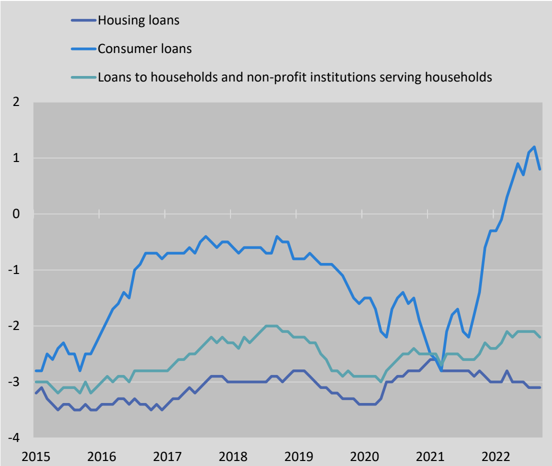
3. FINANCIAL CONDITION OF HOUSEHOLDS

3.1 DEVELOPMENTS IN HOUSEHOLDS' CREDIT AND INDEBTEDNESS

The annual rate of change in household lending by domestic monetary financial institutions (MFIs) remained in negative territory in the first nine months of 2022 (September 2022: -2.2%, see Chart II.1). Specifically, the annual rate of change in housing loans remained negative (September 2022: -3.1%), while the annual rate of change in consumer loans became positive from March 2022 (September 2022: 0.8%).

Chart II.1 Finance of households and non-profit institutions serving households from domestic monetary financial institutions (2015-September 2022)

(twelve-month rate of change)



Source: Bank of Greece.

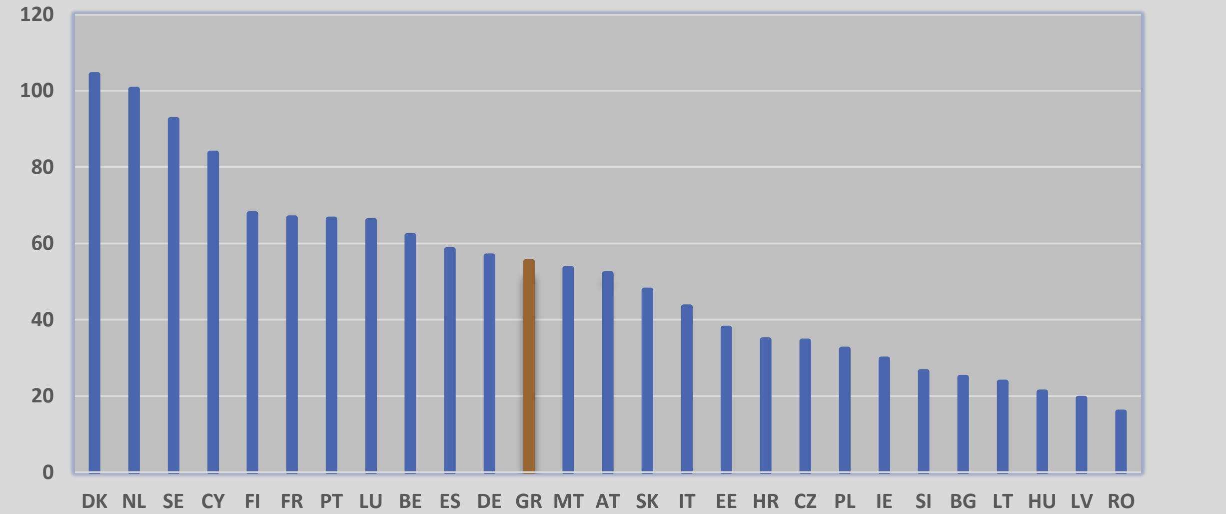
The rates arise from the changes in balances adjusted for loan write-offs, exchange rate differences and reclassifications.

According to the results of *Bank Lending Survey*,[13] the terms and conditions of household lending remained unchanged over the first nine months of 2022. Demand for housing loans increased to some extent in the first quarter of 2022, before falling due to a marginal deterioration of consumer confidence and a change in the general level of interest rates. By contrast, demand for consumer loans remained almost unchanged in the first half of 2022, before picking up in the third quarter of 2022. As regards the supply of loans to households in the fourth quarter of 2022, the terms and conditions are expected, according to the BLS, to remain almost unchanged.

Turning to household liabilities for 2021, the index of household debt, as expressed by the ratio of household debt to GDP, decreased compared to the previous year and stood at 55.2% (see Chart II.2). According to provisional data, Greece remains close to the median of the EU-27. Greece's household debt-to-GDP ratio is expected to improve further for 2022 in comparison with the other EU Member States, mainly owing to substantial nominal GDP growth.

[13] Bank Lending Survey.

Chart II. 2 Household debt in Greece and the European Union (2021)



Source: Eurostat.

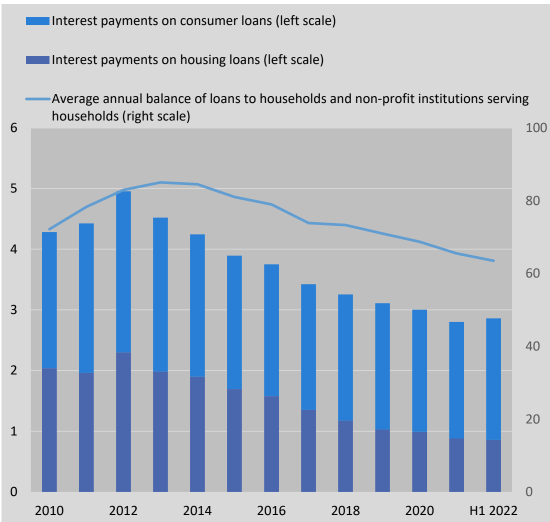
Household debt as a percentage of GDP includes debt securities and loans held by households and non-profit institutions serving households.

3.2 HOUSEHOLDS' INTEREST RATE RISK

Mortgage interest rates remained low, facilitating households to meet their debt obligations in the first half of 2022 and thereby preventing financial stability implications. Interest payments as a percentage of gross domestic household income declined further for housing loans, owing to an increase in gross disposable income. On the contrary, interest payments on consumer loans rose, due to increases in their outstanding balance and interest costs (see Chart II.3).

Chart II.3 Household debt and interest payments on consumer and housing loans (2010 – H1 2022)

(% of gross disposable income)



Sources: Bank of Greece and Hellenic Statistical Authority.

Notes: Interest payments are approximated by the product of the weighted average interest rate per category of outstanding loans multiplied by the average annual balance of household finance per each category. Household finance includes housing and consumer loans that are on the balance sheets of domestic credit institutions and credit servicing firms (CSFs). Household finance also includes the securitised loans which remain on the balance sheets of domestic credit institutions (such as synthetic securitisations). The weighted average interest rate per category of outstanding loans of domestic credit institutions was used for the calculations.

However, from July 2022, the weighted average interest rate of all outstanding loans to households rose (September 2022: 4.5%, June 2022: 3.9%), reflecting the gradual normalisation of monetary policy in the euro area. This increase was more evident in loans of long-term maturity. In particular, the weighted average interest rate on the outstanding balances of housing loans with a maturity of over five years rose by 74 basis points (September 2022: 2.7%, June 2022: 2%), while the respective interest rate on housing loans with a maturity of over one and up to five years increased by 25 basis points (September 2022: 4.1%, June 2022: 3.9%). Respectively, the weighted average interest rate on the outstanding balances of consumer and other loans to households with a maturity of over five years rose by 29 basis points (September 2022: 6.6%, June 2022: 6.3%), while it remained virtually unchanged at 14.1% for those with a maturity of up to one year.

Further normalisation of the Eurosystem's monetary policy is expected to increasingly affect household debt servicing costs, as household loans to a significant extent carry floating interest rates.

3.3 HOUSEHOLDS' INCOME RISK

The evolution of households' disposable income is a key determinant of the relative ease of servicing their loan obligations. According to provisional data from the Hellenic Statistical Authority (ELSTAT), gross disposable income increased by 1.7% in the second quarter of 2022 year-on-year, while real disposable income decreased. Real GDP[14] grew by 7.8% in the first quarter of 2022 year-on-year, maintaining the growth momentum observed in 2021. It should be noted that the final consumption expenditure of households showed a significant rise of 11.0% in the second quarter of 2022[15] year-on-year. Moreover, the unemployment rate fell significantly from 12.9% in December 2021 to 11.8% in September 2022,[16] owing to strong economic growth and higher employment in sectors such as tourism, construction, services and industry.

The resurgence of inflation (the harmonised index of consumer prices – HICP rose by 12% in September 2022 compared to September 2021) due to significant hikes in food prices, transport and energy costs, but also the subsequent spread of price increases across all goods and services, exerts significant pressures on the real disposable income of households, especially the most vulnerable ones. In particular, housing cost spiked by 35.4% in September 2022. These pressures are expected to continue in the first months of 2023 and to be only partially mitigated by, on the one hand, fiscal measures to ease the effects of higher energy costs and, on the other hand, expected increases in wages and pensions.

3.4 HOUSE PRICE RISK

The growth rate of apartment prices accelerated to 9.3% in the first half of 2022 on an annual basis, compared with 7.5% in 2021. In fact, in the second quarter of 2022 apartment prices across the country rose by 9.4% year-on-year. For the second quarter of 2022, the highest annual rate of price increase is observed for newly built apartments compared to older ones (over five years old), up by 10.5% and 8.7%, respectively. The geographical breakdown shows that the strongest increases for the second quarter of 2022 were recorded in the large urban centres, reaching double-digit annual growth rates in Athens (10.9%) and Thessaloniki (10.4%). However, the fact that inflationary pressures intensified implies that the rate of increase in real house prices has slowed down.

[14] According to ELSTAT's provisional GDP data, seasonally and calendar-adjusted figures.
[15] According to ELSTAT's provisional data, seasonally adjusted figures.
[16] According to ELSTAT's data, seasonally adjusted unemployment rate.

The outlook of the Greek real estate market remains positive. It is estimated that investment interest will remain strong in the short term, especially in certain prime locations in Attica and other tourist areas. In the medium term, initiatives to support low-income households (e.g. youth, vulnerable social groups) so as to acquire housing as well as to renovate old residences (e.g. "My Home" and "Renovate - save/rent" programs) are expected to contribute to an improvement of the building stock, but also to a strengthening of the financial condition of these households.

Chart II.4 Index of apartment prices and percentage change

(2007=100)

Source: Bank of Greece.

In addition, it should be pointed out that prices are still far from the historical highs recorded before the global financial crisis. Based on the index of apartment prices compiled by the Bank of Greece for the whole country, the index peaked in 2008 (101.7) and then followed a steady downward trend, reaching a low in 2017 (59.0). Since then, the index of apartment prices has been steadily rising, reaching 78.5 in the second quarter of 2022 (see Chart II.4).

Box II.1 Loans collateralised by residential real estate – Overview of disbursements H1 2022

The Bank of Greece collects on a quarterly basis data on loan disbursements collateralised by residential real estate, in accordance with Bank of Greece Executive Committee Act 175/1/2020.[1] For the purposes of this Act, a residential real estate (RRE) loan refers to a loan to a natural person secured by residential real estate, regardless of the purpose of the loan. In this regard, mortgages, renovation and consumer loans secured by residential real estate, as well as loans to self-employed persons and sole proprietors secured by residential real estate are included in the reporting perimeter.

The main conclusions for H1 2022 can be summarised as follows:

(a) Loan disbursements collateralised by residential real estate remain low both as an absolute figure (€499 million in H1 2022) and compared with the levels prior to the global financial crisis.[2]

(b) The analysis of key indicators (i.e. LTV-O, LTV-C, DSTI-O, LSTI-O, LTI-O, DTI-O)[3] shows that banks so far maintain prudent lending standards.

[1] The current analysis refers to the banking sector, since leasing companies have reported neither loan disbursements nor loan balances collateralised by residential real estate.

[2] In the period 2005-2007, quarterly mortgage flows stood on average at €3 billion (Bank of Greece data on credit to the private sector from domestic MFIs).

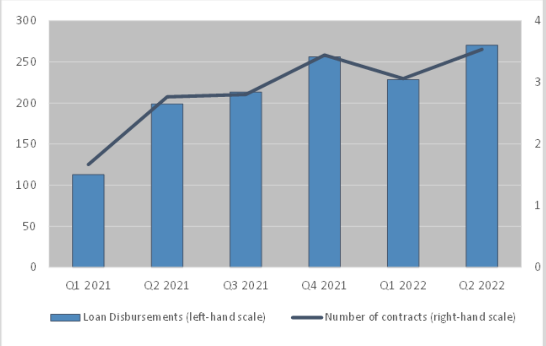
[3] The key indicators are the following: Loan-to-income ratio at origination (LTV-O); Current loan-to-value ratio (LTV-C); Debt-service-to-income ratio at origination (DSTI-O); Loan service-to-income ratio at origination (LSTI-O); Loan-to income ratio at origination (LTI-O); and Debt-to-income ratio at origination (DTI-O).

Analysis of key figures and indicators

In the first half of 2022, the sum of loan disbursements secured by residential real estate at banking sector level amounted to €498.7 million, up by 60% year-on-year, corresponding to 6,596 new loan contracts (see Chart 1). It should be noted that the first quarter of 2021 was negatively affected by the coronavirus pandemic (COVID-19). The average disbursement amount stood at €75.6 thousand in the first half of 2022.

Chart 1 RRE loan disbursements (left axis) and number of contracts (right axis)

(Q1 2021 – Q2 2022, million euro and thousand contracts)



Source: Bank of Greece.

The market share of the four significant institutions in the disbursements of loans secured by residential property amounted to 95.0% in the first half of 2022. The less significant commercial banks and cooperative banks had a share of 3.9% and 0.8%, respectively. Finally, the share of foreign credit institutions' branches was 0.3%.

The weighted average loan-to-value ratio at origination (LTV-O) stood at 63.0% in the first half of 2022 (see Table 1). The ratio for the "owner-occupied" and "buy-to-let" loan categories stood at 64.9% and 79.0% respectively. In fact, 25.9% of disbursements had a LTV-O of less than or equal to 50%, while 91.2% of disbursements had a LTV-O of less than or equal to 80%. Regarding the stock of RRE loans, the weighted average of the current loan-to-value ratio (LTV-C) stood at 73.4%, while 61.7% of disbursements had a LTV-C of less than or equal to 80%.

Table 1. Key figures and indicators of RRE loan disbursements

	Loan Disbursements (in € million)	Number of contracts	LTV-O	LTV-C	LSTI-O	DSTI-O	LTI-O	DTI-O
			(%)					
Q1 2022	228.4	3,061	63.1	74.7	21.9	27.7	3.6	4.1
Q2 2022	270.3	3,535	63.0	72.0	22.7	29.9	3.7	4.2
H1 2022	498.7	6,596	63.0	73.4	22.3	28.9	3.7	4.2

The weighted average loan-to-income ratio at origination (LTI-O) stood at 3.7, indicating that the total amount of loans secured by residential real estate is almost four times higher than the total annual disposable income of borrowers. However, it is worth noting that 39.8% of disbursements had a LTI-O of less than or equal to 3. In addition, the weighted average debt-to-income ratio at origination (DTI-O) stood at 4.2, with 33.4% of new loans having a DTI-O of less than or equal to 3. Equally importantly, the weighted average LSTI-O amounted to 22.3% and the weighted average DSTI-O was slightly higher at 28.9%.

Additional features

- Most of these loans (96.2%) are intended for the purchase of residential real estate with the purpose of being used as a residence by its owner ("owner-occupied"), while only 3.8% is related to loans for the purchase of residential real estate with the primary aim of being let to tenants ("buy-to-let").

- Almost all of the new loans are fully amortised.
- Loan disbursements with a fixed interest rate period of more than 10 years accounted for 55.7% of total new loans, while the percentage of disbursements with a fixed interest rate period of less than or equal to one year amounted to 26.6%. This preference for fixed-rate mortgages will mitigate the impact of monetary policy normalisation on the borrowers concerned.
- The average maturity on origination of the loan disbursements was 23 years. 45.3% of new loan contracts have a maturity of up to 20 years, 17.4% have a maturity from 20 to 25 years, while the remaining 37.2% have a maturity from 25 to 35 years.

Joint distribution of indicators

As regards the joint distributions of selected indicators, 72.8% of loan disbursements have a LTV-O of less than or equal to 80% and a LSTI-O of less than or equal to 30%, while 53.2% of loan disbursements have a LTV-O of less than or equal to 80% and a DTI-O of less than or equal to 4 (see Tables 2 and 3).

Table 2. Joint distribution of loan-to-value at origination (LTV-O) and loan service-to-income at origination (LSTI-O) of RRE loan disbursements (H1 2022)

(%)

	Loan service-to-income at origination (LSTI-O)			
Loan-to-value at origination (LTV-O)	≤30%	(30%-50%]	>50%	**Total**
LTV-O <= 80%	72.8	17.7	1.7	92.1
LTV-O (80%-90%]	2.3	1.2	0.1	3.6
LTV-O (90%-110%]	0.7	0.5	0.1	1.3
LTV-O >110%	2.0	0.9	0.1	2.9
Total	77.8	20.2	2.0	100.0

Based on the joint distribution of LTV-O and LSTI-O, we classify loan disbursements collateralised by residential property in three risk clusters, namely low, medium and high, reflecting their perceived risk. Specifically, the bulk of loan disbursements (i.e. 75.1%) is classified in the category of low risk (green shade); hence, to borrowers with sufficient income and debt-servicing capacity. 23.3% of loan disbursements is classified as medium risk (orange shade). The loan disbursements classified in the category of high risk (red shade) correspond to only 1.7% of the total. These exposures are jointly distributed in the cluster of LTV-O above 80% and LSTI-O above 50% and in the cluster of LTV-O above 90% and LSTI-O above 30%.

Table 3. Joint distribution of loan-to-value at origination (LTV-O) and debt-to-income at origination (DTI-O) of RRE loan disbursements (H1 2022)

(%)

	Debt-to-income at origination (DTI-O)			
Loan-to-value at origination (LTV-O)	≤4	(4-6]	>6	**Total**
LTV-O <= 80%	53.2	26.2	12.7	92.0
LTV-O (80%-90%]	1.4	1.4	0.9	3.6
LTV-O (90%-110%]	0.5	0.5	0.3	1.3
LTV-O >110%	0.8	1.2	1.0	3.0
Total	55.8	29.3	14.9	100.0

Moreover, based on the joint distribution of LTV-O and DTI-O, 54.6% and 41.6% of loan disbursements are classified as low and medium risk, respectively, while the category of high risk corresponds to 3.9%.

In conclusion, the overall analysis of credit origination indicators shows that Greek banks currently apply prudent lending standards regarding loans collateralised by residential real estate.

4. DEVELOPMENTS IN DOMESTIC AND INTERNATIONAL MONEY AND CAPITAL MARKETS

During February-October 2022, downward trends prevailed in the global capital markets, which also affected the Greek markets. Underlying the decline was mainly the change in monetary policy by central banks, which are moving away from accommodative policies towards normalising monetary policy by raising interest rates to tackle inflation. In particular, the US Federal Reserve (Fed), the Bank of England[17] and the European Central Bank (ECB) have, since the beginning of 2022, clearly communicated their intentions to the markets, while simultaneously raising interest rates. As a result, asset valuations came under significant pressure.

The deterioration in investor confidence due to lower expectations for economic growth enhanced risk aversion. In addition, the sharp rise in energy prices further fuelled inflationary pressures, creating conditions for a feedback effect on asset prices across all sectors of economic activity and across money and capital markets. Against this background, government and corporate bond yields started to rise significantly, prompting the ECB to take additional measures to protect the monetary policy transmission mechanism. In particular, since December 2021 the Governing Council of the ECB has decided that reinvestments under the Pandemic Emergency Purchase Programme (PEPP) can be flexibly adjusted at any time in terms of timing, asset classes and countries and in July 2022 introduced a new instrument to protect the transmission of monetary policy (Transmission Protection Instrument – TPI).[18]

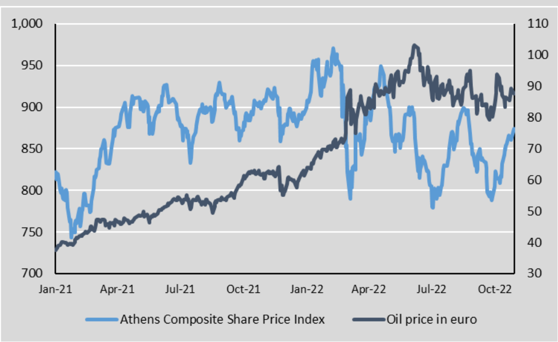
In the Greek stock exchange, the easing of the two-year health crisis pushed the Athex Composite Share Price Index to a seven-year high in February 2022 (971 points), but then prices declined

[17] On 2 November, the Bank of England announced a 0.75% increase in its Bank Rate.
[18] ECB Press Release, "The Transmission Protection Instrument", 21.7.2021. With this instrument, ECB can buy outright bonds of the higher-yield countries.

and at the end of October the index stood lower (874 points). In particular, the Athex Composite Share Price Index exhibited high volatility during the December 2021-October 2022 period: while it initially rose by up to 8.7% at the close of 11.2.2022, it fell by up to 12.8% at the close of 6.7.2022 (or about -20% from the February high). Similarly, in that period, the banking index gained up to 30% on 11.2.2022 compared to the close of 31.12.2021, then declined significantly from its high (by about -41%) on 5.7.2022 and recovered by about 36% on 31.10.2022, to 604 points.

Chart II.1 Athex Composite Share Price Index and oil price (in euro)

(1.1.2021-31.10.2022, daily prices)

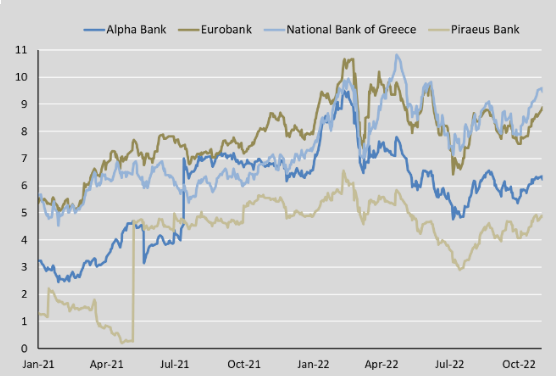


Source: Bloomberg.

Russia's invasion of Ukraine with the resulting geopolitical tensions and the escalating energy crisis had a decisive impact on markets. At the same time, the sharp increase in energy prices, especially oil prices (by up to 59% on 8.6.2022), compared to 31.12.2021 (€112.2 against €70.4 respectively, expressed in euros, see Chart II.5), triggered inflationary pressures and intensified concerns about weaker economic recovery. Investors' risk aversion to holding securities and, secondarily, the build-up of inflationary pressures, combined with supply chain disruptions, led to stock market repricing, despite positive news on corporate profitability in 2021 and the first half of 2022.

Chart II.2 Greek banks' capitalisation index as a percentage of weighted assets

(1.1.2021-31.10.2022, daily prices, %)

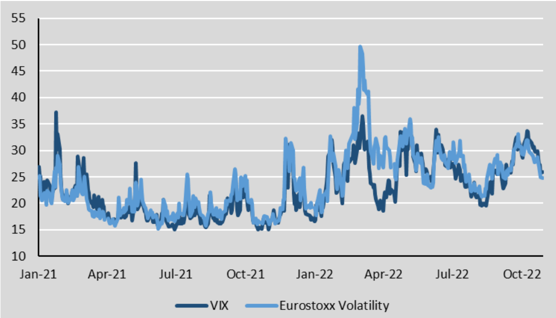


Sources: Bloomberg, Bank of Greece.

As far as Greek banks are concerned, the Market Cap/RWAs ratio declined from the February highs (April for the National Bank of Greece), negatively affected by the fall in stock market prices, while Risk Weighted Assets also reinforced the decline in this ratio due to a small increase mainly driven by the credit expansion of significant banks (see Chart II.6).

Chart II.3 European and US financial markets' volatility

(1.1.2021-31.10.2022, daily prices)



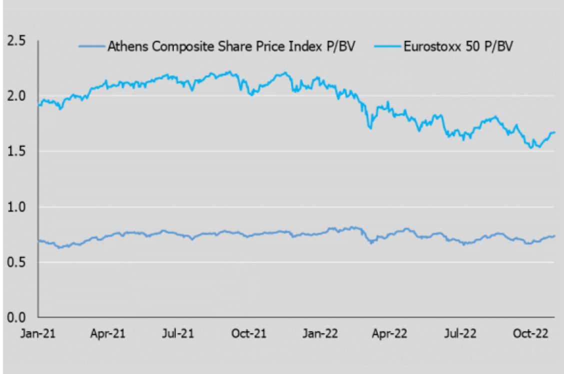
Source: Bloomberg.

However, valuation differences between European and Greek equities narrowed. In particular, European markets since the beginning of Russia's invasion of Ukraine have revised valuations, taking into account the sanctions imposed, the extent of banks' exposures to Russian markets and the wider macroeconomic implications.[19]

Specifically, while the price-to-book value (P/BV) of European equities during the period 31 December 2021 – 31 October 2022 decreased by approximately 20%, the price-to-book value for the Composite Share Price Index in Greece recorded a smaller decline of approximately 2% during the same period. Nevertheless, the European average P/BV continues to stand significantly higher than the Greek one and reached levels above 1, i.e. 1.67 on 31.10.2022, in contrast to the corresponding index for Greece, which hovered around 0.74 (see Chart II.8).

Chart II.4 Stock market indices

(1.1.2021-31.10.2022, daily prices)

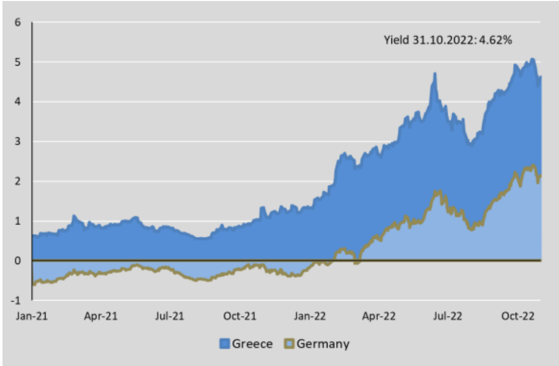


Source: Bloomberg.

Reports from investment firms are positive about these developments, thus confirming the positive outlook of the Greek banking system, following the significant clean-up of the stock of NPLs that has been achieved.[20] In this context, Moody's rating agency in November 2022 upgraded Greek banks, based on the improvement in the Greek economy and banks' asset quality, the strengthening of their solvency and favourable prospects for higher profitability.[21]

Chart II.5 Greek and German 10-year bond yields

(1.1.2021-31.10.2022, daily prices, %)



Source: Bloomberg.

In the bond market, strong pressure was exerted across the Greek yield curve in the period January-October 2022, particularly in the aftermath of the first ECB rate increase in July 2022 (see Chart II.9). The upgrades of Greece's credit rating in April by S&P to BB+ and in March by DBRS to BB (high), one notch short of investment grade, were not enough to contain the rise in Greek government bond yields. Greek bond sales were observed across the yield curve, especially in the most liquid issues, and also affected corporate bond issuance, thus limiting the number of new issues to just five, totalling €1.03 billion in 2022.

Similarly, the yields of euro area 10-year bonds increased significantly between January 2022 and the end of October 2022, while the spread between the Greek bond and the corresponding German bond widened from 152 basis points on 31 December 2021 to 328 basis points on 31 October 2022.

[19] ECB presentation (15.3.2022), Invasion of Ukraine: euro area banks so far resilient to a second exogenous shock

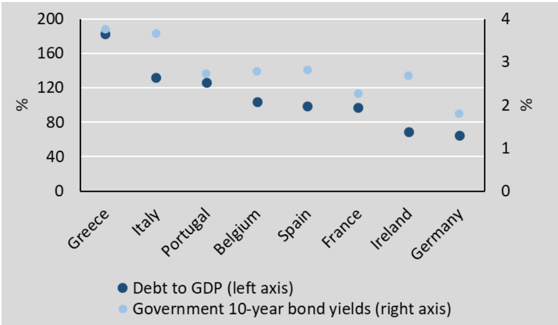
[20] Nasdaq.com (September 2022), "JPMorgan upbeat on Greek banks, upgrades Piraeus to "overweight". Nasdaq.com (August 2022), "HSBC ups price targets on Greek banks, with Eurobank, Piraeus top picks".

[21] Announcement of Moody's rating agency.

In particular, the yields on 10-year government bonds of euro area countries have generally risen in line with the debt-to-GDP ratio (see Chart II.10). Similarly, in the US, the yield on the 10-year Treasury bond rose to 4.05%, following five consecutive benchmark rate hikes by the Federal Reserve in 2022, bringing it to a range of 3.75%-4% (November 2022).

Chart II.6 Debt to GDP and 10-year government bond yields

(31.10.2022, %)

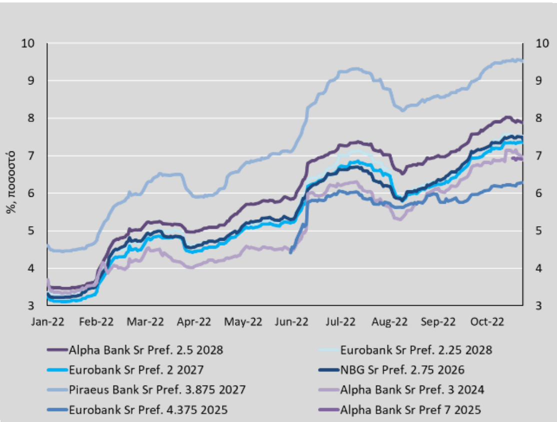


Source: Bloomberg.

Greek banks' bond yields increased during 2022 (see Charts II.11 and II.12). The rise in yields on MREL eligible bonds makes the future issuance of bonds more expensive for Greek banks. In addition, bond yields are expected to continue to be affected in the near future by ECB interest rate hikes, as well as by intensifying inflationary pressures.

Chart II.7 Evolution of yields of senior preferred bonds issued by Greek banks

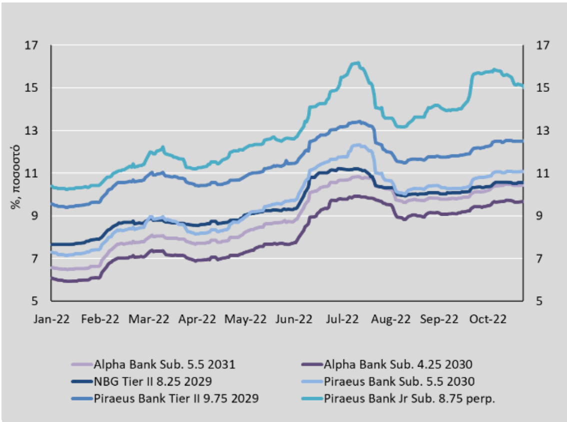
(1.1.2022-31.10.2022, %)



Sources: Bloomberg, Bank of Greece.

Chart II.8 Evolution of yields of subordinated and perpetual bonds issued by Greek banks

(1.1.2022-31.10.2022, %)



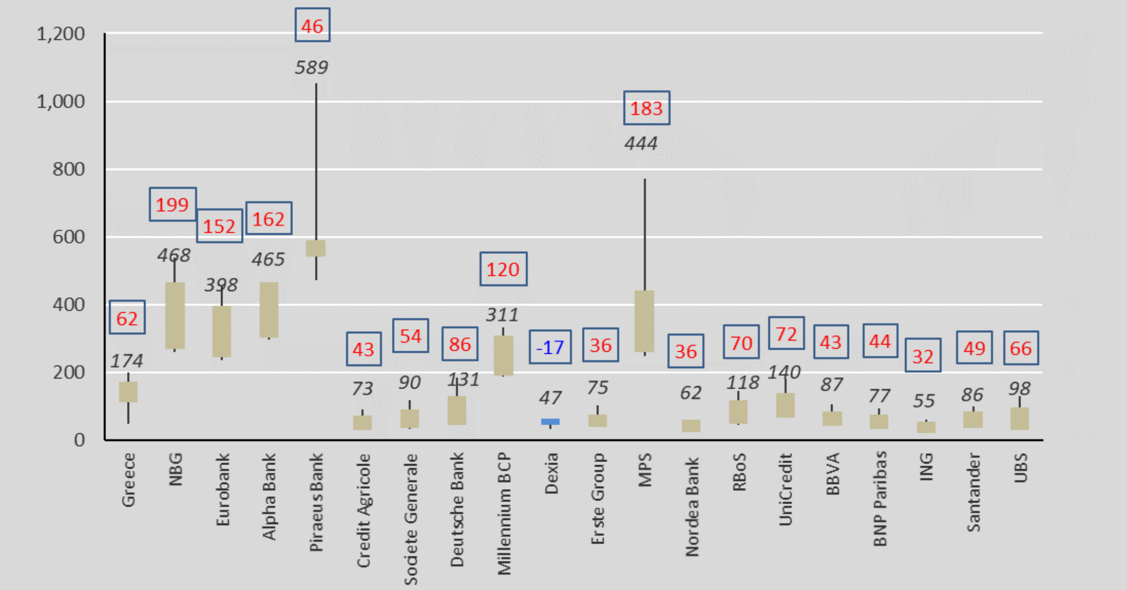
Sources: Bloomberg, Bank of Greece.

The prospects of an upgrade in the Greek sovereign's rating in 2023 remain positive, in the light of recent reports from international rating agencies. It should be noted that investment grade is better valued in times of turmoil, during which liquidity risk is a key determinant of bond prices, as investors tend to move from non-investment grade bonds (which are more difficult to sell) to investment grade bonds. Therefore, the increase in bond demand due to the potential achievement of investment grade will contribute to a more appropriate pricing of securities and to lower yields and, consequently, to a reduction in the funding costs of Greek banks. In conclusion, the achievement of investment grade is an important parameter in the functioning of the banking system, as it will provide new momentum to the Greek economy.

Finally, due to the deterioration of the economic climate, Greece's 5-year credit default swaps (CDS) rose in the first nine months of 2022, from 112 basis points at the end of 2021 to 174 basis points on 31 October 2022. This increase matches the rise in risk levels across the globe (see Chart II.13). The 5-year CDS spreads of all significant Greek banks also followed a similar upward trend, although banks posted profits in the first half of 2022.

Chart II.9 5-year CDS spreads of the Greek sovereign, Greek and European banks

(31.12.2021-31.10.2022, basis points)



Blue bar: Decline in CDS spreads vs 31.12.2021. Beige bar: Increase in CDS spreads vs 31.12.2021.
Lines outside bar: High and Low of the examined period. Number in square: Change in the examined period.

Sources: Bloomberg, Markit.

III. THE BANKING SECTOR

1. KEY BALANCE SHEET FIGURES

In the first half of 2022, Greek banking groups' assets increased marginally. Specifically, total assets amounted to €328.8 billion in June 2022, up by 0.8% (or €2.7 billion) compared to December 2021 (see Table III.1).

Table III.1 Structure of assets and liabilities of Greek commercial banking groups

(in million euro)

Assets	2021	%	June 2022	%	Change
Cash & balances with Central Bank	58,532	17.9	60,778	18.5	2,246
Due from banks	10,484	3.2	6,154	1.9	-4,330
Loans & advances to customers (net)	149,263	45.8	155,171	47.1	5,908
Derivative financial instruments	7,814	2.4	7,858	2.3	44
Debt securities	51,659	15.8	53,661	16.3	2,002
Investment in subsidiaries & associates, tangible and intangible assets	9,881	3.0	10,001	3.0	120
Non-current assets held for sale	6,505	2.0	3,148	1.0	-3,357
Other assets	32,022	9.8	32,064	9.8	42
Total	**326,160**	**100%**	**328,834**	**100%**	**2,674**
Liabilities	**2021**	**%**	**June 2022**	**%**	**Change**
Deposits from customers	217,301	66.6	221,375	67.3	4,074
Due to banks	57,499	17.6	57,444	17.5	-55
Debt securities in issue & other borrowed funds	8,213	2.5	8,650	2.6	436
Liabilities related to assets held for sale	4,028	1.2	580	0.2	-3,448
Other liabilities	14,986	4.6	15,350	4.7	364
Total equity	24,133	7.4	25,435	7.7	1,302
Total	**326,160**	**100%**	**328,834**	**100%**	**2,674**

Source: Bank of Greece.

More specifically, changes in asset amounts and structure are mainly attributed to:

(i) An increase of €5.9 billion in the stock of loans net of provisions, as loan disbursements exceeded the reduction of balances, due to sales and securitisations of NPLs.[22] This increase is due to business loans. Consequently, the share of loans in total assets grew (June 2022: 47.1%, December 2021: 45.8%).

(ii) A €2.2 billion rise in cash, mainly in cash balances at the Bank of Greece, in the context of the improvement in the liquidity conditions of credit institutions, as a result of an increase in deposits from customers and recent bond issuances on international markets. As a result, the share of cash in total assets widened (June 2022: 18.5%, December 2021: 17.9%).

(iii) A €2 billion rise in debt securities, mainly due to a rise in positions in bonds of other states and corporate bonds, resulting in an increase in the percentage share of debt securities in total assets (June 2022: 16.3%, December 2021: 15.8%).

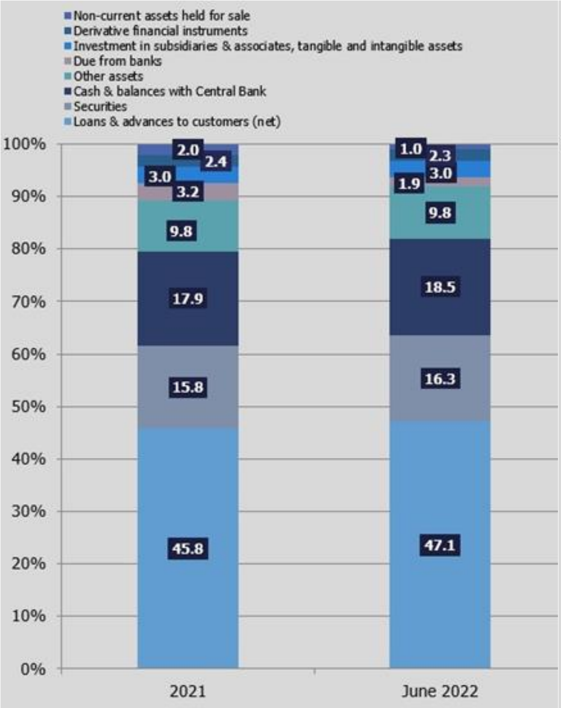
(iv) A decrease of €4.3 billion in claims on credit institutions, mainly due to a drop in deposits in guarantees for derivatives collateral and in sale and repurchase transactions, as well as a decline

[22] It should be pointed out that the stock of loans includes the senior notes that banks have retained from their loan securitisations, which carry a state guarantee under the Hellenic Asset Protection Scheme ("Hercules").

in securities repurchase agreements (repos), resulting in a reduction of their share in total assets (June 2022: 1.9%, December 2021: 3.2%).

(v) A decrease of €3.3 billion in assets available for sale, mainly due to the sale by a significant institution of its insurance subsidiary, resulting in a reduction of their share in total assets (June 2022: 1.0%, December 2021: 2.0%, see Chart III.1 and Table III.1).

Chart III.1 Structure of assets of Greek banking groups
(%)



Source: Bank of Greece.

Chart III.2 Structure of liabilities of Greek banking groups
(%)

Source: Bank of Greece.

On the liabilities side, the most significant developments were as follows:

(i) An increase of €4.1 billion in customer deposits, which have also increased as a percentage of total liabilities (June 2022: 67.3%, December 2021: 66.6%).

