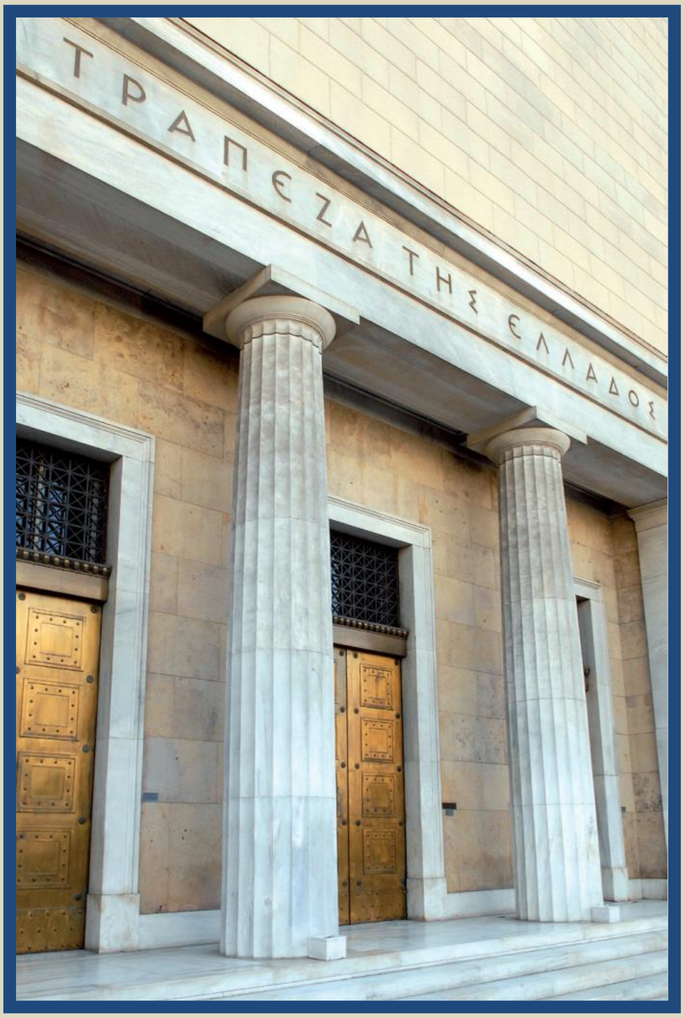
FINANCIAL STABILITY REVIEW



MAY
2023

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I. EXECUTIVE SUMMARY

In 2022, the Greek economy maintained its robust growth momentum, with real GDP growing at an annual rate of 5.9%, mainly due to substantially stronger private consumption and investment. The drivers of consumption were pent-up demand, the use of savings accumulated by households during the pandemic and fiscal measures taken in response to the energy crisis.

Strong economic growth mitigated to a degree the negative impact from particularly high inflation, which stood at 9.3% in 2022 (from 0.6% in 2021), as a result of the energy crisis and increased food prices. The persistence of inflationary pressures,[1] combined with lingering uncertainty associated with the war in Ukraine and other geopolitical risks, such as tensions in USA-China relations, the risk of a sharp repricing of assets in international money and capital markets, as well as the recent turmoil in the US and the Swiss banking system, has considerably heightened risks to financial stability.

The key figures of the domestic banking sector improved substantially, showing that the sector is now better placed than in the past to absorb international market shocks. During the year, the operational target to improve asset quality was achieved and non-performing loan (NPL) ratios were reduced to a single-digit level (December 2022: 8.7% of the loan portfolio, from 12.8% in December 2021), mainly using the government guarantees scheme (known as "Hercules"). Nevertheless, the stock of NPLs remains well above the corresponding European average (December 2022: 1.8%).[2]

Liquidity conditions improved on the back of Greek banks' unimpeded access to money and capital markets,[3] increased resident deposits (December 2022: EUR 196.7 billion), as well as participation in the Eurosystem's refinancing operations,[4] in the context of the implementation of the ECB Governing Council's decisions. Moreover, the introduction of a new Transmission Protection Instrument (TPI)[5] in July 2022 reinforced considerably the tools available to the ECB for the effective transmission of monetary policy and contributed to containing the upward trend in bond yields. The banking sector's capital adequacy improved further to a satisfactory level, above the regulatory minimum. Moreover, achieving significant profitability after two loss-making years, which is attributable to one-off gains and improved core profitability in the second half of the year, helped put in place the conditions for internal capital generation, further strengthening the banking sector and laying the ground for enhanced financing of the real economy.

The shift in the monetary policy stance, with the ECB's interest rate hikes, is expected to contribute to higher bank profitability in the short term. However, the worsening financial condition of households, with high inflation reducing disposable income, as well as of certain firms due to higher operating and financing costs, could lead to a new wave of NPLs in the medium term, which would again affect banks' asset quality.

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[1] The Harmonised Index of Consumer Prices (HICP), which is the inflation tracking indicator, continuously registered higher annual rates until September 2022, which exceeded all historical highs.

[2] Source: European Banking Authority, Risk Dashboard, Q4 2022 EBA Risk Dashboard - Q4 2022.pdf (europa.eu).

[3] During 2022, significant banks raised a total of EUR 2.72 billion.

[4] It should be noted that during the year, banks made voluntary partial repayments (amounting to EUR 15.42 billion) of funds raised through the Eurosystem's targeted longer-term refinancing operations (TLTRO III).

[5] TPI purchases focus 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).

A potential deterioration of geopolitical risks; persistently high levels of inflation; gradually emerging vulnerabilities in the financial system of the European Union (EU),[6] particularly in the commercial real estate (CRE) market,[7] as reflected in the recent "Warning of the European Systemic Risk Board (ESRB)" in 2022; as well as the risk of new exogenous shocks to money and capital markets, highlight most emphatically the volatility of the international financial environment.

This brings to sharper relief the importance of macroprudential policy, since 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.

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 five Special Features.

Special Feature I analyses the importance of the CRE market and its interlinkages with financial stability. It discusses supervisory initiatives for monitoring the market both at European, Member State level and in Greece.

Special Feature II discusses developments in the structure of the Greek banking sector on the basis of specific structural indicators, including an account of major changes in the past twenty-five years, and measures the degree of banking intermediation in the economy (e.g. by total assets as a percentage of GDP). Additionally, it illustrates the structure of the Greek banking sector against corresponding EU and euro area figures, in the context of a peer benchmarking analysis (in terms of size, risk, branch network and staff allocation, business model, etc.).

Special Feature III examines borrower-based measures (BBMs), a special category of macroprudential policy measures related to borrower indebtedness. Specifically, it analyses key types of BBMs, describes the current legal framework in Greece, and briefly reviews practices in other EU Member States.

Special Feature IV presents the recent turbulence in the US and the Swiss banking system, leading to the failure of three US banks and the forced acquisition of the second largest Swiss bank.

Special Feature V examines the turmoil in energy markets during 2022, which led EU institutions to adopt a market correction mechanism to limit excessive gas prices, as well as any impact this mechanism may have on the operation of central counterparties.

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Liquidity and funding conditions of the Greek banking sector in 2022 presented a mixed picture. The normalisation of monetary policy to address inflationary pressures resulted in an increase in Greek banks' funding costs. Against the backdrop of rising interest rates and higher Greek bond yields, and expectations of further ECB rate hikes, access to capital markets and Eurosystem funding became more expensive for Greek banks.

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[6] Issued in September 2022, it 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. See Warning of the European Systemic Risk Board of 22 September 2022 on vulnerabilities in the Union financial system (ESRB/2022/7) (europa.eu). 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.

[7] Recommendation of the European Systemic Risk Board of 1 December 2022 on vulnerabilities in the commercial real estate sector in the European Economic Area (ESRB/2022/9).

During this period, deposits continued their upward trend, albeit at a lower annual rate, reflecting strong economic growth, despite the negative impact of high inflation. The upward path of deposits considerably helped Greek credit institutions to maintain high liquid assets in 2022, despite substantial voluntary repayments of funds raised through the ECB's Targeted Longer-Term Refinancing Operations (TLTRO III). Specifically, in December 2022, the balance of residents' deposits in Greece stood at EUR 196.7 billion, reaching a new ten-year high. Deposits by households and non-financial corporations rose to EUR 141.3 billion and EUR 43.8 billion, respectively, up by EUR 6.2 billion and EUR 3.4 billion, respectively. An increase in deposits by 4.6% on an annual basis is attributable to robust economic growth and depositors' stronger confidence in the financial system. In the first quarter of 2023, deposits decreased slightly by EUR 2 billion to EUR 194.7 billion, mainly on account of a decline in the deposits of non-financial corporations.

Additionally, the acceptance of Greek government bonds as eligible collateral in Eurosystem refinancing operations, as well as Greek banks' participation – albeit reduced – in the Eurosystem TLTRO III, continued to support bank liquidity. It should be noted that Greek banks, taking into account the tightening of funding conditions under TLTRO III, in the fourth quarter of 2022 and the first quarter of 2023 made voluntary repayments of the relevant funds raised from these operations. As a result, in 2022, Eurosystem funding of Greek banks dropped considerably (December 2022: EUR 35.4 billion, December 2021: EUR 50.8 billion), with the trend continuing into the first quarter of 2023 (March 2023: EUR 28.3 billion).

In 2022, the quality of credit institutions' loan portfolios improved substantially. The ratio of NPLs to total loans in 2022 stood at 8.7%, from 12.8% in December 2021, with the total NPL stock standing at EUR 13.2 billion, down by 28.2% or EUR 5.2 billion (December 2021: EUR 18.4 billion).[8] It should be noted that the overall decrease of NPLs from their March 2016 peak reached 87.7% or EUR 94 billion. This reduction in NPLs reflected the progress achieved towards consolidating bank loan portfolios. It should be noted that all four significant banks have attained their operational target of a single-digit NPL ratio by end-2022, with one achieving a level below 5%. However, the NPL ratio of less significant institutions is very high, standing at 44.8%.[9] In addition, this ratio at banking sector level remains well above the European average (December 2022: 1.8%[10]), implying that banks must continue their efforts to reduce the existing NPL stock, especially in the light of emerging challenges.

The shift in the ECB's monetary policy stance, resulting in a higher key interest rate environment, has adversely affected both the cost of financing and the debt repayment capacity of households and firms. The terminal rate will depend on the path of inflation, the evolution of the output gap and the existence of second-round effects via wages. This environment, combined with projected weaker growth rates for the Greek economy in 2023, might again affect the quality of banks' loan portfolios. However, the amount of new NPLs is difficult to estimate, amid uncertainty about geopolitical developments and a potential resurgence of the energy crisis during 2023. In this

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[8] According to on-balance-sheet data on a solo basis. It should be noted that, on a consolidated basis, the stock of NPLs stood at EUR 13.8 billion, down by 28.5% or EUR 5.5 billion from EUR 19.3 billion at the end of 2021.

[9] High ratios are also associated with the difficulties faced by smaller banks in meeting the eligibility conditions of the government guarantee scheme (HAPS/"Hercules") and, thus, their inability to benefit from the scheme.

[10] Source: European Banking Authority, Risk Dashboard, Q4 2022 EBA Dashboard - Q4 2022.pdf (europa.eu). It should be noted that EBA data are calculated on a consolidated basis and include loans to credit institutions and central banks; therefore, they are not directly comparable with Bank of Greece data. For instance, the NPL ratio for domestic significant credit institutions on a consolidated basis and taking into account loans to credit institutions and central banks stands at 4.6%.

context and with a view to preventing a new generation of NPLs, banks introduced special arrangements applicable to performing and vulnerable borrowers.[11]

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In 2022, Greek banking groups posted profits, after tax and discontinued operations, amounting to EUR 3.6 billion, compared with losses of EUR 4.8 billion in 2021, returning to profitability after two loss-making years. Higher non-recurring income played a key part in this development, as did lower provisioning for credit risk. At the same time, core operating income (i.e. net interest income and net commission income) rose, while operating expenses decreased further. As a result, return on assets (RoA) and return on equity (RoE) of banking groups rose to 1.1% and 13.4% respectively.

Capital adequacy of banking groups strengthened considerably in 2022, on the back of, primarily, an increase in banks' prudential own funds by means of internal capital generation and, secondarily, issuance of additional capital instruments. In particular, the Common Equity Tier 1 (CET1) ratio on a consolidated basis rose to 14.5% in December 2022, from 13.6% in December 2021, and the Total Capital Ratio (TCR) to 17.5%, from 16.2%. These ratios are below the average for credit institutions supervised directly by the ECB (CET1 ratio: 15.5% and TCR: 19.4% in December 2022). Taking into account the fully phased-in impact of IFRS 9, the fully loaded CET1 ratio of banking groups stood at 13.4% and the TCR at 16.4%.

Furthermore, the quality of Greek banks' prudential own funds remains low: in December 2022, deferred tax credits (DTCs) amounted to EUR 13.7 billion, representing 52% of total prudential own funds (down from 59% in December 2021). This share comes to 56% 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 EUR 2.3 billion are included in Greek banking groups' prudential own funds (on a fully phased-in IFRS 9 basis), accounting for about 9% of their total prudential own funds. It should be pointed out that, although DTAs of EUR 4.2 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 first two quarters of 2023, this was maintained at 0%, i.e. the lowest possible level. The analysis of additional indicators examined by the Bank of Greece points to emerging cyclical systemic risks in certain areas, such as credit to non-financial corporations, residential real estate prices and the current account. Overall, however, it confirms the view of an absence of excessive credit growth and leverage. 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 2023 O-SII buffer rate at 1% for the four O-SIIs in Greece.

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[11] See Box II.1 Programmes to support vulnerable borrowers and reward performing borrowers with floating-rate mortgages.

In 2022 the capital adequacy of insurance undertakings remained at very high levels and their profitability was satisfactory despite risks arising from the broader macroeconomic environment and those resulting from operational mergers and recent acquisitions of insurance undertakings. In an effort to address the above and other emerging risks, such as those related to climate change, aiming at maintaining the viability of their portfolios, insurance undertakings adjust their business models and review their pricing and investment policies.

At the same time, the smooth operation of financial market infrastructures, i.e. payment, clearing and settlement systems, made a positive contribution to the stability of the domestic financial system through the efficient processing of transactions. The use of electronic means of payment rose significantly in 2022, in terms of both volume and value.

In 2022, total assets of credit servicing firms (CSFs) stood at EUR 1.44 billion,[12] while CSFs' total own funds and liabilities (including provisions) came to EUR 891 million and EUR 546 million respectively. CSF profits amounted to EUR 164 million, while total staff and senior management costs correspond to 44% of their turnover. The total value of exposures under management[13] came to EUR 90.5 million, 74% of which concerns exposures managed by CSFs on behalf of credit acquiring firms[14] and the remaining 26% concerns management of exposures on behalf of credit institutions. Most exposures under management by CSFs on behalf of credit acquiring firms have been assigned to them over the past two years in the context of strategic decisions of credit institutions to reduce their NPLs. Taking into account CSF performance thus far, NPL management on their part needs to be materially improved. The satisfactory performance of CSFs is essential for a successful outcome of the "Hercules" scheme, the resolution of non-performing private debt and the use of dormant productive capacity.

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According to the Bank of Greece Governor's Annual Report,[15] the Greek economy is expected to grow at a rate of 2.2% in 2023,[16] far above the euro area average, but clearly below its 2022 growth rate. Consumption and investment will keep on making a positive contribution to growth. In more detail, the moderation of consumption demand, a low growth rate of household real disposable income and higher interest rates are expected to result in a mild increase in private consumption. At the same time, the medium-term outlook for investment is quite positive, since it is expected to improve in terms not only of value, but also of quality, as a continuously larger share of new investment is directed towards high value-added infrastructure (especially green energy production).

However, heightened uncertainty and risks to the global financial environment leave no room for complacency. An abrupt worsening of financial conditions may negatively impact the financial position of firms, financial stability and the course of public debt reduction in several Member States. The structure of Greek public debt, about 76% of which is in the form of medium-to-long-

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[12] It should be noted that balance sheet data as at 31.12.2022 are provisional and have not been audited by a statutory auditor.

[13] Exposures include all debt instruments (loans and advances and debt securities), excluding off-balance-sheet exposures and write-offs. It should be noted that Bank of Greece Executive Committee Act 206/1/3.6.2022 modified, inter alia, supervisory data and information to be submitted by CSFs to the Bank of Greece.

[14] Prudential data analysed in the present section may differ from data regularly posted on the Bank of Greece website because of the different perimeter of each data release.

[15] See Bank of Greece press release "Governor's Annual Report 2022", 7 April 2023.

[16] The upward revision of the 2023 growth forecast vis-à-vis previous estimates is due to last year's carryover effect, given the economy's overperformance in 2022.

term liabilities to the official sector, and the very favourable repayment profile, are rather reassuring. However, a potential generalised shock to investor confidence may potentially have negative effects at the domestic level too.

Furthermore, the recent banking turmoil in the US and Switzerland clearly demonstrated the swift transmission and spread of risks in the modern financial landscape. In the event of a shock to investors' and depositors' confidence, individual bank vulnerabilities are amplified and transmitted to other credit institutions at unprecedented speed, both at home and abroad, due to global financial interlinkages. Therefore, safeguarding financial stability requires further strengthening of the financial system. The Greek banking sector has made remarkable progress and has become more resilient over the past years, thereby being better placed to withstand potential turbulences and shocks. Although the near-term outlook remains positive, there are still challenges, including improving asset quality, achieving sustainable profitability and further enhancing banks' capital adequacy.

Cleaning up bank balance sheets is the greatest challenge, as the stock of NPLs, despite falling substantially in recent years, is well above the European average. Therefore, further actions are needed towards resolving the legacy NPL stock, which will further strengthen the banking sector and allow it to fulfil its intermediation role. Additionally, past experience has shown the importance of proper and timely recognition of NPLs. Thus, as the normalisation of monetary policy with interest rate hikes hampers households' and firms' debt repayment capacity, all stakeholders should focus on taking measures to prevent the creation of new NPLs. In this context, recently announced measures to protect vulnerable and reward performing borrowers are in the right direction.

As regards profitability, operating income is expected to increase further in 2023. The ECB interest rate hikes are set to further boost banks' net interest income in the short term, given that a very large part of bank loans carry floating rates. However, over the medium term, banks' funding costs are expected to rise on the back of increases in deposit rates and higher costs of bond issuance to meet capital requirements, including bonds to meet the minimum requirement for own funds and eligible liabilities (MREL). At the same time, credit growth is expected to gradually slow in the medium term, either due to early repayments of business loans or reduced demand for new loans. Slower economic growth, higher production costs and lower real household disposable income, coupled with higher debt servicing costs, will weigh on the financial situation of households and firms and may increase banks' cost of credit risk. Lastly, non-recurring income is expected to make a smaller contribution.

Capital adequacy, albeit satisfactory, will be affected by a number of factors: (a) internal capital generation capacity amid heightened uncertainty; (b) implementation of capital actions by banks (e.g. synthetic securitisations, capital increases by less significant banks) and the cost of issuing additional capital instruments (Additional Tier 1, Tier 2) to meet prudential capital requirements; (c) the quality of loan portfolios and its resulting impact on risk-weighted assets; and (d) the evolution of new loan disbursements to non-financial corporations and households.

Safeguarding financial stability in an international environment of heightened risk, including for instance geopolitical tensions, requires vigilance and targeted actions. As monetary policy is being normalised, market fragmentation risks could emerge in the euro area. For this reason, the ECB adopted the TPI. Additionally, the recent turmoil in the US and the Swiss banking system has fuelled risks to financial stability and brought, once again, to the fore the need to complete the banking union. The European Commission's recent proposals on crisis management[17] are a step in the right direction; meanwhile, it will be necessary to push forward with the creation of a bank deposit insurance scheme (European Deposit Insurance Scheme – EDIS)[18] for the euro area as a whole, combined with other measures to mitigate remaining risks in the banking sector. Lastly, it is crucial to implement a prudent fiscal policy for consolidating financial stability and for the Greek government to achieve investment grade, as this would help broaden considerably the investor base (e.g. by attracting institutional investors), which would have a favourable effect on the financing costs of the Greek government,[19] non-financial corporations and banks.

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[17] See Box III.3 The European Commission's proposal

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[18] EDIS should help protect depositors, strengthen financial stability and further weaken the bank-sovereign nexus.

[19] The government bond market has already priced in the achievement of investment grade, as already reflected in the narrowing of Greek spreads against bonds issued by other European countries.

II. MACROECONOMIC ENVIRONMENT, MONEY AND CAPITAL MARKETS

1. ECONOMIC ACTIVITY: DEVELOPMENTS AND PROSPECTS

The Greek economy maintained its growth momentum in 2022, despite strong inflationary pressures arising from the war in Ukraine and a worsening international economic environment. GDP at constant prices exceeded its pre-pandemic levels. Growth was mainly driven by private consumption, which rose strongly in spite of higher goods and services prices. Investment and services exports had a positive contribution, mostly thanks to the robust performance of the tourism sector, whereas public consumption and imports of goods and services had a negative contribution. On the supply side, industries most affected by the pandemic last year, such as tourism, arts, entertainment and recreation, were the main drivers of growth, while construction, professional, scientific and technical activities, as well as trade also made positive contributions.

Table II.1 GDP and its main components (2019 – Q4 2022)

Percentage changes (2015 constant market prices)
Annual data: non-seasonally adjusted; quarterly data: seasonally adjusted

	2019	2020	2021	2022	Q1 2022	Q2 2022	Q3 2022	Q4 2022
Private consumption	1.9	-7.7	5.8	7.8	13.6	8.7	5.6	4.2
Public expenditure	2.1	2.6	2.2	-1.6	-0.9	-0.5	-2.8	-1.9
Gross fixed capital formation	-2.2	1.1	20.0	11.7	13.3	10.1	8.3	14.8
Housing	12.6	19.0	27.3	36.1	16.8	16.8	10.1	117.4
Other construction	-20.4	0.1	10.8	21.5	17.0	17.0	18.7	19.9
Equipment	2.4	-4.1	33.2	5.1	19.7	19.7	15.4	10.3
Domestic demand	**1.2**	**-3.4**	**7.2**	**8.1**	**7.0**	**7.0**	**4.3**	**4.4**
Exports of goods and services	4.9	-21.5	24.1	4.9	12.1	12.1	-3.6	-3.5
Exports of goods	2.0	4.2	13.8	0.4	1.5	1.5	-0.2	-3.3
Exports of services	7.4	-42.6	37.7	9.9	28.4	28.4	-2.6	-5.1
Imports of goods and services	2.9	-7.3	17.7	10.2	14.6	14.6	5.3	7.5
Imports of goods	1.8	-3.8	16.8	11.2	15.9	15.9	8.2	4.8
Imports of services	6.2	-17.2	20.2	7.2	7.9	7.9	-5.2	12.9
Real GDP (market prices)	**1.9**	**-9.0**	**8.4**	**5.9**	**7.3**	**7.3**	**4.4**	**5.2**

Sources: ELSTAT and Bank of Greece.

Business and consumer confidence fluctuated throughout the year amid surging inflation, to slightly pick up in the last quarter. The Purchasing Managers' Index (PMI), after a strong first half, suggested a decline in manufacturing activity owing to weaker demand. Employment rose markedly in 2022, mainly underpinned by strong performance in the first quarter. Inflation levels remained exceptionally high, reflecting the rise in the prices of energy goods, which was passed through to the prices of non-energy goods and services, causing core inflation to rise sharply. Nevertheless, headline inflation showed signs of a decline over the last months of 2022.

In greater detail, GDP in 2022 increased by 5.9% relative to 2021, as private consumption and investment grew considerably despite high inflation and mounting uncertainty. Real private consumption increased strongly by 7.8%, despite households' reduced real disposable income as a result of strong inflationary pressures, thanks to the use of their accumulated savings. By contrast, public consumption decreased by 1.6%, as public spending for addressing the impacts of the pandemic weakened significantly. Gross fixed capital formation rose by 11.7% in 2022, as housing and other construction investment increased substantially by 36.1% and 21.5%, respectively. Investment in equipment rose significantly. In particular, the category of transport equipment and weapon systems increased by 23.2% and the category of machinery and weapon systems by 13.9%, whereas that of ICT equipment declined by 26.3%. The contribution of net exports in 2022 was negative, as imports outgrew exports. Exports rose by 4.9%, mainly on account of a 9.9% increase in services exports due to the recovery in tourism, while exports of goods picked up by a mere 0.4%. Imports rose more strongly (10.2%) 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 5.6% in 2022, mainly driven by growth in business services and especially in tourism-related services. At the sectoral level, "wholesale and retail trade services, repair services of motor vehicles and motorcycles, transportation and storage, accommodation and food services" grew markedly by 12.6%, "arts, entertainment and recreation services" by 24.9%, "construction" by 26.0% and "professional, scientific and technical services, administrative and support services" by 13.6%, while "manufacturing" grew mildly by 1.6%.

The current account deficit deteriorated visibly year-on-year and came to EUR 20.1 billion (9.7% of GDP), compared with EUR 12.3 billion in 2021 (6.8% of GDP). The main factors behind this development were a faster growth in imports, primarily of fuel and secondarily of non-energy goods, than in exports of goods, as well as a deterioration in the primary and secondary income accounts. Foreign direct investment in Greece during 2022 increased to a 20-year high and stood at EUR 6.4 billion, or 3.1% of GDP.

The labour market improved significantly in 2022. More specifically, total employment increased by 5.4%, the best performance in 24 years. Dependent employment rose further by 7.7%, while the self-employed decreased marginally by -0.2%. The unemployment rate fell to 12.4%, from 14.7% in 2021. A considerable improvement in the unemployment rate was observed for both women (16.4% from 18.9% in 2021) and youth aged 20-29 (23.3% from 27.8% in 2021), while the long-term unemployment rate declined to 7.2%, from 9.2% in 2021.

Inflation, as measured by the Harmonised Index of Consumer Prices (HICP), rose sharply in 2022 by 9.3%, against 0.6% in 2021, mainly on account of strong hikes in energy goods. It should be noted that core inflation (HICP excluding energy and unprocessed food) rose to 5.7% in 2022, from -0.7% in 2021. However, since the fourth quarter of 2022 a notable decline in inflation has been recorded, which continued into the first quarter of 2023.

According to forecasts in the Bank of Greece Annual Report (April 2023), GDP is expected to grow by 2.2% in 2023 and employment growth is projected to slow. Inflation is estimated to decline substantially in 2023 – mainly on the back of falling energy prices – but to remain relatively elevated.

2. FISCAL DEVELOPMENTS

According to the first EDP notification of fiscal data for 2019-22 by the Hellenic Statistical Authority (ELSTAT) in April 2023, the general government primary balance for 2022 turned out a surplus of 0.1% of GDP, against a deficit of 4.7% of GDP in 2021 and a budgetary target for a primary deficit of 1.6% of GDP, and public debt fell to 171.3% of GDP in 2022, from 194.6% of GDP in 2021. The overachievement of the fiscal balance is primarily explained by the overperformance of tax revenue owing to improved economic activity, higher inflation and an expansion of e-transactions.

For 2023, according to the 2023 Stability Programme, the primary surplus is projected to reach 1.1% of GDP (which is considerably higher than the target for a primary surplus of 0.7% of GDP in the 2023 Budget) and the debt-to-GDP ratio is projected to drop to 162.6%. The improved forecasts reflect a positive carry-over effect from 2022 on tax revenue and revenue from social security contributions, as well as an upward revision in the economic growth forecast for 2023: 2.3%, against 1.8% in the Budget. The forecast assumes unchanged policies and estimates that the energy-related support measures will be fiscally neutral.

In early 2023, the ECB tightened its monetary policy, stepping up its effort to curb rising inflation amid mounting uncertainty. In January 2023, the Public Debt Management Agency (PDMA) launched a ten-year bond issue, raising EUR 3.5 billion. The yield on the issue was 4.279%, i.e. considerably higher (by 244 bps) compared with the corresponding new issue of January 2022, as a result of higher borrowing costs globally. Notwithstanding this, the coverage ratio was significantly higher, reflecting increased demand for Greek securities, while the issue attracted more long-term and institutional investors. Subsequently, in March the PDMA launched a five-year bond issue, raising EUR 2.5 billion with a yield of 3.919%, and in April it reopened the ten-year bond issue launched in January, this time raising EUR 300 million with a yield of 4.31% and securing a frontloaded funding of 90% of planned issues for 2023. Besides, in January Fitch upgraded Greece's sovereign credit rating to BB+ (from BB-) with a stable outlook, just one notch below investment grade, underlining the resilience of the Greek economy despite a worsening international environment and heightened uncertainty. Moody's in March and S&P in April upgraded the outlook for the Greek economy from stable to positive.

The current international environment is characterised by widespread uncertainty, due to persistently high inflation, the ongoing war in Ukraine, developments in global energy and food prices, and the risk of de-globalisation.

Furthermore, the increased fiscal challenges facing several European countries suggest that, if a new debt crisis is to be averted, the downward path of public debt should not be undermined. In an international environment of higher interest rates, adherence to a policy for realistic and sustainable primary surpluses remains crucial, as rising borrowing costs and slower growth rates are dampening the positive contribution of the interest rate-growth differential, gradually weakening the initial beneficial effect of inflation on the reduction of the debt-to-GDP ratio. Therefore, fiscal prudence is needed, whereby support measures will be fiscally neutral, to ensure the sustainability of public finances.

In the case of Greece in particular, preserving the fiscal credibility achieved before the pandemic is of paramount importance. After the sizeable fiscal expansion of 2020, in 2021-22 Greece achieved one of the largest fiscal adjustments in Europe (6.8 percentage points of GDP, against a euro area average of 3.7 percentage points of GDP) and delivered the greatest cumulative reduction of public debt, with the debt-to-GDP ratio dropping below its pre-pandemic level of 2019. Greece's fiscal performance and sustainability are key to its credit rating upgrade, much more so than for other European countries, as Greece continues to have the highest public debt-to-GDP ratio in the EU and is still short of investment grade rating.

The current economic juncture requires a more effective coordination of monetary and fiscal policies, in tandem with appropriate economic policy flexibility to swiftly adapt to rapidly changing conditions. Monetary and fiscal authorities are faced with the major challenges of stemming inflationary pressures and supporting households as well as firms. If monetary and fiscal policies are not coordinated, there is a risk of moving in diverging directions, with a net zero effect on prices. This would hamper the effort to maintain households' purchasing power and support businesses, as a result of increased uncertainty. The pandemic experience shows that complementarity of the two policies is necessary to achieve price stability over the medium term, so as to ensure lasting fiscal sustainability and strengthen the growth potential.

A coherent medium-term fiscal framework is needed at a time of elevated economic uncertainty. In this light, the introduction of new revised fiscal rules in the EU will give a clear message of aligned economic policies, with concrete fiscal sustainability targets, while a credible commitment to fiscal responsibility will contribute to the anchoring of inflation expectations, supporting monetary policy to this end.

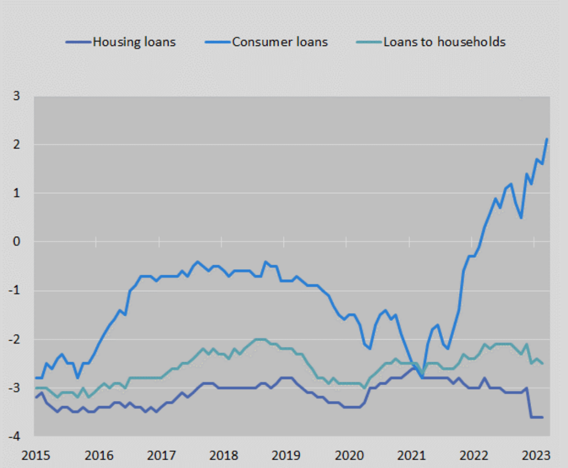
The sustainability of economic policy choices hinges upon addressing both short-term and long-term challenges. In the short term, emphasis should be placed on boosting investment to increase total factor productivity, such as investment in renewable energy sources and green growth in general. Coupled with policies to increase competitiveness and with the implementation of outstanding reforms, they will lay the ground for easing inflationary pressures and improving potential output in the long term. This means that efforts should focus on the implementation of actions envisaged in the "Greece 2.0" plan, with the use of the Recovery and Resilience Facility (RRF) resources. The implementation of the plan's projects will set the economy on a solid path of strong and continuous growth. Promoting green and digital transitions should remain key policy priorities, taking the REPowerEU initiative into account and making effective use of the RRF and other EU funds. In order to ensure the effectiveness of fiscal measures supporting green and digital transitions, these must be fiscally neutral over time, and the financing of pre-emptive actions to tackle climate change must be carefully designed.

3. FINANCIAL CONDITION OF HOUSEHOLDS

The annual rate of change in household lending by domestic monetary financial institutions (MFIs)[20] remained in negative territory in 2022 and the first months of 2023 (March 2023: -2.5%, see Chart II.1). Specifically, the annual rate of change in housing loans remained negative (March 2023: -3.7%), while the annual rate of change in consumer loans turned positive from March 2022 (March 2023: 2.1%). Household lending by domestic MFIs as a percentage of household disposable income stood at 28.2% in December 2022 (from 31.5% in December 2021).

Chart II.1 Household debt from domestic monetary financial institutions (2015 - March 2023)

(twelve-month rate of change)



Source: Bank of Greece.

Note: The growth rates take into account the changes in balances adjusted for loan write-offs, exchange rate differences and reclassifications.

According to the results of *Bank Lending Survey*,[21] in 2022 demand for housing loans, with the exception of the first quarter, declined due to an increase in the general level of interest rates and a deterioration of consumer confidence, while the improving prospects in the residential real estate market were supportive. By contrast, demand for consumer and other household loans increased, with the exception of the first quarter of 2022, underpinned by higher expenditure for durable consumer goods. As regards the supply of loans to households, the reduction in the NPL ratio contributed, according to this survey, to a slight easing of credit standards as well as the terms and conditions of household loans in 2022. Moreover, the rejection rate of housing loans somewhat increased in 2022, while the rejection rate for consumer loans and other loans to households remained unchanged, with the exception of the second quarter of 2022, when it recorded a slight increase. In the first quarter of 2023, credit standards on loans to households remained unchanged, while the overall terms and conditions eased somewhat. Demand for housing loans declined to some extent, due to elevated lending rates and a further deterioration in consumer confidence, while demand for consumer loans remained unchanged. For the second quarter of 2023, according to the survey, the demand for housing and consumer loans is anticipated to remain almost unchanged.

3.1 HOUSEHOLDS' INTEREST RATE RISK

The increase in the ECB base interest rates from June 2022 onwards impacted gradually domestic interest rates. The weighted average interest rate of all outstanding loans to households rose by 201 basis points (March 2023: 5.9%, June 2022: 3.9%), reflecting the shift in the stance of monetary policy in the euro area. This increase was more evident in housing 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 233 basis points (March 2023: 4.3%, June 2022: 2%), while the respective interest rate on housing loans with a maturity of over one and up to five

[20] Including financing to private non-profit institutions and domestic MFIs.

[21] Bank Lending Survey.

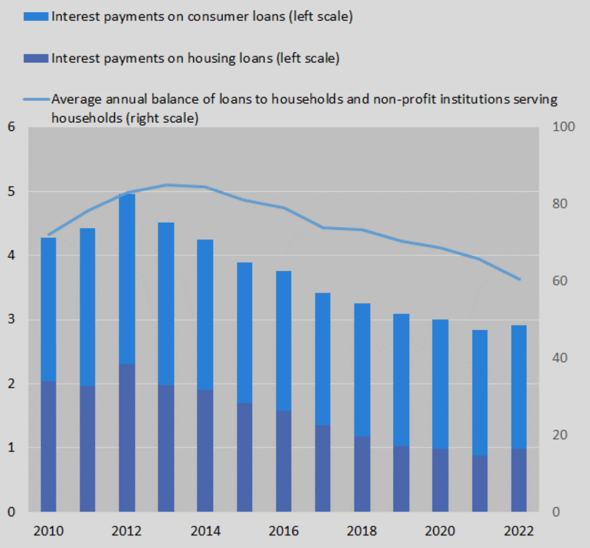
years only increased by 76 basis points (March 2023: 4.6%, June 2022: 3.9%). Likewise, the rise in the weighted average interest rate on the outstanding balances of consumer and other loans to households with a maturity of over five years (125 basis points) was higher than the increase for loans with a maturity of up to one year (78 basis points) and for loans with a maturity between one and five years (67 basis points).

Against this backdrop, the initiative of significant banks to set up a programme for rewarding performing borrowers with a floating-rate mortgage so as to protect them temporarily from further ECB key interest rate hikes (see Box II.1) is regarded as a positive development. Moreover, the criteria for the identification of vulnerable borrowers so that they are eligible to participate in the voluntary support programme of credit and other financial institutions for interest rate subsidy were expanded.

Interest payments as a percentage of gross domestic household income increased in 2022 for housing loans, due to the increase in the interest rates on existing loans, while they remained unchanged for consumer loans (see Chart II.2). Nonetheless, the average annual balance of loans to households declined as a percentage of household gross disposable income as a result of a slight decline in loan balances and an increase in households' gross disposable income.

Chart II.2 Household debt and interest payments on consumer and housing loans (2010 – 2022)

(% of gross disposable income)



Sources: Bank of Greece and Hellenic Statistical Authority.

Notes:

1. 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 category.

2. Household finance includes housing and consumer loans that are on the balance sheets of domestic credit institutions and credit servicing firms (CSFs).

3. Household finance also includes the securitised loans which remain on the balance sheets of domestic credit institutions (such as synthetic securitisations).

4. The weighted average interest rate per category of outstanding loans of domestic credit institutions was used for the calculations.

Box II.1 Programmes to support vulnerable borrowers and reward performing borrowers with floating-rate mortgages

Monetary policy normalisation in the context of the efforts to contain the surge in inflation, inter alia through the increase of base interest rates, resulted in an increase of the interest rates on floating-rate mortgages. Taking into account the material increase in the debt servicing cost for these borrowers, banks have launched programmes to support vulnerable borrowers through a monthly instalment subsidy and reward performing borrowers by maintaining a lower base interest rate.

In December 2022, credit and financial institutions set up a programme for the voluntary support of vulnerable borrowers with a floating-rate mortgage (Vulnerable borrowers' programme or Bridge III).[1] The programme envisages a 50% subsidy of the increase in the monthly instalment of a floating-rate mortgage for a period of 12 months with reference date 30.6.2022. To participate in the programme the borrower submits, from 1 February onwards, an application to be certified as a "vulnerable borrower" by the Special Secretariat for Private Sector Debt

Management. The cost for the support of vulnerable borrowers will be covered by equal contributions of the four significant banks. In April 2023, a Ministerial Decision was issued, which expanded by 30% the eligibility criteria (compared with the initial provisions of Law 4471/2017) for this programme. The eligibility criteria include a) an income threshold, based on household composition; b) a wealth threshold based on real estate assets and other wealth criteria, as well as income imputed from living expenses, differentiated by household composition; and c) residence criteria, whereby the mortgage should be on the primary residence of the borrower.

In April 2023 the four significant banks, in the context of their corporate social responsibility, announced a programme to reward performing borrowers (natural persons) with a floating-rate mortgage. The programmes of significant banks[2] will take effect in the beginning of May, have similar characteristics and entail the automatic enrolment of all performing borrowers with a floating-rate mortgage irrespective of maturity and currency. The main conditions are as follows: a) the loan should have been disbursed prior to 31.12.2022; b) no delinquency (zero days past due) at the start of the programme; and c) the borrower should remain performing for the duration of the programme. According to the programme, the reference interest rate is maintained at the level applicable on 31.3.2023 reduced by 20 basis points for 12 months, thus protecting borrowers from further increases of base interest rates. If during the programme base interest rates decline to a level lower than the programme level, then the lower base rate will automatically be applied in favour of borrowers. This programme is complementary to the potential borrower participation in the aforementioned monthly instalment support programme for vulnerable borrowers.

[1] The programme also covers loans to small enterprises collateralised by the primary residence of the borrower.

[2] Some less significant institutions have announced similar programmes. In addition, NPL servicers are also expected to develop similar programmes for performing borrowers.

3.2 HOUSEHOLDS' INCOME RISK

The evolution of households' disposable income is a key determinant of the relative ease of servicing their loan obligations. According to the most recent available quarterly data on the non-financial accounts of the institutional sectors from the Hellenic Statistical Authority (ELSTAT), households' nominal gross disposable income increased by 7.1% in 2022 year-on-year, while real disposable income marginally decreased (-0.1%) due to high inflation. The increase in households' nominal disposable income stems mainly from a significant rise in the disposable income of the self-employed, which in turn can be attributed to the economic recovery and, possibly, the pass-through of high inflation to the prices of the services provided by the self-employed. The contribution of income from dependent employment was also positive, mainly thanks to an increase in employment and, to a lesser extent, a rise in compensation per employee. On the contrary, the termination of the tax and social security obligations moratorium and the material reduction in pandemic-related subsidies contributed negatively towards household income.

Concurrently, the labour market improved markedly in 2022, with overall employment increasing by 5.4% (compared with 1.4% in 2021) and salaried employment by 7.7%. The number of employees rose significantly in the tourism, education, manufacturing and construction sectors. Against this backdrop, the unemployment rate fell to 12.4% from 14.7% in 2021. On a positive note, the long-term unemployment rate declined to 7.7% (from 9.2% in 2021) and the unemployment rate for young people aged 20-29 declined to 23.3% (from 27.8% in 2021).

Regarding the outlook, uncertainty relates mainly to persistently high inflation that erodes households' real disposable income. In contrast, the labour market has recovered after the Covid-19 pandemic and is expected to improve further in the medium term, despite elevated inflation, interest rate hikes and heightened uncertainty due to the war in Ukraine.

3.3 HOUSEHOLDS' HOUSE PRICE RISK

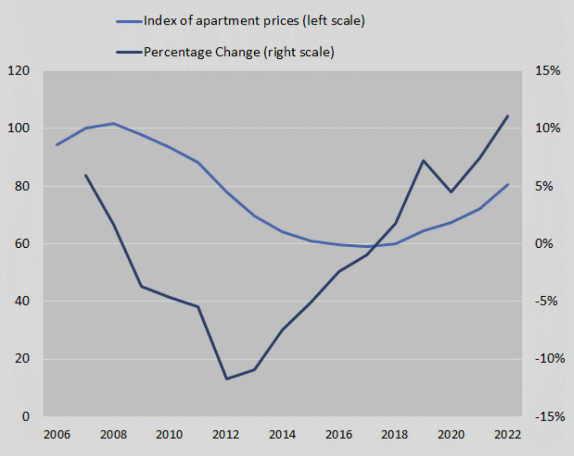
Residential real estate prices, according to the apartment prices indices compiled by the Bank of Greece, continue to increase at an accelerating pace, albeit with significant differentiation at regional level. Specifically, apartment prices (in nominal terms) rose by 11.1% in 2022,[22] compared with an increase of 7.6% in 2021 and 4.5% in 2020. Newly built (up to five years old) apartments' prices rose by 11.8%, slightly more than older ones' (10.5%). The geographical breakdown shows that the strongest increases were recorded in the large urban centres, namely in Athens (13%) and Thessaloniki (11.8%). At the same time, the fact that inflationary pressures intensified implies that the rate of increase in real house prices has slowed compared with 2021.

The outlook of the Greek real estate market remains positive despite uncertainties for the domestic and world economy. It is estimated that investment interest, mainly from abroad, 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. Nonetheless, it should be noted that the residential real estate markets in many EU countries are already undergoing a significant correction, in terms of prices, yields and transaction number.

In addition, it should be pointed out that real estate prices are still far from the historical highs recorded before the Greek sovereign 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 trough in 2017 (59.0). Since then, the index of apartment prices has been steadily rising, reaching 80.4 in 2022 (see Chart II.3).

Chart II.3 Index of apartment prices and percentage change

(2007 = 100)



Source: Bank of Greece.

[22] Residential real estate price growth has been steadily accelerating in the course of 2022 (9.9%, 10.4%, 11.7% and 12.2% in Q1, Q2, Q3 and Q4 2022 respectively).

Box II.2 Loans collateralised by residential real estate: Overview of disbursements

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 175/1/29.07.2020.[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.

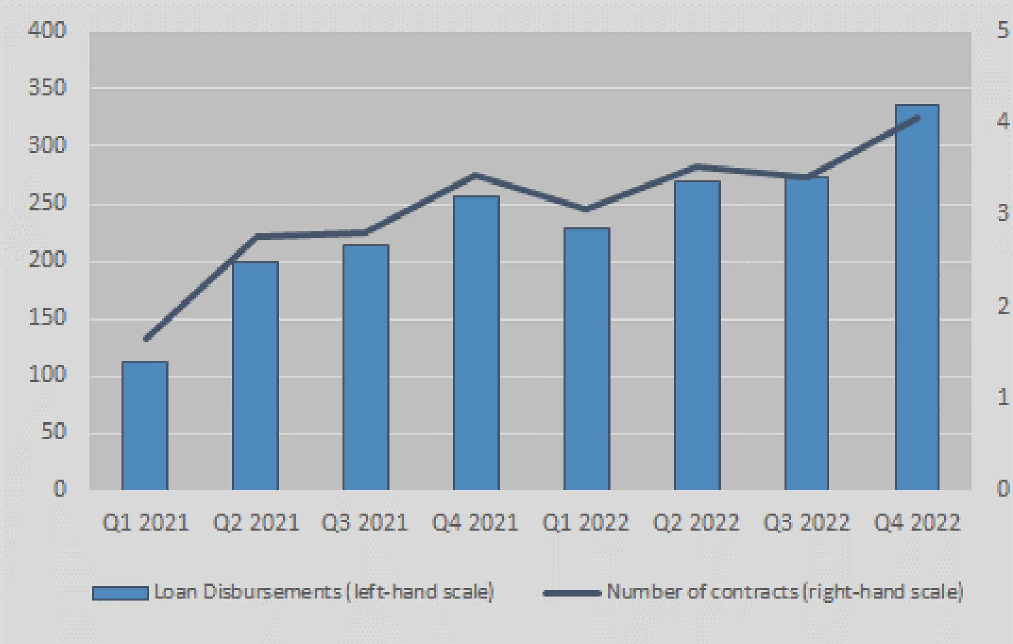
The main conclusions for 2022 can be summarised as follows:

(a) Loan disbursements collateralised by residential real estate stood at €1.1 billion in 2022, up by 42% y-o-y (see Chart 1). However, they remain low both as an absolute figure and compared with the levels prior to the global financial crisis.[2]

(b) The increase in disbursements was not accompanied by an easing of credit origination standards. 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.

Chart 1 RRE loan disbursements and number of contracts

(Q1 2021 – Q4 2022, million euro and thousand contracts)



Source: Bank of Greece.

Analysis of key figures and indicators in Q4 2022

The sum of loan disbursements secured by residential real estate at banking sector level amounted to €337 million in the fourth quarter of 2022, up by 31.4% year-on-year, corresponding to 4,069 new loan contracts. The average disbursement amount stood at €82.7 thousand in the fourth quarter of 2022.

The market share of the four significant institutions in the disbursements of loans secured by residential property amounted to 94.6% in the fourth quarter of 2022. The less significant commercial banks and cooperative banks had a share of 4.8% and 0.5%, respectively. Finally, the share of foreign credit institutions' branches was 0.1%.

The weighted average loan-to-value ratio at origination (LTV-O) stood at 61.6% in the fourth quarter of 2022 (see Table 1). In fact, 27.2% of disbursements had a LTV-O of less than or equal to 50%, while 91.7% 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 71.5%, while 65.2% 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 euro)	Number of contracts	LTV-O	LTV-C	LSTI-O	DSTI-O	LTI-O	DTI-O
			(%)					
Q1 2022	228.4	3,061	63.1	75.9	23.1	28.9	3.6	4.1
Q2 2022	270.3	3,535	63.1	73.6	22.8	30.2	3.8	4.2
Q3 2022	273.8	3,409	64.0	72.7	22.7	30.8	3.7	4.2
Q4 2022	336.7	4,069	61.6	71.5	24.2	32.0	3.8	4.4

The weighted average loan-to-income ratio at origination (LTI-O) stood at 3.8, 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 40.2% 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 4.4, with 33% of new loans having a DTI-O of less than or equal to 3. In addition, the weighted average LSTI-O amounted to 24.2% and the weighted average DSTI-O stood higher, at 32%.

Additional features

- Most of these loans (96.9%) 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 3.1% 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 62.9% of total new loans, while the percentage of disbursements with a fixed interest rate period of 5 to 10 years accounted for 15% of total new loans. Hence, the bulk of new loans has a long fixed interest rate period, which protects borrowers from further increases in base rates. Loan disbursements with a fixed interest rate period of less than or equal to one year amounted to 16.5%.
- The average maturity on origination of the loan disbursements was 23 years. 19.7% of new loan contracts have a maturity of up to 15 years, 40.1% have a maturity from 15 to 25 years, while 35.2% have a maturity from 25 to 35 years and the remaining 5% more than 30 years.

Joint distribution of indicators

As regards the joint distributions of selected indicators, 68.3% 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 51.5% 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 Table 2).

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 (Q4 2022)

(%)

Loan-to-value at origination (LTV-O)	Loan service-to-income at origination (LSTI-O)			
	≤30%	(30%-50%]	>50%	**Total**
LTV-O <= 80%	68.3	19.2	4.9	92.4
LTV-O (80%-90%]	3.1	1.3	0.0	4.4
LTV-O (90%-110%]	1.3	0.3	0.1	1.6
LTV-O >110%	0.9	0.7	0,.	1.6
Total	73.5	21.5	5.0	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. 71.4%) is classified in the category of low risk (green shade), hence to borrowers with sufficient income and debt-servicing capacity. 27.5% of loan disbursements is classified as medium risk (orange shade). The loan disbursements classified in the category of high risk (red shade) account for only 1.1% 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%.

Also, based on the joint distribution of LTV-O and DTI-O, 52.9% and 44.2% of loan disbursements collateralised by residential property are classified in low and medium risk respectively, while only 2.8% of loan disbursements are classified as high risk (see Table 3).

Table 3. Joint distribution of loan-to-value at origination (LTV-O) and debt-to-income at origination (DTI-O) of RRE loan disbursements (Q4 2022)

(%)

Loan-to-value at origination (LTV-O)	Debt-to-income at origination (DTI-O)			
	≤4	(4-6]	>6	**Total**
LTV-O <= 80%	51.5	23.9	16.9	92.3
LTV-O (80%-90%]	1.4	2.5	0.5	4.4
LTV-O (90%-110%]	0.4	1.0	0.2	1.6
LTV-O >110%	0.5	0.5	0.6	1.6
Total	53.8	27.9	18.2	100.0

In conclusion, the analysis of the aforementioned indicators shows that credit institutions apply prudent credit origination standards on loans collateralised by residential property.

[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, mortgage flows stood on average at €12 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).

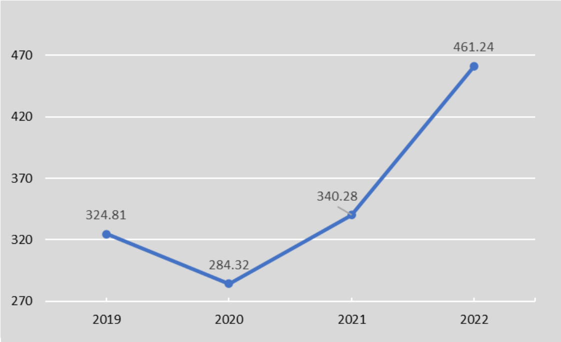
4. FINANCIAL CONDITION OF ENTERPRISES

4.1 FINANCIAL DATA

Despite the successive crises of recent years (health and energy), corporates showed improved revenues and profits in 2022, compared to 2021. According to the data of the Hellenic Statistical Authority (HSA)[23] in 2022, the turnover of all enterprises and the activities of the economy as a whole amounted to €461.2 billion, up by 35.5% compared to 2021 (€340.3 billion) (Chart II.4).

Chart II.4 Turnover evolution for all enterprises and the activities of the economy as a whole (December 2009-December 2022)

(EUR billion)



Source: Hellenic Statistical Authority.

The largest percentage increase compared to 2021 was recorded in the "Accommodation and Food Service Activities" sector (51.8%), as 2022 was the first year of operation without the pandemic restrictions. It should be pointed out that in 2022 tourist receipts approached the 2019 levels, when an all-time high had been observed, thus supporting income and consumption. The performance of the Manufacturing sector was also significantly stronger in 2022, with a turnover of over €100 billion, up by 39.1% compared to 2021. In the same context, the "Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles" sector, which makes up more than 1/3 of the turnover for all businesses, recorded a smaller increase and reached €167 billion in 2022, compared to €139 billion in 2021, registering an increase of 20.1%.

A determinant of the evolution of the business turnover figures was the overall increase in operating costs and inflation. Russia’s invasion of Ukraine in 2022 exacerbated supply chain disruptions that were a legacy of the COVID-19 pandemic and triggered the energy crisis. As a result, the continuation of geopolitical tensions, combined with the escalation of inflationary pressures throughout 2022, created conditions for rising prices of raw materials, pushing up the operating costs of businesses. This was compounded by a rise in business financing costs as a result of the increase in the key interest rates of the ECB in the context of the normalisation of monetary policy

[23] Press release - Turnover of Enterprises 2022

to deal with high inflation. Under these circumstances, the operating costs of businesses and the final prices of products and services were significantly affected.

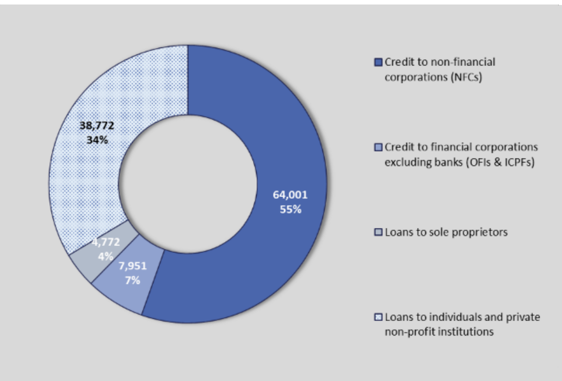
4.2 CREDIT TO NON-FINANCIAL CORPORATIONS AND INDEBTEDNESS

The financing of non-financial corporations (NFCs) by domestic Monetary and Financial Institutions (MFIs) constitutes 55% of total credit to the domestic private sector (Chart II.5). The annual growth rate of MFI credit to NFCs[24] remained positive and significantly increased compared to December 2021 (11.8% and 3.7% respectively, Chart II.6), with corporations absorbing almost 90% of all new loans.

According to the results of the Bank Lending Survey[25] published by the Bank of Greece on a quarterly basis, banks' credit standards on loans or credit lines to enterprises remained unchanged for 2022, while the overall conditions and terms for approving loans "eased somewhat"[26] in the second quarter of 2022 and remained unchanged thereafter.

