FINANCIAL STABILITY REPORT

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MAY 2025

The data underlying the charts and tables presented in this Report can be found at the Banco de Portugal website, with some exceptions for private sources data.

BANCO DE PORTUGAL
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Abbreviations

AAR	Annualised agreed interest rate
AMLA	Authority for Anti-Money Laundering and Countering the Financing of Terrorism
BBMs	Borrower-based measures
BLS	Bank Lending Survey
CBR	Combined buffer requirement
CCoB	Capital conservation buffer
CCyB	Countercyclical capital buffer
CES	Consumer Expectations Survey
CET1	Common Equity Tier 1 capital
DORA	Digital Operational Resilience Act
DSTI	Debt service-to-income ratio
EA	Euro area
EBITDA	Earnings before interest, taxes, depreciation, and amortisation
ECB	European Central Bank
ENISA	European Union Agency for Cybersecurity
EU-SILC	EU Statistics on Income and Living Conditions
FED	Federal Reserve
FTSE	Financial Times Stock Exchange
GDP	Gross domestic product
GHG	Greenhouse gas
ICPFs	Insurance corporations and pension funds
IFs	Investment funds
IMF	International Monetary Fund
LCR	Liquidity coverage ratio
LSTI	Loan-service-to-income ratio
LTV	Loan-to-value ratio
ML/TF	Money laundering and terrorist financing
MREL	Minimum Requirement for Own Funds and Eligible Liabilities
MSCI	Morgan Stanley Capital International
NBFI	Non-bank financial intermediation
NBFS	Non-banking financial sector

NFPS	Non-financial private sector
NMFIs	Non-monetary financial institutions
NPISHs	Non-profit institutions serving households
NPLs	Non-performing loans
NSFR	Net stable funding ratio
OECD	Organisation for Economic Co-operation and Development
OFIs	Other financial intermediaries
O-SIIs	Other systemically important institutions
P1R	Pillar 1 requirements
P2G	Pillar 2 guidance
P2R	Pillar 2 requirements
PT	Portugal
Q1	Tier 1
REIFs	Real estate investment funds
RICS	Royal Institution of Chartered Surveyors
ROA	Return on assets
SIFs	Securities investment funds
SMEs	Small and medium-sized enterprises
sSyRB	Sectoral systemic risk buffer
T2	Tier 2
TLTROs	Targeted Longer-Term Refinancing Operations
US	United States
UTAO	Unidade Técnica de Apoio Orçamental (Technical Budget Support Unit)

Executive summary

In recent months, **risks to financial stability have increased**. The unpredictability of US economic policies and the reactions of different geopolitical and trading partners generate adverse effects on global economic activity. This may result in negative repercussions on economic activity, inflation and asset prices. Global uncertainty and declining confidence among economic agents affect financing conditions and consumption and investment decisions.

Volatility and the likelihood of sharp financial market corrections have risen, especially in the riskier asset segments. However, the Portuguese banking sector has a low exposure to capital instruments. In exposure to debt securities, in particular public debt, the geographical diversification of issuers and the large weight of the component accounted for at amortised cost mitigate risks. In addition, investors and credit rating agencies have improved their sovereign risk assessment, with an impact on the valuation of domestic government bonds. Deleveraging of the banking sector in recent years has also contributed to reducing refinancing risks.

The materialisation of **an adverse environment is likely to have a limited impact on the Portuguese real estate market**, which accounted for 25% of banks' assets. In view of a slow adjustment to supply, the rise in prices in the residential segment has been sustained by demand from resident and non-resident foreign nationals, an increase in household disposable income and the recent cycle of declining interest rates. Banks' exposure, in the form of residential loans, is mitigated by the low share of the property value that is financed by the loan and by the tightening of the debt-to-income ratio.

It is crucial for financial stability that the Portuguese public debt ratio stays on a downward path, complying with sustainability criteria and European Union (EU) fiscal rules. In the medium term, fiscal challenges may be amplified by the European strategy of increasing defence spending; as such, countercyclical margins should be preserved in preparation of possible economic downturns.

In a scenario of deteriorating economic and financial conditions, household consumption and corporate investment would be constrained, as well as debt servicing capacity, especially of the most vulnerable agents. However, in 2024, firms and households benefited from declining interest rates, with both becoming more resilient to the materialisation of risk scenarios. Firms maintained high operating profitability and increased their capital ratio, reduced their indebtedness and preserved high liquidity. Households saw their disposable income increase, strengthened their savings and reduced their indebtedness.

In a central scenario of transition to lower interest rates, and against a background of continued growth in economic activity, credit risk is expected to remain contained. At the end of 2024, the banking sector had high profitability, liquidity and capital, and good asset credit quality, benefiting from the significant adjustment in recent years. **In parallel, net interest income will be under pressure, with an impact on the sector's results**, which are expected to decline in comparison to those recorded in the past two years, albeit above those observed in the period of very low interest rates. **In this context, it is essential that banks remain prudent in provisioning and capital conservation.** Recent macroprudential measures adopted by the Banco de Portugal, namely the implementation of the sectoral systemic risk buffer (sSyRB) and the application of a 0.75% countercyclical capital buffer (CCyB), alongside the macroprudential Recommendation relating to new credit for house purchase and consumer credit, strengthen the sector's resilience.

The external environment may pose new challenges, be they economic, financial or technological, e.g. cyber risks and operational risks, as demonstrated by the recent interruption of the electricity supply in Spain and Portugal. As an economy highly interconnected with the outside world, **Portugal should incorporate these risk factors into its policymaking and prepare to deal with them. The Banco de Portugal will continue to act towards fostering the stability of the financial system.**

I Financial stability outlook

1 Vulnerabilities and risks to financial stability

1.1 Main vulnerabilities and risks

In recent months, risks to financial stability have heightened, reflecting adverse developments in global economic activity associated with the greater unpredictability of US economic policies, coupled with high geopolitical uncertainty. Tensions resulting from military conflicts in Ukraine and the Middle East, in addition to changes in US foreign policy, especially in geostrategy and trade, increase the likelihood of disruptions to supply chains and trade flows, with negative repercussions on economic growth, inflation and asset prices. Rising defence spending in Europe could stimulate economic activity but also increase inflationary pressures and could pose an additional challenge to monetary policy.

Global uncertainty and reduced confidence among economic agents tend to adversely affect spending decisions, particularly investment decisions, and asset valuation, increasing risk premia and penalising financing, especially in international wholesale markets. In a context of increased volatility, the likelihood of sharp corrections in markets increases, in particular for riskier assets. High valuations and risk concentration in equity markets, particularly in the US technology sector, increase vulnerability to unexpected events.

In the Portuguese **real estate market**, the effects of an adverse environment on demand and prices are expected to be limited in the short and medium term. Strong price increases in the residential segment have been supported by rising disposable income, demand from resident and non-resident foreign nationals, an increase in construction costs and slow supply adjustments.

Among the main risks for euro area **general governments** are the possible deterioration in sovereign debt financing conditions in view of the geopolitical environment and the need for public investment in strategic areas, worsened by a possible slowdown in economic activity. In the medium term, fiscal challenges are expected to be marked by an increase in defence spending, which, despite a potentially positive contribution to the European economy directly and indirectly through innovation and technological development, may require higher tax revenue and/or debt. Despite the consolidation of public accounts over the last decade, the strengthening of European institutions to avoid fragmentation and ensure monetary policy transmission mechanisms, and the improvement of credit ratings, the Portuguese public debt ratio must crucially be kept on a downward path, respecting sustainability criteria and EU fiscal rules.

Firms and households may also be affected. In the short term, the direct impact in Portugal of the change in US trade policy is expected to be limited and circumscribed in sectoral terms, mostly affecting more export-oriented sectors, such as manufacturing, and, to a lesser extent, trade. Among manufacturing firms, the concentration of sales in the US market is limited. However, indirect effects, stemming from heightened uncertainty surrounding investment and consumption decisions, may worsen economic activity and financing conditions. However, corporate balance sheets showed a robust financial position. In 2024, firms maintained high operating profitability (9.4% of assets) and increased their capital ratio (to 45.6%), reduced indebtedness (to 74% of GDP) and remained highly liquid. Households saw their real disposable income increase (7.8%), boosted savings, amounting to 12.2% of disposable income, and reduced indebtedness (79.2%). The materialisation of a scenario of economic growth and further reduction in interest rates, already seen since the second half of 2024, is expected to improve the ability of firms and households to service debt, reducing vulnerabilities.