(ii) A rise of €1.3 billion in equity, mainly due to an increase in reserves and retained earnings. As a result, the share of equity in total liabilities grew (June 2022: 7.7%, December 2021: 7.4%).

(iii) An increase in debt securities in issue and other borrowed funds (by €0.4 billion), resulting in a marginal rise in their share in total liabilities (June 2022: 2.6%, December 2021: 2.5%). Eurobank issued a new senior bond of €0.5 billion in the first half of 2022.

(iv) Finally, there was a decrease in liabilities available for sale (by €3.4 billion), mainly due to a reduction of liabilities related to the sale of an insurance company by a significant institution. As a consequence, the share of liabilities available for sale in total liabilities decreased (June 2022: 0.2%, December 2021: 1.2%, see Chart III.2 and Table III.1).

2. RISKS

2.1 CREDIT RISK

Evolution of key figures

In the first half of 2022, the quality of credit institutions' loan portfolios improved. Non-performing loans (NPLs) continued their downward trend; as a result, in the first half of 2022 the total NPL stock stood at €14.9 billion, down by 19.0% or €3.5 billion compared to end-2021 (€18.4 billion), according to on-balance-sheet data taken on a solo basis[23] (Table III.2).

Table III.2 Key figures – Total portfolio

(in million euro, on-balance-sheet items)	Dec-21	Jun-22
Breakdown of NPLs		
Total loans	**144,097**	**147,460**
Performing loans	**125,697**	**132,557**
NPLs	**18,400**	**14,903**
Unlikely-to-pay	6,530	4,814
Past due > 90 days	5,705	5,172
91-180 days	850	655
181-360 days	874	610
>1 year	3,982	3,907
Denounced loans	6,165	4,916
Breakdown of forborne loans		
Forborne loans	**15,238**	**12,848**
Performing forborne loans	8,037	7,275
Non-performing forborne loans	7,201	5,573
Breakdown of impairment losses and write-offs		
Accumulated impairment on NPLs	**7,739**	**6,237**
Write-offs	**1,870**	**453**
of which write-offs of denounced loans	1,150	231
Breakdown of collateral		
Total collateral	**95,436**	**95,589**
Collateral on performing loans	**84,850**	**87,080**
Collateral on NPLs	**10,586**	**8,510**
Unlikely-to-pay	4,232	3,088
Past due > 90 days	3,015	2,674
Denounced loans	3,339	2,748
Collateral on non-performing forborne loans	**4,739**	**3,673**
Breakdown of flows		
Flows of non-performing loans	**818**	**150**
Flows to performing loans	-3,369	-1,179
Flows from performing loans	4,187	1,329

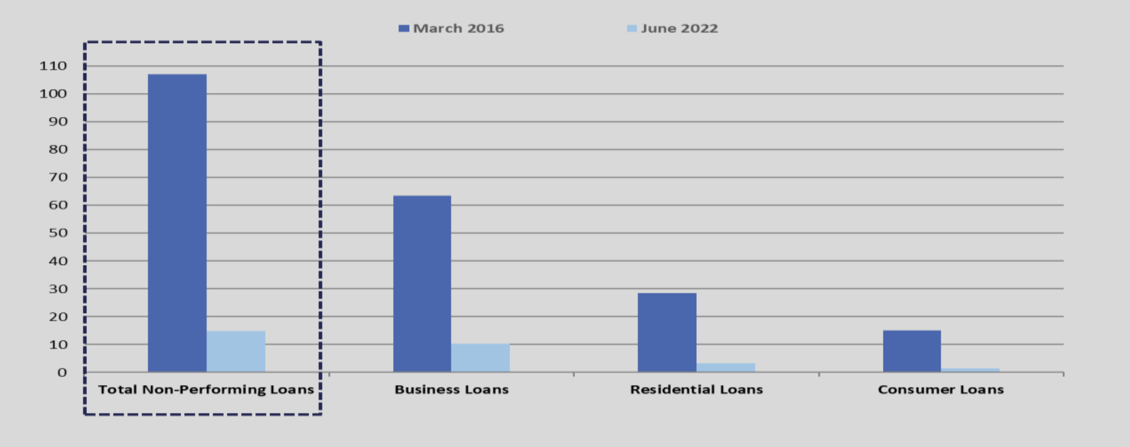
Source: Bank of Greece.

It should be noted that the total decrease of NPLs from their March 2016 peak reached 86.1% or €92.3 billion (Chart III.3).

[23] On a consolidated basis, the stock of NPLs stood at €15.5 billion, down by 19.9% or €3.9 billion from €19.4 billion at the end of 2021.

Chart III.3 Comparison of half-year 2022 NPL stock per portfolio with the March 2016 peak

(in billion euro)

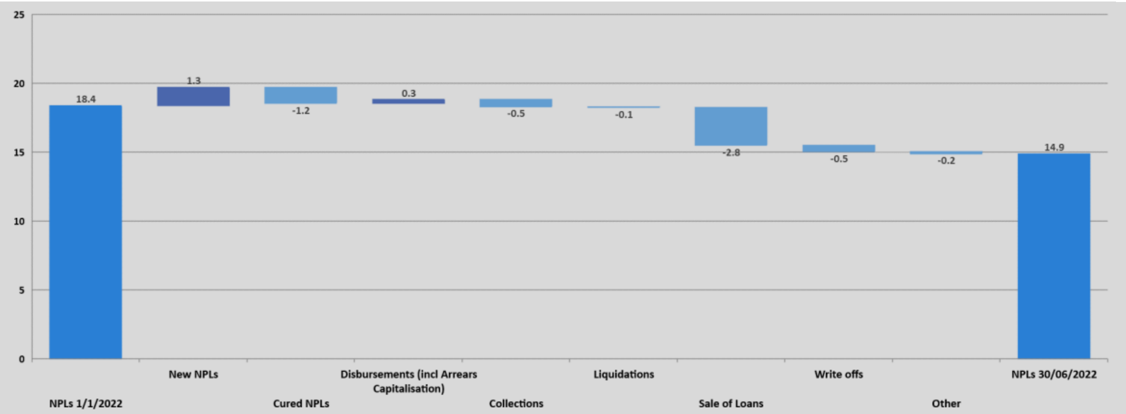


Source: Bank of Greece.

The decline in NPLs in the first half of 2022 is mainly due to their classification into Held for sale, pending the completion of the sale transactions through securitisation, as well as to outright sales of loans on the secondary market, while to a lesser extent it is due to collections and write-offs (see Chart III.4). The securitisation transactions are to take advantage of the Hellenic Asset Protection Scheme (HAPS) for the granting of guarantees by the Greek State on the senior tranche securities[24] ("Hercules" plan).[25]

Chart III.4 Flows of half-year 2022 non-performing loans

(in billion euro)



Note 1: The categories "Liquidations" and "Sale of Loans" include any partial write-off amounts related to these categories. The "Write offs" category includes pure loan write-offs.

Note 2: NPL sales transactions, whether outright or through securitisations, are included in the categories "Loan sales" and "Other".

Source: Bank of Greece.

[24] See. Box V.1 "Securitisations as a tool to reduce banks' non-performing loans (NPLs)" (Financial Stability Report – May 2022) (FINANCIAL_STABILITY_REVIEW_MAY_2022.pdf).

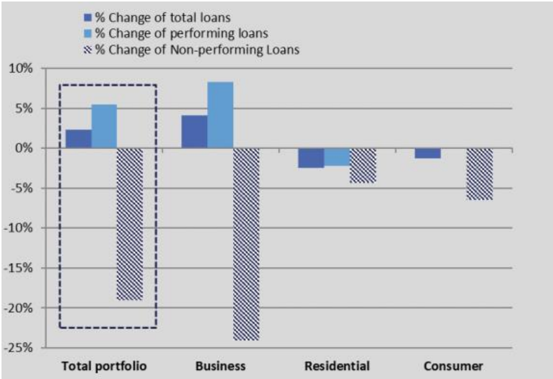
[25] The "Hercules" plan was to expire in October 2022 and a new extension is being considered. It should be noted that as at 30.6.2022, the total stock of NPLs included in the plan stood to €47.9 billion, while the amount of guarantees granted by the Greek State amounted to €18.7 billion.

However, it should be noted that the transfer of NPLs out of the banking sector does not automatically mean the removal of debt from the economy. The debt remains and is now managed by credit servicing firms (CSFs). The smooth functioning of the NPL secondary market is therefore key to a definitive debt resolution and to this end the effective use of all available tools is a prerequisite. Rehabilitation of borrowers with viable and bankable investment plans should be put forward as an option that can help towards both a definitive resolution of private debt overhang and the growth of the real economy.

The stock of total outstanding loans amounted to €147.5 billion, recording a slight increase of 2.3%, mainly coming from the business loan portfolio (+4.1%). In the same vein, the total stock of performing loans increased by 5.5%, also due to the business loan portfolio (+8.3%) (see Chart III.5).

Chart III.5 Percentage change of Greek banks' total (performing and non-performing) loans per portfolio in 2021

(%)



Source: Bank of Greece.

The ratio of NPLs to total loans at the end of the first half of 2022 stood at 10.1%, down from 12.8% in December 2021. This reduction reflected the progress achieved towards cleaning up bank balance sheets. It is worth noting that all four significant institutions have attained their operational target of a single-digit NPL ratio by end-2022. However, the NPL ratio of less significant institutions (LSIs) is very high, at 49.7% (which also relates to the unsuitability of the government guarantee scheme (HAPS) for the vast majority of smaller banks).

In addition, the system-wide NPL ratio remains a multiple of the European average (June 2022: 1.8%[26]), implying that banks must continue and step up their efforts to reduce their existing NPL stock, especially in the light of emerging challenges.

The protracted war in Ukraine, with the ensuing energy crisis, has been a crucial factor behind the increase in imported inflationary pressures, weighing heavily on household real disposable income and business operating costs. The strong economic growth recorded on the basis of data for the first half of 2022 has helped to alleviate pressures. However, the normalisation of the ECB’s monetary policy, resulting in a higher interest rate environment, clearly indicates that both the cost of financing and the debt repayment capacity of households and corporations will be adversely affected. This environment, combined with weaker near-term economic growth prospects, would again affect the quality of banks’ loan portfolios due to the creation of new NPLs. The amount of new NPLs is difficult to estimate though, amid uncertainty about the evolution of parameters related to the geopolitical and energy-related crisis, especially in the event that the crisis should prove more prolonged than expected or escalate further.

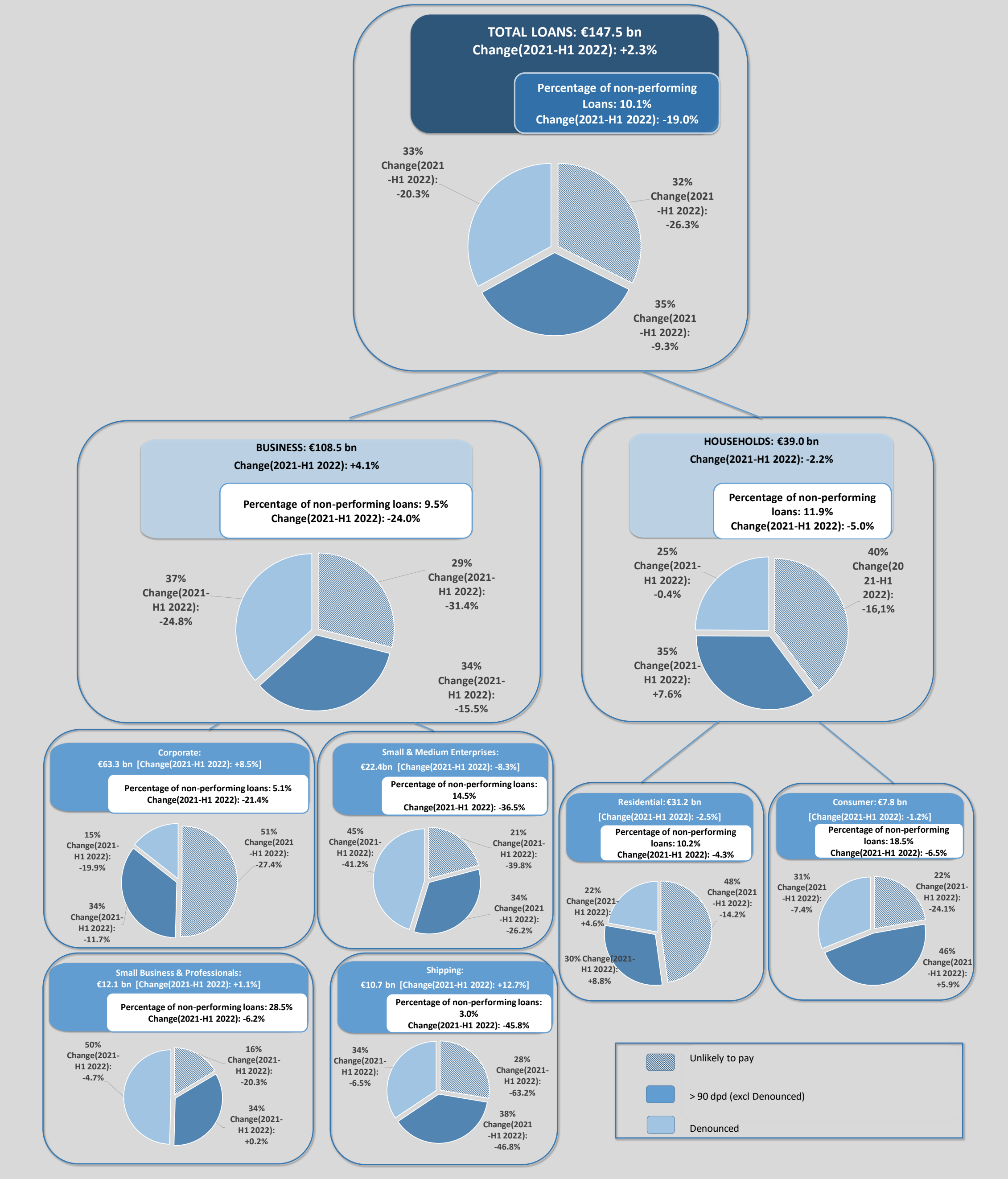
[26]Source: European Banking Authority, Risk Dashboard, Q2 2022 [EBA Dashboard - Q2 2022.pdf (europa.eu)]

Structure and evolution of non-performing loans (NPLs)

A significant decline in the stock of NPLs was recorded across loan portfolios in half-year 2022, while the decrease of NPLs for business loans was particularly strong (see Chart III.6).

Chart III.6 Structure and evolution of Greek commercial banks' total loans and NPLs by loan portfolio category in half-year 2022

(in billion euro, percentage %)



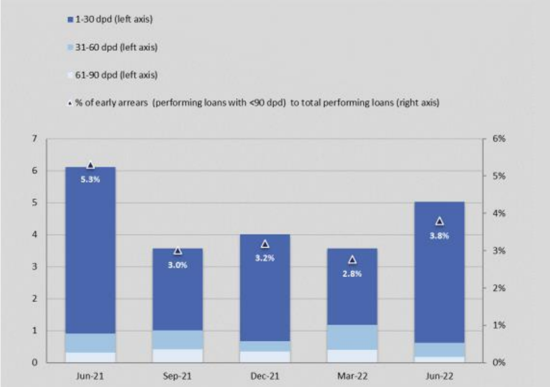
Source: Bank of Greece.

Unlikely-to-pay loans amounted to €4.8 billion (32% of NPLs) at half-year 2022, down by 26.3% compared to end-2021 (€6.5 billion).

Loans that are 1 to 90 days past due (early arrears) increased by 25.3% to €5.0 billion in half-year 2022, from €4.0 billion in 2021. This rise comes mainly from business loans that are overdue by 1 to 30 days. In addition, the ratio of loans that are overdue by 1 to 90 days to total performing loans increased further to 3.8% in half-year 2022, compared with 3.2% at end-2021 (see Chart III.7).

Chart III.7 Structure of early arrears per arrears bucket and the ratio of early arrears to total performing loans

(in billion euro, %)



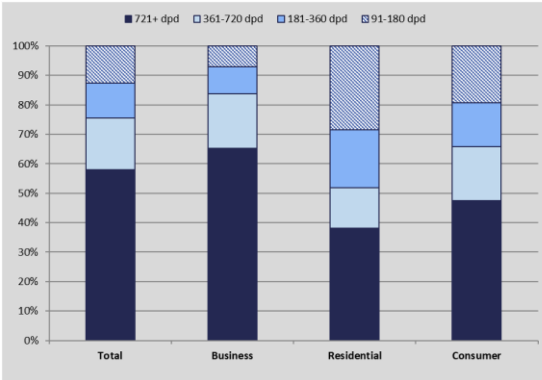
Source: Bank of Greece.

Loans over 90 days past due (excluding denounced loans) declined further in half-year 2022 to €5.2 billion (34.7% of NPLs), down by 9.3% compared to end-2021 (€5.7 billion). However, it should be pointed out that 75.5% of NPLs in this category are more than one year past due, higher than at end-2021 (70.4%). The share of such NPLs in business loans is 83.8%, in mortgage loans 51.9% and in consumer loans 65.8%.

An analysis of the structure of NPL balances in the arrears bucket of more than 90 days past due per portfolio at half-year 2022 is presented in Chart III.8.

Chart III.8 NPLs' balance structure in the arrears bucket of more than 90 days past due (excluding denounced loans) per portfolio

(%)



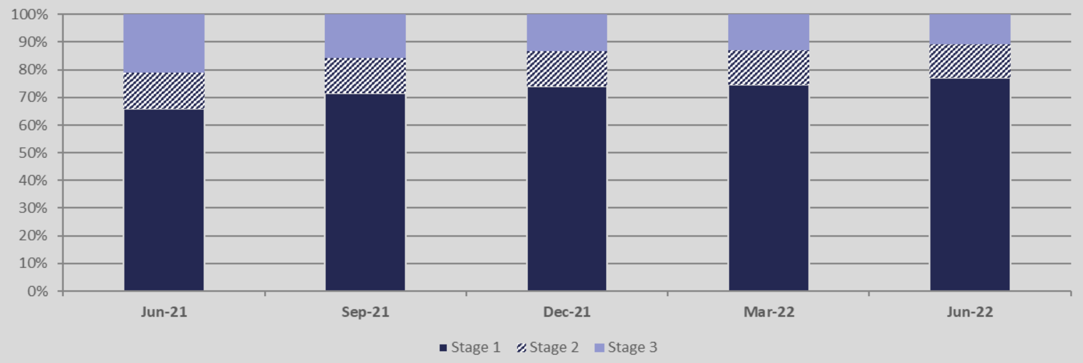
Source: Bank of Greece.

At the same time, 33.0% of NPLs relate to denounced loans, which in half-year 2022 amounted to €4.9 billion, down by 20.3% compared to end-2021 (€6.2 billion), mainly due to sales transactions through securitisation.

Finally, the improvement in portfolio quality is reflected in the allocation of the total loan stock per stage, according to the level of credit risk, in accordance with International Financial Reporting Standard 9 (IFRS 9), in 2022 compared to 2021, which is mainly due to a decrease in the total NPL stock included in stage 3 (see Chart III.9).

Chart III.9 Allocation of the total loan stock per stage according to IFRS 9

(percentage %)



Source: Bank of Greece.

Indicators for the monitoring and evaluation of NPLs

Turning to the indicators for the monitoring and evaluation of the management of NPLs for half-year 2022, the following are observed (see Table III.3):

Table III.3 Total portfolio – Key indicators

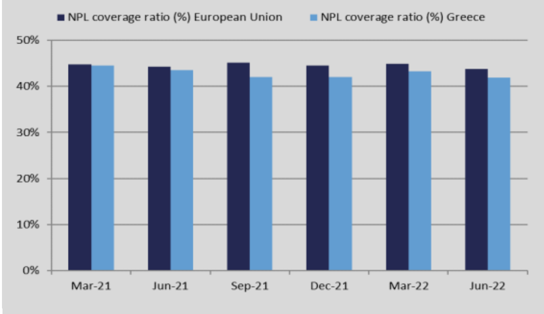
(%, on-balance-sheet items)	Dec. 2021	Jun. 2022
Credit quality indicators		
NPL ratio	**12.8**	**10.1**
> 90 days past due	8.2	6.8
NPL structure		
Unlikely-to-pay	**35.5**	**32.3**
Past due > 90 days	**31.0**	**34.7**
91-180 days	4.6	4.4
181-360 days	4.7	4.1
>1 year	21.6	26.2
Denounced loans	**33.5**	**33.0**
Forborne to total loans		
Forborne loans	**10.6**	**8.7**
Forborne performing loans	5.6	4.9
Forborne non-performing loans	5.0	3.8
Coverage ratios and write-offs		
Coverage ratio of NPLs	**42.1**	**41.9**
Total write-offs to total loans	**1.3**	**0.3**
Total write-offs to NPLs	**10.2**	**3.0**
NPL collateral coverage ratio	**57.5**	**57.1**
Collateral coverage on forborne non-performing loans	65.8	65.9
Total NPL coverage (provisions + collaterals)	99.6	99.0
Quarterly default and cure rates		
Default rate	0.6	0.6
Cure rate	3.3	3.2
Credit risk cost		
Loan-loss impairment to net loans	5.7	1.3
Loan-loss impairment to total assets	2.6	0.6

Source: Bank of Greece.

- The NPL coverage ratio stood at 41.9% in half-year 2022, from 42.1% at end-2021. In particular, the cumulative provisions for the coverage of NPLs established by banks until the end of half-year 2022 amounted to €6.2 billion, compared with €7.7 billion at end-2021. This decrease is mainly due to the NPL securitisation and sale transactions that took place during the half-year. It should be pointed out that the level of the coverage ratio of NPLs in Greece is below the EU average (Q2 2022: 43.8%[27]) (see Chart III.10).

Chart III.10 NPL coverage ratio

(percentage %)

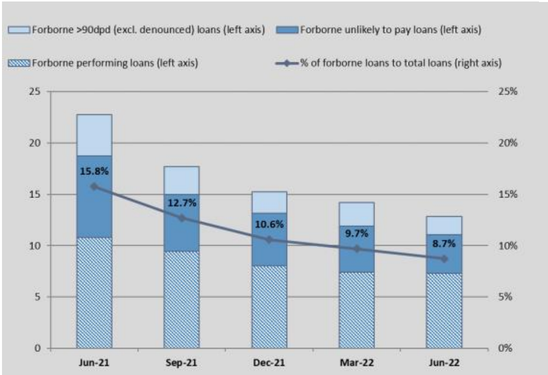


Sources: Bank of Greece, European Banking Authority.

- The collateral coverage ratio for NPLs amounted to 57.1%, having declined marginally compared to end-2021 (57.5%), while the collateral coverage ratio on forborne non-performing loans came to 65.9%, against 65.8% at end-2021.
- Total forborne loans[28] fell significantly to €12.8 billion, representing 8.7% of total loans in half-year 2022, compared with 10.6% at end-2021 (€15.2 billion) (see Chart III.11). The decrease of forborne loans since June 2021 is mainly due to securitisations and sales of NPLs. It should be noted that 13.8% of the already forborne loans are in arrears by more than 90 days, unchanged from end-2021.
- 65.7% of NPLs over 90 days past due have not been forborne, compared with 63.3% at end-2021, while the rates for mortgage, consumer and business loans are 63.8%, 77.0% and 64.1%, respectively.
- Loan write-offs amounted to €0.5 billion, of which €0.2 billion relate to denounced – mainly corporate – loans.
- During half-year 2022, the flows from performing to non-performing loans were €1.329 million, while the flows from non-performing to performing loans were €1.179 million, resulting in positive net flows of NPLs of €150 million. It is worth noting that the trend observed in the first quarter of 2022 for negative net flows of NPLs was reversed in the second quarter, so these flows are positive again.

Chart III. 11 Evolution of forborne loans per category and evolution of the ratio of forborne loans to total loans

(in billion euro, %)



Source: Bank of Greece.

- It should be noted that €0.5 billion, i.e. 3.1% of NPLs, relate to loans that are under legal protection status and for which the issuance of a final court decision is pending. €0.2 billion of these relate to loans that have already been denounced. Loans in this category concern either

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[27] Source: European Banking Authority, Risk Dashboard, Q2 2022 [EBA Dashboard - Q2 2022.pdf (europa.eu)]

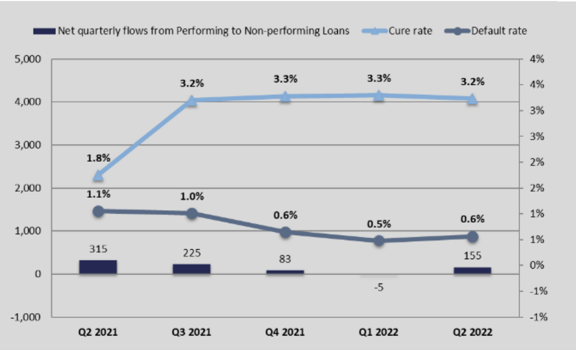
[28] Bank of Greece Executive Committee Act 175/2/29.7.2020 provides an indicative list of possible forbearance solutions for performing and non-performing loans.

natural persons (e.g. Law 3869/2010[29]) or legal entities (e.g. Law 4307/2014, Bankruptcy Code). Regarding the sub-categories, approximately 5.6% of non-performing mortgages are subject to legal protection, while the corresponding percentage for consumer loans is 4.5%.

- The cure rate stood at 3.2% in the second quarter of 2022 and the default rate at 0.6% (see Chart III.12). Looking into individual loan portfolio categories, the highest cure rate (8.1%) is recorded in mortgage loans and the lowest (1.9%) in corporate loans.
- The largest part of forborne loans concerns long-term arrangements representing 65.8% of total forborne loans, followed by short-term arrangements with 31.5% and total closure actions with 2.7% (Chart III.13). It is worth mentioning that the percentage of forborne non-performing loans for half-year 2022 remains high (43.7%), although it appears slightly improved compared to 2021 (47.5%).

Chart III.12 Evolution of net quarterly flows from performing to non-performing loans, default rate and cure rate

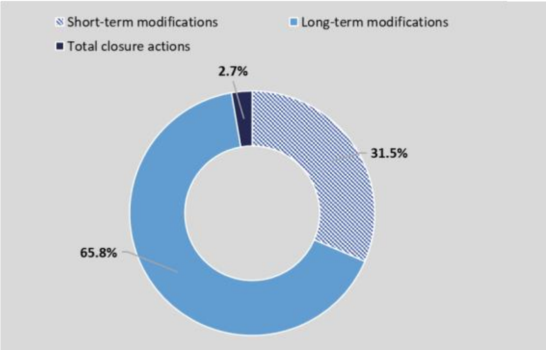
(in billion euro, %)



Source: Bank of Greece.

Chart III.13 Allocation of forborne loans balance by modification type

(in billion euro)



Source: Bank of Greece.

Credit risk per sector

In half-year 2022, financing to businesses, according to on-balance-sheet data, amounted to €108.5 billion, accounting for about 74% of the total financing of Greek credit institutions to the economy. The NPL ratio in the business portfolio (9.5%, for the first time at single-digit level) continues to be mainly influenced by the high ratio in the category of small and medium-sized enterprises (SMEs) (14.5%) and Small Business Professionals (SBPs) (28.5%).

As regards the sectoral breakdown of financing to the Greek economy, the largest share concerns financial corporations (25% of total corporate financing, compared with 26% in 2021). The NPL ratio for this sector is lower than the corresponding average ratio for corporate loans (2.9%, compared with 3.1% for 2021).

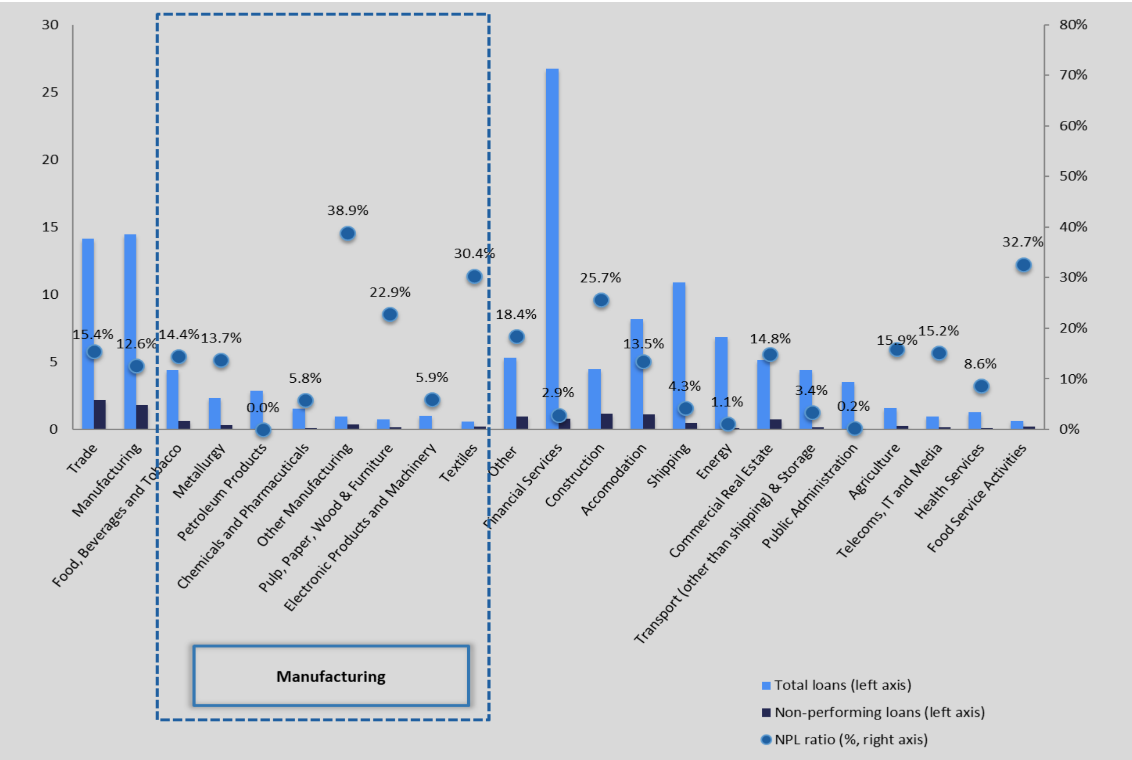
The highest NPL ratios are recorded in the sectors of Food Service Activities (32.7%), Construction (25.7%), Agriculture (15.9%), Trade (15.4%), Telecoms, IT and Media (15.2%) and Commercial Real Estate (14.8%). High NPL ratios are also recorded in sub-sectors of Manufacturing, such as Textiles (30.4%), Pulp, Paper, Wood & Furniture (22.9%) and Other Manufacturing (38.9%), which, however, concern lower lending balances and therefore have a lower effect on

[29] The law, last amended in September 2018, provides that banking secrecy will be lifted with respect to borrowers benefiting from its provisions, who will cease to qualify for protection if they raise any objection. At the same time, borrowers will declare that they authorise any credit institution to disclose to their creditors the data of any bank accounts and products, permitting them to process and exchange the data they hold or receive from credit institutions.

the overall NPL ratio of the Manufacturing sector. The lowest ratios are indicatively in Energy (1.1%) and Financial Services (2.9%) (see Chart III.14).

Chart III.14 Sectoral breakdown of business loans and NPLs for half-year 2022

(in billion euro, percentages %)



Source: Bank of Greece.

Overall, it should be noted that the environment shaped by the normalisation of monetary policy, with rising interest rates and rising funding costs, compounded by the energy crisis, ongoing disruptions in supply chains and mounting inflationary pressures, is weighing on the operating costs of businesses. The impact should be heavier on the manufacturing sectors, where operating costs are directly related to the prices of raw materials and energy; however, it is clear that all economic activity will be affected. In light of the above, any quantitative assessment of any new NPLs that may arise is surrounded by great uncertainty and is extremely precarious.

2.2 LIQUIDITY RISK

The liquidity of the Greek banking system in the period January-September 2022 presented a mixed picture. In an environment of rising Greek bond yields and expectations of further interest rate increases by the ECB, Greek banks' access to capital markets became more difficult. During this period, deposits continued their upward trend, albeit at a lower rate than in the previous year, reflecting strong economic growth, credit expansion, but also the negative impact of imported high inflation.

Deposits from corporations and households amounted to €185.5 billion in September 2022 (December 2021: €180 billion, June 2022: €182.3 billion), reaching a new ten-year high. This positive change is mainly due to an increase in saving deposits and is linked both to the significant recovery of the Greek economy and to an increase in bank lending, which both contributed to the strengthening of depositors' saving capacity. Similarly, deposits from non-financial corporations stood at €41.9 billion in September 2022 (December 2021: €40.3 billion, June 2022: €40.9 billion), showing a slowdown in their growth rate since the beginning of the year, as the large increase in energy prices and operating costs forced corporations to draw down on their savings.

Deposit rates remained almost unchanged and the weighted average deposit/repo rate was 0.04% in September 2022 (December 2021: 0.04%, June 2022: 0.03%). Similarly, the average interest rate offered to households and non-financial corporations was 0.05% and 0.02% respectively in September 2022 (December 2021: 0.05% and 0.01%, June 2022: 0.04% and 0.00%).

Bank funding continues to rely mainly on deposits and Eurosystem funding, while in 2022 debt securities issuance also contributed (see Chart III.15). Specifically, in September 2022, deposits and repos from non-MFIs amounted to €226.1 billion, down from €217.7 billion at the end of 2021. Over the same period, Eurosystem funding of Greek banks remained stable at €50.7 billion, while debt securities issued in September 2022 increased to €8.7 billion from €8.0 billion at end-2021 following the issuance of a €500 million senior preferred bond by Eurobank.[30]

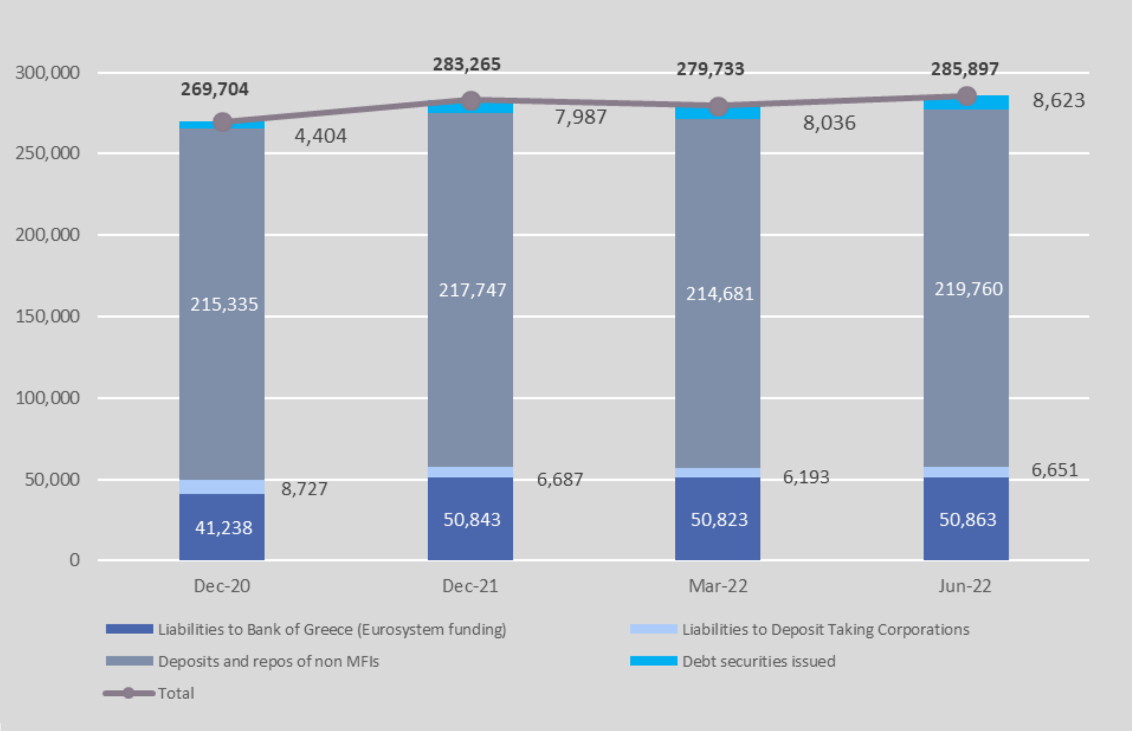
The access of Greek banks to the Eurosystem's refinancing operations – on very favourable terms – has improved their interbank funding costs, as has been shown so far by the path of the interbank funding rate,[31] which, however, has increased from July 2022 onwards. In addition, repos continue to remain one of the most important sources of funding for Greek banks, as they are characterised by smooth refinancing, an increased number of counterparties and improved pricing. It should be noted that the volume of interbank repo transactions is likely to increase from December 2022 onwards (with the gradual early repayment as well as the expiry of the Eurosystem's targeted longer-term refinancing operations TLTRO III).

[30] In October 2022, Alpha Bank completed the issuance of a senior preferred bond of €400 million.

[31] The Euro Short-Term Rate (€STR) reflects the wholesale euro unsecured overnight borrowing costs of banks located in the euro area. The €STR is published on each TARGET2 business day based on transactions conducted and settled on the previous TARGET2 business day (the reporting date "T") with a maturity date of T+1, which are deemed to have been executed at arm's length and thus reflect market rates in an unbiased way.

Chart III.15 Sources of funding of Greek credit institutions

(mln euro)



Source: Bank of Greece (supervisory data).

In June 2022, the ECB announced its decision to end net purchases of securities under the Asset Purchase Programme (APP) from 1 July 2022. However, it retained the possibility of fully reinvesting the principal payments from maturing securities purchased under the APP for an extended period of time and for as long as necessary to maintain ample liquidity conditions and an appropriate monetary policy stance. In addition, with regard to the Pandemic Emergency Purchase Programme (PEPP), the ECB intends to reinvest the principal payments from maturing securities purchased under this programme at least until the end of 2024.

In particular, it was decided to allow the ECB to buy bonds issued by the Hellenic Republic over and above rollovers of redemptions in order to avoid an interruption of purchases in that jurisdiction, which could impair the transmission of monetary policy to the Greek economy while it is still recovering from the fallout from the pandemic.[32]

Subsequently, in July 2022, the Governing Council of the ECB approved the Transmission Protection Instrument (TPI).[33] This decision was based on the Governing Council's updated assessment of inflation risks and the reinforced support provided by the TPI for the effective transmission of monetary policy. It will support the return of inflation to the Governing Council's medium-term target of 2% by strengthening the anchoring of inflation expectations and by ensuring that demand conditions adjust to deliver its inflation target in the medium term. In particular, as the Governing Council continues normalising monetary policy, the TPI will ensure that the monetary

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[32] ECB monetary policy decision June 2022

[33] TPI purchases would be focused on public sector securities (marketable debt securities issued by central and regional governments as well as agencies, as defined by the ECB) with a remaining maturity of between one and ten years.