Chart II.5 Credit to the domestic private sector by domestic Monetary Financial Institutions (MFIs)

(EUR millions, percentages %)

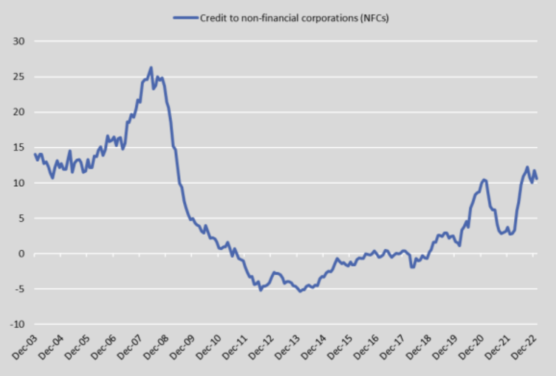


Source: Bank of Greece.

Note: Outstanding amounts at end of period in EUR million, including securitised loans and corporate bonds.

Chart II.6 Annual growth rate of credit to non-financial corporations from domestic MFIs (December 2003-December 2022)

(percentages %, annual growth rates)



Source: Bank of Greece.

Growth rates are derived from the changes in outstanding amounts corrected for loan write-offs, exchange rate valuations and reclassifications.

Overall demand for loans or credit lines to enterprises had "increased somewhat",[27] reflecting a strong recovery in the economy for 2022, as well as increased financing needs arising from high inflation. The factors that contributed to higher demand for loans by enterprises mainly concern fixed investments, inventories and working capital. It is worth noting that at the euro area level, according to the findings of the Bank Lending Survey,[28] there was a decrease in the demand for loans by enterprises in the fourth quarter of 2022 for the first time since the beginning of 2021, mainly due to an increase in the general level of interest rates.

In the first quarter of 2023, credit standards, as well as overall conditions and terms for approving loans, remained unchanged. The overall demand for loans to NFCs "decreased somewhat", due

[24] MFI credit to the Greek economy (bankofgreece.gr)

[25] The Bank Lending Survey is conducted on a quarterly basis by the national central banks of the euro area, in collaboration with the European Central Bank (ECB), on a sample of approximately 150 banks from all euro area countries, which includes the four significant credit institutions in our country.

[26] Average of banks' responses on a scale of 1 to 5, where: 1=lending conditions "tightened considerably", 2="tightened somewhat", 3="remained basically unchanged", 4="eased somewhat" and 5="eased considerably".

[27] Average of banks' responses on a scale of 1 to 5, where: 1=loan demand "decreased considerably", 2="decreased somewhat", 3="remained basically unchanged", 4="increased somewhat", 5="increased considerably".

[28] The euro area bank lending survey – Fourth quarter of 2022 (europa.eu)

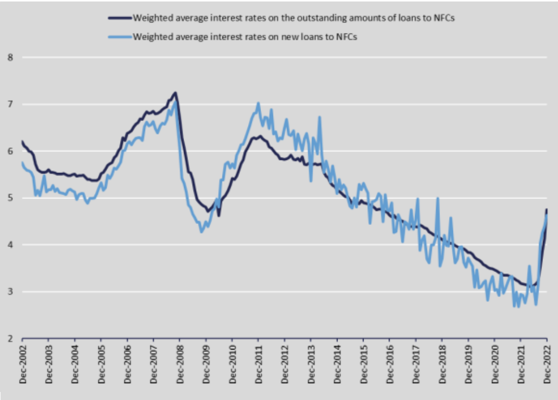
to a rise in the general level of interest rates, contrary to Greek MFIs' assessment in the previous quarter that demand for loans would "increase somewhat". For the second quarter of 2023, according to the survey, Greek MFIs expect a decrease in the demand for loans to NFCs.

Regarding lending rates to NFCs, until the first half of 2022 they were maintained at historically low levels, thus facilitating the access of enterprises to low-cost borrowing. However, the gradual increase in key ECB interest rates from July 2022 (by 375 bps cumulatively until 4 May 2023), as part of the normalisation of monetary policy to curb rising inflation, led by the end of the year to an increase in the weighted average interest rates of new and existing loans of MFIs to NFCs. In particular, the weighted average interest rate on new loans rose by 169 basis points, from 2.94% at the end of 2021 to 4.63% in December 2022. Likewise, in the same period, the weighted average interest rate on existing loans increased by 158 basis points, from 3.17% to 4.75% (Chart II.7). The rise in financing costs, combined with the energy crisis, inflation and supply chain disruptions, is expected to have significant impacts on business operating costs in the near future.

The NFC credit-to-GDP ratio (Chart II.8) at the end of 2022 fell marginally to 31%, compared to 2021 (32%), mainly due to higher GDP growth compared to credit growth.

Chart II.7 Weighted average interest rates on new and outstanding amounts of loans to NFCs from MFIs (December 2004-December 2022)

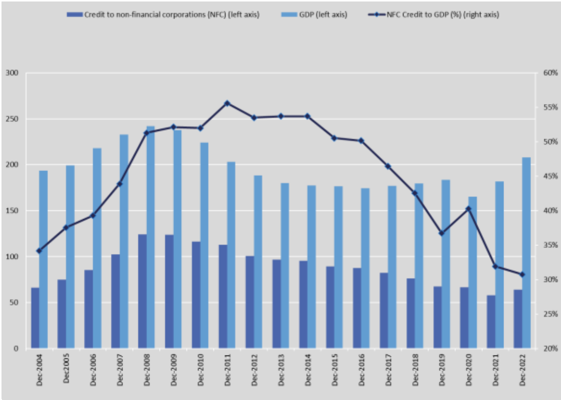
(percentages %)



Source: Bank of Greece.

Chart II.8 Ratio of NFC credit to Gross Domestic Product (December 2004-December 2022)

(EUR billion, percentages %)



Source: Bank of Greece.

5. DEVELOPMENTS IN DOMESTIC AND INTERNATIONAL MONEY AND CAPITAL MARKETS

During November 2022-March 2023, bullish trends prevailed in global capital markets, favourably affecting the Greek market, which achieved one of the best performances internationally during that period. The main reasons for the markets' rally were an international decline in energy prices, gradually easing inflationary pressures and a revision of initial estimates of an economic downturn and recession in the global economy. In this context, the combination of satisfactory economic growth rates internationally and strong signals from labour markets, where a decrease in the unemployment rate was observed, led to a rally in financial markets.

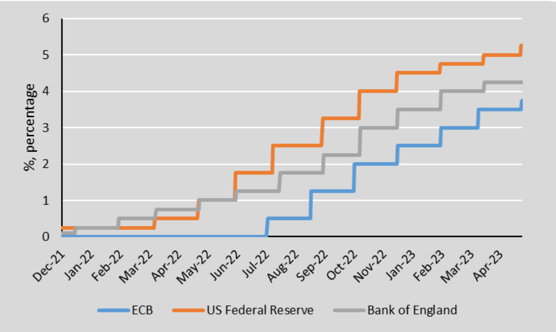
This rise was more pronounced in the Greek stock market due to the overall positive sentiment regarding the performance of the Greek economy, coupled with expectations of the Greek government's achieving investment-grade rating. Additionally, significant investments were selectively made in large-cap companies, especially in banking stocks. Furthermore, the increase in bank equity valuations can be attributed to an improvement in the quality of their asset portfolios, as the stock of non-performing loans (NPLs) was reduced, and to the achievement of significant profitability following several loss-making financial years.

Overall, it should be noted that the global increase in risk appetite for holding financial instruments and, to a lesser extent, the reduction in inflationary pressures have led to higher stock market valuations. The strengthening of the financial condition of non-financial corporations in the country,[29] in a macroeconomic environment of strong economic growth, as well as encouraging employment statistics with the unemployment rate continuing to fall, have significantly contributed to the consolidation of a positive sentiment.

In the bond market, government bond yields did not follow the upward trend of the previous period and largely showed signs of stabilisation, while central banks continued to normalise monetary policy. In particular, the US Federal Reserve (Fed), the Bank of England and the European Central Bank (ECB) from the beginning of 2022 had clearly communicated their intentions to the markets, and throughout 2022 made successive interest rate hikes (see Chart II.9). The tightening of monetary policy continued in early 2023.[30]

Chart II.9 Central banks' interest rates

(1.12.2021-4.5.2023, daily prices)



Source: Bloomberg.

Additionally, the decision of the Governing Council of the ECB in December 2021, according to which reinvestments under the Pandemic Emergency Purchase Programme (PEPP) can be adjusted flexibly over time, asset classes and jurisdictions, along with the introduction of a new instrument for safeguarding the transmission of monetary policy, the Transmission Protection

[29] See section II.4 **Error! Reference source not found.**.

[30] It should be noted that the ECB's monetary policy framework is always, given the data and other parameters examined, geared towards achieving a medium-term inflation level of 2%, while the US Federal Reserve's monetary policy is in line with its dual mandate of achieving a satisfactory level of employment and a low rate of inflation.

Instrument (TPI), in July 2022, had a stabilising effect.[31] Against this backdrop, continued purchases of euro area government bonds contributed, among other factors, to the stabilisation of the yields of the debt securities purchased.

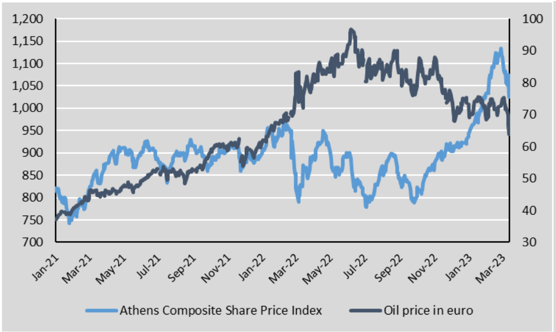
In the Greek stock market, the easing of the two-year health crisis and the particularly favourable economic environment, with positive prospects for an upgrade of the Greek economy to investment grade, pushed the Athex Composite Share Price Index to an eight-year-and-five-month high in March 2023 (1,140.96 points). However, prices subsequently declined and by mid-March the index stood at a lower level (1,025.22 points), mainly due to the impact of the collapse of Silicon Valley Bank in the US and the bailout of Credit Suisse in Switzerland.[32] In particular, the Athex Composite Share Price Index in the period November 2022-March 2023 showed a steady rise, before dropping in March amid high volatility: having initially risen by up to 21.9% at the close on 1.3.2023, it fell by up to 10% at the close on 17.3.2023. Likewise, in that period, the banking index gained up to 45.7% on 1.3.2023 compared to the close of 31.12.2022, but then declined significantly from its high (by around -21.1%) on 17.3.2023.

The stock market in Greece rallied as oil prices fell, also under the influence of a rise of the euro against the dollar. In particular, the sharp fall in energy and especially oil prices (by up to 15% on 15.3.2023), compared to 31.12.2022 (to €63.9 per barrel, from €75.2 respectively, see Chart II.10), created the conditions for easing inflationary pressures and mitigated to some extent concerns about a slowdown in the economic recovery.

As regards Greek banks with shares listed on the Athens Exchange, the Market Cap/RWAs ratio (see Chart II.11) increased significantly in 2023 compared to the end of 2022, before retreating from its high levels in early March, negatively affected by the fall in stock prices due to the banking turmoil with the collapse of banks in the US and the bailout of Credit Suisse in Switzerland, which was taken over by UBS.

Chart II.10 Athex Composite Share Price Index and oil price (in euro)

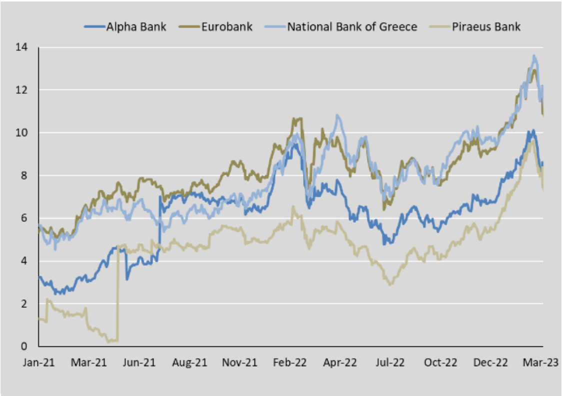
(1.1.2021-15.3.2023, daily prices)



Source: Bloomberg.

Chart II.11 Greek banks' capitalisation index as a percentage of weighted assets

(1.1.2021-15.3.2023, daily prices, percentage %)



Sources: Bloomberg and Bank of Greece.

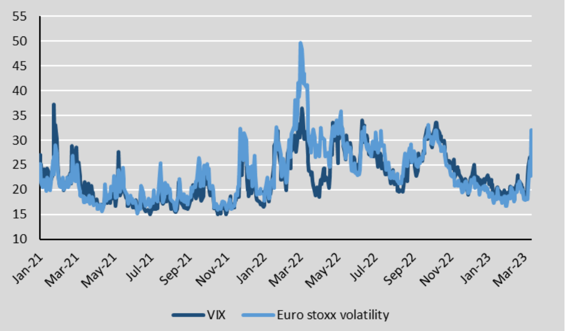
[31] ECB Press Release, "The Transmission Protection Instrument", 21.7.2022. In essence, this instrument allows the ECB to buy directly the bonds of member countries whose financial conditions are deteriorating, thus jeopardising the monetary policy transmission mechanism.

[32] See Special Feature IV of current report: "THE BANKING TURMOIL IN THE UNITED STATES AND THE TAKEOVER OF CREDIT SUISSE BY UBS IN SWITZERLAND".

At the European level, the upward trend of stock markets in the period October 2022-February 2023 was halted after the banking turmoil in March. Consequently, optimistic expectations of positive corporate results and a recovery in bank profitability due to rising interest rate margins[33] were not enough to sustain the price levels of February 2023. In March, equity prices fell sharply, and overall year-to-year volatility rose to higher levels compared to 2022 (see Chart II.12).

Chart II.12 European and US financial markets' volatility

(1.1.2021-15.3.2023, daily prices)

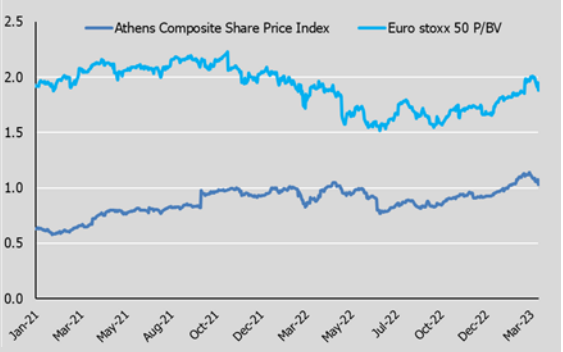


Source: Bloomberg.

However, the difference in valuations between European and Greek equity securities increased between October 2022 and March 2023, although the Athex Composite Share Price Index rose more than the Euro Stoxx 50 index[34] (17.3%, compared with 11.5%), leading to a rise in stock market valuations. Specifically, while the price to book value (P/BV) of European equities over the period 31 October 2022-15 March 2023 increased by around 10.4%, the P/BV for the Athex Composite Share Price Index recorded a larger increase, of around 12.5% over the same period. The European average P/BV continues to be significantly higher than its Greek counterpart and reached levels above one, i.e. 1.83 on 31.10.2022, in contrast with the corresponding index for Greece, which hovered around 1.03 (see Chart II.13).

Chart II.13 Stock market indices

(1.1.2021-15.3.2023, daily prices)

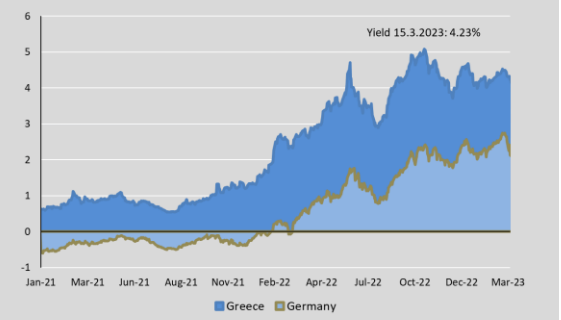


Source: Bloomberg.

In the bond market, yields on Greek government bonds with a maturity of more than five years declined between November 2022 and mid-March 2023, although the ECB raised the interest rate on the standing deposit facility to 3.25% in May 2023 from 0.75% in October 2022 (see Chart II.14). In contrast, yields increased on Greek Treasury bills and bonds with

Chart II.14 Greek and German 10-year bond yields

(1.1.2021-15.3.2023, daily prices, percentage %)



Source: Bloomberg.

[33] It should be noted that according to the available EBA data, the normalisation of monetary policy through interest rate hikes is having a positive effect on the profitability of European banks as it boosts net interest income. The increase in funding costs from the rise in interest rates on banks' liabilities has so far lagged behind the increase in revenue growth on assets (pass through).

[34] The Euro Stoxx 50 is the euro area equity index designed by Stoxx, an index provider owned by Deutsche Börse Group. This index comprises the stocks of 50 companies that are considered leaders in their respective sectors and belong to the large-cap category in 11 euro area countries.

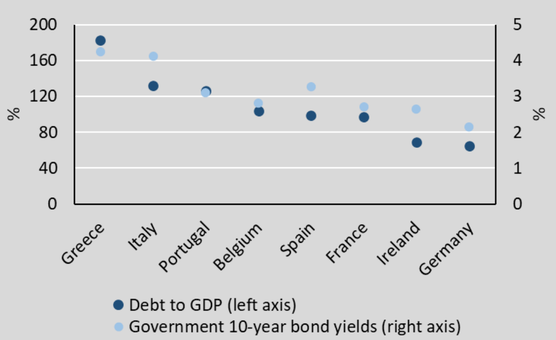
maturities of less than 3 years. Overall, interest rate hikes by the ECB had a negative impact on the issuance of new bonds by non-financial corporations.[35]

Similarly, the yields of 10-year government bonds of euro area countries fell between November 2022 and mid-March 2023, while the spread of the 10-year Greek government bond against its German counterpart (Bund) fell from 248 basis points on 31 October 2022 to 210 basis points on 15 March 2023.

In particular, the yields of 10-year government bonds of euro area countries have as a rule moved in lockstep with the debt-to-GDP ratio (see Chart II.15). In the United States, the yield on the 10-year government bond fell to 3.34% on 3 May 2023 from 4.05% on 31 October 2022, although there were 10 successive increases in the Fed funds rate in 2022 and 2023, bringing the interest rate to the range of 5%-5.25% (May 2023).

Chart II.15 Debt to GDP and 10-year government bond yields

(15.3.2023, percentage %)

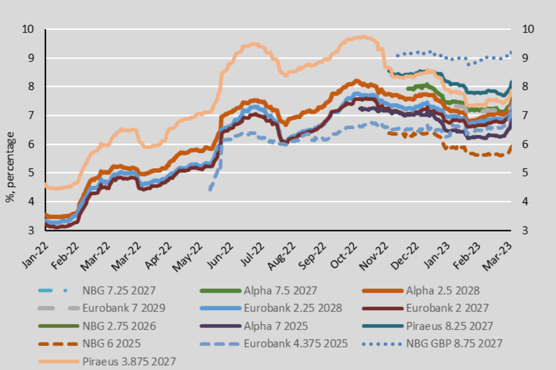


Source: Bloomberg.

Greek bank bond yields fell in the period November 2022-early March 2023, before rising sharply after the banking turmoil in the US and Switzerland (see Charts II.16 and II.17). The increase in bond yields makes the issuance of bonds by Greek banks more expensive in the short term, particularly in the context of meeting the Minimum Requirement for own funds and Eligible Liabilities (MREL). At the same time, the decision to write off Credit Suisse's Additional Tier 1 bonds, in the context of its acquisition by UBS, had a negative impact on the market for AT1 capital instruments.

Chart II.16 Evolution of yields of senior preferred bonds issued by Greek banks

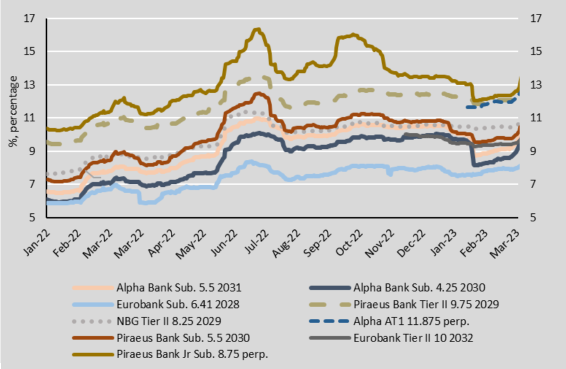
(1.1.2022-15.3.2023, percentage %)



Source: Bloomberg.

Chart II.17 Evolution of yields of subordinated and perpetual bonds issued by Greek banks

(1.1.2022-15.3.2023, percentage %)



Source: Bloomberg.

Overall, bank bond yields are expected to continue to be affected in the near future by possible further ECB key interest rate hikes, as well as by possible negative developments in the global banking bond market.

[35] It should be noted that the last bond issuance by a Greek company took place in July 2022.

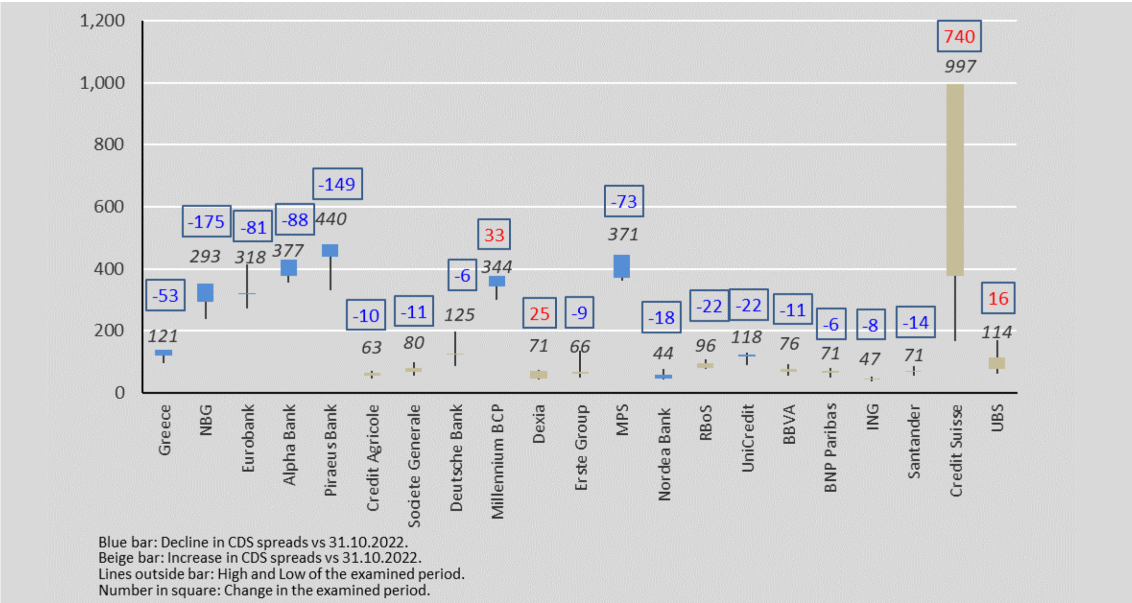
Reports from investment firms are positive about developments in Greece. In this context, Fitch upgraded Greece's credit rating to BB+ from BB, with a stable outlook, on 27 January 2023.[36] Moody's also upgraded the outlook on the Greek government's sovereign credit rating in March 2023, based on expectations of a period of higher nominal GDP growth, thanks to improvements in governance and reforms in the economy and the banking sector.[37] In addition, S&P (rated "BB+") upgraded Greece's outlook to positive on 21 April, on the back of improved public finances and financial sector stability.[38] Similarly, DBRS Morningstar in March 2023 affirmed its "BB (high)" rating with a "stable outlook" for the Greek economy, placing it one notch below investment grade on the rating scale.

The prospects for an upgrade of the Greek government's sovereign credit rating within 2023 remain solid, taking into account the aforementioned recent reports by international rating agencies.[39] The increase in demand for bonds due to a possible achievement of the investment grade is expected to contribute to lower yields and, consequently, to lower funding costs for Greek banks. Consequently, the achievement of the investment grade target is instrumental for the functioning of the banking sector, as it will provide new momentum to the Greek economy.

Finally, due to the improvement in economic sentiment, Greece's 5-year Credit Default Swap spreads (CDS spreads) declined between November 2022 and mid-March 2023, falling to 121 basis points on 15 March 2023, from 174 basis points on 31 October 2022. This decline is in line with the decrease in risk levels observed globally, although March saw a broader upward trend in risk valuation in most countries and banks due to the turmoil in the banking system (see Chart II.18).

Chart II.18 5-year CDS spreads of the Greek sovereign, Greek and European banks

(31.10.2022-15.3.2023, basis points)



Sources: Bloomberg, Markit.

[36] See Fitch Upgrade, 27 January, 2023.
[37] See Moody's announcement, 17 March, 2023.
[38] See S&P announcement, 21 April, 2023.
[39] It should be noted that investment grade holdings are better valued in times of disruption, when liquidity risk is a key determinant of bond prices, as investors tend to move from non-investment grade bonds (which are more difficult to liquidate) to investment grade bonds.

The prices of 5-year credit risk premiums of all major Greek banks followed a similar downward trend until February 2023, as banks posted profits in 2022 and the outlook of the domestic banking sector improved. In March 2023, Greek banks’ CDS spreads widened, although they remained lower than the corresponding levels as at 31 October 2022.

III. THE BANKING SECTOR

1. KEY BALANCE SHEET FIGURES

In December 2022, Greek banking groups' assets stood at €325.4 billion, down by 0.2% (or €806 million) compared to December 2021 (see Table III.1).

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

(in million euro)

	2021		2022		Change
Assets		%		%	
Cash & balances with Central Bank	58,532	17.9	53,487	16.4	-5,045
Due from banks	10,484	3.2	6,460	2.0	-4,024
Loans & advances to customers (net)	149,263	45.8	160,347	49.3	11,084
Derivative financial instruments	7,814	2.4	7,127	2.2	-687
Securities	51,659	15.8	55,063	16.9	3,404
Investment in subsidiaries & associates, tangible and intangible assets	9,881	3.0	10,271	3.2	390
Non-current assets held for sale	6,505	2.0	2,502	0.8	-4,003
Other assets	32,022	9.8	30,098	9.3	-1,924
Total	**326,160**	**100**	**325,354**	**100**	**-806**
	2021		**2022**		**Change**
Liabilities		%			
Deposits from customers	217,300	66.6	230,163	70.7	12,863
Due to banks	57,500	17.6	42,679	13.1	-14,821
Debt securities in issue & other borrowed funds	8,219	2.5	10,175	3.1	1,956
Liabilities related to assets held for sale	4,137	1.3	39	0.0	-4,098
Other liabilities	14,877	4.6	15,267	4.7	390
Total equity	24,127	7.4	27,031	8.3	2,904
Total	**326,160**	**100**	**325,354**	**100**	**-806**

Source: Bank of Greece.

More specifically, changes in assets' volumes and composition are mainly attributed to:

(i) An increase of €11.1 billion in net loans, as loan disbursements exceeded the reduction of balances due to the sale and securitisation of NPLs.[40] The increase is mainly due to business loans. As a result, the share of net loans in total assets increased (December 2022: 49.3%, December 2021: 45.8%).

(ii) A decrease of €5.0 billion in cash, mainly cash balances with the Bank of Greece, in the context of the repayment of TLTRO III funding from the Eurosystem. As a result, the share of cash in total assets decreased (December 2022: 16.4%, December 2021: 17.9%).

(iii) A decrease of €4.0 billion in amounts due from banks, mainly due to a decline in collateral deposits for derivatives and securities repurchase agreements (repos) as well as to a reduction in repos. As a consequence, the share of amounts due from banks in total assets decreased (December 2022: 2.0%, December 2021: 3.2%).

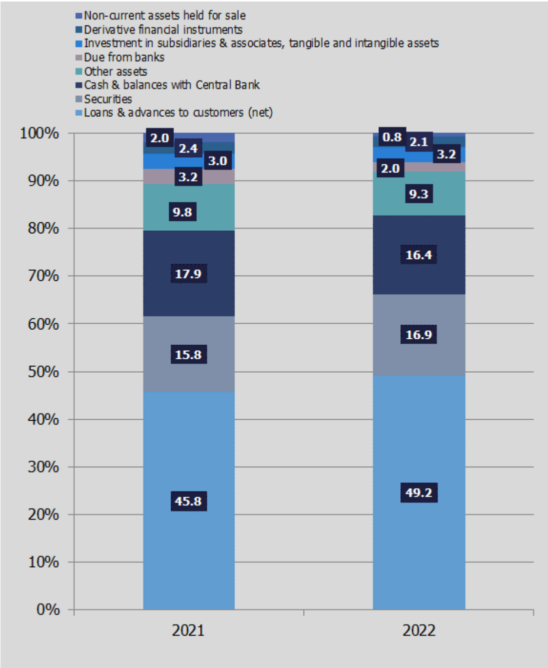
[40] It should be pointed out that the stock of loans includes the senior notes that banks have retained from their loan securitisations, which carry a state guarantee under the Hellenic Asset Protection Scheme ("Hercules").

(iv) A decrease of €4.0 billion in assets available for sale, mainly due to the sale of an insurance subsidiary by a significant institution, resulting in a reduction of their share in total assets (December 2022: 0.8%, December 2021: 2.0%).

(v) An increase of €3.4 billion in debt securities, mainly due to a rise in foreign government bonds and corporate bonds, resulting in an increase of the share of debt securities in total assets (December 2022: 16.9%, December 2021: 15.8%, see Chart III.1 and Table III.1).

Chart III.1 Structure of assets of Greek banking groups

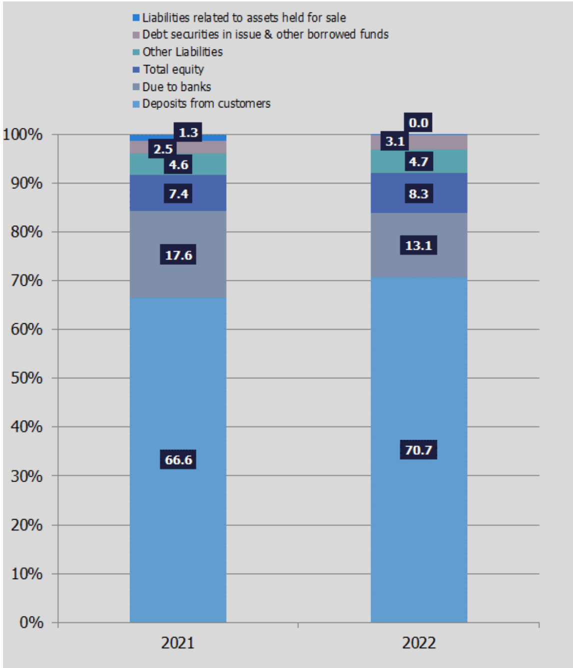
(%)



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) A decrease in amounts due to banks by €14.8 billion, as a result of the repayment of TLTRO III funding. As a consequence, the share of amounts due to banks in total liabilities decreased (December 2022: 13.1%, December 2021: 17.6%).

(ii) An increase of €12.9 billion in customer deposits, as a result of which the share of customer deposits in total liabilities grew (December 2022: 70.7%, December 2021: 66.6%).

(iii) A decrease of €4.1 billion in liabilities available for sale, mainly due to the sale of an insurance subsidiary by a significant institution, resulting in the elimination of their share over total liabilities.

(iv) An increase of €2.9 billion in equity, mainly due to a rise in reserves and retained earnings. As a result, the share of equity in total liabilities increased (December 2022: 8.3%, December 2021: 7.4%).

(v) Finally, there was an increase in debt securities in issue and other borrowed funds (by €2.0 billion), resulting in a rise of their share in total liabilities (December 2022: 3.1%, December 2021: 2.5%, see Chart III.2 and Table III.1). Banks floated a number of bond issues,[41] mainly in

[41] In 2022, new issues stood at €2.4 billion, and in the first months of 2023 at €0.9 billion.

the second half of 2022, in an effort to meet the interim supervisory requirements for MREL in 2023 and also strengthen their capital base.

2. RISKS

2.1 CREDIT RISK

Evolution of key figures

In 2022, the asset quality of credit institutions' loan portfolios improved significantly. Non-performing loans (NPLs) continued their downward trend; as a result, at the end of the year the total stock of NPLs stood at €13.2 billion, reduced by 28.2% or €5.2 billion compared to the end of 2021 (€18.4 billion), according to on-balance-sheet data on a solo basis[42] (see Table III.2).

Table III.2 Key figures – Total portfolio

(in million euro, on-balance-sheet items)	Dec-21	Dec-22
Breakdown of NPLs		
Total loans	**144,097**	**151,752**
Performing loans	**125,697**	**138,535**
NPLs	**18,400**	**13,217**
Unlikely-to-pay	6,530	4,040
Past due > 90 days	5,705	4,389
91-180 days	850	481
181-360 days	874	530
>1 year	3,982	3,378
Denounced loans	6,165	4,789
Breakdown of forborne loans		
Forborne loans	**15,238**	**11,414**
Performing forborne loans	8,037	6,638
Non-performing forborne loans	7,201	4,776
Breakdown of impairment losses and write-offs		
Accumulated impairment on NPLs	**7,739**	**5,992**
Total collateral	**95,436**	**97,707**
Collateral on performing loans	**84,850**	**89,780**
Collateral on NPLs	**10,586**	**7,927**
Unlikely-to-pay	4,232	2,763
Past due > 90 days	3,015	2,353
Denounced loans	3,339	2,811
Collateral on non-performing forborne loans	**4,739**	**3,303**
Flows breakdown of non-performing loans and write-offs	**2021**	**2022**
Flows of non-performing loans	**818**	**110**
Flows to performing loans	-3,369	-2,434
Flows from performing loans	4,187	2,545
Write-offs	**1,870**	**961**
of which write-offs of denounced loans	1,150	618

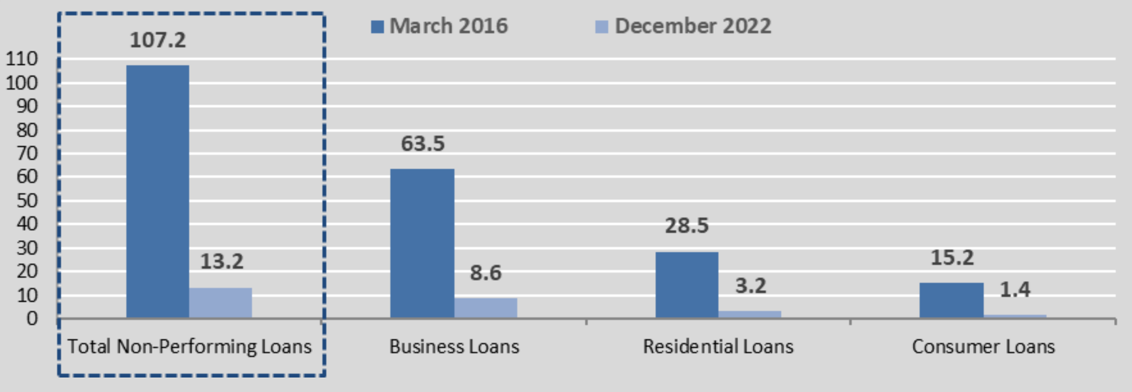
Source: Bank of Greece.

It should be noted that the total decrease of NPLs from their March 2016 peak reached 87.7% or €94 billion (see Chart III.3).

[42] On a consolidated basis, the NPL stock stood at €13.8 billion, down by 28.5% or €5.5 billion from €19.3 billion at the end of 2021.

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

(in billion euro)

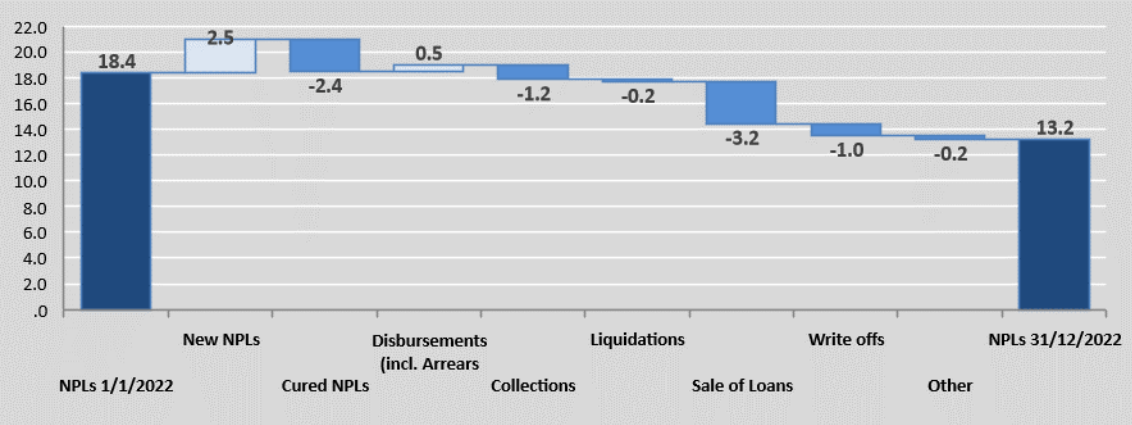


Source: Bank of Greece.

The decline of NPLs in 2022 is mainly due to their classification as held for sale, pending the completion of the sale transactions through securitisation, as well as 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).

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

(in billion euro)



Notes: 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.

NPLs sales transactions directly or through securitizations are included in the categories "Sale of Loans" and "Other"

Source: Bank of Greece.

It should be noted that the flow of new NPLs during the year exceeded that of NPLs reclassified as performing, while collateral liquidations remained negligible. For some of the securitisation transactions, the utilisation of Greek government guarantees (under the “Hercules” plan[43]) on the senior tranche securities[44] is pending.

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

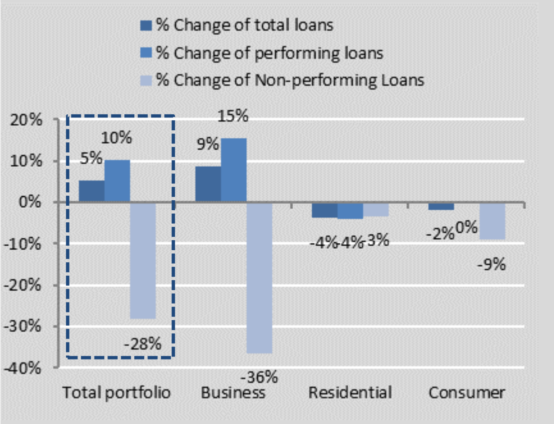
[43] The "Hercules" plan was scheduled to expire on October 2022 and a new extension is being considered. It should be noted that as at 31 December 2022, the total stock of NPLs included in the plan amounts to €43.8 billion (from €47.9 billion as at 30 June 2022), while the amount of guarantees granted by the Greek State stands at €17.4 billion.

[44] See Box V.1 "Securitisations as a tool to effectively manage banks' non-performing loans (NPLs)" (Financial Stability Review – May 2022)

key for resolving the legacy stock of debt and to this end the effective use of all available tools is warranted. Rehabilitation of borrowers with viable and bankable investment plans should be considered as an option that can help towards both the resolution of the private debt overhang and the growth of the real economy.

Chart III.5 Percentage change of Greek banks' total (performing and non-performing) loans per portfolio in 2022

(percentages %)



Source: Bank of Greece.

The total stock of outstanding loans amounted to €151.8 billion, recording a slight increase of 5.3%, coming only from the business loan portfolio (+8.7%). Similarly, the total stock of performing loans increased by 10.2%, also due to the business loan portfolio (+15.4%) (see Chart III.5).

The ratio of NPLs to total loans at the end of 2022 stood at 8.7%, down from 12.8% at the end of 2021. This reduction reflects the progress achieved towards the cleaning up of 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, with one of them also breaching the 5% limit. However, in the less significant institutions (LSIs), the ratio of NPLs to total loans is particularly high and stands at 44.8%, a percentage that is also related to the incompatibility of the government guarantee protection scheme (HAPS) for the vast majority of smaller banks.

Additionally, the system-wide NPL ratio remains higher than the European average (December 2022: 1.8%[45]), 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 2022 data 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. This environment, combined with the prospects for a slowdown in economic growth in 2023, may once again affect the quality of banks' loan portfolios through the creation of new NPLs.

[45] Source: European Banking Authority, EBA Dashboard - Q4 2022.pdf (europa.eu). It should be noted that the EBA data are calculated on a consolidated basis and include loans to credit institutions and central banks, therefore they are not directly comparable with the Bank of Greece data. Indicatively, the NPL ratio for domestic significant credit institutions on a consolidated basis, taking into account loans to credit institutions and central banks, is 4.6%.

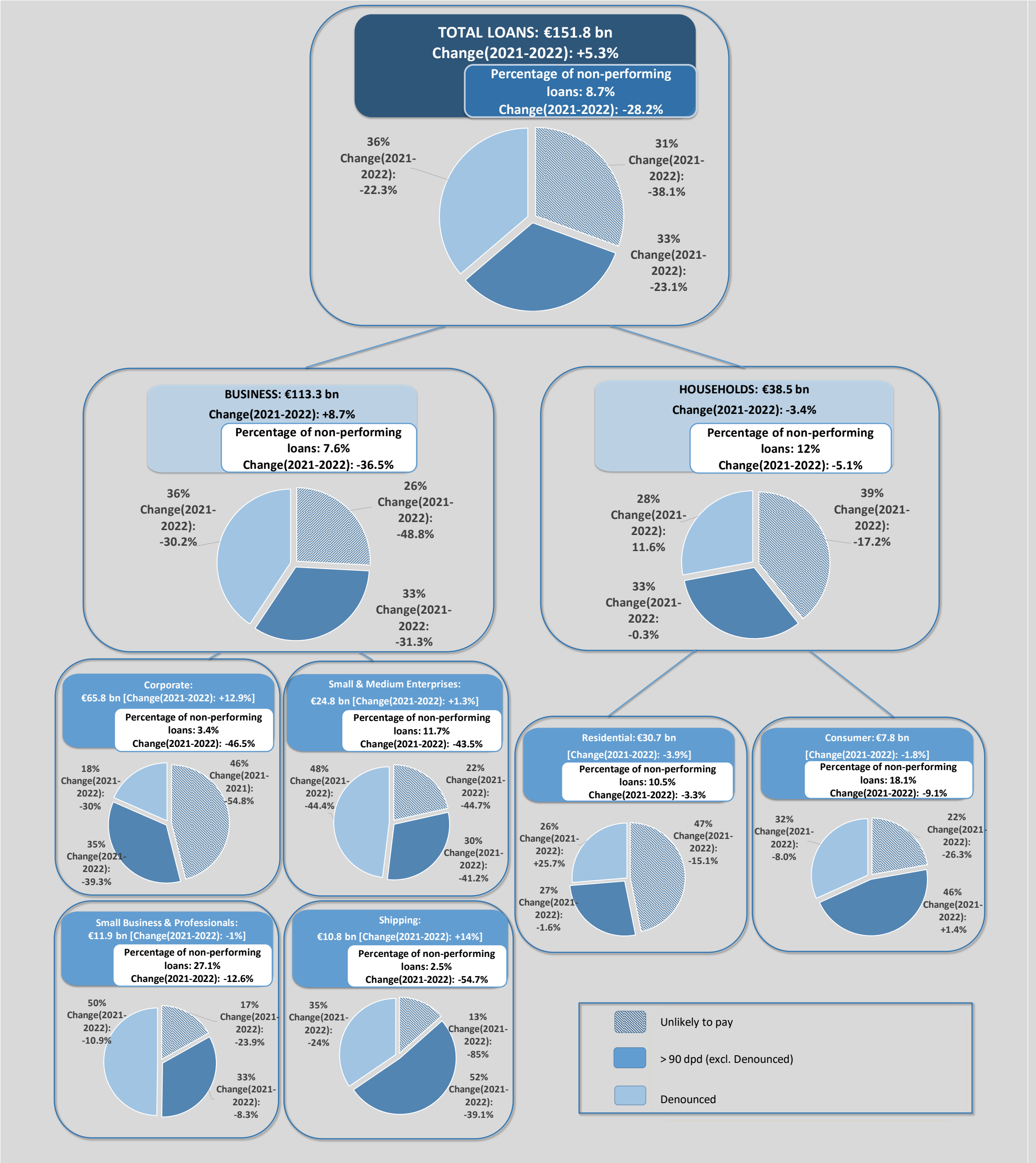
Structure and evolution of non-performing loans (NPLs)

A significant decline in the stock of NPLs was recorded for all loan portfolios in 2022, with the decrease of NPLs for business loans being particularly strong (see Chart III.6).

Unlikely-to-pay loans amounted to €4 billion (31% of NPLs) at the end of 2022, down by 38.1% compared to end-2021 (€6.5 billion).

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

(in billion euro, percentages %)

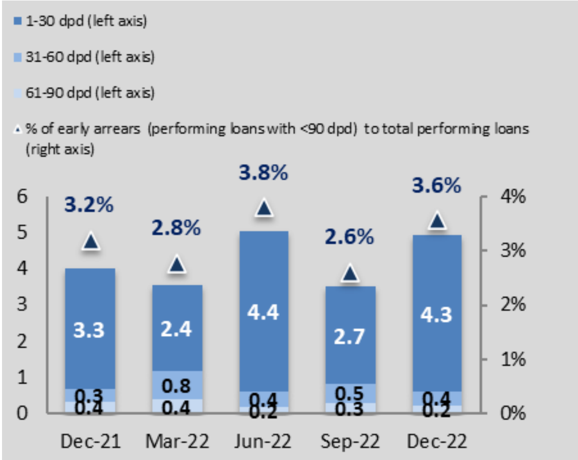


Source: Bank of Greece.

Loans that are 1 to 90 days past due (early arrears) increased by 22.6% to €4.9 billion at the end of 2022, from €4 billion at the end of 2021. This rise comes mainly from business loans in arrears from 1 to 30 days.

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

(in billion euro, percentages %)



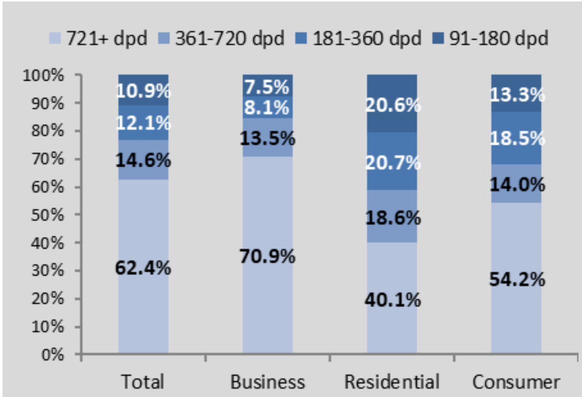
Source: Bank of Greece.

In addition, the ratio of loans in arrears from 1 to 90 days to total performing loans increased in 2022 to 3.6%, compared with 3.2% at the end of 2021 (see Chart III.7).

Loans over 90 days past due (excluding denounced loans) declined further at the end of 2022 and amounted to €4.4 billion (33.2% of NPLs), down by 23.1% compared to end-2021 (€5.7 billion). However, it should be pointed out that 77% of the NPLs falling into this category are more than one year past due, an increased percentage compared to the end of 2021 (69.8%). The corresponding delinquency rate for business loans amounts to 84.4%, for residential loans to 58.7% and for consumer loans to 68.2%.

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

(percentages %)



Source: Bank of Greece.

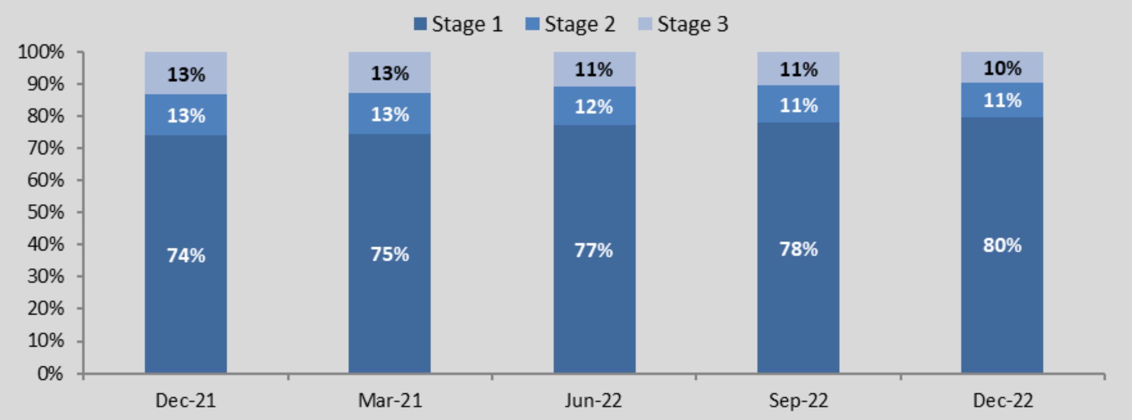
An analysis of the structure of NPL balances in the arrears bucket of more than 90 days past due per portfolio at year end-2022 is presented in Chart III.8.

At the same time, 36.2% of NPLs relate to denounced loans, which at the end of 2022 amounted to €4.8 billion, down by 22.3% compared to end-2021 (€6.2 billion), mainly due to sale through securitisation transactions.

Finally, the improvement in portfolio quality is also reflected in the allocation of the total loan stock per stage, in accordance with International Financial Reporting Standard 9 (IFRS 9), in 2022 compared to 2021, a fact that is mainly due to a decrease of 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

(percentages %)



Source: Bank of Greece.

Indicators for monitoring and evaluation of NPLs

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

Table III.3 Total portfolio – Key indicators

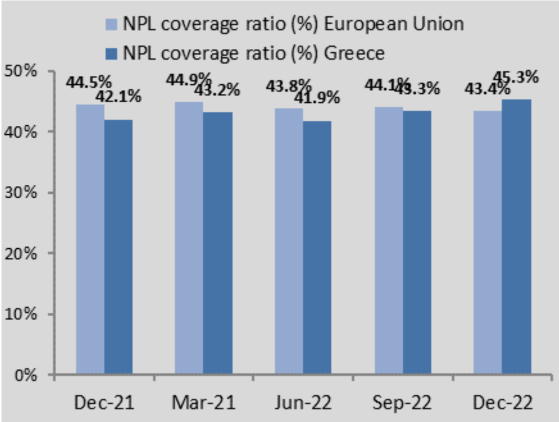
(percentages %, on-balance-sheet items)	Dec-21	Dec-22
Credit quality indicators		
NPL ratio	**12.8**	**8.7**
> 90 days past due	8.2	6.0
NPL structure		
Unlikely-to-pay	**35.5**	**30.6**
Past due > 90 days	**31.0**	**33.2**
91-180 days	4.6	3.6
181-360 days	4.7	4.0
>1 year	21.6	25.6
Denounced loans	**33.5**	**36.2**
Forborne to total loans		
Forborne loans	**10.6**	**7.5**
Forborne performing loans	5.6	4.4
Forborne non-performing loans	5.0	3.1
Coverage ratios and write-offs		
Coverage ratio of NPLs	**42.1**	**45.3**
Total write-offs to total loans	**1.3**	**0.6**
Total write-offs to NPLs	**10.2**	**7.3**
NPL collateral coverage ratio	**57.5**	**60.0**
Collateral coverage on forborne non-performing loans	65.8	69.2
Total NPL coverage (provisions + collaterals)	99.6	105.3
Quarterly default and cure rates	**Q4-21**	**Q4-22**
Default rate	0.6	0.4
Cure rate	3.3	4.0
Cost of Credit risk		
Loan-loss impairment to net loans	5.7	1.1
Loan-loss impairment to total assets	2.6	0.5

Source: Bank of Greece.

- The NPL coverage ratio (accumulated provisions) stood at 45.3% in December 2022, compared with 42.1% at the end of 2021. In particular, the cumulative provisions for the coverage of NPLs established by banks until the end of 2022 amounted to €6 billion, compared with €7.7 billion at the end of 2021. This decrease is mainly due to the NPL securitisation and sale transactions that took place during the year. It should be pointed out that it is the first time that the level of the NPL coverage ratio in Greece exceeds the European average (Q4 2022: 43.4%[46]) (see Chart III.10), which is due to the greater reduction of the denominator (NPLs) compared to that of the numerator (cumulative provisions).

Chart III.10 NPL coverage ratio

(percentages %)



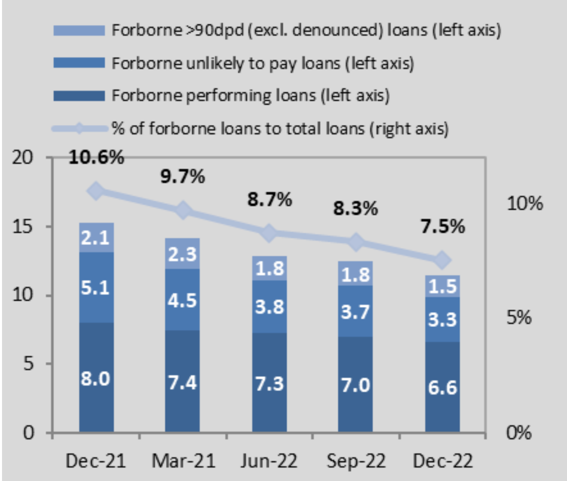
Sources: Bank of Greece , European Banking Authority.

- The collateral coverage ratio for NPLs in December 2022 was 60%, higher than at end-2021 (57.5%), while the collateral coverage ratio on forborne non-performing loans amounted to 69.2%, compared with 65.8% at the end of 2021.
- Total forborne loans[47] in December 2022 fell to €11.4 billion, from €15.2 billion at the end of 2021, representing 7.5% of total loans (10.6% in 2021) (see Chart III.11). The decrease in forborne loans in the last two years is mainly due to securitisations and sales of NPLs.

  It should be noted that 13.2% of forborne loans are in arrears by more than 90 days, a percentage slightly reduced compared to the end of 2021 (13.8%).
- 65.6% of NPLs over 90 days past due have not been modified (forborne), compared with 63.2% at the end of 2021, while the corresponding rates for residential, consumer and business loans stand at 62.1%, 75.7% and 64.4%, respectively.

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

(in billion euro, percentages %)



Source: Bank of Greece.

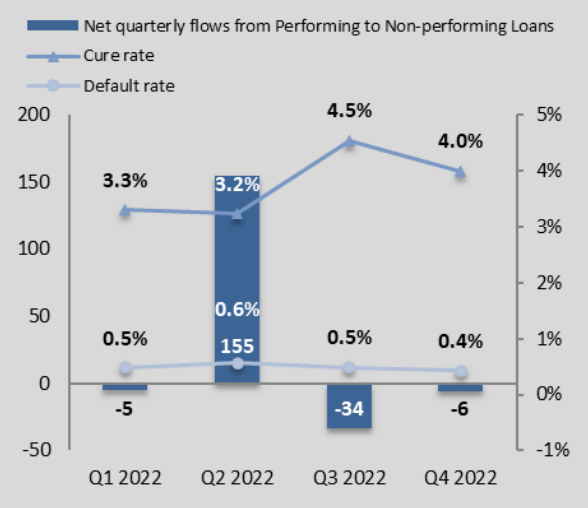
[46] Source: European Banking Authority, Risk Dashboard, Q4 2022 EBA Dashboard - Q4 2022.pdf (europa.eu)

[47] Bank of Greece Executive Committee Act 175/29.7.2020 provides an indicative typology of forbearance and resolution and closure solutions for performing and non-performing loans.