In the non-banking financial sector (NBFS), risks remain limited. This sector, which is small and has few direct and indirect interlinkages with the various resident institutional sectors, is mainly exposed to developments in international financial markets. The preponderance of closed-end funds in real estate investment funds (REIFs) and the higher liquidity of these funds mitigate risks. In the insurance sector, resilience is supported, among other aspects, by solvency levels materially above regulatory requirements.

The current geopolitical context, which hampers international commitments, exacerbates structural risks to financial stability, such as those **linked to climate change and digitalisation**. These risks affect all sectors of the economy, including the financial sector. The Banco de Portugal's Reports on the Banking Sector's Exposure to Climate Risk show that, from an intertemporal perspective, the optimal choice involves an orderly, timely and predictable transition to a low-carbon economy. In this area, the development of a European regulatory framework and the promotion of investment are particularly important.

The banking sector should continue with a conscious use of new technologies, managing new risks such as cyber risk, fraud or reliance on a limited set of technology service providers. These providers are also subject to cyberattacks, with financial and reputational losses and data breaches – risks that should be on the authorities' radar. It is important to consolidate the progress already made and to strengthen operational and cybersecurity resilience.

At the end of 2024, the banking sector was characterised by high profitability (1.4% of assets), asset credit quality, liquidity and capitalisation (18% CET1 ratio), benefiting from the significant adjustment seen in recent years. This sector, which plays a central role in financial intermediation in Portugal, maintained a significant exposure to sovereign debt securities (19% of assets) and real estate assets, with loans to households secured by a mortgage (25% of assets) standing out. As mitigating factors, geographical diversification and the high share of the component at amortised cost are particularly noteworthy in exposure to sovereign debt. For housing loans, mitigating factors are the low share of the stock with high loan-to-value (LTV) ratios (above 80%) and loan-service-to-income (LSTI) ratios (above 40%). Benefiting from lower official interest rates from June 2024 onwards, and legislative measures, including those targeting housing, loans to households accelerated. In the case of firms, there was an increase in the share of loans classified as medium risk, with a decrease in the low and high-risk classes, with interest rate spreads on new business narrowing for all risk classes.

The transition to lower interest rates as economic activity continues to grow should help to contain credit risk. However, it will also put pressure on net interest income, impacting the sector's results, which are expected to decline compared with the last two years, albeit remaining above those recorded in the long period of very low interest rates.

In this context, it is crucial that banks maintain a prudent approach to provisioning and preserving capital. Recent macroprudential measures adopted by the Banco de Portugal, namely the implementation of the sectoral systemic risk buffer (sSyRB) and the 0.75% countercyclical capital buffer (CCyB), together with the macroprudential recommendation relating to new credit for house purchase and consumer credit, will make a decisive contribution to strengthening the sector's resilience.

1.2 Macroeconomic and market environment

1.2.1 Macroeconomic environment

In 2024, the Portuguese economy grew by 1.9%, compared with 0.8% for the euro area, while the unemployment rate remained at historically low levels. In the coming years, economic activity is expected to grow further, albeit at a gradually slower pace, which takes on greater importance due to developments in economic activity in the first quarter of 2025 (0.5% contraction from the previous quarter). In its April projections, the International Monetary Fund (IMF) revised global growth downwards and projected 2% growth in 2025 for Portugal, above the euro area average (0.8%). The European

Commission's spring forecast, published on 19 May, confirms this downward revision. According to the IMF, employment is expected to increase from its 2024 peak, accompanied by a stabilisation of the unemployment rate. Inflation was 2.7% in 2024 and is expected to converge to 2% by 2026, in line with the moderating trend in services prices. In the euro area, inflation is estimated to reach the monetary policy target at the beginning of 2026.

Economic projections are subject to significant downside risks, notably those associated with the invasion of Ukraine, the conflict in the Middle East and, more recently, the United States' new stance on geopolitics and trade. These factors heighten the risk of commodity price increases, supply chain disruptions, lower global trade growth and increased exchange rate volatility. In particular, the imposition of tariffs by the US on EU exports could have a significant adverse effect on the Portuguese economy. High uncertainty may constrain investment and consumption decisions by firms and households. Conversely, accelerating European reforms could boost economic activity, thereby strengthening confidence among agents.

In a context of convergence towards price stability, central banks in major advanced economies started to cut interest rates in the second half of 2024. The European Central Bank (ECB) started this process in June 2024, with the deposit facility rate declining by 100 basis points by the end of 2024 to 3%, then down to 2.25% in April 2025. The rates on the main refinancing operations and the marginal lending facility then stood at 2.4% and 2.65% respectively. Despite the end of the targeted longer-term refinancing operations (TLTRO III) and the asset purchase programmes, market liquidity remained abundant. In the US, the Federal Reserve ("Fed") started cutting interest rates in September 2024, with a cumulative 100 basis point reduction by the end of the year. In 2025, it kept rates unchanged amid high uncertainty about developments in the US economy.

Heightened uncertainty about economic and tariff policies and its effects on inflation pose further challenges to central bank action in the largest advanced economies. The heightened risk to price and economic developments underlines the importance of a monetary policy that, while anchored to its mandate, keeps pace with economic and financial developments.

1.2.2 International financial markets

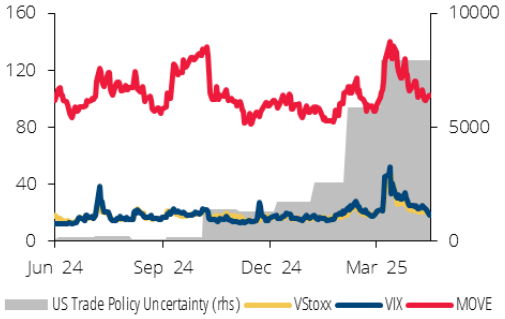
This prevailing uncertainty has been reflected in financial markets (Chart I.1.1). Market instability worsened from February 2025 onwards, with US tariff-related announcements and responses from other countries. In particular, the scale of tariffs announced on 2 April had an immediate impact on investors' expectations about economic growth. In the following weeks, volatility remained high, amid retaliatory measures between the US and China. In the meantime, there have been temporary reviews and suspensions of some measures, including an agreement with the United Kingdom and an understanding reached with China that resulted in a 90-day tariff reduction.

At the end of the first quarter of 2025, interest rate expectations in the euro area were revised downwards, reversing the adjustment following the US elections (Chart I.1.2). Economic uncertainty following the outcome of the November 2024 US election led markets to revise expectations of additional interest rate cuts towards the end of the year. However, the scale and scope of tariff announcements – by putting additional pressure on economic growth – have led to a downward revision of the interest rate path. On 12 May, three-month EURIBOR futures pointed to decreases in interest rates to below 2% by the end of 2026, followed by an uptick to levels above 2.25% from mid-2027 onwards.

In the euro area sovereign debt market, the broad-based decline in yields since June 2024, including in Portugal, came to a halt in 2025 owing to economic policy uncertainty. However, there were no significant changes in spreads against German debt (Chart I.1.3). The escalation of trade tensions temporarily benefited euro area debt against US debt, but announcements of higher government spending in Europe countered this effect. The proposed reform of the German constitutional amendment enshrining the balanced budget principle, known as the "debt brake", has played a crucial

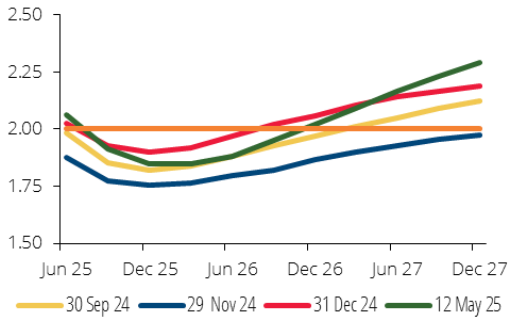
role in this development. The Portuguese sovereign debt yield differential against German debt remained relatively constant and below the average differential of other euro area countries, widening only recently amid increased volatility, in line with developments in other euro area countries.