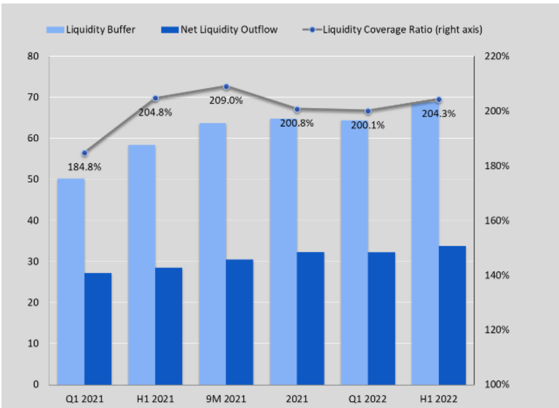
policy stance is transmitted smoothly across all euro area countries. The singleness of the Governing Council's monetary policy is a precondition for the ECB to be able to deliver on its price stability mandate. The TPI will be an addition to the ECB's toolkit and can be activated to counter unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across the euro area. In any case, PEPP reinvestment flexibility will continue to be the first line of defence to counter risks to the transmission mechanism related to the pandemic.[34]

Finally, in October 2022, the ECB raised the interest rate on its main refinancing operations to 2%. At the same time, it decided to change the terms and conditions of the TLTRO-III programme and to adjust the remuneration of minimum reserves.[35] In particular, from 23 November 2022, the interest rate on TLTRO III operations will be indexed to the average applicable key ECB interest rates, while three additional voluntary early repayment dates will be introduced to provide TLTRO III participants with additional opportunities to partly, or fully, repay their respective TLTRO III borrowings before their maturity. In addition, as from 21 December 2022, the remuneration of minimum reserves is set at the ECB's deposit facility rate instead of the main refinancing operations rate.

Liquidity ratios

Chart III.16 Liquidity Coverage Ratio - LCR

(%, billion euro)



Source: Bank of Greece.

In the first half of 2022, Greek banks continued their efforts to enhance their liquidity by improving the composition of their portfolios with high-quality, unencumbered liquid assets. As a result, banks' Liquidity Coverage Ratio (LCR) stood at 204.3% at system-wide level, up by 3.5 percentage points compared to end-2021 (December 2021: 200.8%), remaining relatively stable compared to H1 2021 (June 2021: 204.8%) (see Chart III.16). This increase is mainly due to a 6.2% strengthening in the liquidity buffer held by banks. It should be noted that the Liquidity Coverage Ratio of Greek banks remained significantly higher than the corresponding European average for banks in the Single Supervisory Mechanism (164.4% in H1 2022).[36]

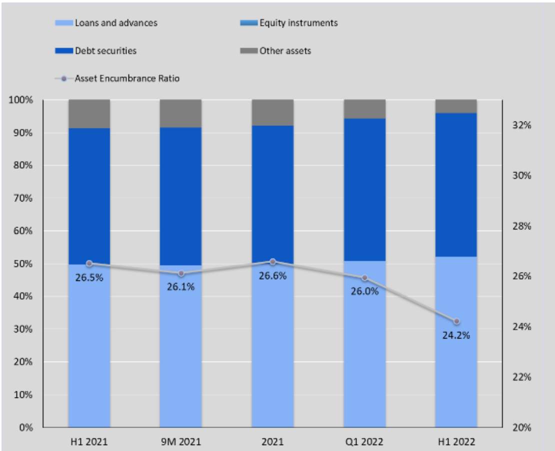
In addition, the Net Stable Funding Ratio (NSFR) stood at 127% in June 2022, from 124% at the end of 2021, reflecting the adequate coverage of banks' long-term liabilities without requiring excessive use of short-term funding.

[34] ECB monetary policy decision July 2022
[35] ECB monetary policy decision October 2022
[36] Supervisory Banking Statistics (SSM 2022)

The Asset Encumbrance Ratio (AER) in the first half of 2022 decreased to 24.2%, from 26.6% at the end of 2021, remaining lower than the corresponding average of European Banking Authority banks (June 2022: 28.5%) (see Chart III.17). It should be noted that the decline in the ratio was a result of a decrease in the numerator – i.e. the amount of their encumbered assets – and a simultaneous increase in the denominator, i.e. banks' assets.

Chart III.17 Asset Encumbrance Ratio

(%)



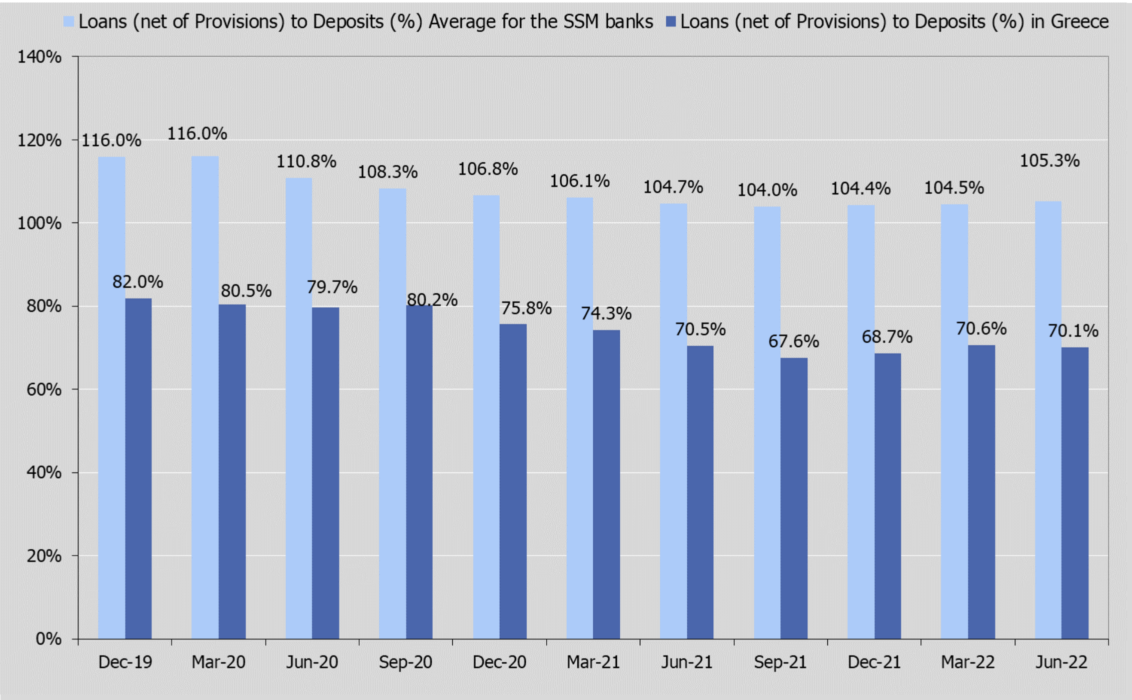
Source: Bank of Greece.

Turning to the structure of encumbered assets, the largest decrease was recorded in other assets (-€3.4 billion), while debt securities declined by €0.6 billion and loans and advances by €1.1 billion.

The deleveraging of the loan portfolio of Greek banks, which had been observed in 2021, was halted in the first half of 2022. The loan-to-deposit ratio was lower (June 2022: 70.1%[37]) than the European average for banks in the Single Supervisory Mechanism (June 2022: 105.3%[38]), due to the slower growth of deposits compared to loans (see Chart III.18).

Chart III.18 Loans (net of provisions) to Deposits of Greek banks (consolidated)

(%)



Sources: Bank of Greece and Supervisory Banking Statistics.

[37] Bank of Greece – According to supervisory data submitted by banks.
[38] Supervisory Banking Statistics (SSM 2022).

Minimum requirements for own funds and eligible liabilities

Banks have already taken initiatives to meet the Minimum Requirements for Own Funds and Eligible Liabilities (MREL) by the end of 2025. In particular, banks have issued Tier 2 bonds, green bonds and senior unsecured bonds (see Table III.4), while the observed decline in risk-weighted assets also plays an important role. Taking into account the MREL framework, an acceleration in the issuance of subordinated and senior preferred bonds is expected in the coming years. In this context, in May 2022, Eurobank issued a €500 million senior preferred bond with an interest rate of 4.375% and, in October 2022, Alpha Bank raised €400 million at an interest rate of 7% by issuing a similar bond.

Table III.4 Issuances of Greek banks' bonds

Senior Preferred Bonds	Issue Amount (million euro)	Coupon (%)	Issue Date	Maturity Date
Alpha Bank Senior Pref. 2024	400	3	14/12/2021	14/2/2024
Alpha Bank Senior Pref. 2028	500	2.5	23/9/2021	23/3/2028
Alpha Bank Senior Pref. 2025	400	7	1/11/2022	1/11/2025
Eurobank Senior Pref. 2028	500	2.25	14/9/2021	14/3/2028
Eurobank Senior Pref. 2027	500	2	5/5/2021	5/5/2027
Eurobank Senior Pref. 2025	500	4.375	9/6/2022	9/3/2025
NBG Senior Pref.	500	2.75	8/10/2020	8/10/2026
Piraeus Senior Pref.	500	3.875	3/11/2021	3/11/2027
Tier II Bonds	**Issue Amount (million euro)**	**Coupon (%)**	**Issue Date**	**Maturity Date**
Alpha Bank Subordinated	500	5.5	11/3/2021	11/6/2031
Alpha Bank Subordinated	500	4.25	13/2/2020	13/2/2030
NBG Tier II	400	8.25	18/7/2019	18/7/2029
Piraeus Bank Tier II	400	9.75	26/6/2019	26/6/2029
Piraeus Bank Subordinated	500	5.5	19/2/2020	19/2/2030
Piraeus Bank Junior Subordinated	600	8.75	16/6/2021	Perpetual

Source: Bank of Greece.

Box III.1 The digital euro as a future means of payment

Digital innovation has brought about important changes in the financial sector, such as the increased use of digital payments, a decline in the use of cash and the emergence of crypto-assets and stablecoins that could potentially rival both commercial bank and central bank money.[1]

In order to respond to these challenges and to preserve the role of central bank money in an increasingly digital economy, several central banks around the world are exploring the issuance of central bank digital currencies (CBDC). According to a BIS study,[2] in 2021, 90% of the 81 central banks surveyed were engaged in some work on CBDC, while some had launched a digital currency for use by the general public (retail BDC)[3] or a pilot digital version of their respective currency (such as China).

The ECB, in October 2021, launched a two-year "investigation phase" on the issuance of a digital euro (a retail CBDC). During the first year of this phase, the ECB Governing Council approved an initial set of basic design choices for a digital euro, and in its second year, which has just begun, is going to analyse additional features. The overall design will be reviewed before the end of the investigation phase, and in October 2023 the Governing Council could decide to start a "realisation phase" of the digital euro, developing and testing technical solutions and business arrangements. This phase could last around three years. At the same time, in the first quarter of 2023, the European Commission is expected to publish a proposal for a regulation to establish and govern essential aspects of the digital euro as a new form of central bank money.

Among the key objectives of a digital euro are to: (a) preserve the role of public money as the monetary anchor for the payment system; (b) address and support the digital transformation in payments, providing a form of central bank money for digital payments that would preserve the coexistence and complementarity of private and public money; (c) offer a free, riskless and accessible form of central bank money for digital payments – in the same way as cash is used for physical payments – along with private forms of money (payments with bank cards or electronic payments constitute transfers of private money); and (d) support strategic autonomy and economic efficiency in the euro area.

In addition, a digital euro could enhance the safety of digital payments and provide further payments choices, while contributing to a reduction in transaction costs.[4]

It should be mentioned that there is still uncertainty about the final design of the digital euro and its distribution model, which require careful consideration in order to minimise unintended consequences for monetary policy, financial stability and financial intermediation.

[1] Central bank money/public money: liabilities of a central bank, in the form of either banknotes or bank deposits held at a central bank. Commercial bank money/private money: commercial bank liabilities that take the form of deposits held at a commercial bank (source: ECB). See also Bank of Greece: The digital euro and the importance of central bank money

[2] BIS Papers No. 125: "Gaining momentum – Results of the 2021 BIS survey on central bank digital currencies".

[3] ECB (April 2022), "Digital euro glossary".

[4] ECB – F. Panetta (June 2022), "The digital euro and the evolution of the financial system".

As regards financial stability, the digital euro could affect bank deposits in case of an outflow of deposits from credit institutions to the digital currency. This would increase the cost of funding as banks would try to offset the outflow of deposits with new bond issues, reduce bank profitability and potentially affect lending to the economy.[5]

However, these risks can be mitigated by introducing carefully designed safeguards. In particular, with regard to the design of the digital euro, the integration of specific tools is being considered to limit the use of the digital euro as a form of investment. Such tools may include (a) quantitative limits on the holdings of digital euro that would limit individual take-up and the possibility of deposit conversion; or (b) negative interest rates on deposits in digital euro above a certain threshold that would make large digital euro holdings unattractive compared to other highly liquid and low-risk assets. In addition, banks are expected to remain the main pillar of digital operations, by opening digital accounts and wallets in digital euro and providing all services related to the management of funds, as well as transactions in digital euro.[6]

In conclusion, in recent years research has progressed from the first definitions of CBDC to the study of its effects on the financial system and monetary policy, as well as the analysis of its potential design features.

However, further research is needed in various areas in order to maximise the benefits of a digital euro and avoid unintended consequences. Also, the economic conditions that will prevail when the digital euro is issued (e.g. interest rates, level of excess reserves, etc.) and the availability of alternative digital means of payment will have to be taken into consideration.

This research will form an essential part of the analysis that will guide decisions about the digital euro. In addition, the understanding of the potential effects of the digital euro on financial stability will be enhanced by observations of early CBDC issuances and pilot digital currencies globally.

[5] ECB – F. Panetta (April 2022), "More than an intellectual game: exploring the monetary policy and financial stability implications of central bank digital currencies"
[6] ECB – F. Panetta (September 2022), "Building on our strengths: the role of the public and private sectors in the digital euro ecosystem"

2.3 MARKET RISK

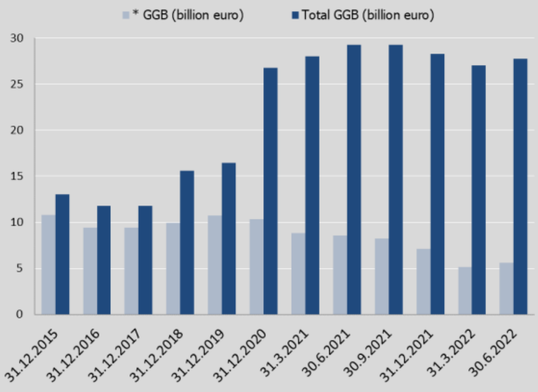
In the first half of 2022, the course of international capital markets affected the portfolios of Greek banks. More specifically, Greek government bonds held in banks' portfolios which are valued at fair value were negatively affected by the decline in prices. However, the largest part (around 80%) of this portfolio are held-to-maturity securities and are therefore not affected by daily price movements, while it should also be noted that banks also apply interest rate hedging policies. Overall, the trend towards lower bond market valuations is expected to persist and possibly intensify in the near future, as long as the ECB normalises its monetary policy by gradually raising intervention rates to levels that will ensure a timely return of inflation to the medium-term target of 2%. In addition, an environment of high interest rate expectations, inflationary pressures and heightened geopolitical risks is expected to contribute negatively in this direction.

Exposure to Greek government bonds[39]

Greek government bonds (including Treasury bills) held by Greek banks in their portfolios in the first half of 2022 amounted to €27.7 billion (8.4% of their assets), down by around €574 million (or 2%) compared to the end of 2021.

In particular, the value of the portfolio of Greek government securities held by the banking sector in portfolios valued at fair value fell to €5.6 billion in the first half of 2022, compared with €7.1 billion in 2021 (see Table III.5 and Chart III.19), down by 21%. The value of this portfolio as a percentage of banks' total assets declined to 1.7% from 2.1% in 2021.[40]

Chart III.19 Greek Government Bond Portfolio



* G.G.B.: refers to Greek Government Bonds that are valued as available-for-sale, at fair value & held for trading purposes. As from 1.1.2018, with the implementation of IFRS 9, it relates to fair value through other comprehensive income & held for trading purposes.

Source: Bank of Greece.

It should be noted that, in the context of examining the performance of this bonds portfolio, according to its composition in the first half of 2022,[41] a potential increase in interest rates by 1 basis point (bp) in the entire portfolio would result in a loss of €21.7 million for all Greek banks, compared with a loss of €33.7 million at the end of 2021. Similarly, the impact of a potential 1 bp increase in credit spreads[42] on the total portfolio would entail a loss of €23.6 million in H1 2022, compared with a loss of €37.5 million at the end of 2021.

Table III.5 Banking sector investments

(in million euro)	31.12.2020	30.06.2021	31.12.2021	30.6.2022	% Difference 30.6.2022 – 31.12.2021
Total					
Greek government bonds (including Treasury bills)	26,755.0	29,242.6	28,302.7	27,728.4	-2.0%
of which Treasury Bills*	3,260.1	3,197.2	1,458.5	2,593.6	78.0%
Corporate bonds	1,888.0	2,012.3	2,679.5	3,178.8	18.6%
Equities	492.4	385.3	679.0	419.7	-38.2%
Mutual fund units/shares	115.5	124.3	138.5	178.3	28.7%
Other holdings	719.6	725.0	1,108.2	969.8	-12.5%
Portfolios valued at current value					
Greek government bonds (including Treasury bills)	10,306.7	8,540.3	7,098.6	5,615.4	-20.9%
Corporate bonds	1,796.8	1,911.8	2,449.6	1,374.6	-43.9%
Equities	492.4	385.3	679.0	419.7	-38.2%
Mutual fund units/shares	115.5	124.3	138.5	178.3	28.7%

Source: Bank of Greece.
* Hellenic Treasury Bills.

[39] According to data submitted by banks in June 2022.
[40] The portfolios measured at fair value refer to the portfolios classified as Fair Value Through Other Comprehensive Income (FVTOCI), Fair Value Through Profit and Loss (FVTPL) and Held For Trading (HFT) portfolios.
[41] According to data submitted by banks in June 2022.
[42] This refers to the calculation of the change in the present value of positions due to an increase in credit spreads by one basis point, according to supervisory report CS01. It refers to the credit risk of bonds and credit derivatives.

Exposure to corporate bonds[43]

During H1 2022, the value of corporate bonds held by banks increased from €2.7 billion to €3.2 billion, due to the purchase of Greek corporate bonds issued mainly by companies active in the construction and energy sector. However, in H1 2022, corporate bonds valued at fair value decreased significantly by 44% to €1.4 billion, from €2.4 billion at the end of 2021, as a result of banks' efforts to avoid losses in the trading portfolio due to the decline in bond prices. As a result, the ratio of corporate bonds valued at fair value to total banking sector assets fell to just 0.4% in June 2022.

Exposure to equities, mutual funds and other holdings[44]

The value of equities, mutual fund shares/units and other holdings as a percentage of the banking sector's total assets decreased in 2022. More specifically, in June 2022 banks held equities, other holdings and mutual fund shares/units with a total value of €1.5 billion, or 0.47% of total banking sector assets, compared with €1.9 billion at the end of 2021, or 0.65% of total assets (see Table III.5). This decline is mainly due to a reduction in holdings of equities and other holdings by the Greek banking system in the first half of the year.

Exposure to foreign exchange risk[45]

Banks' foreign exchange exposure remained almost fully hedged in H1 2022, as it was at the end of 2021, and rose from -€312.5 million in December 2021 to -€320.1 million in June 2022. In particular, the hedge of banks' US dollar positions increased to -€295.2 million in H1 2022 from -€106.4 million in December 2021. In contrast, Swiss franc exposure rose from €47.5 million at the end of 2021 to €92.6 million in June 2022, with the strengthening of the Swiss currency against the euro contributing to higher foreign exchange risk.

Interest rate sensitivity of debt securities and derivatives[46]

An examination of the performance of the banking sector's securities and derivatives[47] portfolio shows that a 1 bp increase in interest rates, at the level of the trading portfolio, which is valued at fair value and amounts to €1.5 billion, would result in a loss of €5.3 million for all Greek banks, according to the composition of the portfolio in June 2022. Likewise, at the level of total securities and derivatives portfolios, a 1 bp increase in interest rates would cause a loss of €20.5 million, based on data for H1 2022. Similarly, the effect of a 1 bp increase in credit spreads would result in a loss of less than €1 million in the trading portfolio, while the overall loss for the banking system would amount to €38.4 million. Banks hold a portfolio of interest rate derivative products for financial hedging purposes, mainly of simple structure, which are mostly cleared through central counterparties or involve bilateral transactions governed by standardised 'counterparty credit risk' coverage contracts.

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[43] According to data submitted by banks in June 2022.
[44] According to data submitted by banks in June 2022.
[45] According to data submitted by banks in June 2022.
[46] According to data submitted by banks in June 2022.
[47] According to data submitted by banks in June 2022.

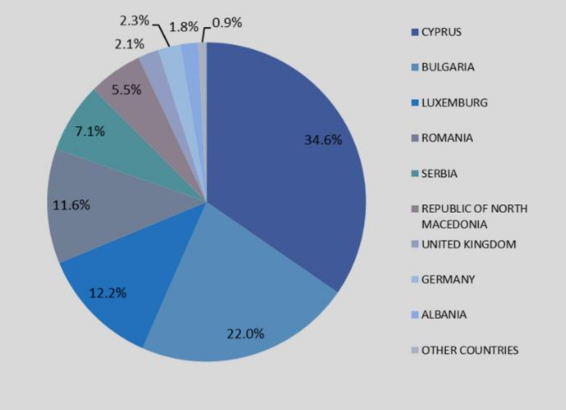
Capital requirements for market risk

Total capital requirements for market risk decreased to €273.8 million in H1 2022 from €345.1 million at the end of 2021. These capital requirements correspond to 63.6% for debt securities, 22.0% for foreign exchange, 7.5% for equity securities and 6.9% for commodities. Weighted exposures to credit valuation adjustment risk for major banks, on a solo basis, amounted to €368.5 million in H1 2022, from €343.6 million at the end of 2021. Similarly, capital requirements to cover credit valuation adjustment risk for the banking sector as a whole amounted to €29.5 million in H1 2022, compared with €28.1 million at the end of 2021.

2.4 INTERNATIONAL ACTIVITY

During the first half of 2022, Greek banking groups' cross-border activity remained unchanged. Greek banks' cross-border assets stood at €34.4 billion in June 2022, up by 0.5% from December 2021, while cross-border activities remained stable at 10.5% of the banking sector's total assets on a consolidated basis.[48]

Chart III.20 Distribution of Greek banking groups' cross-border assets (June 2022, %)



Source: Bank of Greece.

Broken down by region, South-East Europe (SE Europe)[49] accounts for 82.6% of total international activity business assets, mostly located in Cyprus and Bulgaria (see Chart III.20). Financial centres, namely Luxembourg, the United Kingdom and Germany, represent 16.6% thereof, led by Luxembourg. The share of SE Europe in Greek banks' external position in deposits and loans is even larger (90% and 83.3% respectively, see Table III.6), where the highest number of business units and staff are concentrated.

Profitability of bank subsidiaries and branches abroad increased significantly to €165 million and accounts for 6.2% of banking groups' pre-tax profits on a consolidated basis. Subsidiaries in Cyprus, Romania and Bulgaria made a significant contribution to profitability. Activities in Egypt, Luxembourg and Germany were also profitable. On the contrary, activities in Albania, Serbia and the United Kingdom were loss-making.

Loans in arrears[50] amounted to €661 million in June 2022, from €732 million in December 2021 (down by 10% on a comparable basis), representing 3.7% of the loan book. More specifically, as a percentage of total loans, the ratio of loans in arrears was 3.0% for corporate loans, 6.4% for consumer loans and 3.5% for mortgage loans. Mortgage loans in arrears declined by 2%, corporate loans in arrears by 18%, while consumer loans in arrears increased by 2%, on a comparable basis. The provisioning coverage ratio of loans in arrears rose to 78% (December 2021: 76%).

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[48] According to supervisory data submitted for the activity of credit institutions abroad through branches and subsidiaries in the context of Bank of Greece Governor's Act 2651/20.01.2012. The analysis in this section concerns only banking subsidiaries and branches abroad.
[49] The activity of Greek banks in SE Europe is conducted through subsidiaries and branches in Albania, Bulgaria, the Republic of North Macedonia, Cyprus, Romania and Serbia.
[50] Defined as loans more than 90 days past due.

Table III.6 Key figures of Greek banking groups abroad (June 2022)

(amounts in million euros)

Country	Assets	Gross Loans	Loans in arrears	% of loans in arrears	Deposits	Number of business units	Number of employees
SE Europe	**28,393**	**15,036**	**623**	**4.1%**	**22,186**	**547**	**8,807**
Albania	611	269	15	5.7%	530	34	366
Bulgaria	7,556	4,926	211	4.3%	6,373	192	3,010
Republic of North Macedonia	1,890	1,433	101	7.0%	1,374	64	954
Cyprus	11,896	3,919	121	3.1%	9,631	28	1,033
Romania	4,000	2,841	83	2.9%	2,761	133	1,931
Serbia	2,440	1,648	92	5.6%	1,517	96	1,513
Financial centres	**5,692**	**2,986**	**33**	**1.1%**	**2,464**	**4**	**203**
Germany	782	582	1	0.2%	120	1	14
United Kingdom	724	442	2	0.4%	604	1	77
Luxemburg	4,185	1,961	30	1.5%	1,739	2	112
Other countries[1]	**294**	**25**	**5**	**19.8%**	**11**	**2**	**142**
TOTAL	**34,379**	**18,047**	**661**	**3.7%**	**24,661**	**553**	**9,152**

Source: Bank of Greece

[1] Other countries include Egypt and Malta.

In terms of liquidity, the "loan-to-deposit" ratio increased marginally (June 2022: 73.2%, December 2021: 70.9%). More specifically, deposits remained almost unchanged, while lending increased by 4% compared to December 2021 on a comparable basis.

The outlook for international activities in the current conjuncture is characterised by increased uncertainty, as indeed for Greece, taking into account the risk of spillover of inflationary pressures into the real economy, persistent supply chain disruptions, the anticipated slowdown of economic activity in many European countries and increased geopolitical risks.

3. RESILIENCE

3.1 PROFITABILITY

In the first half of 2022, Greek banks recorded profit after taxes and discontinued operations amounting to €2.3 billion, compared with losses of €4.0 billion in the corresponding period of 2021 (see Table III.7), returning to profitability after two consecutive loss-making years.

In detail, in the first half of 2022 the operating income of Greek banks increased by 18.7% compared to the first half of 2021. Net interest income declined by 11.2%. More specifically, interest income declined by 6.8%, due to a contraction of the bank's loan portfolio, mainly due to NPL sales, as well as a small decrease in the weighted average interest rate of loans. In contrast, interest expenses increased as a result of higher interest payments on bank bonds, derivatives and hedging instruments. The net interest margin increased compared to the first half of 2021 and stood at 1.6%, remaining higher than that of the banking groups in the Banking Union directly supervised by the ECB (see Table III.8). Net income from commissions rose substantially by 20.5%, with a positive contribution from new loan disbursements, payments and fund transfers, credit cards, portfolio management and investment banking. Core operating income (i.e. net interest income and net commission income) decreased by 5%. Income from financial operations significantly increased by 42% in the first half of 2022, thanks to gains form Greek government bond transactions, derivatives, hedging instruments and FX transactions. Other income also grew strongly due to the segregation and sale of the payment acquiring business by three significant credit institutions. It is worth noting that non-recurring income (i.e. one-offs), such as gains from financial transactions, gains from the aforementioned sale of the acquiring business as well as from the TLTRO III program, amount to €2.5 billion, representing 43% of total operating income in the first half of 2022.

Table III.7 Financial results of the Greek banking sector

(in million euro)

	First half 2021	First half 2022	Change (%)
Operating income	**4,884**	**5,800**	**18.7**
Net interest income	2,907	2,583	-11.2
- Interest income	3,694	3,441	-6.8
- Interest expenses	-787	-859	9.1
Net non-interest income	1,977	3,217	62.7
- Net fee income	697	841	20.5
- Income from financial operations	1216	1,727	42.0
- Other income	64	649	>100
Operating costs	**-2,120**	**-1,928**	**-9.1**
Staff costs	-1,065	-893	-16.2
Administrative costs	-767	-736	-4.1
Depreciation	-288	-299	3.9
Net income (operating income less costs)	**2,764**	**3,872**	**40.1**
Impairment charges	-6,415	-1,004	-84.3
Other impairment losses	-123	-148	20.0
Non-recurring profits/losses	-53	-114	>100
Pre tax profits (+)/losses (-)	**-3,828**	**2,606**	**-**
Taxes	-239	-518	>100
Profits(+)/Losses(-) from discontinued operations	44	240	>100
After tax profits (+)/losses (-)	**-4,023**	**2,328**	**-**

Source: Financial statements for Greece's four significant institutions (SIs) and supervisory data for the less significant institutions (LSIs).

Operating expenses decreased by 9.1%, mainly due to staff cost rationalisation as a result of voluntary retirement schemes of previous years, while expenses in the first half of 2021 had been burdened by one-off corporate transformation expenses. Furthermore, depreciation expenses rose, mainly due to an increase in intangible assets and investments in IT infrastructure in the context of accelerating efforts towards digital transformation. As a results, in the first half of 2022, Greek banks' cost-to-income ratio improved significantly.

The cost of credit risk[51] declined in the first half of 2022. In particular, banks' loan-loss provisions amounted to €1.0 billion, compared with €6.4 billion in the first half of 2021. It should be noted

[51] Cost of credit risk is the ratio of credit risk provisions (y-o-y) over loans after accumulated provisions.

that a significant amount of the provisions in the first half of 2021 was linked with the sale of NPL portfolios.

Table III.8 Banking groups' profitability indicators in Greece and the Banking Union

(in percentages %)

	Greece		Banking Union[1]
	First half 2021	First half 2022	First half 2022
Net interest margin	1.9	1.6	1.0
Operating costsTotal assets	1.4	1.2	1.2
Cost-to-income ratio	43.4	33.2	62.2
Cost of credit risk	8.9	1.3	0.5
Return on Assets (RoA)[2, 3]	-2.6	1.4	0.5
Return on Equity (RoE)[2, 3]	-33.2	18.3	7.6

Sources: Financial Statements of Greece's four significant institutions (SIs) and supervisory data for the less significant banks (LSIs) and ECB Statistical Data Warehouse (SDW) – Supervisory Banking Statistics.

[1] Banking groups in the Banking Union directly supervised by the ECB.

[2] Indicators are calculated using total assets at the end of the corresponding period.

[3] RoA and RoE indicators are calculated using profits/losses after tax and discontinued operations.

As a result, Greek banking groups recorded profit after taxes and discontinued operations and the RoA and RoE ratios amounted to 1.4% και 18.3% respectively.

As regards profitability prospects, the increase of the key interest rates of the ECB will boost the net interest income of Greek banks in the medium term, as a considerable part of disbursed loans carry variable interest rates. Neverthless, in the medium term the economic slowdown, higher production costs and lower real household disposable income, in conjunction with higher debt servicing costs, will weigh on the financial situation of households and businesses and may increase banks' cost of credit risk. Furthermore, interest expenses are expected to pick up due to the withrdrawal of emergency measures, such the TLTROs, which had been implemented in the context of the ECB's accommodative monetary policy stance to mitigate the effects of the pandemic, as well as due to the need to issue bonds to meet regulatory requirements (e.g. MREL).

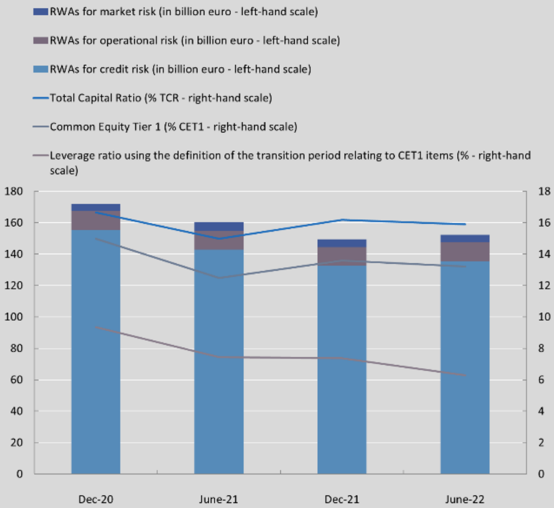
Therefore, banks need to accelerate the implementation of their business plans for financing healthy businesses, focusing on export-oriented economic sectors and taking advantage of the opportunities offered by the Recovery and Resilience Facility, as well as households, by applying prudent lending criteria. At the same time, banks should further diversify their income in the context of an efficient allocation of deposits and client funds. Accelerating the digital transformation of credit institutions can help in this direction. Developing a sustainable business model that achieves a satisfactory level of operating profitability will improve the banking sector's ability to absorb the effects of potential shocks (either endogenous or exogenous) and safeguard financial stability.

3.2 CAPITAL ADEQUACY

Greek banking groups' capital adequacy declined marginally in the first half of 2022 compared with 2021, mainly as a result of an increase in risk-weighted assets.

In particular, the Common Equity Tier 1 (CET1) ratio on a consolidated basis stood at 13.2% in June 2022, slightly down from 13.6% in December 2021, and the Total Capital Ratio (TCR) at 15.9%, down from 16.2%, respectively.

Chart III.20 Capital adequacy and leverage indicators, and breakdown of RWAs of Greek banking groups (December 2020 – June 2022)



Source: Bank of Greece.

These ratios are well below the average for credit institutions supervised directly by the ECB in the Banking Union (CET1 ratio 15% and TCR 18.9% in June 2022). Taking into account the fully phased-in impact of IFRS 9, the fully loaded CET1 ratio and the TCR of Greek banking groups stood at 12.1% and 14.8%, respectively.

In more detail, Greek banks' prudential own funds remained almost unchanged in June 2022 compared with December 2021, since profits after tax and discontinued operations offset the negative impact from the phasing-in of International Financial Reporting Standards 9 (IFRS 9), the amortisation of Deferred Tax Credits (DTCs) and fair value measurement of financial assets (Fair Value Through Other Comprehensive Income – FVTOCI). Nonetheless, the quality of Greek banks' prudential own funds remains low: in June 2022, DTCs amounted to €14 billion, representing 58% of total prudential own funds (down from 59% in December 2021). This share comes to 63% of total prudential own funds when taking into account a fully phased-in impact of IFRS 9 (compared with 68% in December 2021). Moreover, deferred tax assets (DTAs) of €2.2 billion are included in Greek banking groups' prudential own funds (with a fully phased-in impact of IFRS 9), accounting for around 9% of their total prudential own funds.[52]

Risk-weighted assets increased by 1.9% in June 2022 compared with December 2021, mainly as a result of a 2.4% rise in assets weighted for credit risk, which account for 89% of total risk-weighted assets. By contrast, assets weighted for market risk declined by 7.3% in June 2022 compared with December 2021. Finally, assets weighted for operational risk remained unchanged.

Furthermore, the leverage ratio[53] (Tier 1 capital/exposures) deteriorated to 6.3% in June 2022, from 7.4% in December 2021, because of the re-inclusion of all central bank exposures[54] in the calibration of the leverage ratio (see Chart III.25).

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[52] Although DTAs of €4.8 billion are not included in banks' prudential own funds, sufficient future profitability is needed in order for them not to pose risks to banks' capital base in the medium-to-long term.

[53] Defined as Tier 1 capital (using the transitional definition of Tier 1 capital) to its average total consolidated assets.

[54] As part of its supervisory measures to address the COVID-19 pandemic crisis, the ECB temporarily allowed banks to exclude central bank exposures accumulated after 31.12.2019 from their leverage ratio. This exclusion applied until 31.3.2022.

At EU level, temporary capital and operational relief measures taken by the ECB in 2020 in response to the COVID-19 pandemic expire at end-2022 and will most probably not be extended.[55] Until then, Greek significant banks may temporarily operate below the capital conservation buffer and the level of capital defined by their Pillar 2 Guidance and dip into their Additional Tier 1 (AT1) and Tier 2 capital to meet Pillar 2 requirements.[56] Similar measures have been taken for less significant banks directly supervised by the Bank of Greece.

The Bank of Greece set the buffer for the four significant banks identified as other systemically important institutions (O-SII buffer) at 1.00% in 2023, up by 0.25% compared with 2022, increasing commensurately the level of the combined buffer requirement for significant banks.

As regards the outlook for Greek banks' capital adequacy, some of the parameters affecting it are the following: (a) possible constraints on internal capital generation capacity amid growing macroeconomic challenges and monetary policy normalisation; (b) the costs of implementing NPL reduction strategies and sufficient provisioning for credit risk, particularly in light of the potential emergence of new NPLs; (c) the implementation of capital enhancement actions (e.g. synthetic securitisations) and the cost of issuing capital instruments (Additional Tier 1, Tier 2) to meet regulatory capital requirements, including the cost of issuing MREL-eligible bonds; and (d) the evolution of new loan disbursements to households and non-financial corporations.

4. INTERCONNECTEDNESS WITH OTHER SECTORS OF THE FINANCIAL SYSTEM

4.1 DIRECT INTERCONNECTEDNESS OF MFIs WITH OTHER SECTORS[57]

The total assets of Greek monetary financial institutions (MFI)[58] vis-à-vis other resident and non-resident sectors as a percentage of GDP has declined since the first quarter of 2021 and tended to stabilise in the first half of 2022, reversing the upward trend observed during the first months of the pandemic crisis. In particular, the value of MFI assets vis-à-vis other sectors fell below 160% of GDP in June 2022 (see Chart III.22) from a peak of 180% recorded in the fourth quarter of 2020.

The distribution of MFI assets reflects a reduction of exposure to households and corporations, mainly by making use of the government guarantee scheme in loan securitisations of credit institutions, while the exposure to General Government is comparatively smaller. It should also be noted that MFIs' claims on investment funds, insurance corporations and pension funds are much lower compared to all other sectors (less than 1% of GDP).

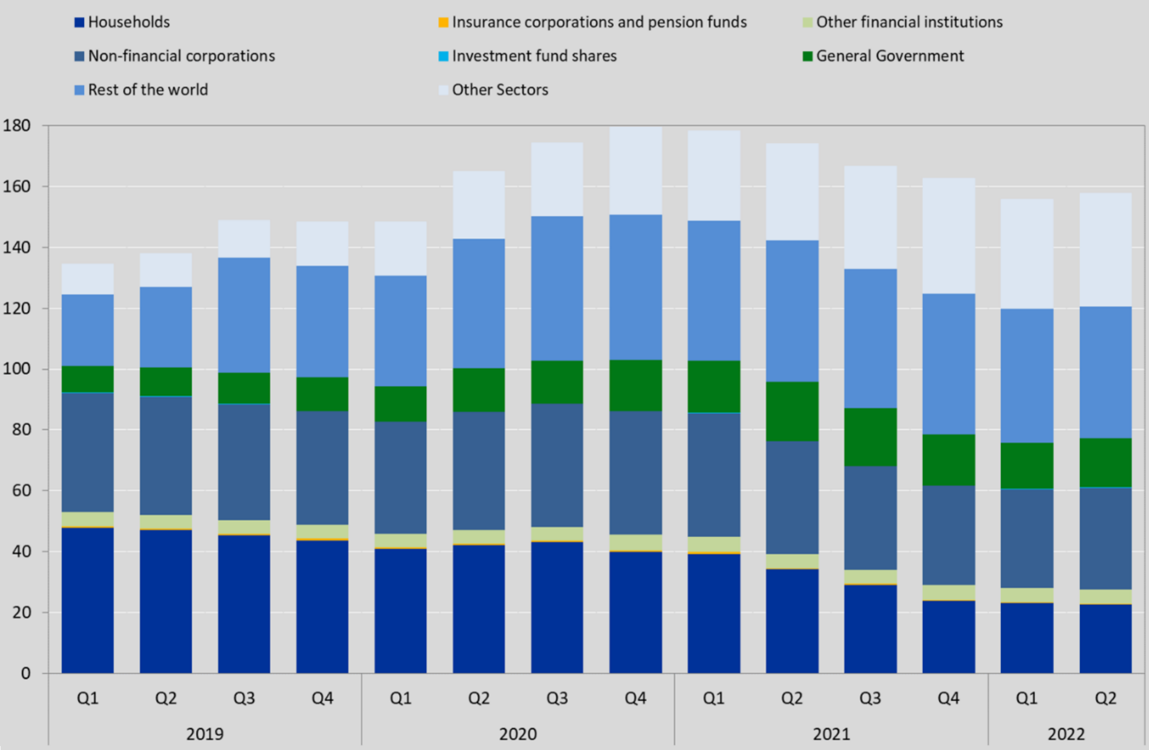
[55] See ECB press release of 12 March 2020, "ECB Banking Supervision provides temporary capital and operational relief in reaction to coronavirus".