- Loan write-offs in 2022 amounted to €1 billion, of which €0.6 billion relate to denounced loans, in particular business loans (€0.5 billion).
- During 2022, the flows from performing to non-performing loans were €2.5 billion, while the flows from non-performing to performing loans were €2.4 billion, leaving positive net flows to non-performing loans of €110 million. It is worth noting that, with the exception of the second quarter of 2022, when significant net flows to NPLs were observed (€155 million), in the remaining three quarters the trend was marginally negative (see Chart III.12). Finally, the cure and default rate indicators may be affected by the "denominator effect" due to e.g. sales of non-performing loans in the former case or credit expansion in the latter.

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

(in billion euro, percentages %)



Source: Bank of Greece.

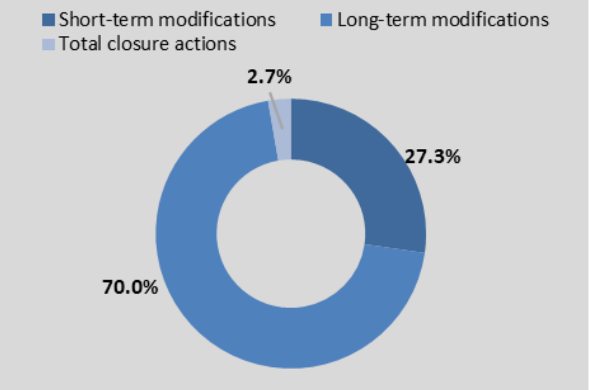
- It should be noted that €264 million, i.e. 2% of the NPLs, relate to loans that are under legal protection status and for which the issuance of a final court decision is pending; €116 million of these relate to loans that have already been denounced. Loans in this category concern either natural persons (e.g. Law 3869/2010[48]) or legal entities (e.g. Law 4307/2014, Bankruptcy Code). Regarding the sub-categories, approximately 4.5% of non-performing residential loans are subject to legal protection, while the corresponding percentage for consumer loans is 3.4%.
- The cure rate stood at 4% in the fourth quarter of 2022 and the default rate at 0.4% (see Chart III.12). Looking into individual loan portfolio categories, the highest cure rate (7.7%) is recorded in residential loans and the lowest (2.8%) in business loans.

[48] 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 largest part of forborne loans relates to long-term modifications, representing 70% of total forborne loans, followed by short-term modifications with 27.3% and resolution and closure actions with 2.7% (see Chart III.13). It is worth mentioning that the percentage of forborne non-performing loans at end-2022 remains high (42.3%), although it appears improved compared to 2021 (47.5%).

Chart III.3 Allocation of forborne loans balance per modification type

(percentages %)



Source: Bank of Greece.

Credit risk per sector for business loans

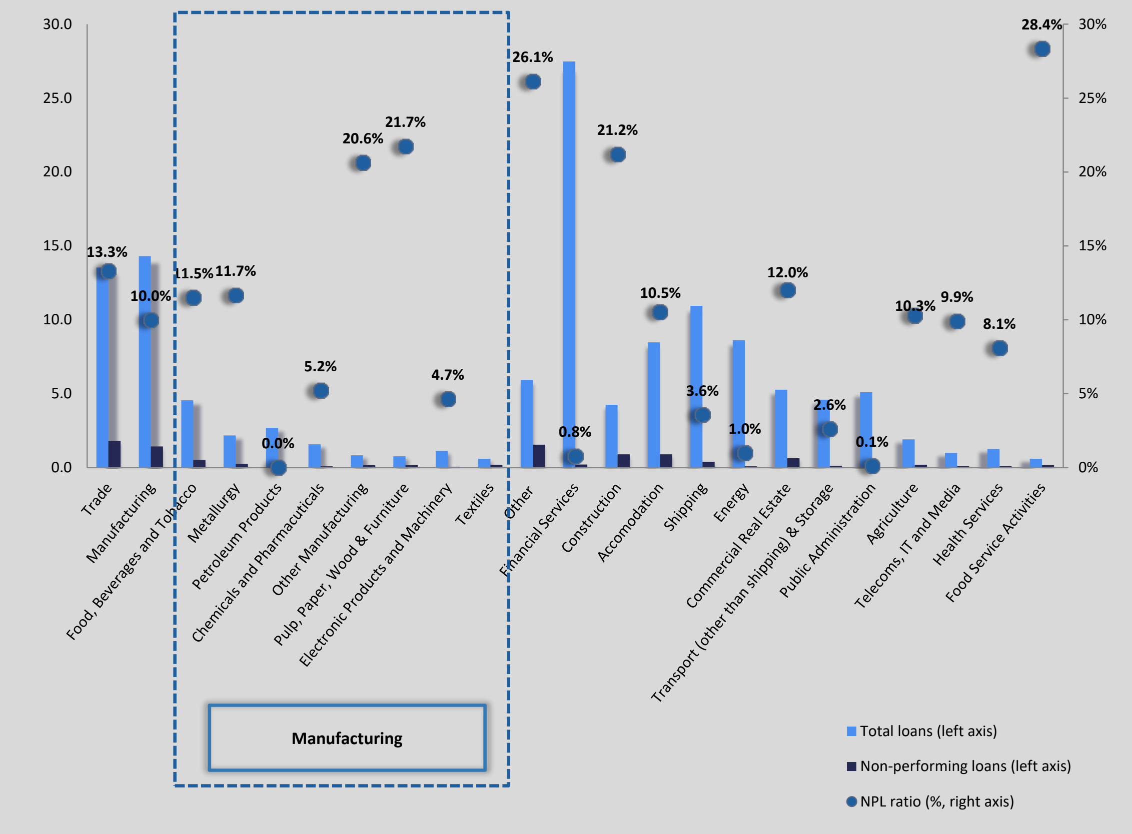
In December 2022, financing to business, according to on-balance-sheet data, amounted to €113.3 billion, accounting for about 75% of the total financing of Greek credit institutions to the economy. The NPL ratio in the business portfolio (7.6%) continues to be mainly influenced by the high ratio in the category of small and medium-sized enterprises (SMEs) (11.7%) and Small Business Professionals (SBPs) (27.1%).

As regards the sectoral breakdown of financing to the Greek economy, the largest share concerns financial corporations (24% of total corporate financing, compared with 26% in 2021). This sector also includes senior tranches of securitisations held by credit institutions under the “Hercules” plan. The NPL ratio for this sector is much lower than the corresponding average ratio for business loans (0.8% in 2022, compared with 3.1% for 2021).

The highest NPL ratios are recorded in the sectors of Food Service Activities (28.4%), Construction (21.2%), Trade (13.3%), Commercial Real Estate (12%), Accommodation (10.5%), Agriculture (10.3%) and Manufacturing (10%). High NPL ratios are also recorded in sub-sectors of Manufacturing, such as Textiles (30.3%), Pulp, Paper, Wood & Furniture (21.7%) and Other Manufacturing (20.6%), which, however, concern lower lending balances and therefore have a lower effect on the overall NPL ratio of the Manufacturing sector. The lowest ratios are indicatively observed in Energy (1%) and Financial Services (0.8%) (see Chart III.14).

Chart III.4 Sectoral breakdown of business loans and NPLs for the year 2022

(in billion euro, percentages %)

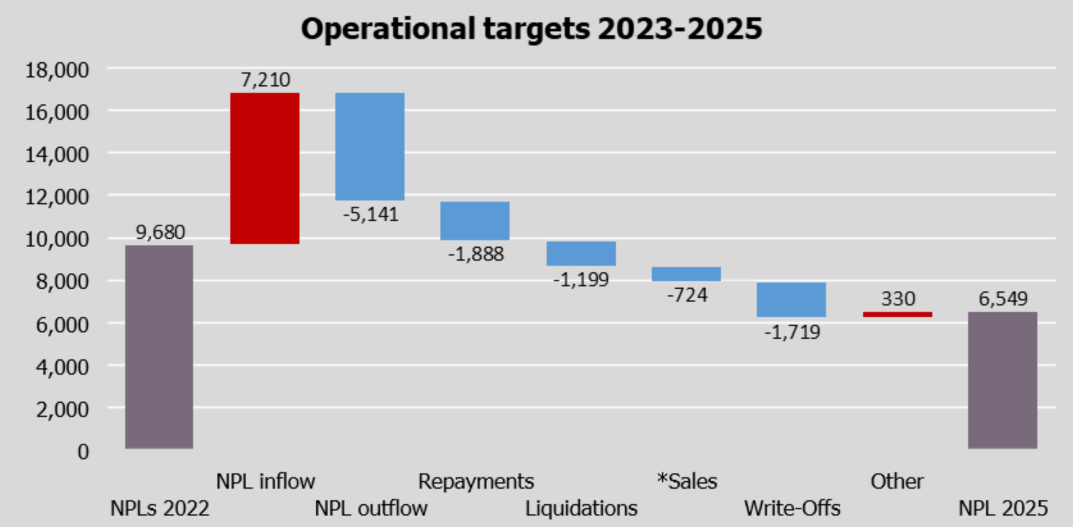


Source: Bank of Greece.

Overall, it should be noted that the environment shaped by the shift in the monetary policy stance, with rising interest rates and rising funding costs, compounded by a slowdown of economic activity, higher production costs and lower real disposable income of households, will exert pressure on households and certain businesses, and may adversely affect the quality of the loan portfolio.

Box III.1 NPL operational targets set by significant banks for the period 2023-2025

Significant banks have set operational targets regarding NPL evolution during the three-year period 2023-2025. Targets are submitted on a consolidated basis and concern only the portfolios of non-financial corporations and households, while only a baseline macroeconomic scenario is taken into account.



*Sales include both outright sales and securitisations.

For the period 2023-2025, banks aim to reduce NPLs by €3.1 billion or 32% (see chart). As a result, the NPL ratio is expected to reach 4% in 2025, from 7% in 2022, and further converge with the euro-area bank average.

NPLs reduction will be mainly driven by loan repayments (€1.9 billion) and write-offs (€1.7 billion), followed by sales (€0.7 billion) and collateral liquidations (€0.5 billion). The NPL net flow is expected to remain positive (€2.1 billion) as current economic conditions are expected to put pressure on the financial position of households and businesses in the short term.

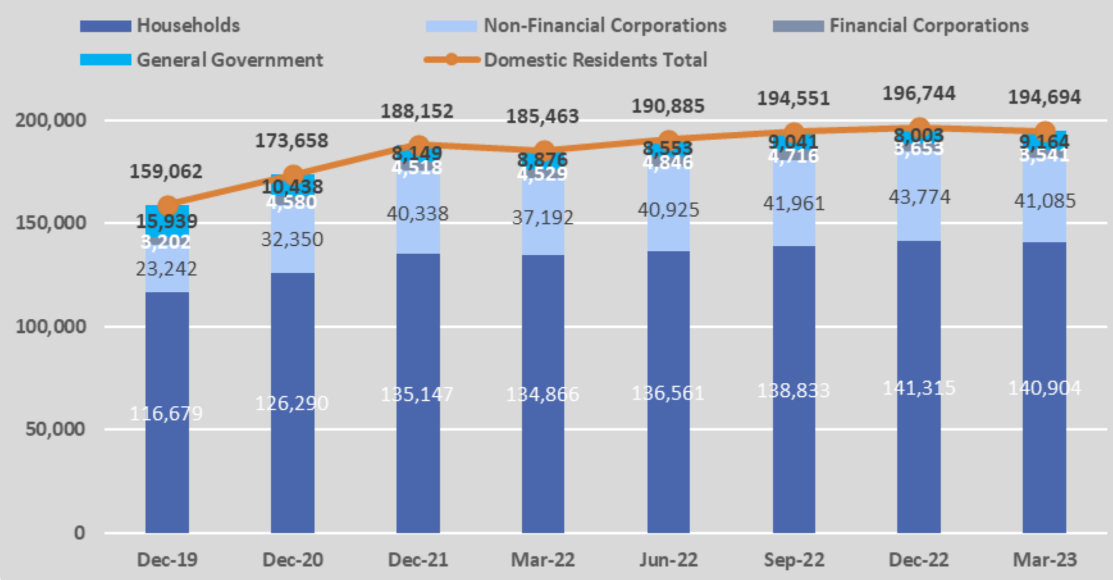
In conclusion, under a baseline scenario and a decade after the NPL peak (March 2016), the four significant banks will have successfully tackled the NPL problem.

2.2 LIQUIDITY RISK

The liquidity of the Greek banking sector in 2022 presented a mixed picture. The shift in the monetary policy stance, in an effort to stem inflationary pressures, led to an increase in Greek banks' funding costs. In an environment of rising interest rates and Greek bond yields and amid expectations of further increases in the ECB key interest rates, the access of Greek banks to the capital markets and the Eurosystem refinancing operations became costlier. During 2022, deposits flows continued their upward trend, reflecting strong economic growth, despite the negative impact of high inflation. The increase in deposits considerably boosted the liquidity buffers of Greek banks, which remained at relatively high levels in 2022, despite the early and partial repayment of the amounts raised through TLTRO III operations. However, the upward trend in deposits halted in the first quarter of 2023.

Chart III.5 Deposits and repos of domestic non-MFIs in MFIs in Greece (excluding the Bank of Greece)

(in million euro)



Source: Bank of Greece.

Domestic deposits stood at €196.7 billion in December 2022, reaching a new ten-year high, but fell by 1% in the first quarter of 2023, to stand at €194.6 billion (see Chart III.15). During 2022, households' and non-financial corporations' deposits increased by €6.2 billion and €3.4 billion, reaching €141.3 billion and €43.8 billion, respectively. The increase in deposits by 4.6% on an annual basis is mainly attributed to rapid economic growth and mounting depositors' confidence. However, the slowdown of deposit growth in 2022 is due, among other things, to the strong inflationary pressures that have squeezed household disposable income and pushed upwards business operating costs. In the first quarter of 2023, there was a small decrease of €2 billion in deposits (to €194.7 billion in March 2023), mainly owing to a decline in deposits from non-financial corporations.

General government deposits did not change significantly on an annual basis in 2022 (December 2022: €8.0 billion, December 2021: €8.1 billion), while they increased in the first quarter of 2023 and reached €9.2 billion. Financial corporations' deposits fell by 20% (December 2022: €3.7 billion, December 2021: €4.5 billion) and have remained at roughly the same levels in 2023.

The access of Greek banks to the Eurosystem's refinancing operations – on very favourable terms – from 2020 until mid-2022 has improved their interbank funding costs, as reflected by the path of the interbank funding rate up until July 2022.[49] However, after June 2022, Greek banks' funding sources were significantly affected by the normalisation of ECB's monetary policy and the increase of the three key interest rates (main refinancing operations rate, marginal lending facility rate and deposit facility rate) in order to tackle inflationary pressures.

From July 2022 to May 2023, the key interest rates of the Eurosystem were raised by 375 basis points, while in October 2022 the ECB decided to modify the terms of the TLTRO III operations

[49] 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.

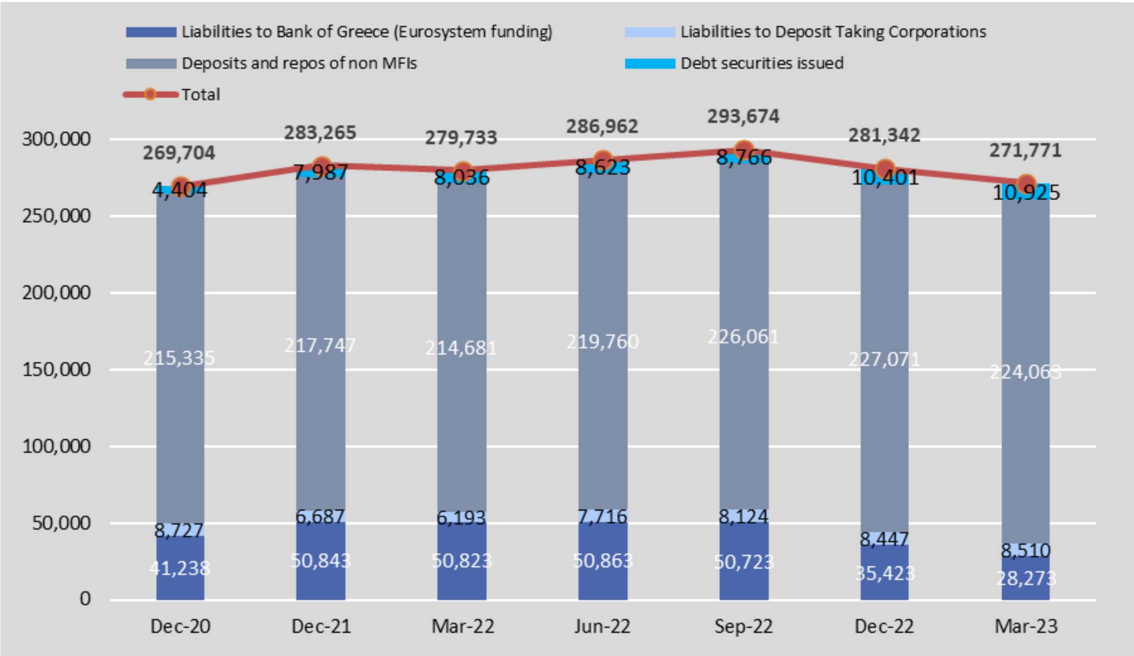
and readjust the interest rate on minimum reserves.[50] From 23 November 2022 onwards, the interest rate on all TLTRO III operations was set as the average of the current ECB key interest rates, while from 21 December 2022 the interest rate on minimum reserves is determined according to the Eurosystem's deposit facility rate instead of the main refinancing operations rate. Due to the higher cost of ECB funding, in the fourth quarter of 2022 and in the first months of 2023, Greek banks proceeded in the early voluntary repayment of part of their TLTRO III loans. More specifically, in 2022, as well as in the first quarter of 2023, Greek banks' Eurosystem funding dropped significantly (March 2023: €28.3 billion, December 2022: €35.4 billion, December 2021: €50.8 billion) (see Chart III.16) after the shift in the monetary policy stance and the worsening of the terms of TLTRO III operations.

The 2022 annual reduction of €15.4 billion in Eurosystem funding was largely offset by a €9.4 billion annual increase in deposits and repurchase agreements with non-financial corporations and households (December 2022: €227.1 billion, December 2021: €217.7 billion), complemented by a €2.4 billion increase in debt securities issued (December 2022: €10.4 billion, December 2021: €8.0 billion) and a €1.8 billion increase in liabilities to deposit-taking corporations (December 2022: €8.4 billion, December 2021: €6.7 billion). The ECB funding repayment (additional €7.2 billion) continued in the first quarter of 2023 using available cash.

The ECB's decision to maintain flexibility in reinvesting the principal payments from maturing securities purchased under the Pandemic Emergency Purchase Programme (PEPP), in order to address risks for the transmission of the monetary policy, was an important development that affected positively Greek banks' liquidity in terms of the market value of the Greek government bonds held in their portfolios.

Chart III.6 Sources of funding of Greek credit institutions

(in million euro)



Source: Bank of Greece.

[50] ECB, press release of 27.10.2022, Monetary policy decisions

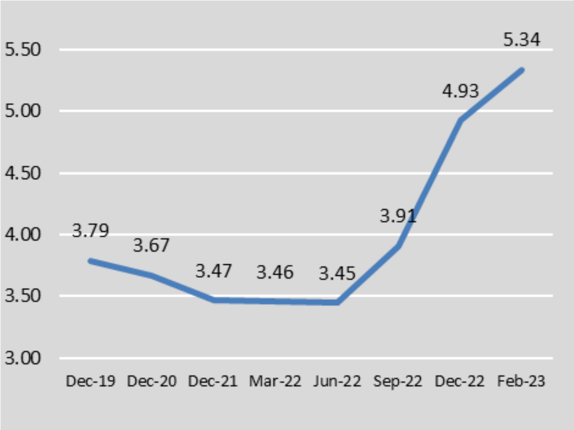
Equally beneficial was the decision of the Governing Council of the ECB, in July 2022, to adopt the Transmission Protection Instrument (TPI).[51] The TPI is an addition to the ECB's toolkit and can be activated to counter undesirable, extraordinary market developments that pose a serious threat to the transmission of the monetary policy, which has shifted to stem inflationary pressures.[52]

These decisions, combined with the continued eligibility of Greek government bonds as acceptable collateral for the Eurosystem's main refinancing operations, halted the upward trend in yields and prevented potential negative effects on the transmission of monetary policy to the Greek economy from the interruption of purchases of Greek government bonds while it is still recovering from the fallout from the pandemic.[53]

In 2022 and the first months of 2023, deposit rates increased slightly despite the significant increase in the ECB key interest rates (see Chart III.17). The average weighted interest rate for deposits and repos increased slightly to 0.18% in February 2023 (December 2022: 0.09%, December 2021: 0.04%). The average deposit interest rate for households and non-financial corporations stood at 0.15% and 0.30% respectively in February 2023 (December 2022: 0.06% and 0.17%, December 2021: 0.04% and 0.02%). It is worth mentioning that the increase in the average weighted interest rate for deposits and repos relates almost solely to term deposits.

Chart III.7 Loan-Deposit Interest Rate Spread

(%)



Source: Bank of Greece.

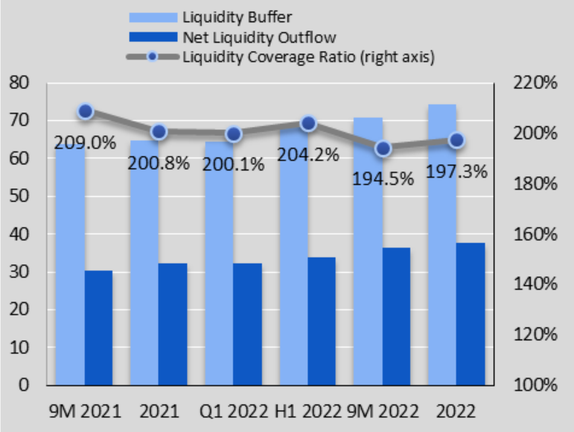
Liquidity ratios

In 2022, Greek banks' liquidity remained at a high level.

The Liquidity Coverage Ratio (LCR) stood at 197.3%, slightly down on an annual basis (see Chart III.18), but almost double compared to the supervisory requirement of 100%. The LCR remained high despite the partial repayment of the TLTRO III funding, due to the increase in deposits and the release of encumbered assets mobilised as collateral to the Eurosystem's refinancing operations, which are now eligible for the banks' liquid buffers. The

Chart III.8 Liquidity Coverage Ratio (LCR)

(% and in billion euro)



Source: Bank of Greece.

[51] 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.

[52] ECB, press release of 21.7. 2022, Monetary policy decisions.

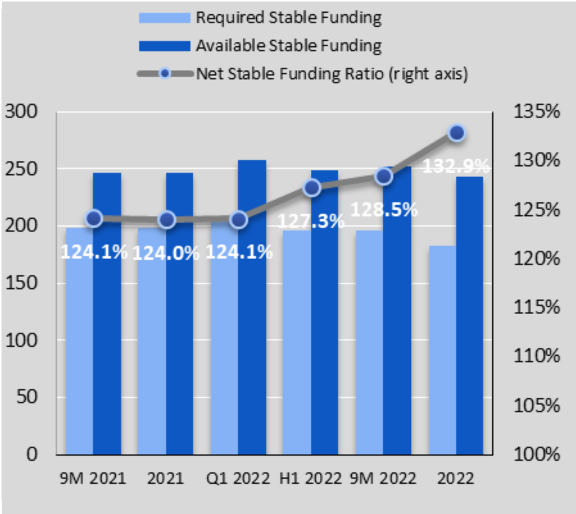
[53] ECB, press release of 9.6.2022, Monetary policy decisions

Liquidity Coverage Ratio of Greek banks remained significantly higher than the corresponding European average for banks in the Single Supervisory Mechanism (161.46% in the fourth quarter of 2022)[54]. The further repayment of TLTRO III operations may affect the course of the LCR where the encumbered assets being released are not eligible for banks' liquid buffers.

In addition, the Net Stable Funding Ratio (NSFR) showed a significant increase in 2022 and stood at 132.9% in December 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 (see Chart III.19). The rise in the NSFR is due to an increase in retail deposits, which partially offset the decline in Eurosystem funding, as well as to a reduction of required funding following the release of encumbered assets that qualify as high-quality liquid assets. The NSFR for Greek banks remained slightly higher than the corresponding European average for banks in the Single Supervisory Mechanism (125.8% in the fourth quarter of 2022). The supervisory requirement for the NSFR is set at 100%.

Chart III.9 Net Stable Funding Ratio (NSFR)

(%)

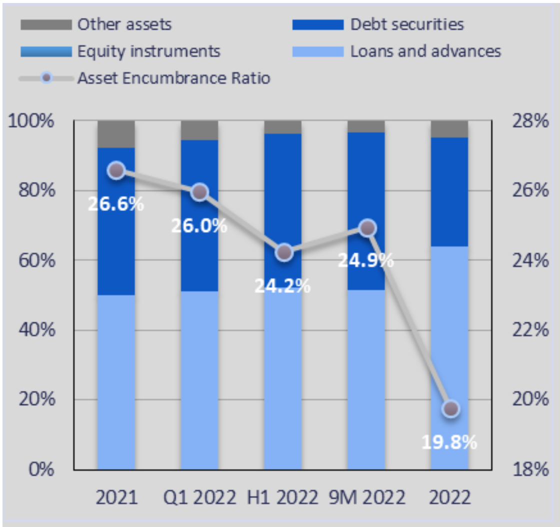


Source: Bank of Greece.

The Asset Encumbrance Ratio (AER) improved, as it fell significantly to 19.8% in 2022, from 26.6% at the end of 2021, remaining lower than the corresponding average of European Banking Authority banks (December 2022: 25.8%) (see Chart III.20). The reduction took place mainly in the fourth quarter of 2022 following the release of encumbered assets in the context of the partial repayment of TLTRO III funding. Regarding the structure of encumbered assets, the largest decrease was recorded in debt securities (€15.8 billion).

Chart III.10 Asset Encumbrance Ratio (AER)

(%)



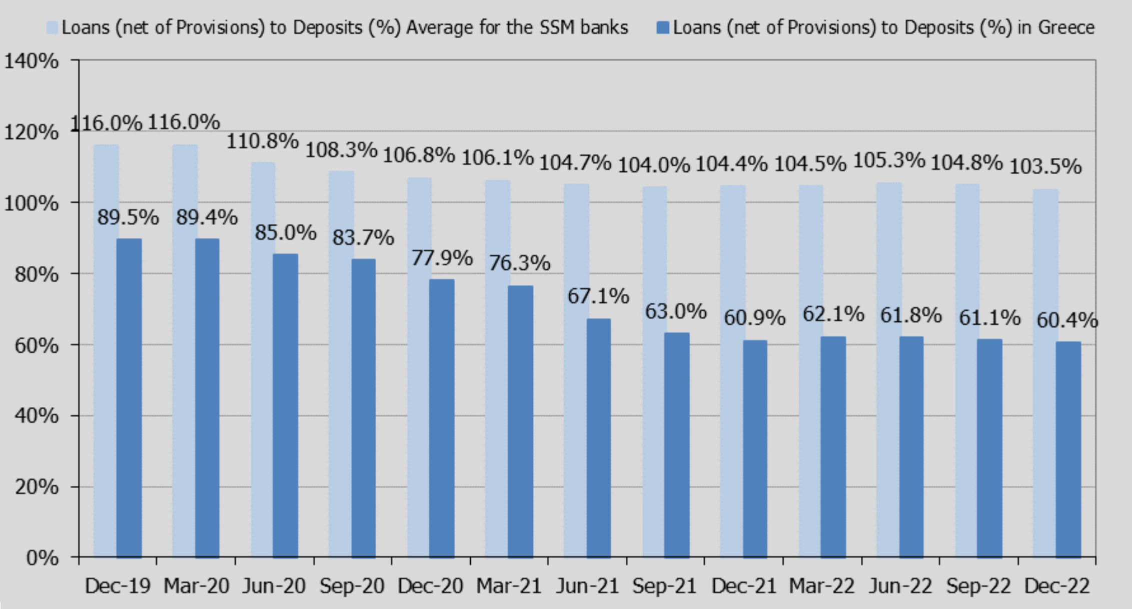
Source: Bank of Greece.

The deleveraging of Greek banks' loan portfolios, which had been observed in 2021, was halted in 2022. The loan-to-deposit ratio for households and non-financial corporations was the second lowest in the euro area (December 2022: 60.4%[55]) and lower than the corresponding average for banks in the Single Supervisory Mechanism (December 2022: 103.5%,[56] see Chart III.21).

[54] Source: Single Supervisory Mechanism (SSM) -Supervisory Banking Statistics.
[55] Source: Bank of Greece – Supervisory data submitted by banks.
[56] Source: ECB Banking Supervision, SSM Supervisory Banking Statistics, Fourth quarter 2022, April 2023.

Chart III.11 Loans (net of provisions) to Households' and Non-Financial Corporations' Deposits

(%)



Source: Supervisory Banking Statistics.

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 in recent years Additional Tier 1 capital instruments (AT1), Tier 2 capital and senior unsecured bonds (see Table III.4), which are also an additional source of funding. In this context and despite the significant increase in yields, in 2022 the significant Greek banks issued senior preferred bonds of a nominal value of €2,150 million and £200 million, as well as subordinated bonds of a nominal value of €300 million. In line with the MREL framework and also with a view to reducing reliance on ECB funding, subordinated debt issuances are expected to continue in the coming years.

Table III.3 Issuances of Greek banks' bonds

	Issue Amount (€ million)	Coupon (%)	Issue Date	Maturity Date
	Senior Preferred Bonds			
Alpha Bank	€500	2.5	23/9/2021	23/3/2028
Alpha Bank	€400	7	1/11/2022	1/11/2025
Alpha Bank	€400	7.5	16/12/2022	16/06/2027
Eurobank	€500	2.25	14/9/2021	14/3/2028
Eurobank	€500	2	5/5/2021	5/5/2027
Eurobank	€500	4.375	9/6/2022	9/3/2025
Eurobank	€500	7	26/1/2023	26/1/2029
NBG	€500	2.75	8/10/2020	8/10/2026
NBG	€500	7.25	22/11/2022	22/11/2027
NBG	£200	8.75	2/12/2022	2/6/2027
Piraeus Bank	€500	3.875	3/11/2021	3/11/2027
Piraeus Bank	€350	8.25	28/11/2022	28/1/2027

Subordinated Bonds				
Alpha Bank	€500	5.5	11/3/2021	11/6/2031
Alpha Bank	€500	4.25	13/2/2020	13/2/2030
Alpha Bank	€400	11.875	8/2/2023	Perpetual
Eurobank	€950	6.41	17/1/2018	17/1/2028
Eurobank	€300	10	6/12/2022	6/12/2032
NBG	€400	8.25	18/7/2019	18/7/2029
Piraeus Bank	€400	9.75	26/6/2019	26/6/2029
Piraeus Bank	€500	5.5	19/2/2020	19/2/2030
Piraeus Bank	€600	8.75	16/6/2021	Perpetual

Source: Bank of Greece.

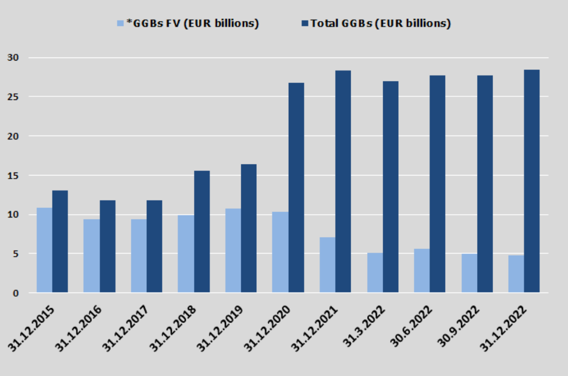
2.3 MARKET RISK

In the second half of 2022, developments in international capital markets and the significant increase in the level of reference interest rates affected the bond portfolios of Greek banks. More specifically, Greek government bonds were negatively affected by the increase in interest rates, resulting in a drop in their prices. However, the largest share (about 83%) of the Greek government bond portfolio held by credit institutions regards securities that are held to maturity and are valued at amortised cost, not at fair value. Thus, daily price changes do not affect their book values, while at the same time it should be noted that banks also apply interest rate risk hedging policies. Overall, the shift in the monetary policy stance is expected to sustain the downward trend in bond market valuations. Also, the possibility of an environment of high interest rate expectations, inflationary pressures and increased geopolitical risks could negatively affect bond markets.

Exposure to Greek government bonds

The total amount of Greek government bonds (including Treasury bills) held by Greek banks in their portfolios in the second half of 2022 amounted to €28.4 billion[57] (9.5% of their assets), up by approximately €718 million (+2.6%) compared to the first half of 2022.

Chart III.12 Greek government bond portfolio



* G.G.B. FV: refers to Greek government bonds that are fair valued for accounting purposes (classified as: available-for-sale, fair value through P&L, held for trading purposes). From 1.1.2018 with the implementation of IFRS 9, it relates to GGBs fair valued through other comprehensive income, through P&L, and held for trading purposes.

Source: Bank of Greece.

The value of the portfolio of Greek government securities held by the banking sector in fair-valued[58] portfolios fell to €4.8 billion in the second half of 2022, compared with €5.6 billion in the first half of 2022 (see Table III.5 and Chart III.22), down by 15%. The value of this portfolio as a percentage of banks' total assets fell to 1.6% from 1.8% in the first half of 2022.

[57] The cut-off date for data in the "Market Risk" section is 31.12.2022. They consist in supervisory data submitted by credit institutions.

[58] Based on IFRS 9, the assets classified in the following portfolios are fair-valued: Held For Trading – HFT, Fair Valued Through Profit and Loss – FVTPL, Mandatorily Through Fair Value – MTFV and Fair Valued Through Other Comprehensive Income – FVTOCI.

It should be pointed out that in analysing the interest rate risk of the total Greek government bond portfolio, on the basis of its composition during the second half of 2022, a potential increase in the general level of interest rates (risk-free rates) by 1 basis point (b.p.) (PV01) is expected to result into a loss of €22.3 million for all Greek banks, compared with a loss of €21.7 million in the first half of 2022. In the same vein, the effect of a potential increase in credit spreads by 1 b.p. (CS01) leads to a loss of €22.5 million in the second half of 2022, compared with a loss of €23.6 million in the first half of 2022. However, it should be noted that the actual impact on banks' profits/capital would be limited to a loss of €2.5 million and €2.6 million respectively for the above-mentioned interest rate changes (PV01, CS01), given that the majority of Greek government bonds are held to maturity at amortised cost portfolios by the Greek banks.

Table III.4 Banking sector investments

(amounts in million euro)	31.12.2020	31.12.2021	30.6.2022	31.12.2022	% Difference 31.12.2022 – 30.06.2022
Total					
Greek government bonds	26,755.0	28,302.7	27,728.4	28,446.5	2.6%
of which Treasury Bills	*3,260.1*	*1,458.5*	*2,593.5*	*2,592.4*	*0.0%*
Corporate bonds	1,888.0	2,679.5	3,178.8	3,419.7	7.6%
Equities	492.4	679.0	419.7	470.6	12.1%
Mutual fund units/shares	115.5	138.5	178.3	280.7	57.4%
Participations	719.6	1,108.1	969.5	1,592.3	64.2%
Portfolios held at fair value					
Greek government bonds	10,306.6	7,098.6	5,615.4	4,786.5	-14.8%
of which Treasury Bills	*2,906.6*	*1,458.5*	*2,593.5*	*2,433.2*	*-6.2%*
Corporate bonds	1,796.8	2,449.6	1,379.5	1,312.6	-4.9%
Equities	492.4	679.0	419.7	470.6	12.1%
Mutual fund units/shares	115.5	138.5	178.3	280.7	57.4%

Source: Bank of Greece.

Exposure to corporate bonds

During the second half of 2022, the value of corporate bonds held by banks increased from €3.2 billion to €3.4 billion. However, corporate bonds valued at fair value fell by 4.9% to €1.3 billion, from €1.4 billion in the first half of 2022, inter alia due to a decline in bond prices. Therefore, fair-valued corporate bonds as a percentage of the banking sector's total assets fell to 0.4% in the second half of 2022, from 0.5% in the first half of 2022.

Exposure to equities, mutual funds and participating interests

The value of equity securities, mutual funds and participating interests held by the banking sector during the second half of 2022 increased as a percentage of total bank assets. Specifically, in December 2022, banks held equity securities, participating interests and mutual fund shares/units with a total value of €2.3 billion, i.e. 0.8% of the banking sector's total assets, compared with

€1.6 billion at the end of the first half of 2022, i.e. 0.5% of total assets (see Table III.5). Underlying this development was mainly an increase in the Greek banking sector's participating interests during the second half of the year, in particular an increase in a systemic bank's stake in a non-financial corporation.

Exposure to foreign exchange risk

Banks' open foreign exchange position[59] amounted to €954 million in the second half of 2022, reduced by €23 million compared to the first half of 2022. Greek banks mainly have open foreign exchange positions in US dollars (€219 million in the second half of 2022), while their exposures to currencies such as the pound sterling (GBP), the Swiss franc (CHF) and the Japanese yen (JPY) is lower by approximately €50 million cumulatively. In addition, Greek banks are exposed to the local currencies of countries where their foreign subsidiaries are located, the foreign exchange risk of which is managed and hedged through positions in derivative products at the parent bank level. Compared to the first half of 2022, the exposure in US dollars decreased by €132 million and the exposure in Swiss francs declined by €125 million.

Interest rate sensitivity of debt securities and derivatives

From the analysis of the interest rate risk of the securities and derivatives portfolio of the banking sector, it follows that an increase in interest rates by 1 b.p. (PV01) for fair-valued portfolios, whose fair value amounts to €10.6 billion, is expected to cause a loss of €9.2 million for all Greek banks, according to the composition of the portfolio in the second half of 2022. For all portfolios of securities and derivatives, i.e. assets valued both at fair value and at amortised cost, an increase in interest rates by 1 b.p. implies losses amounting to €23.7 million, as of the second half of 2022. Likewise, the effect of an increase in credit spreads by 1 b.p. (CS01) is expected to result in a loss of €7.2 million for fair-valued portfolios, while for all portfolios the potential loss amounts to €38.2 million. Banks hold a portfolio of interest rate derivatives for hedging purposes, mostly simple in structure, that are typically cleared through central counterparties or involve bilateral transactions governed by standardised counterparty credit risk collateral exchange agreements, which mitigate the interest rate risk assumed.

Capital requirements for market risk

Total capital requirements for market risk fell to €230.4 million in the second half of 2022 (2.1% of total capital requirements), from €290.5 million at the end of the first half of 2022 (2.6% of total capital requirements). 58% of these capital requirements concern positions in trading debt instruments, 12% positions in equity securities, 24% positions in foreign exchange and 6% positions in commodities. Capital requirements to cover credit valuation adjustment (CVA) risk for the entire banking sector amounted to €40.2 million in the second half of 2022, compared with €30.2 million in the first half of 2022.

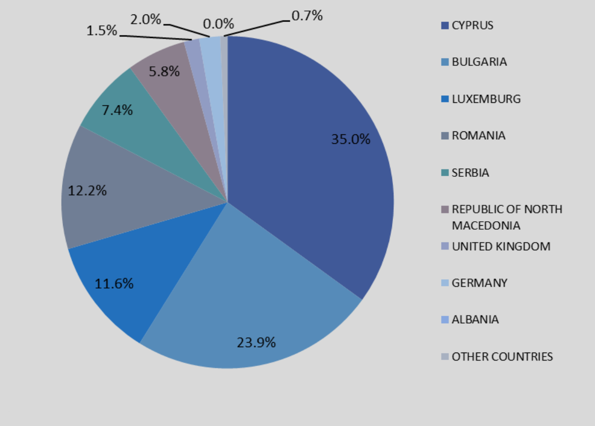
[59] For the calculation at system level, opposite positions in the same currency in different credit institutions are not netted. In addition, for the calculation of the open foreign exchange position, the larger of the buy (long) and sell (short) positions per currency is considered.

2.4 INTERNATIONAL ACTIVITY

In 2022, Greek banking groups continued to streamline their international activities by focusing on markets considered to be of strategic importance. In this context, Alpha Bank withdrew entirely from the Albanian market,[60] while Eurobank reached an agreement to further increase its stake in Hellenic Bank in Cyprus[61] and to acquire BNP Paribas Personal Finance Bulgaria.[62]

Greek banks' assets abroad stood at €35 billion in December 2022, up by 2.4% from December 2021, while international activities increased to 10.8% of the banking sector's total assets on a consolidated basis in December 2022, from 10.6% in December 2021.[63]

Chart III.23 Distribution of Greek banking groups' assets abroad (December 2022, percentage %)



Source: Bank of Greece.

Broken down by region, South-East Europe (SE Europe)[64] accounts for 84.2% of the total assets of international activities, mostly located in Cyprus and Bulgaria (see Chart III.23). Financial centres, namely Luxembourg, the United Kingdom and Germany, represent 15.1% thereof, led by Luxembourg. The share of SE Europe (where the highest number of business units and staff are concentrated) in Greek banks' deposits and loans abroad is even larger (90.6% and 84.6% respectively, see Table III.6).

Profitability of bank subsidiaries and branches abroad increased significantly to €380 million and accounts for 8.6% of banking groups' pre-tax profits on a consolidated basis. Subsidiaries in Cyprus and Bulgaria made a significant contribution to profitability, while the contribution of activities in Egypt, the Republic of North Macedonia, Romania and Luxembourg was lower.

Loans in arrears[65] amounted to €570 million in December 2022, from €700 million in December 2021 (down by 18.6% on a comparable basis[66]), representing 3.1% of the loan book. More specifically, as a percentage of total loans, the ratio of loans in arrears was 2.4% for corporate loans, 5.7% for consumer loans and 3.2% for mortgage loans. Corporate loans in arrears declined by 30.1%, consumer loans in arrears by 5.1% and mortgage loans in arrears by 4.9% on a comparable basis. The provisioning coverage ratio of loans in arrears rose to 82% (December 2021: 76%).

In terms of liquidity, the "loan-to-deposit" ratio rose marginally (December 2022: 71.1%, December 2021: 70.9%). In more detail, both deposits and lending increased by 4% compared to December 2021 on a comparable basis.

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[60] Alpha Bank's subsidiary in Albania was sold to the Hungarian OTP Bank.
[61] Eurobank's stake is expected to rise from 12.6% to 29.2% of Hellenic Bank's share capital.
[62] In addition, in March 2023 Eurobank announced an agreement to sell Eurobank Direktna in Serbia to AIK Banka Beograd.
[63] According to supervisory data submitted for the activity of credit institutions abroad through branches and subsidiaries under Bank of Greece Governor's Act 2651/20.01.2012. The analysis in this section concerns only the banking subsidiaries and branches abroad.
[64] 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.
[65] Defined as loans more than 90 days past due.
[66] For comparability purposes, the figures of Alpha Bank Albania for 2021, from which the bank disinvested in 2022, are not taken into account.

Table III.6 Key figures of Greek banking groups' international activity (December 2022)

(amounts in million euro)

Country	Assets	Gross Loans	Loans in arrears	% of loans in arrears	Deposits	Number of business units	Number of employees
SE Europe	**29,481**	**15,349**	**549**	**3.6%**	**23,125**	**505**	**8,375**
Bulgaria	8,363	5,326	203	3.8%	6,996	192	3,014
Republic of North Macedonia	2,014	1,475	86	5.8%	1,535	62	942
Cyprus	12,255	3,807	122	3.2%	9,929	23	1,002
Romania	4,269	3,011	54	1.8%	3,034	133	1,947
Serbia	2,580	1,730	84	4.9%	1,630	95	1,470
Financial centres	**5,295**	**2,780**	**20**	**0.7%**	**2,385**	**4**	**186**
Germany	712	466	1	0.2%	108	1	14
United Kingdom	523	367	0	0.0%	429	1	66
Luxembourg	4,060	1,947	19	1.0%	1,848	2	106
Other countries[1]	**248**	**5**	**1**	**20.3%**	**4**	**2**	**80**
TOTAL	**35,024**	**18,134**	**570**	**3.1%**	**25,514**	**511**	**8,641**

Source: Bank of Greece

[1] Other countries include Egypt and Malta.

The outlook for international activities at the present conjuncture is surrounded by uncertainty, taking into account the increased geopolitical risks, the slowdown of economic activity in many European countries and the contractionary monetary and fiscal policy. It should be mentioned, however, that the international activities of Greek banking groups contribute to the diversification of their sources of income and to the reduction of concentration risk.

3. RESILIENCE

3.1 PROFITABILITY

In 2022, Greek banks recorded profit after taxes and discontinued operations amounting to €3.6 billion, compared with losses of €4.8 billion in 2021 (see Table III.7), returning to profitability after two consecutive loss-making years. The increase in non-recurring income as well as the reduction in new provisions for credit risk significantly contributed to this development (see Chart III.24).

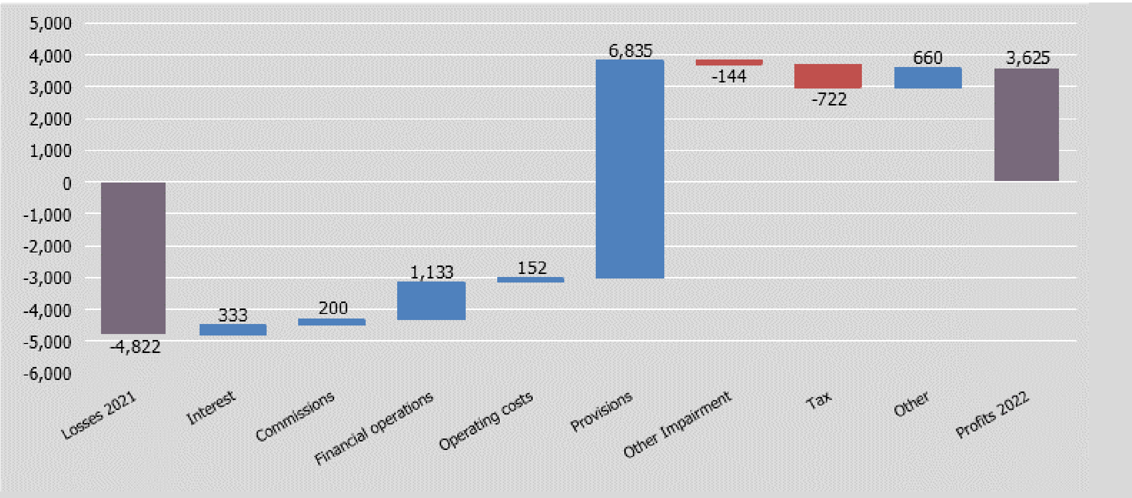
Table III.7 Financial results of the Greek banking sector

(in million euro)	2021	2022	Change (%)
Operating income	**8,610**	**10,715**	**24.4**
Net interest income	5,510	5,842	6.0
- Interest income	7,133	7,752	8.7
- Interest expenses	-1,623	-1,910	17.7
Net non-interest income	3,100	4,872	57.2
- Net fee income	1,512	1,712	13.2
- Income from financial operations	942	2,076	>100
- Other income	646	1,085	68.0
Operating costs	**-4,194**	**-4,042**	**-3.6**
Staff costs	-2,010	-1,883	-6.3
Administrative costs	-1,605	-1,561	-2.7
Depreciation	-578	-598	3.5
Net income (operating income less costs)	**4,416**	**6,673**	**51.1**
Impairment charges	-8,519	-1,684	-80.2
Other impairment losses	-239	-383	60.3
Non-recurring profits/losses	-85	-118	38.8
Pre-tax profits (+)/losses (-)	**-4,427**	**4,488**	**-**
Taxes	-440	-1,161	>100
Profits(+)/Losses(-) from discontinued operations	45	298	>100
After tax profits (+)/losses (-)	**-4,822**	**3,625**	**-**

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

Chart III.24 Profit and loss statement waterfall (2021 – 2022)

(in million euro)



Source: Bank of Greece.

More specifically, in 2022 the operating income of Greek banks increased by 24.4% compared to 2021. Net interest income rose by 6.0%, as the increase in interest income in absolute terms was greater than the increase in interest expenses. In more detail, interest income grew by 8.7% on an annual base, affected by both the increase in key interest rates and credit expansion in 2022. At the same time, the rise in interest expenses was sharper, reaching 17.7%, mainly due to the subsequent increase in the cost of funding through the issuance of bonds and, to a lesser extent, in the cost of deposits. Consequently, the net interest margin stood at 1.8%, increased compared to 2021, remaining higher than the average of banking groups in the Banking Union directly supervised by the ECB (for developments in bank rates, see Box III.2).

Box III.2 Evolution of bank interest rates for deposits and loans in Greece and the euro area[1]

The new financial environment shaped by the impact of decisive developments, such as the ongoing war in Ukraine, the rapid increase in inflation and the normalisation of monetary policy, had a significant impact on the cost of lending and the yield on deposits. In particular, bank interest rates changed significantly following the trend created by the successive increases in the ECB's key interest rates, which cumulatively rose by 375 bps as of 11.05.2023. In this regard, a descriptive analysis of weighted average interest rates by country regarding both new deposits/loans and weighted average interest rates on outstanding deposits/loans during 2022 and the first months of 2023 is particularly useful.

According to the methodology of the Bank of Greece, the weighted average interest rates of new loans/deposits are calculated taking into account the interest rates in the reference month weighted by the average of the last 12 months' balances of outstanding deposits/loans. The average weighted interest rates of outstanding deposits/loans are calculated taking into account the interest rates in the reference month weighted by the balance of outstanding deposits/loans in the reference month.

There are significant differences in the ranking of the countries with the highest/lowest deposit and lending interest rates depending on the category, duration, purpose and other characteristics, which are related to – among other things –the structure of the economy, the cost of financing, the consumer/investment/depositor profile, etc. (e.g. in Austria there are only a few loans without an agreed maturity, while in Greece most loans are without an agreed maturity, which increases the average weighted interest rate on loans). In addition, for a balanced reading of the descriptive comparative analysis below, some additional parameters should still be taken into account, such as the starting point (cliff effect) of deposit rate increases (e.g. in some euro area countries they were negative for a long period), banks' funding costs, as well as the lagged response of weighted average deposit rates in comparison with the rapid pass-through of reference rates (e.g. Euribor) to lending products. In more detail, while the increase in ECB key interest rates is almost immediately reflected in lending rates, the effect of interest rate hikes on time deposits is expected to be seen in the coming months. This is mainly due to the particularly low cost of all time and sight deposits, which, due to their characteristics, are priced very low throughout Europe practically close to 0%, and their partial conversion into time deposits started just a few months ago and is still ongoing, both in Greece and in the euro area.

New deposits/loans interest rates

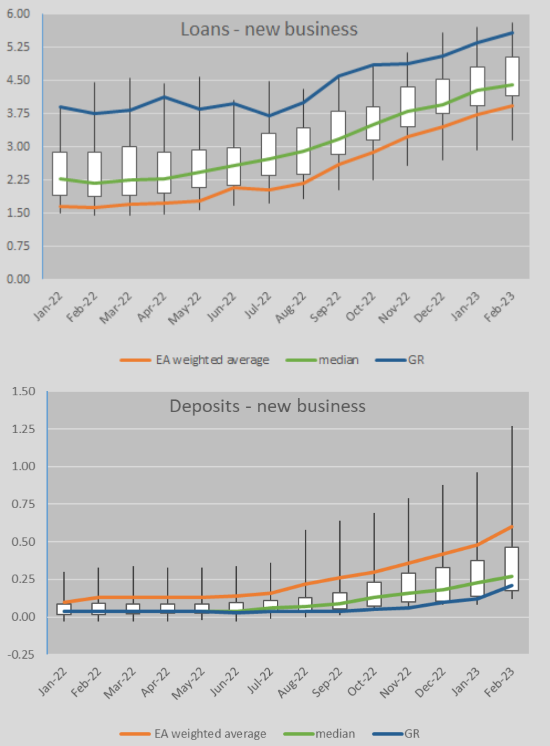
During 2022 and the first months of 2023, interest rates on new loans in Greece are among the highest in the euro area. Since July 2022, banks' weighted average interest rate for new loans in Greece is among the three highest and in February 2023 stood at 5.57%. The median and weighted average of the euro area countries are 4.41% and 3.93% respectively, while the minimum and maximum rate are in France (3.15%) and Malta (5.81%), respectively.

In contrast, new deposit interest rates in Greece during 2022 and the first months of 2023 are among the lowest in the euro area. Since July 2022, the weighted average interest rate for new deposits is among the lowest and in February 2023 stood at 0.21%. The median and weighted average of euro area countries in February 2023 are 0.27% and 0.6%, respectively. It is worth noting that low deposit rates are offered in 6 euro area countries (between 0.12-0.18%), while the minimum and maximum rates are in Ireland (0.12%) and France (1.27%), respectively.

As a consequence, the interest rate spreads between new loans and deposits in Greece are among the highest in the euro area, standing at 5.36 percentage points (pps) in February 2023. The median and weighted average bank interest rate spread on new loans and deposits in euro area countries are 4.12 and 3.33 pps respectively. The minimum and maximum interest rate spreads are in France (1.88 pps) and Latvia (5.63 pps), respectively.

Chart 1 Distribution of interest rates on new deposits/loans in euro area countries

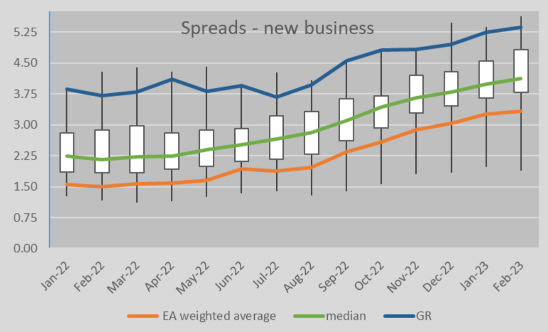
(%)



Source: Bank of Greece.

Chart 2 Distribution of interest rate spreads on new deposits/loans in euro area countries

(percentage points)



Source: Bank of Greece

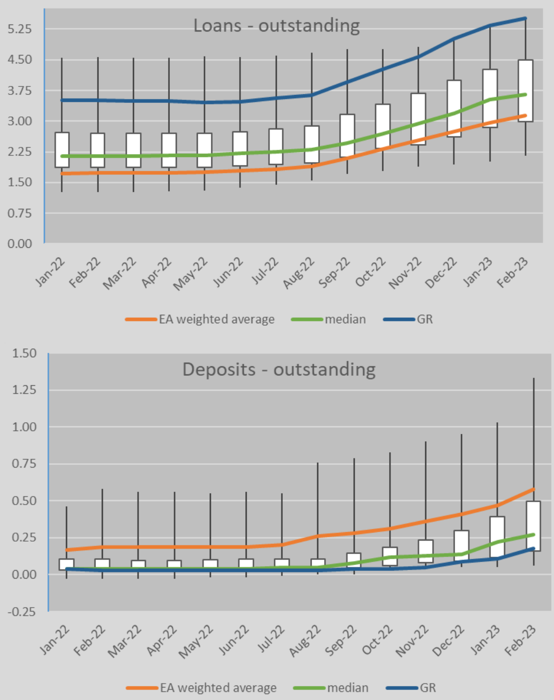
Outstanding deposits/loans interest rates

During 2022 and the first months of 2023, lending rates on outstanding amounts in Greece are among the highest in the euro area. In February 2023, the weighted average lending rate on outstanding loans in Greece stood at 5.52%. The median and weighted average of euro area countries are 3.65% and 3.14%, respectively. The minimum and maximum bank interest rate on outstanding loans are in France (2.16%) and Greece (5.52%) respectively.