Chart I.1.1 • US trade policy uncertainty and implied volatility in equity and bond markets | In points



Sources: LSEG and www.PolicyUncertainty.com, Baker, Bloom and Davis* | Note: Option-implied volatility: 'VSTOXX' refers to Euro Stoxx 50, 'VIX' to S&P500, 'MOVE' to US treasury one-month swaps curve; *Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636. Latest observation: 12 May 2025.

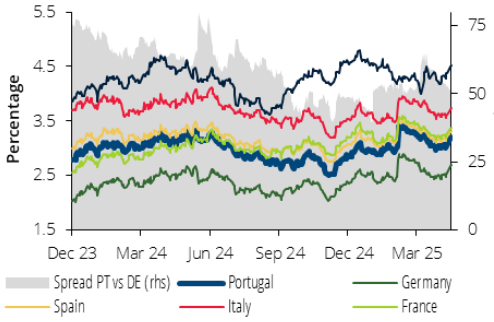
Chart I.1.2 • Interest rate implied in three-month EURIBOR futures contracts | Per cent



Sources: LSEG and Banco de Portugal calculations. | Note: Latest observation: 12 May 2025.

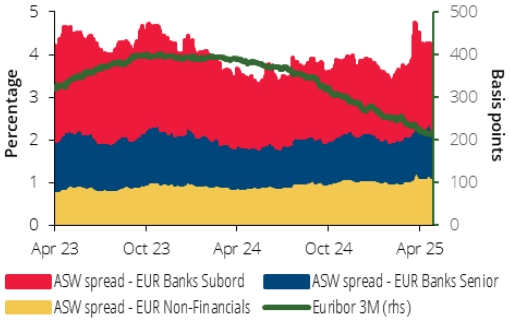
Interbank interest rates have remained on a downward path since October 2023 (Chart I.1.4). Despite the increase in sovereign debt yields in the euro area, interbank rates declined further, while continuing to be the main benchmark for corporate funding in Portugal. Euro area firms continued to benefit from more favourable market financing conditions than two years ago, with no significant deterioration in the credit risk premium, as measured by asset swap spreads. The same is true for bank funding in the euro area, both for senior and subordinated debt.

Chart I.1.3 • Yields on 10-year sovereign debt



Source: LSEG. | Note: Latest observation: 12 May 2025.

Chart I.1.4 • Three-month EURIBOR and asset swap spreads on corporate and bank bonds in the euro area

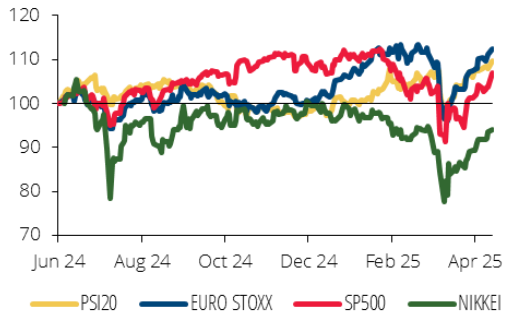


Source: LSEG. | Notes: Asset swap spreads of iBoxx indices. Asset swap spreads reflect credit risk embedded in bond prices. The iBoxx index represents investment-grade bonds denominated in euro. Sub-index 'Non-Financials' refers to non-financial corporate bonds, 'Banks senior' refers to senior bank bonds, and 'Banks Subord.' refers to subordinated bank bonds. Latest observation: 12 May 2025.

Already in 2025, investors reassessed their stance on the euro area equity market (Chart I.1.5). The main euro area equity index posted gains of 12% up to 12 May, outperforming the US index, which accumulated losses amounting to 1% over the same period. In the first week of April 2025, volatility increased significantly, leading to large losses in the US market. The drop in the S&P500 on 4 April was the most marked since March 2020. In the following week, the announcement of the suspension of tariffs on 9 April resulted in the largest daily gain for the S&P500 since 2008 and the Nasdaq since 2000.

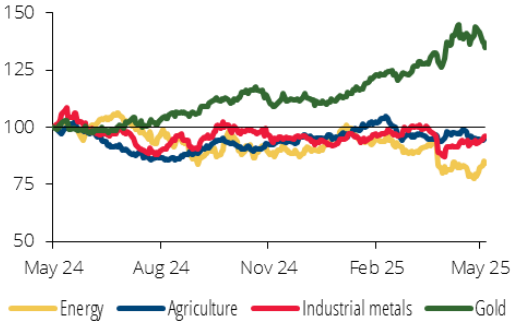
Developments in commodity markets were uneven (Chart I.1.6). Energy and metal prices fell, signalling fears of a deterioration in economic activity. Conversely, gold (as a safe haven) has intensified its upward trend of recent years and reached new record highs. Developments in gold futures contracts, particularly in contracts with physical settlement, confirmed the correlation between their price and political uncertainty.

Chart I.1.5 • Equity market indices in Portugal, Europe, US and Japan | Index



Source: LSEG. | Notes: Stock indices with a base value of 100 on 30 June 2024. Latest observation: 12 May 2025.

Chart I.1.6 • Commodity prices | Index



Source: Datastream and Banco de Portugal calculations. | Notes: S&P Commodity Index except for gold. Base value of 100 on 10 May 2024. Latest observation: 12 May 2025.

1.2.3 Portuguese real estate market

Residential real estate market

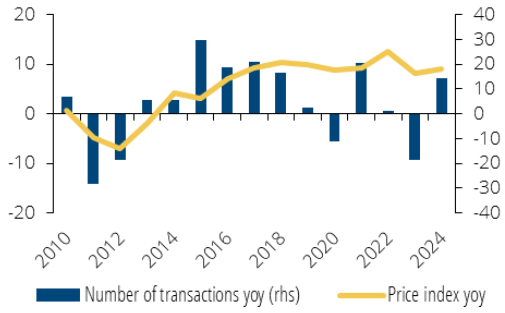
As transactions recovered in 2024, house prices continued to rise. House prices rose by 9.1%, following an 8.2% increase in 2023. The number of transactions increased by 14.5%, following an 18.7% fall in 2023 (Chart I.1.7). Transactions in existing dwellings were still predominant, accounting for 80% of the total.

In the euro area, the residential real estate market rebounded in 2024, following a price correction in 2023. Prices grew by 4.2% in 2024, following a 1.2% decrease in the previous year. Countries such as Spain and the Netherlands posted an increase in transactions, following a broad-based contraction in 2023 (Chart I.1.8). The correction of house prices, together with the decline in interest rates and the consequent improvement in financial conditions, seems to have reduced the likelihood of a further significant contraction in euro area prices.

Since 2015, house prices have grown faster than household income on average. The ratio of house prices to income exceeded the long-term average in 2019, despite stabilising in 2023 and 2024 (Chart I.1.9), reflecting similar cumulated growth in prices and household nominal disposable income per capita over both years (20% and 17% respectively). The ratio of the price index to the rental index has continued to increase, exceeding the long-term average since 2019 (33% at the end of 2024). Over the past two years, rents have increased by 12%. In real terms, the house price index is also above its long-term trend (Chart I.1.10). The assessment of house price overvaluation is based on models that

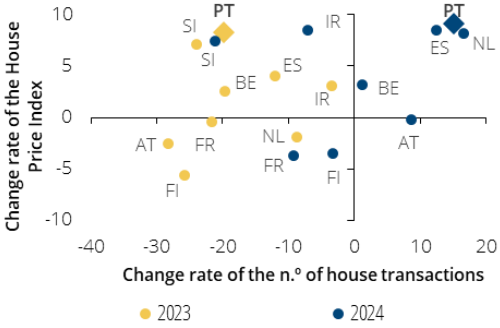
consider macroeconomic fundamentals/determinants. In 2024, these models continued to signal that prices remained above theoretical equilibrium values, although estimates varied according to the methodology used. Given the uncertainty involved and the limitations of the models, these estimates should be interpreted with caution.

Chart I.1.7 • Price index and number of transactions in dwellings in Portugal | Per cent



Source: Statistics Portugal.