[56] Provided as a permanent arrangement under Directive (EU) 2019/878 (CRD V).

[57] The analysis of the interconnectedness between different economic factors and markets helps identify potentially systemic vulnerabilities from the interconnectedness of entities within the financial sector or between the financial and the non-financial sector.

[58] The MFI sector comprises National Central Banks, Credit Institutions (CIs), Electronic Money Institutions (EMIs), Other Financial Institutions accepting deposits (OFIs) and Money Market Funds (MMFs).

Graph III.22 Assets of Greek monetary financial institutions (MFI) by issuing sector (% of GDP) (March 2019 – June 2022)



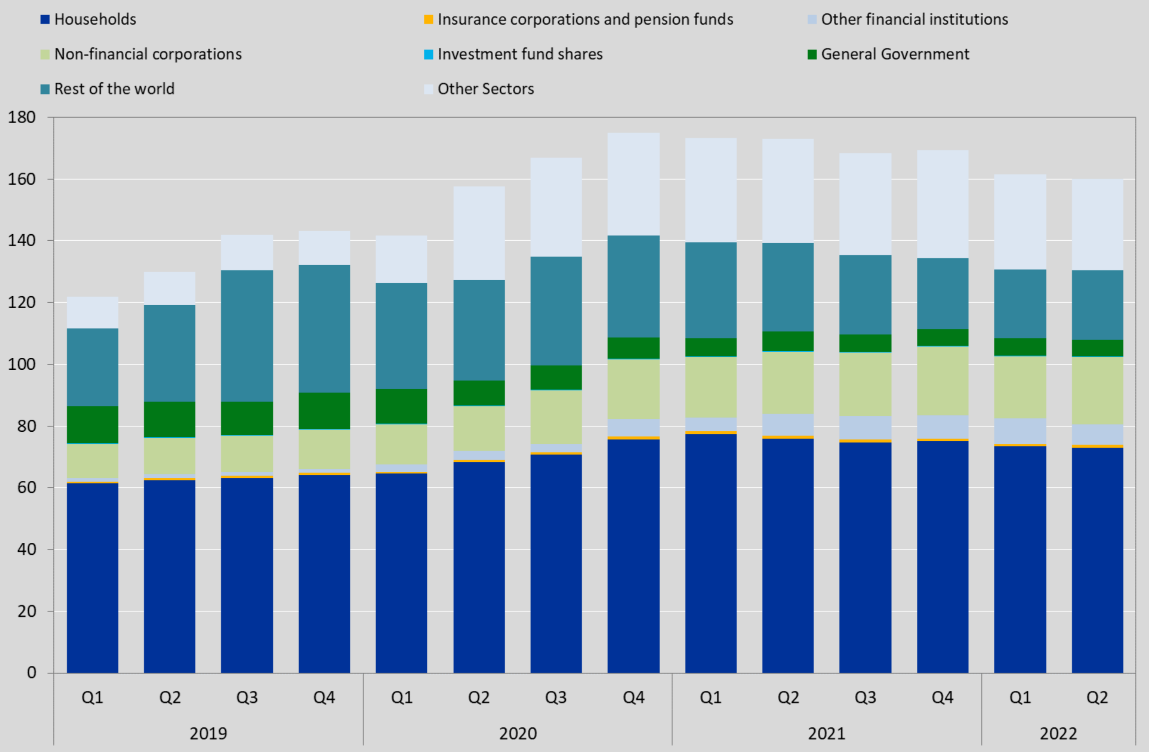
Source: Bank of Greece.

Claims on households decreased to 22.7% of GDP in the second quarter of 2022, from 23.9% at the end of 2021, while claims on the rest of the world[59] remain significant and accounted for 43.4% of GDP in the second quarter of 2022. The changes observed during the first half of 2022 are mainly due to an increase of GDP during this period, while a part is also due to a reduction of exposure to households and corporations.

Accordingly, MFI liabilities as a percentage of GDP amount to 160% in the second quarter of 2022, which signifies a stabilisation at lower levels compared to the peak of 175% of GDP recorded in the fourth quarter of 2020 (see Chart III.23).

[59] Rest of the world residents comprise natural/legal persons that do not reside/have their registered office in Greece, with a further distinction between residents of euro area countries other than Greece and residents of non-euro area countries.

Graph III.23 Liabilities of Greek monetary financial institutions (MFI) by holding sector (% of GDP) (March 2019 – June 2022)



Source: Bank of Greece.

The decrease in MFI liabilities as a percentage of GDP observed in the first half of 2022 is mainly due to the significant increase of GDP in 2021 and in the first half of 2022. Regarding the distribution of liabilities, the bulk is accounted for by exposures to households (deposits), while the liabilities of MFIs to insurance corporations and pension funds (ICPFs) and investment funds are close to just 1% and 0.5% of GDP, respectively. In particular, there is a marginal decrease in MFI liabilities to households (June 2022: 73% of GDP, December 2021: 75.2% of GDP), compared with an even smaller decrease recorded in liabilities to non-financial corporations (June 2022: 21.8% of GDP, December 2021: 22.3% of GDP).

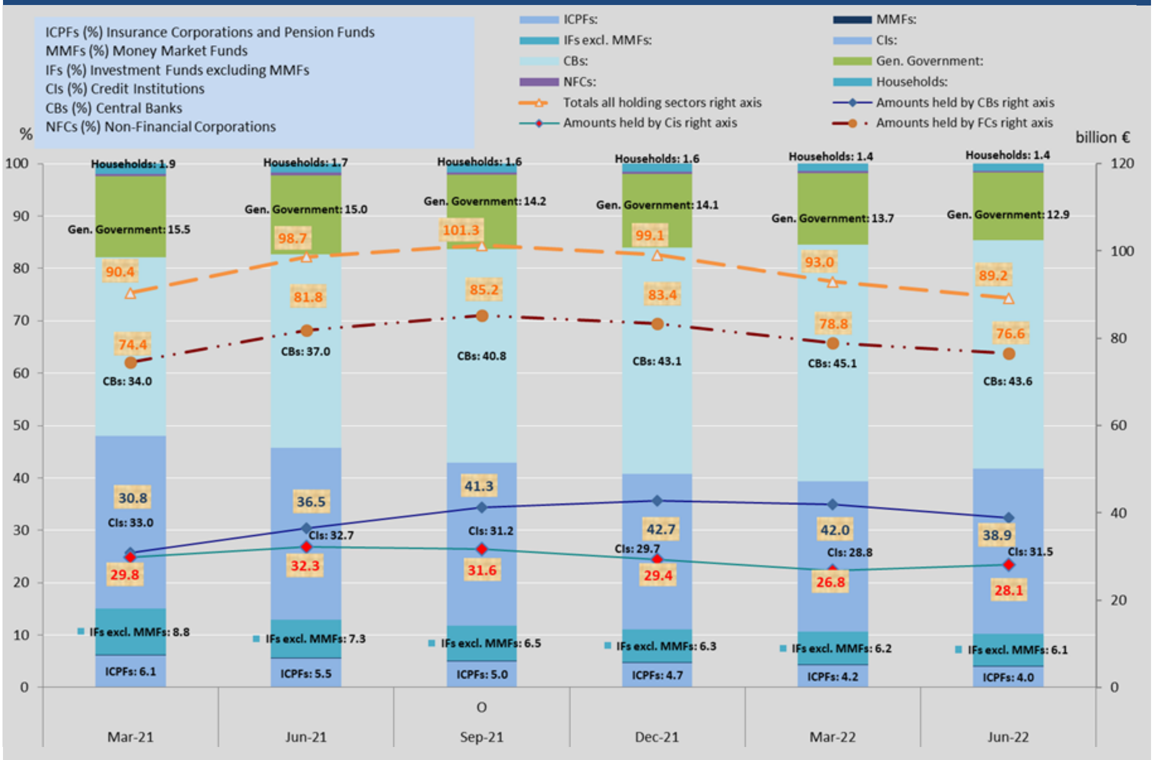
4.2 INDIRECT INTERCONNECTEDNESS OF BANKS WITH OTHER ENTITIES OF THE FINANCIAL SECTOR[60]

Euro area credit institutions' (CIs) holdings of securities issued by the General Government in Greece stood at €28.1 billion in June 2022, compared with €29.4 billion at the end of 2021. In the same vein, there was an even greater decline in securities issued by the General Government in Greece and held by the euro area central banks, as the amount of holdings stood at €38.9 billion in June 2022, compared with €42.7 billion at the end of 2021. It should be noted that the amounts of holdings by money market funds (MMFs) and investment funds (IFs) of the euro area remain

[60] The indirect interconnectedness of banks with other entities of the financial sector examines whether – alongside the banking sector – there are changes in other sectors holding securities issued by the General Government in Greece (i.e. Greek government bonds, Treasury bills and guarantees). In this context, the ECB's Securities Holding Statistics database (SHS) provides information on securities and equities held by euro area investors (at country level), broken down by instrument, issuer country and issuer sector.

at low levels. Securities issued by the General Government and held by insurance corporations and pension funds (ICPFs) further declined to €3.6 billion in June 2022 compared to the end of 2021 (December 2021: €4.7 billion) (see Chart III. 24).

Graph III.24 Holdings of securities issued by the General Government in Greece: amounts and share (%) by sector (March 2021 – June 2022)



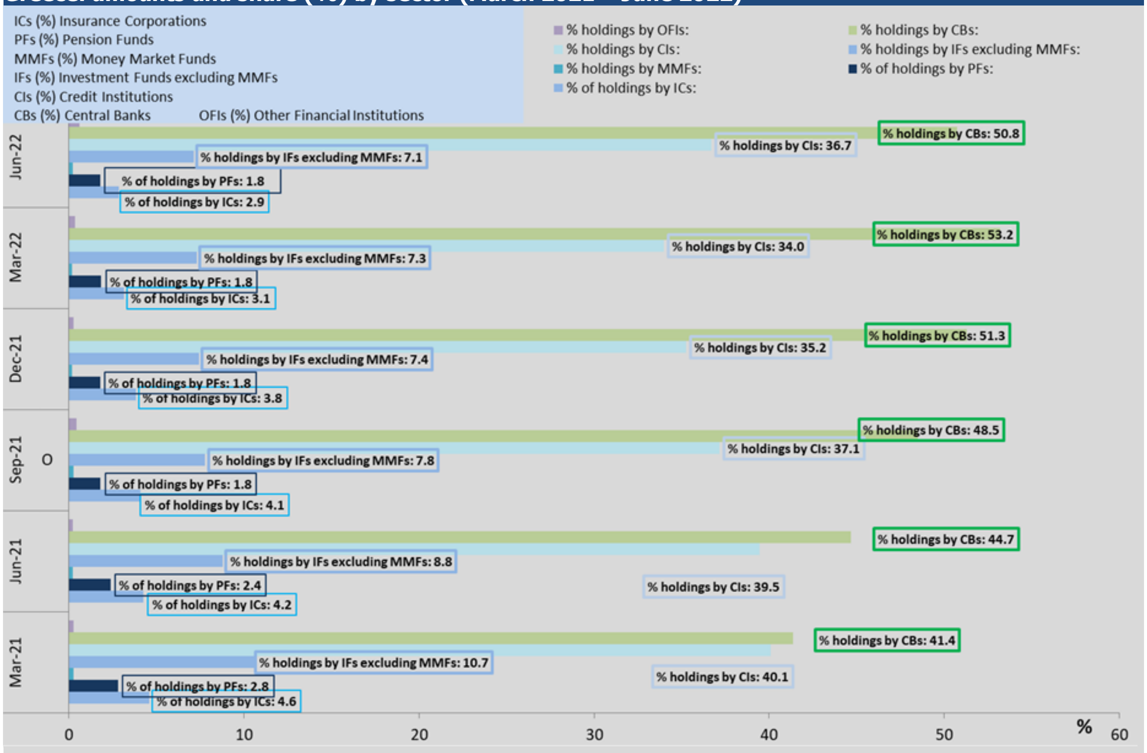
Source: ECB, Securities Holding Statistics database (SHS).

4.2.1 Analysis of securities holdings by euro area financial corporations

Euro area financial corporations' (FCs) holdings of securities issued by the General Government in Greece,[61] reduced significantly their exposures to €76.6 billion by June 2022, from €83.4 billion at the end of 2021 (Chart III.24). This was due to decreases in the amounts of holdings by both euro area central banks and euro area credit institutions. In particular, regarding the share of securities holdings, a marginal decrease is observed in those held by central banks to 50.8% in June 2022, from 51.3% at the end of 2021, while on the other hand an increase is observed in the share held by credit institutions to 36.7% in June 2022, from 35.2% at the end of 2021 (Chart III.25).

[61] The new SHS time series used in the analysis divides Financial Corporations (FCs) into credit institutions (CIs), Money Market Funds (MMFs), investment funds other than money market mutual funds (IFs), Central Banks (CBs) financial vehicle corporations engaged in securitisation (FVCs), insurance corporations (ICs), Pension Funds (PFs) and Other Financial Institutions (OFIs).

Graph III. 25 Euro area financial corporations' holdings of securities issued by the General Government in Greece: amounts and share (%) by sector (March 2021 – June 2022)



Source: ECB, Securities Holding Statistics database (SHS).

At the same time, there was a decrease in the share of securities held by insurance corporations to 2.9% in June 2022, from 3.8% at the end of 2021. It should be noted that credit institutions have an incentive to increase their holdings of securities issued by the General Government, especially in times of crisis, as they are in need of more eligible collateral for liquidity provision by the ECB, which is not the case for other financial corporations.[62]

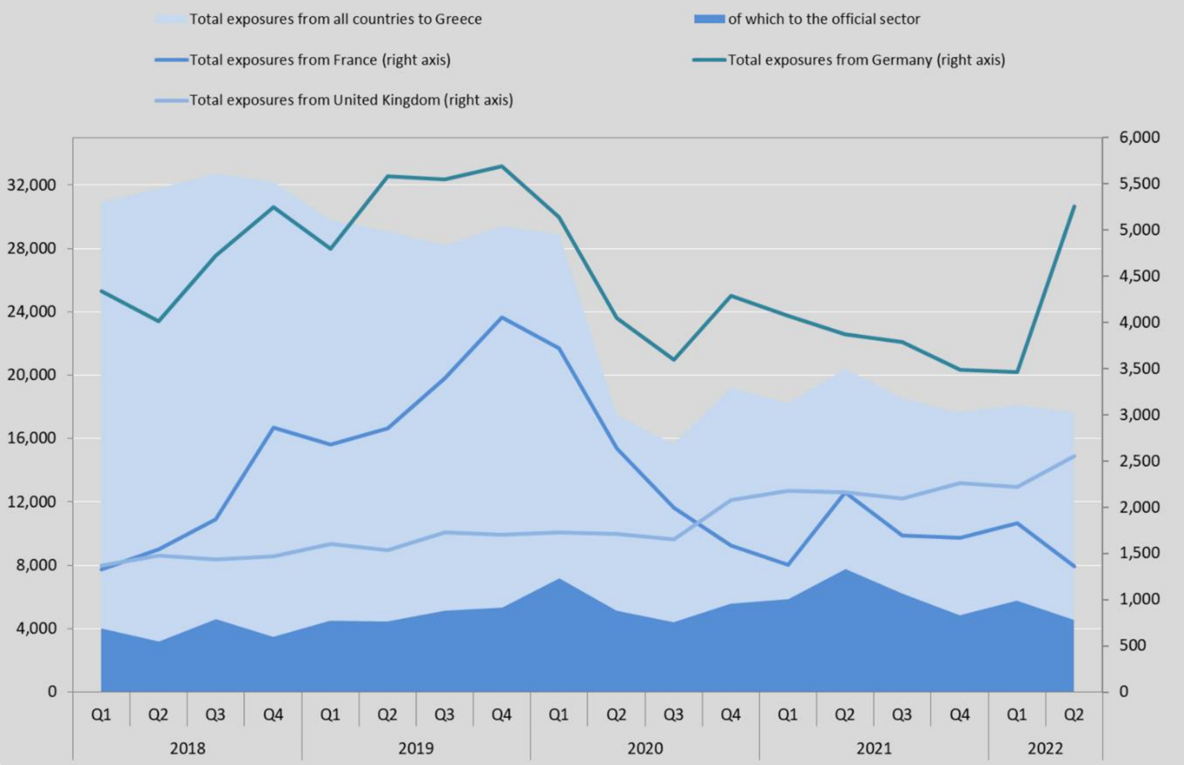
Finally, the Hellenic Republic's prospects of acquiring an investment grade sovereign rating in 2023 create favourable conditions for an improvement in the structure of the debt securities held by credit institutions, with a view to a further reduction of the risk in their portfolios.

4.3 EVOLUTION OF CROSS-BORDER EXPOSURES OF GREEK BANKS AND OF FOREIGN BANKS' EXPOSURES TO GREECE

The consolidated total exposures of foreign banks from all countries to Greece decreased significantly to USD 17.6 billion in the second quarter of 2022, compared with a five-year high of USD 32.7 billion in the third quarter of 2018 (September 2018 data).[63] The decline since 2018 reflects the evolution of foreign banks' balance sheets through a reallocation of liquidity to their global operations during the pandemic, while part of this decrease is attributed to a shift to domestic placements.[64]

[62] Money Market Funds (MFIs), Pension Funds (PFs), Investment Funds (IFs) and Other Financial Institutions (OFIs).
[63] It should be noted that this reduction is smaller in euros than in dollars due to the change of the euro/dollar exchange rate, which accelerated after the first quarter of 2022.
[64] Statistical release: BIS international banking statistics at end-September 2020 ; Statistical release: BIS international banking statistics at end-June 2020

Graph III. 26 Total exposures of banks from all countries to Greece on an ultimate risk basis in million dollars (March 2018 – June 2022)



Source: BIS, Consolidated Banking Statistics.

However, total exposures to the official sector[65] showed more volatility over the past two years and finally stood at USD 4.6 billion in June 2022, compared with USD 4.4 billion in September 2020 (see Chart III.26). The observed changes are due to an increase of the total claims of foreign banks on the official sector, combined with the fluctuations in the valuations of their assets over the same time period.[66]

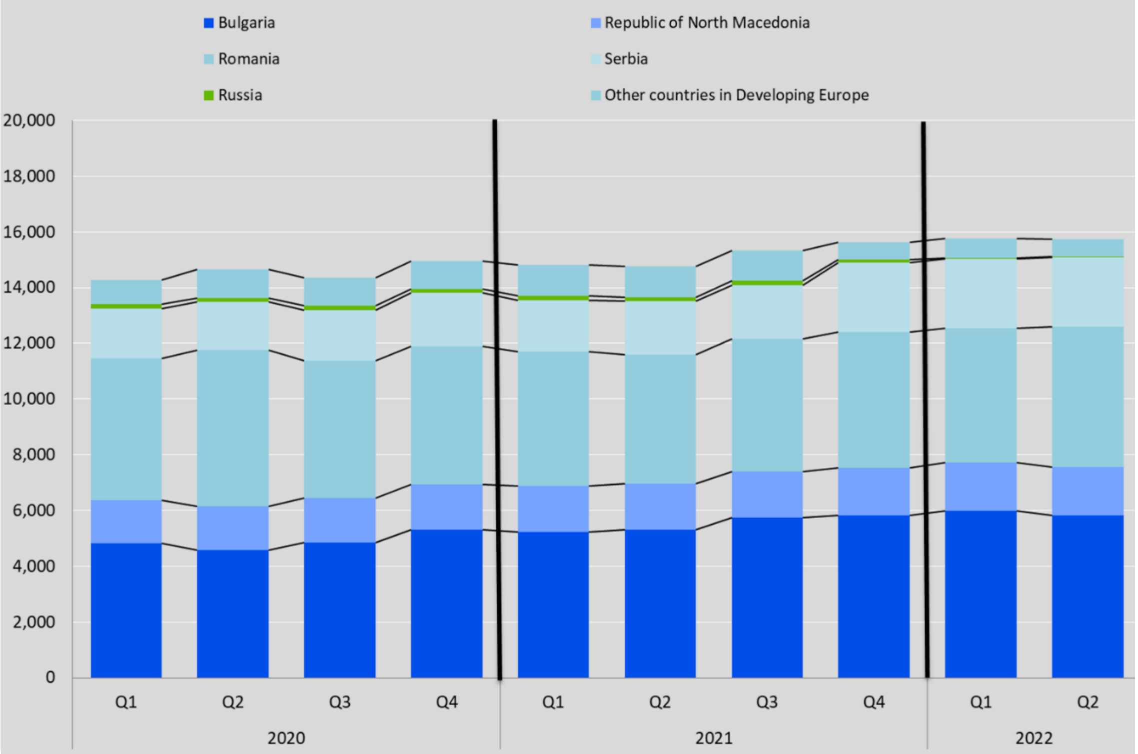
On the other hand, the exposures of Greek banks to Emerging Europe stabilised,[67] reaching €15.7 billion in June 2022, from €15.6 billion at the end of 2021. In particular, in the first half of 2022, there was a slight increase in exposures to Romania, which reached €5 billion in June 2022, from €4.9 billion in December 2021, while exposures to Bulgaria remained stable at €5.8 billion and to the Republic of North Macedonia at €1.7 billion. It is worth mentioning that there was a further drop in the already negligible exposures of Greek banks to Russia to €35.1 million in June 2022, from €94.4 million at the end of 2021 (see Chart III.27).

[65] https://www.bis.org/statistics/glossary.htm?&selection=272&scope=Statistics&c=a&base=term Official Sector: Bank for International Settlements (BIS) classification used in Consolidated Banking Statistics (CBS) and referring collectively to general government, central banks and international organisations.

[66] Statistical release: BIS international banking statistics at end-March 2020

[67] Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Republic of North Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Turkey and Ukraine.

Graph III.27 Evolution of exposures of Greek banks to Emerging Europe in million euro (March 2020 – June 2022)



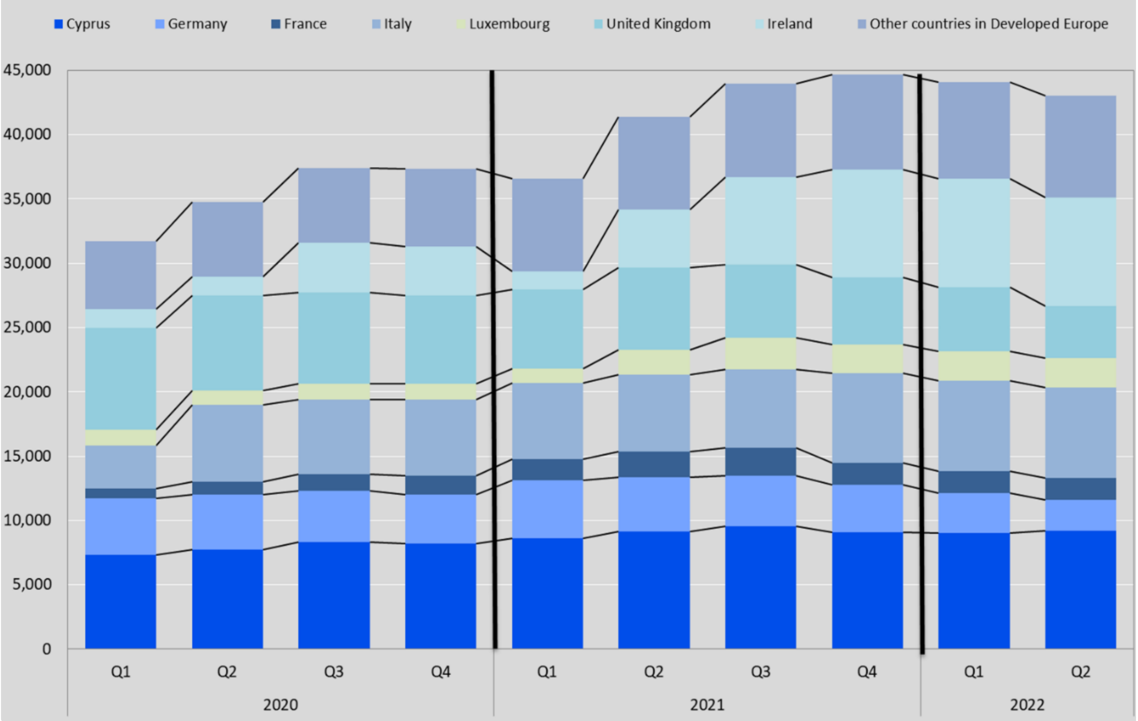
Source: BIS, Consolidated Banking Statistics.

The exposures of Greek banks to Developed Europe[68] decreased to €43.1 billion in June 2022, from €44.6 billion at the end of 2021. This is due to a reduction of exposures to Germany to €2.4 billion, compared with €3.7 billion at the end of 2021, and a decline in exposures to the UK to €4 billion in June 2022, from €5.2 billion at the end of 2021. On the other hand, exposures to Ireland rose substantially, from €3.8 billion in 2020 to €8.4 billion in June 2022, mainly due to Greek banks' transactions making use of the government guarantee scheme in loan securitisations of credit institutions (known as "Hercules").

It should be clarified that, since Greek credit institutions have not reduced lending in Germany, underlying the reduction in exposures is a decrease in other positions, including government bond holdings. On the other hand, the reduction of total exposures to the United Kingdom is consistent with a decrease in Greek banks' lending in this country, which confirms a more general deleveraging from this country. As a result, an increase in activity can be observed in other financial centres, especially in the Irish market (see Chart III.28).

[68] Austria, Belgium, Cyprus, Denmark, Finland, France, Germany (including the ECB), Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Spain, Sweden, Switzerland (including the Bank for International Settlements) and the United Kingdom.

Graph III.28 Evolution of exposures of Greek banks to Developed Europe in million euro (March 2020 – June 2022)



Source: BIS, Consolidated Banking Statistics.

IV. MACROPRUDENTIAL POLICY

The Bank of Greece, as part of its supervisory tasks, monitors developments in the financial system and identifies potential systemic risks. The Bank subsequently designs and implements measures to prevent the build-up of systemic risks and strengthen the resilience of the financial system. Macroprudential policy is the set of such measures, whose ultimate objective is to safeguard financial stability. Macroprudential measures pertain to the financial system as a whole or significant parts thereof, whereas microprudential supervision concerns individual financial institutions.

In the current macroeconomic and financial environment, the importance of an appropriate macroprudential policy to avoid the build-up of systemic risks is gradually becoming apparent. Implementing appropriate macroprudential policy measures, mainly in the form of capital buffers over the medium term, will help create sufficient macroprudential space that will positively affect financial stability.

1. SETTING THE COUNTERCYCLICAL CAPITAL BUFFER RATE

The countercyclical capital buffer (CCyB) aims to address the procyclicality of credit growth and leverage, i.e. to ensure an appropriate level of credit growth and leverage in both the upward and the downward phase of the business cycle. The CCyB rate ranges from 0% to 2.5%, calibrated in steps of 0.25 percentage points or multiples of 0.25 percentage points.[69] The CCyB consists of Common Equity Tier 1 (CET1) capital and is expressed as a percentage of the total risk exposure amount of credit institutions and investment firms that are exposed to credit risk in Greece.[70]

In an economic upswing, setting the CCyB rate at a level above 0% contributes to building up a capital buffer in excess of the minimum requirements applicable in the context of microprudential supervision, thus achieving the prevention and mitigation of excessive credit growth and leverage. Conversely, in an economic downturn, reducing the CCyB rate can encourage the provision of credit to the real economy, thereby softening the impact of the downturn.

The Bank of Greece assesses, on a quarterly basis, the intensity of cyclical systemic risk and the appropriateness of the CCyB rate for Greece, in accordance with Bank of Greece Executive Committee Act 202/1/11.3.2022, setting or adjusting the CCyB rate, if necessary. This rate was set for the first time in the first quarter of 2016 and maintained at 0% ever since.

The appropriateness of the CCyB rate is assessed within the framework of a simplified calibration and rate-setting procedure taking into consideration the "standardised credit-to-GDP gap", as defined in Recommendation ESRB/2014/1, which reflects the deviation of the ratio of credit to GDP from its long-term trend. In more detail, initially the credit-to-GDP ratio is calculated as the sum of short-term and long-term debt securities and loans (i.e. credit), as reported in the financial liabilities of the private non-financial sector, to the sum of the figures of the last four quarterly observations of GDP (calculated in nominal values, non-seasonally adjusted). Subsequently, the long-term trend of the credit-to-GDP ratio is calculated by applying the Hodrick-Prescott filter. The "standardised credit-to-GDP gap" is the difference between the credit-to-GDP ratio and its

[69] For the purposes of paragraph 2 of Article 130 of Law 4261/2014, the designated authority may set the CCyB rate in excess of 2.5%, where justified on the basis of the considerations set out in paragraph 3 of Article 127 of Law 4261/2014.
[70] The total risk exposure amount is calculated in accordance with Article 92(3) of Regulation (EU) No 575/2013.

long-term trend. A high positive value of the “standardised credit-to-GDP gap” indicates excessive credit growth relative to GDP growth, which poses increased risks to the financial system, thus requiring the setting of the CCyB rate at a level above 0%.

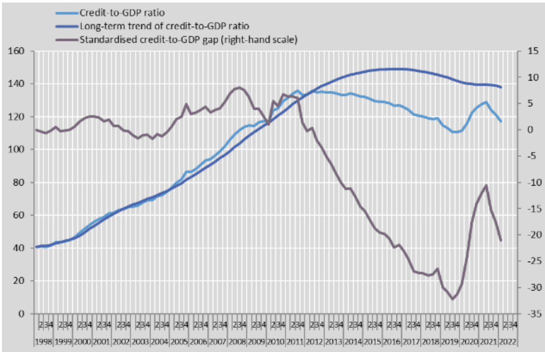
In addition to the “standardised credit-to-GDP gap”, the Bank of Greece also examines a number of additional indicators to monitor the build-up of cyclical systemic risk.[71] These indicators are grouped into six regions:

- Credit developments, where the growth of credit to the domestic private sector and the credit to the domestic private sector to GDP ratio at current prices, the growth of loans to households and the growth of credit to non-financial corporations are monitored.
- Private sector indebtedness, where the credit to non-financial corporations to GDP ratio, individuals’ and private non-profit institutions’ debt-to-income ratio and debt-service-to-income ratio at origination (DSTI-O) for loans collateralised by residential real estate are monitored.
- Potential overvaluation of property prices, where the rise in the price index of residential and commercial real estate (offices and stores) is monitored.
- The strength of bank balance sheets, where the net interest margin (NIM), the growth of risk-weighted assets, the leverage ratio and the loan-to-deposit ratio are monitored.
- External imbalances, as reflected in the evolution of the current account balance to GDP ratio.
- Potential mispricing of risk, where the ATHEX Composite Share Price Index and the FTSE/ATHEX bank index are monitored.

In Greece, the “standardised credit-to-GDP gap” remains in negative territory since 2012. In the first quarter of 2022, it equalled -21 percentage points, compared with -17.7 in the previous quarter (see Chart IV.1), as a result of a rise in nominal GDP. It should be noted that the first quarter of 2022 is the last available quarter for the financial liabilities of the private non-financial sector before setting the CCyB rate for the fourth quarter of 2022. For this value of the “standardised credit-to-GDP gap”, the benchmark buffer rate (buffer guide), as defined in paragraph 3(a) of recommendation B of Recommendation ESRB/2014/1, is zero.

Chart IV.1 Standardised credit-to-GDP gap, credit-to-GDP ratio (non-seasonally adjusted) and long-term trend of credit-to-GDP ratio (Hodrick Prescott one-sided filter)

(Q1 1998 – Q1 2022)



Source: Bank of Greece.

The analysis of the additional indicators examined by the Bank of Greece confirms the view of an absence of excessive credit growth and leverage.

Consequently, the Bank of Greece maintained the CCyB rate at “zero percent” (0%) in 2022. In the press release of 28.9.2022, the Bank of Greece announced that the CCyB rate has been kept unchanged at 0% in the fourth quarter of 2022 and published the data justifying its evaluation. The CCyB rate was set at the lowest possible level and therefore does not affect the capital requirements for credit institutions.

[71] For definitions, see Bank of Greece Executive Committee Act 202/2/11.3.2022.

2. IDENTIFICATION OF THE OTHER SYSTEMICALLY IMPORTANT INSTITUTIONS IN GREECE (O-SIIs) AND SETTING OF THE O-SII BUFFER RATE

Under Law 4261/2014 (Article 124), the Bank of Greece is responsible for identifying other systemically important institutions (O-SIIs)[72] among institutions authorised in Greece. O-SIIs are identified on an annual basis so as to consider the application of an O-SII buffer and the calibration thereof.

An O-SII buffer aims to reduce moral hazard and strengthen the resilience of other systemically important institutions. In this context, moral hazard arises when an institution expects not to be let to fail given its systemic importance ("too big to fail"). An O-SII buffer limits excessive risk-taking by a systemically important credit institution through higher capital requirements, thus reducing moral hazard. Moreover, it cushions the systemic impact of misaligned incentives by strengthening the systemically important institution's capital buffer to absorb potential losses and thus reduces contagion risk.

The O-SII buffer consists of Common Equity Tier 1 (CET1) capital and its rate is set at a level of up to 3% of the total risk exposure amount.[73] The O-SII buffer is set on a solo, sub-consolidated or consolidated basis, as applicable, and its rate is reviewed at least once a year.

The Bank of Greece has adopted the European Banking Authority (EBA) guidelines in relation to the assessment of O-SIIs (EBA/GL/2014/10),[74] as they were adopted by Bank of Greece Executive Committee Act 56/18.12.2015. According to the EBA guidelines, the competent authorities should, for each bank falling under their jurisdiction, calculate relative scores indicating the systemic importance of each bank based on specific criteria. These criteria relate to size, importance for the economy, complexity and interconnectedness of the institution with the financial system.

These four criteria each consist of one or more mandatory indicators which will be used as a minimum by the competent authorities in calculating the score of each credit institution. The score of each credit institution is expressed in basis points (bps). Each competent authority sets a threshold in bps; institutions with a score equal to or higher than that should be identified as O-SIIs. This threshold can be set from 275 bps up to 425 bps to take into account the specificities of the Member State's banking sector and to ensure the homogeneity of the group of O-SIIs designated in this way based on the O-SIIs' systemic importance. The 350 bps is proposed as an indicative threshold. The competent authorities may designate further relevant entities as O-SIIs based on additional qualitative and/or quantitative indicators of systemic importance.

In calculating the systemic importance scores of Greek banks, the Bank of Greece used only the mandatory indicators (see Table IV.1) and selected a threshold of 350 bps.

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[72] In contrast with Global Systemically Important Institutions – G-SIIs.

[73] It should be noted that an O-SII buffer rate higher than 3% is subject to European Commission authorisation.

[74] Guidelines on the criteria to determine the conditions of application of Article 131(3) of Directive 2013/36/EU (CRD) in relation to the assessment of other systemically important institutions (OSIIs), EBA, 16 December 2014.

Table IV.1 Mandatory indicators for the scoring of O-SIIs in Greece		
Criterion	**Indicators**	**Weight**
Size	Total assets	25%
Importance	Value of domestic payment transactions	8.33%
	Private sector deposits from depositors in the EU	8.33%
	Private sector loans to recipients in the EU	8.33%
Complexity/ Cross-border activity	Value of OTC derivatives (notional)	8.33%
	Cross-jurisdictional liabilities	8.33%
	Cross-jurisdictional claims	8.33%
Interconnectedness	Intra-financial system liabilities	8.33%
	Intra-financial system assets	8.33%
	Debt securities outstanding	8.33%

As a result, the following institutions were identified as O-SIIs for 2022:

- Alpha Services and Holdings S.A.
- Eurobank Ergasias Services and Holdings S.A.
- National Bank of Greece S.A.
- Piraeus Financial Holdings S.A.

By Executive Committee Act 212/21.09.2022, the Bank of Greece decided to set the O-SII buffer at 1% for 2023 (from 0.75% in 2022) for all O-SIIs, as defined at consolidated level above. The O-SII buffer is also imposed on the following credit institutions at solo level:

- Alpha Bank S.A.
- Eurobank S.A.
- National Bank of Greece S.A.
- Piraeus Bank S.A.

The four credit institutions identified as O-SIIs represent approximately 95% of the total assets of the domestic banking sector.

3. COMBINED BUFFER REQUIREMENT

The combined buffer requirement in Greece for the four significant banks stood at 3.25% of risk-weighted assets in 2022 and will be raised to 3.5% as from January 2023 (see Table IV.2), while for the less significant banks it remains at 2.5%.[75]

[75] It is noted that the systemic risk buffer (SyRB) has not been activated in Greece.

Table IV.2 Combined buffer requirement of the four significant banks in Greece

(percentages, %)

Combined buffer requirement	2022	2023
Capital conservation buffer (CCoB)	2.5	2.5
Countercyclical capital buffer (CCyB)[1]	0	0
Other systemic institutions buffer (O-SII)		
Alpha Services and Holdings S.A.	0.75	1.00
Eurobank Ergasias Services and Holdings A.E.	0.75	1.00
National Bank of Greece S.A.	0.75	1.00
Piraeus Financial Holdings S.A.	0.75	1.00
Combined buffer requirement	**3.25**	**3.5**

1. For the activities in Greece.

Box IV.1 Warning of the European Systemic Risk Board on vulnerabilities in the financial system of the European Union (EU)

On 22 September 2022, the General Board of the European Systemic Risk Board (ESRB) adopted Warning ESRB/2022/7, which draws the attention of Member States to the vulnerabilities in the financial system of the European Union (EU). In more detail, the EU's financial system has proved to be resilient so far despite increasing geopolitical and economic uncertainties. However, the ESRB has identified a number of severe risks to financial stability. These risks may materialise simultaneously, thereby interacting with each other and mutually amplifying their impact. The probability of tail-risk scenarios materialising has increased since the beginning of 2022, and has been exacerbated by recent geopolitical developments. These geopolitical developments impact energy prices and supply, implying a renewed rise in balance sheet stress for businesses and households. Moreover, higher-than-expected inflation is tightening financial conditions, which may amplify stress in the financial sector.

A pronounced deterioration in economic activity could lead to a renewed increase in credit risk at a time when some credit institutions are still in the process of addressing COVID-19 pandemic-related asset quality issues that have so far been limited due to extensive public support measures. Risks to financial stability stemming from a sharp fall in asset prices also remain severe. Rising mortgage rates and the deterioration in debt servicing capacity on account of a decline in real household income could exert downward pressure on house prices. In turn, this could trigger the materialisation of accumulated cyclical risks in real estate markets. In addition, the probability of large-scale cyber incidents impacting the financial system has increased.