In contrast, bank deposit rates on outstanding amounts in Greece during 2022 and the first months of 2023 are among the lowest in the euro area (0.18% in February 2023). The median and weighted average deposit interest rates for euro area countries in February 2023 are 0.27% and 0.58%, respectively. It is worth noting that weighted average deposit rates on outstanding amounts are below 0.18% in 9 euro area countries. The minimum and maximum deposit rates on outstanding amounts are in Cyprus (0.06%) and France (1.33%), respectively.

Chart 3 Distribution of interest rates on outstanding deposits/loans in euro area countries

(%)

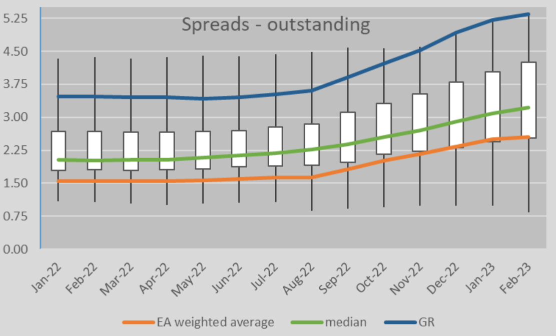


Source: Bank of Greece

Therefore, in Greece the interest rate spreads on outstanding amounts are among the highest in the euro area, standing at 4.93 pps in February 2023. The median and weighted average bank interest rate spreads on outstanding amounts of the euro area countries are 2.85 pps and 2.34 pps, respectively.

Chart 4 Distribution of interest rate spreads on outstanding deposits/loans in euro area countries

(percentage points)



Source: Bank of Greece

The support measures announced by Greek banks are expected to contribute towards containing mortgage rates in the phase of monetary policy normalisation by the ECB. In particular, the voluntary support programme for borrowers of credit and financial institutions with floating-rate housing loans (Vulnerable borrowers' programme or Bridge III) subsidises 50% of the increase in the monthly instalment on a variable-rate housing loan for a period of 12 months, with reference date 30.6.2022 and with expanded eligibility criteria, while recently Greek banks announced an initiative to reward performing borrowers with floating-rate mortgages regardless of maturity and currency (see Box II.1 Programmes to support vulnerable borrowers and reward performing borrowers with floating-rate mortgages).

[1] The analysis covers data up to February 2023.

Net fee and commission income increased significantly, by 13.2%, supported by fees 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 fee and commission income) grew by 7.6%. Income from financial operations recorded a particularly large increase of 120.3%, driven by gains from Greek government bond transactions, derivatives and hedging instruments. Other income also increased by 68.0%, mainly due to gains from the separation and sale of the payment acquiring business by all four significant banks. It is worth noting that non-recurring income, such as gains from financial operations and gains from the aforementioned sale of the payment acquiring business, amount to approximately €3.1 billion, representing 29.3% of total operating income for 2022.

Operating costs decreased by 3.6%, mainly due to a decrease in staff costs as a result of the implementation of voluntary retirement schemes in previous years and the one-off corporate transformation expenses that were incurred in 2021. Additionally, depreciation expenses rose mainly as a result of an increase in intangibles assets due to investments in IT infrastructure in an effort to accelerate digital transformation. As a consequence, Greek banks' cost-to-income ratio improved significantly in 2022 (December 2022: 37.7%, December 2021: 48.7%), remaining significantly lower than the European average (61.2%, see Table III.8).

Table III.8 Profitability indicators

(%)

	Greece		Banking Union[1]
	2021	2022	2022
Net interest margin	1.7	1.8	1.4
Operating costs/Total assets	1.3	1.2	1.2
Cost-to-income ratio	48.7	37.7	61.2
Cost of credit risk	5.7	1.1	0.5
Return on Assets (RoA)[2,3]	-1.5	1.1	0.5
Return on Equity (RoE)[2,3]	-20.0	13.4	7.7

Sources: Financial statements for the four significant institutions (SIs) and supervisory data for the less significant institutions (LSIs), 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.

The cost of credit risk[67] declined in 2022. In particular, impairment charges stood at €1.7 billion, compared with €8.5 billion in 2021. It should be noted that a significant part of impairment charges in 2021 was related to the sale of NPL portfolios.

As a result, Greek banking groups recorded profit after taxes and discontinued operations and the RoA and RoE ratios amounted to 1.1% and 13.4% respectively.

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

As regards the profitability outlook, operating income is expected to increase further, but there are still challenges. More specifically, in the short term banks' net interest income is expected to rise further[68] as a consequence of the increase in ECB key interest rates, combined with new loan disbursements, mainly to businesses in the context of the utilisation of the Recovery and Resilience Facility (RRF) resources. However, in the medium term, banks' funding costs are expected to grow, due to the gradual increase in deposit rates and the increased cost of bond issuances needed to meet supervisory requirements (e.g. MREL).

At the same time, the slowdown in economic activity, the rise in production costs and the decrease in households' disposable income, compounded by the increased cost of already disbursed loans, will put pressure on households' and businesses' financial condition and may increase banks' cost of credit risk. Finally, the contribution of non-recurring revenues is expected to be smaller.

Box III.3 The European Commission's proposal to adjust and further strengthen the EU's existing bank crisis management and deposit insurance (CMDI) framework

In 2014, the Bank Recovery and Resolution Directive[1] and the Regulation on the Single Regulation Mechanism were adopted (Banking Union second pillar).[2] This legislation, taken in conjunction with the Deposit Guarantee Scheme Directive,[3] aims to harmonise the response to banking crises, safeguarding taxpayers' money and protecting depositors.

On 18.4.2023, the European Commission published its proposals on the review of the crisis management and deposit insurance (CMDI) framework. The review is part of the agenda and the political priorities of Ms Ursula von der Leyen,[4] President of the European Commission, for the completion of the Banking Union, as published in 2019. The proposal has the following objectives:

a. preserving financial stability and protecting taxpayers' money by facilitating the use of deposit guarantee systems in crisis situations to protect depositors;

b. shielding the real economy from the impact of bank failures, by extending the application of resolution measures to small and medium-sized credit institutions;

c. improving depositor protection by extending depositor protection to public entities (e.g. hospitals, schools, municipalities) as well as to client money deposited in certain types of client funds (such as by investment firms and payment institutions).

The European Commission notes that the completion of the Banking Union with the adoption of the third pillar, i.e. the European Deposit Insurance Scheme, should be re-assessed subsequently. It also states that in 2024 the State aid Framework will be reviewed in line with the Eurogroup statement in November 2020.

The proposals for the review of the CMDI framework will be discussed with the European Council and the European Parliament.

The main amendments to the crisis management and deposit guarantee framework relate to the following:

[68] The positive impact on banks' net interest income is already largely reflected in Q4 2022 results, which are significantly higher than previous quarters, thus creating a higher base for 2023 results.

1. Expansion of the scope of resolution measures to small and medium-sized credit institutions

Under the current framework, the application of resolution measures to small and medium-sized credit institutions is difficult, as they face challenges in meeting the minimum requirement of own funds and eligible liabilities (MREL). In order for resolution to be effective for smaller institutions, the European Commission proposes (a) an adjustment of the methodology for calculating the MREL based on the business model of deposit-taking institutions, on the condition that the proposed resolution measure to be applied is the sale of business tool; and (b) a modification of the criteria for the Public Interest Assessment conducted by the resolution authorities, in order for this assessment to take into account the existence of critical functions at national and regional level.

2. Enhancement of the role of national Deposit Guarantee Schemes (DGSs) to finance preventive, resolution or alternative measures in insolvency

This proposal concerns the use of national DGSs under specific conditions in: (a) the application of preventive measures (including recapitalisation) to solvent credit institutions; (b) the financing of resolution measures, also through the provision of funds to meet the 8% Total Liabilities and Own Funds (TLOF) bail-in threshold and ensure access to the Single Resolution Fund (which is conditioned to the above threshold); and (c) the financing of alternative measures in insolvency (such as the sale of business to an acquiring credit institution) to ensure the smooth market exit of the failed credit institution.

In order to facilitate DGSs to finance the different crisis management measures instead of paying out depositors, the European Commission proposes (a) changing the seniority of claims by removing DGS super-priority in the insolvency creditors ranking; and (b) harmonising the least cost test (taking into account both direct and indirect costs for the financing of these measures) during the public interest assessment.

3. Other amendments

The proposal also includes:

(a) modifications of definitions (such as solvency) and the conditions for providing state aid during precautionary recapitalisation with the aim to harmonise the application of this measure; (b) improvements to early intervention measures and the cooperation between the competent and resolution authorities; and (c) modification of depositors' insolvency ranking, by abolishing the differentiation between covered and non-covered deposits.

Evaluation of these proposals

The proposals published move in the right direction to ensure the smooth management of banking crises and the protection of depositors. In particular, the following changes are very important:

(a) the abolition of the different treatment between depositors and their protection during the application of resolution measures;

(b) the expansion of the scope of resolution measures to small and medium-size credit institutions through the modification of the public interest test;

(c) the harmonisation and upgrade of the role of DGSs in the application of preventive, resolution and alternative measures.

Despite the above-mentioned positive proposals, there is a need for further changes relating to:

(a) ensuring that the framework is appropriate for the management of a systemic crisis, considering that the current framework is designed to resolve a crisis in a specific credit institution;

(b) the provision of sufficient liquidity to the credit institution under resolution, as despite the measures taken to ensure the funding by the Single Resolution Fund and DGSs, unhindered access to liquidity for the credit institution under resolution is still not fully guaranteed;

(c) the need to harmonise the framework for state guarantees with the new framework for crisis management in the banking sector so as to ensure the smooth implementation of the relevant measures;

(d) the adoption of a common deposit insurance fund at the banking union level (EDIS), as the lack of such fund continues to negatively affect depositors' confidence, especially in the event of a systemic crisis.

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[1] Directive 2014/59/EU Bank Recovery and Resolution Directive (BRRD), which took effect on 1.1.2015 and was amended on 24 March 2019.
[2] Regulation (EU) 806/2014 on the Single Resolution Mechanism Regulation, which took effect on 1.1.2016.
[3] Directive 2014/49/EU on Deposit Guarantee Schemes (DGSD), which took effect in 2015.
[4] https://op.europa.eu/en/publication-detail/-/publication/62e534f4-62c1-11ea-b735-01aa75ed71a1
[5] According to para. 7b of Article 27 of the Single Resolution Mechanism Regulation, the Single Resolution Fund may in exceptional cases provide funds for the financing of the resolution of credit institutions on the condition that its contribution does not exceed 5% on the total amount of the liabilities and own funds of the credit institution in resolution.

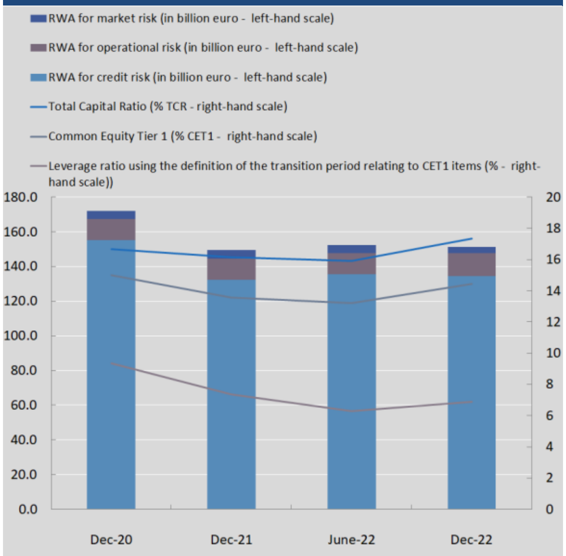
3.2 CAPITAL ADEQUACY

Greek banking groups’ capital adequacy strengthened significantly in 2022, mainly due to the increase in regulatory capital through internal capital generation and the issuance of capital instruments, while risk-weighted assets increased marginally year-on-year.

In particular, the Common Equity Tier 1 (CET1) ratio on a consolidated basis increased at 14.5% in December 2022, from 13.6% in December 2021 (see Chart III.25), and the Total Capital Ratio (TCR) rose to 17.5%, from 16.2%, respectively. These ratios are below the average for credit institutions supervised directly by the ECB in the Banking Union (CET1 ratio 15.5% and TCR 19.4% in December 2022). Taking into account the fully phased-in impact of IFRS 9, the fully loaded CET1 ratio and the fully loaded TCR of Greek banking groups in December 2022 stood at 13.4% and 16.4%, respectively.

In more detail, Greek banks’ prudential own funds increased by 9.6% in December 2022 compared to December 2021, as profits after

Chart III.25 Capital adequacy and leverage indicators, and breakdown of RWAs of Greek banking groups (December 2020 – December 2022)



Source: Bank of Greece.

tax and discontinued operations, combined with capital enhancement through bond issues accounted as equity, more than offset the negative impact from the phasing-in of IFRS 9 and the amortisation of Deferred Tax Credits (DTCs). Nonetheless, the quality of Greek banks' prudential own funds remains low: in December 2022, DTCs amounted to €13.7 billion, representing 52% of total prudential own funds (down from 59% in December 2021). The above mentioned share increases to 56% 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 €2.3 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.[69]

Risk-weighted assets increased by 1.4% in December 2022 compared to December 2021, mainly as a result of a 1.7% increase in assets weighted for credit risk. Assets weighted for credit risk account for 89% of total risk-weighted assets, which is largely explained by Greek banks' business model, focusing on traditional banking and mainly lending activities. At the same time, assets weighted for operational risk increased by 7.1% compared to December 2021, making up the second largest part of total risk-weighted assets and corresponding to 9% of the total. Finally, assets weighted for market risk account for the smallest part of total risk-weighted assets (3%) and were in fact by 21.5% lower compared to December 2021.

Furthermore, the leverage ratio[70] (Tier 1 capital/exposures) deteriorated to 6.9% in December 2022, from 7.4% in December 2021, because of the re-inclusion of all central bank exposures[71] in the calibration of the leverage ratio (see Chart III.25). However, it should be pointed out that in the second half of 2022 the leverage ratio increased from 6.3% in June 2022, as a result of internal capital generation.

By Executive Committee Act 195/21.9.2022, 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. It is also worth pointing out that in April 2023 Attica Bank completed a share capital increase of €473 million.

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; (b) the implementation of capital enhancement actions (e.g. synthetic securitisations, share capital increases for the less significant banks) 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; (c) portfolio quality and its impact on risk-weighted assets; and (d) the evolution of new loan disbursements to households and non-financial corporations.

[69] Although DTAs of €4.2 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.

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

[71] 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.

Box III.4 Withdrawal of the authorisation of Olympus Cooperative Bank and placement of that credit institution under special liquidation

On 4 February 2023, the European Central Bank withdrew the authorisation of Olympus Cooperative Bank[1] in line with the procedure that is envisaged in Regulation (EU) 1024/2013.[2]

Since December 2020, the credit institution did not meet minimum capital requirements as per Regulation (EU) 575/2013 on prudential requirements for credit institutions and failed to raise the necessary funds within the deadline granted for that purpose.

According to audited data as at 31.12.2021, Olympus Cooperative Bank had total assets of €96.5 million, which represented 0.03% of total banking sector assets in Greece. The credit institution operated through 4 branches in the prefectures of Drama and Evros and had a staff of 43. As at 31.12.2021, the own funds of the credit institution stood at €6.9 million, which were further reduced in the course of 2022. The non-performing loans (NPL) ratio in December 2021 was 84.7% and the coverage ratio for NPLs was 38.2%.

Following the withdrawal of its authorisation, on 4 February 2023, the Bank of Greece placed the credit institution under special liquidation pursuant to Article 145 of Law 4261/2014. Additionally, with a view to safeguarding customer deposits, the Bank of Greece, using the sale of business tool (under Article 145B of Law 4261/2014), explored the interest of other credit institutions to acquire all the deposits and selected assets of Olympus Cooperative Bank. It opted for the transfer of all deposits and selected assets to the "National Bank of Greece S.A.", following its offer. The difference between the value of liabilities and assets (funding gap) transferred to the acquiring credit institution is covered by the Hellenic Deposit and Investment Guarantee Fund (TEKE) and the Greek State based on the abovementioned article.

PQH Single Liquidation Société Anonyme, Special Liquidator For Credit Institutions[3] has been appointed as special liquidator. It should be noted that third-party claims will be repaid from the liquidation proceeds based on creditor seniority under the legal framework.[4]

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[1] Olympus Cooperative Bank had been authorised as a credit institution in 1998 in the form of a cooperative bank under Law 1667/1986 and with the name "Cooperative Bank of Drama".

[2] https://eur-lex.europa.eu/legal-content/EL/TXT/PDF/?uri=CELEX:32013R1024&from=PL.

[3] By decision of the Credit and Insurance Committee [ΕΠΑΘ 182/1/04.04.2016 (ΦΕΚ Β΄925)], the Bank of Greece appointed PQH as special liquidator of Agricultural Bank of Greece S.A. under special liquidation, Hellenic Post Bank S.A. under special liquidation, Proton Bank S.A. under special liquidation, Probank S.A. under special liquidation, FBB- First Business Bank S.A. under special liquidation, Panellinia Bank S.A. under special liquidation, Achaiki Cooperative Bank under special liquidation, Cooperative Bank of Lamia under special liquidation, Cooperative Bank of Lesvos-Limnos under special liquidation, Cooperative Bank of Dodecanese under special liquidation, Evoia Cooperative Bank under special liquidation, Cooperative Bank of West Macedonia under special liquidation, Peloponnese Cooperative Bank under special liquidation, T-Bank under special liquidation, Old Bank of Crete S.A. under liquidation and the financial institution ATE Leasing S.A. under special liquidation.

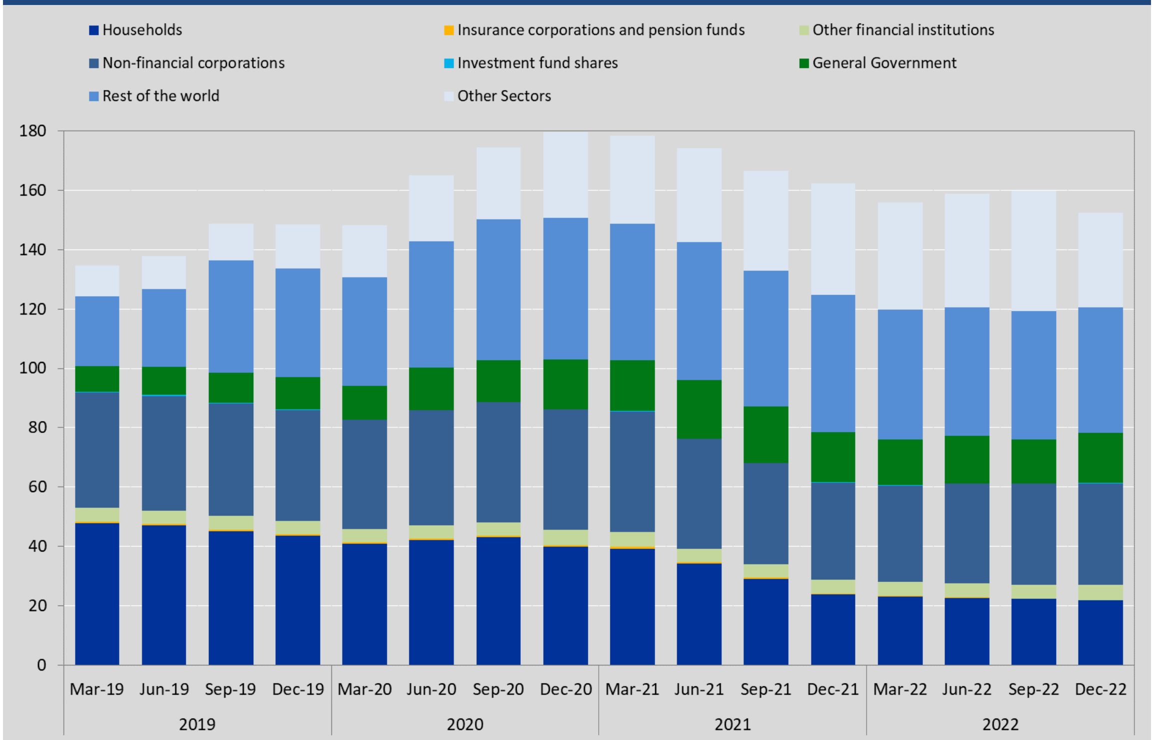
[4] Article 145A of Law 4261/2014.

4. INTERCONNECTEDNESS WITH OTHER SECTORS OF THE FINANCIAL SYSTEM

4.1 DIRECT INTERCONNECTEDNESS OF MFIs WITH OTHER SECTORS

The total claims of Greek Monetary Financial Institutions (MFIs)[72] other than the Bank of Greece vis-à-vis other resident and non-resident sectors as a percentage of GDP decreased in December 2022. This was due to the simultaneous increase in nominal GDP and credit to non-financial corporations, while a decrease was observed in MFI claims vis-à-vis other sectors.[73] As a result, the value of MFI assets stood at 152.5% of GDP in December 2022 (see Chart III.26), compared with 162.4% in December 2021.

Chart III.26 Financial Assets of Greek Monetary Financial Institutions (MFIs) by issuing sector (% of GDP) (March 2019 – December 2022)



Source: Bank of Greece.

More specifically, the distribution of MFI assets reflects an increase of claims vis-à-vis non-financial corporations to 34.1% of GDP in December 2022, from 32.6% in December 2021, and a decrease of claims vis-à-vis other sectors, which fell to 32% of GDP in December 2022, from 37.7% of GDP in December 2021. In addition, MFI claims vis-à-vis households and private non-profit institutions fell further to 21.8% of GDP in December 2022, from 23.9% in December 2021, due to continued deleveraging. It should be pointed out that MFI claims vis-à-vis the rest of the world[74] remain significant and stood at 42.2% of GDP in December 2022, from 46.2% of GDP in December 2021, while MFI claims vis-à-vis the General Government accounted for 16.8% of GDP in December of both 2021 and 2022.

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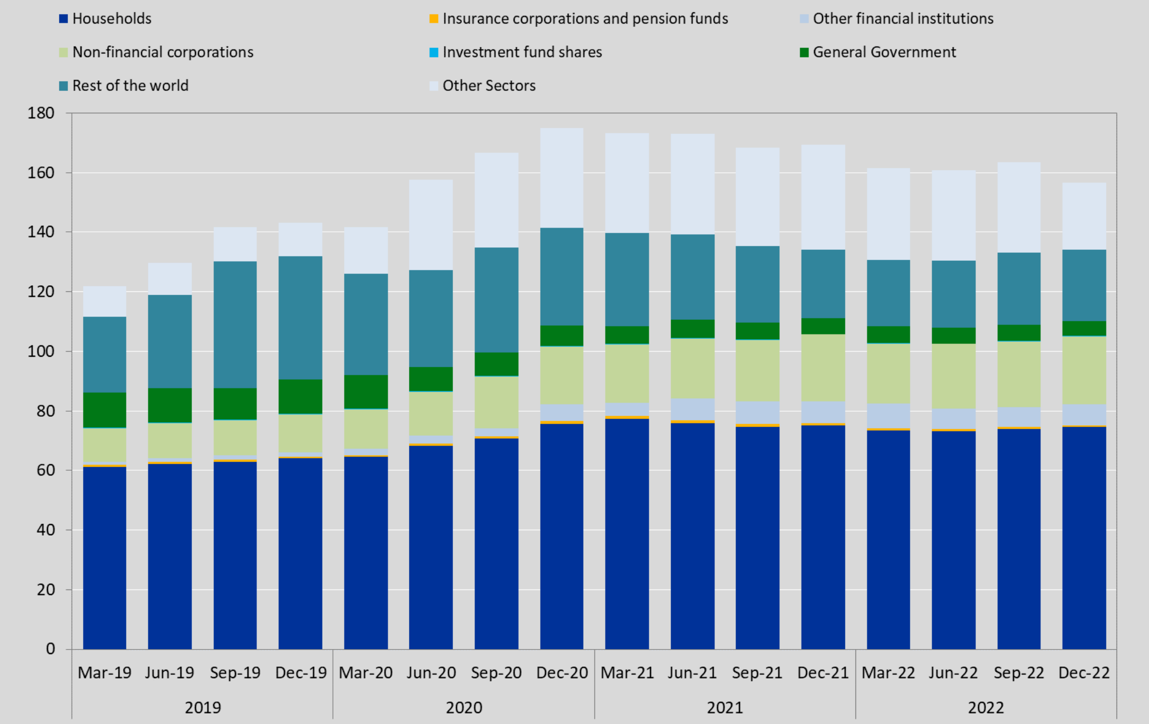
[72] The MFI sector comprises in general Central Banks, Credit Institutions (CIs), Electronic Money Institutions (EMIs), Other Financial Institutions accepting deposits and Money Market Funds (MMFs). The entities in this section exclude the Bank of Greece.

[73] Other sectors include technical insurance reserves, unlisted stocks and shares, deposits with the ECB and financial derivatives. The rise observed in the first nine months of 2022 is due to an increase in deposits with the ECB and to financial derivatives.

[74] Rest of the world residents comprise of natural/legal persons who do not reside/have their registered office in Greece, with a further breakdown into residents of euro area countries other than Greece and residents of other countries.

In the same vein, MFI liabilities as a percentage of GDP decreased to 156.7% in December 2022, from 169.2% in December 2021, while the average ratio for 2022 stood marginally over 160% of GDP (see Chart III.27).

Chart III. 27 Financial Liabilities of Greek Monetary Financial Institutions (MFIs) by holding sector (% of GDP) (2019 – 2022)



Source: Bank of Greece.

MFI liabilities as a percentage of GDP decreased in 2022, due to both an increase in nominal GDP and a rise in liabilities to households and private non-profit institutions serving households (NPISHs), and stood at €143.2 billion (74.5% of GDP) in December 2022, from €135.9 billion (75.1% of GDP) in December 2021. Regarding the distribution of liabilities, a determining factor has been household deposit growth, albeit at a declining rate, throughout 2022. The slowdown in deposit growth in 2022 is due to pent-up consumer spending by households, rising food and energy prices, and the withdrawal of pandemic-related support measures. Liabilities to non-financial corporations stood marginally higher in December 2022 compared to December 2021 (December 2022: 22.8% of GDP, December 2021: 22.3% of GDP). MFI liabilities to insurance corporations and pension funds (ICPFs) and investment funds are close to just 0.6% and 0.2% of GDP, respectively.

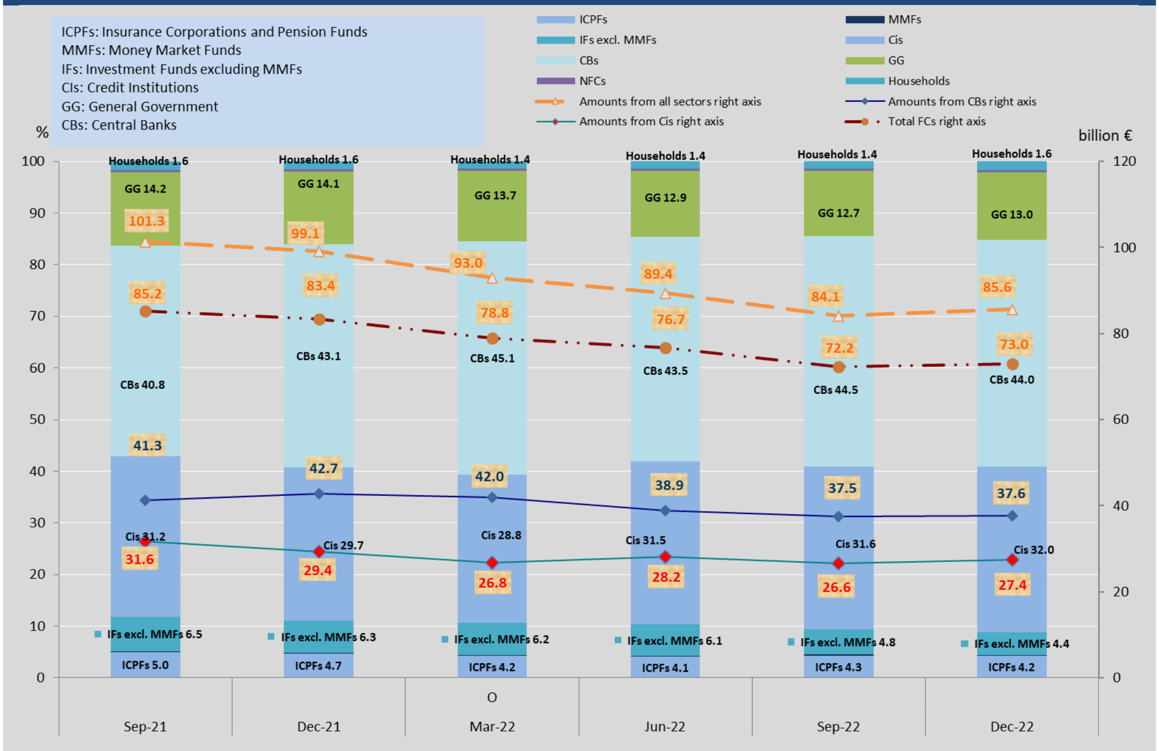
4.2 INDIRECT INTERCONNECTEDNESS OF BANKS WITH OTHER ENTITIES OF THE FINANCIAL SECTOR[75]

Euro area credit institutions' (CIs') holdings of securities issued by the General Government declined in 2022, after an increase observed during the pandemic period due to the provision of financing by the ECB on favourable terms. More specifically, holdings of securities issued by the

[75] The analysis of the indirect interconnectedness of banks with other entities of the financial sector investigates whether there are changes in the amount of securities issued by the General Government in Greece (i.e. Greek government bonds and T-Bills, as well as guarantees) which are held not only by credit institutions, but also by other non-banking financial sectors. In this context, the ECB's Securities Holding Statistics (SHS) database provides information on securities and shares held by euro area investors (at country level), broken down by instrument type, issuing country and issuer sector.

General Government in Greece and held by euro area CIs fell to €27.4 billion in December 2022, from €29.4 billion in December 2021. Euro area CIs hold a progressively smaller share of the – pandemic-related – cumulative issuance of government bonds by the General Governments of the euro area countries compared to 2021.

Chart III.28 Holdings of securities issued by the General Government in Greece: amounts and share (%) by sector (September 2021 – December 2022)



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

In addition, a reduction is observed in euro area central banks' holdings of securities issued by the General Government in Greece. CB's holdings amounted at €37.6 billion in December 2022, compared with €42.7 billion in December 2021. It should be noted that euro area central banks' balance sheets had already expanded significantly due to the purchase of government securities issued by the euro area General Governments during the pandemic period. Securities issued by the General Government and held by insurance corporations and pension funds (ICPFs) amounted to €3.6 billion in December 2022, compared with €4.7 billion in December 2021. The amounts of euro area holdings by money market funds (MMFs) and investment funds (IFs) remain at low levels (see Chart III. 28).

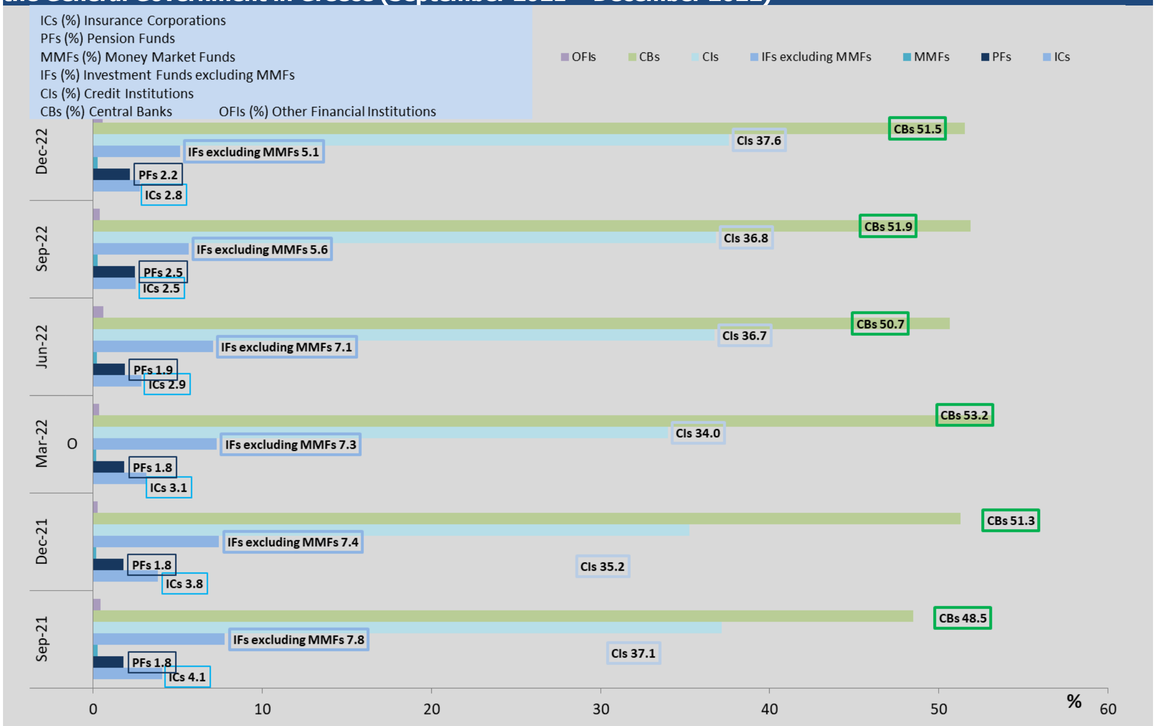
Breakdown of securities holdings by euro area financial corporations

Euro area financial corporations' (FCs') holdings of securities issued by the General Government in Greece[76] were significantly reduced to €73 billion in December 2022, from €83.4 billion in December 2021 (Chart III.28). Underlying this were decreases in the amounts of holdings by both euro area central banks and euro area credit institutions. As the ECB's quantitative easing was

[76] 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 funds (IFs), Central Banks (CBs) financial corporations, vehicles engaging in securitisation (FVCs), insurance corporations (ICs), Pension Funds (PFs) and Other Financial Institutions (OFIs).

gradually reduced, banks' exposures to the official sector decreased. However, regarding the holdings of securities issued by the General Government by category of euro area FCs, it is observed that the share of credit institutions increased to 37.6% in December 2022, from 35.2% at the end of 2021, and the corresponding share of central banks reached 51.5% in December 2022, compared with 51.3% at the end of 2021. At the same time, there is a decrease in the percentage of securities held by insurance corporations to 2.8% in December 2022, from 3.8% at the end of 2021. For the other institutions of the financial sector,[77] the exposure to securities issued by the General Government is significantly lower (see Chart III.29).

Chart III. 29 Percentage composition of euro area financial corporations' holdings of securities issued by the General Government in Greece (September 2021 – December 2022)



Source: ECB, Securities Holding Statistics database SHS.

The upgrade of the Hellenic Republic's credit rating in 2023 that will lead to the acquisition of investment grade is expected to 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 EXPOSURES OF GREEK BANKS ABROAD AND EXPOSURES OF FOREIGN BANKS TO GREECE

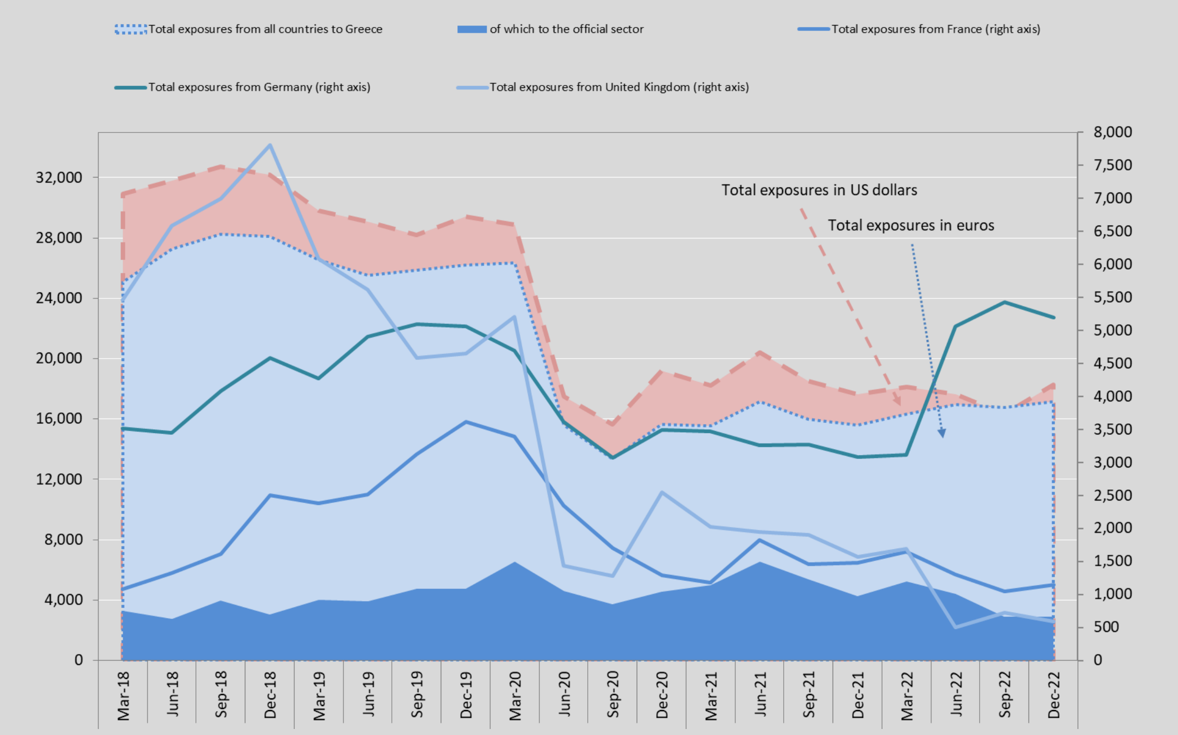
The consolidated total exposures from all countries to Greece amounted to €17.1 billion in December 2022, representing 3/5 of the five-year high that was reported in the third quarter of 2018 (September 2018: €28.2 billion). During 2022, despite the reduction of exposures in USD, the

[77] Money Market Funds (MMFs), Pension Funds (PFs), Investment Funds (IFs) and Other Financial Institutions (OFIs). In general, market participants perceive reserves held by the central bank as carrying greater liquidity benefits than government debt holdings because they can be used to settle payments or meet margin calls at par.

corresponding exposures in euro increased, due to differences in asset valuations and exchange rates.[78,79]

Chart III. 30 Total exposures of banks from all countries to Greece on an ultimate risk basis (March 2018 – December 2022)

(million euro unless otherwise indicated)



Source: BIS database, Consolidated Banking Statistics.

However, total exposures from all countries to the official sector in Greece[80] decreased significantly in 2022, regardless of the effect of the €/$ exchange rate, and amounted to €2.9 billion in December 2022, from €4.3 billion in December 2021 (see Chart III.30). The gradual completion of the asset purchase/quantitative easing programmes by the ECB, which had made it easier for banks to buy and hold securities issued by the Greek Government on favourable terms, contributed to the reduction of exposures, while the volatility of total exposures to the official sector in Greece is explained by an environment of increased volatility and changes in inflation expectations.[81]

Regarding the exposures of Greek banks abroad, there was an increase in the exposures of Greek banks to Emerging Europe,[82] which reached €16.7 billion in December 2022, from €15.6 billion in the end of 2021. In particular, 2022 saw a significant increase in exposures to Bulgaria, which reached €6.5 billion in December 2022, from €5.8 billion in December 2021, while a smaller increase was observed in exposures to Romania, to €5.1 billion in December 2022, from €4.9

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78 Statistical release: BIS international banking statistics at end-September 2022 and Statistical release: BIS international banking statistics at end-June 2022.

79 The first nine months of 2022 saw a significant appreciation of the dollar against the euro.

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

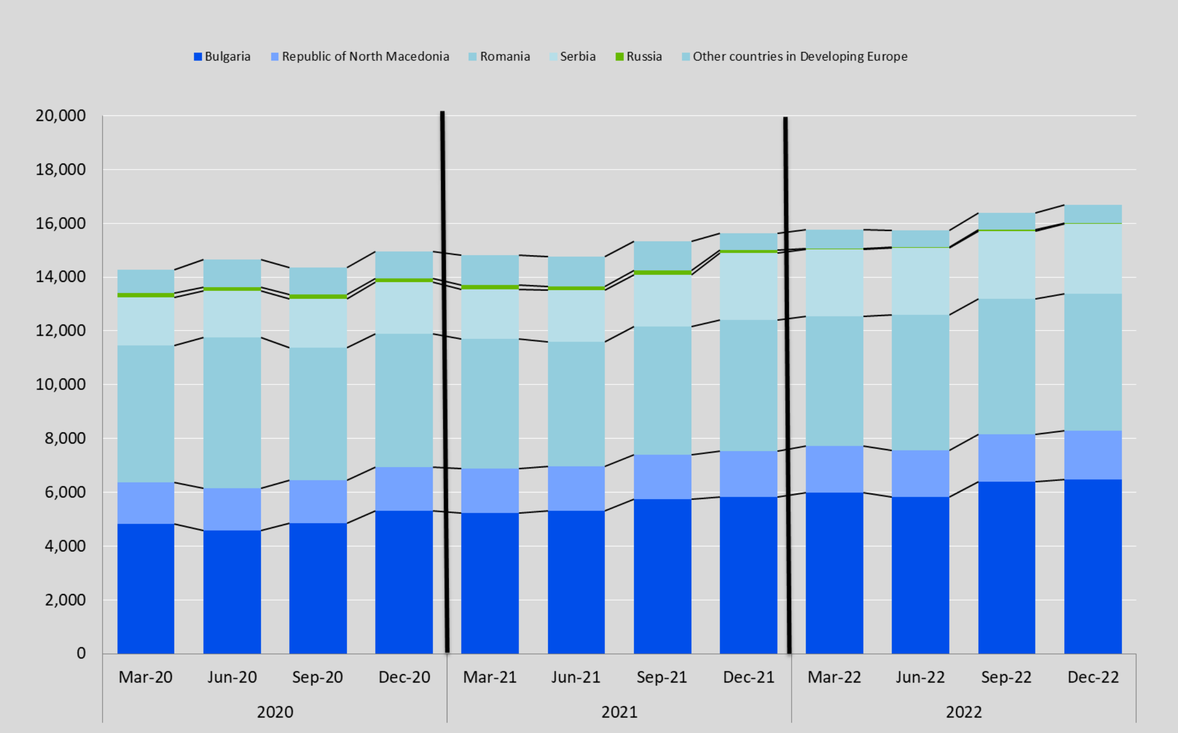
81 BIS Quarterly Review March 2023, «Covid, central banks and the bank-sovereign nexus».

82 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.

billion in December 2021, and to the Republic of North Macedonia, to €1.8 billion, from €1.7 billion. It is worth mentioning that the almost negligible exposures of Greek banks to Russia continued to decrease at a high annual rate and amounted to €29.8 million in December 2022, compared with €94.4 million in December 2021 (see Chart III.31).

Chart III.31 Evolution of exposures of Greek banks to Emerging Europe (2020 – 2022)

(million euro)



Source: BIS database, Consolidated Banking Statistics.

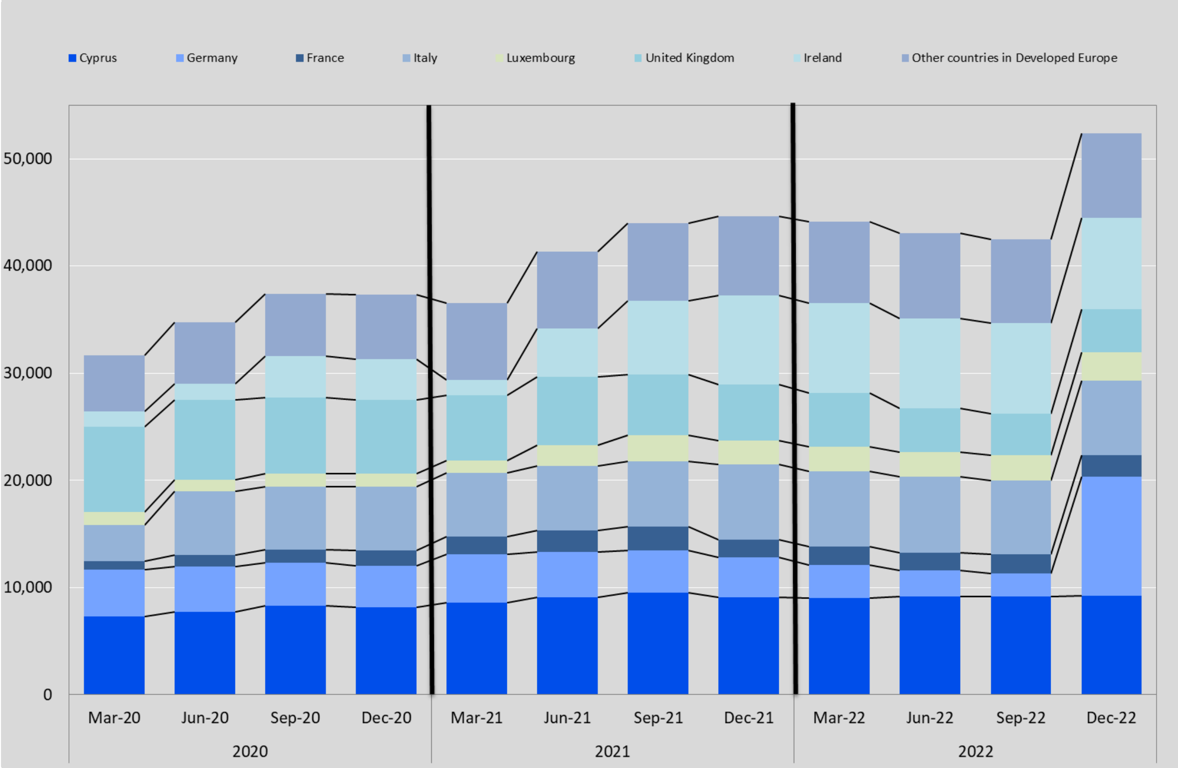
The exposures of Greek banks to Developed Europe[83] increased to €52.3 billion in December 2022, from €44.6 billion at the end of 2021, almost exclusively as a result of an increase of exposures to Germany[84] to €11.1 billion in December 2022, from €3.7 billion at the end of 2021, while a decline was observed in exposures to the United Kingdom to €4 billion in December 2022, from €5.2 billion at the end of 2021. Exposures to Cyprus remained at high levels and reached €9.3 billion in December 2022, while an increase was observed in exposures to Luxembourg, from €2.2 billion in 2021 to €2.6 billion in December 2022, and to France, from €1.7 billion in 2021 to €2.0 billion in December 2022 (see Chart III.32).

[83] 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.

[84] The increase of exposures to Germany (which includes the ECB) is due to a transfer of a large part of the exposures of a major Greek bank from Greece to Germany, as this bank deposited its excess liquidity in the ECB's deposit facility. It should be noted that the interest rate of this facility increased from 0.75% on 14.9.2022 to 2% on 21.12.2022 and to 3% on 22.3.2023.

Chart III.32 Evolution of exposures of Greek banks to Developed Europe (2020 – 2022)

(million euro)



Source: BIS database, 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.[85] 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.[86]

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 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 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%.

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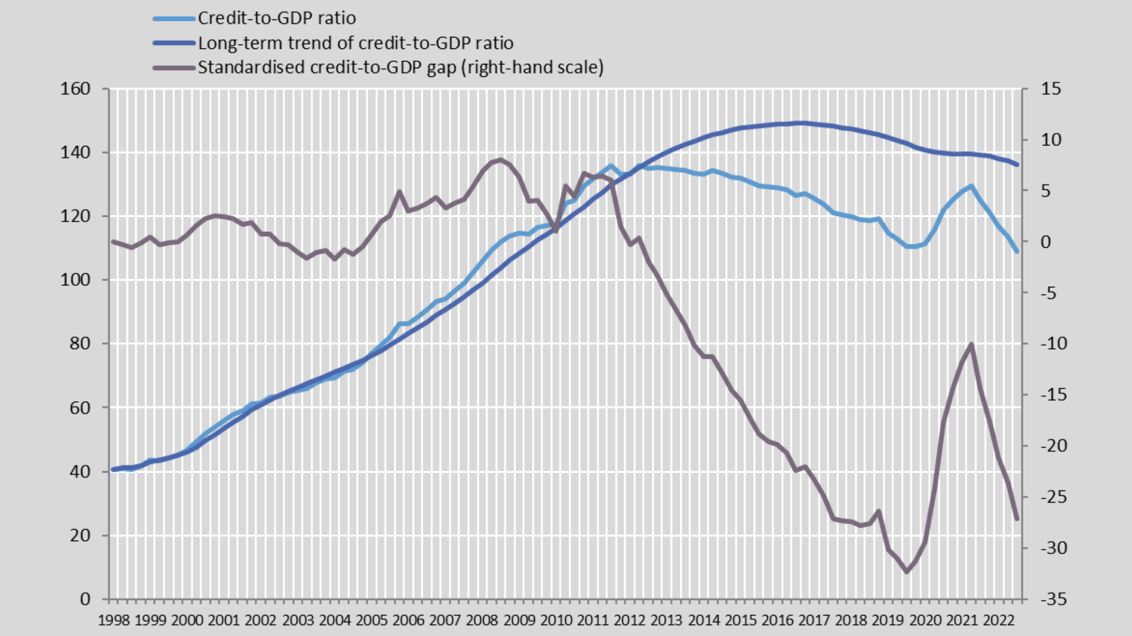
[85] For the purposes of para. 2 of Article 130 of Law 4261/2014, the designated authority may set the CCyB rate in excess of 2.5%, where justified on the basis of the considerations set out in para. 3 of Article 127 of Law 4261/2014.
[86] The total risk exposure amount is calculated in accordance with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

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.[87] 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.

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 – Q3 2022)



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

In Greece, the "standardised credit-to-GDP gap" remains in negative territory since 2012. In the third quarter of 2022, it equalled -27.1 percentage points, compared with -23.6 in the previous quarter (see Chart IV.1), as a result of a rise in nominal GDP. It should be noted that the third quarter of 2022 is the last available quarter for the financial liabilities of the private non-financial

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

sector before setting the CCyB rate for the second quarter of 2023. For this value of the "standardised credit-to-GDP gap", the benchmark buffer rate (buffer guide), as defined in para. 3(a) of recommendation B of Recommendation ESRB/2014/1, is zero.

The analysis of the additional indicators examined by the Bank of Greece points to emerging cyclical systemic risks in certain areas, such as credit to non-financial corporations, residential real estate prices and the current account. Overall, however, it confirms that there is no excessive credit growth in Greece and is consistent with maintaining the countercyclical capital buffer rate at 0% in the second quarter of 2023.

Consequently, the Bank of Greece maintained the CCyB rate at "zero percent" (0%) in the first and the second quarter of 2023. The CCyB rate was set at the lowest possible level and therefore does not affect the capital requirements for credit institutions.

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)[88] 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"). Imposing additional capital requirements in the form of an O-SII buffer limits excessive risk-taking by a systemically important institution through higher capital requirements, thus reducing moral hazard 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.[89] 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),[90] 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 institution. The score of each 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

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[88] In contrast with Global Systemically Important Institutions – G-SIIs.
[89] It should be noted that an O-SII buffer rate higher than 3% is subject to European Commission authorisation.
[90] 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.

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.

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 on a consolidated basis above. The O-SII buffer is also imposed on the following institutions at solo level:

• Alpha Bank S.A.

• Eurobank S.A.

• National Bank of Greece S.A.

• Piraeus Bank S.A.

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

V. OTHER SECTORS OF THE FINANCIAL SYSTEM

1. STRUCTURE OF THE DOMESTIC FINANCIAL SYSTEM

In 2022, the structure of the domestic financial system showed no significant changes compared to end-2021, with banks remaining the main pillar. In particular, the assets of credit institutions amount to 88.5% of the total assets of the financial system, with Greek commercial banks representing 86.5%, while cooperative banks and branches of foreign banks account for only 0.5% and 1.5% respectively. The four significant banks continue to hold the largest share of the industry, accounting for approximately 94.5% of the total banking assets.

Table V.1 Structure of the domestic financial system

(amounts in million euro)

	2017		2018		2019		2020		2021		2022	
Assets		**%**		**%**		**%**		**%**		**%**		**%**
Credit institutions	**244,739**	**88.6%**	**240,102**	**88.4%**	**247,267**	**87.3%**	**277,335**	**87.9%**	**302,678**	**88.0%**	**306,119**	**88.5%**
Greek commercial banks	*236,894*	*85.7%*	*232,130*	*85.5%*	*240,691*	*85.0%*	*271,791*	*86.2%*	*296,403*	*86.2%*	*299,284*	*86.5%*
Cooperative banks	*2,629*	*1.0%*	*2,814*	*1.0%*	*3,160*	*1.1%*	*1,727*	*0.5%*	*1,786*	*0.5%*	*1,750*	*0.5%*
Foreign banks' branches	5,216	*1.9%*	5,157	1.9%	3,417	1.2%	3,818	1.2%	4,490	1.3%	5,085	1.5%
Institutional investors	**22,956**	**8.3%**	**23,099**	**8.5%**	**27,750**	**9.8%**	**29,251**	**9.3%**	**32,516**	**9.5%**	**31,364**	**9.1%**
Insurance companies	16,920	6.1%	17,038	6.3%	18,882	6.7%	19,976	6.3%	20,468	6.0%	18,698	5.4%
Pension funds					1,612	0.6%	1,698	0.5%	1,887	0.5%	1,800	0.5%
Collective investment undertakings	6,036	2.2%	6,061	2.2%	7,256	2.6%	7,577	2.4%	10,160	3.0%	10,866	3.1%
Mutual funds	*3,189*	*1.2%*	*2,954*	*1.1%*	*4,297*	*1.5%*	*4,438*	*1.4%*	*6,247*	*1.8%*	*6,303*	*1.8%*
Portfolio investment and real estate investment companies	*2,847*	*1.0%*	*3,107*	*1.1%*	*2,959*	*1.0%*	*3,139*	*1.0%*	*3,913*	*1.1%*	*4,563*	*1.3%*
Other non-bank institutions	**8,552**	**3.1%**	**8,396**	**3.1%**	**7,770**	**2.7%**	**7,528**	**2.4%**	**7,184**	**2.1%**	**6,899**	**2.0%**
Brokerage firms	681	0.2%	603	0.2%	739	0.3%	753	0.2%	807	0.2%	607	0.2%
Leasing and factoring companies	7,504	2.7%	7,461	2.7%	6,746	2.4%	6,522	2.1%	6,186	1.8%	6,292	1.8%
Consumer credit[1] and venture capital companies	367	0.1%	332	0.1%	285	0.1%	253	0.1%	191	0.1%	0	0.0%
Credit servicing firms	**39**	**0.0%**	**51**	**0.0%**	**484**	**0.2%**	**1,223**	**0.4%**	**1,535**	**0.4%**	**1,445**	**0.4%**
Total	**276,287**	**100%**	**271,648**	**100%**	**283,272**	**100%**	**315,338**	**100%**	**343,913**	**100%**	**345,827**	**100%**

[1] The only company in the sector was absorbed by a significant bank.