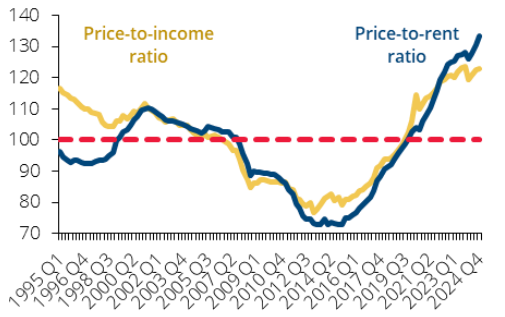
Chart I.1.8 • Price index and number of transactions in dwellings | Per cent



Source: Eurostat. | Notes: The chart includes euro area countries for which comparable information on house prices and transactions is available (Belgium, Ireland, Spain, France, Netherlands, Austria, Slovenia and Finland). Each point in the chart corresponds to one country.

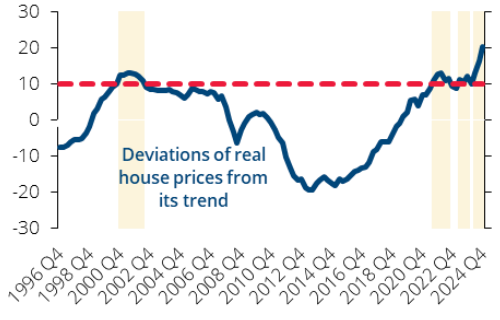
Construction costs have increased by 40% since 2015 (accumulated inflation in this period was 22%), driven by the cost of material and labour costs. Despite the stabilisation in the cost of materials in 2023 and 2024, labour costs have continued to rise, standing at 8.1% in 2024 (Chart I.1.12). The number of workers in construction has grown since 2016, with 360 thousand workers in 2023, nearing its 2007 levels (380 thousand). Labour shortages and difficulties in obtaining permits are identified as the main constraints to activity, according to Statistics Portugal's qualitative survey on construction and public works.

Chart I.1.9 • Standardised ratios of house prices to income and rents



Source: OECD. | Notes: Developments in rents reflect the index of actual rents paid by prime residence tenants included in the calculation of the Consumer Price Index. Overvaluation periods are considered to be those in which standard ratios exceed the 100 threshold, which identifies the long-term average. Latest observation: 2024 Q4.

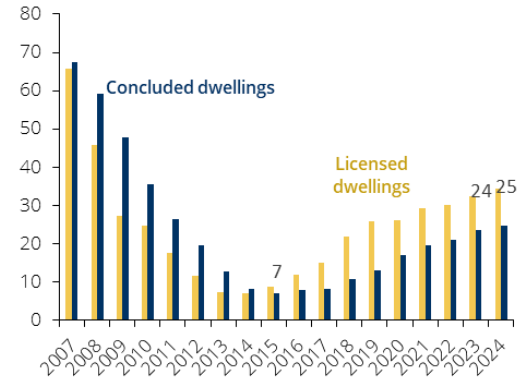
Chart I.1.10 • Deviation from the long-term trend of real house prices



Source: OECD (Banco de Portugal calculations). | Notes: Long-term trend obtained using the HP filter, applied to the real house price series (private consumption deflator). Overvaluation periods are those in which the index is 10% above its long-term trend. Latest observation: 2024 Q4.

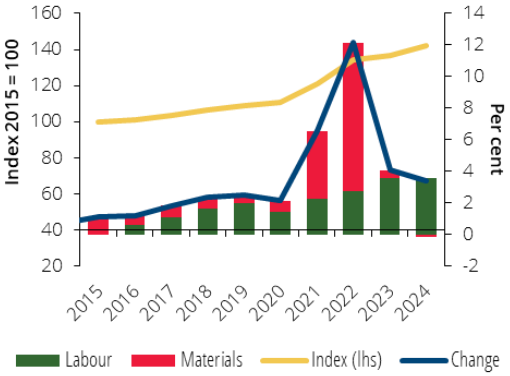
The shortage of housing supply contributes to higher prices in the residential real estate market and coexists with a high number of secondary and vacant dwellings. In Portugal, this shortage is associated with low construction activity. After a sharp fall between 2007 and 2014, housing starts recovered in a contained and gradual manner. Between 2015 and 2024, about half the number of new dwellings were built compared to the previous eight years. Following the increase in building permits since 2016, 25 thousand new dwellings were built in 2024, a 4% increase compared to 2023 (Chart I.1.11), more than trebling compared to its lowest figure. In 2021, 31% of the Portuguese housing stock was not permanently occupied, with 19% being secondary dwellings and 12% vacant dwellings. This share of vacant dwellings was among the highest in the euro area, compared with 14% in Spain, 8% in France, 7% in Ireland and 3% in the Netherlands (OECD Affordable Housing Database – indicator HM1.1. Housing stock and construction).

Chart I.1.11 • Licensed and concluded dwellings | Thousands



Source: Statistics Portugal. | Note: Household dwellings in new buildings.

Chart I.1.12 • Construction costs – index, rate of change and contributions

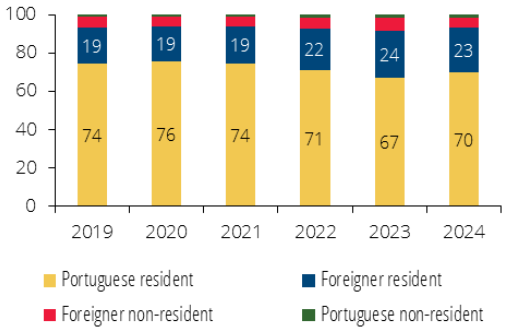


Source: Statistics Portugal. | Notes: The series in the chart refer to new housing construction costs. The index presented has a base value of 100 in 2015 and represents cumulative developments in total costs. The 'Change' series refers to the average annual rate of change in the index.

Participation of foreign buyers has increased, reflecting the increase in the foreign population residing in Portugal and investment by non-residents. In 2024, the share of transactions carried out by foreign buyers (hereinafter 'foreigners') was 29%. This compares with 25% in 2019 (Chart I.1.13). Following a drop in 2023, these transactions increased by 6.7% in 2024, reflecting the greater participation of foreign residents while that of non-residents fell by 8.5%. In 2024, Brazil led in terms of house purchases, with 25% of transactions with foreigners, followed by Angola and France with 14% each. Transactions by US citizens accounted for 6% of the total, trebling compared to 2019. In 2024, the average value of purchases by foreigners amounted to €272 thousand, above the €187 thousand of domestic buyers. Among foreigners, UK and US buyers stood out, with average values of €430 thousand.

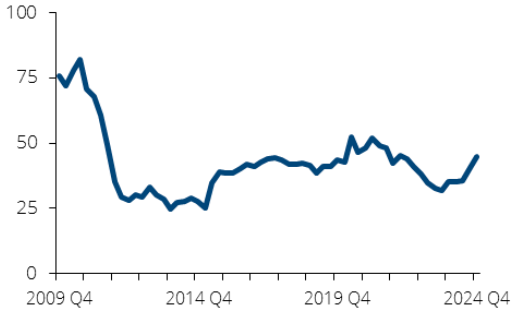
The weight of credit in transactions is lower than in the past. Since 2012, new loans (excluding transfers) have accounted for less than half of the amount transacted, below 75% in 2009 (Chart I.1.14). In 2024, that share stood at 40%, reflecting the increase in transactions in dwellings by foreigners. Credit to these buyers (residents and non-residents) has been growing, although in 2024 the increase was smaller than that of new credit to domestic buyers. Therefore, its weight in total new loans decreased from 18% (in 2023) to 17%.

Chart I.1.13 • Number of transactions in dwellings | Per cent



Sources: Banco de Portugal calculations and Statistics Portugal. | Notes: A foreign buyer is considered a buyer who was not born in Portugal. A non-resident buyer is a buyer with tax residence outside Portugal.