Given the increase in systemic risks to financial stability, the ESRB considers it necessary for private sector institutions, market participants and relevant authorities to continue to prepare for materialisation of tail-risk scenarios. Preserving or enhancing the resilience of the EU's financial sector remains essential so that the financial system can continue to support the real economy if and when financial stability risks materialise. Close coordination between relevant authorities and prudent risk management practices across all financial sectors and market participants remain key to addressing vulnerabilities effectively, while avoiding market fragmentation and negative externalities for other Member States.

Credit institutions can act as a first line of defence by ensuring that their provisioning practices and capital planning properly account for expected and unexpected losses that may be caused by the deterioration in the risk environment. This includes proactively and regularly adjusting their own capital projections under baseline and adverse scenarios. The latter should reflect sufficiently conservative and updated macroeconomic scenarios, assuming severe, but plausible stress under prolonged periods. Furthermore, by anticipating and preparing for near-term liquidity risks, credit institutions ensure their immediate resilience, should any of the risks mentioned above materialise.

Complementing credit institutions' prudent risk management practices, micro- and macroprudential capital buffers that are consistent with the prevailing level of risk help ensure banking sector resilience. Preserving or further building up macroprudential buffers would support credit institutions' resilience and enable the authorities to release these buffers, if and when risks materialise and negatively impact credit institutions' balance sheets. At the same time, macroprudential policy decisions should be made considering Member State-specific macro-financial outlooks and banking sector conditions, to limit the risk of procyclicality.

Financial stability risks beyond the banking sector should also be addressed. This requires tackling vulnerabilities and increasing the resilience of non-bank financial institutions and market-based finance. Where macroprudential tools are not available, authorities may need to make use of their supervisory powers to mitigate the consequences of the materialisation of financial stability risks and ensure that markets do not become impaired. Relevant authorities should also continue to monitor risks closely and enhance supervisory dialogue with supervised non-bank financial institutions where needed. By ensuring that their risk management practices adequately reflect the heightened risks and by heeding supervisors' guidance and expectations, non-bank financial institutions can further strengthen their resilience themselves.

Beyond the financial sector, liquidity strains for non-financial corporations participating in the energy derivatives markets also need to be tackled. However, this should not come at the cost of relaxing prudential requirements for central clearing systems.

V. OTHER SECTORS OF THE FINANCIAL SYSTEM

1. STRUCTURE OF THE DOMESTIC FINANCIAL SYSTEM

The domestic financial system remains bank-centric, as the assets of credit institutions account for 88.7% of its total assets and its structure did not show significant changes during the first half of 2022 (see Table V.1). Greek commercial banks play a dominant role, with their assets representing 86.7% of the total assets of the financial system, while cooperative banks and foreign banks' branches account for 0.5% and 1.5% respectively. In addition, the banking sector is characterised by a high level of concentration, with the four significant banks accounting for approximately 93% of the total assets of the banking sector.

Institutional investors are the second most important sector of the domestic financial system. Insurance companies, pension funds and collective investment undertakings are included in this category. Their assets represented 8.8% of total assets in the first half of 2022. In this sector, insurance companies stand out with assets of €18.8 billion in the first half of 2022 (5.4% of the total), as well as collective investment undertakings with assets of €10 billion (2.9% of the total).

A small share of the market is held by other non-banking institutions (brokerage firms, leasing companies, factoring companies, consumer credit companies and venture capital companies), which in the first half of 2022 amounted to 2% of the entire financial system.

Finally, the participation of credit servicing firms in the total assets of the financial system remains small (0.4% of the total), although these companies manage claims from non-performing exposures of a significant amount.

Chart V.1 Structure of the domestic financial system

(amounts in million euro)

	2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		1st half of 2022	
Assets		%		%		%		%		%		%		%		%		%		%		%
Credit institutions	**357,115**	**91.6%**	**341,829**	**91.6%**	**329,036**	**91.7%**	**311,644**	**91.1%**	**279,750**	**90.3%**	**244,739**	**88.6%**	**240,102**	**88.4%**	**247,267**	**87.3%**	**277,335**	**87.9%**	**302,678**	**88.0%**	**308,343**	**88.7%**
Greek commercial banks [1]	*315,868*	*81.0%*	*326,370*	*87.5%*	*315,183*	*87.8%*	*303,713*	*88.8%*	*271,698*	*87.7%*	*236,894*	*85.7%*	*232,130*	*85.5%*	*240,691*	*85.0%*	*271,791*	*86.2%*	*296,403*	*86.2%*	*301,353*	*86.7%*
Cooperative banks	*3,652*	*0.9%*	*3,157*	*0.8%*	*3,200*	*0.9%*	*2,544*	*0.7%*	*2,508*	*0.8%*	*2,629*	*1.0%*	*2,814*	*1.0%*	*3,160*	*1.1%*	*1,727*	*0.5%*	*1,786*	*0.5%*	*1,818*	*0.5%*
Foreign banks' branches	37,595	9.6%	12,302	3.3%	10,653	3.0%	5,387	1.6%	5,544	1.8%	5,216	*1.9%*	5,157	1.9%	3,417	1.2%	3,818	1.2%	4,490	1.3%	5,172	1.5%
Institutional investors	**20,962**	**5.4%**	**21,909**	**5.9%**	**21,009**	**5.9%**	**21,219**	**6.2%**	**21,477**	**6.9%**	**22,956**	**8.3%**	**23,099**	**8.5%**	**27,750**	**9.8%**	**29,251**	**9.3%**	**32,467**	**9.4%**	**30,628**	**8.8%**
Insurance companies	15,555	4.0%	16,205	4.3%	15,085	4.2%	15,611	4.6%	15,975	5.2%	16,920	6.1%	17,038	6.3%	18,882	6.7%	19,976	6.3%	20,468	6.0%	18,849	5.4%
Pension funds															1,612	0.6%	1,698	0.5%	1,838	0.5%	1,764	0.5%
Collective investment undertakings	5,407	1.4%	5,704	1.5%	5,924	1.7%	5,608	1.6%	5,502	1.8%	6,036	2.2%	6,061	2.2%	7,256	2.6%	7,577	2.4%	10,160	3.0%	10,016	2.9%
Mutual funds	*3,573*	*0.9%*	*3,798*	*1.0%*	*3,346*	*0.9%*	*3,141*	*0.9%*	*2,932*	*0.9%*	*3,189*	*1.2%*	*2,954*	*1.1%*	*4,297*	*1.5%*	*4,438*	*1.4%*	*6,247*	*1.8%*	*5,875*	*1.7%*
Portfolio investment and real estate investment companies	*1,834*	*0.5%*	*1,906*	*0.5%*	*2,578*	*0.7%*	*2,467*	*0.7%*	*2,570*	*0.8%*	*2,847*	*1.0%*	*3,107*	*1.1%*	*2,959*	*1.0%*	*3,139*	*1.0%*	*3,913*	*1.1%*	*4,141*	*1.2%*
Other non-bank institutions	**11,913**	**3.1%**	**9,311**	**2.5%**	**8,914**	**2.5%**	**9,099**	**2.7%**	**8,492**	**2.7%**	**8,552**	**3.1%**	**8,396**	**3.1%**	**7,770**	**2.7%**	**7,528**	**2.4%**	**7,184**	**2.1%**	**7,036**	**2.0%**
Brokerage firms	831	0.2%	1,084	0.3%	951	0.3%	927	0.3%	675	0.2%	681	0.2%	603	0.2%	739	0.3%	753	0.2%	807	0.2%	907	0.3%
Leasing and factoring companies	10,213	2.6%	7,417	2.0%	7,397	2.1%	7,781	2.3%	7,434	2.4%	7,504	2.7%	7,461	2.7%	6,746	2.4%	6,522	2.1%	6,186	1.8%	5,938	1.7%
Consumer credit and venture capital companies	869	0.2%	810	0.2%	566	0.2%	391	0.1%	383	0.1%	367	0.1%	332	0.1%	285	0.1%	253	0.1%	191	0.1%	191	0.1%
Credit servicing firms											**39**	**0.0%**	**51**	**0.0%**	**484**	**0.2%**	**1,223**	**0.4%**	**1,535**	**0.4%**	**1,496**	**0.4%**
Total	**389,990**	**100%**	**373,049**	**100%**	**358,959**	**100%**	**341,962**	**100%**	**309,718**	**100%**	**276,287**	**100%**	**271,648**	**100%**	**283,272**	**100%**	**315,338**	**100%**	**343,864**	**100%**	**347,504**	**100%**

Source: Bank of Greece.

The structure of the table is based on the IMF Report *Greece: Financial System Stability Assessment* (2006).

1 As of December 2016, the assets of the Consignment Deposits and Loans Fund are not included in the data, due to its reclassification from the Financial Sector to the General Government Sector.

2. INSURANCE UNDERTAKINGS

2.1 KEY FIGURES[76]

During the first half of 2022, no significant changes were observed in the structure of the Greek private insurance market. In particular, in June 2021, 36 insurance undertakings[77] were active, a number unchanged compared to December 2021, which can be classified according to the type of authorisation as follows:

- 2 life insurance undertakings;
- 18 non-life insurance undertakings; and
- 16 insurance undertakings (composites) writing both life and non-life business (including life insurance undertakings underwriting only non-life business of "Accident" and "Sickness" classes) (Table V.1).

Of the above 36 insurance undertakings supervised by the Bank of Greece, 34 operate and are supervised in accordance with the European Directive "Solvency II", which applies to all Member States since 01.01.2016, while two insurance undertakings are exempted, due to their size, from a lot of the requirements related to all three pillars of Solvency II.[78] Of the 34 insurance undertakings subject to the provisions of Solvency II, 12 belong to insurance groups with their parent undertaking in other Member States and five to insurance groups subject to supervision by the Bank of Greece. In addition, four insurance undertakings with their head offices in Greece operate in other EU Member States under the freedom to provide services.

Furthermore, according to the most recent data available by the European Insurance and Occupational and Pensions Authority (EIOPA), in December 2021, 212[79] insurance undertakings with head offices in other EU Member States operate in Greece, either under the freedom of establishment (branches) or the freedom to provide services, the financial supervision of which is the responsibility of the supervisory authorities of their home Member States. Gross written premiums of these undertakings in 2021 amounted to €266 million, as regards branches, and €709 million for activity conducted under the freedom to provide services, amounts corresponding to 5% and 13% of the total Greek insurance market.

In particular regarding the motor third party liability insurance market, the market share of insurance undertakings from other Member States which are writing insurance business in Greece, either under the freedom of establishment (branch) or the freedom to provide services, has increased, in terms of number of vehicles, to 19% in first half of 2022 (from 18% in 2021).

[76] In this chapter, information and data submitted until 31.1.2022 have been taken into account.
[77] Excluding the mutual insurance undertakings referred to in the first sentence of para. 1 of Article 7 of Law 4364/2016.
[78] The Bank of Greece, based on the principle of proportionality, has allowed 2 insurance undertakings that meet the required size and operating criteria to be exempted from certain Solvency II provisions regarding the solvency requirements, the system of governance and public disclosure.
[79] It concerns insurance undertakings that operate in Greece, either under the freedom of establishment or the freedom to provide services, and declare this production to EIOPA.

Table V.1 Number of Insurance Undertakings pursuing business in Greece

	2018	2019	2020	2021	June 2022
Life Insurance Undertakings	2	2	2	2	2
Non-Life Insurance Undertakings	19	19	18	18	18
Insurance Undertakings writing both Life and Non-life business	17	17	17	16	16
Total	**38**	**38**	**37**	**36**	**36**
Insurance Undertakings falling within the scope of Directive 2009/138/EC	*36*	*36*	*35*	*34*	*34*
Branches of insurance undertakings established in other Member States	23	23	23	21	21
Insurance undertakings established in other Member States pursuing business under the freedom to provide services in Greece	231	244	253	212	N/A

Source: Bank of Greece.

The domestic insurance market is characterised by significant concentration, especially with regard to the undertakings that carry out life insurance business and to the undertakings that carry out both life and non-life insurance business, since the 5 largest insurance undertakings hold 81% of the relevant market,[80] in terms of technical provisions. The 5 largest insurance undertakings operating in non-life insurance business, in terms of gross written premiums, hold a share of 51% of the relevant market.[81]

Total production of gross written premiums in the first half of 2022 amounted to €2.2 billion, unchanged from the first half of 2021 (Chart V.1). In particular, gross written premiums of the life insurance business[82] in the first half of 2022 amounted to €1.1 billion, down by 6% year-on-year. It is worth noting that €0.5 billion of this amount concerns insurance products linked to investments, which increased by 5% compared to the first half of 2021 and represent 42% of total gross written premiums of life business.

During the same period, non-life insurance premiums[83] amounted to €1.1 billion, up by 7% compared to the first half of 2021. The lines of business with the most significant market shares are third-party motor liability (33%), fire insurance (19%) and hospital expenses insurance (17%), with increased production compared to the first half of 2021, by +2%, +9% and +8% respectively.

In the first half of 2022, claims incurred amounted to €0.9 billion for life insurance and €0.4 billion for non-life insurance, up by 16% και 29% respectively (Chart V.2).

For non-life insurance, the loss ratio of the market during the first half of 2022 stood at 46% of the relevant earned premiums of the same period (against 43% in 2021), while the expense ratio (administration expenses and commissions) remained unchanged at 46%.

[80] In terms of technical provisions of Life and Composite insurance undertakings.

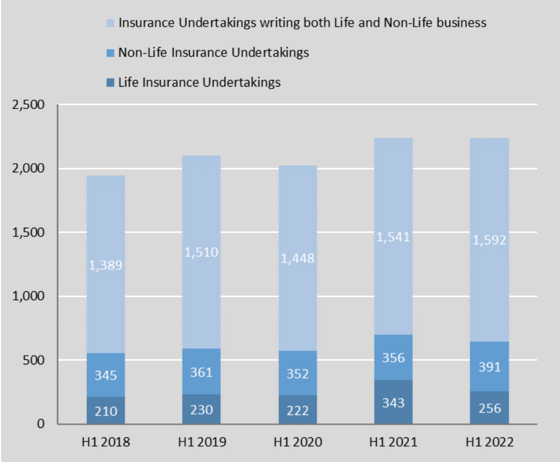
[81] Financial and supervisory data presented in this section concern only the 34 undertakings that operate in the domestic insurance market and are subject to supervision by the Bank of Greece according to Solvency II requirements.

[82] Including production of Life, Non-Life and Composite insurance undertakings.

[83] See previous footnote.

Chart V.1 Gross written premiums per type of insurance undertaking

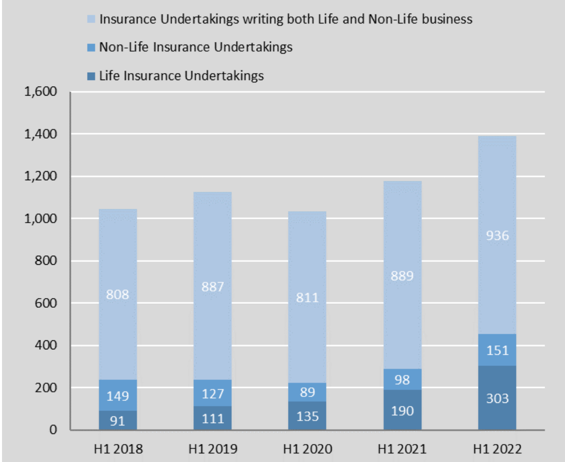
(milion euro)



Source: Bank of Greece.

Chart V.2 Claims incurred per type of insurance undertaking

(million euro)



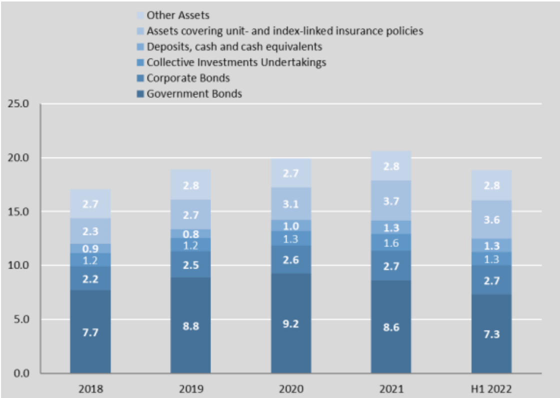
Source: Bank of Greece.

Total assets of insurance undertakings supervised by the Bank of Greece amounted to €18.8 billion as at 30.06.2022, down by 9% compared to 31.12.2021 (Chart V.3). Of total assets, €7.3 billion (39%) were held in government bonds and €2.7 billion (14%) in corporate bonds. Turning to the credit rating of these assets, 94% of government bonds and 87% of corporate bonds were BB- and above. In addition, an amount of €3.6 billion (19%) related to investments of unit- and index- linked insurance products.

Total liabilities of insurance undertakings amounted to €15.0 billion as at 30.06.2022 (against €16.5 billion as at 31.12.2021), while total technical provisions amounted to €13.5 billion for the same period (against €15.2 billion as at 31.12.2021), of which €10.5 billion related to life insurance business and €3.0 billion to non-life business (Chart V.4). As regards life technical provisions, 32% refers to unit- and index- linked insurance products (30% as at 31.12.2021).

Chart V.3 Insurance Undertakings Assets' Breakdown

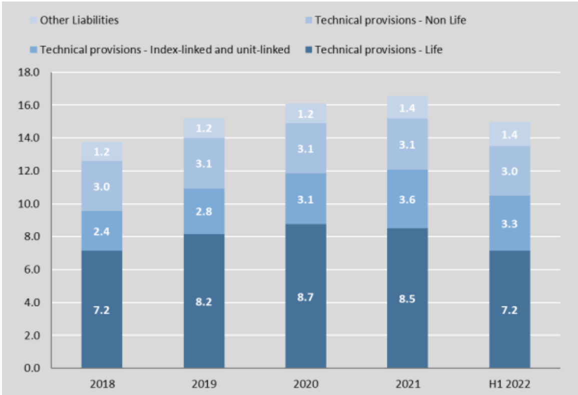
(billion euro)



Source: Bank of Greece.

Chart V.4 Insurance Undertakings' Liabilities Breakdown

(billion euro)



Source: Bank of Greece.

Total own funds of insurance undertakings stood at €3.9 billion, down by 5% compared to the previous year (Table V.2). The total Solvency Capital Requirement (SCR)[84] amounted to €1.9 billion, and the respective total eligible own funds were €3.9 billion. Concerning the quality of the eligible own funds of the insurance market, 92% of these own funds are classified in the highest quality category (Tier 1). In parallel, the SCR coverage ratio for all insurance undertakings is significantly higher than 100%.

The Minimum Capital Requirement (MCR)[85] for the entire insurance market amounted to €0.7 billion and the respective total eligible own funds to €3.6 billion.

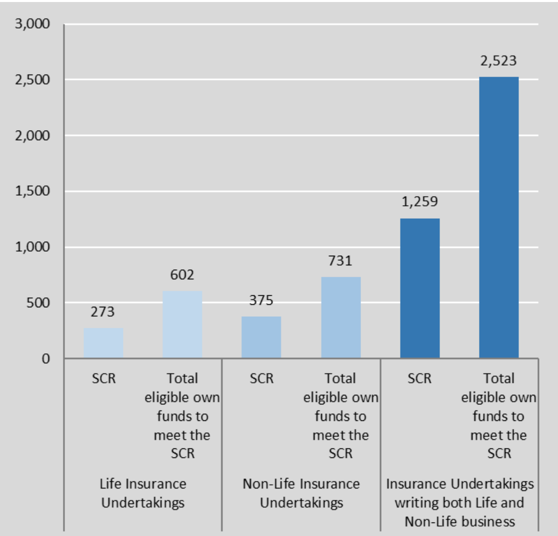
Table V.2 Capital requirements, total eligible own funds and solvency ratios

Amounts in mil. €	2018	2019	2020	2021	June 2022
Total Solvency Capital Requirement (SCR)	1,717	1,899	1,940	2,094	1,907
Total Eligible Own Funds to meet the SCR	2,987	3,403	3,602	3,984	3,856
SCR ratio	174.0%	179.2%	185.7%	190.3%	202.2%
Minimum Capital Requirement (MCR)	648	691	703	714	659
Total Eligible Own Funds to meet the MCR	2,813	3,257	3,441	3,718	3,557
MCR ratio	433.8%	471.1%	489.5%	521.0%	539.5%

Source: Bank of Greece.

Chart V.5 SCR and total eligible own funds to meet the SCR per type of insurance undertaking

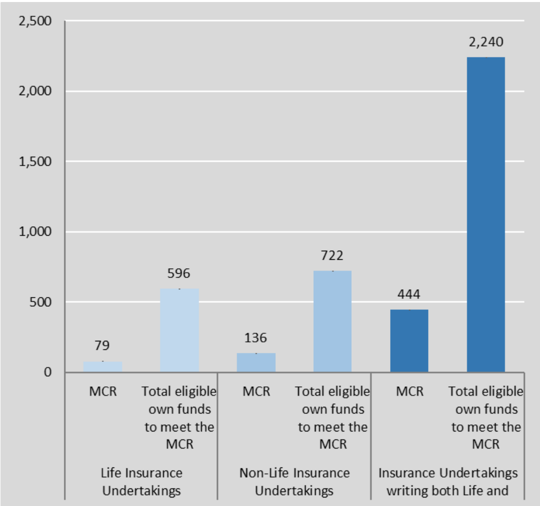
(June 2022, mil. €)



Source: Bank of Greece.

Chart V.6 MCR and total eligible own funds to meet the MCR per type of insurance undertaking

(June 2022, mil. €)



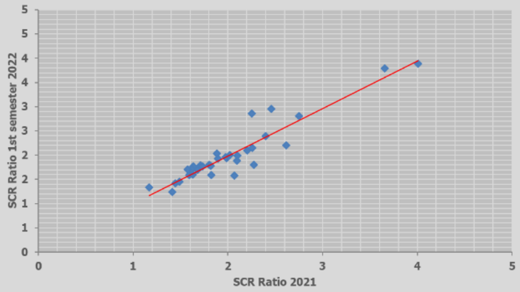
Source: Bank of Greece.

[84] The calculation of the Solvency Capital Requirement reflects the adequacy of the own funds so that the insurance undertaking has the ability to absorb losses at a confidence level of 99.5% with a time horizon of one year.
[85] The Minimum Solvency Requirement reflects the adequacy of the own funds so that the insurance undertaking has the ability to absorb losses at a confidence level of 85%, with a time horizon of one year, and represents a level of capital below which the interests of policyholders could be seriously jeopardised if the undertaking were allowed to continue operating.

Chart V.7 depicts the SCR coverage ratio in June 2022 compared to December 2021.

Undertakings depicted in Chart V.7 above the red line showed an improvement in the SCR coverage ratio in the first half of 2022 (58% of all insurance undertakings), while undertakings below the red line showed a deterioration in their SCR coverage ratio. However, all undertakings remain solvent.

Chart V.7 SCR coverage ratio June 2022/December 2021



Source: Bank of Greece.

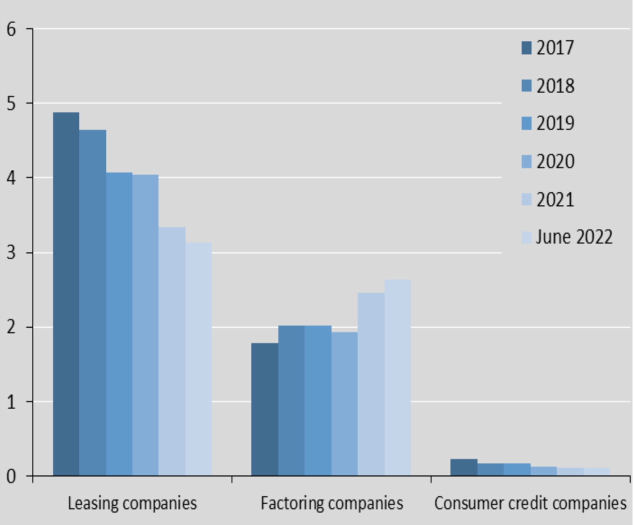
3. OTHER FINANCIAL INSTITUTIONS

3.1 LEASING COMPANIES – FACTORING COMPANIES – CONSUMER CREDIT COMPANIES

The assets of leasing companies continued the downward trend of recent years, recording a 6.4% decrease during the first half of 2022 and reaching €3.1 billion, compared with €3.3 billion in December 2021 (see Chart V. 8). The reduction in question resulted mainly from increased provisioning in view of the ongoing restructuring of assets through the sale of non-performing loans.

Chart V.8 Evolution of assets of other financial institutions

(billion euro)



Source: Bank of Greece.

On the contrary, the assets of factoring companies increased again and stood at €2.6 billion in June 2022, 7.1% higher than in December 2021 (€2.5 billion), mainly due to a continued increase in loans and advances to customers (excluding credit institutions).

As regards credit companies, their assets showed a small increase and reached €107.1 million in June 2022, compared with €105.7 million at the end of December 2021.

Turning to the interconnection of other financial institutions with credit institutions, it is worth noting that their liabilities to credit institutions, which mainly concern borrowing from parent groups, increased further during the first half of 2022 and reached 20.9% of their total liabilities, compared with 18.7% in December 2021.

At the same time, the claims of other financial institutions on credit institutions increased significantly (June 2022: €275 million, December 2021: €167 million) as a result of corporate transformations that took place within the current year, and account for 4.7% of assets in June 2022, compared with 2.8% in December 2021.

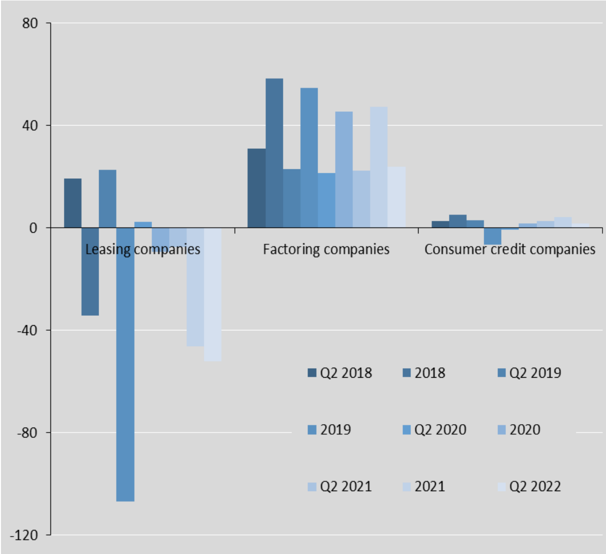
In terms of income statements, in the first half of 2022 leasing companies continued to post losses, which reached €52.1 million, compared with €7.4 million in the first half of 2021, which are primarily due to an increase in credit risk provisions and are linked to the expected sale of non-performing loans.

On the other hand, factoring companies posted profits, without any significant change, which amounted to €23.8 million in the first half of 2022, compared with €22.4 million in the first half of 2021.

Credit companies recorded reduced profits of €1.8 million in the first half of 2022, compared with €2.8 million in the corresponding period of the previous year (see Chart V.9).

Chart V.9 Evolution of income statements of other financial institutions

(million euros)

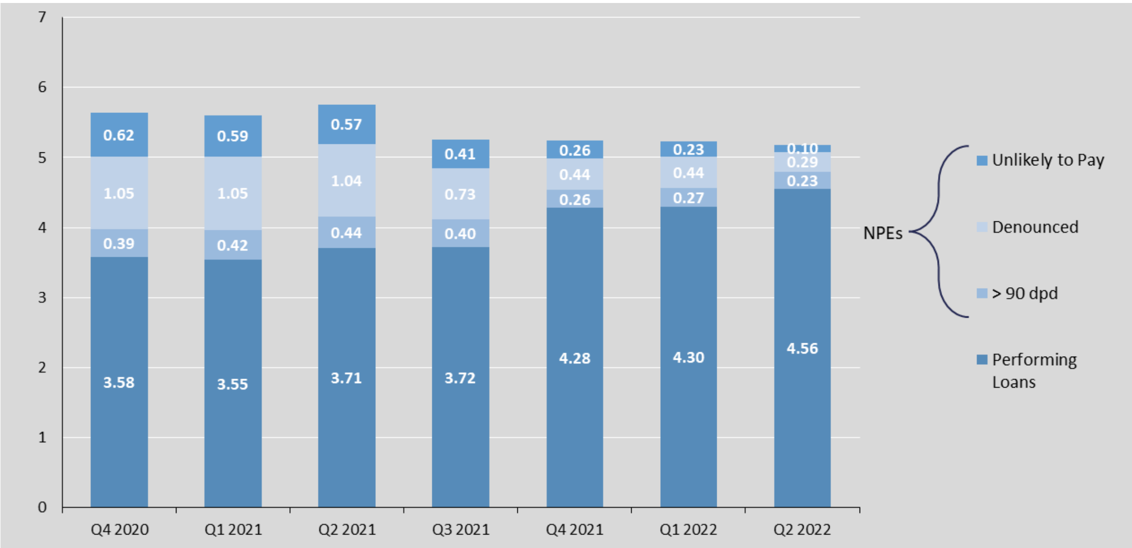


Source: Bank of Greece.

Finally, non-performing loans (on balance sheet), cumulatively for the three sectors (leasing, factoring and consumer credit), decreased by 35% and amounted to €620 million at the end of June 2022 (€955 million in December 2021), resulting also in a reduction in the percentage of non-performing loans to total loans (12% in June 2022, versus 18.2% in December 2021) (see Chart V.10). The reduction in question is mainly due to the imminent sale of non-performing loans in the context of the ongoing effort of significant banks to clean up their balance sheets.

Chart V.10 Other financial institutions – Performing and non-performing loans

(billion euros)



Source: Bank of Greece.

3.2 CREDIT SERVICING FIRMS (CSFs)

Under Law 4354/2015 and Bank of Greece Executive Committee Act 118/19.05.2017, the Bank of Greece has authorised a total of 26 credit servicers to provide servicing management of loan and credit receivables, of which 23 are still active. Until today none of the CSFs has applied for authorisation to refinance receivables. The activity of CSFs varies considerably, with 15 firms having minimum to zero activity, while 3 firms have a market share of 83% based on the total value of exposures under management.

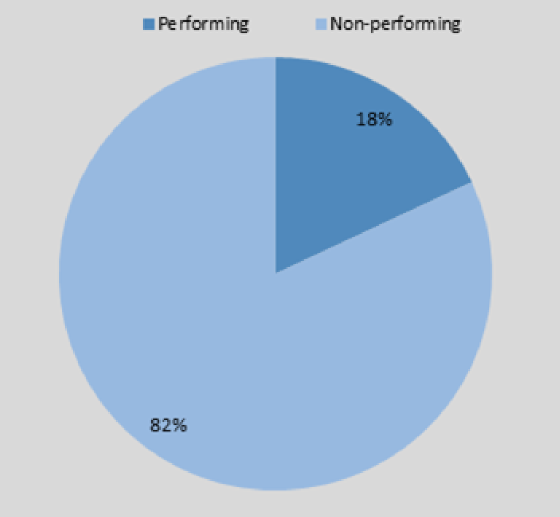
Cumulative data for CSFs

According to June 2022 data,[86] the total assets of CSFs equal €1.49 billion. The total equity, including provisions, and total liabilities of CSFs stand at €798 million και €635 million, respectively. CSFs' profits amounted to €65 million in the first half year 2022, while total staff and senior management costs correspond to 42% of their total revenues.

The portfolio of exposures[87] under management is divided into exposures that are serviced on behalf of credit institutions and exposures that are serviced on behalf of credit acquiring firms. According to June 2022 data, total exposures under management amounted to €92.7 billion, of which 27% were exposures managed by CSFs on behalf of credit institutions and 73% were exposures serviced on behalf of credit acquiring firms.

The majority of exposures managed by CSFs during the last two years were transferred to them in the context of credit institutions' NPL reduction strategy. The portfolio of exposures under management during the first half of 2022 consisted mainly of non-performing exposures (82%) and, to a lesser extent, performing exposures (18%) (Chart V.11).

Chart V.11 Portfolio structure



Source: Bank of Greece.

Management of exposures serviced on behalf of credit acquiring firms

The total amount of exposures managed by CSFs on behalf of credit acquiring firms stood at €67.8 billion according to June 2022 data. The total amount of exposures has increased compared to the second half of 2021 due to the inflow of new loans from additional securitisations and sale of non-performing exposures by credit institutions.

The portfolio includes mainly business loans (46%), consumer loans (32%) and residential loans (22%) (Chart V.12).

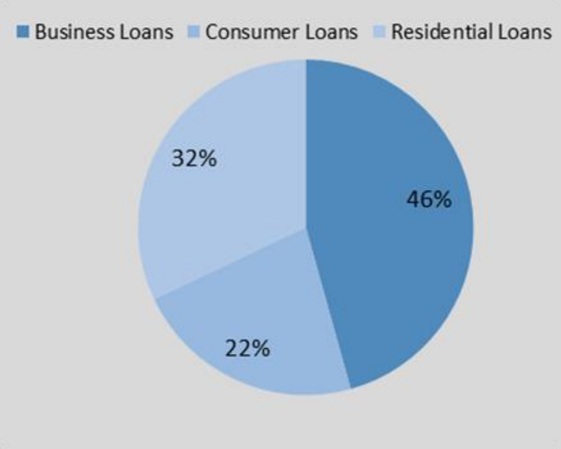
[86] All data as of 30.06.2022 are provisional and have not been audited by a statutory auditor.

[87] Exposures include all debit instruments (loans and advances and debit securities), excluding off-balance-sheet exposures and write-offs. It should be noted that Bank of Greece Executive Committee Act 206/1/03.06.2022 has modified the data to be submitted by, *inter alia*, credit servicing firms to the Bank of Greece.

The exposures under management on behalf of credit acquiring firms are of poor credit quality, with 92% being non-performing exposures. Of the non-performing exposures that are under management, the majority are denounced exposures (72.7%), while 17.7% are exposures that are past due by 90 days or more and 9.6% are unlikely to pay exposures (Chart V.13).

Chart V.12 Exposures under management by portfolio

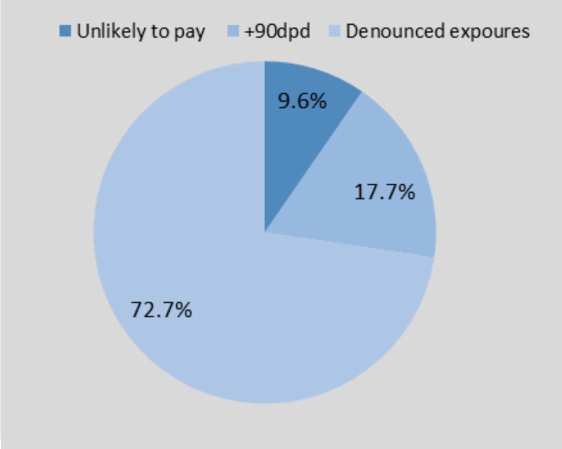
(%)



Source: Bank of Greece.

Chart V.13 Non-performing exposures under CSF management (per category)

(%)

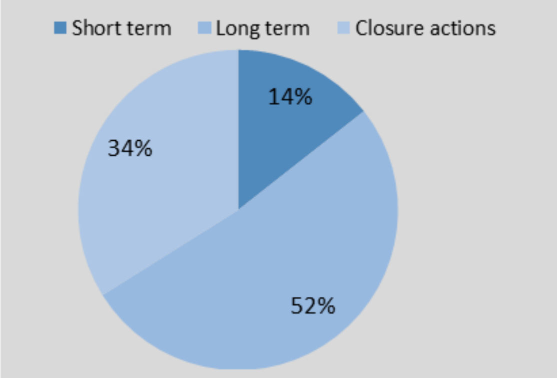


Source: Bank of Greece.

Repayments, liquidation of collateral and write-offs of exposures managed by CSFs on behalf of credit acquiring firms are significantly higher compared to the second half of 2021 and stood at €1.70 billion for the first half of 2022. In more detail, repayments, liquidation of collateral and write-offs of exposures for the first half of 2022 amounted to €820 million, €298.5 million and €581 million, respectively.

Finally, in the first half of 2022, modifications affected 29.6% of the total portfolio managed on behalf of credit acquiring firms. According to June 2022 data, long-term modifications[88] accounted for the bulk of modified exposures (52%), followed by resolution and closure actions (34%) and short-term modifications[89] (14%) (Chart V.14).

Chart V.14 Analysis of exposures under management that were modified



Source: Bank of Greece.

It should be noted that, as at June 2022, resolution and closure actions amounted to €6.8 billion, short-term modifications to €2.9 billion and long-term modifications to €10.4 billion.

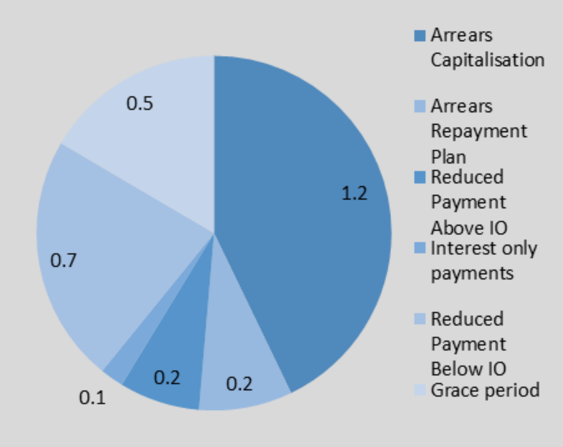
According to June 2022 data, capitalisation of arrears was the most common short-term modification (accounting for 43% of short-term modifications – Chart V.15a), while the most common

[88] Long-term modifications are those with a duration of more than two years, based on conservative assumptions regarding the borrower's future repayment capacity throughout the repayment schedule.
[89] Short-term modifications are those with a duration of less than two years, applicable to cases where the repayment difficulties are reasonably judged to be temporary.

types of long-term modifications were the extension of the loan term, split balance and partial debt write-down, accounting for 30%, 30% and 28%, respectively (Chart V.15b).

Chart V.15a Short-term modifications

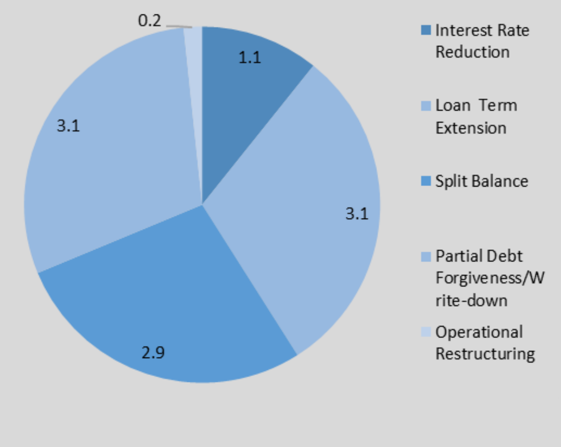
(billion euro)



Source: Bank of Greece.

Chart V.15b Long-term modifications

(billion euro)

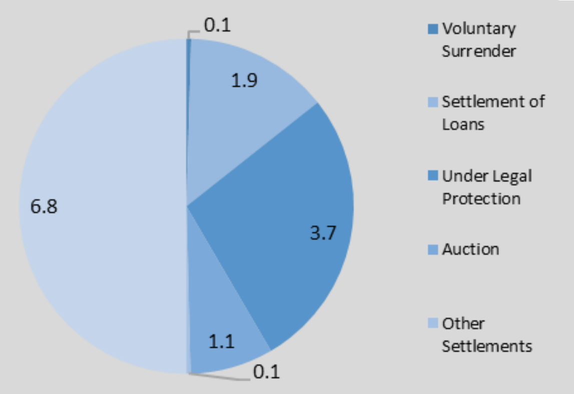


Source: Bank of Greece.

As at June 2022, the most common types of resolution and closure actions[90] were settlement of loans under legal protection (54%) and settlements of loans (28%) (Chart V.15c).