Source: Bank of Greece

Institutional investors are the second most important sector of the domestic financial system in terms of assets. Insurance companies, pension funds and collective investment undertakings are included in this category. In 2022, institutional investors' assets represented 9.1% of the total assets of the financial system. Insurance companies stand out with €18.7 billion in assets (5.4% of the system), as well as collective investment undertakings with €10.9 billion in assets (3.1% of the system).

Other non-banking institutions (namely, brokerage firms, leasing companies, factoring companies, consumer credit companies and venture capital companies) continue to hold a small share of the market, standing at 2.0% of the entire financial system.

Finally, the share of credit servicing firms in the total assets of the financial system remains small, representing just 0.4% of the entire financial system.

2. INSURANCE UNDERTAKINGS

2.1 KEY FIGURES[91]

As at 31.12.2022, 36 insurance undertakings[92] were active in the Greek private insurance market, a number unchanged compared to 31.12.2021. Insurance undertakings can be classified according to the type of license as follows:

- 2 life insurance undertakings;
- 19[93] non-life insurance undertakings; and
- 15[94] insurance undertakings (composites) writing both life and non-life business (including life insurance undertakings underwriting only non-life business of "Accident" and "Sickness" classes).

Out of the above 36 insurance undertakings, 34 are supervised in accordance with the European Directive "Solvency II", which applies to all Member States since 1.1.2016, while 2 insurance undertakings are excluded, due to their size, from a lot of requirements related to all three pillars of Solvency II.[95] Out 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 5 to insurance groups subject to supervision by the Bank of Greece. In addition, 5 insurance undertakings with their head offices in Greece operate in other EU Member States under the freedom to provide services provisions.

Furthermore, according to the most recent data available by the European Insurance and Occupational Pensions Authority (EIOPA), on 31.12.2021, 215 insurance undertakings with head offices in other EU Member States[96] operated in Greece, either using the freedom of establishment provisions (branches) or the freedom to provide services provisions, the financial supervision of which is under the responsibility of the supervisory authorities of their home Member State. For the year 2021, annual gross written premiums of these undertakings amounted to €267 million for the activity under the freedom of establishment provisions and €715 million for the activity under the freedom to provide services provisions, which correspond to 5% and 13% of the total Greek insurance market, respectively. In particular, regarding the motor third party liability insurance market, the market share (in vehicle count) of insurance undertakings from other Member States which are writing insurance business in Greece, either via the freedom of establishment (branch) or the freedom to provide services, has increased to 20% (from 18% as at 31.12.2021) (Table V.2).

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[91] The cut-off date for information and data in this chapter is 31.1.2023.

[92] Excluding the mutual insurance undertakings referred to in the first sentence of para. 1 of Article 7 of Law 4364/2016.

[93] As of 21.7.2022, the number of non-life insurance undertakings amounts to 19, due to the incorporation of Horizon 1964 Non-Life Insurance Company S.A.

[94] As of 29.12.2022, the number stands at 15, due to merger of NN Hellas and NN Hellas II (formerly Metlife).

[95] 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.

[96] Source: European Insurance and Occupational Pensions Authority (EIOPA).

Table V.2 Number of Insurance Undertakings performing activities in Greece	2018	2019	2020	2021	2022
Life Insurance Undertakings	2	2	2	2	2
Non-Life Insurance Undertakings	19	19	18	18	19
Insurance Undertakings writing both Life and Non-life business	17	17	17	16	15
Total	**38**	**38**	**37**	**36**	**36**
of which *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	20
Insurance Undertakings established in other Member States pursuing business under the freedom to provide services	231	244	253	215	N/A

Source: Bank of Greece.

The financial figures presented below concern only 34 undertakings operating in the domestic insurance market which are subject to supervision by the Bank of Greece according to Solvency II requirements.

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. The 5 largest insurance undertakings hold 85% of the relevant market, in terms of technical provisions, while the 5 largest insurance undertakings operating in non-life insurance business, in terms of gross written premiums, hold a share of 51% of the relevant market.

Gross written premiums of the life insurance business[97] in 2022 amounted to €2.4 billion, increased by 2% compared to the previous year. Out of this amount, €1.0 billion is related to insurance products linked to investments (40% of total gross written premium of life business, compared with 42% in 2021, recording a minor decrease of 3%). In parallel, there was an increase of 2% in gross written premiums of insurance products with profit participation features, as well as an increase of 13% in other life insurance business (Chart V.1).

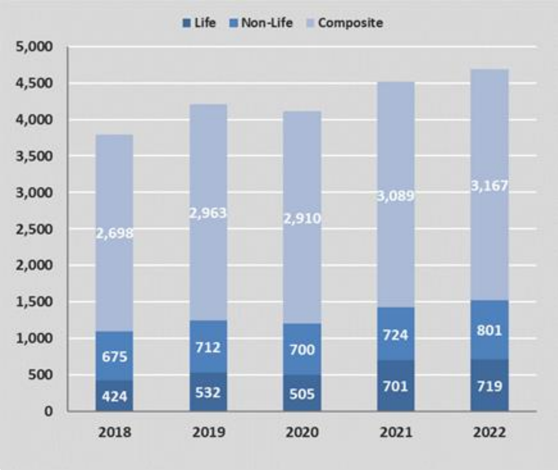
During the same period, non-life insurance premiums[98] amounted to €2.3 billion, up by 6% compared to the previous year. The lines of business with the most significant market shares are third-party motor liability (33%), fire insurance (21%) and hospital expenses insurance (17%), which have changed, compared to the previous year, by +1%, +9% and +8%. In 2022, claims incurred amounted to €1.6 billion for life insurance and €0.9 billion for non-life insurance, up by 2% and 17% respectively.

For non-life insurance, as at 31.12.2022, the market loss ratio and the expense ratio (administration expenses and commissions) both amounted to 48%, compared with 43% and 46%, respectively, as at 31.12.2021.

[97] Including production of Life, Non-Life and Composite insurance undertakings.
[98] See previous footnote.

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

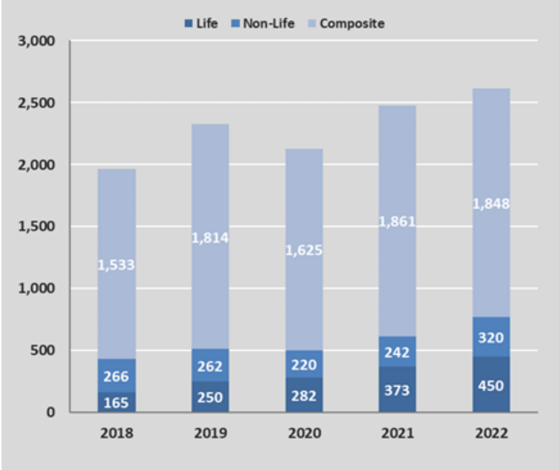
(million euro)



Source: Bank of Greece.

Chart V.2 Claims incurred per type of insurance undertaking

(million euro)



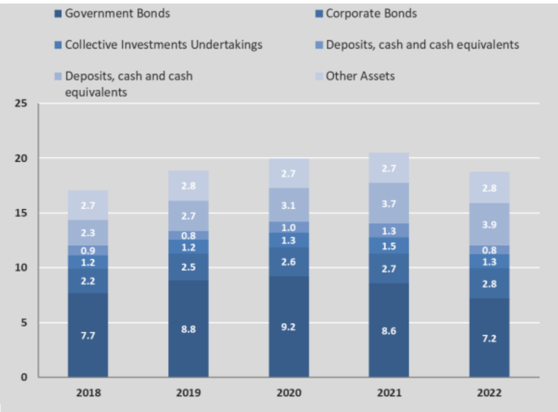
Source: Bank of Greece.

The total assets of insurance undertakings supervised by Bank of Greece amounted to €18.7 billion as at 31.12.2022, down by 9% compared to 31.12.2021. Of the total assets, €7.2 billion (38%) were held in government bonds and €2.8 billion (15%) in corporate bonds. As concerns the credit rating of these assets, 95% of the government bonds and 88% of the corporate bonds were BB- and above. In addition, an amount of €3.9 billion (21%) related to investments of unit- and index-linked insurance products (Chart V.3).

The total liabilities of insurance undertakings amounted to €15.1 billion (compared with €16.5 billion as at 31.12.2021), while total technical provisions amounted to €13.7 billion (compared with €15.2 billion as at 31.12.2021), of which €10.8 billion related to life insurance business and €3.0 billion to non-life business. As concerns life technical provisions, 33% refers to unit- and index-linked insurance products (compared with 30% as at 31.12.2021) (Chart V.4).

Chart V.3 Insurance undertakings' assets breakdown

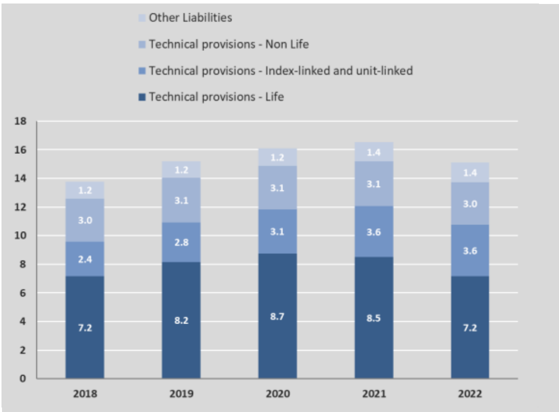
(billion euro)



Source: Bank of Greece.

Chart V.4 Insurance undertakings' liabilities breakdown

(billion euro)



Source: Bank of Greece.

The total own funds of the insurance market stood at €3.6 billion, having decreased by 11% compared to the previous year. The total Capital Solvency Requirement (SCR)[99] amounted to €2.0

[99] 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.

billion and the respective total eligible own funds were €3.6 billion. Concerning the quality of the eligible own funds of the insurance market, 91% 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% (Table V.3 and Chart V.5).

The Minimum Capital Requirement (MCR)[100] for the entire insurance market amounted to €0.7 billion and the respective total eligible own funds amounted to €3.3 billion (Table V.3 and Chart V.6).

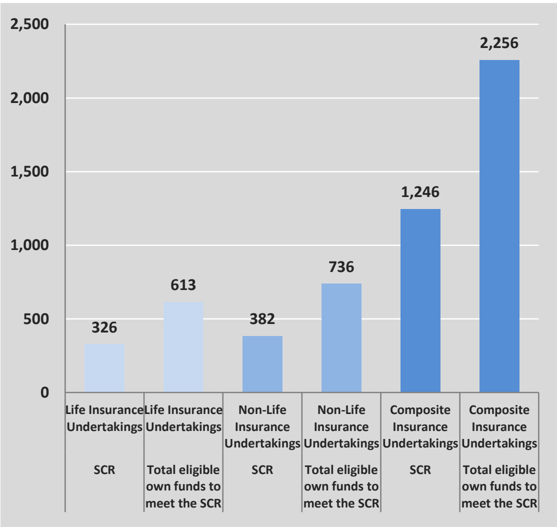
Table V.3 Capital requirements, total eligible own funds and coverage ratios

amounts in million euro	2018	2019	2020	2021	2022
Solvency Capital Requirement (SCR)	1,717	1,899	1,940	2,094	1,954
Total eligible own funds to meet the SCR	2,987	3,403	3,602	3,984	3,606
SCR coverage ratio	174.0%	179.2%	185.7%	190.3%	184.6%
Minimum Capital Requirement (MCR)	648	691	703	714	676
Total eligible own funds to meet the MCR	2,813	3,257	3,441	3,718	3,290
MCR coverage ratio	433.8%	471.1%	489.5%	521.0%	486.9%

Source: Bank of Greece

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

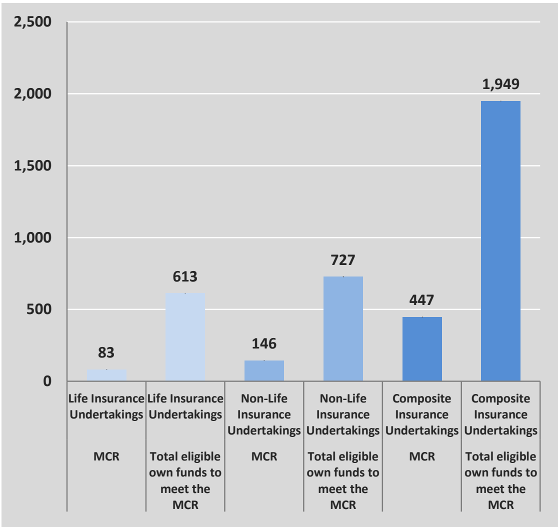
(31.12.2022, million euro)



Source: Bank of Greece.

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

(31.12.2022, milliion euro)



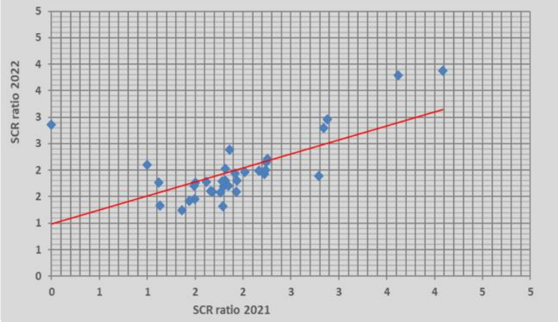
Source: Bank of Greece.

[100] 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 would be seriously jeopardised if the undertaking were allowed to continue operating.

The following chart compares the SCR coverage ratio in 2022 with the relevant figure in 2021.

Undertakings shown in Chart V.7 above the red line show an improvement in the SCR coverage ratio in 2022 compared to the previous year (38% of all insurance undertakings), while undertakings below the red line show a deterioration in their SCR coverage ratio. Although the SCR coverage ratio has changed during 2022, all undertakings remain solvent.

Chart V.7 SCR coverage ratio 2022/2021



Source: Bank of Greece.

2.2 THE RISKS OF INSURANCE UNDERTAKINGS

Insurance undertakings are exposed to underwriting and investment risk. According to the analysis of the standard formula of the Solvency Capital Requirement, these risks haven not significantly changed for 2022.

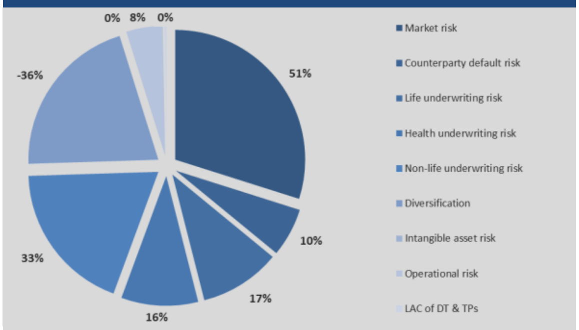
Life underwriting risks have mainly a long-term horizon, due to the nature of life insurance liabilities. For life insurance undertakings the biggest risk is market risk and, more particularly, interest rate risk. Non-life underwriting risks have mainly a short-term time horizon, although for some cases of insurance claims time is required until their full settlement, such as claims related to catastrophic events (earthquake or fire). Furthermore, for both life and non-life insurance, counterparty default risk as well as operational risk are considered important. In fact, operational risk is intertwined with the successful or unsuccessful business operation of an insurance undertaking.

In 2022, market risk (which mainly concerns equity and credit spread risk) and underwriting risk both decreased slightly compared to 2021. It should be noted that the risk analysis in the following charts concerns the net Solvency Capital Requirement, after the risk mitigating effect of reinsurance,[101] which is important mainly for catastrophic risks (fire, earthquake lines of business).

Analysis of the risks of insurance undertakings

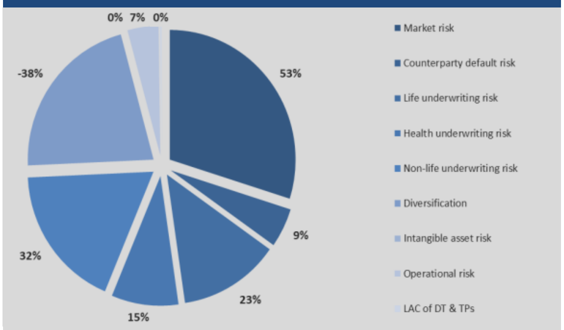
Analysing the risks of the entire Greek insurance market, in the last two years, a decrease of two percentage points is observed in market risk and a decline of life underwriting risk by six percentage points, while non-life underwriting risk and health underwriting risk increased marginally (Chart V.8 and Chart V.9).

Chart V.8 Analysis of insurance market risks in 2022



Source: Bank of Greece.

Chart V.9 Analysis of insurance market risks in 2021



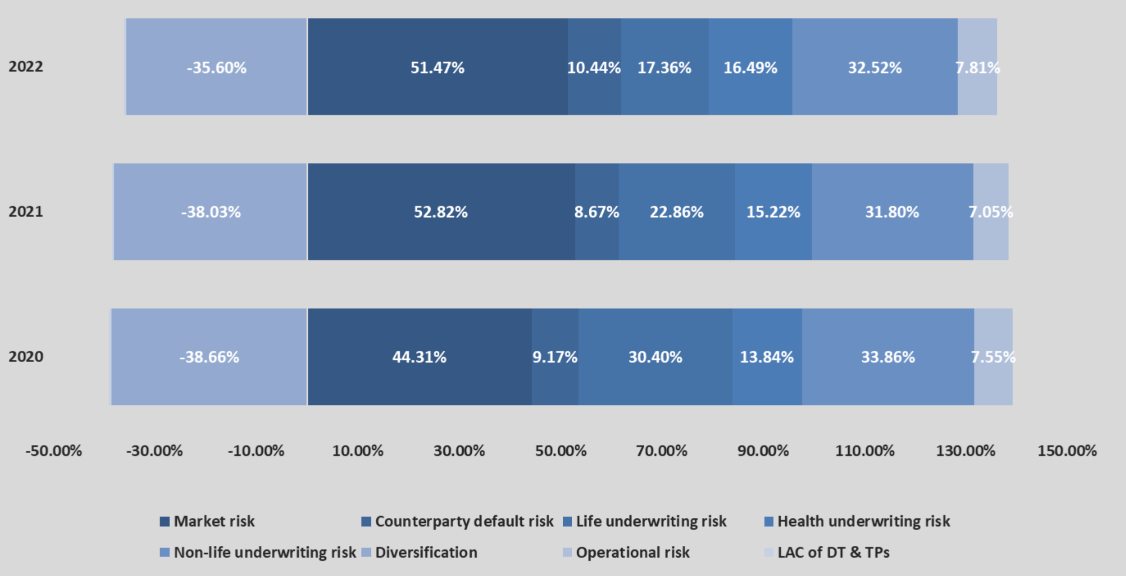
Source: Bank of Greece.

[101] Reinsurance is a technique of mitigating the risk of insurance undertaking, based on a contract, by transferring part of the risk or the portfolio to third parties.

In the years 2020-2022, market risk rose, health underwriting risk increase slightly, while non-life underwriting risk decreased slightly.

Operational risk has shown smaller changes in this three-year period, as opposed to life underwriting risk, which decreased significantly. As concerns counterparty default risk, there is no substantial change, while there was a slight decrease in the diversification benefit[102] of associated risks (Chart V.10).

Chart V.10 Analysis of insurance risks for the period 2020-2022

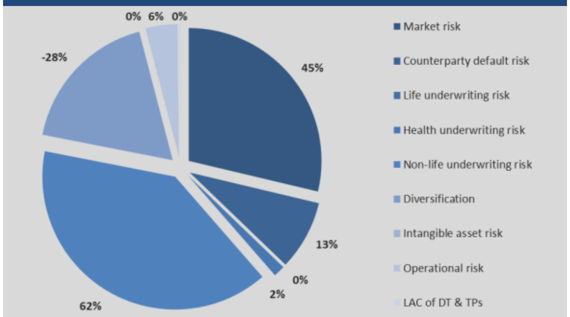


Source: Bank of Greece.

Non-Life insurance undertakings

For Non-Life insurance undertakings, non-life insurance undertaking risk is the most important risk, which accounts for 61.78% (from 58.87% in 2021 and 61.06% in 2020) of their risk profile. The second biggest risk is market risk, accounting for 44.92% (compared with 52.26% in 2021 and 46.24% in 2020). The next, in order of importance, risk is counterparty default risk, with a contribution of 13.27%, having increased compared to the previous year (9.38% in 2021), while operational risk remains quite low, at around 6.07% (5.72% in the previous year). Finally, diversification mitigates risk by 27.95% (Chart V.11).

Chart V.11 Analysis of the risks of Non-Life Insurance Undertakings, 31.12.2022

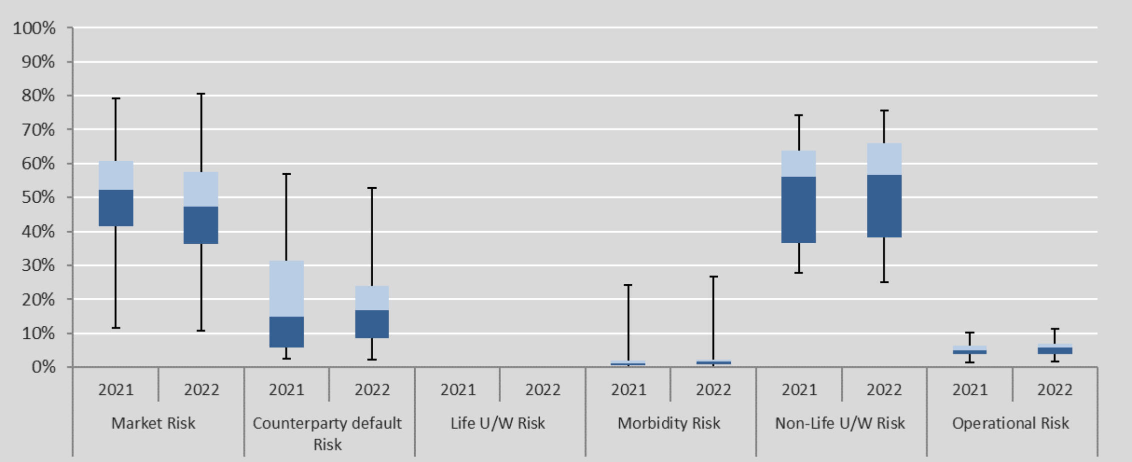


Source: Bank of Greece.

However, significant differences are observed between individual non-life insurance undertakings. In particular, there is a great heterogeneity in the risk profile and especially in market risk and counterparty default risk, with the contributions of these risks to the risk profile of insurance undertakings ranging from 10.81% to 80.66% and from 2.25% to 52.70%, respectively. (Chart V.12).

[102] The diversification benefit is the reduction of exposure to the risk associated with the fact that the adverse effect of one risk can be offset by the more favourable outcome of another risk, when these risks are not fully correlated.

Chart V.12 Distribution of risks of Non-Life Insurance Undertakings, 31.12.2022



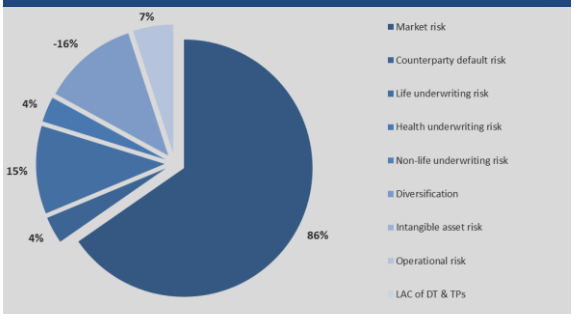
Source: Bank of Greece.

Life insurance undertakings

For the two (2) insurance undertakings that exclusively underwrite life insurance business, the biggest risk is market risk (85.99%), showing a significant increase compared to the previous year (74.34% in 2021), followed by life undertaking risk with 14.56% (from 36.11% in the previous year).

Counterparty default risk decreased to 4.44% from 7.52% the previous year, while operational risk increased to 6.64% from 4.99% in the previous year. Finally, health underwriting risk remained at similar levels to the previous year (4.17% in 2022, compared with 3.82% in 2021).

Chart V.3 Analysis of the risks of Life Insurance Undertakings, 31.12.2022

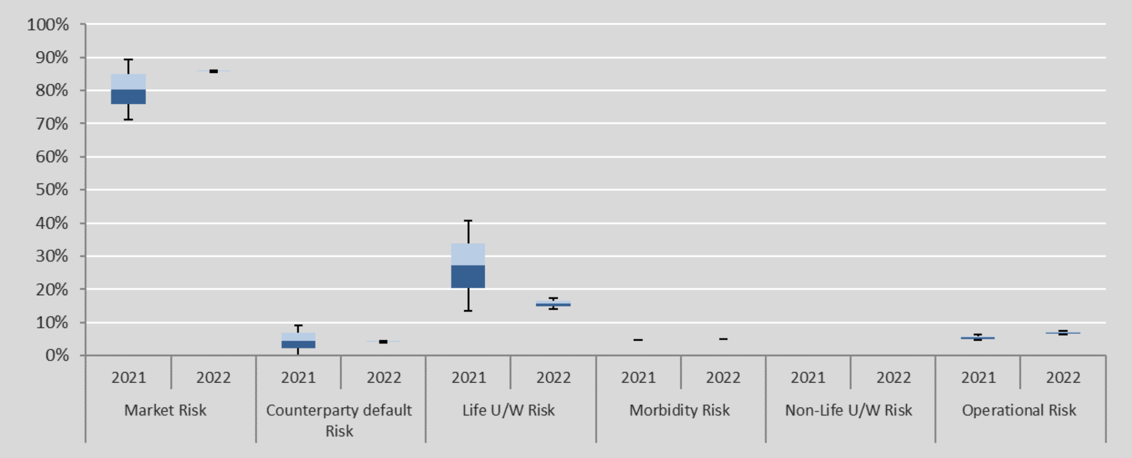


Source: Bank of Greece.

Finally, diversification benefits decreased significantly compared to the previous year (15.80% in 2022, from 26.77% in 2021) (Chart V.13).

Differences can likewise be observed between individual life insurance undertakings (Chart V.14).

Chart V.4 Distribution of risks of Life Insurance Undertakings, 31.12.2022

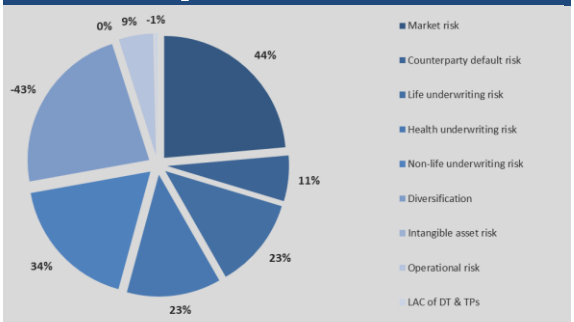


Source: Bank of Greece.

Composite Insurance Undertakings

For insurance undertakings writing both life and non-life business (composite insurance undertakings), the contribution of different risks to their risk profile differs significantly.

Chart V.5 Analysis of the risks of Composite Insurance Undertakings in 2022



Source: Bank of Greece.

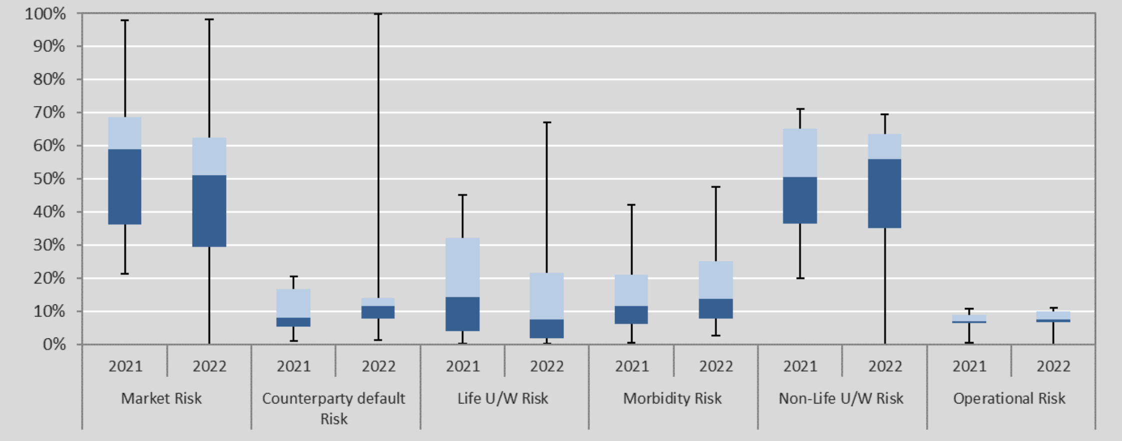
The biggest risk is market risk, accounting for 44.12% (from 48.46% in the previous year), while non-life underwriting risk, life underwriting risk and health underwriting risk account for 33.52%, 22.55% and 23.37% respectively, compared with 32.01%, 25.52% and 20.78% in the previous year (Chart V.15).

In addition, counterparty default risk is high, marginally increased compared to previous years (around 11.29%, from 8.74% in 2021 and 9.52% in 2020). The diversification benefits are quite significant (reducing the risk by 42.75%), as these undertakings have greater potential to undertake unrelated or, in some cases, negatively correlated risks.

Comparing individual composite insurance undertakings, there is great heterogeneity.

This heterogeneity is due to the fact that composite insurance undertakings include both life insurance undertakings, which underwrite non-similar to life health business, and a significant number of composite insurance undertakings which underwrite mainly non-life business. Similarly, the high variation of life underwriting risk is due to the small number of undertakings that undertake significant life insurance risk (Chart V.16).

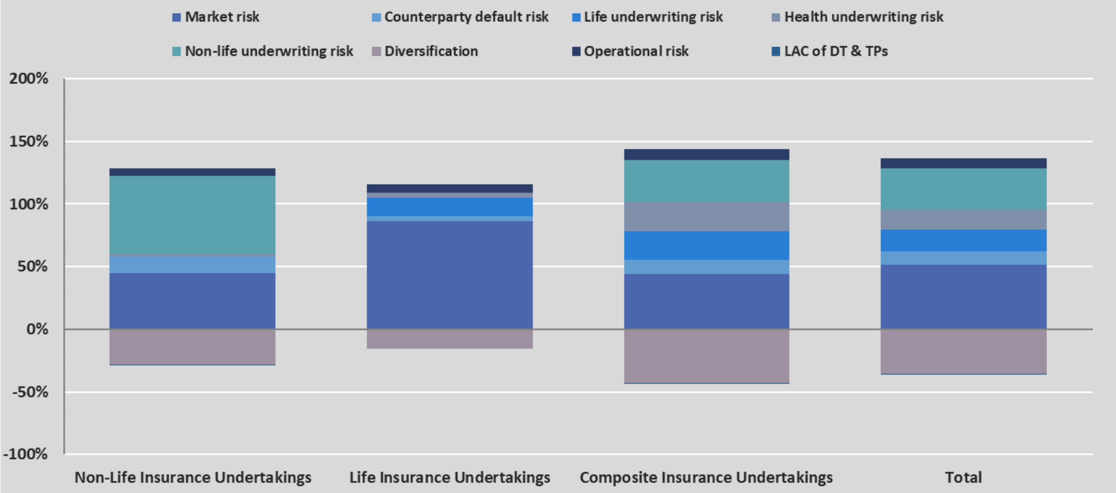
Chart V.6 Distribution of risks of Composite Insurance Undertakings in 2022



Source: Bank of Greece.

Considering the type of insurance business, the biggest risks for 2022 are non-life underwriting risk and market risk (Chart V.17).

Chart V.7 Distribution of risks per type of Insurance Undertaking in 2022

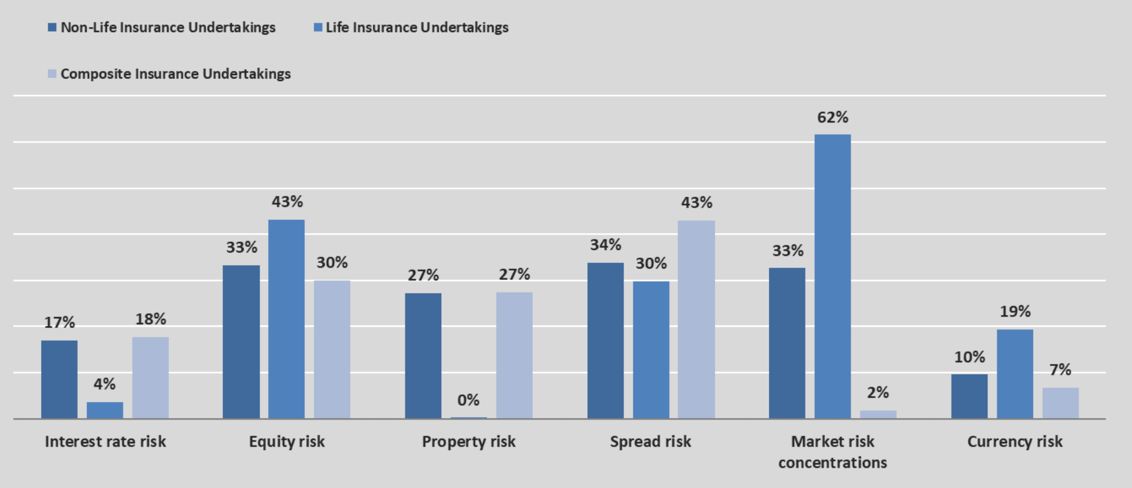


Source: Bank of Greece.

Market Risk of insurance undertakings

Regarding market risk, which accounts for 51.47% of insurance undertakings' total risk, it appears that there are large variations by different type of insurance undertaking and by specific risk category (Chart V.18).

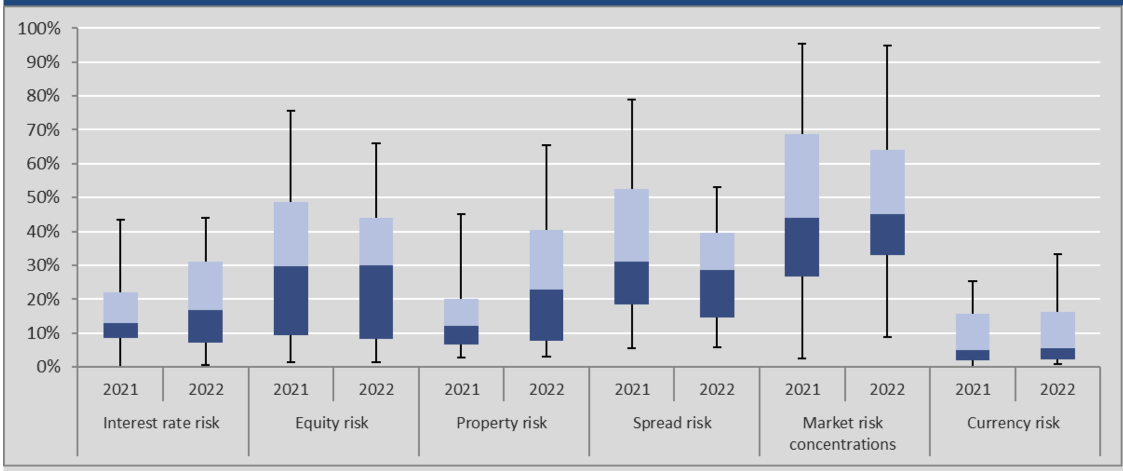
Chart V.8 Analysis of Market Risk in the insurance market in 2022



Source: Bank of Greece.

Analysing market risk distribution of non-life insurance undertakings, it follows that these are quite exposed to spread risk (33.77% of their total risk, compared with 38.47% in the previous year), equity risk (33.25%), market concentration risk (32.65%) and real estate property risk (27.20%) (Chart V.18 & Chart V.19).

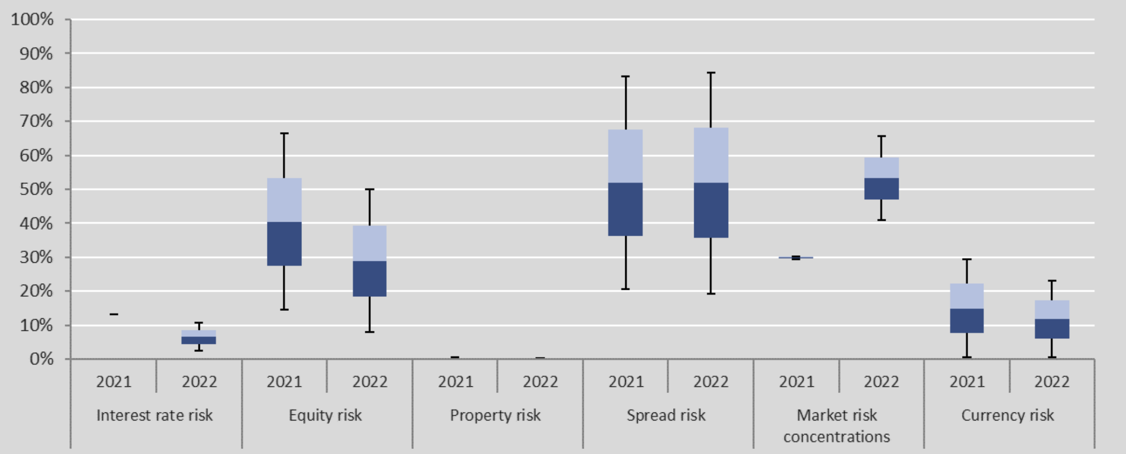
Chart V.9 Distribution of Market Risk for Non-Life Insurance Undertakings in 2022



Source: Bank of Greece.

The most significant risk of life insurance undertakings is market concentration risk (61.59%), which increased significantly compared to the previous year (29.99%), as well as equity risk and spread risk, which amount to 43.19% (from 55.68% in the previous year) and 29.77% (from 33.48% in the previous year). It is also remarkable that interest rate risk remains at low levels. Real estate property risk is almost zero, while currency risk fell to 19.40% (from 23.47% in 2021 and 31.08% in 2020) (Chart V.18 and Chart V.20).

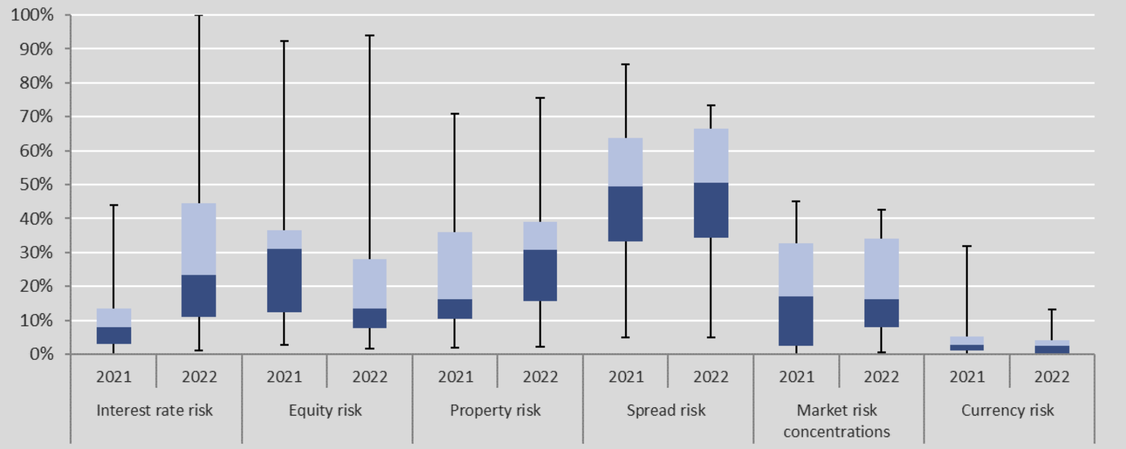
Chart V.20 Distribution of Market Risk for Life Insurance Undertakings in 2022



Source: Bank of Greece.

There is large variation in the exposure of composite insurance undertakings to market risk. In each market risk category, there are insurance undertakings with almost zero exposure and others with quite large exposure. In these undertakings the most significant component of market risk is spread risk (42.96%, compared with 47.51% in 2021), followed by equity risk (29.94%, compared with 35.66% in 2021) (Chart V.18 and Chart V.21).

Chart V.21 Distribution of Market Risk for Composite Insurance Undertakings in 2022



Source: Bank of Greece.

3. OTHER FINANCIAL INSTITUTIONS

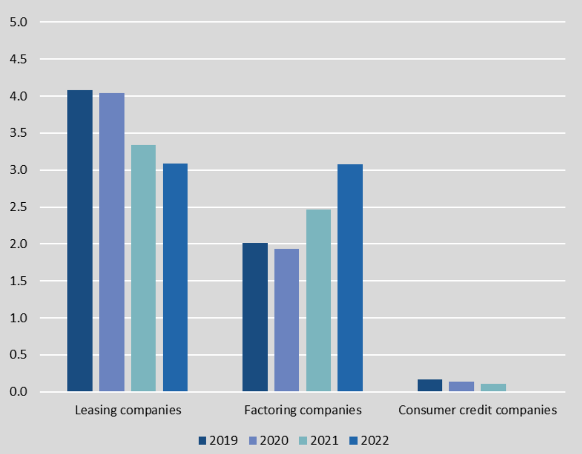
3.1 LEASING COMPANIES – FACTORING COMPANIES – CONSUMER CREDIT COMPANIES

The assets of leasing companies fell further to €3.1 billion, down by 6% compared to the previous year (see Chart V.22). The reduction in question is explained mainly by the restructuring actions carried out by the leasing companies of the Piraeus Bank Group.[103]

On the contrary, the assets of factoring companies increased again and stood at €3.1 billion in June 2022, 24.9% 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, the only company in the sector was absorbed in 2022 by a significant bank.

Chart V.10 Evolution of assets of other financial institutions

(billion euro)

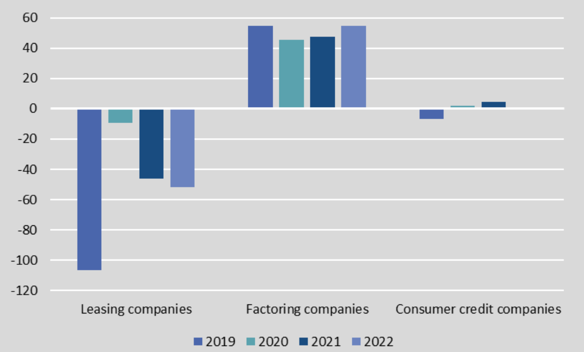


Source: Bank of Greece.

Turning to the interconnection of other financial institutions with credit institutions, it is worth noting that their liabilities to credit institutions mainly concern borrowing from parent groups, which increased further at the end of 2022 to 19.4% of their total liabilities, compared with 18.4% in December 2021. At the same time, the receivables of other financial institutions from credit institutions decreased significantly from €171.2 million in 2021 to €97.1 million in 2022, representing 1.6% of their total assets in December 2022, compared with 2.9% in December 2021.[104]

Chart V.11 Evolution of pre-tax profits of other financial institutions

(million euro)



Source: Bank of Greece.

In terms of income statements, in 2022 leasing companies continued to post losses before tax, which reached €51.9 million, compared with €46.4 million in 2021, primarily due to an increase in credit risk provisions which are linked to the expected sale of non-performing loans. By contrast, factoring companies recorded profits before tax, which amounted to €54.5 million in 2022, compared with €47.4 million in 2021 (see Chart V.23).

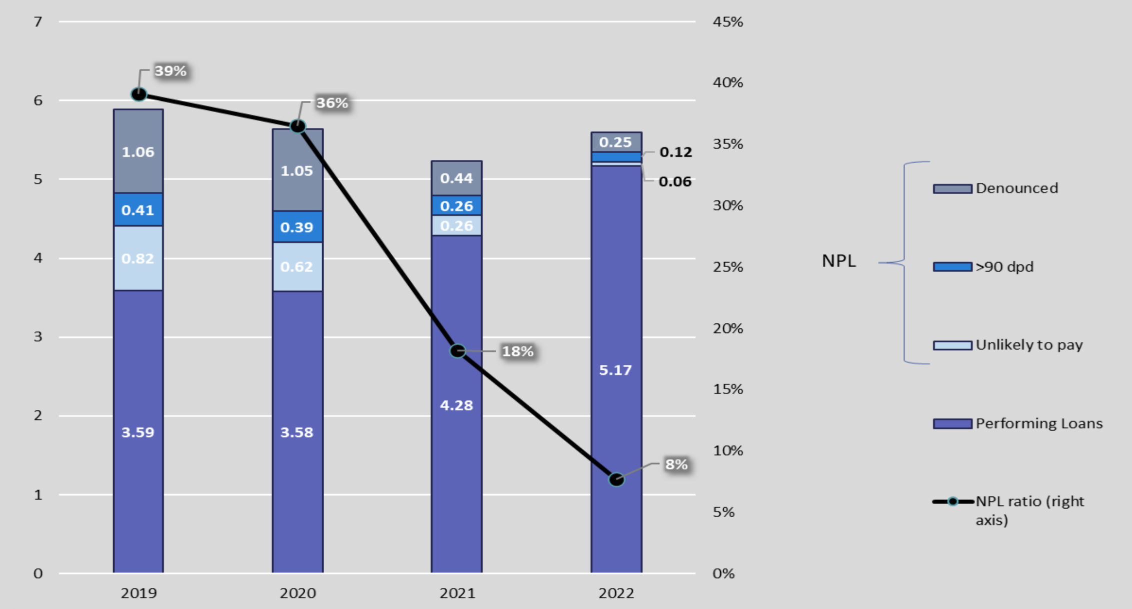
[103] Certain wholly owned subsidiaries of the Group, namely Piraeus Leasing Single Member S.A, Sunshine Leases Single Member S.A. and Piraeus Property Real Estate Management Single Member S.A., were incorporated following the demerger of certain wholly owned subsidiaries of the Group, namely Piraeus Leasing Single Member S.A., Piraeus Financial Leasing Single Member S.A. and Piraeus Leases Single Member S.A.

[104] Due to the absorption of the credit company.

Finally, non-performing loans (on-balance-sheet data), cumulatively for the three sectors (leasing, factoring and consumer credit), decreased by 55% to €429 million at the end of 2022 (€955 million in December 2021), resulting also in a reduction in the ratio of non-performing loans to total loans (8% in June 2022, from 18% in December 2021) (see Chart V.24). The aforementioned reduction is mainly due to the sale of non-performing loans in the context of the ongoing effort of significant banks to clean up their balance sheets.

Chart V.12 Other financial institutions – Performing and non-performing loans

(billion euros, percentage %)



Source: Bank of Greece.

3.2 CREDIT SERVICING FIRMS (CSFs)

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.[105] Until today none of the CSFs has applied for authorisation to refinance receivables. The activity of CSFs varies considerably, with 3 firms having a market share of 84% based on the total value of exposures under management and 15 firms having minimum to zero activity.

Cumulative data for CSFs

According to end-2022 data, the total assets of CSFs amounted to €1.44 billion,[106] while total equity and liabilities, including provisions, stood at €891 million and €546 million, respectively. CSFs' profits amounted to €164 million in 2022, while total staff and senior management costs corresponded to 44% of their total revenues.

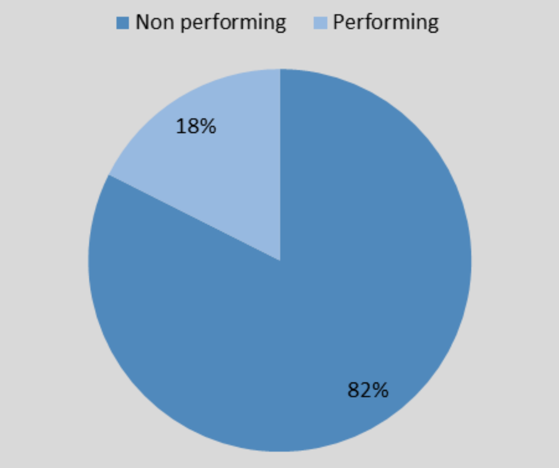
[105] Under Law 4354/2015 and Bank of Greece Executive Committee Act 118/19.05.2017, as currently in force.

[106] All data as at 31.12.2022 are provisional and have not been audited by a statutory auditor.

According to end-2022 data, total exposures under management[107] amounted to €90.5 billion, of which 74% were exposures serviced on behalf of credit acquiring firms[108] and the other 26% were exposures managed by CSFs on behalf of credit institutions.

The majority of exposures managed by CSFs on behalf of credit acquiring firms were transferred to them during the last two years 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.25).

Chart V.13 Portfolio structure (2022)



Source: Bank of Greece.

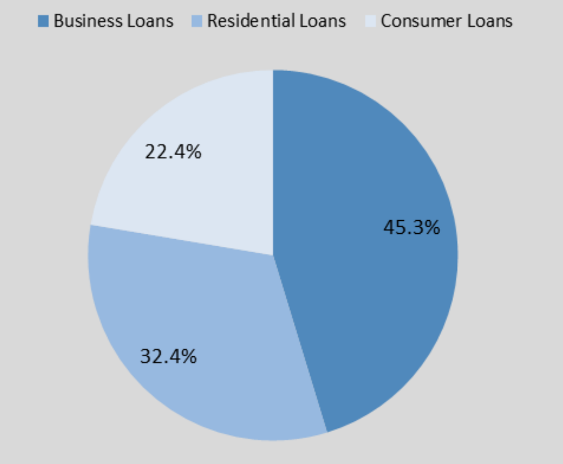
Management of exposures serviced on behalf of credit acquiring firms

The total amount of exposures managed by CSFs on behalf of credit acquiring firms stood at €67.2 billion according to 2022 data. The portfolio includes mainly business loans (45.3%), consumer loans (32.4%) and residential loans (22.4%) (Chart V.26).

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 (74.1%), while 17% are exposures that are past due by 90 days or more and 8.9% are unlikely to pay exposures (Chart V.27).

Chart V.14 Exposures under management by portfolio (2022)

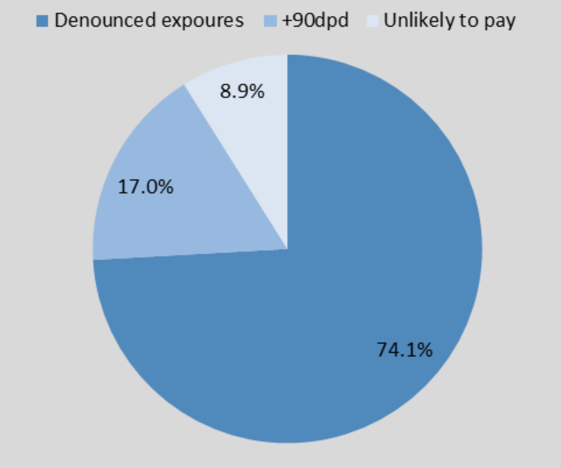
(%)



Source: Bank of Greece.

Chart V.15 Non-performing exposures under CSF management (per category) – 2022

(%)



Source: Bank of Greece.

[107] Exposures include all debt instruments (loans and advances and debt 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.

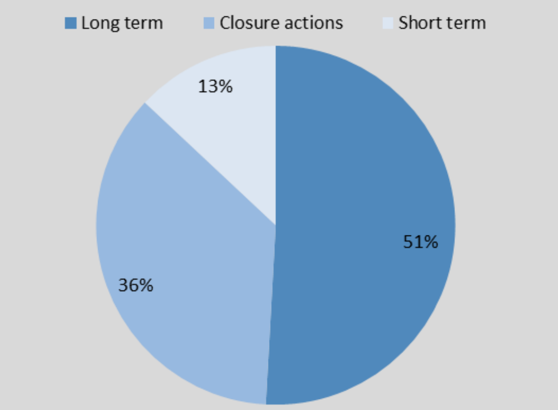
[108] Any discrepancies between the supervisory data analysed in this section of the Financial Stability Report and the data regularly published by the Bank of Greece on its website are mainly due to the different perimeter of each data release.

Repayments, liquidation of collateral and write-offs of exposures managed by CSFs on behalf of credit acquiring firms stood at €3.78 billion in 2022. In more detail, repayments of exposures amounted to €1.93 billion, liquidation of collateral to €0.73 billion and write-offs to €1.12 billion.

Finally, in 2022, modifications affected 26.9% of the total portfolio managed on behalf of credit acquiring firms. Long-term modifications accounted for the bulk of modified exposures (51%), followed by resolution and closure actions (36%) and short-term modifications (13%)[109] (Chart V.28). It should be noted that, as at end-2022, resolution and closure actions amounted to €6.5 billion, short-term modifications to €2.4 billion and long-term modifications to €9.2 billion.

Capitalisation of arrears was the most common short-term modification[110] (accounting for 49% of short-term modifications – Chart V.29a), while the most common types of long-term modifications[111] were the extension of the loan term, partial debt write-down and split balance, accounting for 27%, 33% and 29%, respectively (Chart V.29b).

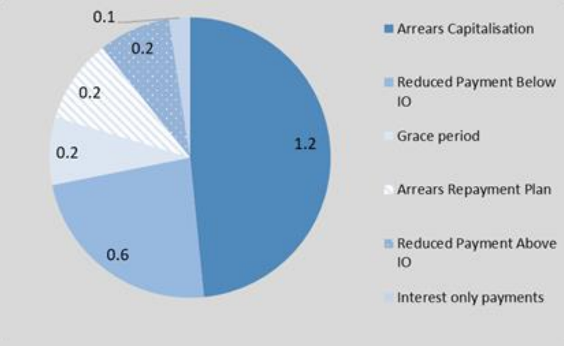
Chart V.16 Breakdown of exposures under management that were modified (2022)



Source: Bank of Greece.

Chart V.17a Short-term modifications (2022)

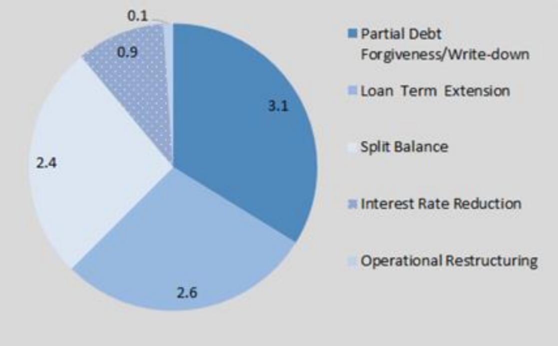
(biillion euro)



Source: Bank of Greece.

Chart V.29b Long-term modifications (2022)

(billion euro)



Source: Bank of Greece.

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[109] See Bank of Greece Executive Committee Act 175/2/29.07.2020, Annex V.

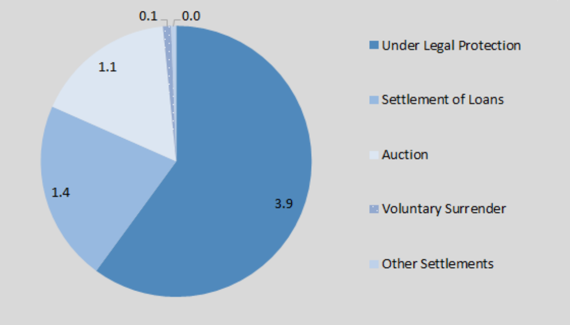
[110] Short-term modifications are those with a duration of less than two years, applicable to cases where the repayment difficulties are reasonably judged to be temporary.

[111] 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.

As at end-2022, the most common types of resolution and closure actions[112] were settlement of loans under legal protection (60%) and settlements of loans (21%) (Chart V.29c).