Chart I.1.14 • New loans for house purchase as a percentage of the total amount of transactions in dwellings | Per cent

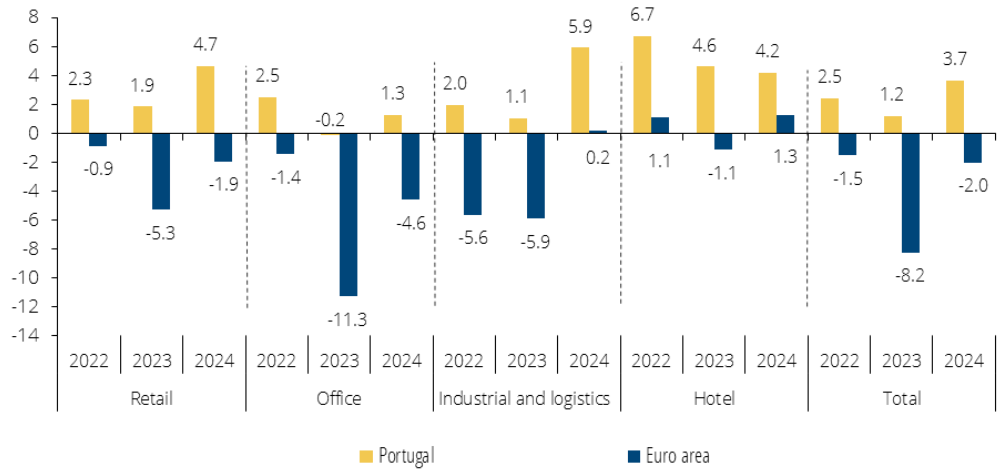


Sources: Banco de Portugal and Statistics Portugal. | Notes: This series excludes renegotiated loans since 2014 and credit transfers since 2019, credit transactions that are not related to the purchase of a house. Before these periods, it was not possible to identify these transactions, but it is estimated that they accounted for a residual percentage of the total volume of new business in those periods. Latest observation: 2024 Q4.

Commercial real estate market

In 2024, the commercial real estate market remained resilient, in contrast to the decline in euro area prices. The Morgan Stanley Capital International (MSCI) price index for Portugal rose by 3.7% (1.2% in 2023), while in the euro area the price correction continued, with a 2.0% fall in 2024 (-8.2% in 2023) (Chart I.1.15). A shortage in the supply of real estate meeting demand requirements, especially from international investors, supported market valuation. In the retail segment, commercial real estate prices rose by 4.7% in 2024, while in the office segment they increased by 1.3%, after stabilising in 2023. The industrial and logistics segment was particularly buoyant, with a 5.9% appreciation. Finally, in the hotels segment, prices also continued to grow, with a 4.2% increase, linked to favourable expectations for the tourism sector.

Chart I.1.15 • Commercial Property Price Index | Per cent



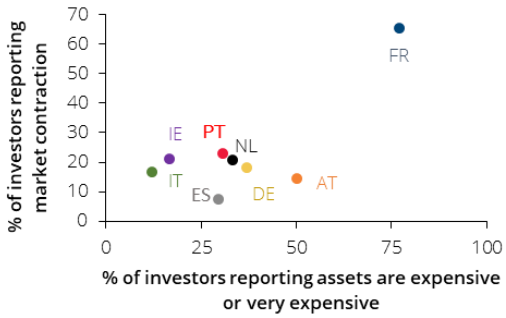
Source: Morgan Stanley Capital International (MSCI).

Investment in the Portuguese commercial real estate market continued to be dominated by international investors, mostly institutional investors. In 2024, it totalled €2.5 billion (85% by international investors), up by 40% from 2023, when the lowest investment since 2018 was recorded (€1.6 billion). This market continued to be marked by the concentration of investment in few, high-value real estate assets, which also explains the volatility in sales amounts.

The Portuguese commercial real estate market does not show any signs of overvaluation. In particular, at the end of 2024, 30% of investors assessed commercial real estate as expensive or very expensive (Chart I.1.16), a lower share than at the end of 2023. In the remaining euro area countries (with the exception of France), perceptions of an overvaluation also decreased, reflecting the price correction that occurred in 2023 and 2024. In addition, one-quarter of investors considered that the market was in a contractionary phase, a share close to that observed at the end of 2023.

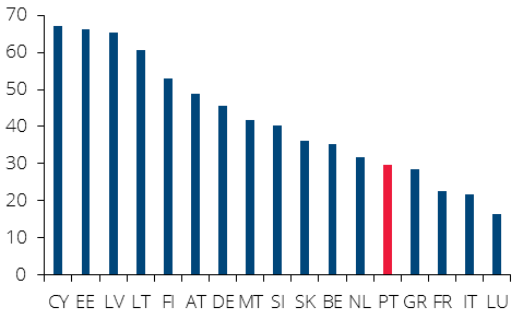
The banking sector's exposure to commercial real estate remained limited compared to other euro area countries and to residential real estate. As of September 2024, loans to firms secured by real estate accounted for 30% of total loans to firms, on a consolidated basis, the fifth lowest figure among the euro area countries with available data (Chart I.1.17). These loans were concentrated on small and medium-sized enterprises (SMEs) and different sectors of activity. In many cases, the property securing the loan was used by the firm itself to carry out its business and not as an investment asset for rental or sale. In addition, capital requirements for this type of credit are higher than those for credit secured by residential real estate, which mitigates any materialisation of risk in this market.

Chart I.1.16 • Views from market participants as to commercial real estate prices | Per cent



Sources: Global Commercial Property Monitor, Royal Institution of Chartered Surveyors – RICS. | Note: Data for the fourth quarter of 2024.

Chart I.1.17 • Loans to firms secured by real estate in Portugal and the euro area – September 2024 | Per cent



Sources: ECB and Banco de Portugal. | Notes: Consolidated data. Ratio calculated on the basis of figures net of impairments. Includes loans to firms secured by (commercial or other) real estate. Data not available for Spain or Ireland. Figures expressed as a percentage of total loans to firms in each country.

1.3 Sectoral risk analysis

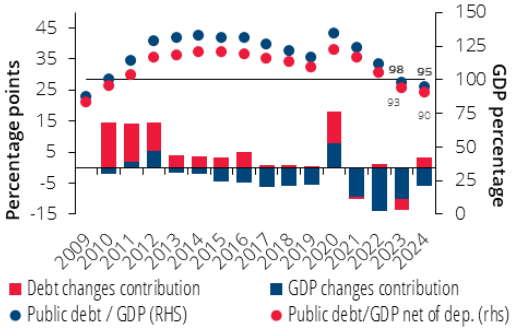
1.3.1 General government

In 2024, the Portuguese public debt ratio declined to 95% of GDP, from 98% in 2023, despite an increase in nominal debt (Chart I.1.18). The debt ratio net of deposits narrowed to 90% of GDP, also reflecting growth in deposits by €1.9 billion (0.7% of GDP). Portugal had a fiscal surplus of 0.7% of GDP (down from 1.2% in 2023), and therefore the increase in nominal debt reflected the effect of deficit-debt adjustments (3.8% of GDP). There was a notable increase in financial assets (€3.8 billion), including, in addition to deposits, debt and equity securities that strengthened the portfolios of social

security funds, the Fundo de Resolução (Resolution Fund) and the Fundo de Garantia de Depósitos (Deposit Guarantee Fund).[1]

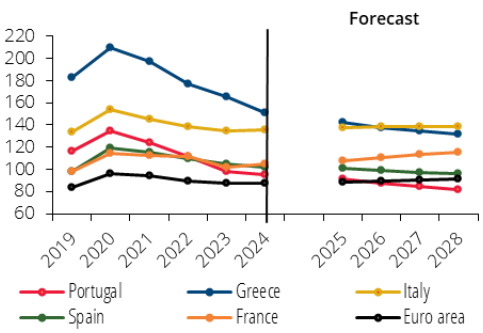
In its April projections, the IMF anticipated that the debt ratio as a percentage of GDP would decline further, bringing it below the euro area average in 2026 (Chart I.1.19). Macroeconomic and geopolitical factors, including higher defence spending, will continue to pose substantial risks to this path.

Chart I.1.18 • Portuguese public debt ratio



Source: Banco de Portugal and Statistics Portugal.

Chart I.1.19 • IMF public debt projections | As a percentage of GDP



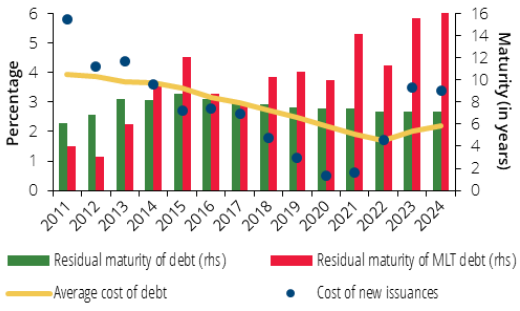
Source: IMF. | Note: April 2025 projections.