Chart V.15c Resolution and closure actions

(billion euro)



Source: Bank of Greece.

Management of exposures serviced on behalf of credit institutions

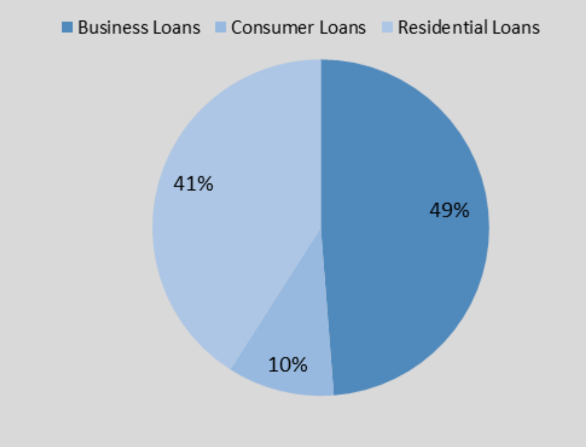
The total amount of exposures managed by CSFs on behalf of credit institutions stands at €24.9 billion. This amount is slightly lower than the amount of exposures managed in the second half of 2021 due to the sale of exposures by credit institutions to credit acquiring firms. It should be noted that 54% of these exposures are non-performing exposures.

The portfolio of exposures managed on behalf of credit institutions consists mainly of business loans (49%), residential loans (41%) and consumer loans (10%) (see Chart V.16).

[90] Resolution and closure actions include any change in the type of loan contract or termination of the contract.

Repayments and liquidation of collateral managed by CSFs on behalf of credit institutions have decreased significantly to €868 million in the first half of 2022 compared to the second half of 2021. In particular, repayments and collateral liquidation, during the first half of 2022, amounted to €807 million and €61.4 million, respectively.

Chart V.16 Breakdown of exposures under management
(%)



Source: Bank of Greece.

During the 2019-June 2022 period, total exposures of €1.15 billion were sold on the secondary market, consisting mainly of business loans. In the majority of these sales, such an action was not included in the initial business plan[91] of these firms and, in reality, involved a change of the loan ownership structure without necessarily resulting in any modification of the terms of the exposure for the borrower. This activity has recently increased and is expected to grow further in the coming period.

Overall, there has been an increase in the total amount of exposures managed by CSFs and an increase in activity on the secondary market. The ability of these firms to manage loans on behalf of credit institutions and of credit acquiring firms is hampered due to recent judgment no. 822/2022 of the Supreme Court and the relevant decisions of the Appeal Courts, regarding CSF's standing to institute and participate in enforcement proceedings entailing auctions of foreclosed properties. However, the effectiveness of CSFs is expected to become visible in the coming months with the lifting of the above restrictions, along with the recent launch (in September 2022) of the digital auction platform for the principal residence of vulnerable households, which will apply until its transfer to the Sale and Lease Back Organisation.

3.3 PAYMENT INSTITUTIONS, E-MONEY INSTITUTIONS, PAYMENT INITIATION SERVICE PROVIDERS AND ACCOUNT INFORMATION SERVICE PROVIDERS

Key figures

(a) Payment Institutions (PIs)

Under Law 4537/2018[92] and Bank of Greece Executive Committee Act (ECA) 164/2/13.12.2019,[93] the Bank of Greece has authorised 14 payment institutions (PIs) and one account information service provider (AISP). It should be noted that three PIs took over the divested merchant acquiring business of[94] three significant banks in 2022. As a result, a new landscape is

[91] See Chart 6 of Box VI. – "Securitizations as a tool to effectively manage banks' Net Performing Loans (NPLs).", Financial Stability Report, May 2022.

[92] Law 4537/2018 transposed to Greek law Directive (EU) 2015/2366 (Payment Service Directive II – PSD II) establishing the regulatory framework for payment services in the internal market.

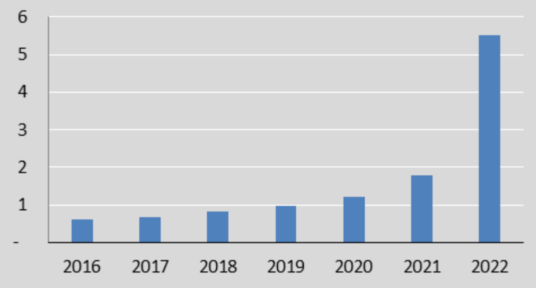
[93] As amended by ECA 178/5/02.10.2020 and currently in force.

[94] According to Article 4 of Law 4537/2018, "acquiring of payment transactions or merchant acquiring" refers to a payment service provided by a payment service provider contracting with a payee to accept and process payment transactions, which results in a transfer of funds to the payee.

emerging in the electronic payments sector, as merchant acquiring services will be provided to a considerable extent by PIs authorised by the Bank of Greece. Against this background, a rapid increase in payment volumes to be settled by PIs is expected in the near future.

Chart V.17 Annual value of payment transactions by PIs

(EUR billions)



Source: Bank of Greece.

The total value of payment transactions carried out by PIs in the reference period for 2022[95] amounts to €5.5 billion, up by 208.8% compared with the previous reference period for 2021[96] (€1.8 billion, see Chart V.17). This substantial increase in the volume of payments is primarily due to the start of operations, in the first half of 2022, of only one of the three PIs that took over the divested acquiring business of significant banks, as mentioned above, and, secondarily, to an increase in the value of executed remittances and a higher rate of merchant acquiring on electronic platforms (e-marketplaces).[97] It should be noted that 91% of the value of payments carried out by PIs in 2021 was concentrated among three PIs. It is also noteworthy that one PI also engages in credit provision – in accordance with the provisions of Law 4537/2018 – as an ancillary service to merchant acquiring (outstanding credit as at 30.6.2022: €2.4 million).

As at 30.6.2022, the total equity of PIs increased significantly, by €24.0 million, to €27.7 million (compared with €3.7 million at end-2021), while profits for the first half of 2022 amounted to €7.5 million, compared with €2.0 million for 2021 as a whole (see Chart V.18). The increases in the total equity and profits of PIs are due to the reasons explained above, which led to higher volumes of payments.

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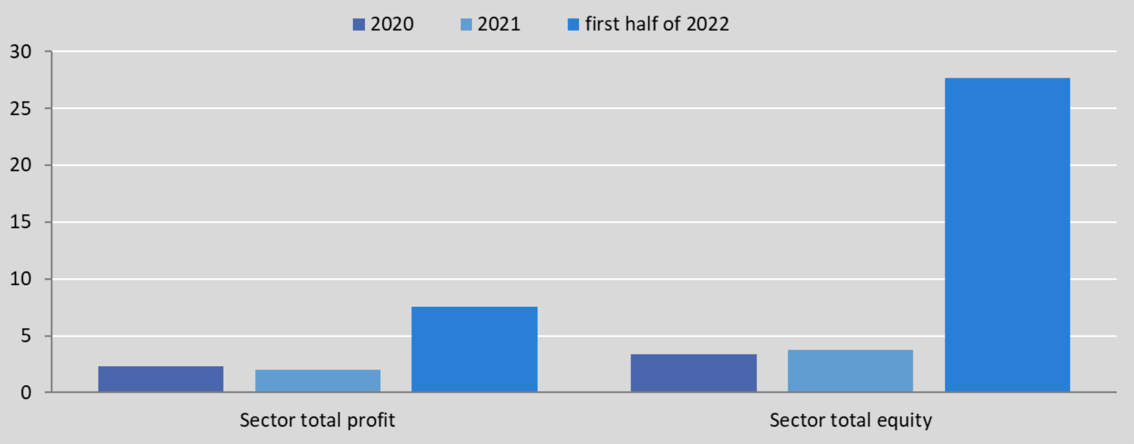
[95] Under the current regulatory framework, the total value of payment transactions relates to a 12-month period. In particular, the reference period for 2022 extends from 1.7.2021 to 30.6.2022.

[96] Under the current regulatory framework, the total value of payment transactions relates to a 12-month period. In particular, the reference period for 2021 extends from 1.1.2021 to 31.12.2022.

[97] The term e-marketplace means a web-based platform developed and managed by a company, on which sellers register in order to distribute their goods electronically to buyers. The operation of an e-marketplace typically involves the conclusion of a collaboration agreement between sellers and the e-marketplace manager, the promotion of their goods in the virtual environment of the e-marketplace (website/application), the ordering of goods by buyers (users of the platform) and the payment through a payment service provider by methods that vary depending on the implementation of the services and the options available to buyers.

Chart V.18 Profit and equity of Payment Institutions

(EUR millions)



Source: Bank of Greece.

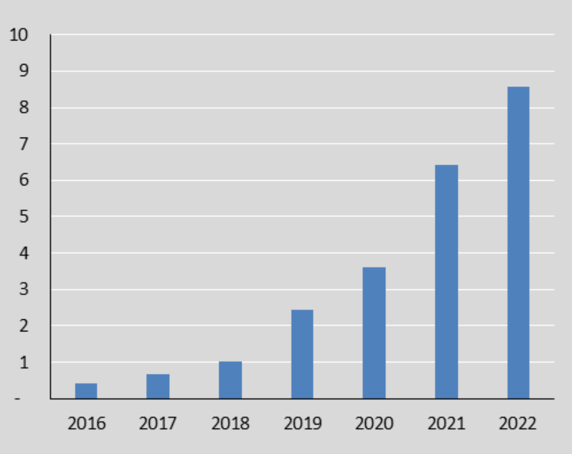
(b) Electronic Money Institutions (EMIs)

Furthermore, under Law 4021/2011[98] and Bank of Greece Executive Committee Act 164/2/13.12.2019, the Bank of Greece has authorised three electronic money institutions (EMIs).

The total annual value of payment transactions conducted in the reference period for 2022[99] by EMIs amounted to €8.6 billion, up by 34.4% in relation to the previous reference period for 2021[100] (€6.4 billion, see Chart V.19). This significant increase in the volume of payments is mostly due to the expansion of the activities of one EMI abroad (under the EU passport regime). This EMI also accounts for 79% of the total annual value of EMI payments. A second EMI significantly developed its operations, on the one hand by providing merchant ac-

Chart V.19 Annual value of payment transactions by EMIs

(EUR billions)



Source: Bank of Greece.

[98] Law 4021/2011 transposed to Greek law the provisions of Directive 2009/110/EC on the taking up, pursuit and prudential supervision of the business of electronic money institutions.

[99] Under the current regulatory framework, the total value of payment transactions refers to a 12-month period. In particular, the reference period for 2022 extends from 1.7.2021 to 30.6.2022.

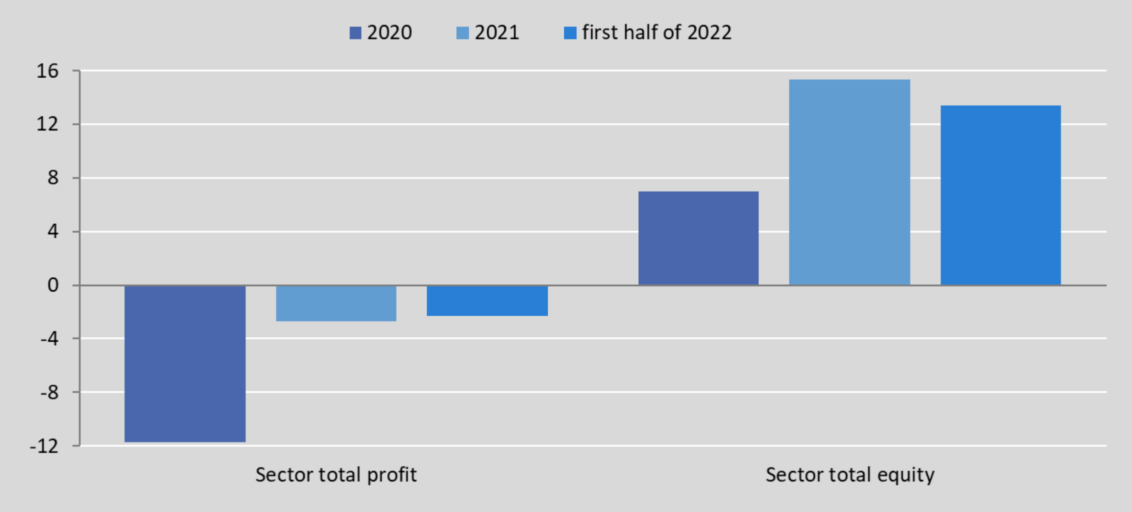
[100] Under the current regulatory framework, the total value of payment transactions relates to a 12-month period. In particular, the reference period for 2021 extends from 1.1.2021 to 31.12.2022.

quiring services and on the other hand by introducing an electronic wallet to the Greek market.[101]

In the first half of 2022, the total equity of EMIs amounted to €13.4 million, down by €1.9 million since the end of 2021 (December 2021: €15.3 million). In addition, in the first half of the year, EMIs recorded losses of €2.3 million, compared with losses of €2.7 million for the whole of 2021 (see Chart V.20). The losses posted in this sector are mainly due to investment spending, particularly in IT and technology sectors, but also to ongoing expansion to other European markets.

Chart V.20 Profit and equity of Electronic Money Institutions

(EUR millions)



Source: Bank of Greece.

In addition, it should be noted that 257 PIs and 187 EMIs have notified the Bank of Greece of their intention to provide payment services under the EU passport regime.[102] The majority of these exercise the freedom to provide services without establishment. As regards the type of payment services provided, it should be noted that most of the above institutions are active in the issuance of payment instruments and/or merchant acquisition, the transfer of funds and the execution of remittances.

Finally, it should be noted that in cases of payment transactions exempted from the provisions of Article 3 of Law 4537/2018,[103] two companies providing digital content purchase services for online gaming and closed wallet services have been included in the public register[104] established by the Bank of Greece.

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[101] In accordance with Article 10 of Law 4021/2011, electronic money means electronically stored monetary value ("e-wallet") as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions and which is accepted by a natural or legal person other than the electronic money issuer

[102]An "EU passport" enables PIs and EMIs established in a Member State to provide payment and electronic money services in another Member State under the freedom of establishment or the freedom to provide services, as long as the services in question are covered by their authorisation granted by the home Member State and subject to the notification of the required information to the Bank of Greece by the competent authorities of the home Member State.

[103]The European Banking Authority issued guidelines (EBA/GL/2022/02) on the limited network exclusion under PSDII in February 2022, with effect from 1 June 2022.

[104] In accordance with Article 14 of Law 4537/2018, the Bank of Greece publishes on its official website a public register of authorised PIs/EMIs/AISPs established in Greece, as well as the activities exempted from Law 4537/2028, which are notified to the Bank of Greece and are lawfully carried out by natural or legal persons, in accordance with Article 37(3) and Article 37(4) of Law 4537/2018.

VI. FINANCIAL MARKET INFRASTRUCTURES

1. ELECTRONIC PAYMENT INSTRUMENTS

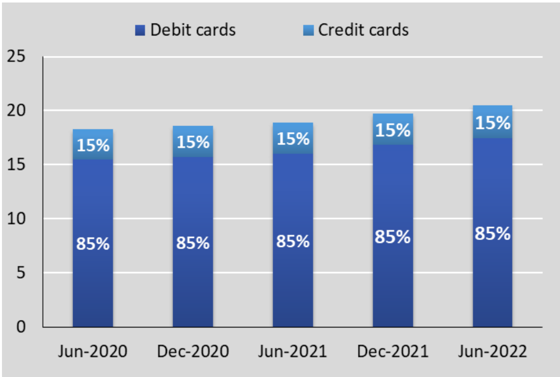
1.1 PAYMENT CARDS

Number of payment cards

As of end-June 2022, the total number of active payment cards[105] in circulation reached 20.4 million, up by 4% compared to end-December 2021 (see Chart VI.1).

Chart VI.1 Number of cards per card type

(million)



Source: Bank of Greece.

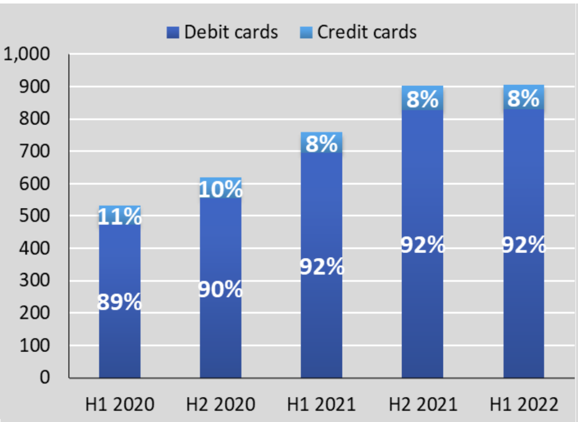
With respect to the various types of cards, the number of debit and credit cards has risen by 4% and 2%, respectively, since end-December 2021. The share of debit and credit cards in the total number of payment cards remained stable at 85% and 15%, respectively.

Transactions with payment cards

The total number and value of transactions with payment cards effected during the first half of 2022 slightly varied in comparison to the second half of 2021. More specifically, the number of transactions increased by 0.4%, reaching 904 million (see Chart VI.2), while their corresponding value decreased by 3%, amounting to €44 billion (see Chart VI.3).

Chart VI.2 Number of card transactions

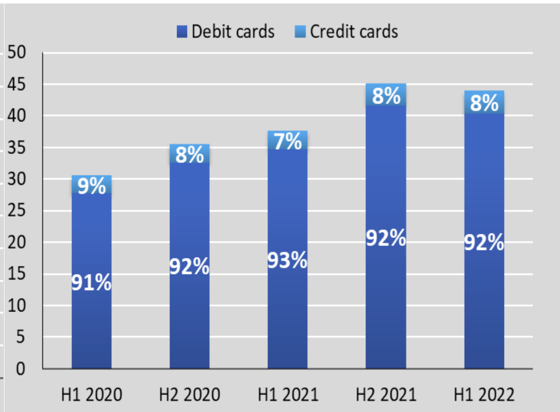
(million)



Source: Bank of Greece.

Chart VI.3 Value of card transactions

(billion euro)



Source: Bank of Greece.

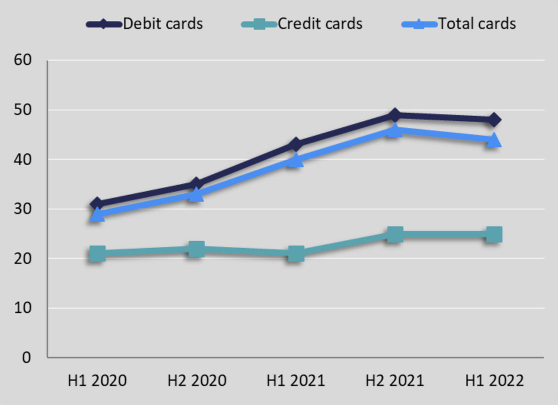
The average number of transactions per card fell to 44, from 46 transactions in the previous semester.

[105] For the purposes of this Review, debit cards comprise prepaid cards and cards that can be used for cash withdrawals but not for purchases. Credit cards comprise virtual cards and delayed debit cards.

Debit cards remained the leading substitute for cash, with the average number of transactions per debit card reaching 48, from 49 transactions in the second half of 2021. The average number of transactions per credit card remained unchanged at 25 transactions (see Chart VI.4).

Chart VI.4 Average number of transactions per card type

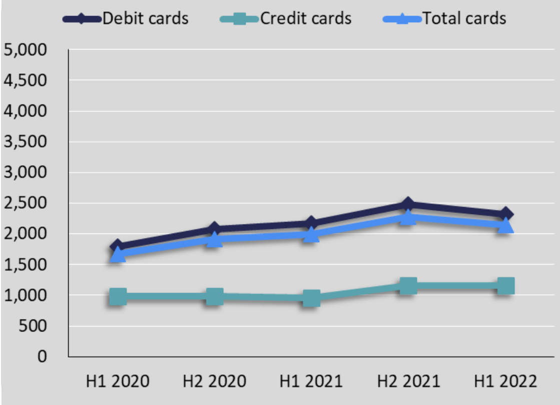
(transactions)



Source: Bank of Greece.

Chart VI.5 Average value of transactions per card type

(euro)



Source: Bank of Greece.

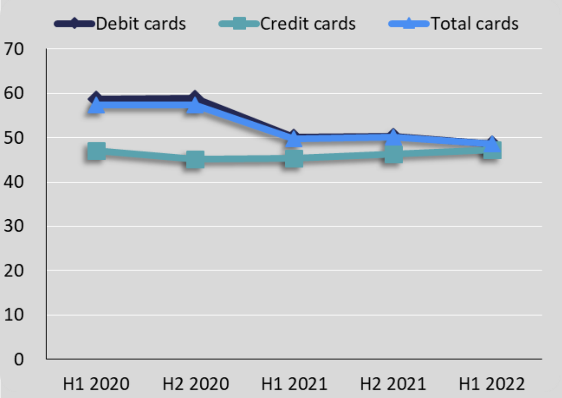
The average value of transactions per card decreased for the first time since the first half of 2020. Specifically, the average value of transactions per card was €2,145, down by 6% compared to the second half of 2021 (see Chart VI.5). This decrease was due to a 6% decline in the average value of transactions per debit card to €2,312. The average value of transactions per credit card slightly rose by 0.57% at €1,165.

The average value per transaction for all cards fell, compared to the second semester of 2021, to €48 (see Chart VI.6).

Turning to transactions by card category, the average value per transaction using debit cards amounted to €48, down by 3%, whereas the average value per transaction using credit cards rose to €47, from €46 in the previous half. The trend towards greater use of debit cards for the purchase of low-value products and services also continued in the first half of 2022.

Chart VI.6 Average value per card transaction

(euro)



Source: Bank of Greece.

Payment card transactions fraud

The fraud-to-transaction ratio reflects the proportion of the number and the value of fraudulent transactions to the number and value of total transactions. In volume terms, the fraud-to-transaction ratio in the first half of 2022 remained stable at 0.02% and accounted for one fraudulent transaction per 6.6 thousand transactions (see Table VI.1). Respectively, in value terms, the fraud-to-transaction ratio remained unchanged at 0.01%, corresponding to €1 fraud value per €7 thousand transaction value (see Table VI.2).

A breakdown of fraud per card transactions type, i.e. (a) ATM transactions, (b) POS payments and (c) card not present transactions (CNP), shows that the majority of fraud incidents is seen in CNP transactions via the internet or mail/telephone order (see Charts VI.7 and VI.8).

Table VI.1 Fraud to transaction ratio - Volume

Period	Number of transactions	Number of fraudulent transactions	Fraud to transaction ratio
H1 2022	904,213,583	136,153	0.02%
H2 2021	930,811,199	183,009	0.02%
H1 2021	756,938,020	209,381	0.03%
H2 2020	617,921,296	284,543	0.05%
H1 2020	531,939,549	157,691	0.03%

Source: Bank of Greece.

Table VI.2 Fraud to transaction ratio - Value

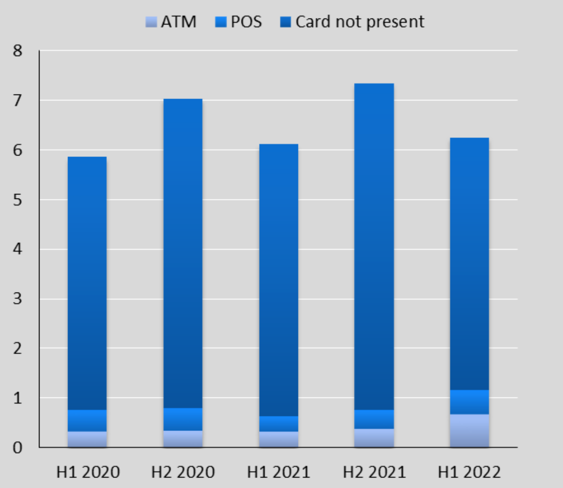
(euro)

Period	Value of transactions	Value of fraudulent transactions	Fraud to transaction ratio
H1 2022	43,899,493,109	6,241,816	0.01%
H2 2021	49,673,218,509	7,338,362	0.01%
H1 2021	37,614,253,430	6,103,487	0.02%
H2 2020	35,501,144,457	7,030,409	0.02%
H1 2020	30,526,569,005	5,853,697	0.02%

Source: Bank of Greece.

Chart VI.7 Number of fraudulent transactions per transaction type

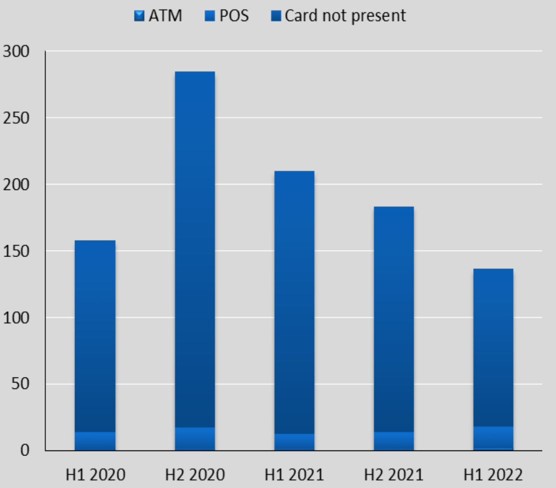
(thousand)



Source: Bank of Greece.

Chart VI.8 Value of fraudulent transactions per transaction type

(million euro)

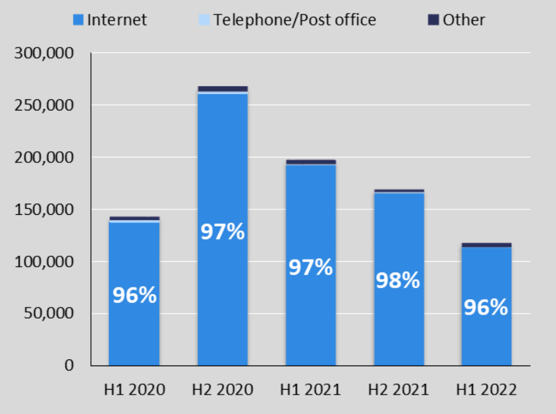


Source: Bank of Greece.

During the first half of 2022, the number of fraudulent transactions recorded per transaction type reached 1,476 in ATM, 17 thousand in POS and 117 thousand in CNP transactions. The corresponding value of fraudulent transactions was €679 thousand in ATM, €490 thousand in POS and €5 million in CNP transactions. A further analysis on fraud cases in CNP transactions reveals that the majority of incidents related to remote transactions via the internet (see Charts VI.9 and VI.10).

Chart VI.9 Number of fraudulent transactions in CNP transactions

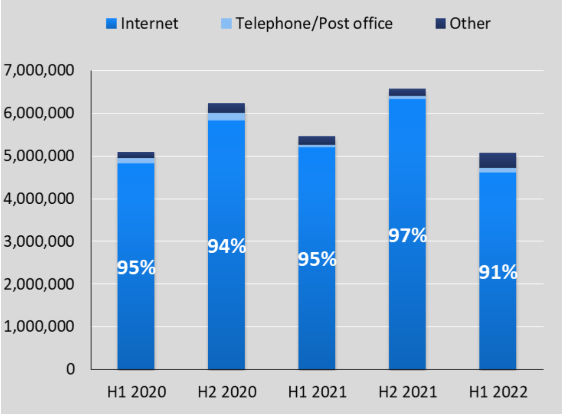
(transactions)



Source: Bank of Greece.

Chart VI.10 Value of fraudulent transactions in CNP transactions

(euro)



Source: Bank of Greece.

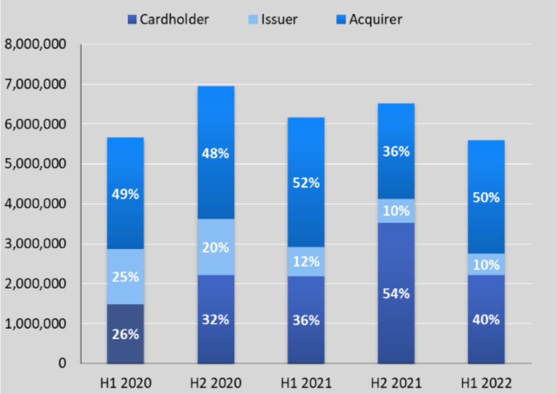
It should be noted that the vast majority of internet incidents are related to cross-border online purchase transactions. These high levels of fraudulent cross-border transactions via the internet are mainly due to the fact that the international technical standard for secure transactions "3DSecure" is used more extensively by payment service providers established in Greece than by payment service providers operating abroad.

The financial losses arising from fraudulent transactions using payment cards reached €5.6 million in the first half of 2022, down by 14% and 9% compared to the first and second half of 2021 respectively.

Financial losses were borne by the parties involved in the card transaction chain according to their liability. Based on the distribution of losses, cardholders and acquirers bore 40% and 50% of total losses, respectively. Issuers incurred 10% of total losses (see Chart VI.11).

Chart VI.11 Loss distribution from fraudulent transactions

(euro)



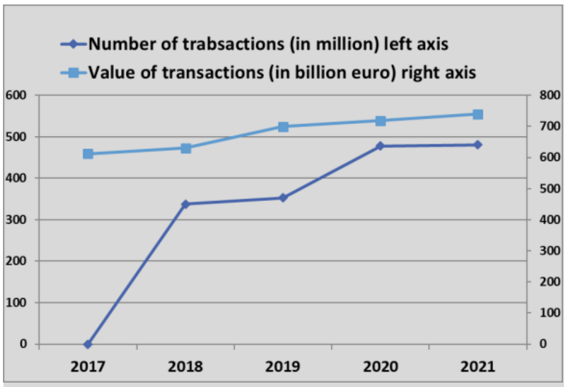
Source: Bank of Greece.

1.2 CREDIT TRANSFERS

Credit transfer transactions

During 2021, a total of 481 million customer transactions using credit transfers were effected, amounting to €739 billion. Compared to 2020, the number of credit transfer transactions rose by 1% and their corresponding value by 3% (see Chart VI.12). The average value per transaction increased by 2% to €1,537 in 2021, from €1,504 in 2020 (see Chart VI.13).

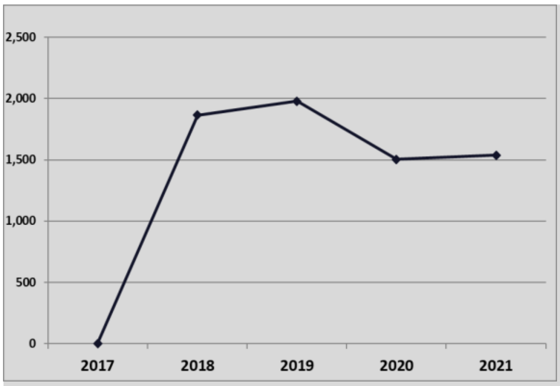
Chart VI.12 Credit transfers - Evolution of number and value of transactions



Source: Bank of Greece.

Chart VI.13 Credit transfers - Evolution of average value per transaction

(euro)



Source: Bank of Greece.

Credit transfer transaction fraud

Using the European Banking Authority methodology (EBA/GL/2018/05) for compiling fraud statistics, during 2021 credit transfer fraud increased by 609% in volume terms and by 320% in value terms compared to 2020. More specifically, a total of 8,365 fraud incidents amounting to €26.3 million were recorded, compared with a total of 1,179 incidents amounting to €6.2 million in 2020.

The credit transfer fraud-to-transaction ratio remained very low, at 0.00199% in volume terms and 0.00406% in value terms, accounting for one fraudulent transaction per 50 thousand credit transfers effected and €1 of fraud per €25 thousand transferred.

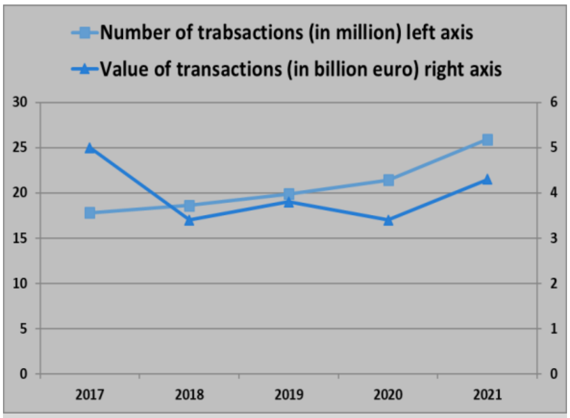
An analysis of fraud data shows that the vast majority of fraud incidents is caused by (a) the issuance of a payment order by the fraudster; and (b) the manipulation of the payer by the fraudster. According to the former fraud method, the fraudster issues an unauthorised payment order after having illegally acquired the payer's or the payee's sensitive payment data. In the latter fraud method, the payer is manipulated by the fraudster to issue a payment order, or to give the instruction to do so to the payment service provider, in good faith, to a payment account it believes belongs to a legitimate payee.

1.3 DIRECT DEBITS

Direct debit transactions

On an annual basis, customer transactions using direct debits in 2021 increased by 21% to 25.9 million over 2020. Their corresponding value also rose by 26% to €4.3 billion (see Chart VI.14). The average value per direct debit transaction increase by 4% to €166 (see Chart VI.15).

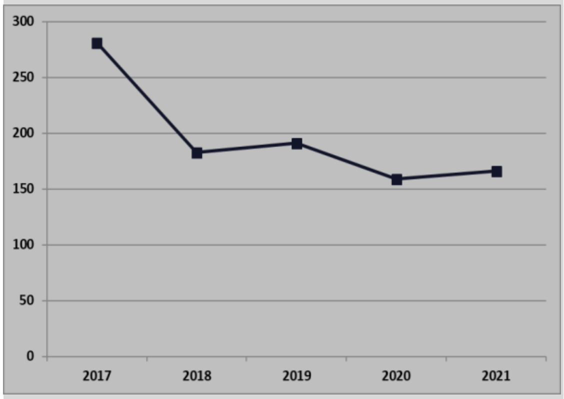
Chart VI.14 Direct debits - Evolution of number and value of transactions



Πηγή: ECB, Statistical Data Warehouse 30.08.2022.

Chart VI.15 Direct debits - Evolution of average value per transaction

(euro)



Πηγή: ECB, Statistical Data Warehouse 30.08.2022.

Direct debit transaction fraud

Direct debits continued to be regarded as the safest payment instrument given that there were no fraud incidents reported by payment service providers also in 2021.

2. CENTRAL COUNTERPARTIES

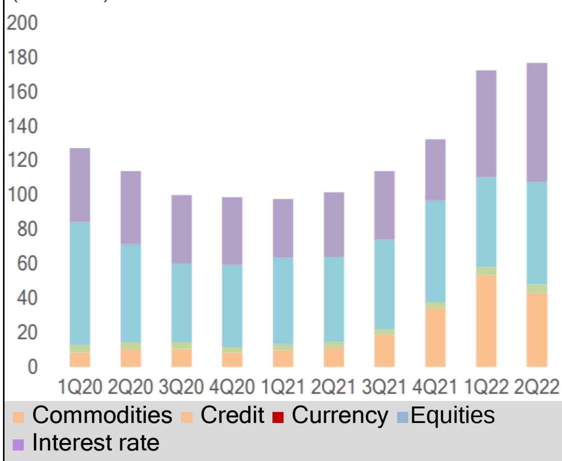
2.1 EUROPEAN DEVELOPMENTS

Russia's invasion of Ukraine had a strong impact on financial markets and led to extreme volatility, especially in commodity markets, including the energy market. Against this backdrop, the prices of commodities and their related derivatives soared and have remained volatile ever since. At the same time, there was an increase in trading activity associated with this volatility.

All of this resulted in initial margins rising to a historically high in the commodity derivatives market and especially in the energy derivatives segment. A significant increase was also observed in initial margins for interest rate derivatives, driven by increasing trading activity due to inflationary pressures and expected changes in interest rates by both EU and non-EU central banks (Chart VI.16).

Chart VI.16 Initial margins collected by EU CCPs by asset class

(billion euros)



Note: Outstanding amounts of initial margin required and excess collateral received by EU27 CCPs for derivatives (CCP.A, CC&G data missing).

Source: ESMA.

Although commodity derivatives markets in the EU are small in size compared to the overall derivatives markets, the increase in margining by CCPs can create pressures on the liquidity of clearing members and their clients and lead to wider impacts, given the high concentration and interconnection between the companies in the sector, banks, central counterparties and other financial institutions. At the same time, it raises concerns that market participants may limit their trading in derivatives used for hedging or turn to over-the-counter (non-centrally cleared) trading, which reduces trading transparency and may increase counterparty credit risk with potential implications for financial stability.

The European Securities and Markets Authority (ESMA), in coordination with national competent authorities, is closely monitoring the financial impact of the recent crisis on central counterparties, which nevertheless remained resilient during the crisis, despite extreme prices and increased market volatility.

*****

ESMA published, on 5 July 2022, the results of the fourth stress test exercise for CCPs authorised to provide services in the European Union (EU) – EU CCPs, as well as third-country CCPs that have been assessed as systemically important for the financial stability of the EU or its Member States (Tier 2). In total, 15 CCPs participated in the exercise, including two of the United Kingdom.

The results of the exercise confirm the overall resilience of CCPs to credit risk, concentration risk and operational risk, based on the tested scenarios. However, regarding volatility in the energy derivatives market, the considered scenario turned out to be less extreme than what was observed in the market after Russia's invasion of Ukraine.

It should be noted that this exercise for the first time included a new operational risk component in order to assess the resilience of central counterparties to operational incidents and failures of third-party service providers.

The exercise identified areas where the risk management framework needs strengthening. For example, with regard to concentration risk, gaps between required and available buffers were identified for some CCPs, particularly in commodity derivatives markets.

Regarding operational risk, it was observed that most of the operational risk incidents stem from third-party services, while several critical service providers have the potential to affect the critical functions of multiple CCPs in a correlated manner. In addition, differences were observed between CCPs in terms of risk sources, exposures and risk mitigation tools, which need to be further assessed by competent authorities on an individual basis.

Overall, however, as demonstrated by the exercise, CCPs have sufficient buffers to withstand adverse market developments in combination with the default of the two clearing members with the largest exposures and have remained overall resilient despite increased market volatility in the wake of Russia's invasion of Ukraine.

2.2 ATHENS EXCHANGE CLEARING HOUSE (ATHEXCLEAR)

The Athens Exchange Clearing House (ATHEXClear) provides clearing services and acts as a central counterparty for the clearing of Athens Exchange transactions (securities and derivatives markets, as well as securities lending facility), as well as transactions in derivatives on the Energy Exchange, the volumes of which are very low.

During the first half of 2022, derivatives and securities lending transactions cleared by ATHEX-Clear decreased compared to the previous year in terms of their average daily volume, but increased in terms of their average daily value.

In more detail, the average daily volume of transactions in the derivatives market and the securities lending facility, as a whole, amounted to 39,828 transactions, during the period under review, down by 17.4% compared to the previous year (2021: 48,233 transactions) and 42.8% lower compared to the corresponding period of the previous year (January – June 2021: 69,668 transactions) – as shown in Table VI.3 and Chart VI.17 – a change mainly due to the reduction observed in Stock Futures.

Chart VI.17 Daily Average Traded Volume in the Derivatives Market by commodity type and in the Securities Lending Facility

(in thousand transactions)

Source: Monthly Statisical Bulletin Derivatives – lending, Hellenic Exchanges – Athens Exchange S.A.

Table VI.3 Daily Average Traded Volume in the Derivatives Market by commodity type and in the Securities Lending Facility

	Index Futures	Index Options	Stock Futures	Stock Options	Lending (Multilateral/Bilateral)	Total
2017	2,508	379	74,494	98	1,226	78,705
2018	2,573	326	53,063	47	670	56,679
2019	2,461	255	39,093	85	872	42,767
2020	1,698	147	38,154	62	1,121	41,182
2021	1,205	152	46,238	71	567	48,233
June 2022	1,158	90	37,975	45	559	39,828

Source: Monthly Statistical Bulletin Derivatives – lending, Hellenic Exchanges – Athens Exchange S.A.