Chart V.29c Resolution and closure actions (2022)

(billion euro)



Source: Bank of Greece.

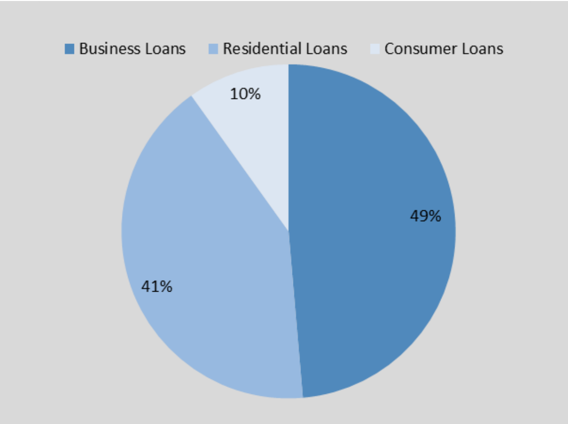
Management of exposures serviced on behalf of credit institutions

The total amount of exposures managed by CSFs on behalf of credit institutions stands at €23.2 billion at end-2022, with 55% of these exposures being 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.30).

Chart V. Breakdown of exposures under management on behalf of credit instittions (2022)

(%)



Source: Bank of Greece.

As at end-2022, repayments and liquidation of collateral managed by CSFs on behalf of credit institutions amounted to €1.94 billion, of which €1.76 billion were repayments and €0.18 billion were collateral liquidation.

Secondary market activity

During the 2019- 2022 period, total exposures of €2.2 billion were sold on the secondary market, consisting mainly of business loans (there was also significant activity during the first quarter of 2023, with the amount standing at €3.1 billion in March 2023). For most of these sales, such an action was not included in the initial business plan[113] of these firms and effectively 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 been increasing since mid-2021 and is expected to grow further in the context of the effort to achieve the business targets of CSFs.

[112] Resolution and closure actions include any change in the type of loan contract or termination of the contract.
[113] See Chart 6 of Box VI. – "Securitisations as a tool to effectively manage banks' Net Performing Loans (NPLs)", Financial Stability Report, May 2022.

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

Key figures

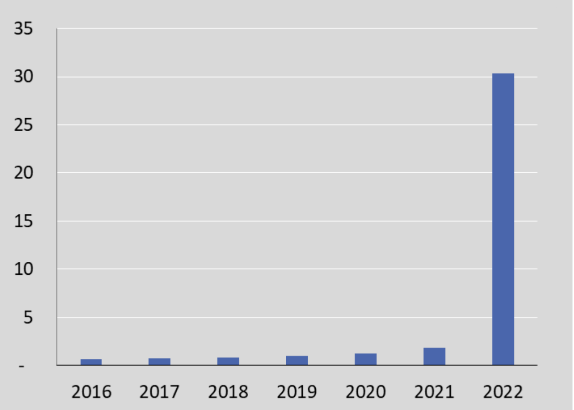
(a) Payment Institutions (PIs)

Under Law 4537/2018[114] and Bank of Greece Executive Committee Act (ECA) 164/2/13.12.2019,[115] the Bank of Greece has authorised 15 payment institutions (PIs) and one account information service provider (AISP). In more detail, five PIs were authorised in 2022, four of which took over the divested merchant acquiring business[116] of the four significant banks. As a result, a new landscape is 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, there has been a rapid increase in the annual value of payment transactions by PIs compared to previous years.

Specifically, the total value of payment transactions carried out by PIs in 2022[117] came to €30.3 billion, about 17 times higher than in 2021 (€1.8 billion, see Chart V.31). As noted above, this increase is attributable to the start of operations of the four PIs that took over the merchant acquiring business of the significant banks, accounting for 92% of the value of payments in total. In addition, the increase in the value of payments executed by the other PIs is remarkable (2002: €2.3 billion, 2021: €1.8 billion). It should be noted 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 in December 2022: €761 thousand, December 2021: €1.5 million).

Chart V.31 Annual value of payment transactions by payment institutions

(EUR billion)



Source: Bank of Greece.

In December 2022, the total equity of PIs increased rapidly by €45.4 million to €49.1 million (from €3.7 million in December 2021), while profits also rose to €22.5 million in December 2022, from €2 million in December 2021 (see Chart V.32). This development is attributable to the start of operations of the four PIs that took over the merchant acquiring business of the significant banks.

[114] 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.

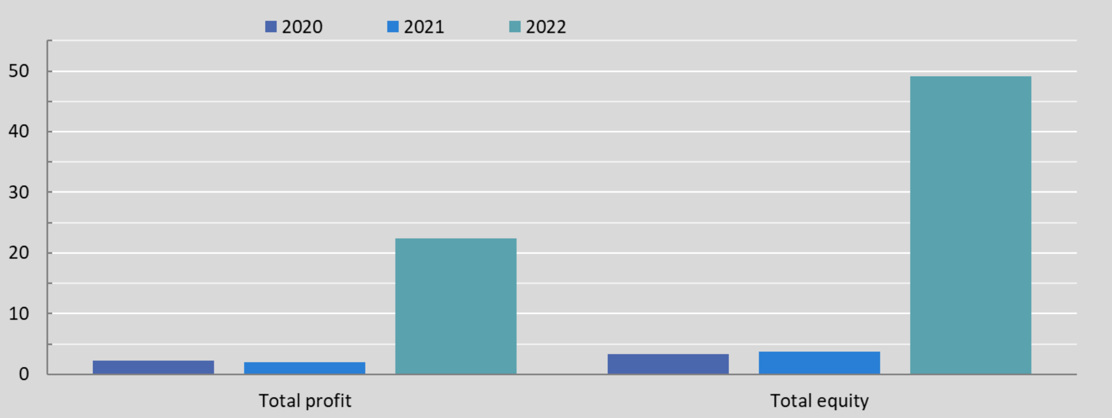
[115] As amended by ECA 178/5/02.10.2020 and currently in force.

[116] 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.

[117] 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 1.1.2022 to 31.12.2022.

Chart V.32 Profit and equity of payment institutions

(EUR billion)



Source: Bank of Greece.

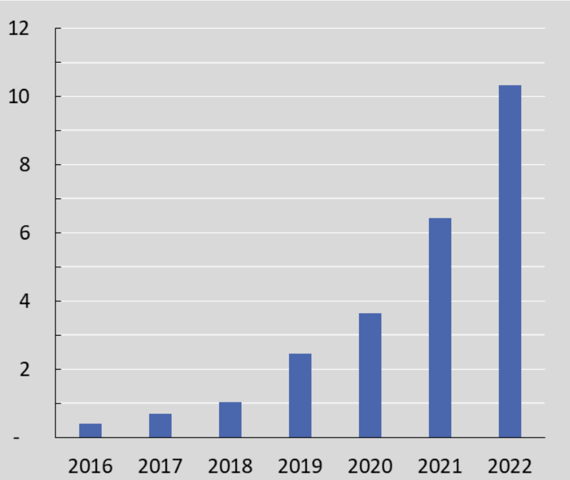
(b) Electronic Money Institutions (EMIs)

Under Law 4021/2011[118] 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 2022[119] by EMIs amounted to €10.3 billion, up by 60.7% compared to 2021 (€6.4 billion, see Chart V.33). 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).[120] This EMI also accounts for 78% of the total annual value of EMI payments. Moreover, in the course of 2022, the other two EMIs also expanded their business, on the one hand by engaging in merchant acquiring and on the other hand because the second EMI introduced an electronic wallet to the Greek market.[121]

Chart V.33 Annual value of payment transactions by electronic money institutions

(EUR billion)



Source: Bank of Greece.

In December 2022, the total equity of EMIs amounted to €58.6 million, up by €43.2 million compared with December 2021 (€15.3 million). In addition, EMIs posted losses of €13.6 million in 2022, compared with losses of €2.7 million in

[118] 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.

[119] 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 1.1.2022 to 31.12.2022.

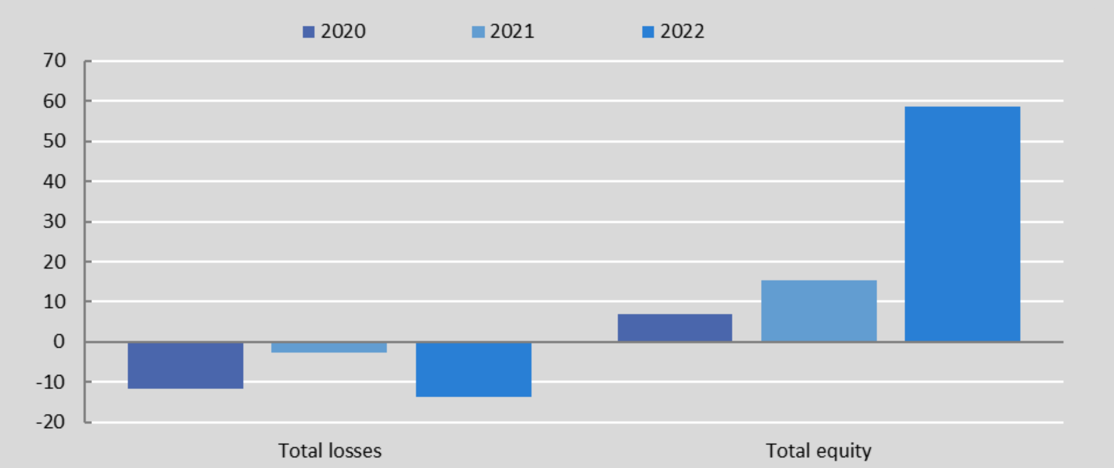
[120] An "EU passport" enables PIs and EMIs established in another EEA Member State to provide payment and electronic money services in Greece under the freedom of establishment or the freedom to provide services, as long as the services in question are covered by their authorisation granted by the home 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.

[121] 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.

2021 (see Chart V.34). The sector's losses are mainly due to investment spending, particularly in the IT and technology sectors, but also to ongoing expansion to other European markets.

Chart V.34 Results and equity of electronic money institutions

(EUR billion)



Source: Bank of Greece.

It should also be noted that 263 PIs and 193 EMIs established in other EEA Member States have notified the Bank of Greece of their intention to provide payment services in Greece under the EU passport regime. 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 acquiring, the transfer of funds and the execution of remittances.

Finally, it should be noted that in cases of payment transactions excluded from the scope of Law 4537/2018 under Article 3 thereof,[122] two companies providing digital content purchase services for online gaming and closed wallet services have been entered in the public register[123] established by the Bank of Greece.

[122] The European Banking Authority issued guidelines (EBA/GL/2022/02) on the limited network exclusion under PSDII in February 2022, effective from 1 June 2022. By virtue of ECA 214/2/12.12.2022, the Bank of Greece adopted these European Banking Authority guidelines.

[123] In accordance with Article14 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 excluded from the scope of Law 4537/2018, 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 (4) of Law 4537/2018 (Supervised institutions (bankofgreece.gr)).

VI. FINANCIAL MARKET INFRASTRUCTURES

The smooth functioning of the payment, clearing and settlement systems is critical for the effective and efficient operation of the financial system. Their safe and proper functioning is a primary concern of the national and European oversight authorities, in the interest of the implementation of the Eurosystem monetary policy and the maintenance of confidence in the common currency.

1. PAYMENT SYSTEMS

In 2022, payment systems effectively contributed to the smooth operation of the interbank and the retail payments market and to the fulfilment of the public's high expectations for fast and secure payments.

1.1 TARGET2-GR

The Greek component TARGET2-GR (T2-GR) of the Trans-European Automated Real Time Gross Settlement Express Transfer System TARGET2 operated effectively during 2022, with its operational availability reaching 100%. In 2022, the number of domestic and cross-border interbank and customer payment orders transmitted through the system came to 945.3 thousand, from 947.7 thousand in 2021. The corresponding value of payment orders reached €1.1 trillion, from €951 billion, up by €171 billion (+18%) from the previous year.

1.2 DIAS INTERBANKING SYSTEMS S.A.

The multilateral net settlement system for retail payments DIAS operated effectively throughout 2022 and its operational availability reached 100%. The growing demand for electronic payment transactions by the public is reflected in the increased number of processed payment transactions. More specifically, in 2022 the system processed 38.17 million payment transactions more than in 2021 (+11.6%). Per interbank payment service provided (see Table VI.1), a significant increase was recorded in credit transfer transactions by 10% and in direct debit transactions by 12%. In addition, POS payments to Greek government entities substantially increased by 42% in comparison to previous year. On the contrary, ATM transactions decreased by 6% and electronic cheques clearing transactions by 4%. In line with the increased number of transactions, the corresponding total value reached €407 billion, up by 18.3%.

Table VI.1 Transactions of the DIAS payment system

(in million transactions)

Type of transactions	2022	2021	2020
Credit transfers and other fund transfers	310.96	281.64	249.11
Direct Debits	26.10	23.39	20.45
Cheques	2.21	2.31	2.51
ATM withdrawals	5.88	6.26	7.08
POS payments	22.42	15.81	13.38
Total	**367.57**	**329.4**	**292.53**

Source: DIAS

Data analysis shows the high operational capability of DIAS to respond to the public's growing demand for electronic payment transactions.

1.3 ATHENS CLEARING OFFICE (ACO)

The Athens Clearing Office (ACO) processed 24 thousand less cheques in physical form (-13.73%) than those submitted for netting in 2021.

The daily average number of cleared cheques in 2022 was 596 (-13.39%), from 688 in 2021. On the contrary, the value of cleared cheques increased by €1.9 billion (+15.19%), with their daily average value rising to €58.07 million (+15.64%) in comparison to 2021 (see Table VI.2).

Table VI.2 ACO cheques processing

(number of transactions and value in million euro)

	2022	2021	2020	Change 2022 -2021	Change 2021 -2020
Number of cheques submitted for clearing	154,433	179,006	210,668	-13.73%	-15.03%
Daily average number of cheques submitted for clearing	596	688	813	-13.39%	-15.32%
Value of cheques submitted for clearing	15,040	13,056	12,088	+15.19%	+8.01%
Daily average value of cheques submitted for clearing	58.07	50.21	46.67	+15.64%	+7.60%

Source: ACO

2. PAYMENT CARDS

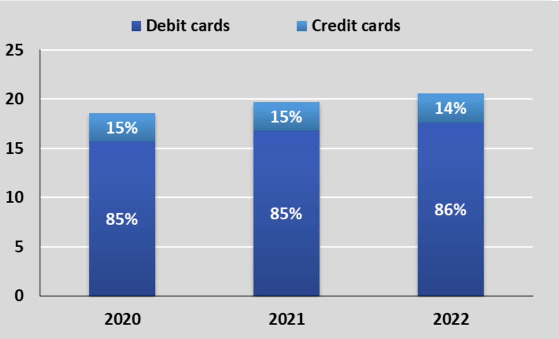
In 2022, the extensive use of card payments is reflected in the increased number of issued cards and the growing volume and value of payment transactions. Interestingly, the average value per card payment transaction decreased.

2.1 NUMBER OF PAYMENT CARDS

The total number of active cards in circulation at the end of 2022 reached 20.6 million, increased by 4% in comparison to 2021 (see Chart VI.1). With respect to the different types of cards, the number of debit cards increased by 5% to 17.6 million. A substantial increase of 20% has been recorded in the issuance of pre-paid[124] cards, which reached 2.3 million. The number of credit cards remained stable from the previous year at 2.9 million. Virtual cards[125] rose by 17% to 126 thousand. The constantly increasing use of internet transactions seems to be the main driver of the continuing growth of the issuance of prepaid and virtual cards.

Chart VI.1 Number of cards per card type

(million)



Source: Bank of Greece.

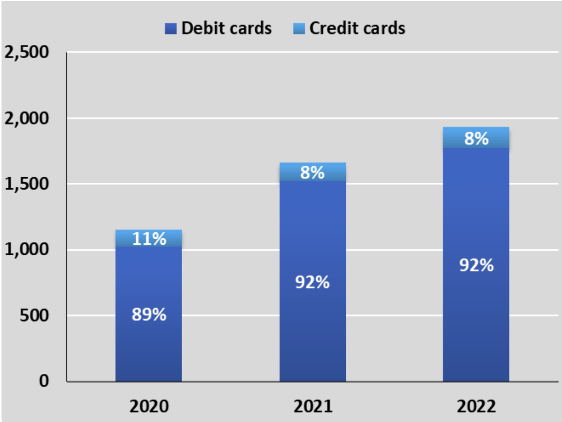
[124] For the purposes of this Review, debit cards comprise prepaid cards and cards that can be used for cash withdrawals but not for purchases. Credit cards comprise virtual cards and delayed debit cards.
[125] See previous footnote.

2.2 PAYMENT CARD TRANSACTIONS

The total number of payment card transactions reached 1,930 million, from 1,658 million in 2021, up by 16% (see Chart VI.2).

Chart VI.2 Number of card transactions

(million)



Source: Bank of Greece.

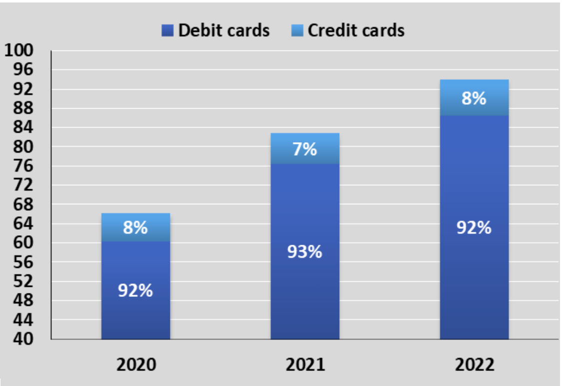
The number of payment transactions with debit cards rose to 1,775 million, from 1,523 million in previous year, increased by 17%. Debit cards remain the main substitute of cash, accounting for 92% of the total number of payment transactions with all types of card payments. The number of credit card transactions increased to 154 million from 135 million in 2021, up by 14%. Credit cards had a share of 8% in the total number of card payments.

The value of card payment transactions amounted to €94 billion, up by 14% in comparison to 2021 (see Chart VI.3).

The average number of transactions per card increased by 12% and reached 94 transactions, from 84 transactions in 2021 (see Chart VI.4).

Chart VI.3 Value of card transactions

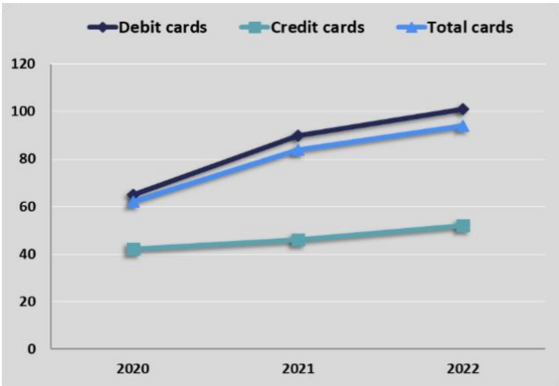
(billion euro)



Source: Bank of Greece.

Chart VI.4 Average number of transactions per card type

(transactions)



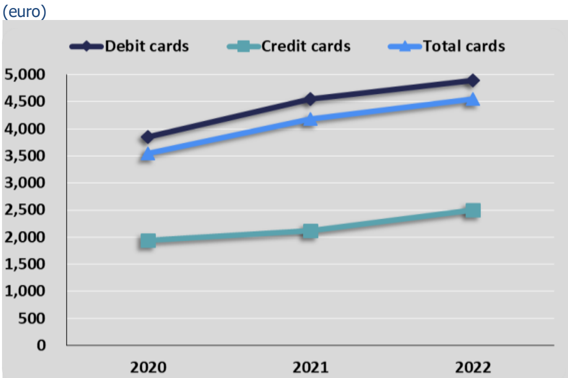
Source: Bank of Greece.

By analysing the indicators of the individual types of cards, the change in the average number of transactions per card is mainly due to a significant increase in the average number of transactions per debit card to 101, from 90 transactions in 2021, and secondarily to a rise in the average number of transactions per credit card to 52, from 46 in the previous year.

In line with the increase in the average number of transactions per card, the average value of transactions per card edged up by 9% to €4,556, from €4,186 in 2021 (see Chart VI.5).

Chart VI.5 Average value of transactions per card type

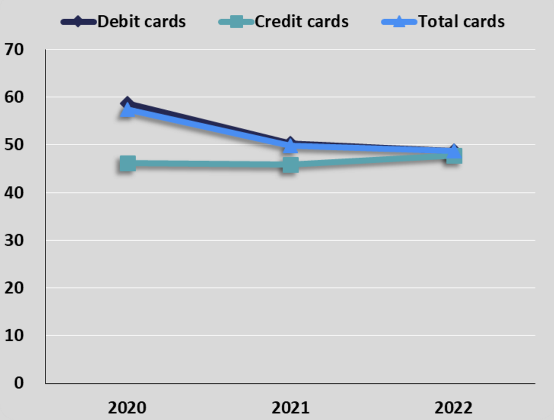
(euro)



The increase in the average value per transaction is mainly due to the increased number and value of transactions with debit cards, given their larger volume. In more detail, the average transaction value per debit card rose by 8% to €4,898, from €4,546 in 2021, whereas the average transaction value per credit card rose by 18% to €2,501, from €2,117.

Chart VI.6 Average value per card transaction

(euro)



Source: Bank of Greece.

The average value per card transaction continued to decline in 2022, reaching €48, from €50 in 2021 and €58 in 2020 (see Chart VI.6). The declining value per card transaction was mainly evident in the value of transactions per debit card, which fell to €49, from €50 in 2021. By contrast, the average value of payment transactions with credit cards slightly increased to €48, from €46 in 2021.

The expanding use of debit cards even for purchases of low-value products and services seems to be the reason for the continued decline in the average value per transaction.

2.3 PAYMENT CARD TRANSACTIONS FRAUD

The number of fraudulent transactions in card payments fell by 27% compared to 2021 (see Table VI.3). The ratio of the number of fraudulent transactions to the total number of transactions, i.e. the fraud to transaction ratio, significantly decreased to 0.01%, accounting for one fraudulent transaction per 6.7 thousand transactions.

Table VI.3 Fraud to transaction ratio - Volume

Period	Number of transactions	Number of fraudulent transactions	Fraud to transaction ratio
2022	1,929,643,889	287,356	0.01%
2021	1,657,644,753	392,390	0.02%
2020	1,149,860,845	442,234	0.04%

Source: Bank of Greece

On the contrary, the value of fraudulent transactions increased by 21% in comparison to the previous year (see Table VI.4). Nevertheless, the ratio of the value of fraudulent transactions to the total value of transactions remains at the low level of 0.02%, accounting for €1 fraud value per €5.7 thousand transaction value.

Table VI.4 Fraud to transaction - Value

(euro)

Period	Value of transactions	Value of fraudulent transactions	Fraud to transaction ratio
2022	93,891,177,722	16,237,522	0.02%
2021	82,716,394,764	13,441,849	0.02%
2020	66,027,713,462	12,884,106	0.02%

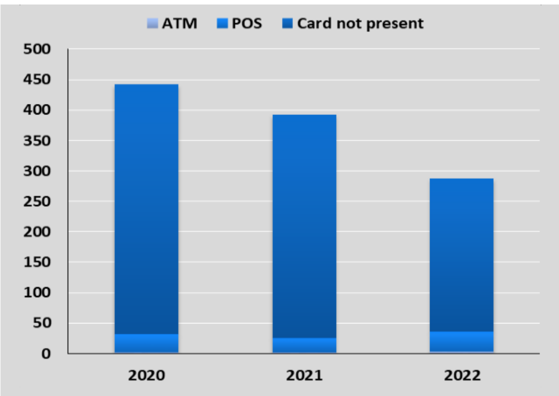
Source: Bank of Greece

The examination of fraud per card type (see Chart VI.7 and VI.8) reveals a significant increase in fraud payment transactions in ATM, POS and card not present (CNP) transactions performed via the internet and mail/telephone order.

The increase in fraud payment transactions in ATMs and POSs in comparison to 2021 is mainly due to a rise in illegal ATM and POS transactions with lost/stolen payment cards. In particular, the value of fraud ATM transactions with lost/stolen cards was €1.3 million, from €705 thousand in 2021, up by 92%, whereas the value of fraud POS transactions with lost/stolen cards reached €1.7 million, from €701 thousand in 2021, up by 147%.

Chart VI.7 Number of fraudulent transactions per transaction type

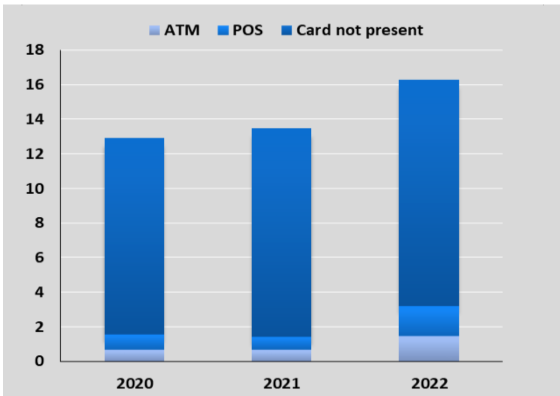
(thousand transactions)



Source: Bank of Greece.

Chart VI.8 Value of fraudulent transactions per transaction type

(million euro)

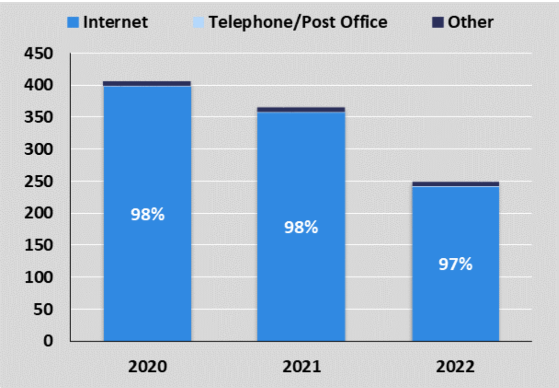


Source: Bank of Greece.

With respect to fraud in CNP transactions, the majority of fraud payment transactions concerned remote transactions via the internet (See Chart VI.9 and VI.10), in particular cross-border transactions with foreign entities, as in previous years.

Chart VI.9 Number of fraudulent transactions in CNP transactions

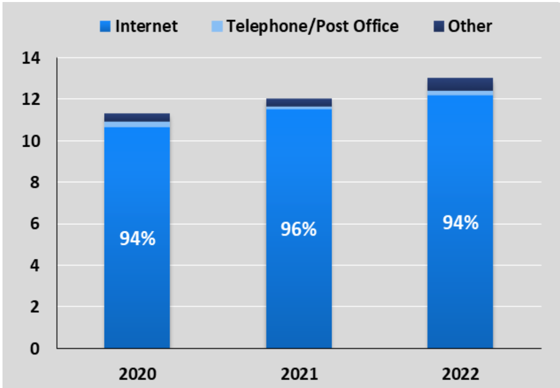
(thousand transaction)



Source: Bank of Greece.

Chart VI.10 Value of fraudulent transactions in CNP transactions

(million euro)

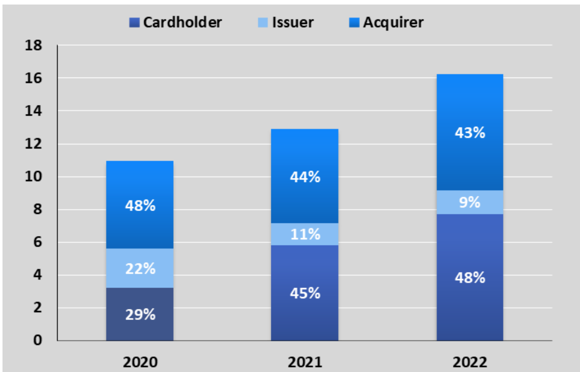


Source: Bank of Greece.

The financial losses arising from fraudulent transactions were borne by the parties involved in the card transaction chain according to their degree of fault. In 2022, the allocation of losses among the three parties participating in the card transaction chain (See Chart VI.11) shows that the majority of losses was borne by the card holders and the card acquiring payment service providers, with 48% and 43% respectively. Card issuing payment service providers incurred 9% of the total losses.

Chart VI.11 Loss distribution from fraudulent transactions

(million euro)



Source: Bank of Greece.

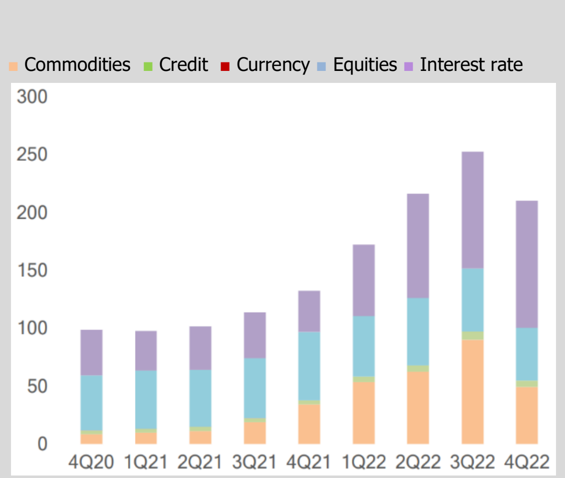
3. CENTRAL COUNTERPARTIES

3.1 EUROPEAN DEVELOPMENTS

During the second half of 2022, margins paid to CCPs by clearing members and their clients increased, following price volatility and increased market turmoil (see Chart VI.12).

Chart VI.12 Initial margins collected by EU CCPs by asset class

(billion euro)



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

Source: ESMA.

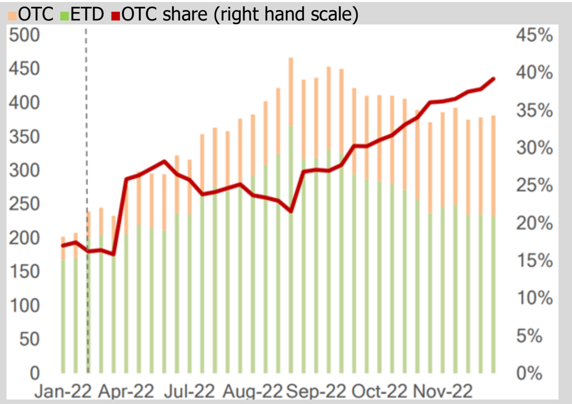
European commodity derivatives (and energy derivatives in particular) were particularly affected by these conditions, with margin requirements being significantly higher in the third quarter of 2022 (up by 44%) in the central counterparties of the European Union (EU). In the fourth quarter of 2022, the decline in energy prices led to a decrease in margins, which however remained at a higher level compared to the fourth quarter of 2021 (before the Russian invasion of Ukraine).

A similar picture was observed in the interest rate derivatives market, with margins increasing by 22% in the second half of 2022 for EU central counterparties.

The sharp rise in energy derivative prices observed until the end of August 2022 and the corresponding increase in margin requirements are likely to be linked to the migration of some derivative transactions to over-the-counter (OTC) markets – where trades are not cleared through a central counterparty – especially with regard to transactions by non-financial corporates. This is due to the latter's effort to reduce the use of additional liquidity, thereby reducing also the liquidity risk associated with increased margin requirements through central clearing.

Chart VI.13 Non-financial corporations' exposures to energy derivatives

(billion euro)



Note: Dashed line shows the beginning of the invasion of Ukraine.

Source: ESMA.

Before Russia's invasion of Ukraine, non-financial corporations' exposures to OTC energy derivatives amounted to about 15% of total exposures, increased to about 25% after the invasion and reached 40% of total exposures in December 2022 (Chart VI.13). These developments pose risks, as OTC markets are characterised by lower liquidity and transparency, with all that this entails for financial stability, as well as higher counterparty risk due to the lack of centralised risk management.

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On 7 December 2022, the European Commission published a legislative proposal to amend the EMIR regulation,[126] with the primary aim of making EU central clearing services more attractive to market participants, while ensuring that adequate risk considerations are upheld and without endangering financial stability.

To achieve this goal, the proposal aims, among other things, at simplifying the procedures for central counterparties when launching new products and changing risk models, by introducing a non-objection approval for those changes that do not increase the risks for the central counterparty. Thus, EU CCPs will be able to offer new products for clearing and introduce model changes more quickly and at reduced costs, making EU central clearing more attractive.

In addition, the proposal aims to further enhance the existing supervisory framework in order to make EU CCPs more resilient. This is proposed to be achieved through the establishment of joint supervisory teams for the supervision of EMIR-authorised CCPs, as well as a joint monitoring mechanism with enhanced supervisory powers. This ensures that EU CCPs will remain resilient to new market challenges.

Finally, the proposal aims at strengthening the EU's strategic autonomy to further control and mitigate the risks to financial stability that may arise when market participants are over-dependent and have increased exposure to systemically important third-country CCPs. To ensure this, clearing members and their clients will be required to hold, directly or indirectly, active accounts at EU CCPs through which systemically important products will be cleared, thereby reducing the proportion of trades that are cleared by systemically important third-country CCPs.

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On 22 December 2022, the European Council adopted Regulation (EU) 2022/2578 establishing a "market correction mechanism" (MCM)[127] to protect EU citizens, as well as the economy, against excessively high prices in the natural gas market. The aim of the Regulation is to apply a price ceiling for natural gas transactions when gas prices reach extremely high levels. The Regulation entered into force on 1 February and is directly applicable, while the mechanism began to apply on 15 February 2023.

The implementation of the Regulation may affect organised markets, as their participants may redirect their trading activity to over-the-counter markets. The relevant CCPs and the entire central clearing ecosystem may also be impacted through an increase in margin calls, a possible overall reduction of market liquidity and a possible reduction of hedging opportunities.

3.2 ATHENS EXCHANGE CLEARING HOUSE (ATHEXCLEAR)

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

During 2022, derivatives and securities lending transactions cleared by ATHEXClear decreased compared to the previous year in average daily volume and average daily value terms.

[126] Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories, as currently in force.
[127] See Special Feature V of the current Review: "DEVELOPMENTS IN THE EUROPEAN ENERGY MARKETS".

Table VI.5 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
2022	1,162	87	33,064	39	678	35,029

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

In more detail, the average daily volume of transactions in the derivatives market and the securities lending facility as a whole amounted, during 2022, to 35,029 transactions, down by 27.3% compared to the previous year (2021: 48,233 transactions) – as shown in Table VI.5 and Chart VI.14 –, a change mainly due to the reduction observed in Stock Futures.

Likewise, the average daily value of transactions in 2022 amounted to €13.5 million, down by 4% compared to the previous year (€14 million in 2021) (see Table VI.6 and Chart VI.15).

Chart VI.14 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), Hellenic Exchanges – Athens Exchange S.A.

Table VI.6 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
2022	4.88	0.37	8.24	0.03	13.51

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

Chart VI.15 Daily Average Traded Value in the Derivatives Market by commodity type

((in million euros)

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

4. CENTRAL SECURITIES DEPOSITORIES

4.1 REGULATORY DEVELOPMENTS

In the modern digital age, information and communication technologies (ICTs) support complex systems used for everyday activities and ensure the uninterrupted operation of key sectors of the economy, including the financial sector. Nevertheless, it is recognised that increasing digitalisation and interconnectedness between systems amplifies the risk arising from ICT and make the financial system vulnerable to cyber threats[128] and ICT-related disruptions.

In this context, on 27 December 2022, the European Commission published Regulation 2022/2554 on digital operational resilience[129] for the financial sector (DORA). The DORA Regulation was issued as part of the European Commission's digital finance strategy for the EU, with the objective of supporting the innovation and competition potential of digital finance, while mitigating the risks arising from it. The DORA Regulation specifically addresses ICT-related risks, including cyber threats, recognising that ICT-related events/incidents and the lack of operational resilience can compromise the soundness of the entire financial system.

The Regulation's objective is to achieve a high level of digital operational resilience in financial sector entities, including central securities depositories and central counterparties.

To fulfil this objective, the DORA Regulation sets out uniform requirements and rules for:

- the enhancement and streamlining of the financial entities' conduct of ICT risk management;
- the establishment of operational resilience testing of ICT systems;
- the promotion of the exchange of information and data between financial entities;
- the development of policies for the management of ICT-related incidents;
- the setting up of an arrangement for reporting ICT incidents to the competent authorities with the aim of strengthening the effectiveness of supervision;
- the exchange of information and cooperation between the competent authorities.

In addition, with regard to the ICT services provided by third parties, the regulation introduces requirements regarding:

- the sound management of ICT third-party risks;
- the contractual arrangements between ICT third-party service providers and financial entities;
- the establishment of a framework for the supervision of critical ICT third-party service providers when providing services to financial entities.

The DORA Regulation entered into force on 16 January 2023 and will start to apply as from 17 January 2025.

This new Regulation is expected to make the financial system more resilient to ICT risks. Nevertheless, given that the financial entities operate in a continuously changing ICT environment, both financial entities and supervisors face significant challenges in trying to comply with this Regulation. More specifically, the financial companies' management as well as the supervisory authorities should actively and sufficiently develop their capabilities and skills in order to acquire a good

[128] Cyber threat means any potential circumstance, event or action that could damage, disrupt or otherwise adversely impact network and information systems, the users of such systems and other persons.
[129] Digital operational resilience is the ability of businesses and organisations to cope with any kind of disruption to their smooth operation and of threats related to ICT.

understanding of the ICT risks and to properly assess them and their impact on the entities' activities.

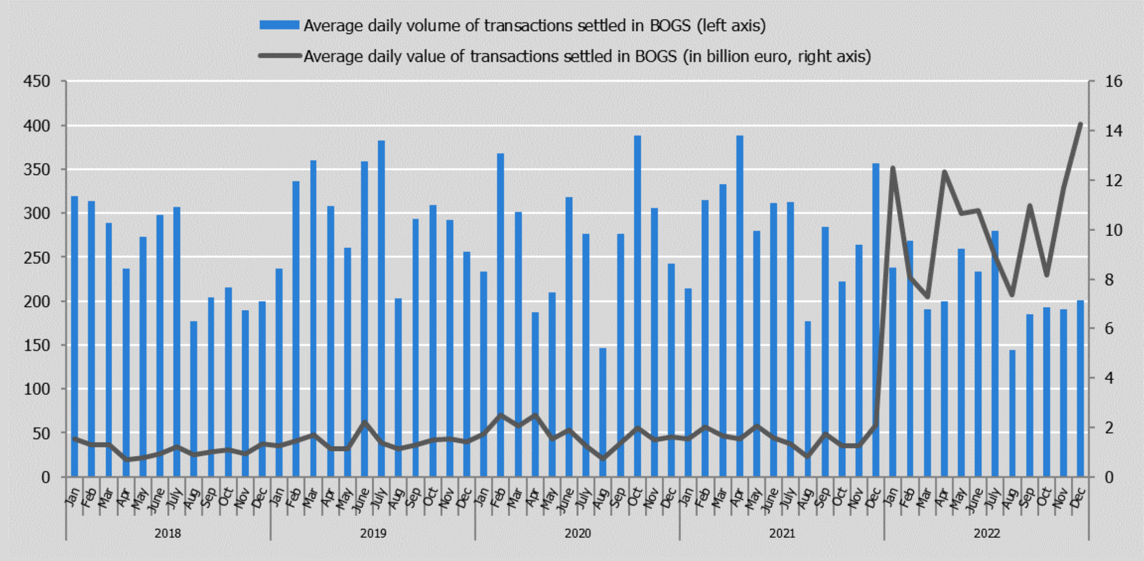
4.2 THE BANK OF GREECE SECURITIES SETTLEMENT SYSTEM (BOGS)

The operation of the Securities Settlement System of the Bank of Greece ("System for Monitoring Transactions in Book-Entry Securities", hereinafter "BOGS") in the second half of 2022 was continuous and uninterrupted, as BOGS has developed all the technical arrangements that are necessary both for processing a large volume of transactions and for business continuity in emergency situations (e.g. hardware failure, natural disasters). In addition, the security and efficiency of the services offered remained at a high level.

The average daily value of transactions settled in BOGS in the second half of 2022 (buy/sell transactions, repos in securities, internal transfer of securities, etc.) amounted to €10.23 billion, of which €345 million were buy/sell transactions, as activity decreased compared to the first half of 2022 (€10.28 billion and €604 million, respectively). The average daily value of transactions for 2022 amounted to €10.25 billion, of which €475 million concerned buy/sale transactions (see Table VI.7 and Chart VI.16). 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.

The average daily volume of transactions in the second half of 2022 reached 199 transactions (first half: 231.5 average daily transactions), of which 95 were buy/sell transactions (first half: 107 average daily transactions) (see Table VI.7 and Charts VI.16). The average daily volume of transactions for 2022 reached 215 transactions, of which 100.8 were buy/sell transactions.

Chart VI.16 Average daily volume and value of transactions settled in BOGS (2018-2022)



Source: Bank of Greece.

Table VI.7 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	8,912.50	306.45	382.39	276.00	313.00	280.00
August	909.41	1,143.18	726.86	799.06	7,365.34	177.39	203.36	147.00	177.00	144.00
September	1,017.99	1,279.68	1,394.42	1,719.40	10,975.04	204.50	293.90	276.00	284.00	185.00
October	1,087.59	1,503.12	1,957.54	1,255.66	8,176.61	215.13	308.83	388.00	222.00	193.00
November	943.20	1,525.55	1,483.11	1,252.64	11,691.87	189.73	292.00	306.00	264.00	191.00
December	1,317.13	1,429.29	1,606.98	2,080.48	14,253.90	200.16	256.60	243.00	357.00	201.00
Monthly average prices	**1,083.76**	**1,431.77**	**1,721.73**	**1,566.82**	**10,252.87**	**252.00**	**300.00**	**271.00**	**288.00**	**215.25**

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.

Since February 2022, in compliance with the European Regulation on Central Securities Depositories (CSDR)[130] and in particular the provisions concerning the measures to be taken by CSDs to prevent and address settlement fails,[131] BOGS monitors settlement fails and provides regular (monthly and annual[132]) reports on the number and details of these cases.

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

Settlement activity in the Dematerialised Securities System managed by Hellenic Central Securities Depository (ATHEXCSD) showed an increase in the value of settled securities transactions, while a decrease was observed in the daily number of settled transactions.

More specifically, the average daily number of settled securities transactions in 2022 amounted to 30,126, slightly down by 1% year-on-year (from 30,386 transactions in 2021) (see Table VI.8 and Chart VI.17).

On the contrary, the average daily value of settled securities transactions in 2022 increased by 3% compared to 2021 and amounted to €73.90 million, compared with €71.65 million in 2021 (see Table VI.8 and Chart VI.17).

[130] 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.
[131] "Settlement fail" means the non-occurrence of settlement or partial settlement of a securities transaction on the intended settlement date, due to lack of securities or cash and regardless of the underlying cause.
[132] The annual report on settlement fails for 2022 has been published on the website of the Bank of Greece.

Table VI.8 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
2022	29,404	12	131	2	0	576	30,126
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
2022	72,481.4	12.3	977.1	16.4	0.0	409.0	73,896.2

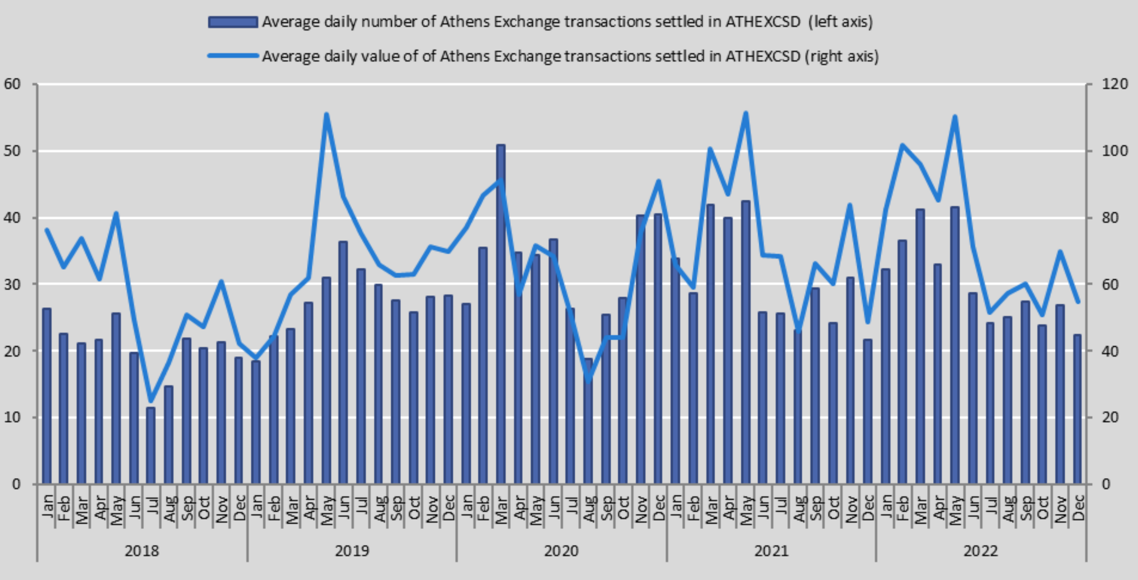
Source: AxiaNumbers Monthly Statistical Bulletin, Hellenic Exchanges – Athens Exchange S.A.

[1] Transactions on the Athens Exchange that were settled in the Dematerialised Securities System, calculated by the single count method (purchases only).

A noticeable increase in corporate bond transactions was observed during 2022. The average daily number of transactions reached 131, compared with 75 in 2021 (up by 75%). On the contrary, the average daily value of corporate bond transactions remained almost unchanged (2022: €0.98 million, 2021: 0.99 million).

Chart VI.17 Average daily number and value of transactions settled in the Hellenic Central Securities Depository (2018-2022)

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



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

As mentioned above, in compliance with the CSDR and the provisions on measures to prevent and address settlement fails, ATHEXCSD, since February 2022, monitors the settlement fails and provides regular (monthly and annual) reports on the number and details of these cases.

SPECIAL FEATURE I
THE IMPORTANCE OF THE COMMERCIAL REAL ESTATE MARKET FOR FINANCIAL STABILITY

Elias Veloudos[133]

Dimitrios E. Chalamandaris

The Commercial Real Estate (CRE)[134] sector plays an important role in an economy and in the financial system, as it is characterised by strong interconnections and interactions with specific sectors of economic activity and sectors of the financial system. In recent years, and especially after the period of the COVID-19 pandemic, international agencies and organisations have focused on the commercial real estate market, highlighting the need to systematically monitor the associated risks, as well as the usefulness of analysing and quantifying the impact of these risks in order to mitigate them.

This study describes the importance of the commercial real estate market in the economy and the financial system, focusing the analysis on the developments and figures of the Greek financial system. First, it examines the channels of communication and interconnection of the commercial real estate market with financial stability. Second, it describes the measures and supervisory initiatives that have been undertaken at EU and Member State level, in order to help determine the framework for the development of the appropriate toolkit for monitoring and quantifying the risks and design the relevant macro-prudential measures to limit potential effects. Finally, the last section presents the conclusions of the study and the near-term market outlook.

The importance of the Commercial Real Estate market (CRE)

The important role of the real estate market and related sectors of economic activity (e.g. construction, real estate management) is determined by their size and shares in Gross Domestic Product (GDP), but at the same time by their respective shares in the overall financing of the real economy. With regard to commercial real estate in particular, in some countries of the European Union (EU) financial exposures to this sector have an appreciable share in GDP, as well as in the financing and the balance sheets of credit and other financial institutions, thus highlighting the importance of the sector.

The gross added value of the "Construction"[135] and "Real Estate Management" sectors has always had a significant share in an economy's GDP. In particular, in the period 2019-2022, this share varies in the EU between 7.3% (Ireland) and 17.1% (Finland), with the average percentage being around 15%. The corresponding percentage for Greece is close to the EU average and the sample median (see Chart 1).

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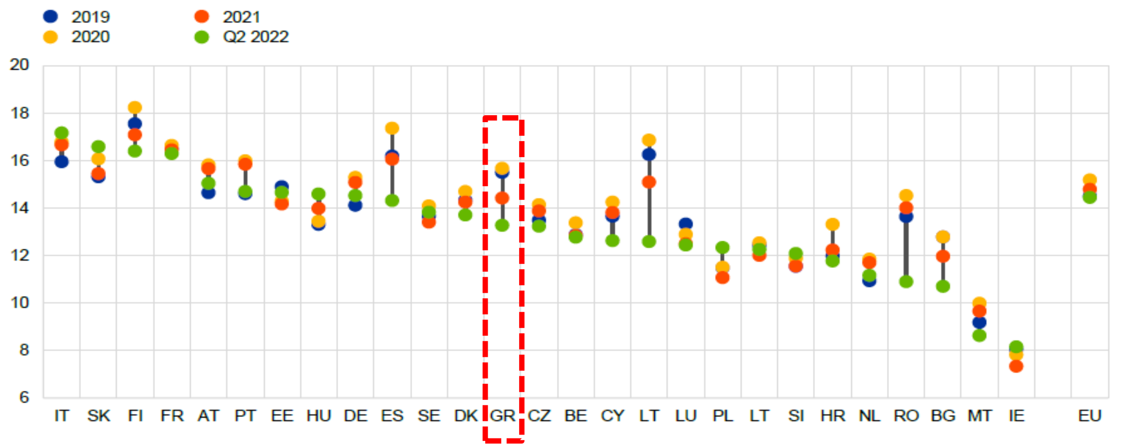
[133] Special thanks are due to N. Stavrianou, for his valuable comments and observations, and A. Kaliontzoglou, G. Kaoudis, and H. Gazi for their assistance in processing the data and charts.

[134] According to Recommendation (ESRB/2019/3) of the European Systemic Risk Board (ESRB), commercial real estate (CRE) "*means any income-producing real estate, either existing or under development, , including rental housing; or, real estate used by the owners of the property for the purpose of conducting their business, purpose or activity, either existing or under construction, that is not classified as residential real estate (RRE); and includes social housing.[…] If a property has a mixed CRE and RRE use, it should be considered as different properties (based for example on the surface areas dedicated to each use) whenever it is feasible to make such breakdown; otherwise, the property can be classified according to its dominant use*."

[135] The construction sector includes the construction of residences, office buildings, public buildings, or projects such as roads, bridges, various facilities, etc.

Chart 1. Gross added value of the 'Construction' and 'Real Estate management' sectors in the EU (2019-Q2 2022)

(% of GDP)

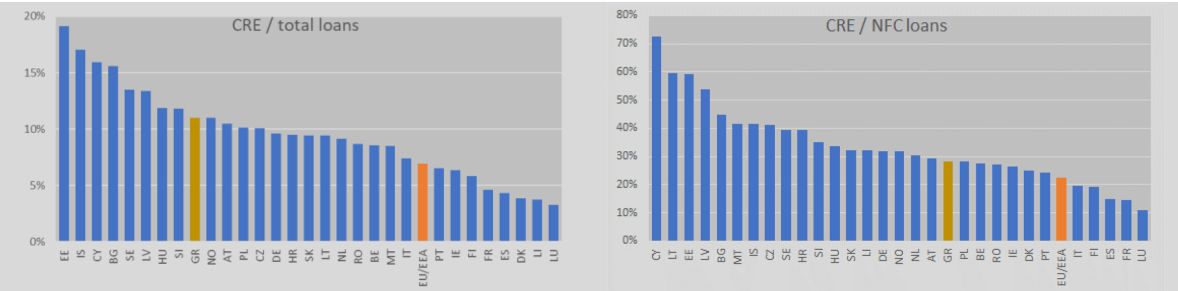


Source: ESRB Report on Vulnerabilities in the EEA commercial real estate sector, January 2023.

In 2022, in the EU, commercial real estate loans[136] as a percentage of total lending ranged between 3% (Luxembourg) and around 19% (Estonia), while as a percentage of loans to non-financial corporations (NFCs) between 11% (Luxembourg) and 73 % approximately (Cyprus). These figures for Greece were 11% and 28% respectively – close to the average percentage of EU countries (see Chart 2).

Chart 2. Commercial Real Estate loans as a percentage of total loans and of non-financial corporate loans (NFC loans) - 2022

(%)



Note: The EBA guidelines on the submission of the data by financial institutions take into account the ESRB Recommendation definition of Commercial Real Estate.

Source: EBA Risk Dashboard, BoG calculations.

The above data highlight the importance of the commercial real estate market, as well as its direct connection with the increase in cyclical systemic risks[137] for many sectors of the financial system (e.g. investment funds, insurance companies, pension funds and credit institutions), making it an important parameter for financial stability.

Intertwining of the commercial real estate market with financial stability

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[136] According to the ESRB Recommendation of 21 March 2019 amending Recommendation ESRB/2016/14 on closing real estate data gaps (ESRB/2019/3).

[137] Cyclical and structural risks are monitored in the context of monitoring and identifying potential systemic risk.

See ESRB Working Paper Series No 138 / September 2022 The effect of structural risks on financial downturns and Borio, C. and P. Lowe (2002), "Assessing the risk of banking crises", *BIS Quarterly Review*, December 2002.

The importance of the real estate sector – and commercial real estate in particular – and the link with financial stability have attracted the interest of academic researchers and international organisations and agencies.[138] The reports prepared from time to time by the European Systemic Risk Board (ESRB)[139] are particularly enlightening, both for the current situation, the identification and assessment of the relevant risks, and the development of tools and measures to deal with said risks. Although real estate-related industries are important to the economy and the financial system, the commercial real estate sector has more weight than residential real estate. In particular, commercial real estate is used both as collateral for business loans and for investment purposes. Its price changes are directly linked to economic developments and the commercial real estate market is characterised by great cyclicality and is more directly linked to changes in economic activity than the residential real estate market.

The development, acquisition and management of commercial real estate is directly linked to the generation of capital gains and regular rental income. Hence, expected returns carry more weight and have a more decisive role in the context of investment decisions in the case of commercial real estate than in the case of residential real estate, which is mainly related to meeting housing needs.[140]

In the downswing of the business cycle or in the event of a crisis/sharp shock, the rental income of commercial properties and their value will be adversely affected. This highlights the high degree of sensitivity and interconnection of the commercial real estate market in different phases of the economic cycle in comparison with the residential real estate market.

Abrupt changes in economic activity can affect the financial system through multiple channels and potentially amplify the effects on it. The construction and acquisition of commercial real estate is primarily financed by banks and leasing companies, as well as by investment funds (e.g. equity funds, real estate investment funds, Real Estate Investment Trusts – REITs, etc.) or by real estate investment companies through loans and direct investments. It is also common practice for large real estate investment companies to tap the capital markets to obtain funding by issuing bonds and equity securities.

The importance of the commercial real estate sector for the financial system is also highlighted by the fact that these properties constitute collateral for both direct investment (purchase, management/exploitation of commercial real estate), especially in real estate investment funds, and for borrowing by businesses. A particular feature of the commercial real estate market in this respect is that long-term assets are financed through debt with a potentially shorter maturity or through the issuance and sale of mutual fund shares/units by Undertakings for Collective Investment in Transferable Securities (UCITS),[141] which can be liquidated immediately without any

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[138] Ryan E., Horan A. and Jarmulska B. (2022) "Commercial real estate and financial stability – new insights from the euro area credit register", ECB, *Macroprudential Bulletin, 19*. E. Ryan, A. Horan and B. Jarmulska (2022) Commercial real estate and financial stability – new insights from the euro area credit register, Macroprudential Bulletin, 19.