The average cost of debt issued in 2024 was 3.4%, reversing the upward trend that started in 2020 (Chart I.1.20). In recent years, higher interest rates on new issuance have put pressure on the average cost of debt, which in 2024 rose to 0.5 p.p. above its 2022 low. However, the impact on total financing costs was limited, due to the high share of debt issued at fixed rates (88%) and the average maturity of 7.2 years for direct State debt. The reduction in the debt ratio as a percentage of GDP has contributed to successive upgrades to the sovereign debt rating, thereby mitigating the risk of a sharp increase in financing costs.

The portfolio of Portuguese government bonds held by the Eurosystem has gradually decreased, amid excess market liquidity. In 2024, the share of Portuguese sovereign debt held by the Eurosystem, the Banco de Portugal and the ECB decreased by 3 p.p., while that held by other non-resident investors increased by 4 p.p. The Eurosystem's portfolio receded by €4.8 billion, while non-residents other than the ECB and the European Union increased their exposure by €11.8 billion. This development stems from upgrades to the rating of the Republic and the inclusion of Portuguese sovereign debt in the FTSE World Government Bond Index in November 2024. The increased exposure to international financial markets reinforces the importance of maintaining a sovereign debt reduction path (Chart I.1.21).

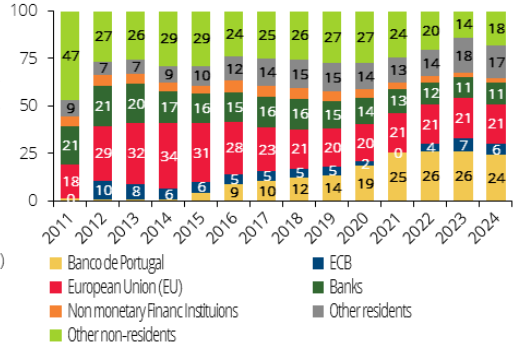
[1] The deficit-debt adjustment comprises a heterogenous range of factors. For further details, see Condições dos mercados, dívida pública e dívida externa: março de 2025, Box 2, UTAO.

Chart I.1.20 • Cost and maturity of Portuguese public debt



Sources: Portuguese Treasury and Debt Management Agency. | Notes: Data refers to direct State debt. Residual maturity refers to the stock of debt and medium and long-term debt issued.

Chart I.1.21 • Structure of Portuguese public debt holders | Per cent



Sources: Banco de Portugal., ECB and Portuguese Treasury and Government Debt Agency . | Note: Other non-resident investors exclude the ECB and the European Union, identified in the chart.

In the absence of persistent financial market turmoil, refinancing risk remains contained. By 2028, the annual amounts of maturing debt should not exceed 10% of the total stock, remaining below €20 billion between 2026 and 2028 (Table I.1.1). In 2024, the Portuguese State had on average €15 billion in deposits with resident financial institutions.

Table I.1.1 • Schedule of Portuguese public debt redemptions | EUR billions

	2025	2026	2027	2028	After 2028
Stock of debt maturing	21.3	19.3	19.3	18.7	162.1
Treasury bills	6.7	2.3	0.0	0.0	0.0
Official loans	1.5	5.0	3.0	2.6	44.6
Other medium and long-term debt	13.0	12.0	16.2	16.1	117.5
Weight in total stock of debt (%)	8.8	8.0	8.0	7.8	67.4
Weight in 2024 GDP (%)	7.5	6.8	6.8	6.6	56.9

Source: Portuguese Treasury and Debt Management Agency. | Note: Calculations based on information for February 2025. Excludes savings certificates, Treasury certificates, short-term special debt certificates and medium/long-term special debt certificates.

1.3.2 Firms

In 2024, Portuguese firms continued to perform well, with high operating profitability, increased capital ratio and a rise in deposits. Operating profitability, measured as the ratio of earnings before interest, taxes, depreciation and amortisation (EBITDA) to assets, was 9.4% (9.5% in 2023), with lower heterogeneity across sectors (Chart I.1.22). The transport and storage, construction, and trade sectors stood out, with increases of 1.3 p.p., 0.9 p.p. and 0.6 p.p. respectively. In turn, the industrial sector saw a 1.1 p.p. reduction, concentrated in the first half of the year, while maintaining profitability levels above average among Portuguese firms.

Financing costs rose in 2024, but showed signs of a reduction in the last months of the year. It peaked at 5% in the third quarter (2.7 p.p. up from mid-2022) but broadly receded at the end of the year (Chart I.1.23). The ratio of financing expenses coverage by EBITDA improved in the last quarter of the year from 6.9 to 7.1.

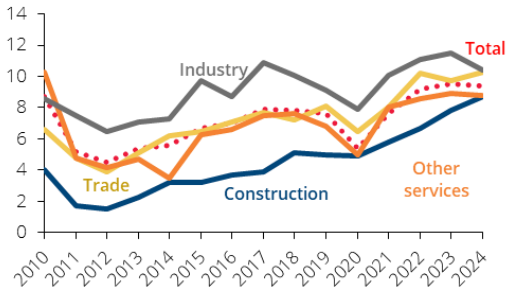
The capital ratio, measured as equity as a percentage of assets, grew further in 2024, albeit at a slower pace than in 2023. This development reflected retained earnings and was broadly based across sectors (except head offices) and size classes. Since mid-2009, the capital ratio has increased by 15 p.p.

for total firms, to 45.6%, and by 20 p.p. for SMEs, to 46%. The increase in capitalisation was accompanied by a decrease in obtained funding, which accounted for 26.6% of assets. Firms have maintained a distributed income rate of close to 40%, in line with the euro area average.

In 2024, firms continued to report financing needs, to the amount of 4.4% of GDP (0.6 p.p. more than in 2023). This reflected a decrease in the saving rate (from 9.1% to 8% in 2024) and in capital transfers received, partly offset by a drop in investment from 14% to 13% of GDP. This performance contrasts with most euro area countries, which had aggregate net lending of 1.1%.

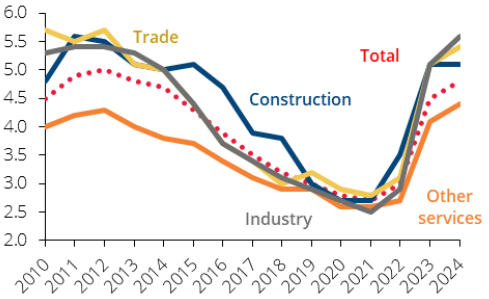
Nominal corporate debt remained stable. In 2024, total debt stabilised after having decreased by 2.3% in 2023, with increases in credit from resident banks (Section 3.1) and non-residents, offset by the reduction in credit from non-monetary financial institutions (non-MFIs) and households[2] and, to a lesser extent, by write-offs (Chart I.1.24). Net issuance of debt securities amounted to €4.2 billion (the highest figure since 2008), concentrated in a small number of firms.

Chart I.1.22 • Operating profitability, by sector of activity | Per cent



Source: Banco de Portugal. | Notes: Average operating profitability on assets is defined as the ratio of EBITDA to average assets for the period. EBITDA is an acronym for earnings before interest, taxes, depreciation and amortisation.

Chart I.1.23 • Cost of obtained funding | Per cent

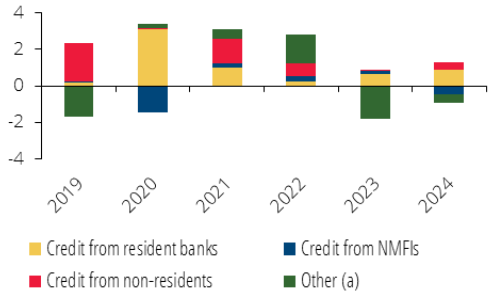


Source: Banco de Portugal. | Notes: The costs of obtained funding include costs associated with bank loans, debt securities and other loans. The quarterly ratio corresponds to the value obtained for the year ending in the quarter.