In contrast, the average daily value of transactions in the first half of 2022 amounted to €15 million, up by 7% compared to the previous year (€14 million in 2021), but down by 10.9% compared to the corresponding period of last year (January-June 2021: €16.78 million) (see Table VI.4 and Chart VI.18).

Table VI.4 Daily Average Traded Value in the Derivatives Market by commodity type

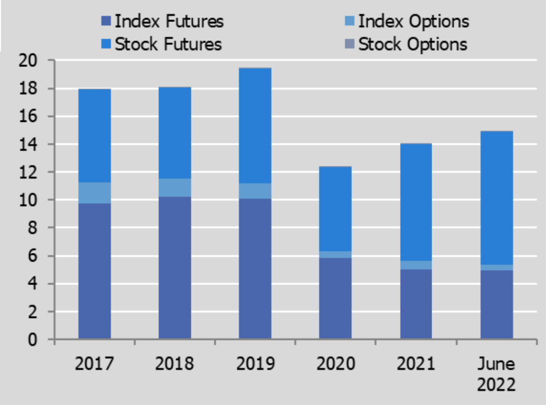
(in million euros)

	Index Futures	Index Options	Stock Futures	Stock Options	Total
2017	9.73	1.49	6.66	0.04	17.93
2018	10.23	1.30	6.48	0.01	18.03
2019	10.11	1.04	8.24	0.03	19.42
2020	5.81	0.51	6.02	0.03	12.37
2021	5.02	0.64	8.32	0.06	14.03
June 2022	4.95	0.39	9.57	0.04	14.95

Source: Monthly Statistical Bulletin Derivatives – lending, Hellenic Exchanges – Athens Exchange S.A.

Chart VI.18 Daily Average Traded Value in the Derivatives Market by commodity type

(in million euros)



Source: Monthly Statistical Bulletin Derivatives – lending, Hellenic Exchanges – Athens Exchange S.A.

3. CENTRAL SECURITIES DEPOSITORIES

3.1 REGULATORY DEVELOPMENTS

On 2 June 2022, the European Commission published Regulation 2022/858 (DLT Pilot regime[106]) introducing a pilot regime for market infrastructures based on Distributed Ledger Technology (DLT). This regulation shall apply as from 23 March 2023.

The aim of the pilot regime is to enable the use of distributed ledger technology in issuing, trading and settlement of crypto-assets that qualify as financial instruments,[107] so as to ensure that the EU regulatory framework for financial services is innovation-friendly and does not pose obstacles to the application of innovative technologies. At the same time, the objective of the pilot regime is to preserve investor protection, market integrity, financial stability and transparency, and to avoid regulatory arbitrage and loopholes.

This pilot regime will enable the European Securities and Markets Authority (ESMA) and competent authorities to draw lessons on the opportunities and specific risks related to crypto assets that qualify as financial instruments and their underlying technologies. In addition, the knowledge and the experience gained will contribute to the identification of practical proposals for the adjustment of the current regulatory framework to the new technologies of issuing, safekeeping and assets servicing, as well as to the technologies for trading and settlement of DLT financial instruments.

[106] According to the definitions of the DLT pilot regime, 'distributed ledger technology' or 'DLT' means a technology that allows the operation and use of distributed ledgers; 'distributed ledger' means an information repository that keeps records of transactions and that is shared across, and synchronised between, a set of DLT network nodes using a consensus mechanism; and 'consensus mechanism' means the rules and procedures by which an agreement is reached, among DLT network nodes, that a transaction is validated.

[107] Crypto-assets are one of the main applications of distributed ledger technology in the financial sector. For crypto-assets that qualify as financial instruments within the meaning of Directive 2014/65/EU of the European Parliament and of the Council (Markets in Financial Instruments Directive, MiFID II), a full set of financial services legislation potentially applies to issuers and the firms conducting activities related to them. For crypto-assets that fall outside the scope of Union financial services legislation (stablecoins, e-money tokens, utility tokens), the European Commission presented in 24.9.2020 a proposal for a Regulation on Markets in Crypto-assets (MiCA), on which the European Council and the European Parliament reached a provisional agreement in June 2022.

The DLT Pilot regime introduces three categories of infrastructure using DLT technology: DLT multilateral trading facilities (DLT MTFs), DLT trading and settlement systems (DLT TSSs) and DLT settlement systems (DLT SSS). With respect to these infrastructures and their operators, the regulation establishes requirements for: (a) the granting and withdrawal of permission to operate; (b) their operation; (c) their supervision; and (d) cooperation between the operators, the competent authorities and ESMA. On the other hand, the DLT Pilot regime includes provisions regarding the temporary exemption of these infrastructures from certain requirements of the EU financial services legislation, which could prevent operators from developing solutions for the trading and settlement of transactions in crypto assets. In the case of exemption, however, it must be ensured that the existing requirements for investor protection and financial stability are not weakened.

As provided for in the DLT Pilot regime, after a period of no more than three years, ESMA is required to submit to the European Commission an evaluation of the pilot regime on the basis of which the Commission will consider preserving the pilot regime or amending it to include new types of financial instruments or terminating it.

3.2 THE BANK OF GREECE SECURITIES SETTLEMENT SYSTEM (BOGS)

The operation of the Securities Settlement System of the Bank of Greece ("System for Monitoring Transactions in Book-Entry Securities" – "BOGS") in the first half of 2022 was continuous and uninterrupted, while the security and efficiency of the services offered were maintained at a high level.

The average daily value of transactions settled in BOGS in the first half of 2022 (buy/sell transactions, repos in securities, internal transfer of securities, etc.) amounted to €10.28 billion, of which €604 million were buy/sell transactions. In addition, the average daily volume of transactions in the first six months of the year reached 233 transactions, of which 107 were buy/sell transactions (see Table VI.5 and Chart VI.19). These data are not comparable with the 2021 data because as of January 2022, transactions in the special purpose Greek government Treasury bill (Law 4254/14, Article 1, subpara. C.4) are included in transactions data.

Table VI.5 Average daily value and volume of transactions settled in BOGS

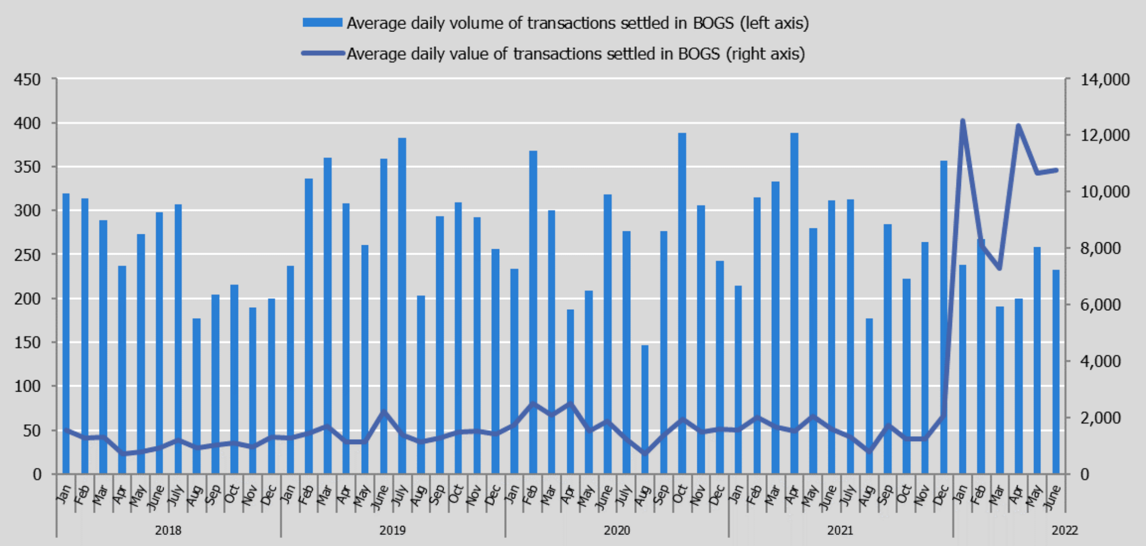
	Average daily value (in million euro)					Average daily transaction volume				
	2018	2019	2020	2021	2022*	2018	2019	2020	2021	2022*
January	1,548.34	1,260.33	1,733.54	1,544.38	12,516.03	319.41	237.45	233.41	214.00	238.00
February	1,277.22	1,438.64	2,519.11	2,009.14	8,091.21	313.90	336.65	367.75	315.00	268.00
March	1,294.59	1,703.39	2,069.01	1,663.07	7,294.69	288.76	360.10	300.73	333.00	191.00
April	697.84	1,146.08	2,506.32	1,518.04	12,348.19	236.50	307.60	186.85	388.00	200.00
May	772.86	1,139.99	1,529.67	2,061.32	10,653.34	273.45	260.17	209.24	280.00	259.00
June	919.38	2,236.98	1,881.47	1,575.82	10,755.71	298.38	359.00	318.55	311.00	233.00
July	1,219.55	1,375.03	1,252.75	1,322.85		306.45	382.39	276.00	313.00	
August	909.41	1,143.18	726.86	799.06		177.39	203.36	147.00	177.00	
September	1,017.99	1,279.68	1,394.42	1,719.40		204.50	293.90	276.00	284.00	
October	1,087.59	1,503.12	1,957.54	1,255.66		215.13	308.83	388.00	222.00	
November	943.20	1,525.55	1,483.11	1,252.64		189.73	292.00	306.00	264.00	
December	1,317.13	1,429.29	1,606.98	2,080.48		200.16	256.60	243.00	357.00	
Monthly average prices	**1,083.76**	**1,431.77**	**1,721.73**	**1,566.82**	**10,276.53**	**252.00**	**300.00**	**271.00**	**288.00**	**231.50**

Source: Bank of Greece.

* As of January 2022, transactions in the special purpose Greek government Treasury bill (Law 4254/14, Article 1, subpara. C.4) are included in transactions data.

Chart VI.19 Average daily volume and value of transactions settled in BOGS (2018-June 2022)

(value in million euro)



Source: Bank of Greece.

3.3 THE DEMATERIALISED SECURITIES SYSTEM OF THE COMPANY "HELLENIC CENTRAL SECURITIES DEPOSITORY"

The company Hellenic Central Securities Depository (ATHEXCSD) has been authorised by the Hellenic Capital Market Commission as a Central Securities Depository (CSD) in accordance with the European Regulation on Central Securities Depositories (CSDR).[108] As provided for by this regulation, after their authorisation, CSDs are subject to regular review and evaluation in which, for ATHEXCSD, the Bank of Greece as a member of the Eurosystem also participates as a relevant authority, i.e. as the central bank that issues the currency in which settlement takes place and the central bank in whose books the cash leg of the transactions is settled.

Settlement activity in the Dematerialised Securities System managed by ATHEXCSD showed an increase in the number and the value of settled stock transactions.

More specifically, the average daily number of settled stock transactions in the first half of 2022 amounted to 35,745, slightly up by 1% year-on-year compared to the first half of 2021 (35,361 transactions) (see Table VI.6 and Chart VI.20).

At the same time, the average daily value of settled stock transactions in the first half of 2022 increased by 11% compared to the corresponding period of 2021 and amounted to €92.64 million, compared to €82.02 million in the first half of 2021 (see Chart VI.20 and Table VI.6).

[108] Regulation (EU) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation (EU) no. 236/2012.

Table VI.6 Average daily number and value of settled transactions[1] in the Hellenic Central Securities Depository

	Equities	Pref. Rights	Corporate bonds	ETFs	Government Debt	Alternative market (Stocks)	Total
Average daily number of transactions settled in ATHEXCSD							
2018	20,324	7	41	2	0	11	20,385
2019	27,383	40	64	3	0.49	32	27,523
2020	32,700	7	64	3	0.21	206	32,982
2021	29,939	56	75	2	2	312	30,386
Jan-Jun 2022	35,149	14	122	3	0	456	35,745
Average daily cash value of transactions settled in ATHEXCSD (in thousand euro)							
2018	54,962.4	0.7	657.4	47.5	0.0	6.9	55,674.9
2019	66,273.4	23.3	959.4	44.1	39.8	20.8	67,360.8
2020	64,474.5	2.4	760.8	40.0	10.2	119.7	65,407.7
2021	70,247.6	23.5	985.6	17.0	84.7	296.8	71,655.0
Jan-Jun 2022	91,107.0	25.2	1,142.0	13.6	0	349.5	92,637.3

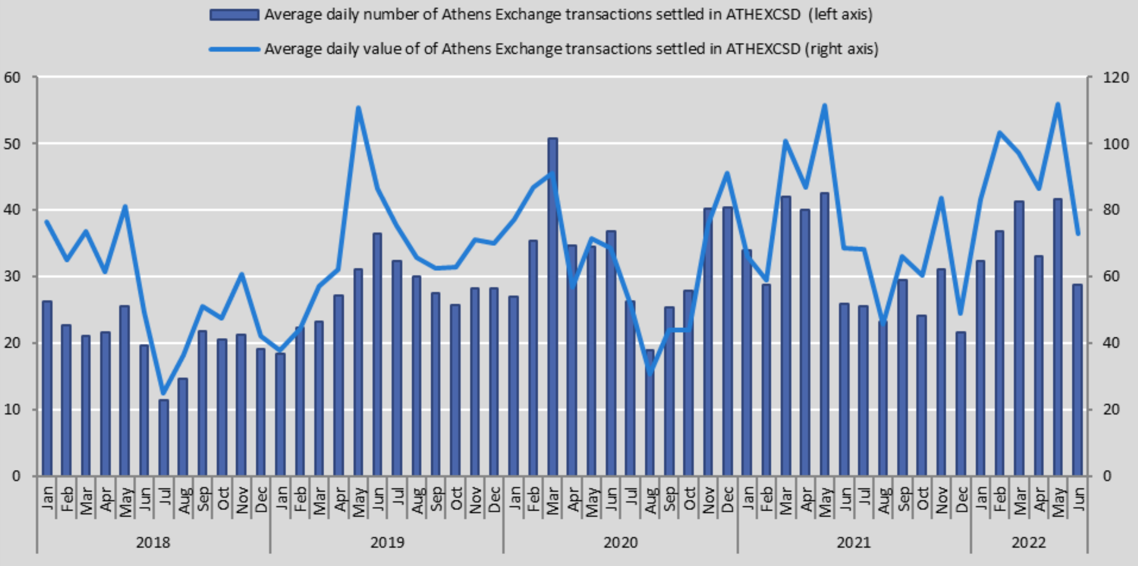
Source: AxiaNumbers Monthly Statistical Bulletin, Hellenic Exchanges – Athens Stock Exchange.

[1] Stock market transactions are the transactions of the Athens Stock Exchange that were settled in the Dematerialised Securities System, calculated by the single count method (purchases only).

A noticeable increase in corporate bonds transactions was observed during the first half of 2022. The average daily number of transactions reached 122, compared with 65 in the corresponding period of 2021 (up by 87%), and their average daily value reached €1.14 million (H1 2021: €0.82 million, up by 39%).

Chart VI.20 Average daily number and value of Athens Exchange transactions settled in ATHEXCSD (2018-June 2022)

(number of transactions in thousands and value in million euro)



Source: AxiaNumbers Monthly Statistical Bulletin, Hellenic Exchanges – Athens Stock Exchange.

SPECIAL FEATURE I
STRUCTURE OF THE GREEK ECONOMY AND BANK CREDIT EXTENSION DURING THE DECADE 2010-2020

Dimitrios. E. Chalamandaris[109]

Anna Tsounia

Eugenie Garganas

Introduction

For more than a decade, throughout the 2008-2020 period, the Greek economy faced significant challenges, such as the global financial crisis, the sovereign debt crisis, the imposition of a set of restrictions on domestic credit institutions, including capital controls, and, more recently, the coronavirus (COVID-19) pandemic. After 2008, the Greek economy entered a deep crisis, resulting in three successive economic adjustment programmes and the activation of the country's financial support mechanism by the EU, the ECB and the International Monetary Fund. During that period, the structure of both the financial system and the economy as a whole changed significantly and the necessary adjustment to a new environment was achieved.

The object of this study is to identify and analyse the contribution of each sector to the economy in comparison with the provision of bank credit during the period under review. To this end, it jointly examines the evolution and structure of GDP, total bank credit extended to businesses as well as non-performing exposures. First, it analyses the percentage share of each sector in the economy, in terms of gross value added, during the decade 2010-2020. It then examines the trend in corporate lending and its correlation with specific banking ratios (NPL ratios, provisioning coverage ratio, etc.) per sector, taking into account the importance of the sector in the economy in terms of gross value added, over the 2015-2020 sub-period.

Analysis of gross value added (GVA) over time

The Greek economy and its structure changed significantly in the decade 2010-2020, both in the context of its evolution and modernisation and as a result of the challenges it faced during that period. In order to present both the direction and the extent of the change in the structure of the Greek economy, the evolution of the percentage share of each sector in GDP, in terms of total gross value added, is analysed.

According to the output-side approach, GDP is defined as the sum of the added values of all activities that produce goods and services, plus taxes and minus product subsidies. Value added is equal to the value of the product produced (by any unit engaged in productive activity), after

[109] Special thanks are due to colleagues H. Voridis, K. Kotsoni, G. Pavlou, M. Flevotomou and K. Kanellopoulos for their valuable comments and observations, as well as to Ms. A. Katsika (Hellenic Statistical Authority) for the useful clarifications provided on the figures for Gross Value Added by industry.

subtracting the cost of production, i.e. the value of the intermediate consumption of the goods and services that were used as inputs in the production process.[110]

The evolution of the percentage share in GDP in terms of gross value added (GVA) by sector of economic activity in the period 2010-2020 shows a remarkable change in the structure of total GVA[111] (see Chart 1). Specifically, out of a total of 14 sectors of economic activity, the percentage share of six sectors declined ("Construction", "Trade", "Shipping", "Accommodation, restaurants/ cafes",[112] "Real estate activities", "Health" and "Other sectors") and eight other sectors' increased ("Manufacturing", "Agricultural activities", "Energy and oil products", "Transport (excl. shipping) and logistics", "Financial corporations", "Telecommunications, Information Technology & media" and "Public administration").

The percentage share of "Real Estate activites" in total GVA, despite decreasing to approximately 16% in 2020 from 17% in 2010, is historically the highest compared with the rest of the sectors.[113] Similarly, the share of "Trade", although decreasing from 12.6% in 2010 to 11.9% in 2020, remains amid the highest among the sectors, along with the share of "Public Administration", which grew to around 11% in 2020 from 10% in 2010, remaining almost flat in the decade before 2020.[114]

[110] Value added is calculated before or after the consumption of fixed capital, thus "gross" or "net" respectively, and is subdivided by institutional sector (e.g. non-financial corporations, private or public, domestic or foreign-controlled, etc.) and by type of activity or industry that contributes to the total, e.g. agriculture, manufacturing, construction, services, etc. The institutional sectors are defined in Section 1 of the Annex to Regulation (EU) no. 549/2013.

[111] The sectoral classification applied follows the classification outlined in the business loans reporting requirement under Bank of Greece Executive Committee Act 47/9.2.2015.

[112] For the "Accommodation, restaurants / cafes" sector, economic activity seems to have declined only between 2018 and 2020, after following an upward trend up to 2018.

[113] "Real estate activities" includes, *inter alia*, the services output of owner-occupied real estate (imputed rents). Since the percentage of owner-occupation of real estate is very high in Greece, it is to be expected that this sector has a high GVA over time. It should also be noted that, although FDI in real estate activities in Greece has increased considerably in the past four years, this rise may not be fully reflected in the ELSTAT annual data, as the 2019 and 2020 data are under revision.

[114] A remarkable rise was observed in the final consumption expenditure of general government in 2009. This increase is mainly due to the wage bill. This is so because in 2009, despite the strict income policy announced in March (freeze of central government wages and pensions), the wage bill grew due to factors such as (a) the inclusion of the additional benefits of the abolished Special Accounts in the 2009 figures; (b) the financial support provided to low-wage and low-pension citizens in the form of a one-off tax-free allowance; and (c) special wage arrangements for judges and doctors of the National Health System, which were implemented before the wage freeze and the payment of the one-off allowance.

Chart 1 Evolution of percentage shares in gross value added per sector (2010-2020)

%

Source: ELSTAT.

Note: Figures in blue and red fonts show the years 2010 and 2020 respectively. The lower panel depicts the subsectors of manufacturing.

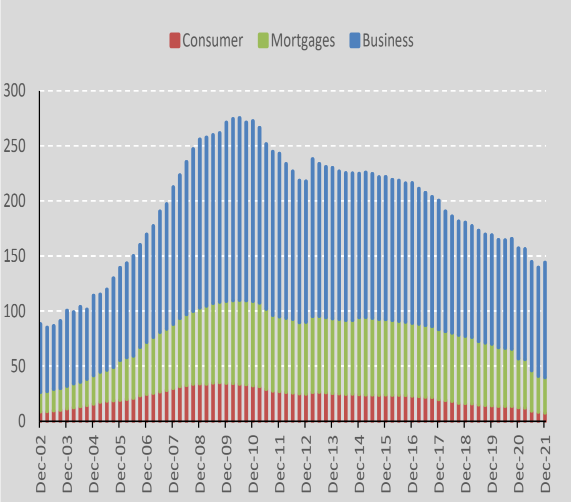
"Manufacturing" remains among the sectors with a significant share in GVA, further growing over the course of the decade. Of the manufacturing subsectors – as they have been grouped for the current analysis – only "Food, Beverage and Tobacco Industry" and "Chemical and Pharmaceutical Industry" have increased their share in total GVA compared to 2010, while the percentage shares of all other subsectors – even marginally some of them – have declined.

Loan evolution by asset class – supervisory data

Over the past twenty years, according to *supervisory data*, the structure of the loan portfolio of Greek banks has not changed significantly, with business loans consistently accounting for the bulk of bank credit (see Charts 2a and 2b). In particular, based on December 2021 data, the share of business loans in the total loan portfolio is 72%, followed by housing loans with 22%. The outstanding amount of business loans, according to December 2021 data, is €104.3 billion, substantially lower than its June 2010 peak (€165 billion).[115]

Chart 2a Loan balances per asset class (supervisory data, before provisions)

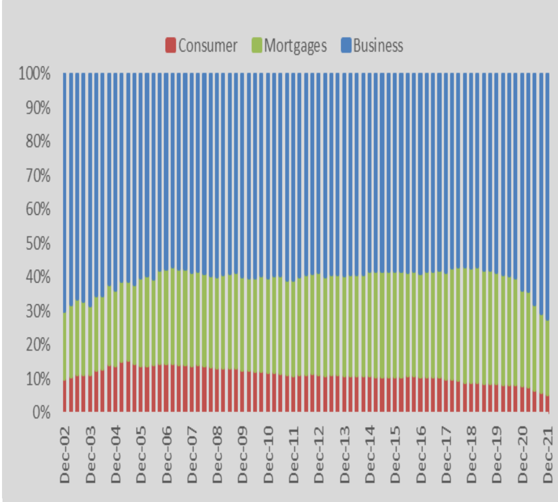
(bln EUR)



Source: Bank of Greece data.

Chart 2b Loan balances/share per asset class (supervisory data, before provisions)

(%)



Source: Bank of Greece data.

The fact that the bulk of the loan portfolio consists of business loans is also reflected in the structure of the non-performing exposures (NPEs) of Greek banks. In particular, 74% of NPEs relate to business loans, with the value of non-performing business loans (NPLs) in December 2021 standing at €13.5 billion (see Chart 3), substantially lower (by 79%) than the March 2010 peak (€63.5 billion). This remarkable reduction is a result of banks' actions to resolve NPLs, mainly through loan securitisations using the guarantee programme of the Greek State, known as "Hercules". It should be pointed out that, despite a decrease in NPLs, which leads to a reduction of the overall business portfolio, Greek banks granted further business loans (as the total value of business loans, according to December 2021 data, is little higher than their value according to September 2021 data), taking advantage, among other things, of the guarantees provided due to the pandemic through the programme of the "Covid-19 Business Guarantee Fund" (managed by the Hellenic Development Bank). As noted in relevant literature, it might be interesting at a later stage to examine whether and to what extent NPLs were replaced by new guaranteed loans.[116]

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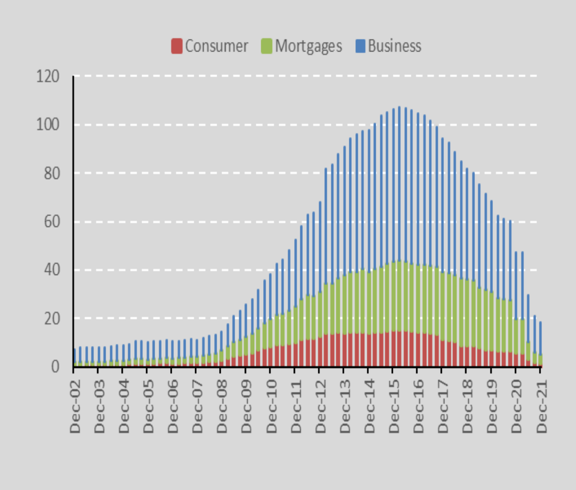
[115] It should be noted that supervisory data differ from those of the Consolidated Financial Statements of domestic Monetary Financial Institutions (excluding the Bank of Greece) on the basis of which the financing of the economy is estimated. More generally, the change in the outstanding amount of loans is equal to the difference between the disbursements of new loans and the amount of principal and interest payments on outstanding loans during the reference period. In order for the change in the balance of loans to reflect the actual evolution of credit expansion by banks to the private sector, it must be adjusted for loan write-offs, sales and transfers, as well as various reclassifications and, finally, securitised receivables that have been derecognised from the banks' assets. Therefore, loans that were initially e.g. written off or transferred off the balance sheet are, during this adjustment, reintegrated into the change in the total outstanding amount of loans. Indicatively, based on these adjustments, the rate of contraction in bank loans to non-financial corporations between June 2010 and December 2021 was approximately -4.2%, much lower than the unadjusted change of -52.0% (mortgages: -28.3%, as against -62.1%; consumer loans: -24.1%, as against -75.2%). The above adjusted rate of change is approximated with the data of the Consolidated Financial Statements of domestic Monetary Financial Institutions excluding the Bank of Greece, as these changes are not all recorded separately in supervisory data. Finally, significant loan transfers reduced the outstanding balance recorded in some months in 2020-2021 due to the corporate transformations of commercial banks (see Box 1, *Financial Stability Review*, January 2021).

[116] Please see Altavila C., Ellul A., Pagano M., Polo A., Vlassopoulos T. (2021), "Loan Guarantees, Bank Lending and Credit Risk Reallocation", 3rd Biennial Banca d'Italia and Bocconi University Conference on Financial Stability and Regulation.

Chart 3a Non-performing loans per asset class (outstanding amounts before provisions)

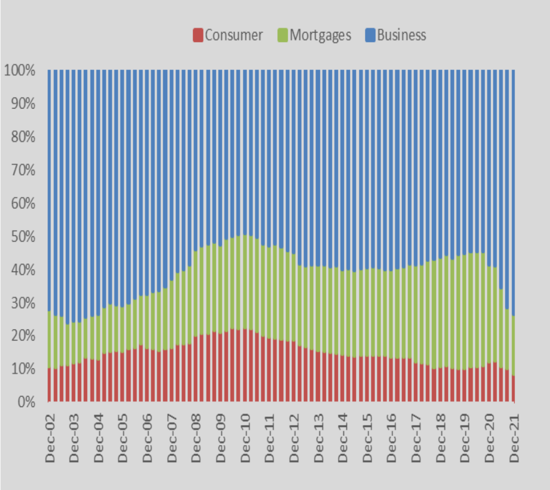
(bln EUR)



Source: Bank of Greece data.

Chart 3a Non-performing loans per asset class – shares (before provisions)

(%)

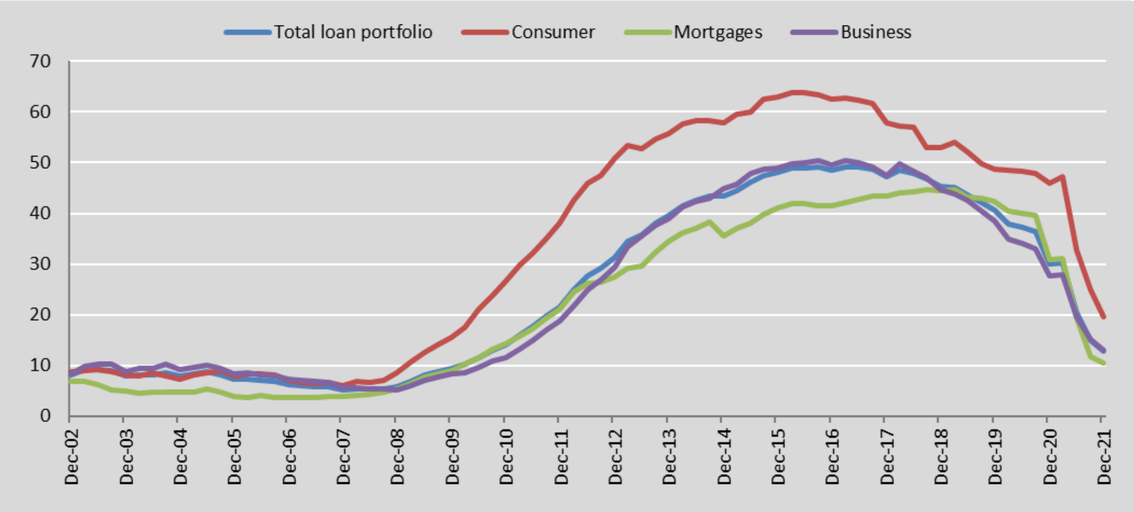


Source: Bank of Greece data.

In addition, it is worth noting that the NPL ratio for business loans is almost identical to the overall NPL ratio for the entire loan portfolio (see Chart 4).

Chart 4 NPL ratio per asset class (before loan loss provisions)

(%)



Source: Bank of Greece data.

From the above analysis it is clear that business loans affect both the trend and the value of the overall NPL ratio and therefore it is important to examine how it is related to the evolution of GDP at both overall and sectoral level.

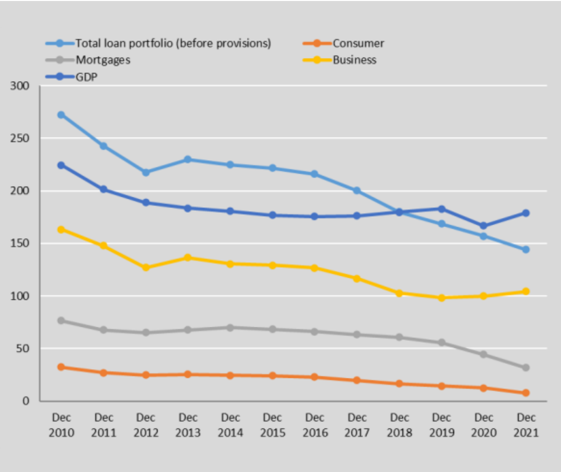
Evolution of bank credit to GDP

GDP followed a steep downward path during the crisis period until 2013, before stabilising in the period 2014-2016 and then reversing in the three years 2017-2019, before the onset of the pandemic. During the same period, total financing from credit institutions, after decreasing between the years 2010 and 2012, temporarily recovered in 2013, but has ever since been on a constant downward path. Overall, both GDP and bank loans underwent a negative change in the years 2010-2020. Given the above-mentioned significant increase in NPLs, the decrease in financing –

according to supervisory data on outstanding loans – is mainly linked to: (a) a worsening of economic conditions; (b) the fact that many prospective borrowers do not meet credit standards; (c) write-offs and sales of NPLs; (d) a system-wide reduction of loan portfolios due to the implementation of resolution measures – and the retention of loans outside operating banks in institutions under liquidation; (e) the shortage of bank liquidity due to lack of access to the interbank market and significant outflows of deposits; and (f) banks' effort to save funds and limit the increase in risk from new financing. The substantial state aid given to Greek banks (see below the box *Greek banks' recapitalisation through state aid during the crisis*) appears to have dampened the decline in bank credit extension after 2013, mitigating the impact on financial stability and preventing a sharp contraction in financing to the economy, which would have fuelled an even deeper recession. Finally, despite the slight recovery in GDP since 2017, bank lending is still on a downward trend according to supervisory data[117] (see Chart 5). In terms of adjusted outstanding balance of loans, the picture differs as some of the changes mentioned above do not have an impact (e.g. loan write-offs, see footnote 115 above).

Chart 5a Evolution of loans and GDP (outstanding amounts - supervisory data, 2010-2021)

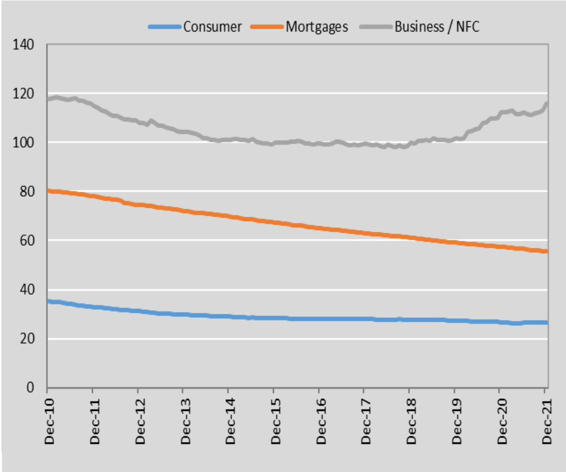
(bln EUR)



Sources: ELSTAT data and Bank of Greece data.

Chart 5b Adjusted outstanding amounts of loans (data from Consolidated Financial Statements of domestic MFIs excluding the Bank of Greece, Notional Stock, Dec 2010=actual stock) 2010-2021

(bln EUR)



Sources: SDW data, Bank of Greece calculations.

BOX – Greek banks' recapitalisation through state aid during the crisis

During the crisis from 2008 to 2015, the Greek State (including through the Hellenic Financial Stability Fund) injected capital to Greek banks in a total amount of €36.32 billion. Additionally, Greek banks received €14.35 billion to cover the funding gap (i.e. the difference between transferred liabilities and assets) as part of the implementation of resolution measures.

The first amount (capital injections) was disbursed pursuant to the provisions of:

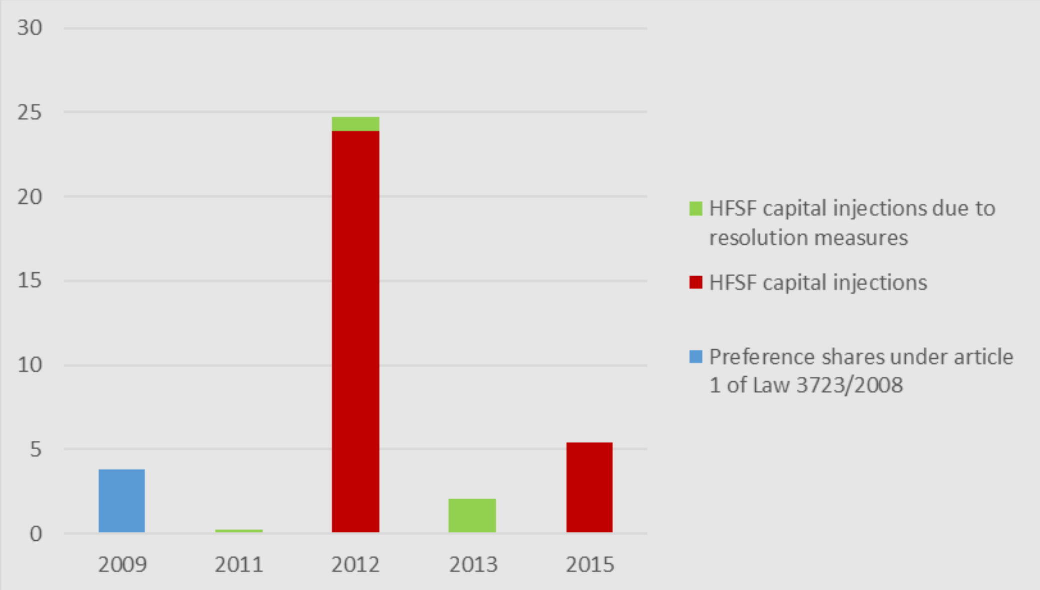
a. Law 3723/2008, in order to address the implications of the global financial crisis;

[117] It should be noted that in 2020 banks began to participate in the "Hercules" scheme and therefore the reduction in credit reflects the securitisation and sale of a significant part of NPLs.

b. Law 3864/2010, in order to address the implications of the Greek sovereign debt crisis; and

c. Law 3864/2010 and Law 3601/2007,[1] in order to implement resolution measures and inject capital to acquiring banks so that they could comply with minimum regulatory requirements.

Amount of capital (state aid) injected to Greek banks per year



Source: Bank of Greece estimates.

a. Issuance of preference shares under Law 3723/2008

In response to the global financial crisis in 2008, Law 3723/2008 "Enhancement of the economy's liquidity for addressing the implications of the global financial crisis, and other provisions" was adopted. In 2009, the Greek banking system started facing significant liquidity problems, as credit ratings downgrade limited their access to money and capital markets.

In particular, Article 1 of the above Law laid down the conditions for capital increases by banks authorised by the Bank of Greece through the issuance of preference shares, which would be taken up by the Greek State. The maximum amount of preference shares was set at €5 billion. Banks could buy back the preference shares at the offer price, after five years or earlier, upon approval by the Bank of Greece. If the share buyback was not possible due to non-compliance with the minimum capital requirement set by the Bank of Greece, the preference shares would be converted to common shares or shares of another existing category by decision of the Minister of Economy and Finance, on a recommendation from the Governor of the Bank of Greece.

Greek banks issued preference shares under Article 1 of Law 3723/2008 equal to €3.8 billion[2] in 2009, which were taken up by the Greek State.

[1] The banking law in force during that period.
[2] Bank of Greece data, *Financial Stability Report*, July 2010, p. 67 [in Greek].

b. Recapitalisation through the Hellenic Financial Stability Fund (Law 3864/2010)[3]

The implications of the protracted and deepening recession on banks' fundamentals and in particular their participation in the restructuring of Greek sovereign debt (Private Sector Involvement – PSI) resulted in a deterioration of banks' capital position, and the development of a recapitalisation plan became necessary. In May 2012, the Bank of Greece conducted an exercise for calculating the capital needs and evaluating the viability of each Greek bank. The capital needs of all Greek banks were estimated at €40.5 billion, €27.5 billion of which for the four systemic credit institutions. The support programme for the Greek economy envisaged a total of €50 billion for covering the cost of recapitalisation and restructuring of the Greek banking system. Capital support was provided through the HFSF's participation in banks' capital increases through the issuance of preference shares. Where a bank did not meet the capital requirements under the legal framework in force, then capital was injected through the issuance of common shares. These capital increases were fully covered in cash and there was no pre-emptive right of existing shareholders.