[139] See ESRB Report on commercial real estate and financial stability in the EU (December 2015), ESRB Report on Vulnerabilities in the EU commercial real estate sector (November 2018) and ESRB Report on Vulnerabilities in the EEA commercial real estate sector (January 2023).

[140] It is clarified that real estate that generates income obviously also includes real estate that businesses exploit to meet the housing needs of individuals or businesses; however, in the Greek real estate market, this business model is not particularly developed and does not constitute the basic model of business exploitation.

[141] It is worth pointing out that, according to the current institutional framework, UCITS in Greece are defined as Portfolio Investment Companies (AEEH) and Mutual Fund Management Companies (AEDAK). However, AEEHs have the form of a closed funds and for this reason investment in the said companies and consequently in their investment portfolio is carried out by holding equity securities that are compulsorily listed and traded on the stock exchange.

early warning period. Additionally, unlike securities traded on capital markets, such as equities and bonds, the liquidity of commercial real estate is particularly low.

It is worth underlining that, in contrast to residential real estate, in the case of loans for the purchase of commercial real estate, especially when they are not intended for own use, borrowers have limited incentives to service their loans if they face financial difficulties or, more generally, when there is a significant drop in commercial real estate prices. In the latter case, moral hazard increases, and so does the probability of strategic default. This is because borrowers see that the value of the properties in question and the associated cash flows may be much lower than their initial estimate and thus their entire business plan becomes unsustainable.

Therefore, the characteristics of commercial real estate loans, i.e. the amount of such loans, the typically long maturity, the illiquidity of the assets, which may act as collateral, and the increased effect of moral hazard in relation to other categories of exposures, may amplify the impact of a commercial real estate market shock, with a risk of spillover into the financial sector at large. A shock to the commercial real estate market may not only reduce the value of collateral, but also limit the possibility of selling commercial real estate, leading to a sharp correction of prices (fire sales).[142] Highly leveraged commercial real estate companies may be unable to service their loans, which in turn increases pressure for sales of commercial real estate used as collateral. Investors may be forced to sell other assets to obtain liquidity and this may exacerbate the negative sentiment and price correction in the real estate market in general.[143] In such an eventuality, the pressure on prices is fed back, with adverse effects on the balance sheets of property management and exploitation companies, as well as on the incomes of all those active in the commercial real estate market.

The importance of the commercial real estate sector in the economy and indirectly in the stability of the financial system is further highlighted by the interconnection with other sectors of economic activity, such as that of construction. Through the impact on the construction industry, a disruption in the commercial real estate market ultimately affects overall macroeconomic aggregates such as unemployment and economic growth, which in turn are expected to contribute to higher default rates, with significant implications for financial stability.

Conversely, potential negative macroeconomic developments would affect overall economic growth and, possibly, cause a deterioration in the quality of banks' assets (through an increase in non-performing loans – NPLs) and a decline in the value of real estate collateral. These developments in turn would pose significant challenges to the real estate market and especially to commercial real estate.

In conclusion, potential adverse developments in the commercial real estate sector are likely to have a systemic impact on both the real economy and the financial system. In support of this, it is worth mentioning that there are examples in modern history where adverse developments in

[142] See ESRB (2021), Special Feature 2.1: "Commercial real estate – liquidity and leverage risks in investment funds", NBFI Monitor No 6, August, J.H. Lang, M. Behn, B. Jarmulska and M. Lo Duca "Real estate markets, financial stability and macroprudential policy", European Central Bank. C. Crowe, G. Dell'Ariccia,, D. Igan, and P. Rabanal (2013), "How to deal with real estate booms: Lessons from country experiences", *Journal of Financial Stability*, 9:3, 300-319.

[143] This problem becomes particularly acute when the notice periods for the redemption of units/shares of mutual funds that hold and invest in real estate are short or do not exist at all.

the commercial real estate market were a decisive – mainly amplifying – factor in the evolution of financial crises.[144]

Monitoring of commercial real estate market – EU initiatives

Over the last few years, international bodies and organisations have highlighted the need to systematically monitor the risks associated with the CRE market, as well as the importance of analysing and quantifying them. Exploring risks and limiting potential negative effects on the financial system are a priority. Therefore, important initiatives have been taken at both EU and Member State level to develop supervisory reports and methodologies for monitoring developments in the CRE market and appropriate risk mitigation measures.

The Joint Committee of European Supervisory Authorities[145] recently pointed out the risks arising from the real estate sector, calling on the competent supervisory authorities to remain vigilant, while recommending increased monitoring of financial companies' assets related to activities in this sector.[146] The ECB and the Single Supervisory Mechanism (SSM) included the CRE market in their communication[147] of the analysis of banks' exposure to vulnerable sectors of economic activity and supervisory priorities, considering CRE to be more affected by the COVID-19 pandemic, while it had attracted significant investment during the prolonged low-interest rate environment. At the same time, the report points out that, as inflation rises and central banks normalise monetary policy, higher interest rates can increase pressure on the real estate sector. In this context, supervisory authorities are asked to be particularly vigilant regarding the possible accumulation of risks in areas such as collateral valuation and credit standards. Collateral valuation risk is among the supervisory priorities, taking into account the ongoing efforts of several banks to clean up their loan portfolios from CRE-related NPLs that have accumulated since the global financial crisis. In 2022, the SSM also announced its plan to carry out on-site inspections of the risk associated with exposure to CRE, as well as to conduct a targeted review of this particular sector.[148]

As the monitoring and quantification of the risks arising from the CRE market and the interconnection with the financial system are among the priorities of supervisory authorities, the European Systemic Risk Board (ESRB) had already issued in 2016 a relevant Recommendation[149] to the competent supervisory authorities. The Recommendation highlights the channels of interconnection of the real estate market (residential and commercial) and the resulting risks for financial

[144] According to international literature (see Asian Development Bank Institute 2009 – ADB Financial Crisis and Crisis Management in Sweden. Lessons for Today, Commercial properties and financial stability (riksbank.se)), the commercial real estate market has rarely, to date, been the sole trigger of financial crises, but has often amplified their impact. However, the banking crisis in Sweden in the early 1990s was largely caused by overvaluations in the commercial real estate market. In other crises, commercial real estate loans may not have been the trigger, but contributed significantly to the losses suffered by banks, most notably in Spain, Ireland and the US during the global financial crisis of 2007-08. Additionally, in all crises the NPL ratio was typically higher for commercial real estate than for residential real estate, as there is a greater incentive for strategic default and bankruptcy filings by commercial real estate businesses.

[145] The Joint Committee consists of the European Banking Authority – EBA, the European Insurance and Occupational Pensions Authority – EIOPA and the European Securities and Markets Authority – ESMA.

[146] Joint Committee Report on Risks and Vulnerabilities in the EU financial system (Sep. 2022).

[147] ECB Banking Supervision – Supervisory priorities for 2022 and ECB Banking Supervision: SSM supervisory priorities for 2023-2025.

[148] S. Darrieux, E. Banu, M.T. McDonald and C. Quintas (2022) "Commercial real estate: connecting the dots", ECB *Supervision Newsletter*, August.

[149] Recommendation of the European Systemic Risk Board of 31 October 2016 on closing real estate data gaps (ESRB/2016/14). The key objective of this Recommendation is to monitor developments in residential and commercial real estate markets, which are the most important segments of the real estate market for financial stability purposes, by establishing a harmonised framework at European Union level.

stability, while encouraging the national supervisory authorities to establish an appropriate supervisory framework for monitoring, collecting and processing relevant data. [150]

Finally, in January 2023, the ESRB published a second report[151] and another Recommendation[152] on the vulnerabilities of the CRE sector. The report found that the sector is vulnerable to cyclical risks related to higher inflation, tightening of financial conditions that limits the scope for refinancing outstanding debt and taking on new loans, as well as a sharp deterioration in the growth outlook following the Russian invasion of Ukraine. The sector is also vulnerable to structural changes, including the effects of policies related to climate change and sustainability, such as stricter building standards, as well as the spread of the use of new technologies, such as the shift to e-commerce. In addition, as a result of the pandemic, flexible work arrangements taking advantage of modern technology (e.g. remote and hybrid work) have become more widespread. These vulnerabilities can be amplified through the interconnections between financial institutions, as the CRE sector has strong interconnections with both the real economy and the financial system.

In this respect, in the recent post-COVID-19 period, several national supervisory authorities in Europe have implemented macroprudential policy measures to address the risks stemming from the CRE market (see Table 1).

Table 1 Macroprudential measures for commercial real estate (CRE) risks in EEA countries[153]

Abolished
Introduction
In place
Relaxation

Status	Measure	CY	CZ	DE	DK	FI	HR	HU	IE	IS	LV	NO	PL	RO	SE
Before ESRB 2019 assessment	CCyB									Introduction		Introduction			Introduction
	SyRB		Introduction			Introduction		Introduction				Introduction			
	Art. 124 - CRE RW						Introduction		Introduction		Introduction	Introduction	Introduction	Introduction	Introduction
	Exposure Limit				Introduction										
	LTV	Introduction											Introduction		
After ESRB 2019 assessment	CCyB									In place		In place			In place
	SyRB		Abolished	Introduction		Abolished		Abolished				In place			
	Art. 124 - CRE RW						In place		Abolished		In place	In place	Relaxation	In place	Abolished
	Art. 458 - CRE RW											Introduction			
	CRE RW (micro)														Introduction
	Exposure Limit				In place										
	LTV	In place											In place		

Source: ESRB Report on Vulnerabilities in the EEA commercial real estate sector January 2023.

Monitoring of the commercial real estate market – Initiatives in Greece

The Bank of Greece, in the context of its responsibilities for monitoring the systemic risks of the financial system and recognising the particular importance of the CRE market for the economy and its role in the smooth functioning of the financial system, early on placed emphasis on developing a mechanism for collecting and analysing primary data on activity in this market. In particular, it constructed Residential and Commercial Real Estate Indices, using the analytical information it regularly collects from all credit institutions, as well as from the Real Estate Investment

[150] In 2020, the Bank of Greece adopted the Recommendation of the European Systemic Risk Board of 31 October 2016 on closing real estate data gaps (ESRB/2016/14) by issuing Executive Board Act 175/1/2020.

[151] See ESRB Report on Vulnerabilities in the EEA commercial real estate sector, January 2023.

[152] Recommendation of the European Systemic Risk Board, of 1 December 2022, on vulnerabilities in the commercial real estate sector in the European Economic Area (ESRB/2022/9).

[153] A detailed description of prudential measures can be found on the Bank of Greece website, https://www.bankofgreece.gr/en/main-tasks/financial-stability/macroprudential-policy

Companies (REICs) operating in Greece.[154] The aim is, on the one hand, to systematically monitor CRE prices and rents, and on the other hand, to investigate other qualitative characteristics, such as returns on investment in the CRE market, i.e. data which are necessary for an informed analysis of developments and prospects in the market.

Moreover, in 2020 the Bank of Greece adopted the Recommendation of the European Systemic Risk Board of 31 October 2016 on the filling of data gaps relating to the real estate market (ESRB/2016/14) by issuing Executive Committee Act 175/1/29.07.2020. Pursuant to this Act, the Bank of Greece collects data on loan disbursements[155] collateralised by residential and commercial real estate on a quarterly basis, while all credit institutions and leasing companies are within the reporting perimeter. Moreover, data on CRE-related indebtedness and investment are to be submitted on a quarterly basis (flows) and on an annual basis (stocks), with reference date 31 December every year.[156]

In Greece, in recent years CRE prices have risen at a significantly lower rate than RRE prices. Furthermore, CRE prices remain significantly below the highs observed before the financial crisis (see Chart 3).

Chart 3 Price and rent indices for offices and retail property uses (percentage change, y-o-y)

Source: Bank of Greece

The rise in real estate prices over the past two years has been accompanied by a corresponding increase in the balance of CRE-related loans. In particular, according to data collected under Executive Committee Act 175/29.07.2020,[157] the outstanding amount of loans from banks and leasing companies in December 2022 stood at €20.8 billion, compared with €19.5 billion in December

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[154] These indicators have specific advantages, such as the official implementing body and the application of a modern methodology; timely and regular publication (press releases issued on predetermined dates); quarterly periodicity of residential real estate indices and half-yearly periodicity of commercial real estate indices; and country-wide coverage with the possibility of granular breakdown (e.g. by geographical area, type of use, age), etc. The above contribute to a more in-depth assessment of developments and prospects of the real estate market in our country, thus strengthening first of all the market itself.

[155] Under Executive Committee Act 175/1/29.07.2020, a commercial real estate loan is defined as "a loan granted to a legal person for the acquisition of an income-producing property (or group of income-producing properties), either existing or under development; or a property (or group of related properties) used by the owners for the purpose of conducting their business, purpose or activity, either existing or under construction ; or collateralised by a commercial property (or group of commercial properties)".

[156] Submissions for commercial real estate data began in January 2021.

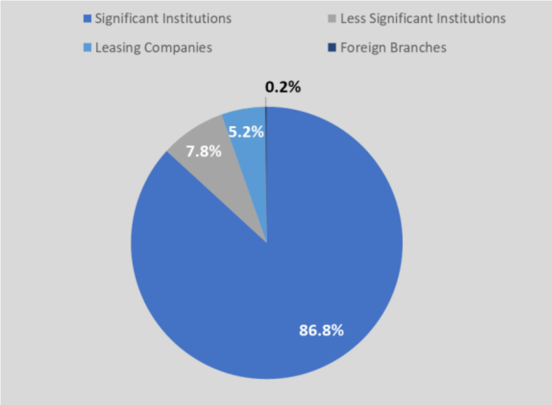
[157] Under Executive Committee Act 175/2020, to monitor CRE-related indebtedness and investment, the flows and stocks of the following indicators are taken into account: direct and indirect investment, investment valuation adjustments, loans (including real estate under development or construction), non-performing loans (including real estate under development or construction), loan-loss provisions (including real estate under development or construction).

2021, up by 6.7%. However, in 2022 the corresponding size of banks' and leasing companies' investments in CRE decreased to €2.9 billion, from €3.2 billion in 2021.

Credit institutions accounted for 94.8% of CRE lending, while leasing companies accounted for the remainder (see Chart 4). In addition, the loans granted mainly concerned retail premises and secondarily the other CRE categories (see Chart 5), while it is important to note that in 2022, 40.8% of all business loans concerned properties intended for own use.

Chart 4 Outstanding amounts for CRE-related loans –breakdown by credit provider (December 2022)

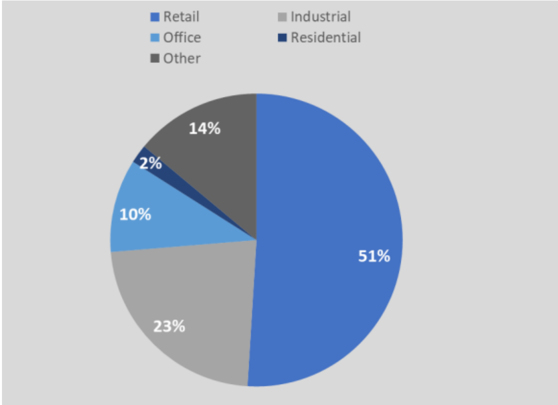
(%)



Note: Including commercial properties under development or construction.
Source: Bank of Greece.

Chart 5 Outstanding amounts for CRE-related loans –breakdown by type of property (December 2022)

(%)



Note: Including commercial properties under development or construction.
Source: Bank of Greece.

Conclusions

Heightened geopolitical concerns due to the continued war in Ukraine, soaring inflation and monetary policy normalisation are shaping a new macroeconomic and financial environment for the CRE market. The current strong interconnectedness between the CRE market, economic activity and the financial sector highlights the importance of strengthening the monitoring of this market and the risks stemming from the potential creation of cyclical systemic risks.

The systematic examination of the CRE market becomes even more important, as this particular market will be additionally affected by the policies adopted to deal with climate change, as well as by the broader structural changes taking place (e.g. the spread of remote working arrangements). The timely adoption and implementation of appropriate policies[158] by the competent supervisory authorities will contribute to a strengthening of the framework for monitoring the risks related to the CRE market and will further enhance the resilience of the financial system.

Overall, the exposure of the Greek financial system to CRE-related investment and loans[159] is close to the European average. At the same time, CRE prices at the current juncture, following the prolonged economic crisis, are still lower than the pre-crisis peak.

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[158] For micro- and macroprudential measures, see Special Feature III: "MACROPRUDENTIAL BORROWER-BASED MEASURES IN THE EUROPEAN UNION (EU): A STOCK-TAKING".

[159] The exposure of the financial system refers to either loans collateralised by CRE or loans granted purely for investment purposes, i.e. purchase of commercial real estate.

SPECIAL FEATURE II
EVOLUTION OF THE BANKING SECTOR STRUCTURE IN GREECE

Dimitrios. E. Chalamandaris

Anna Tsounia

Eugenie Garganas

The structure of the banking sector in Greece has changed significantly over the last decades. These changes are partly due to exogenous factors, such as the debt crisis and, more recently, the COVID-19 pandemic. The latter has disrupted the flow and conduct of social, economic and financial activity at global level, amplifying at the same time both short- and medium-term risks. The emergency of a new reality in the economic life of the country, along with the taking of unprecedented measures[160] for addressing the risks of the pandemic, has put pressure on the way banks operate, which, like the relationship with their partners and clients, has changed rapidly – and continues to change – in response to the conditions created by the pandemic. To this end, banks have embarked on a transformation – digital and strategic – in order to adapt to the new environment and meet the challenges they face, so as to ensure their soundness and profitability and their ability to finance the economy.

Additionally, the Bank of Greece, alongside other relevant authorities (such as the SSM, the ESRB and the EBA), has stressed that low or insufficient profitability is a challenge for banks and that there is a need to improve their efficiency through cost-cutting and income diversification in a changing environment with peculiar characteristics (e.g. a long period of negative interest rates, followed by successive key interest rate hikes, multiple impacts from the war in Ukraine, elevated inflation, etc.). As a result of the pandemic outbreak, however, and its prolonged duration, the SSM put further pressure on banks to take relevant actions so as to create synergies through mergers and acquisitions. Following the kick-off of the ECB key rate hike cycle in July 2022, the trend of low profitability of Greek banks has reversed. The gradual pass-through of these increases to Greek banks' lending rates, combined with strong credit expansion to non-financial corporations (until December 2022), boosted bank interest income.

In this context, the present analysis focuses on the evolution of the structure of the Greek banking sector using structural indicators, recording the main changes that have taken place over the last 25 years. It is worth noting that there is no ideal number of banks that should operate at country level, let alone a specific network size (e.g. number of branches/offices, employees, etc.). Moreover, given the role that banks play in the economy, the analysis also includes key indicators of

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[160] In Europe, the European Commission, the ECB, the Single Supervisory Mechanism (SSM) and national competent authorities have taken immediate monetary, supervisory, fiscal and other measures to contain the pandemic, protect citizens and mitigate the economic impact. A comprehensive list of the relevant measures to tackle the pandemic per country can be found by the reader at IMF, the World Bank and in particular the section relating to measures supporting the financial sector, the European Systemic Risk Board – ESRB, the Financial Stability Board – FSB and the European Banking Institute – EBI. Particularly informative about the measures of the competent authorities and the impact of the pandemic on the stability of the financial system are "*Pandemic Crisis and Financial Stability*" (2020), European Banking Institute Working Paper Series, edited by C. Gortsos and W.G. Ringe, and "*Financial Stability amidst the Pandemic Crisis: On Top of the Wave*" (2021), European Banking Institute, e-book series, edited by C. Gortsos and W.G. Ringe. In addition, the relevant measures of the Bank of Greece are described in the special feature "Prudential and regulatory measures for the financial system enacted in the context of the COVID-19 pandemic" (in Greek), Financial Stability Review, June 2021, p.p. 83-93

the capacity and degree of intermediation of the banking sector (e.g. total assets as a percentage of GDP). Finally, the structure of the Greek banking sector is compared to EU and euro area figures (size, risk, branch network/employees, business model, etc.), as a part of a comparative analysis with similar banking sectors.

Evolution of the banking sector structure in Greece

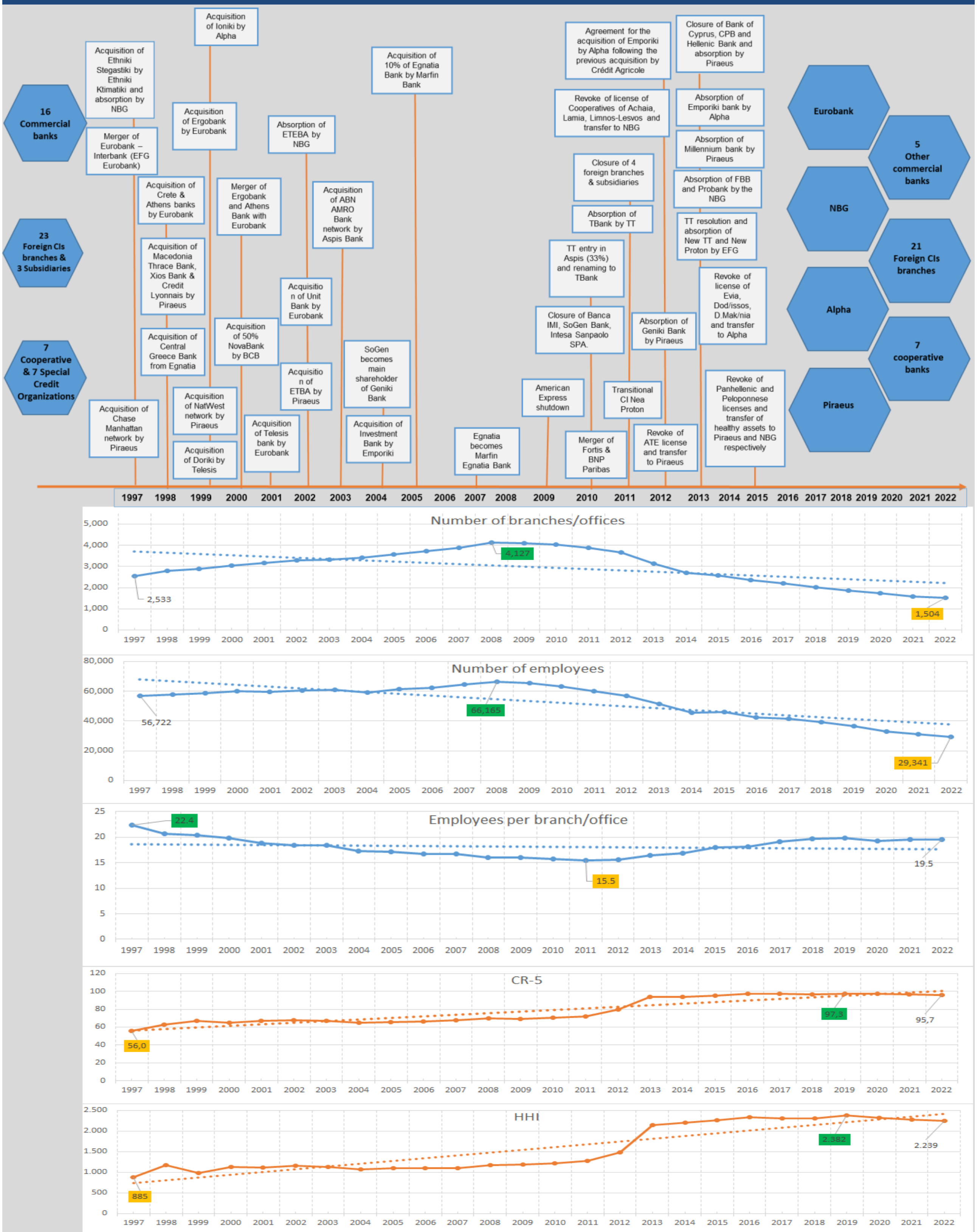
The Greek banking sector has been largely restructured over the last 25 years (1997-2022), which can be divided into two periods. In particular, after the liberalisation of the banking sector in the 1990s, there was a remarkable expansion of the banking sector in the decade 2000-2010, mainly due to strong credit expansion as a result of cheap financing at low interest rates. Subsequently, the collapse of Lehmann Brothers and the global financial crisis led to a major restructuring of the banking sector in Greece, which was intensified by the onset of the Greek debt crisis,[161] resulting in a gradual change of the relevant bank indices and figures. The aforementioned changes are reflected also in assets, number of banks, branch network, employed staff, concentration, etc.

Total assets and credit ratios as percentages of GDP have declined significantly since the beginning of the crisis compared to the 2000-2010 highs. In particular, ***total assets as a percentage of GDP*** declined mainly due to sales of assets and subsidiaries by banks and banking groups, as well as due to the strengthening of provisions to address the high stock of non-performing loans (NPLs), recording, however, significant fluctuations (e.g. from over 220% in 2011 to around 136% in 2018). In 2022, nominal GDP was 17% lower than in 2008. ***Total credit to the economy from credit institutions as a percentage of GDP*** has been declining almost continuously since 2011 (from 152% in 2011 to 77% in 2022). This reduction is linked to various credit containment factors (e.g. pressures on banks' liquidity, deterioration of borrowers' financial situation), especially in the first years after 2011, as well as to the consolidation of banks' loan portfolios and loan transfers/sales in general (e.g. in 2020-2021 the outstanding balance of credit decreased due to loan sales).

The banking sector structure is significantly different from what it was before the debt crisis, as fewer banks are operating today. In order to better understand the changes that took place in the banking environment and shaped the current picture, the evolution of the structure of the banking sector in the period 1997-2022 is described (see Chart 1) and the main changes are highlighted on the basis of specific structural indicators on a solo basis (see graphs at the lower part of the chart).

[161] See *The Chronicle of the Great Crisis. The Bank of Greece 2008-2013* (2014) .

Chart 1 Evolution of the structure of the banking sector in Greece and related indicators (1997-2022)



Source: Bank of Greece own calculations, ECB SDW/SSI and Hellenic Bank Association.
Note: The above dates of mergers/acquisitions do not cover all transactions in the sector, as most acquisitions - holdings of less than 50% are not included (e.g. acquisition of 10% of Eurobank by the German Deutsche Bank in 1999, acquisition of 6.7% of Emporiki by the French Crédit Agricole in 2000, etc.). On 4.2.2023, the authorisation of Olympus Cooperative Bank waswithdrawn and the credit institution went into special liquidation.

The numbers on green and orange backgrounds refer respectively to the peaks and troughs between 1997-2022 of each series. A dashed trendline is included in each chart.

During the 25-year period under review, the structure of the banking sector in Greece changed significantly also in terms of credit institution (CI) categories. Specifically, in 2022, 4 significant institutions (SIs), 11 less significant institutions (LSIs), including 7 cooperative banks, as well as 21 foreign branches are active in Greece (compared with 16 commercial banks, 23 foreign CI branches, 3 subsidiaries of foreign CIs, 7 cooperative and 7 special credit organisations in 1997). In this context, domestic CIs' market shares remained high, although they fluctuated at times (e.g. from around 78% in 2008 to almost 99% in 2022), while another notable development was the exit of foreign credit institutions through the sale of bank subsidiaries and branches established in Greece.

Throughout the period 1997-2022, the trend of all indicators is negative, with the exception of the concentration indicators (orange lines in the graphs). In more detail, the ***branch network*** expanded during the period 1997-2008, but has been shrinking significantly during the last decade, reaching a trough of 1,504 in 2022, down by 64% from the 2008 peak of 4,127. The ***number of employees*** in the sector followed a similar path, from a peak of 66,165 in 2008 to a trough of 29,341 in 2022 (down by approximately 35,000). The ***number of employees per branch/office*** stands at 19.5 in 2022, marginally increasing in recent years, as staff reductions and branch/office reductions took place at different pace. The voluntary exit programmes implemented by banks in recent years, combined with staff relocations in the context of the sale of NPL portfolios, have contributed significantly to the reduction of the sector's workforce. In particular, in recent years, the clean-up of Greek banks' balance sheets from the high stock of NPLs has been reflected both in the number of branches/offices and employees and in the balance sheet figures of Greek banks, reflecting the ongoing restructuring of the sector.

		Number of branches/offices	Number of employees	Employees per branch	CR5	HHI
1997-2022	**average**	2,961	52,736	18.1	78.4	1,577
	median	3,077	58,202	18.3	70.1	1,199
	min	1,504	29,341	15.5	56.0	885
	max	4,127	66,165	22.4	97.3	2,382
2018-2022	**average**	1,734	33,915	19.6	96.6	2,304
	median	1,723	33,095	19.6	96.8	2,304
	min	1,504	29,341	19.2	95.7	2,239
	max	2,003	39,383	19.8	97.3	2,382

Concentration in the banking sector in Greece has significantly increased over the last decade, as evidenced by the relative *indicators of the cumulative share of the five largest banks (CR5) and the Herfindahl-Hirschman Index (HHI),*[162] which are among the highest in Europe. In particular, all structural indicators (e.g. assets-to-GDP, number of banks, branch network and staff employed) of the Greek banking sector declined significantly over the last decade, with the exception

[162] The Herfindahl-Hirschman Index (HHI) shows the level of concentration of the banking sector (based on total assets). It is calculated by adding the squared value of market shares of all credit institutions in the banking sector and ranges between 0 and 10,000.

of concentration ratios (CR5 and HHI), which peaked in 2019. The resolution of 13 credit institutions, the sale of Cypriot banks' branches, as well as the withdrawal from Greece of foreign credit institutions (e.g. the sale of Emporiki Bank), contributed to this change. Moreover, the relevant structural indicators (assets/GDP, number of banks, branch network and staff employed) for Greece are either below or around the median of the respective EU level /indicators (see Box I).

During the period 2018-2021, in which the impact of the pandemic is included, a remarkable change took place with regard to the use of electronic transaction channels. In particular, there is a significant decrease in both branches/offices and employees, with a simultaneous increase in both ATMs (5,733 in 2021 from 5,601 in 2018[163]) and POS machines in Greece by 23% (836,619 in 2021, compared with 677,628 in 2018), and in the number of POS transactions in Greece with cards issued in Greece (by 116%: 1,147,833 in 2021, from 530,328 in 2018). This fact, combined with the increase in the number of transactions outside branches (e.g. online, e-banking, phone-banking), is an important indication of the transition to a more digital banking, compared to the previously prevailing banking practice of "transactions with physical presence".

Box 1 Evolution of the banking sector structure in Europe

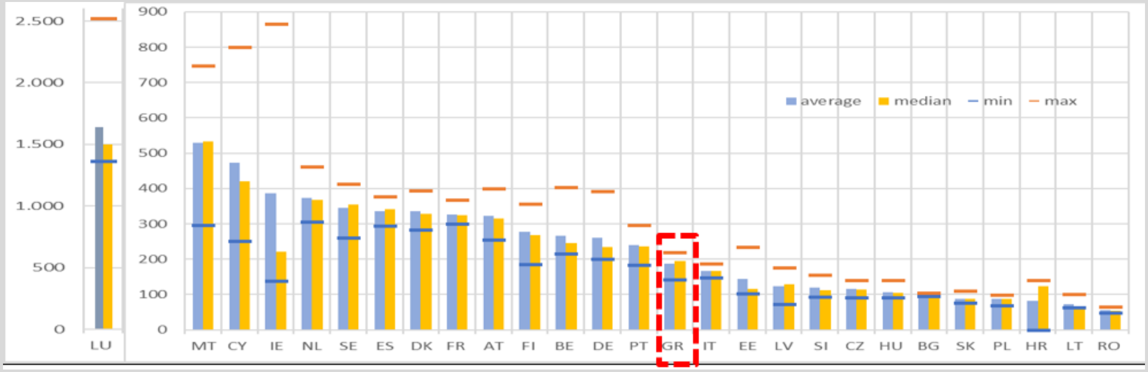
The structure of the banking sector in Europe differs significantly across EU Member States in terms of total assets to GDP, number of employees, branches/offices and market concentration. However, the general trend of changes that have taken place in recent years is similar to the picture observed for Greece, albeit to a different extent and with some exceptions between countries. Total banking assets in the EU and the euro area as a percentage of GDP have declined significantly since 2008, showing considerable heterogeneity across countries. Significant differences between EU Member States can also be observed in the banking sector structure in terms of shares held by domestic credit institutions, subsidiaries and branches of foreign credit institutions, which have changed significantly since 2008. It is worth noting that – since 2015 – European banks have been operating within the Banking Union with two Pillars (Single Supervision and Resolution – SSM and SRB) fully implemented.

With the exception of Luxembourg, where the banking sector is disproportionately large in terms of assets relative to the size of the economy (average value 1,643% between 2008 and 2021), the total assets of the banking sector as a percentage of GDP in the EU are comparable across most Member States. The average value over the period 2008-2021 ranges between 56% (Romania) and 529% (Malta).[164] The corresponding figure for Greece is 187%, close to the sample median and similar to Belgium, Germany, Portugal and Italy (see Chart a).

[163] See ECB SDW. According to the World Bank, the number of ATMs per 100,000 adults in Greece has been gradually increasing since 2015 and stands at 64.1 in 2021 – close to the median for euro area and EU countries (62.7).
[164] It is worth noting that the corresponding figure for the US banking sector has been around 95% over time.

Chart a CIs' total assets as a percentage of GDP (2008 -21)

(%)

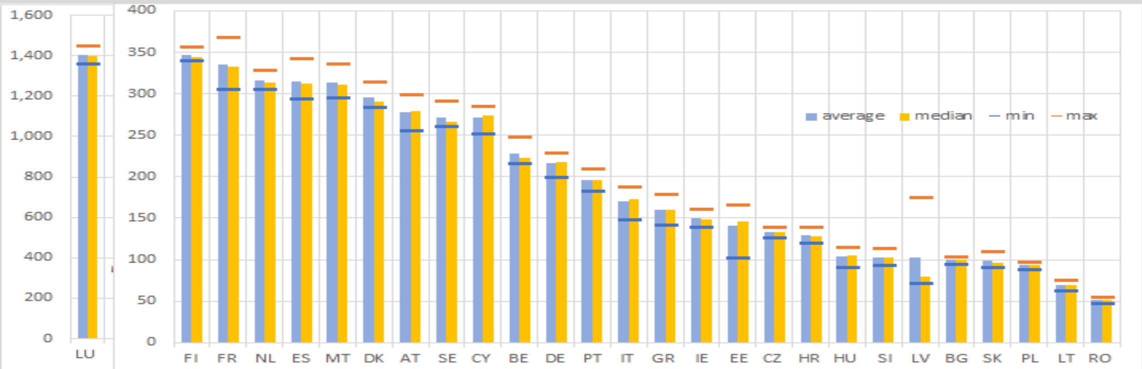


Source: ECB SDW/derived data.

In 2020 and 2021, total assets to GDP seem to recover, largely due to the rapid deterioration of the economy as a result of the pandemic, despite the marginal growth in total assets as a result of the ECB's quantitative easing program (see Chart b).

Chart b CIs' total assets as a percentage of GDP (2018 -21)

(%)

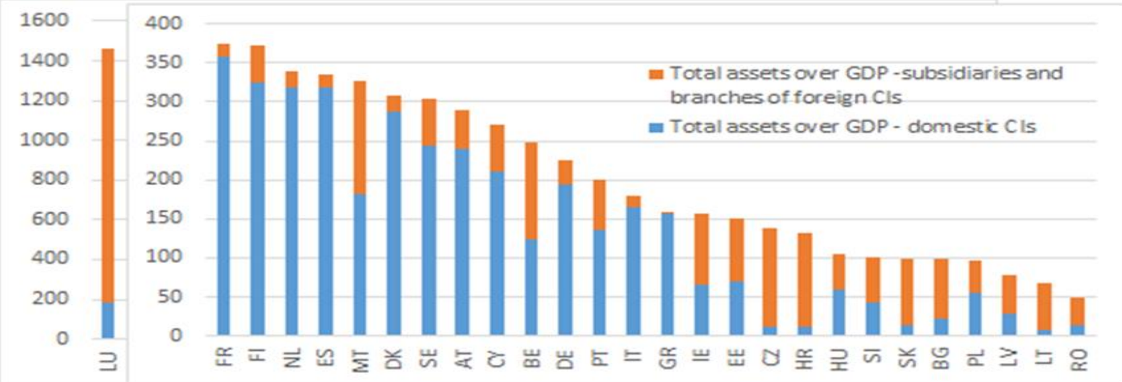


Source: ECB SDW/derived data.

In 2021, the total assets of the banking sector as a percentage of GDP in the EU – with the exception of Luxembourg – ranged between 55% (Romania) and 352% (France). The corresponding figure for Greece is close to the sample median and similar to Italy and Latvia (see Chart c). Of the 179 percentage points in GDP terms, less than 3 percentage points concern the total assets of subsidiaries and branches of foreign CIs (the lowest in the EU). For 11 of the 27 EU Member States (LU, LV, HR, CZ, SK, LT, BG, RO, IE, EE, SI), the assets of subsidiaries and branches of foreign CIs account for the largest share of banks' total assets as a percentage of GDP. For the other 16 Member States, the total assets of domestic CIs account for the largest share of total assets as a percentage of GDP, ranging between 9% and 99%. For only 6 Member States the total assets share of domestic CIs and the total assets share of the subsidiaries and branches of foreign CIs are comparable (i.e. between 40-60%), while in all other cases the share for one of the two categories is significant.

Chart c CIs' total assets as a percentage of GDP (2021)

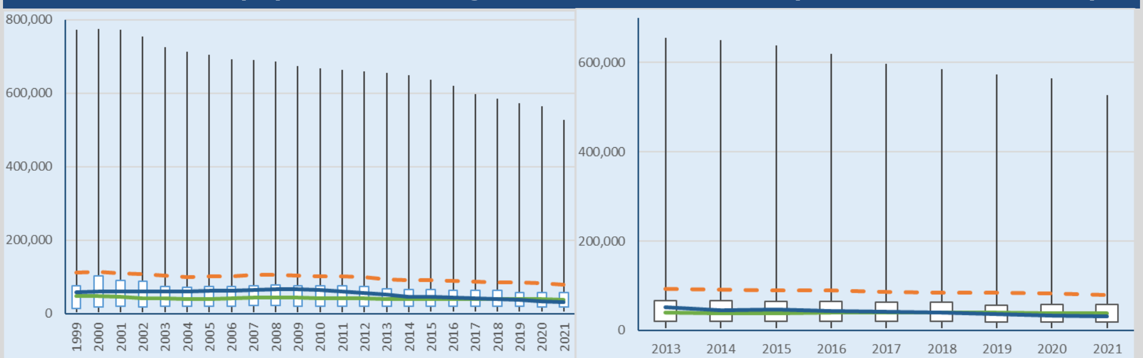
(%)



Source: ECB SDW/derived data.

The number of employees in the banking sector in the EU has been declining since 2008, with an average of 79,499 in 2021 (from a peak of 112,892 in 2000). In 2021, in 5 countries the number of employees is a multiple of 50,000 employees, while in 11 countries the figure is less than 30,000. The fact that the median is significantly below the mean and the distance between the maximum (e.g. top-3: DE, FR, IT) and the minimum (e.g. bottom-3: EE, MT, LV) of the sample remains particularly high during the years 1999-2021 demonstrates the high degree of heterogeneity between Member States as regards this metric (see Chart d) due to *significant idiosyncratic characteristics (e.g. geographical area, population etc.)*. In Greece, the number of employees in the banking sector is well below the EU average, as well as the median after 2017. The number of employees in domestic CIs in Greece in 2021 is 31,028, close to Ireland, the Czech Republic, Denmark, Bulgaria and Luxembourg. The average annual rate of change in the number of employees for the period 1999-2021 stood at -2.7% and -1.4% for Greece and the EU respectively. The average annual rate of decline for the period 2013-2021 was significantly higher in Greece, reflecting an acceleration in the trend of staff reduction (-5.4% and -1.8% for Greece and the EU respectively). The trend of the two series – number of employees in the banking sector for Greece and average figure for the EU – is similar.

Chart d Number of employees in the banking sector in the EU and Greece (1999-2021 and 2013-2021)

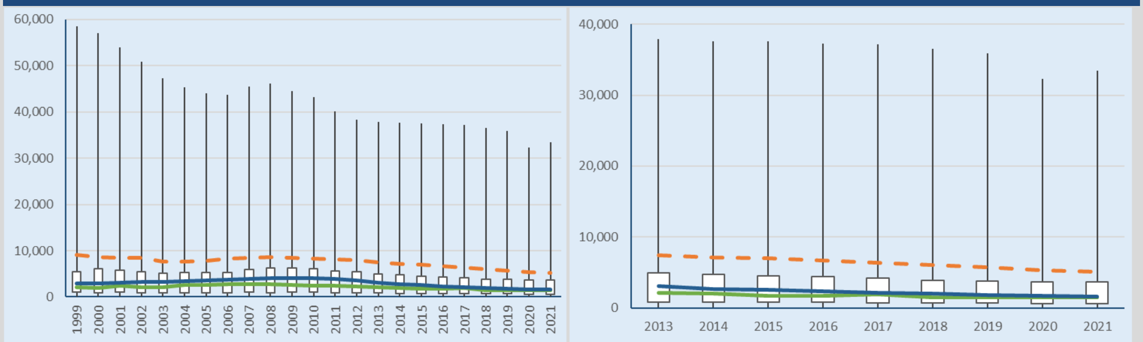


Source: ECB SDW/SSI.

Note: **min/max, 1st/3rd quartile (box), average (orange dashed line), median (green line), Greece (blue line).** The left-hand graph refers to available data for the period 1999-2021, with data for some countries being available after 2003 (e.g. Bulgaria, Romania and Croatia). The right-hand graph refers to the period 2013-2021, for which data are available for all EU Member States. 25% of the observations of the number of bank employees in the EU per year are below the value of the low line of the relevant box chart and 75% of the observations are above the value of the high line of the box area.

The number of branches/offices has been decreasing since 2008 and the average value stands at 5,122 in 2021 (from a peak of 9,029 in 1999). In 2021, in 5 countries the network of bank branches/offices is a multiple of 5,000, while the number of branches/offices in 12 countries is less than 1,000. The number of branches/offices in Greece in 2021 is 1,565, similar to Belgium, Hungary, the Czech Republic and Sweden. As in the previous case for the number of employees, the fact that the median is significantly below the mean and the distance between the maximum (e.g. top-3: FR, DE, IT) and the minimum value (e.g. bottom-3: EE, LV, MT) of the sample remains particularly high during the years 1999-2021 demonstrates the high degree of heterogeneity across Member States (see Chart e)

Chart e Number of bank branches/offices in the EU and Greece (1999-2021 and 2013-2021)



Source: ECB SDW/SSI.

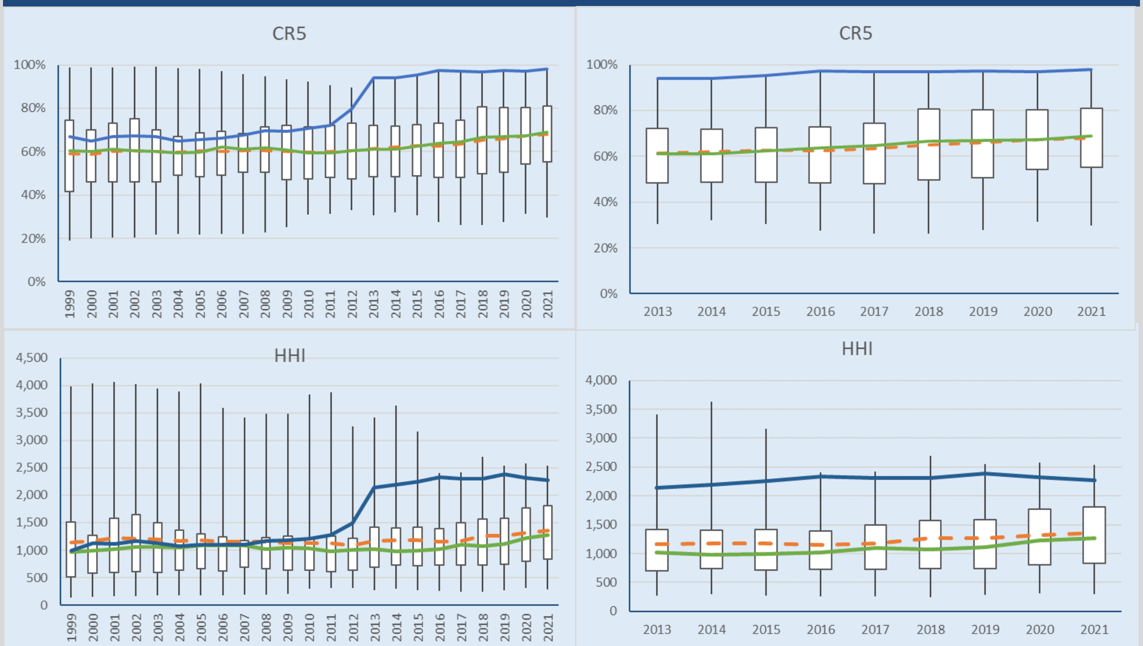
Note: **min/max, 1st/3rd quartile (box), average (orange dashed line), median (green line), Greece (blue line).** The left-hand graph refers to available data for the period 1999-2021, with data for some countries being available after 2003 (e.g. Bulgaria, Romania and Croatia). The right-hand graph refers to the period 2013-2021 for which data are available for all EU Member States. 25% of the observations of the number of bank employees in the EU per year are below the value of the low line of the relevant box chart and 75% of the observations are above the value of the high line of the box area.

The average annual rate of change in the number of branches/offices for the period 1999-2021 stood at -2.6% and -2.4% for Greece and the EU respectively. The average annual rate of decline for the period 2013-2021 was significantly higher in Greece, reflecting the acceleration observed in the trend of branch network reduction (-7.4% and -4.0% for Greece and the EU respectively). For Greece, the number of bank branches/offices is well below the average value of the corresponding aggregate in the EU and around the median throughout the period 1999-2021, with the trend of the two series – number of branches/offices for Greece and average value for the EU – being similar. According to the World Bank,[165] the number of branches/offices per 100,000 adults in 2021 for Greece (16.8) coincides with the median for euro area countries (close to the level of Austria and Ireland).

The concentration of the banking sector has been increasing in Europe, mainly since 2012, with the average CR5 ratio standing at 67.8% in 2021 (all-time high, from a trough of 58.6% in 2000). The median of this indicator almost coincides with the mean, while the distance between the maximum (e.g. top-3: GR, EE, LT) and the minimum (e.g. bottom-3: LU, DE, IT) of the sample remains high over the period 1999-2021, demonstrating a high degree of heterogeneity across Member States (see Chart f).

[165] See World Bank Data.

Chart f Banking market concentration ratios – cumulative share of the five largest banks (CR 5) and Herfindahl-Hirschman Index (HHI) – in the EU and Greece (1999-2021 and 2013-2021)



Source: ECB SDW/SSI.

Note: **min/max, 1st/3rd quartile (box), average (orange dashed line), median (green line), Greece (blue line).** The left-hand graph refers to available data for the period 1999-2021, with data for some countries being available after 2003 (e.g. Bulgaria, Romania and Croatia). The right-hand graph refers to the period 2013-2021 for which data are available for all EU Member States. 25% of the observations of the number of bank employees in the EU per year are below the value of the low line of the relevant box chart and 75% of the observations are above the value of the high line of the box area.

Overall, the level of concentration of the banking sector in the EU appears high, with a few large banks having significant market shares, despite variation across EU Member States.[166] In 2021, in 8 EU countries the cumulative market share of the 5 largest credit institutions per country (CR5) exceeds 80%, while in only 4 countries (Germany, France, Austria and Luxembourg) it is less than 50%. These indicators for the Greek banking sector are among the highest in Europe in 2021. The CR5 ratio for Greece is higher than the average and median value for the EU throughout the period 1999-2021, while from 2013 onwards CR5 in Greece is the highest among EU Member States.

An analysis of the HHI index for EU countries leads to similar conclusions, as its average stands at 1,270 in 2021 (all-time high, from a trough of 971 in 1999). The median of this indicator is below the mean, while the distance between the maximum (e.g. top-3: EE, CY, GR) and the minimum (e.g. bottom-3: DE, LU, FR) of the sample remains high over the period 1999-2021, demonstrating a high degree of heterogeneity across Member States as regards this metric (see Chart e). The HHI index for Greece has been above the average and median value for the EU since 2008, while since 2013 it has remained consistently high and among the highest in the EU. The trend of concentration of the sector, as reflected by the evolution of the CR5 and HHI indices, is significantly stronger in Greece than on average in the EU.

[166] Looking at the concentration of the banking market in selected non-EU countries (source: World Bank database), in 2021 CR5 stands at (i) 84.2% in Switzerland, remaining over 80% since 2000; (ii) 54.2% in China, almost unchanged since 2014 (in 2013 it was 100%); (iii) 60% in the UK, unchanged since 2018, having declined from around 75% in the 2007-2017 period; and (iv) 50% in the US, gradually declining since 2015.

In conclusion, the structure of the banking sector in Europe changed significantly over the period 2008-2021. The global financial crisis and the pandemic seem to have had a significant impact in this direction. In 2021, the levels of most structural indicators for the Greek banking sector are below the median of EU countries, with the exception of the number of branches/offices index, which is marginally higher than the median of EU countries, and concentration indicators, which are among the highest in Europe.[167]

Restructuring policies in the banking sector – trends and prospects in Europe

The ECB and the SSM – in the context of the Banking Union – have repeatedly stressed the need to restructure the banking sector in Europe, reiterating more emphatically this recommendation due to the pandemic and, more recently, the war in Ukraine. This can be achieved in, mainly, two ways:

First, the digital and strategic transformation of the operation of credit institutions and the services provided through the use of fintech products and policies/practices. Greek banks have taken important steps in this direction and plan to further digitalise their services and operations (e.g. payments and lending); integrate their systems into electronic platforms; and adopt innovative technologies.

Second, with a view to achieving sustainable and adequate bank profitability – as a key factor in absorbing unexpected shocks and risks to financial stability – it is estimated that restructuring the sector through mergers, acquisitions or strategic partnerships will enhance the soundness of the financial system. It is necessary, however, that the competent authority monitors closely and credit institutions manage effectively the execution risks stemming from banks' restructuring plans, mergers and acquisitions.

Recognising the significant differences – even idiosyncratic – that determine the structure of the banking sector across European countries, calls from the ECB and others bodies, as mentioned above, have further intensified with the unfolding of the pandemic crisis. This includes the ECB Guide on the supervisory approach to consolidation in the banking sector , which was launched for consultation in summer 2020 and published in January 2021 (see Box 2).

Box 2 ECB Guide on consolidation in the banking sector within the Single Supervisory Mechanism (SSM)[168]

Transactions leading to consolidation[169] are generally initiated and executed by market participants with the goal of optimising their opportunities by forging new combinations of existing business activities. Consolidation transactions are also scrutinised by the prudential supervisor to make sure that the resulting business combination complies with prudential requirements and ensures effective and prudent risk management.

[167] Calculating the average and standard deviation for each indicator in the sample with all EU countries (excluding the UK) and the euro area, the z-score for the Greek banking sector for both 2021 and 2014-2021 is estimated. Z-score values are negative for all sub-indices, indicating a faster decline than the average rate of change in EU countries, except for concentration indicators for which they exceed one.

[168] Following the public consultation in October 2020, the ECB published in January 2021 the *Guide on the supervisory approach to consolidation in the banking sector*. It should be noted that this Guide does not establish new regulatory requirements, and the specifications and principles it sets out should not be construed as legally binding rules.

[169] The term "consolidation" in this Guide means "*any business combination of pre-existing independent legal entities that is relevant from the perspective of prudential supervision of institutions by the SSM, including mergers between institutions and acquisition by one institution of another institution, but excluding intra-group transactions*".

With this Guide, ECB Banking Supervision intends to clarify, within the current regulatory framework, the principles underpinning the prudential supervisory approach it follows when determining whether the arrangements implemented by a credit institution resulting from a consolidation ensure the sound management and coverage of its risks.[170] This will increase its transparency vis-à-vis the market by helping stakeholders understand the supervisory expectations aimed at ensuring the safety and soundness of credit institutions resulting from a business combination, particularly when it comes to mergers and acquisitions of supervised entities, so as to help credit institutions design prudentially sustainable projects.

The approach taken is founded on the baseline case whereby a bank subject to the Single Supervisory Mechanism (SSM) intends to acquire the control of another bank subject to the SSM. These principles remain valid – with the necessary adaptations – in all other cases.[171]

A case-by-case approach based on proportionality in the application of these principles should be expected. The principles laid out in this document are intended to serve as a starting point for ad hoc supervisory decisions, which will be tailored to the specificities of each transaction.

The Guide covers the following thematic areas:

1. ***The overall approach to the supervisory assessment of consolidation projects***, listing the objectives and procedure. The objectives relate to the viability of the newly combined entity and the fulfilment of all prudential requirements.
2. ***The supervisory expectations regarding consolidation projects of banks and companies in the financial sector***. The Guide contains the elements of a credible and comprehensive business plan at group level as well as the process for assessing the viability of the business plan and strategy by the supervisory authority (ECB). The governance and risk management framework of the new entity is expected to be guided by the principles set out in the European Banking Authority (EBA) Guidelines on internal governance (EBA/GL2017/11) and to be adapted in order to manage possible integration challenges.
3. ***The supervisory approach to key prudential aspects of the consolidation transaction, namely (i) the communication of the supervisory*** approach that the ECB intends to apply to stakeholders; (ii) the post-merger Pillar 2 capital requirements (P2R and P2G); (iii) the prudential treatment of goodwill/badwill;[172] and (iv) the transitional arrangements for the use of internal models for assessing capital requirements.[173]

[170] Macroprudential matters are not within the scope of this Guide. However, consolidation may also concern macroprudential policy, in particular designation of other systemically important institutions and global systemically important institutions and corresponding buffer levels.
[171] Business combinations of banks subject to the SSM include: (i) mergers of two entities supervised by the SSM; and (ii) proposed acquisitions of one entity supervised by the SSM by another entity under the same supervisory regime.
[172] The supervisory approach for calculating the ex post merger of P2R and P2G will be determined by two key principles: (a) a thorough assessment and mitigation of the main weaknesses of the combined entity and execution risk in the business plan and (ii) an appropriate level of Pillar 2 capital, which is aligned with the risk profile of the combined entity. In addition, the ECB will coordinate with competent authorities when necessary (e.g. SRBs, relevant macroprudential authorities, etc.)
[173] Since a business combination transaction may result in the generation of goodwill or badwill, the supervisory approach with regard to badwill is based on the recognition of the accounting value of badwill, and then on an assessment of the availability of equity to cover potential losses.

4. ***The ongoing supervision of the newly combined entity***, focusing on enhanced monitoring of execution risks for a limited time span and fostering the swift convergence of the newly combined entity with standard supervisory activities.[174]
5. ***The application of this framework to consolidation transactions involving less significant institutions (LSIs).***

The growing challenges for banks in Europe may lead to further consolidation in the wider financial sector, both within a country's territory and at cross-border level. To this end, the completion of the Banking Union, as well as smaller legislative changes, can support cross-border restructuring, increase the efficiency of euro area cross-border banking groups and contribute to the international competitiveness of the European economy as a whole.[175]

Conclusions

The successive crises over the past fifteen years – combined with the new institutional framework and the establishment of the two pillars of the Banking Union – have had a significant impact on the shape of the financial sector in Greece and Europe. In particular, the structure of the banking sector, the way services are provided through branches and other channels, as well as the activity of foreign credit institutions through subsidiaries and branches have changed significantly.