Indebtedness continues to decline and firms maintain record high liquidity. In a context of unchanged debt, firms' indebtedness ratio, as a percentage of GDP, dropped by 4 p.p. from 2023, to 74%, below euro area levels (Chart I.1.25). The ratio of indebtedness net of deposits decreased by 5 p.p. to 47%, reflecting growth in corporate deposits (8% in 2024, after a fall in 2023). At the end of 2023 (the last year with Simplified Corporate Information data), the cash-to-deposit ratio accounted for 9.2% of assets, below the 9.9% peak observed in 2021 and 2022. Trade, accommodation and food services, and construction stood out, due to their higher-than-average liquidity.

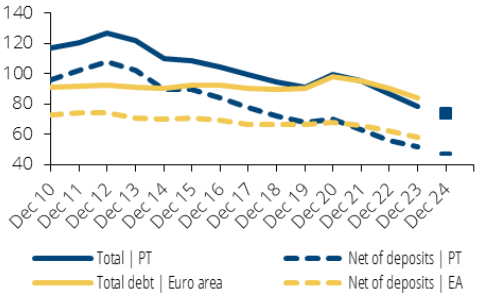
[2] Throughout the report, the term 'households' is used for the sake of simplicity in cases where it refers toa broader statistical aggregate that also includes non-profit institutions serving households (NPISHs).

Chart I.1.24 • Contributions to changes in corporate debt | In p.p. of GDP



Source: Banco de Portugal. | Notes: Consolidated figures. 'NMFIs' refers to non-monetary financial institutions. The concept of credit shown in the chart includes loans granted and securities held by the funding sectors. (a) Includes loans to households, trade credits and advances, other changes in volume and value, and write-offs from assets in the balance sheet of resident banks.

Chart I.1.25 • Gross indebtedness ratio and indebtedness ratio net of deposits(1), as a percentage of GDP

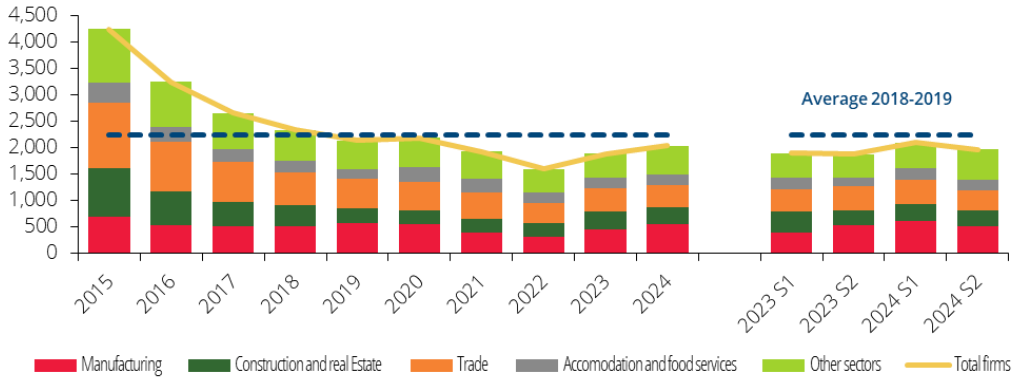


Source: Banco de Portugal. | Notes: Consolidated figures. (1) The ratio of indebtedness net of deposits corresponds to the ratio of NFC total debt less deposits to GDP.

The number of insolvencies remained low. After an increase that started in mid-2022 – most notably in manufacturing – this path was interrupted in 2024, with the number of insolvencies remaining below the average for the period 2018-19 (Chart I.1.26). These developments are consistent with the absence of significant credit risk materialisation in bank loans to firms (Section 3.3).

Firms' balance sheets were, overall, in a robust financial position. No sectors with a significant concentration of vulnerable firms have been identified, and fragility episodes have been limited to specific firms, as is common even in periods of economic expansion. In the central macroeconomic scenario for 2025, the share of financially vulnerable firms is expected to decrease (firms with EBITDA lower than twice the amount of interest incurred). This share is estimated to have decreased from 14% at the end of 2024 to 12% (weighted by assets) in 2023, and is expected to decline further in 2025, to 8%.

Chart I.1.26 • Insolvencies declared | In number

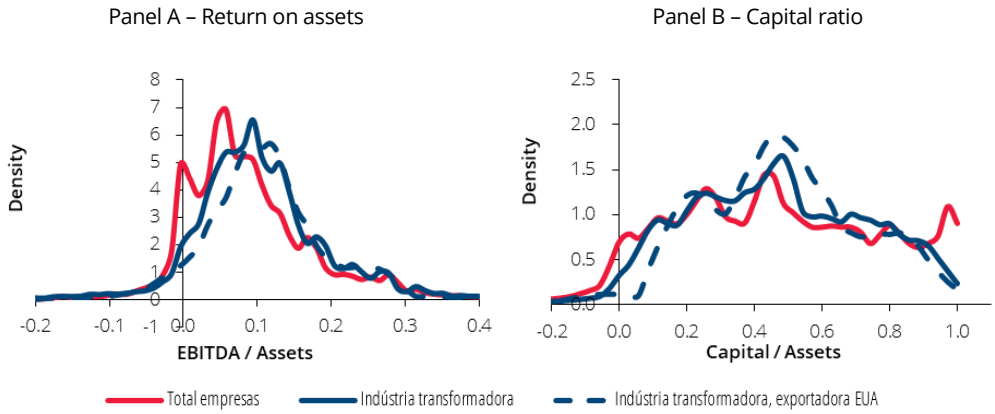


Source: Statistics Portugal. | Notes: Bankruptcy/insolvency proceedings ordered by judicial persons or similar entities (number). Semi-annual information is annualised.

Change in US trade policy is expected to have an impact particularly on the more export-oriented sectors such as manufacturing and, to a lesser extent, trade. In Portugal, in 2023, exports

to the US accounted for 2.7% of manufacturing sales and 0.4% of sales in trade. Of the manufacturing firms that exported to the US, only 22% directed more than 10% of their sales to that market. The improvement in Portuguese firms' financial situation over the last decade is expected to have increased their capacity to absorb the impact of possibly lower sales to the US. In particular, manufacturing firms have higher profitability and capital ratio indicators than total firms. The same was true for firms most exposed to the US market (Chart I.1.27).

Chart I.1.27 • Return on assets and capital ratio of firms in 2023 – Total firms, manufacturing and firms exporting to the US

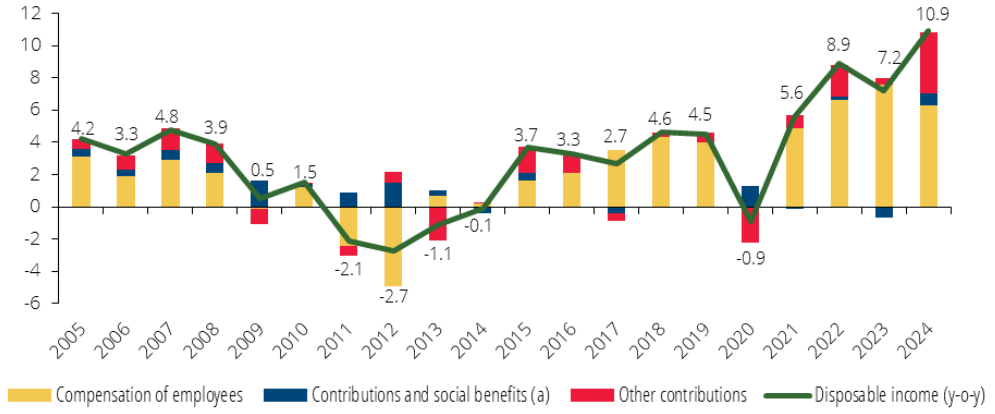


Source: Banco de Portugal | Notes: Empirical distribution obtained using a Gaussian kernel that weighs firms by their total assets. The dashed blue series refers to the subset of manufacturing firms whose exports of goods to the US exceed 10% of their turnover. Return on assets is defined as the ratio of EBITDA to the firm's assets. EBITDA is an acronym for earnings before interest, taxes, depreciation and amortisation. The capital ratio is measured by the ratio of equity to assets (end-2023 figures).

1.3.3 Households

In 2024, nominal household disposable income posted the highest growth rate in the last two decades (10.5%), corresponding to a 7.8% increase in real disposable income. This growth mainly reflected a rise in the wage bill and other contributions, such as gross operating surplus, property income, taxes and other net transfers (Chart I.1.28). Throughout 2024, Statistics Portugal's consumer confidence indicator remained on an upward path until July, only to stabilise in the final months of the year.