In May and December 2012, the four banks that were assessed as viable received as an advance payment from the HFSF notes of €24.3 billion issued by the European Financial Stability Facility (EFSF) .[4] During 2013, following the completion of the share capital increases of the four banks, the HFSF paid in total €23.9 billion.[5]

In December 2015, the recapitalisation of Greek banks was completed with increased private sector participation. The amount of two banks' capital needs under the severe scenario that was not covered by the private sector was provided by the HFSF (around €5.4 billion[6]).

c. Recapitalisation through HFSF as part of resolution measures implemented by the Bank of Greece

During 2011-2013, the HFSF provided: (a) the amount of initial capital and any subsequent capital increases of the bridge banks "New Proton Bank" and "New TT Hellenic Postbank; (b) the amount of capital needed for the acquiring bank to maintain the relevant capital adequacy ratios following the acquisition of the selected assets and liabilities as part of the resolution process; and (c) the amount of the funding gap resulting from the difference between transferred liabilities and assets. In particular, for the application of resolution measures, the HFSF provided in total €17.51 billion, €1.41 billion of which for the injection of capital to bridge banks, €1.75 billion for the recapitalisation of acquiring banks and €14.35 billion[7] for the funding gap resulting from the difference between the transferred liabilities and assets.

[3] Report on the recapitalisation and restructuring of the Greek banking sector, December 2012.
[4] Hellenic Financial Stability Fund, *Annual Report 2012*.
[5] Hellenic Financial Stability Fund, *Annual Report 2013*. It should be noted that this amount does not include amounts of €524 million and €570 million that the HFSF provided for the recapitalisation of the acquiring banks following the acquisition of selected liabilities and assets of the branches of Cypriot banks in Greece and of the Agricultural Bank of Greece, as these amounts are included in the capital provided as part of the resolution of the relevant banks.
[6] Bank of Greece, *Annual Report 2015*.

[7] These amounts do not include: (a) part of the funding gap of "Proton Bank S.A." and "T Bank S.A.", as these amounts had been provided by the Resolution Scheme of the Deposit and Investment Guarantee Fund (TEKE); and (b) the amounts that relate to the resolution of "Panellinia Bank S.A." and "Cooperative Bank of Peloponnese", as these amounts had been provided by the Resolution Scheme of TEKE.

Evolution of business loans and percentage share in GVA by sector

The analysis will now focus on the period 2015-2020, instead of the period 2010-2020 as in the previous sections (for reasons of both availability and comparability of data, taking into account the transfer of a large part of the loans off the banks' balance sheets, through the loan securitisations that took advantage of the Greek State's guarantee scheme, known as "Hercules"). In particular, for the period 2015-2020, we estimate – per sector – the average values of (i) the percentage share in GVA; (ii) the percentage share in banks' total business loans exposures; (iii) the NPL ratio; and (iv) the loan-loss coverage ratio (see Table A).

For all variables, in order to show the trend, z-score values are calculated, estimating the difference of the last observation (2020) in relation to the average value of the period 2015-2020 in terms of the standard deviation of the sample. Therefore, if the 2020 observation is greater (lesser) than the estimated six-year average, then the z-score value will be positive (negative) and will be shown on a green (red) background in the columns of z-scores. The further the z-score value is from zero, the larger or smaller the 2020 observation will be relative to the six-year average. It is important to note that any conclusions from the table below should be tentative, as a potential decline or increase can be either a positive or a negative development depending on the nature of the indicator (e.g. a decrease in the NPL ratio, as well as an increase in the coverage ratio are positive developments). For this reason, any negative or positive development is shown on a red or green background respectively. In addition, the average value for all business loans for the six-year period 2015-2020 was estimated for the variables "NPL ratio" and "loan-loss coverage ratio" (in brackets the average values). For these two ratios, the average values per sector which are better or worse than the corresponding average values for all business loans are indicated in green or red background, applying the same approach as in recording a positive or negative development, as above.

Table A Percentage share in GVA per sector of economic activity and key indicators of bank credit

(%, average value during 2015-2020)

Sector	Sector's average share in total GVA		Structure of total bank business loans per sector		NPL ratio per sector (avg 37.3)		Coverage ratio per sector (avg 51.4)	
	Avg	Change - (z-score)***	Avg	Change - (z-score)***	Avg	Change - (z-score)***	Avg	Change - (z-score)***
Real estate activities	16.9	-1.3	4.5	0.4	46.4	-1.7	47.0	-1.2
Other sectors	14.4	0.6	9.8	1.2	38.6	-2.0	58.1	-1.2
Trade	12.0	-0.8	19.7	-1.1	48.8	-1.8	55.3	-0.7
Public administration	10.4	1.7	3.1	-0.6	1.4	-0.8	91.4	0.7
Manufacturing	8.7	2.2	16.5	0.7	40.9	-1.7	52.0	-0.7
Accommodation**	6.4	-1.9	6.1	1.4	37.0	-1.6	31.0	-0.8
Restaurants/ cafes			1.0	-2.1	67.7	-1.6	47.9	1.0
Financial corporations	5.3	-0.9	9.6	2.2	19.5	-1.5	58.5	-1.5
Health	4.5	2.0	1.4	1.2	38.3	-1.6	53.3	-1.2
Agricultural activities	4.4	1.9	1.7	0.4	48.9	-1.7	43.7	-0.3
Transport (excl. shipping) & logistics	4.2	-0.1	2.2	1.6	32.1	-1.6	52.7	1.7
Energy & oil products	4.1	-0.3	5.0	0.9	3.6	-1.1	71.0	0.4
Food, beverages, tobacco	3.4	2.1	4.5	0.7	37.0	-1.8	50.2	-0.8
Telecommunications, information technology & media	3.3	1.9	1.9	-1.6	54.6	-1.9	63.5	0.0
Shipping	2.8	1.5	6.4	1.3	30.0	-1.5	41.4	-0.7
Construction	2.7	0.3	11.1	-2.1	46.8	-1.7	47.7	-1.8
Chemicals & pharmaceuticals	1.5	2.1	1.7	0.8	32.9	-1.7	51.7	-0.7
Metals & metal products	1.3	1.8	3.1	-0.3	43.9	-1.7	55.3	0.2
Electronic products & machinery	0.9	-0.8	1.2	0.2	40.4	-1.6	55.9	-1.2
Other manufacturing sectors	0.8	1.3	1.8	-0.8	56.4	-1.3	49.1	-0.1
Paper, wood & furniture	0.5	2.1	1.3	-2.0	63.8	-1.8	49.9	0.1
Textiles	0.3	-1.0	1.2	-1.7	65.6	-1.9	51.4	-0.2

Sources: ELSTAT and Bank of Greece data.
*Manufacturing and subsectors of manufacturing are in blue cells.
** "Accommodation" includes "Restaurants – cafes" in GVA figures.
***Change of last observation (2020) compared to the average value for 2015-2020, in terms of standard deviation, z-score= (X-μ)/st.dev.

The five sectors with the highest average percentage share in total GVA in the period 2015-2020 ("Real Estate activities", "Other Industries", "Trade", "Public Administration" and "Manufacturing") cumulatively exceed 62%. Of these, only two ("Real Estate activities" and "Trade") appear to be trending downward in terms of their percentage share in GVA (i.e. recording a negative z-score, as the last observation (2020) is less than the average value of the period 2015-2020 in terms of sample standard deviation). Especially for "Trade", this finding is consistent with the fact that during 2020 this sector, along with others such as "Accommodation, restaurants/ cafes ", suffered significant losses due to the imposition of the lockdown and forced suspension of operations. Similarly, the average percentage share of the specific sectors in total bank credit to businesses cumulatively exceeds 53%, with two of them ("Trade" and "Public Administration") registering a downward trend in total bank credit. It is worth noting that, while the NPL ratios are declining for all sectors, for "Real Estate Activities", "Other Industries", "Trade" and "Manufacturing" the NPL ratios remain higher than the corresponding average ratio for all business loans throughout the six-year period 2015-2020. On the contrary, the average value of the coverage ratios of these sectors, in the same period, is higher than the average for "Other Industries", "Trade", "Public Administration" and "Manufacturing", signifying an overall prudent bank lending policy. In any case, it should be pointed out that any differences identified in bank credit granting by sector of economic activity in this study in relation to previous analyses (see, for example, Bank of Greece, *Annual Report 2021*, section VI.2) are mainly due to differences in the calculation of the change based on the adjusted share based on data of the Consolidated Financial Statements of domestic Monetary Financial Institutions excluding the Bank of Greece, compared to a calculation of a simple change based on bank supervisory data.

Similarly, the 10 sectors with the lowest average percentage share in total GVA throughout 2015-2020 ("Food, Beverage and Tobacco Industry", "Telecommunications, Information Technology & media", "Shipping", "Construction", "Chemical and Pharmaceutical Industry", "Metals and metal products", "Electronic Products and Machinery", "Other Manufacturing Activities", "Paper, Wood and Furniture Industry" and "Textiles") include all seven subsectors of manufacturing and do not exceed 18% cumulatively. For only two of these sectors ("Electronic Products and Machinery" and "Textiles") does the trend of the percentage share in Greek GVA seem to be downward. The average percentage share of these specific sectors in total bank credit to businesses cumulatively exceeds 34%, with four of them ("Food, Beverage and Tobacco Industry", "Shipping", "Chemical and Pharmaceutical Industry" and "Electronic Products and Machinery") recording an upward trend in total bank credit. It is worth mentioning that, while the NPL ratios are declining for all industries, for only three out of 10 specific industries ("Food, Beverage and Tobacco Industry", "Shipping" and "Chemical and Pharmaceutical Industry") are the NPL ratios lower than the respective average NPL ratio for all business loans for the six-year period 2015-2020. The average value of the coverage ratio of the sectors in question, in the same period, is higher than the average for five of them.

The same analysis is then applied to calculate the z-score, comparing the last observation (i.e. 2020 as before), but having estimated the average and the standard deviation for the five years 2015-2019 (as opposed to the period 2015-2020 used in the analysis so far). The resulting z-score values are higher (i.e. more distant from zero) for all industries and all variables, but with considerable variation (from marginally higher to several times the z-score compared to the analysis for the 2015-2020 period). Essentially, the initial expectation that the year 2020 is a special year is confirmed, as a significant impact is recorded both from the pandemic itself and from the measures taken to support the economy, while clearly reflecting the significant changes in the NPL ratio in 2020, in the context of the consolidation of banks' loan portfolio. In summary, the main observations are as follows:

- Regarding the percentage share in total GVA, there is a significant change (increase/decrease) of the realised value for 2020 compared to the period 2015-2019 for "Trade", "Public Administration", "Accommodation, restaurants/ cafes", "Health", "Agricultural activities", "Telecommunications, Information Technology & media", "Manufacturing" (as well as its subsectors "Food, Beverage and Tobacco Industry", "Chemical and Pharmaceutical Industry", "Metals and metal products" and "Paper, Wood Industry and Furniture").
- The change in the percentage share in total bank business exposures is particularly noticeable (higher z-score value) for "Restaurants/ cafes ", "Financial corporations", "Construction", "Paper, Wood and Furniture Industry" and "Textiles".
- The NPL ratio decreases significantly in 2020 compared to the period 2015-2019 for all sectors, recording quite higher z-score values for most sectors, which is mainly due to banks' actions to deal with NPLs through the "Hercules" scheme.
- The change in the z-score value in 2020 compared to the five-year period 2015-2019 is considerably greater than the corresponding z-score value estimated for the six-year period 2015-2020 for the loan coverage ratio of three sectors ("Construction", "Financial services" and "Transport (excl. shipping) and logistics").

It is worth noting that in this section a simplified approach is applied including a comparative analysis of the percentage share in total GVA per sector in relation to bank credit to businesses and the data relating to the quality of the loan portfolio. In particular, the objective of the analysis is to present the general framework for the recognition and identification of sectors of the economy that demonstrate particular sensitivity to specific risks and therefore might need further analysis and increased vigilance or support, and by no means to make specific estimates per sector. In order to conduct a comprehensive and thorough assessment of the structure of the economy and bank credit, important factors that are not assessed in this study – and may need further analysis – should be taken into account. In particular, this study should be read and evaluated with particular caution, as several caveats apply and important dimensions and factors are not taken into account, namely (a) employment; (b) the importance of certain sectors in the local economy and regional growth/development; (c) the prospects for specific sectors' growth and contribution to economic activity; (d) the interaction between different sectors and the prospect of creating synergies and economies of scale; (e) the speed of transformation of the economy (of consumption and production), investment, technological upgrading, energy policy; (f) the particularities of some sectors regarding the collateral policy; (g) the time lag between collections and payments; (h) the nature of the production model of some sectors (such as capital intensive, labour intensive), etc.

Having regard to the above, as well as to the aforementioned caveats and limitations, it is important to pay attention in particular to the sectors most affected by the risks associated with climate change, such as agricultural production, real estate management and tourism, and in particular to their financing by the banking system and the evolution of the quality of the relevant portfolio. Overall, for specific sectors of economic activity, there is a relative mismatch between the percentage share in total GVA and the structure of total bank credit to businesses by sector, while the picture of asset quality (credit risk) is mixed.

Conclusions

Given the importance of business loans in bank credit and the economy, the current study analysed the percentage share of the individual sectors in the gross added value (GVA) of the economy from 2010 to 2020. This analysis illustrates that: (a) banks have supported the Greek economy by financing businesses throughout the period under review, even in times of crisis, making use of any support measures (both state capitalisation and state guarantees); and (b) the sectors that have a significant share in GVA seem to broadly coincide with the sectors financed by banks, with only a few exceptions.

It is worth noting that, despite the general framework for the recognition and identification of specific sectors of the economy described in this Special Feature, further analysis and better understanding of the risks and importance of the above sectors are recommended (e.g. capital/labour/technology intensive sectors, sectors affected by climate change, sectors with increased credit risk, seasonally sensitive sectors, etc.).

Finally, taking into account the current challenges, the optimal allocation of available resources through the provision of bank credit to businesses and the effective management of the Recovery and Resilience Facility funds – combined with other actions (e.g. effective management of NPLs) – seem as a unique opportunity that will contribute to the recovery and transformation of the Greek economy towards a sustainable growth model.

SPECIAL FEATURE II
THE EUROPEAN AND NATIONAL REGULATORY FRAMEWORK ON INFORMATION & COMMUNICATION TECHNOLOGY (ICT) AND SECURITY RISK MANAGEMENT

Stefanos Zissis

The global financial system has entered the era of digital transformation; institutions, services, products and customers interconnect on cyberspace, increasing at the same time the complexity in managing users, data and applications. The COVID-19 pandemic acted as a catalyst in accelerating the pace of digital transformation for financial institutions. In particular, measures to contain the pandemic have swiftly helped bridge a decades-old digital divide in the way in which financial institutions provide services to their customers, given available technologies. Thus, financial institutions across the world capitalised on the rapid technological developments and turned to technologically innovative solutions such as machine learning, artificial intelligence, big data and the cloud in order to continue providing services to their customers and maintain their competitive advantage.

The shift of financial institutions towards digital transformation has boosted their profitability and productivity, while at the same time making their operations more complex and hyper-connected,[118] thereby exposing them to heightened risks, including those arising from cyberattacks.[119] Financial institutions manage a plethora of sensitive and personal data, as well as financial data (bank account details, investment data, insurance data, etc.), which are regular targets of cyberattacks.

The fallout of a cyberattack may be economic, but is also linked with a loss of trust on the part of investors/customers and an undermining of the financial institution's overall reputation. Financial services are by default associated with customer trust and, as a result, the need to safeguard trust remains strong in the case of digital financial services as well. It is therefore clear that safeguarding security and operational resilience of institutions providing digital financial services is now more important than ever. To this end, a strong regulatory framework is necessary to allow financial institutions to adequately respond to the challenges and risks stemming from the era of digital transformation.

The evolution of the regulatory framework on information systems risk management

The regulatory framework on information systems risk management started to emerge in the early 2000s. Focusing on information systems security, it laid down primary regulatory standards for minimum requirements and guidance to institutions towards better understanding and responding to risks. The Bank of Greece, having recognised the risks identified in information systems, first

[118] Hyperconnectivity results from the simultaneous use of multiple systems, devices and communication media, so that organisations and users are always connected via email, chat, phone or face-to-face contacts.
[119] A cyberattack is defined in EU legislation as a malicious ICT-related incident by means of an attempt to destroy, expose, alter, disable, steal or gain unauthorised access to or make unauthorised use of an asset perpetrated by any threat actor.

included relevant requirements in Bank of Greece Governor's Act no. 2438/6.8.1998.[120] Subsequently, Annex II to Bank of Greece Governor's Act no. 2577/9.3.2006[121] set out more detailed requirements and rules for a safe and efficient operation of information systems in the context of operational risk management by financial institutions.

Ten years later, there was a rise in cyberattack incidents worldwide, spearheaded by an attack on the Central Bank of Bangladesh in February 2016. This attack highlighted the fact that cyber risks threatening the financial system had been seriously underestimated. Financial institutions began to understand that everyone is vulnerable and that it was no longer a question of if a cyberattack would take place, but when. As the frequency and complexity of cyberattacks continuously increased and attackers used smart techniques to hit their targets, financial institutions had to take specific measures to rise to the new challenges. On the one hand, emphasis was placed on creating frameworks for information systems risk management and, on the other hand, investment in specialised technological equipment and human resources increased. The goal was to safeguard their operational resilience by understanding that information systems security directly affects their smooth operation and overall sustainability.

Over the past five years, technological innovation, such as cloud, artificial intelligence and big data analytics, have transformed the risk identification and management framework. There have been several cases in which financial institutions, lacking the adequate know-how to internally adopt new technologies in order to keep abreast with their new digital competitors (financial technology companies, FinTechs), turned to third party providers, i.e. big technology companies (big techs) to meet their growing needs in the new digital landscape. It is therefore clear that in this way risk is redefined and lies beyond the reach of financial institutions' direct control, increasing commensurately the complexity of risk management.

It should be noted that regulatory authorities had from the outset recognised that the emergence of technological innovation continuously transforms the nature of risks and warrants a strong regulatory framework that can respond to current and future needs in the era of digital transformation. At the same time, it has become clear that an overly restrictive regulatory approach could act as a deterrent to future innovation and economic growth and thus there is a need to strike a balance between innovation and regulation in a way that will enable multiple gains to be reaped from digital transformation and innovative solutions to be adopted, whilst mitigating and ideally preventing potential risks.

In order to ensure a lasting regulatory framework, amidst rapidly evolving technologies, most regulatory authorities around the world opted for a principle-based regulatory model, which mostly covers governance and strategy, security, service provision and software development, as well as business continuity. Such a regulatory model provides regulators with more room to adjust their requirements to the institutions' risk profiles, always in keeping with the principle of proportionality. At the same time, it allows financial institutions to turn to innovation, having ensured a level-playing field in terms of information systems and security risk management based on a stable and single regulatory framework under which institutions may develop their business models.

[120] Government Gazette A 195/21.8.1998.
[121] Government Gazette A 59/20.3.2006.

The European and national approach to defining the regulatory framework with an emphasis on the financial system

At European level, the European Banking Authority (EBA) was among the first authorities to recognise the need for a common regulatory framework for Information and Communications Technology (ICT) and security risk management in the financial system. To this end, in 2015 a dedicated committee, bringing together representatives of the national competent authorities (including the Bank of Greece), was set up in June 2015. This committee issued guidelines[122] in May 2017 addressed to national competent authorities with regard to ICT Risk Assessment under the Supervisory Review and Evaluation Process (SREP). These guidelines formed the basis for developing mechanisms for the supervision of information systems risks by Member States and the Single Supervisory Mechanism (SSM).

A few months later, as financial institutions shifted to cloud services, which involve particular risks, EBA issued recommendations on outsourcing to cloud service providers (CSPs).[123] These recommendations were in turn incorporated into the EBA general guidelines on outsourcing arrangements,[124] adopted by the Bank of Greece by its Executive Committee Act 178/5/2.10.2020 on outsourcing arrangements.[125]

Subsequently, EBA, addressing financial institutions, deemed that one of the key parameters in determining whether supervised financial institutions can safely shift towards digital transformation is a strong regulatory framework for information systems and security risk management. In this vein, it adopted relevant guidelines in November 2019.[126]

For its part, the European Insurance and Occupational Pensions Authority (EIOPA), aiming at the creation of a European common set of rules for insurance and reinsurance undertakings, adjusted EBA's guidelines and issued relevant guidelines on outsourcing to cloud service providers[127] and on ICT security and governance.[128]

Unfortunately, the above European regulatory framework for information systems risk managements has not been fully and uniformly transposed by Member States, resulting in a limited scope of application that renders the existing rules complex and uneven. It became thus evident that there was a need to create a single and strong regulatory framework across the EU, in order to mitigate any risks arising from digital transformation, in order for consumers and businesses to be able to safely reap more benefits and services from the use of technology.

Against this background, on 24 September 2020 the European Commission submitted a proposal for a directly and generally applicable Regulation, the Digital Operational Resilience Act (DORA),[129] as part of a package of measures for the digital financial system. The aim is for the participants of the European financial system (supervised or non-supervised) to have the necessary safeguards to mitigate cyberattacks and other risks in order to successfully respond to all

[122] EBA-GL-2017-05
[123] EBA-Rec-2017-03
[124] EBA/GL/2019/02.
[125] Press release 7.10.2020.
[126] EBA/GL/2019/04
[127] EIOPA-BoS-20-002.
[128] EIOPA-BoS-20-600.
[129] Digital Operational Resilience Act – DORA

types of ICT disruptions and threats. This Regulation is expected to be published in the first quarter of 2023 and take effect in early 2025.

In 2021, the Bank of Greece, as competent supervisory authority, taking into account the shift towards digital transformation and technological developments, replaced the principles of Annex II to abovementioned Bank of Greece Governor's Act No. 2577/9.3.2006 by Bank of Greece Executive Committee Act 190/2/16.6.2021.[130] This Act essentially repealed the previously applicable provisions by adopting the EBA guidelines on ICT and security risk management.[131] In this context, the scope of the Act was broadened to include, in addition to credit institutions, also payment service providers, as well as leasing and credit companies. At the same time, the regulatory framework includes new requirements in order to keep abreast with technological developments and promote the security of financial institutions. In the same vein, in order to cover risks relating to insurance and reinsurance undertakings, the Bank of Greece issued Executive Committee Act 195/4/29.11.2021,[132] which adopts the abovementioned EIOPA guidelines on ICT security and governance for insurance and reinsurance undertakings and occupational pension funds.

Brief overview of the Bank of Greece's regulatory framework on ICT and security risk management

In accordance with Bank of Greece Executive Committee Act 190/2/16.6.2021,[133] institutions must comply with the regulatory framework in such a way that is proportionate to, and takes account of, the institutions' size, internal organisation, and the nature, scope, complexity and risk of the services and products that the institutions provide or intend to provide. Full compliance necessitates strong ICT and security risk management practices.

The object of this regulatory framework is to lay down requirements for ICT and security risk management and harmonise relevant practices of institutions supervised by the Bank of Greece that fall within the scope of the above Act. It comprises of requirements on information security, including cybersecurity, to the extent that these information is held in ICT systems. More specifically the regulatory framework includes the following per thematic area:

Governance and strategy: Institutions must have an adequate internal governance and internal control framework for their ICT and security risks aiming at managing and mitigating ICT and security risks. They must also have an ICT strategy which sets out clear information security objectives and establishes sets of action plans that contain measures to be put in place in order to achieve the objectives of the ICT strategy. Institutions must also ensure the effectiveness of the risk-mitigating measures when operational functions of payment services and/or ICT services and ICT systems of any activity are outsourced, including to group entities, or when using third parties.

ICT and security risk management framework: Institutions must identify and manage their ICT and security risks assigning the responsibility for managing and overseeing ICT and security risks to a control function. Institutions must also define and assign key roles and responsibilities, including the information security officer, and relevant reporting lines, for the ICT and security

[130] Government Gazette issue B No. 2893/5.7.2021.
[131] EBA/GL/2019/04.
[132] Government Gazette issue B No. 5672/3.12.2021.
[133] Bank of Greece Executive Committee Act No. 190/2/16.6.2021.

risk management framework to be effective. Furthermore, they must identify, establish and maintain updated mapping of their business functions, roles and supporting processes, as well as the information assets supporting these business functions and categorise these functions based on their criticality. This risk assessment should be carried out and documented annually. Based on these risk assessments, institutions must determine which measures are required to mitigate identified ICT and security risks to acceptable levels and report risk assessment results to the Board of Directors in a clear and timely manner.

Information security policy: Institutions must develop and document an information security policy that defines the high-level principles and rules to protect the confidentiality, integrity and availability of institutions' and their customers' data and information. Based on this policy, institutions must establish and implement security measures to mitigate the ICT and security risks that they are exposed to, which include organisation and governance, logical security, physical security, ICT operations security, security monitoring, information security training and awareness, as well as information security reviews, assessment and testing, which must be carried out at least annually for all critical ICT systems.

ICT operations management: Institutions must manage their ICT operations based on documented and implemented processes and procedures and must ensure that performance of their ICT operations is aligned to their business requirements. They must also implement logging and monitoring procedures for critical ICT operations to allow the detection, analysis and correction of errors, and maintain a complete and up-to-date inventory of their ICT assets. Furthermore, they must establish and implement an incident and problem management process to monitor and log operational and security ICT incidents.

ICT project and change management: When managing ICT projects, institutions must implement a project governance process that defines, *inter alia*, project objectives, roles and responsibilities, a project risk assessment, a project plan, timeframe and steps, key milestones, change management requirements to be fleshed out and approved by a relevant function. Institutions must also develop and implement a process governing the acquisition, development and maintenance of ICT systems, designed using a risk-based approach. Finally, they must ensure that all changes to ICT systems are recorded, tested, assessed, approved, implemented and verified in a controlled manner.

Business continuity management: Institutions must conduct a business impact analysis (BIA) as a basis for their business continuity plans (BCPs) and disaster response and recovery plans. These plans should be tested at least annually, based on an adequate set of severe but plausible scenarios. Institutions must ensure that they have effective crisis communication measures in place so that all relevant internal and external stakeholders (including the Bank of Greece) are informed in a timely and appropriate manner.

Payment service user relationship management: Payment service providers must establish and implement processes to provide payment service users with assistance and guidance in order to enhance PSUs' awareness of the security risks linked to payment services. They must also keep payment service users informed about updates in security procedures that affect payment service users regarding the provision of payment services.

SPECIAL FEATURE III
OPTIMISING THE PROCEDURE FOR ROUTING FUNDS OF GENERAL GOVERNMENT ENTITIES THROUGH THE SYSTEM OF TREASURY ACCOUNTS

Fyllenia Gklezakou[134]

Nicoletta Tantoulou

Efficiency in the channelling of public funds through the System of Treasury Accounts (hereinafter "STA")[135] was significantly enhanced during the period 2021-2022 with the use of digital processes and services provided through the Bank of Greece to General Government Entities (hereinafter the "Entities"). The set of institutional reforms that began in 2014 for the effective monitoring of State funds and the enhancement of transparency led, *inter alia*, to the migration of significant – in volume and value terms – payments, including of the wages of the staff of 1,200 Entities, so that they would henceforth be effected through the technical infrastructure of the Bank of Greece and DIAS S.A., using simplified and efficient procedures.

Under the current institutional framework for Public Accounting, the Entities are now required to pay all forms of remuneration of their staff via the Single Payments Authority (hereinafter "SPA") and through the cash management accounts they hold with the Bank of Greece. The scope of this institutional framework includes all the Entities, as listed in the current Registry of the Hellenic Statistical Authority, covering their mandatory banking transactions, i.e. payroll, but also the social benefits distributed through the Entities, such as benefits of the National Social Security Fund (EFKA) and the Organisation of Welfare Benefits and Social Solidarity (OPEKA).[136] This is a transfer of public funds from the State budget, on a continuous basis and for systemically significant amounts, which exceed 7 million remittances adding up to €4 billion per month, thus accounting for 90% of the total value of the Entities' payments .

The migration of the payroll payments of the Entities is part of a set of reforms that started in 2014, when the Central Administration was required to maintain its bank accounts with the Bank of Greece and include them in the Treasury Single Account (hereinafter "TSA") of the State. Subsequently, the Entities were required to transfer their cash reserves to cash management accounts held with the Bank of Greece, through which the Entities transfer part of their liquidity to the commercial banking system so as to facilitate their retail payments. In this context, in June 2019, the Bank of Greece, in collaboration with DIAS S.A., provided the Entities with access to the "DIAS Portal",[137] a special online application for the efficient and safe transfer of State funds.

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[134] Special thanks are due to the staff of the General Accounting Office of State, the Single Payments Authority and DIAS S.A., whose contribution was decisive for the accurate depiction of the whole process and its institutional basis.

[135] The System of Treasury Accounts (STA) includes Central Administration (Treasury Single Account - TSA) and all other General Government Entities.

[136] Article 69A of Law 4270/2014 (Government Gazette A 143) and implementing Decision of the Ministry of Finance 2/45619/DLTP/2021 (Government Gazette B 604/15.02.2021), as applicable, as well as the relevant Circular of the General Accounting Office of State.

[137] Decision of the Ministry of Finance 2/54366/DGGA (Government Gazette B2680/1.7.2019) and Bank of Greece, *Annual Financial Report 2021*,– Government Finance Operation, pp. 40-43 [in Greek].

Furthermore, following the 2018 proposals of the Technical Assistance team of experts of the international Institutions, it became obligatory for State grants to be deposited by the competent ministries to the cash management accounts of each Entity. Finally, in 2021, a special institutional framework was adopted, requiring the Entities to channel their mandatory payments from said accounts to the final beneficiaries.

The new framework, as described above, significantly simplifies the procedures for paying all forms of staff remuneration of the Entities and also brings transparency for all Entities and competent State Authorities involved.[138] This simplification was achieved with the use of an "RFA Online" banking technology, which was adapted to the Transaction System of the Bank of Greece with a view to the efficient routing of public funds. As a result of this institutional and technical innovation:

(a) the Entities were relieved of multiple administrative and accounting burdens from the handling of invoices, which have been totally abolished, as well as of the need to execute bilateral contracts with commercial banks;[139] and

(b) payroll payment and distribution of social benefits have become more effective, given that, under a special provision, it is no longer necessary for each Entity to submit paper authorisations either to the SPA or to DIAS S.A. or the Bank of Greece for this purpose.

The previous and the new procedure for the channelling of the Entities' payroll payments is illustrated in Boxes 1 and 2 below. Under the previous procedure, as a rule, the Entities used to transfer State grants from their cash management accounts, using paper payment orders, to the accounts they held with credit institutions or to their technical payroll accounts held with the Bank of Greece. Next, the relevant payroll records were submitted to the SPA and, through the infrastructure of DIAS S.A., staff wages were credited to the bank accounts of the final beneficiaries (Box 1). At the same time, the Entities had to provide special paper authorisations to the SPA and DIAS S.A. for debiting their accounts, while DIAS S.A. had to issue service invoices to each Entity.

By contrast, the new procedure allows wages to be paid directly from the Entities' cash management accounts with the Bank of Greece, doing away with thousands of fund transfers to credit institutions, as well as the sending of authorisations and the issuing of invoices by the Entities and DIAS S.A., respectively (Box 2).

The migration of the Entities to the new process has been implemented gradually since June 2021, in groups of Entities, organised mainly by public sub-sector, such as Municipalities, Administrative Regions, Hospitals and Universities, as determined following a consultation between the General Accounting Office of State (GAO), the SPA and the Bank of Greece. By October 2022, more than 1,000 Entities had joined the new process under the STA, thus approaching the total of 1,200 Entities that meet the institutional migration conditions;[140] the migration is scheduled to be completed in December 2022.

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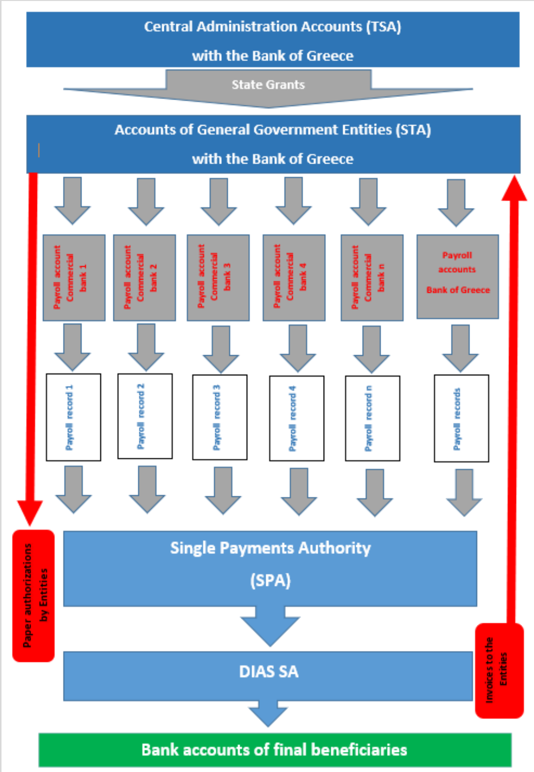
[138] European Commission, Enhanced Surveillance Greece, Institutional Paper 127, May 2020.

[139] Joint Ministerial Decision no. 2/37345/0004 (Government Gazette B784/4.6.2010) "Staff census of the government, legal persons in public law and local authorities, and establishment of a Single Payments Authority", as applicable.

[140] The Registry of the Hellenic Statistical Authority includes 1,700 Entities; however, compliance with the relevant institutional framework remains optional for approximately 500 Entities with low cash balances (Ministerial Decision no. 2/45619/DLTP, Article 1).

Box 1 Illustration of the channelling of large public payments before the introduction of the new procedure

The previous process of public funds transfer for Entities' payroll and social benefit payments was carried out in 3 steps. In the 1st step, the cash management accounts of the Entities with the Bank of Greece were credited with State grants by the TSA. In the 2nd step, the funds were transferred from the said bank accounts to commercial banks of the Entities' choice. In the 3rd step, each commercial bank routed the payments to the final recipients, through DIAS S.A. and other intermediary banks. In addition, each Entity had to authorise the SPA and DIAS S.A. to execute payments by debiting its commercial bank account, while at the same time DIAS S.A. provided on a regular basis to each Entity the required invoices for the bilaterally pre-agreed provision of services.

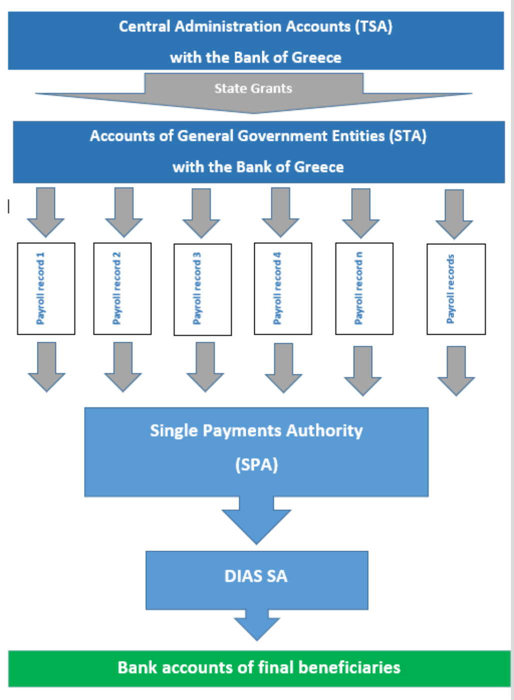


During the transitional stage, migration is progressing smoothly, despite the overall project complexity and the need to continuously provide Entities with clarifications regarding their adaptation to the new public funds transfer regime. Additionally, in cooperation with the SPA and DIAS S.A., operational complexity is being effectively managed, addressing the fact that, for historical reasons, part of the staff wages of several Entities had always been paid out of funds of the Public Investment Programme and not directly from the Regular State Budget.

Box 2 Illustration of the new procedure for channelling large public payments

Under the new simplified procedure for paying Entities' payroll and social benefits, payments are routed from the Entities' bank accounts in the STA directly to the bank accounts of the final beneficiaries, through special payment electronic records following DIAS S.A. standards, under the supervision of the SPA.

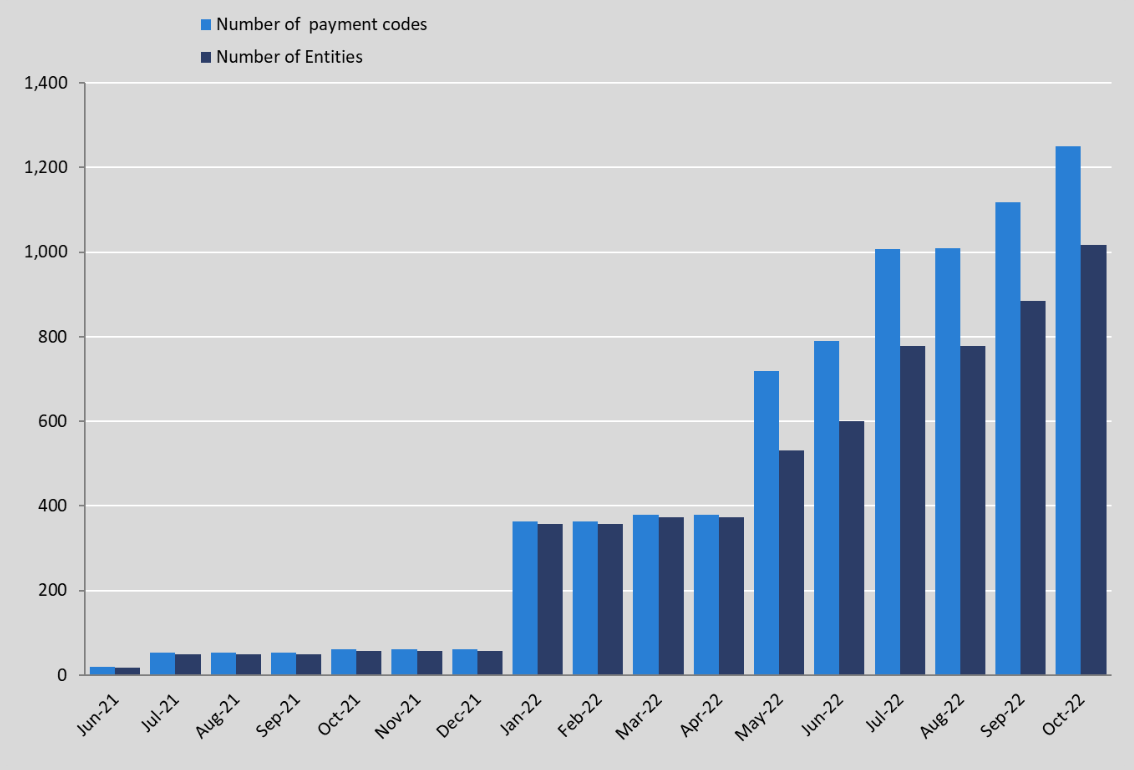
The rationalisation achieved by the new procedure minimises the actions of the parties involved to those absolutely necessary, as both the circulation of invoices by DIAS S.A. to each Entity and the forwarding of paper authorisations by the Entities to the SPA have been abolished.



With the institutional guidance of the GAO and the SPA, the Bank of Greece has been coordinating the migration of the Entities' payroll and social benefits payments, while keeping the updated "List of Fees and Benefits" of migrating Entities and guiding them so that they comply with the new regulatory framework.

Chart 1 Migration of Entities to the new process of channelling payroll payments from their accounts with the Bank of Greece through the STA

Jun. 2021 – Oct. 2022



Source: Bank of Greece.

Overall, this project of migration of these systemically important fund transfers is another milestone towards the completion of the reform of the TSA, as designed by the special Technical Assistance team of the international Institutions in consultation with the State.

The new automated process for routing wages, salaries and benefits of the Entities achieves economies of scale by centralising payments and fund transfers, reduces STA operating costs and increases the efficiency of public fund transfers by eliminating paperwork and thus doing away with the physical presence of citizens in their transactions with the Greek State.

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