The analysis of the relevant indicators for Greece illustrates that, with the exception of the concentration indices (CR5 and HHI), which peaked in 2019, all other indicators have declined significantly over the last decade, and more strongly than in other countries in Europe. In 2021, the relevant structural indicators for Greece are either lower or close to the sample median.

Although the potential for mergers between large banks in Greece is small, enhancing competition is both an important priority and a challenge for the Greek banking sector. Despite the contraction of foreign banks' activity in Greece in previous years, a revival of interest cannot be ruled out, as Greece is expected to obtain investment grade from credit rating agencies as a result of the continuous improvement of the Greek economy recently. A typical example is the recent entry of J.P. Morgan into the Greek market through the acquisition of a qualifying holding in the Viva Wallet Group.

Moreover, one cannot exclude mergers/partnerships between smaller banks in the context of their balance sheet clean-up, as well as a restructuring of banks' activities to enhance their profitability and reduce their operating costs.

Both large and smaller banks should move towards enhancing competition and improving financial ratios by investing significantly in new technologies, further digitalisation of services and new innovative products.

[174] Acknowledging that the benefits and synergies of consolidation may take time to materialise and that consolidation transactions also involve some risks, the ECB considers it crucial to monitor the implementation of the integration plan and to take action where justified. The enhanced monitoring framework includes: (i) specific reporting requirements for the combined entity (e.g. progress made and issues encountered in the implementation of the integration plan); (ii) a clear and detailed plan for the ECB to include a new entity in its supervisory activities (e.g. conducting SREP), and (iii) supervisory measures under the ECB's supervisory powers to address risks not covered by Pillar 1.

[175] See "Enhancing banking consolidation without major legislative change in Europe; contribution by E. McCaul, Member of the ECB Supervisory Board, Eurofi Magazine, February 2022".

SPECIAL FEATURE III
MACROPRUDENTIAL BORROWER-BASED MEASURES IN THE EUROPEAN UNION (EU): A STOCK-TAKING

Katerina Lagaria

This Special Feature discusses borrower-based measures (BBMs), a subcategory of macroprudential policy measures targeting borrower indebtedness and applied at the level of borrowers. It presents the general background for and main types of BBMs, analyses the relevant legislative framework in Greece and, finally, provides an overview of measures used by the other EU Member States.

1. General background

Macroprudential policy is largely a national competence of EU Member States aimed at safeguarding the stability of the financial system as a whole. Over the past decade, national authorities responsible for conducting macroprudential policy[176] have been equipped with a number of tools to prevent and mitigate systemic risks (macroprudential toolkit),[177] which can be used at system level or for one or more of the system's subsets.

Borrower-based measures may be used by national designated authorities (NDAs) in the EU to address systemic risks stemming from the real estate sector. They are extensively used in many Member States,[178] subject solely to national legislative provisions.[179] They may apply to loans to natural and/or legal persons secured by residential and/or commercial real estate,[180] as defined in the respective national legal order.

The purpose of borrower-based measures is to prevent or mitigate the build-up of systemic risks stemming from the property market and related to private sector (household or business) financing. They pertain to new loans, as they impose caps that need to be taken into account in credit providers' loan origination policies. In this manner, they help prevent excessive easing of credit standards and strengthen borrower, and thereby lender, resilience.[181] The impact of these measures on the total stock of loans comes with a time lag, as they pertain to newly originated loans and thus only gradually affect the stock of loans.

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[176] National designated authorities, as defined in Article 136(1) of Directive 2013/36/EU on capital requirements.

[177] Systemic risks in each Member State differ in terms of type, intensity and duration/frequency, as they reflect the different phases of the credit, financial or economic cycle in each jurisdiction and the heterogeneity of Member States' financial systems and economies.

[178] Several international studies have found that borrower-based measures are extensively used worldwide. See Borio et al. (2022), "Macro-financial stability frameworks: experience and challenges", BIS Working Papers No 1057, presenting data for the period 1995-2020; Bank for International Settlements (BIS), "Annual Economic Report 2018", June 2018, presenting data for the period 1995-2018; and International Monetary Fund (IMF), The IMF's Annual Macroprudential Policy Survey – Objectives, Design and Macroprudential Policy Responses", April 2018, presenting data for the year 2018.

[179] As opposed to macroprudential policy measures such as capital buffers which have been agreed at international level in the context of the "Basel III" regulatory framework and transposed at European level into the provisions of Articles 128-140 of Directive 2013/36/EU, and macroprudential measures consisting in adjustments to risk weights for exposures secured by real estate property under Articles 124, 164 and 458 of Regulation (EU) No 575/2013.

[180] Certain countries also apply BBMs to consumer loans secured by real estate property, vehicles or securities.

[181] BBMs mitigate borrower indebtedness and therefore strengthen the resilience of both borrowers and their lenders indirectly and over the medium term, as they improve the risk parameters for new loans. In comparison, macroprudential capital-based measures applied at the level of credit providers improve their resilience directly (by means of e.g. higher capital requirements). As a result, BBMs are not appropriate *per se* for addressing loan supply issues.

More broadly, they may help prevent procyclicality between property-backed lending and property prices,[182] which has historically been associated with financial shocks.[183] More specifically, by affecting the demand for new loans, borrower-based measures may slow credit growth and concurrently contain overvaluation in house prices (housing bubbles). By mitigating and preventing excessive credit growth and leverage, borrower-based measures strengthen the resilience of the property market, in particular, and the financial system, in general.

It is exclusively up to the national authorities designated for this purpose[184] to activate and calibrate the macroprudential measures that they deem to be most appropriate for the macroeconomic and financial conditions in their jurisdiction.[185] Borrower-based measures are often used in response to the accumulation of cyclical systemic risks in the domestic property market, particularly during periods of excessive credit growth.[186] In some countries they are enacted irrespective of the phase of the financial/credit cycle and are adjusted regularly (e.g annually) [187] in line with the risk analysis of the Member State's macroprudential authorities.

As far as their legal form is concerned, borrower-based measures may take the form of recommendations or guidelines addressed to credit providers or may be issued as legally binding and enforceable legislative provisions, depending on the legislative and regulatory practices of each Member State and the structure of the financial system in its jurisdiction. The competence to adopt borrower-based measures arises from a general legislative mandate (e.g. an article in a banking law)[188] or a statutory provision (e.g. an article in the central bank's statutes) [189] assigning the national designated/competent authority with the responsibility to introduce BBMs. On the basis of such a mandate, the designated authority may issue an act setting out the detailed features of the measures, i.e. their content, material scope, credit providers which must apply the BBMs (personal scope), as well as their duration.

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[182] In the upward phase of the credit cycle, exuberance may lead to higher demand for mortgage loans from riskier borrowers, resulting in loan volume growth against the background of relaxed credit standards and creditors being more willing to take on higher levels of risk. House prices may subsequently surge, thus further accelerating credit expansion, creating a feedback loop. See IMF, "Staff Guidance note on macroprudential policy – detailed guidance on instruments", December 2014, p. 32.

[183] The serious negative consequences for financial stability and the real economy of a sudden correction in property market prices have been highlighted in previous crises. See Reinhart, C. M. and K. Rogoff (2009), "This time is different", pp. 142 and 158-162. More specifically, a sudden drop in house prices has been associated with credit shocks, while high debt levels for the private sector may stifle consumer spending and thus hit tax revenues in a crisis.

[184] By contrast, macroprudential capital buffers are part of a European macroprudential framework, based on the (international) Basel regulatory framework and EU legislative provisions (Regulation (EU) No 575/2013 and Directive 2013/36/EU, as transposed in national legal orders).As regards the countries of the Banking Union in particular, they are also subject to the responsibility of the European Central Bank (ECB), which may apply higher requirements for capital buffers than applied by the national competent authorities, if deemed necessary (ECB top-up power).

[185] The choice of measures implemented also reflects the practices in each country's property market.

[186] In certain cases only, measures have been put in place in the wake of crises, see Committee on the Global Financial System (CGFS), "Macroprudential instruments and frameworks: a stocktaking of issues and experiences", CGFS Papers No 38, May 2010, p. 11.

[187] E.g. Ireland and the Netherlands.

[188] In Greece, Law 4261/2014.

[189] In Cyprus, the competence for macroprudential measures arises from Article 47A(6-7) of the Central Bank's statutes.

2. Types of macroprudential borrower-based measures

Macroprudential borrower-based measures ought to be tailored to each Member State's economic and financial conditions in order to help prevent the accumulation of systemic risks stemming from the property market and private-sector financing.[190] If designated authorities identify vulnerabilities in specific areas of the property market, borrower-based measures may be especially targeted to these areas. As a rule, they apply to the domestic financial system, i.e. institutions incorporated in the Member State's jurisdiction as well as branches of institutions incorporated outside its jurisdiction, in order to level the playing field and prevent cross-border leakages and regulatory arbitrage.

Borrower-based measures typically take the form of caps on ratios based either on the value of the property used as collateral for the loan/credit (value-based ratios) or on the income of the borrower (income-based ratios). These two main categories of borrower-based measures (see Table 1) are complementary and are often used in tandem by national designated authorities to achieve targets with greater efficiency.[191] Caps on value-based and income-based ratios may also be combined with amortisation requirements (annuity payments) or maturity caps (see Table 1). Finally, certain authorities stress-test their borrower-based measures through sensitivity analysis, where different variables or parameters are adjusted in response to hypothetical changes in interest rate levels and hypothetical (significant) losses in borrower income.

Table 9 Categories of borrower-based measures

Value-based	Income-based	Other measures
Cap on the loan-to-value (LTV) ratio	Cap on the debt-to-income (DTI) ratio	Amortisation requirement
	Cap on the loan-to-income (LTI) ratio	Loan maturity limit
	Cap on the debt service-to-income (DSTI) ratio	Stressed DSTI (sensitivity analysis e.g. for interest-rate risk, etc.)

Source: Bank of Greece.

Indicatively, in an overvalued housing market environment, a cap on the loan-to-value (LTV) ratio would have little effect on its own, given that the higher value of the collateral would in any event enable borrowers to take out higher loans. As a result, it cannot achieve the target of mitigating overindebtedness during the upward phase of the cycle[192] and prevent systemic risks associated with household and business financing (see Table 2). It is often therefore combined with

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[190] See CGFS, "Private sector debt and financial stability", CGFS Papers No 67, May 2022, p. 59.

[191] The widespread concurrent use of caps on value- and income-based ratios may be attributed to the complementarity of the measures. See indicatively IMF, "Staff Guidance note on Macroprudential Policy – detailed guidance on instruments", December 2014, p. 54; Jácome-Mitra, "LTV and DTI Limits: Going Granular", IMF Working Paper WP/15/154, July 2015; and Lim et al., "Macroprudential Policy: What Instruments and How to Use Them? Lessons from Country Experiences", IMF WP/11/238, October 2011. At the level of individual Member States, empirical studies have provided insights on the concurrent use of different borrower-based measures, see indicatively Jurča et al. (2020), "The Effectiveness of Borrower-based macroprudential measures: a quantitative analysis for Slovakia", IMF WP/20/134; Hejlová et al. (2018), "The introduction and calibration of macroprudential tools targeted at residential real estate exposures in the Czech Republic", Czech National Bank Financial Stability Report 2017-2018, pp. 126-135; O'Brien, E. and E. Ryan (2017), "Motivating the Use of Different Macro-prudential Instruments: the Countercyclical Capital Buffer vs. Borrower-based Measures", Central Bank of Ireland Economic Letter Series vol. 2017, no 15. Cerutti et al. (2015), "The Use and Effectiveness of Macroprudential Policies: New Evidence", IMF WP/15/61 find, by contrast, limited complementarity between caps on LTV and DSTI/LTI ratios.

[192] See Millard, S., Rubio, M. and A. Varadi (2021), "The macroprudential toolkit: effectiveness and interactions", Bank of England Staff Working Paper 902.

income-based measures, for instance a cap on the debt service-to-income (DSTI) ratio, which function as automatic stabilisers at macroprudential level.

National designated authorities maintain their exclusive competence on enacting borrower-based measures under their national provisions, resulting in cross-border divergences in terms of BBM level, scope, specific features and combinations. There is also great divergence in the definitions used by Member States, e.g. for income.

Table 2 Indicative risks associated with private sector credit and relevant macroprudential measures

Risks associated with the value of the collateral/property	**Risks associated with borrower debt service capacity**
• Overvaluation in house prices (housing bubble) • Sudden changes in property market conditions (particularly sudden house price drop)	• Overindebtedness of households and businesses • Interest rate rises • Income or job loss (e.g. rise in unemployment rate)
Indicative outcomes of risk materialisation	
• Borrower default • Impairment losses on loan portfolios	
Macroprudential borrower-based measures	
• Cap on loan-to-value (LTV) ratio	• Cap on debt-to-income (DTI) ratio • Cap on loan-to-income (LTI) ratio • Cap on debt service-to-income (DSTI) ratio
Effects	
Loss-given default (LGD) for exposures secured by residential or commercial real estate	Probability of default (PD) of the borrower

Source: Bank of Greece.

It is up to the national designated authorities to adjust at their absolute discretion the level of borrower-based measures factoring in the characteristics of their domestic economy and financial system, as well as any property market vulnerabilities. It is also up to the national authorities to decide whether borrower-based measures are:

- targeted at specific types of real estate property (e.g. residential or commercial, primary or secondary residence) or loans (e.g. housing or consumer loans);
- differentiated depending on the purpose of the loan (e.g. primary residence or buy-to-let property);
- applied to specific types of institutions (e.g. credit institutions, insurance undertakings, non-bank credit providers, etc.);
- applied to the entire jurisdiction of the Member State or concern specific geographical areas/cities.

Borrower-based measures may prevent overindebtedness for risky borrowers and, at the same time, ensure loan accessibility for prudent ones. In order to mitigate the impact of borrower-based measures on specific groups (such as young borrowers and vulnerable households) and enable credit providers to maintain a minimum level of risk-taking, many national authorities provide for speed limits or flexibility quotas for a share of the volume of loans originated by each institution[193] or waivers for certain categories of borrowers.[194]

3. The legislative framework in Greece

The Bank of Greece is responsible for enacting macroprudential borrower-based measures under Article 133a of Law 4261/2014,[195] which was inserted to the existing provisions of Chapter VI entitled "Capital buffers and other macroprudential policy measures" on 28 March 2023.[196] In the context of its macroprudential mandate, the Bank of Greece may adopt a decision laying down, *inter alia*, the type of borrower-based measures, the ratios or features of credit to which caps apply, as well as the cap percentages, the types of loans to which borrower-based measures apply, as well as the terms and conditions of their implementation.

The Bank of Greece may adopt borrower-based measures to be implemented not only by banks (credit institutions), but also financial institutions and financial sector entities which provide loans and other credit to natural or legal persons secured by residential property located in Greece. It should be noted that borrower-based measures apply to institutions and entities incorporated and operating in Greece, as well as branches in Greece of institutions or entities incorporated in EU or non-EU countries, in connection with loans or other credit to natural or legal persons secured by real estate located in Greece.

In order to monitor and quantify risks stemming from the property market,[197] the Bank of Greece already collects and monitors statistical data on borrower indebtedness relating to residential real estate (RRE) and commercial real estate (CRE) loans, as well as CRE investment.[198] The data are submitted by credit institutions incorporated and operating in Greece, branches in Greece of credit institutions incorporated in EU or non-EU countries and leasing companies incorporated and operating in Greece. The regular monitoring of a reliable and comparable set of key indicators[199] on RRE and CRE loans and relevant investments helps identify the accumulation of systemic risks and assess the need for macroprudential action. Indicators such as the LTV ratio and the DSTI ratio have typically formed the basis for enacting national macroprudential measures in other EU Member States, as analysed below.

[193] National designated authorities usually allow BBM limits to be exceeded for a predetermined percentage share of the volume of loans originated by each credit provider during a reference period (e.g. year or quarter).

[194] For instance, Sweden waives its amortisation requirement (annuity payment) for newly-built property.

[195] Government Gazette A 107/05.05.2014 [in Greek], as applicable.

[196] By Article 54 of Law 5036/2023, Government Gazette A 77/28.03.2023 [in Greek].

[197] SPECIAL FEATURE I "The importance of the commercial real estate market for financial stability" discusses, more specifically, the importance of the commercial real estate market for the Greek financial system.

[198] See Governor's Annual Report 2021, Box VIII.1.

[199] Indicators are defined in a relevant Bank of Greece Executive Committee Act (ECA), see ECA 175/1/29.07.2020 [in Greek].

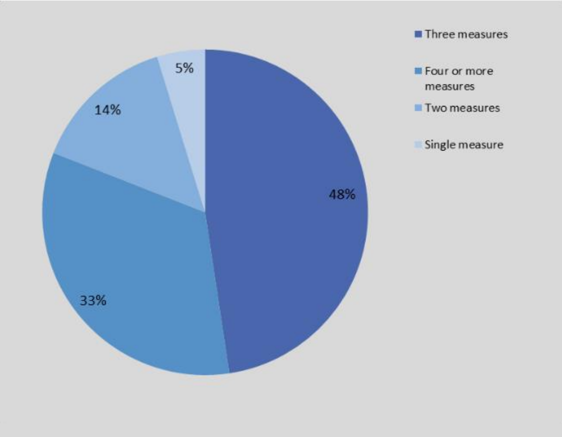
4. Overview of borrower-based measures applied in EU Member States[200]

Borrower-based measures are broadly used in EU Member States, all of which have a relevant legal framework in place.[201] Despite having the necessary legislative and regulatory provisions at their disposal, six Member States have yet to implement any legally binding borrower-based measures, including Greece.[202] The borrower-based measures used by the other 21 Member States have very divergent characteristics and are used in different combinations.

As shown in Chart 1, most EU Member States that implement borrower-based measures enact more than one measures, opting for a set of three and/or four.[203] More specifically, almost half of EU Member States with BBMs have enacted a set of three measures, one third a set of four or more, while only one seventh use only two measures. Luxembourg is the only EU Member State that applies only one borrower-based measure.

Chart 1 Number of BBMs applied in the EU (March 2023)

(in %)



Source: Bank of Greece. Processing of ESRB and IMF data, as well as EU Member State published information.

The cap on the LTV ratio[204] is implemented as a macroprudential measure by 19 Member States, and is most often coupled with a cap on the DSTI ratio.[205] This pair of measures is the most popular choice of macroprudential borrower-based measures (see Chart 2), while the third most popular measure is the maturity limit. It is therefore evident that the core of borrower-based measures implemented by EU Member States consists in a cap on the LTV ratio, a maturity limit and a cap on the DSTI ratio.

[200] Our analysis draws data on borrower-based measures applied in EU Member States from the ESRB's national macroprudential measures database (last update: 10 February 2023), the IMF's iMaPP database and data published by national macroprudential/designated authorities of EU Member States until March 2023.

[201] Until recently, Greece was the only country in the EU lacking a legislative framework for BBMs. See ESRB, "Review of the EU Macroprudential Framework for the Banking Sector – Concept Note", March 2022, p. 32. Italy recently reviewed its legislative framework for enacting BBMs (22.02.2022), see Banca d' Italia, An EU Legal Framework For Macroprudential Supervision Through Borrower-Based Measures, *Conference Papers No 94, February 2023.*

[202] Germany, Greece, Italy, Spain, Croatia and Bulgaria. The latter indicates as a borrower-based measure in the relevant ESRB database that it has been conducting regular internal stress test exercises since 2002 to assess the resilience of the banking system to various risk parameters, which is however not accounted for as such in this Special Feature.

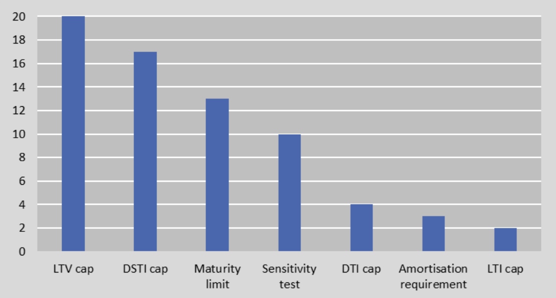
[203] Seventeen EU Member States apply three or more measures.

[204] The LTV ratio is defined as the total amount of the loan or part(s) thereof secured by real estate property at origination divided by the value of the real estate property at the time of origination. See Bank of Greece Executive Committee Act 175/1/29.07.2020 [available in Greek].

[205] The DSTI ratio is defined as the annual cost of servicing a borrower's total debt in relation to the borrower's total disposable income at the time of loan origination. See Bank of Greece Executive Committee Act 175/1/29.07.2020 [available in Greek].

The DSTI is often stress-tested through a sensitivity analysis (stressed DSTI).[206] In this context, designated authorities take into consideration hypothetical scenarios that reflect interest rate hikes or borrower income loss or borrower debt servicing capacity impairment at a certain percentage rate. For the purposes of this Special Feature, a sensitivity analysis is considered a separate borrower-based measure, implemented by 10 Member States (see Chart 2).

Chart 2 Number of EU Member States per type of BBM (March 2023)



Source: Bank of Greece. Processing of ESRB and IMF data, as well as EU Member State published information.

In just a few cases, the DSTI cap is coupled with a debt-to-income (DTI) cap which is aimed at safeguarding the viability of a borrower's debt obligations, restricting them as a ratio of the borrower's (annual disposable or gross) income. Finally, the least used borrower-based measure is the cap on the loan-to-income (LTI) ratio.[207]

Borrower-based measures are mostly imposed in the form of legally binding caps in the EU and only five Member States adopt them in the form of recommendations or guidelines (i.e. Belgium, Denmark, Poland, Portugal and Finland).[208]

It is worth looking in more detail at some of the predominant trends that can be identified when comparing borrower-based measures applied in EU Member States. First of all, borrower-based measures as a rule apply to loans granted for the purchase of real estate property, i.e. mortgage or, in certain cases, consumer secured/unsecured loans.[209] Cyprus and Poland are the only countries to apply caps on the LTV ratio for CRE-secured loans (at 70% and 75% respectively), while Denmark has imposed a cap on the DSTI ratio (100%) and a maximum maturity limit (30 years) for loans to legal persons.

As far as the level of borrower-based measures is concerned, the cap on the LTV ratio often ranges between 80% and 90%, in other words, borrowers need to make a down-payment amounting to 10%-20% of the purchased property's value. Some Member States apply stricter limits (70-75%) on loans secured by buy-to-let property. Cyprus has applied a 50% cap on the LTV ratio where the credit facility is granted to real estate developing companies for financing the acquisition or the construction of luxurious properties and Hungary for loans denominated in a foreign currency granted to unhedged borrowers. There are three Member States which allow credit providers to grant loans amounting to 100% of the purchased property's value: Luxembourg for first-time buyers acquiring their primary residence; Portugal if the loan is granted for purchasing immovable property held by the credit institutions and for property financial leasing agreements; and the Netherlands for all new mortgage loans secured by residential real estate property located in its jurisdiction.

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[206] Cyprus, Finland, Ireland, Lithuania, Malta, Portugal, Slovakia and the Czech Republic.

[207] The LTI ratio is defined as the borrower's total loans or parts of loans secured by real estate property at the time of origination compared to the borrower's total annual disposable income. See Bank of Greece Executive Committee Act 175/1/29.07.2020 [available in Greek].

[208] Following a relevant ESRB recommendation in June 2019, the Czech Republic has enacted legally binding caps on the LTV, DTI, and DSTI ratios, but has maintained loan maturity limits and loan amortisation requirements in the form of recommendations.

[209] Latvia, Portugal, Romania, Slovenia and the Czech Republic are the only Member States that have put in place borrower-based measures applicable to consumer loans or credit.

Table 3 Calibration of BBMs in the EU (March 2023)

(% rates for caps on LTV and DSTI ratios. Years for maturity limits)

	LTV cap	LTI cap	DSTI cap	DTI cap	Amortisation requirement	Maturity limit	Sensitivity test
Austria	90		40			35	
Belgium	80-90		50	9			
Bulgaria							
Croatia							
Cyprus	50-80		65-80				Interest rate rise (to long-term average), income fall by 20%
Czech Republic	90		50	9.5	Standard repayment schedule	8 / 30	Multiple scenarios
Denmark	95	4					Drop in collateral value
Estonia	85-90		50			30	Interest rate rise by 200 bps
Finland	85-95		60				Interest rate rise (IR = 6%)
France			35			25	
Germany							
Greece							
Hungary	35-80		25-60				
Ireland	70-90	3.5-4					Interest rate rise by 200-300 bps
Italy							
Latvia	70-90		40	6		30	
Lithuania	70-85		40			30	Interest rate rise (IR = 5%)
Luxemburg	80-100						
Malta	75-90		40			25-40	Interest rate rise by 150 bps
Netherlands	100		14.5-31			30	
Poland	75-80		40-50			25	
Portugal	80-100		50			35-40	Interest rate rise by 300 bps, income fall by 20%
Romania	50-95		20-40			5	
Slovakia	90		60	3-8	Annuity payments	8 / 30	Interest rate rise by 200 bps
Slovenia	70-80		50			7	
Spain							
Sweden	85				At least 2% annually		

Source: Bank of Greece, based on data from the ESRB database of national macroprudential measures (last update: 10 February 2023), the IMF's iMaPP database and data published by national macroprudential/designated authorities of EU Member States.

Notes: Basis points (bps). Caps mentioned in this table concern natural persons and residential property, representing the range of the lowest to the highest caps applicable for each ratio. Differentiated requirements or exemptions from applicable caps for specific types of borrowers, loans, institutions, etc. do not feature in this Table.

Caps on the DSTI ratio mostly range between 40% and 50% (11 countries), whereas only four Member States (France, the Netherlands, Hungary and Romania) impose stricter limits at 35% or lower. The least stringent DSTI limit is set by Cyprus at 80% of the borrower's "net disposable income" for loans to natural persons secured by real estate property which is the primary or secondary residence of the borrower.[210]

[210] On 18 March 2016, the Central Bank of Cyprus issued a "Directive to credit institutions on credit granting and review processes", which amended its existing borrower-based measures.

The Central Bank of Cyprus uses a set of different measures since 2003. The DSTI ratio is stress-tested through a sensitivity analysis performed to evaluate the impact on debt servicing of higher loan instalments due to interest rate increases or any other cause. More specifically, as a minimum scenario, credit institutions assume that interest rates move towards their long-term average level and that the cash generating capacity of the borrower is reduced by 20%. A similar sensitivity analysis is required by the Central Bank of Portugal, which introduced its BBM framework in February 2018 and activated its first measures in July 2019. More specifically, the DSTI ratio is calculated as a percentage of the borrower's disposable income (after tax and mandatory social security contributions) and considers the impact of an interest rate rise by 300 basis points (bps) for loans with residual maturity of more than 10 years and a reduction of income of at least 20% of current annual income for borrowers aged 70 and over at the planned expiry of the loan agreement.

Loan maturity limits are typically set at 30 years. Malta has adopted more lenient maturity requirements for first-time buyers (FTBs), set at 40 years until loan repayment, and Portugal for young borrowers, in particular, 40 years for borrowers aged 30 or under; 37 years for borrowers over 30 years of age and up to and including 35; and 35 years for borrowers aged over 35. These maturity limits are actually aimed at gradually bringing the maximum maturity limit of loans in Portugal to 30 years.

The cap on the LTI ratio is only used by two EU Member States, Denmark[211] and Ireland,[212] coupled with a cap on the LTV ratio. Four countries (Belgium, Estonia, the Czech Republic and Slovakia) have imposed DTI limits,[213] always in combination with DSTI limits. The Czech Republic and Slovakia have also put in place loan amortisation requirements on the basis of standard repayment schedules. Sweden is the only Member State that accompanies its measure to impose an LTV cap solely with loan amortisation requirements.

Finally, it should be noted that over the past few years there have been waivers (in Austria) or less stringent requirements (in Portugal and Slovakia) for loans that are targeted at improving the energy efficiency of homes and promoting the use of renewable energy in buildings.

In conclusion, macroprudential borrower-based measures are implemented in sets and are adjusted in terms of their level, scope, features and combination to the idiosyncratic characteristics of each Member State's economy and financial system, subject to the absolute discretion of designated authorities under their national legislative and regulatory provisions.

[211] Denmark performs a sensitivity analysis for its LTV cap to consider a decline in the value of the property by 10% (if LTI is between 4 and 5) or 25% (if LTI is above 5).

[212] In Ireland, LTI limits are set at 4 times income for first-time buyers and 3.5 times income for second and subsequent buyers. The Central Bank of Ireland justifies the choice of the LTI on the basis of its benefits from a macroprudential perspective: *inter alia*, it is simple for lenders to implement consistently and easy for the public to understand, while the DSTI would have the potential of being excessively procyclical (e.g. at times of accommodative monetary policy) and could be bypassed by extensions of loan maturity. Also, a DTI limit would restrict a household's total borrowings, not just its mortgage loans. See Central Bank of Ireland, "The Central Bank's Framework for the Macroprudential Mortgage Measures", October 2022, pp. 14-15.

[213] The DTI ratio is defined as the borrower's total debt divided by the borrower's total annual disposable income at the time of loan origination. See Bank of Greece Executive Committee Act 175/1/29.07.2020 [available in Greek].

SPECIAL FEATURE IV
THE BANKING TURMOIL IN THE UNITED STATES AND THE TAKEOVER OF CREDIT SUISSE BY UBS IN SWITZERLAND

Georgios Kaoudis[214]

Elias Veloudos

In March 2023, the euphoria prevailing in the financial markets since the beginning of the year was shattered, initially by rumours and subsequently by news of the collapse of the US Silicon Valley Bank (SVB) and Signature Bank. However, the response from federal authorities and the US government was coordinated and immediate, managing to contain the spread of the confidence crisis across the entire banking sector. SVB, which ranked 16th among US banks in terms of total assets[215] and specialised in providing venture capital to start-ups and financing new technology projects, was forced into liquidation. As for the smaller-sized Signature Bank, the acquisition solution was preferred.[216]

The collapse of SVB was the largest bank failure in the US since 2008, following the collapse of Washington Mutual. In addition, on 1 May, the California Department of Financial Protection and Innovation decided to close First Republic Bank, the 14th largest US bank, in order to protect depositors.[217] The US Federal Deposit Insurance Corporation (FDIC) selected JPMorgan Chase to take over the deposits and most of the assets of First Republic Bank, which had been hit by massive deposit outflows following the collapse of SVB and Signature Bank.[218] Therefore, it is understood that the banking turmoil could have spread further through transmission channels that are difficult to predict.

The timeline of the banking turmoil:

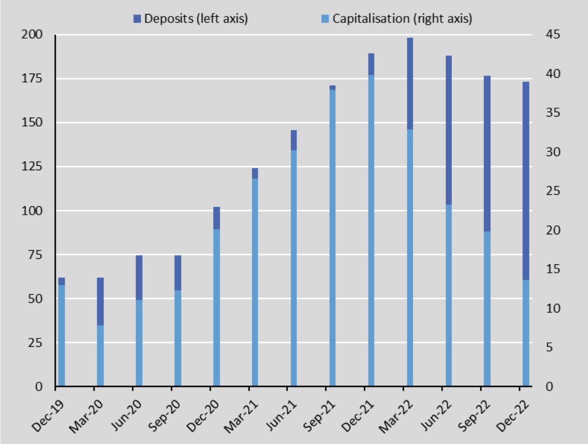
- On 8 March, SVB announced a loss of approximately USD 1.8 billion from the sale of investments in government bonds and mortgage-backed securities (MBS), as well as the decision to raise capital.[219] It is clarified that this capital increase was not secured through hard underwriting,[220] and as a result was unsuccessful.
- 9 and 10 March: Following the failure to complete the capital increase, SVB's share price collapsed (with a daily loss of -60% on 9 March), creating a negative sentiment and a confidence crisis in the investment community, with depositors massively withdrawing deposits

[214] Special thanks are due to colleague Nikos Stavrianou for his assistance in enriching the text.
[215] According to Bloomberg data, SVB's assets in 2022 amounted to USD 212 billion.
[216] On 12 March 2023, the closure of Signature Bank, which had 40 branches with assets of USD 110 billion, followed the collapse of SVB, after a massive withdrawal of deposits (December 2022: USD 88.6 billion) by the bank's customers, in fear of Signature Bank's exposure to the cryptocurrency market. Flagstar Bank, a subsidiary of New York Community Bankcorp, bought out some of Signature Bank's loans, at a discount of about 21%, and deposits, according to the FDIC.
[217] FDIC announcement, May 1 2023.
[218] Announcement of First Republic Bank's first quarter financial results, 24 April 2023. In particular, deposits fell to USD 72.7 billion (excluding a USD 30 billion deposit injection by major US banks) on 21 April 2023, from USD 173.5 billion on 9 March 2023 and USD 176.4 billion on 31 December 2022.
[219] SVB announcement, March 8, 2023.
[220] Hard underwriting is a process in which an underwriter commits to participate in a rights issue before the issue is opened. The underwriter can be a bank or any financial institution that promises to buy all the unsold shares in a rights issue. The underwriter assumes the risk associated with an investment, a business or a loan for a premium. If the rights issue is not covered by investors, the underwriters own the remaining issue.

of around USD 42 billion on 10 March.[221] It is worth noting that in November 2021 SVB's share price had risen to USD 763, bringing its market capitalisation to USD 44 billion (see Chart 1). On 10 March, SVB was declared insolvent by the US federal authorities.

Chart 1 Deposits and capitalisation of Silicon Valley Bank

(31.12.2019-31.12.2022, USD billion)



Source: Bloomberg.

- On 12 March, the US Treasury, the Federal Reserve and the FDIC announced the liquidation of the bank.[222] The FDIC guaranteed all of SVB's deposits, regardless of amount, although approximately 87% of the deposit base was outside the deposit guarantee limits.[223] At the same time, the Fed announced that it would make additional funding available to financial institutions to ensure that banks would be able to meet the demands of all their depositors.[224] In addition, the SVB's UK subsidiary was acquired by HSBC for one pound sterling, following intervention by the Bank of England, highlighting the value of coordinated response by central banks to ensure global financial stability.[225]
- On 20 March, it was agreed that Flagstar Bank, N.A. ("Flagstar") would acquire the operations of Signature Bank, ending uncertainty about the future of that bank.[226]
- Similarly, on 27 March it was announced that First Citizens Bank would take over all of SVB's activities.[227]
- On 1 May, it was announced that First Republic Bank would close and its deposits, branches and most of its assets would be taken over by the largest US bank, JPMorgan Chase.[228] The key elements of the transaction include:[229]
  - Acquisition of the majority of First Republic Bank's assets, including approximately USD 173 billion in loans and approximately USD 30 billion in securities.
  - Acquisition of deposits amounting to approximately USD 92 billion, including USD 25 billion of deposits from major banks.
  - Provision of loss-sharing agreements related to mortgage and commercial loans by the FDIC and USD 50 billion of five-year fixed-rate financing.
  - Payment of USD 10.6 billion to the FDIC by JPMorgan Chase.

[221] Source: Bloomberg, March 11, 2023.
[222] See Announcement on SVB by the US Treasury, the Federal Reserve and the Federal Deposit Insurance Corporation of the United States, 12 March 2023.
[223] The amount of guaranteed deposits is set at USD 250,000. For more information, see Federal Deposit Insurance Scheme.
[224] The Bank Term Funding Program (BTFP) is based on federal funding and provides up to one year of liquidity to financial institutions against bonds eligible for use as collateral at the Fed, purchased at par.
[225] See Bank of England statement on SVB UK, 13 March 2023.
[226] Flagstar Bank announcement, 7 April 2023.
[227] See Announcement by First Citizens BancShares on the acquisition of SVB, 27 March 2023.
[228] See Announcement JPMorgan Chase & Co, 1 May 2023.
[229] See JPMorgan Chase & Co presentation, 1 May 2023.

- Non-underwriting of the corporate debt or preferred stock of First Republic Bank by JPMorgan Chase.

The immediate and decisive reaction of the federal authorities and in particular the FDIC to safeguard all deposits had the effect of mitigating the possibility of panic and preventing the spread of turmoil throughout the US banking industry. It should be noted that the main depositors of SVB and Signature Bank were start-ups in the technology and healthcare sectors; in particular, 44% of the companies that had made an Initial Public Offering (IPO) in 2022 were customers of SVB.[230] Therefore, the potential loss of deposits, apart from the obvious impact it would have had on the credibility of the US financial system, could also have gravely impacted the sectors in which these businesses operate due to loss of funds. The unforeseeable macroeconomic and microeconomic consequences, with the risk of disrupting the operations of several of these businesses that were depositors in SVB, were instrumental to the decision to safeguard deposits.

The reasons that led to the collapse of SVB

SVB's business model had certain peculiarities, diverging from common banking risk management practices that put an emphasis on risk diversification. SVB had become widely known as a specialised bank operating in the technology sector, with a focus on financing startups that carry high credit risk. The bank's corporate governance framework had weaknesses, notably exemplified by the fact that the position of Chief Risk Officer (CRO) had remained vacant for most of 2022. Additionally, SVB's Board of Directors consisted overwhelmingly of non-banking members who lacked previous work experience in the financial industry.[231] At the same time, as repeatedly emphasised by the external auditors of the bank's financial statements, its internal control system exhibited significant weaknesses.

Additionally, the bank's investment portfolio exhibited a high concentration of risks, with approximately 80% of its holdings being US government bonds and mortgage-backed securities (MBS). The decision of SVB's management to have a significant exposure to long-term bond holdings proved decisive in its collapse. Given the large exposure of its bond portfolio to interest rate risk (high duration), the bank was particularly vulnerable to increases in key interest rates and the subsequent rise in bond yields. Therefore, the interest rate hikes implemented in 2022 and early 2023 as part of the Federal Reserve's tightening of monetary policy to address high inflation resulted in significant losses when approximately USD 21 billion worth of bonds were sold from its portfolio. At the same time, a negative impact came from the fact that, while bond interest income remained stable and low, interest expenses on SVB's deposit products increased significantly, further denting its profitability. The massive outflow of deposits within a short period, triggered by rumours of substantial losses on the bank's bond holdings, compounded by its inability to carry out the announced capital increase to bolster its capital base, led to its collapse and the implementation of measures by US authorities to protect depositors.

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230 Silicon Valley Bank, Start-up banking business.
231 Daily Mail and Global Risk Institute, 14 March 2023.

Impact on the Greek banking sector

Greek banks were not directly affected by the collapse of the two US banks, while the indirect impact from the broader turmoil in the global banking sector was minimal, as assessed by the Greek stock market in the aftermath of the banking crisis in the US. In the cases of SVB and Signature Bank, the collapse primarily resulted from serious errors in investment policy and risk management, amid a tightening of monetary policy, as well as weaknesses in the regulation of small and medium-sized banks in the US.

The Greek banking sector's bond holdings as a percentage of deposits stood at 14.5% in December 2022, compared with 80% for SVB. Greek banks also implement hedging strategies that significantly reduce the risk of losses on their bond portfolios. In addition, stress tests conducted regularly for significant European banks, including Greek banks, ensure the adequacy of liquidity and capital, even under adverse economic conditions.[232] Furthermore, the average liquidity coverage ratio of Greek banks, which is a key tool for monitoring liquidity risk and an indicator of the resilience of credit institutions to potential large-scale deposit outflows within a short period, stood at 202% in December 2022.[233] Finally, the funding mechanisms provided by the ECB and the available tools in the conduct of monetary policy ensure the adequacy of bank funding even during periods of a liquidity squeeze.[234]

However, the shock to investors' and depositors' confidence as a result of the collapse of SVB and Signature Bank in the United States undoubtedly raised concerns in the global financial sector. Just a few days after the banking turmoil in the US, concerns shifted to Switzerland, with a focus on Credit Suisse (CS), which was among the 30 largest banks globally.[235]

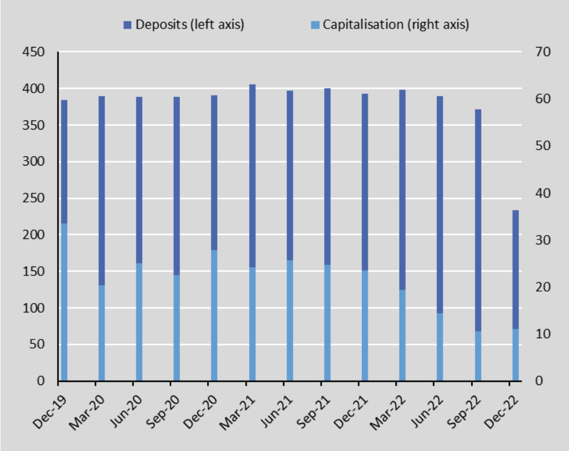
The takeover of Credit Suisse by UBS

In the case of CS (see Chart 2), the reasons that led to the escalation of the crisis of confidence in the viability of the second largest Swiss bank were, on the one hand, massive deposit outflows, and on the other hand, the overall deterioration of its capital base in recent years due to significant losses, which indicated inefficient risk management (e.g. the collapse of the Archegos fund, with losses of USD 5.5 billion, and the bankruptcy of Greensill Capital, with losses of USD 10 billion).

At the same time, CS was in the process of implementing an ambitious three-year restructuring and modernisation plan, about which serious reservations had been expressed.

Chart 2 Deposits and capitalisation of Credit Suisse

(31.12.2019-31.12.2022, Swiss francs billion)



Source: Bloomberg.

[232] It is clarified that both US banks were exempted from the stress tests conducted by US supervisors in significant credit institutions, as they fell below the USD 250 billion threshold of assets on their balance sheets.
[233] Supervisory data, on a consolidated basis.
[234] See Monetary policy decisions, 4 May 2023.
[235] See 2022 List of Global Systemically Important Banks (G-SIBs), 21 November 2022, Financial Stability Board.

Credit Suisse, in the period before its bailout, had already raised CHF 50 billion from the Swiss National Bank's (SNB) emergency liquidity programme, which provides funding secured by mortgages and bonds. In addition, the SNB had approved an emergency liquidity facility, protected in the event of default, of up to CHF 100 billion, and there was also the possibility of raising additional funding of CHF 100 billion through a liquidity guarantee from the Swiss government.[236] However, all the aforementioned liquidity support measures proved insufficient to restore investors' and depositors' confidence in the bank's sustainability.

On 19 March 2023, the SNB,[237] in cooperation with the Swiss government,[238] the Swiss regulator Finma[239] and the largest Swiss bank (UBS), announced an action plan to address the banking turmoil in Switzerland, which envisaged the takeover of CS by UBS at a price of CHF 3 billion. This action was considered necessary to safeguard financial stability, as it would protect CS's deposits in their entirety. However, according to the takeover plan and its terms, the bank's shareholders would suffer a significant write-down on their investment, as the exchange ratio would be unfavourable to CS shareholders (1 UBS share for every 22.48 CS shares), while holders of USD 17.3 billion of Additional Tier 1 capital instruments[240] would be wiped out.

The European banking authorities welcomed the actions of the Swiss authorities to ensure financial stability.[241] However, they pointed out that, under the EU framework, common equity instruments are the first to absorb losses, and only after their full use would Additional Tier 1 instruments be required to be written down. This approach has been consistently applied in past cases and will continue to guide the actions of the SRB and ECB Banking Supervision in crisis interventions. As emphasised, Additional Tier 1 capital is and will remain an important component of the capital structure of European banks.

The reasons for the acquisition and the impact on the Greek banking sector

In the case of the Swiss bank, the problems seem to be related to losses in previous years and the fact that the majority shareholder during the period of turmoil in March 2023 declared its unwillingness to provide additional capital, shattering depositors' and investors' confidence. Moreover, significant concerns arose regarding the effectiveness of the internal control and risk management system of the CS group.

The turmoil in the Swiss banking system in March had a limited impact on European banks.[242] Similarly, Greek banks were not directly affected negatively by these developments, as they had zero exposure to the CS securities that were written off. In addition, it is worth mentioning that the significant Greek banks supervised by the Single Supervisory Mechanism (SSM) have specialised risk and liquidity management units and are also closely monitored by the Bank of Greece.

More specifically:

[236] See Swiss National Bank provides substantial liquidity assistance, 19 March 2023, SNB.
[237] Swiss National Bank (SNB).
[238] See UBS acquisition of Credit Suisse, 19 March 2023, UBS.
[239] Swiss Financial Market Supervisory Authority.
[240] CS's AT1 bonds were rated BB- by Fitch, B/B+ by S&P and B1 by Moody's and were issued in US dollars (USD 15.65 billion), Swiss francs and Singapore dollars.
[241] SRB, EBA and ECB Banking Supervision statement, 20 March 2023.
[242] Opening remarks by Andrea Enria, Chair of the Supervisory Board of the ECB, 21 March 2023, European Parliament.

- Greek banks have sound balance sheets, high levels of liquidity and a strong and diversified retail deposit base, with a high proportion of deposits within the deposit guarantee limits.
- The loan-to-deposit ratio is low (December 2022: 69.8%)[243] and the loan portfolios of Greek banks consist mainly of floating-rate loans (over 90%).[244]
- A small percentage of their assets is invested in high-quality marketable bonds, while the hedging strategies they employ mitigate the risks arising from interest rate hikes.

However, the yields of the subordinated bonds of European banks (including Greek banks) were negatively affected following the write-off of CS's Additional Tier 1 (AT1) capital instruments. This action is likely to lead to an increase in funding costs in the context of meeting the Minimum Requirement for Own funds and Eligible Liabilities (MREL).

Conclusions from the recent turmoil for authorities and policy makers

The recent banking turmoil in the US and Switzerland makes it clear that risks to financial stability have increased. The combination of high inflationary pressures and monetary policy tightening, following a long period of low interest rates, could amplify vulnerabilities both within and outside the financial sector, particularly in non-banking financial intermediaries.[245] This challenging environment is further complicated by geopolitical uncertainties (such as the war in Ukraine or China-US tensions), as well as competition that may come from high-tech companies, as recently seen in the case of Apple and its new partnership with Goldman Sachs.[246]

Despite the improvement in the regulatory framework and supervisory practices, bank failures cannot be ruled out. The authorities should ensure that they minimise both the likelihood of such failures and the impact on depositors and taxpayers. It should be noted that technological changes and the widespread use of social media and electronic transactions can amplify a crisis and give policymakers less time to react, as seen in the case of SVB.

To this end, increased microprudential and macroprudential vigilance by supervisors is deemed necessary. The objective should be to further enhance the resilience of the banking system. Supervisory authorities should be able to identify emerging vulnerabilities at an early stage. Targeted changes in the regulatory framework could mitigate the potential for negative developments, although it appears that faithful implementation of the existing framework as defined in Europe could have prevented the collapse of US banks. In this regard, the recent proposals by the European Commission for revising the crisis management framework are a step in the right direction, while further progress is necessary towards the completion of the Banking Union through the establishment of a Pan-European Deposit Guarantee System.

[243] Source: supervisory data, on a consolidated basis.
[244] Source: EBA Risk Dashboard.
[245] See ESRB, "NBFI Monitor No 7", July 2022.
[246] See Apple announcement, April 17, 2023.

SPECIAL FEATURE V
DEVELOPMENTS IN THE EUROPEAN ENERGY MARKETS

Eleni Loukidou

Daniela Marcelli

2022 was a turbulent year for European energy markets. After the extreme volatility that began in the fourth quarter of 2021, energy prices reached consecutive all-time highs, raising concerns about soaring energy costs for households and businesses.

In particular, in August 2022 natural gas prices in the European Union (EU) reached an unprecedented peak, rising by around 1,000% compared to prices in previous years (since then prices have decreased, thanks in part to favourable weather conditions last winter) (see Chart 1).

In light of the negative effects of high energy prices on citizens and the economy in general, governments and regulators in Europe have tried to find solutions, such as subsidies to households or temporary price reductions through lower taxes, with the aim of reducing energy costs and mitigating the financial impact of high energy prices.

In this context, in December 2022 the Council of the EU adopted Regulation (EU) 2022/2578 ("the Regulation") establishing a temporary market correction mechanism (MCM), which aims to limit episodes of extremely high prices of natural gas in the EU when these prices do not reflect prices on world markets. The provisions of the Regulation concerning the MCM took effect on 15 February 2023 and will remain in force for one year.

The MCM is activated in the event that the natural gas derivative price of the front-month Title Transfer Facility (TTF)[247] contracts (a) exceeds €180 per megawatt hour (MWh) for three consecutive working days and (b) is €35 higher than the reference price in global markets[248] for the same three working days. Such an event is defined in the Regulation as a "market correction event".

It should be noted that in Europe there are gas trading hubs (or virtual trading points) in various countries,[249] but, as stated in the Regulation, the TTF is considered as the standard pricing proxy on European gas markets due to its usually high liquidity.[250] Therefore, the TTF price is widely used as a reference price in pricing formulas of gas supply contracts, as well as a price basis in hedging or derivatives operations.

The EU Agency for the Cooperation of Energy Regulators (ACER) continuously monitors the markets and, if it notices that a market correction event has occurred, publishes a "market correction notice" on its website and the MCM is activated. In this case, transactions on TTF derivatives contracts (that are due to expire in the period from the expiry date of the front-month TTF derivative to the expiry date of the front-year TTF derivative) with prices of €35 above the reference

[247] TTF derivatives are commodity derivatives traded on a regulated market, the underlying of which is a transaction in the Title Transfer Facility (TTF), a virtual trading point/trading hub in the Netherlands.

[248] The reference price is determined by the EU Agency for the Cooperation of Energy Regulators (ACER) that helps ensure the single European market in gas and electricity functions properly.

[249] Among them are: Punto di Scambio Virtuale (PSV) in Italy, Virtual Trading Point (VTP) in Austria, Zeebrugge Beach (ZEE) and ZTP in Belgium, PVB in Spain, Point Exchange Gaz (PEG) in France , VOB in the Czech Republic and Trading Hub Europe (THE) in Germany.

[250] According to figures reported in the Regulation, in the first eight months of 2022 the TTF hub accounted for around 80% of gas traded in the EU and the UK combined.

price published by ACER[251] on the previous day will not be allowed ("dynamic bidding limit"). If the reference price is below 145 €/MWh, the dynamic bidding limit remains at the sum of €145 and €35.

Once activated by ACER, the dynamic bidding limit applies for at least 20 working days and is deactivated (20 working days from the occurrence of the market correction event or afterwards) if the reference price is below 145 €/MWh for three consecutive working days. The dynamic bidding limit will also be deactivated automatically, at any time, if the European Commission declares a regional or EU emergency (under the Regulation on the security of gas supply), notably in a situation where the gas supply is insufficient to meet the gas demand.

Structure of EU natural gas derivatives markets

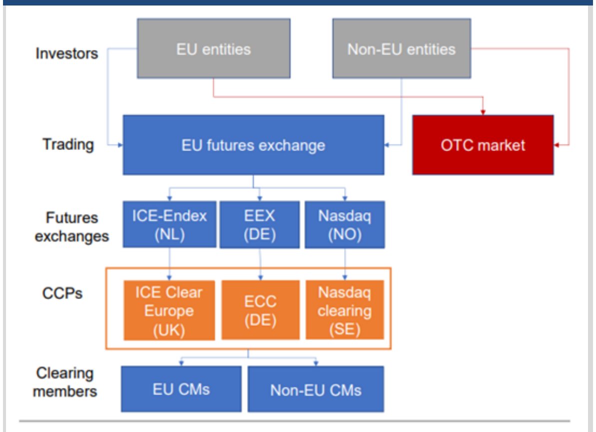
Trading of natural gas derivatives takes place mainly in exchanges – regulated markets where transactions are centrally cleared – and to a lesser extent in over-the-counter markets which usually operate as trading platforms called "organised trading facilities" (OTF).[252]

In particular, TTF derivatives are traded on the following regulated markets: (a) ICE Endex in the Netherlands, (b) EEX in Germany and (c) to a very limited extent, Nasdaq Oslo in Norway.[253]

In these markets, transactions are cleared through the following central counterparties: (a) ICE Clear Europe (based in the United Kingdom) for ICE Endex, (b) ECC in Germany for EEX and (c) Nasdaq Clearing (based in Sweden) for Nasdaq Oslo (see Chart 2).

The investors in natural gas derivatives markets are EU and non-EU entities, including energy companies that trade in the derivatives market to hedge the risk they face due to price volatility. The participants in the above central counterparties are mainly banks, as well as non-financial entities active in the energy sector.

Chart 2 Structure of EU natural gas derivatives markets



Source: European Securities and Markets Authority (ESMA).

Impact of the MCM on central counterparties and clearing

The activation of the MCM could have adverse effects on natural gas markets, their participants and the economy in general. That is why it is foreseen that the European Commission, ESMA and ACER will continuously monitor and review the operation of the MCM from the day of entry into force of the Regulation (February 2023).

In a recent report,[254] ESMA points out that the MCM can affect in many ways the EU clearing ecosystem in general, but also in particular central counterparties, given that TTF derivatives are cleared in these infrastructures.

[251] The reference price in question is the reference price for liquefied natural gas (LNG) in global markets based on an international basket of LNG trading hubs.
[252] Directive 2014/65/EU of the European Parliament and of the Council – MiFID II.
[253] In addition, TTF derivatives are available for trading on one EU OTF but, according to ESMA, trading volumes on this platform are negligible.
[254] ESMA Effects Assessment of the impact of the market correction mechanism on financial markets, 1/3/2023. See also ESMA: Preliminary data report on the introduction of the market correction mechanism, 23/1/2023.

Central counterparties interpose themselves in every transaction that takes place between two counterparties, providing them assurance that their transaction will be concluded. In this way, central counterparties undertake the commitment that even in case one of the two counterparties defaults, the transaction will be settled, i.e. they undertake the counterparty risk. In order to manage this risk, they are required to assess their exposure to counterparties on a daily basis and to retain resources (from the clearing members but also own resources), as well as margins.

The calculation of the required resources and margins is based on market prices. Therefore, there is a high degree of correlation between market prices, central counterparties' exposure, as well as the resources and margins they collect. This means that the activation of the MCM, by limiting the prices of TTF derivatives on regulated markets, affects the central counterparties' risk management framework and may in turn have consequences for the solvency of the central counterparties themselves.

In addition, the lack of reliable prices for risk management may lead to an increase in margin requirements, which in turn may result in higher liquidity risk for counterparties especially in conditions of market turmoil or crises, when available liquidity is limited.

Under these circumstances, counterparties may adjust the trading of the TTF derivatives that are within the scope of the MCM, consequently undermining the effectiveness of the measure and impacting financial stability. Thus, in case of activation of the MCM, the regulatory authorities should monitor if the share of transactions on regulated markets in total transactions decreases (with a corresponding increase in OTC transactions), transactions in third-country regulated markets rise, and transactions outside the scope of the MCM (e.g. different contract maturities, alternative trading venues – OTFs or other trading hubs) also rise. It should be noted that initiatives in this direction have already been announced, with market participants being offered the possibility to trade TTF derivatives outside the scope of the MCM in the UK (by ICE Endex[255]) and in an EU OTF (by EEX[256]).

[255] ICE Announces Plans to Implement EU Market Correction Mechanism and Related Price Cap on TTF Natural Gas
[256] EEX informs on the so-called Market Correction.

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