Chart I.1.28 • Changes in household nominal disposable income and contributions | Per cent and percentage points

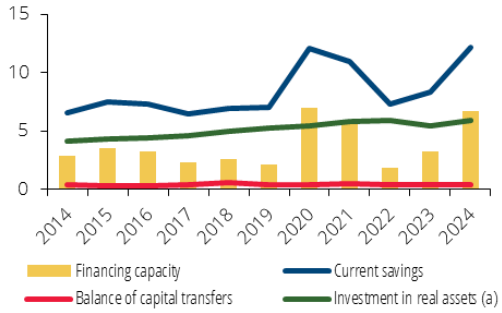


Sources: Banco de Portugal and Statistics Portugal. | Note: (a) Net of transfers in kind.

The saving rate increased in 2024, for the second year in a row, reaching 12.2% and remaining above the average for the period 2015-19. This increase took place against a background of higher interest rates and economic uncertainty – factors fostering precautionary savings. In 2024, savings were mainly allocated to currency and deposits (5.9% of disposable income) and investment in real assets (5.9% of disposable income), mainly housing. Following significant investment in savings certificates in 2023 (5.7% of disposable income), there was a 0.3% disinvestment in 2024.

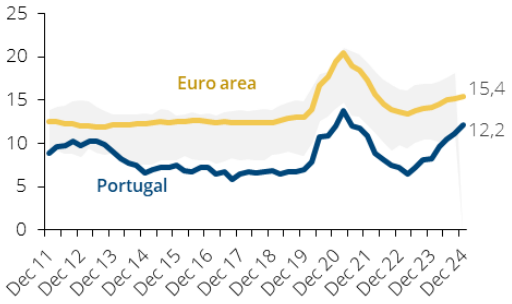
In turn, household net lending stood at 6.7% of disposable income, an increase of 3.5 p.p. from 2023. This increase benefited from the higher savings rate (Chart I.1.29), which paralleled only with 2020, when there was a protracted lockdown. Although the saving rate in Portugal remains below the euro area average, the difference between the two has narrowed (Chart I.1.30). According to Eurostat's 2024 Survey on Income and Living Conditions (EU-SILC), 57% of households in Portugal reported having difficulty (great difficulty, difficulty or some difficulty) in making ends meet, thus exceeding the euro area average (44%). It should be noted, however, that in Portugal this share has decreased since 2013, when it peaked at 81%.

Chart I.1.29 • Savings, investment and net lending/borrowing of households | As a percentage of disposable income



Sources: Statistics Portugal and Banco de Portugal. | Note: (a) Corresponding to the sum of gross fixed capital formation, changes in inventories, acquisitions less disposals of valuables, and acquisitions less disposals of non-produced non-financial assets.

Chart I.1.30 • Household saving rate | As a percentage of disposable income

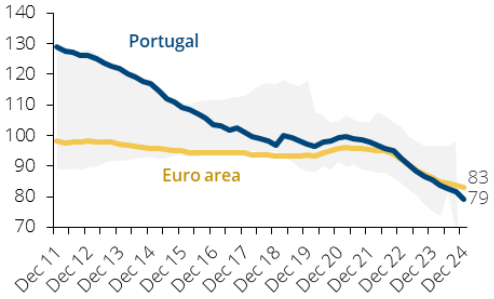


Sources: Banco de Portugal and Eurostat (Banco de Portugal calculations). The shaded area corresponds to the range between the third and first quartiles of the distribution for a set of euro area countries (Belgium, Czechia, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Hungary, Netherlands, Austria, Poland, Portugal and Finland).

In 2024, the household indebtedness ratio continued its downward trend observed over the past decade and a half, falling by 5.4 p.p. from the end of 2023, to 79.2% of disposable income. It has remained below the euro area average since 2019 (Chart I.1.31). This reflected the substantial increase in disposable income and total household debt, which posted an annual rate of change of 3.8% at the end of 2024, reflecting an increase in loans for house purchase (3.6%) and consumer loans (6.2%) (Chart I.1.32).

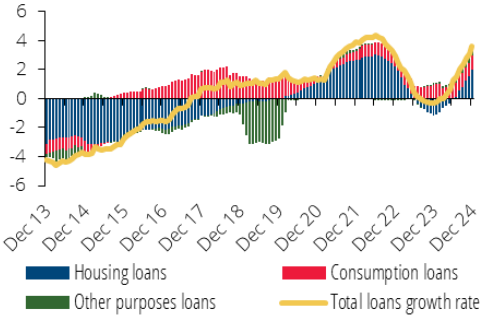
The average interest rate on the stock of loans for house purchase has declined since May 2024, following several months of increases (Chart I.1.33, Panel A). In December, it stood at 4.0%, above the euro area average (2.7%) and reflecting the predominance of variable-rate agreements. For consumer credit and other purposes, the cost of financing stabilised, with some easing towards the end of the year. The average rate reached 7.8% in December 2024, compared with 5.7% in the euro area average (Chart I.1.33, Panel B).

Chart I.1.31 • Household indebtedness ratio | As a percentage of disposable income



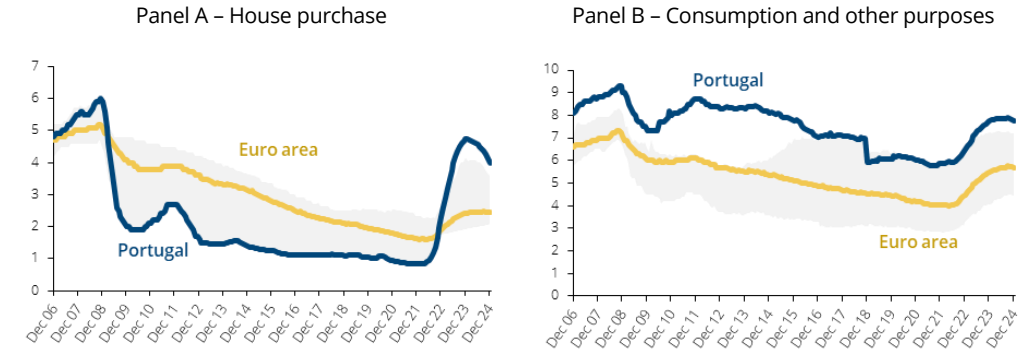
Sources: Banco de Portugal and Eurostat (Banco de Portugal calculations). | Notes: Non-consolidated figures for total debt. For disposable income, figures unadjusted for the balance of social transfers in kind are considered. The shaded area corresponds to the range between the third and first quartiles of the distribution for a set of euro area countries (Belgium, Germany, Ireland, Greece, Spain, France, Italy, Netherlands, Portugal and Finland).

Chart I.1.32 • Contribution to the annual rate of change in household debt | Per cent and percentage points



Source: Banco de Portugal. | Notes: Annual rates of change were calculated on the basis of an index constructed using adjusted transactions, i.e. changes in end-of-period outstanding amounts adjusted for reclassifications, write-offs, price and exchange rate revaluations and, where relevant, for the effect of securitisation and sales. The annual rates of change shown in this section may differ from those reported in Section 3.2, as they relate to a broader universe of credit institutions, including non-monetary financial institutions.

Chart I.1.33 • Average interest rate on the stock of loans | Per cent



Source: ECB (Banco de Portugal calculations). | Notes: The shaded area corresponds to the range between the 10th and 90th percentiles of the distribution for a set of euro area countries (Belgium, Germany, Ireland, Spain, France, Italy, Netherlands, Austria, Portugal, Slovenia and Finland). Latest observation: December 2024.

In 2024, EURIBOR rates declined across the board, posting 2.8%, 2.6% and 2.4% at the end of the year for the three-month, six-month and twelve-month rates respectively (1.1 p.p., 1.3 p.p. and 1.2 p.p. lower than at the end of 2023). This downward trend is projected to continue, given expectations for the same rates throughout the year (Chart I.1.2, Section 1.2.2). Housing costs – including rents, mortgage instalments and other housing-related expenses (such as water, electricity and gas) – accounted for a substantial component of the household budget. According to EU-SILC data, the share of these costs in household disposable income increased by 2.8 p.p. in 2024, to 16.8%, despite remaining below the euro area average (19.7%).

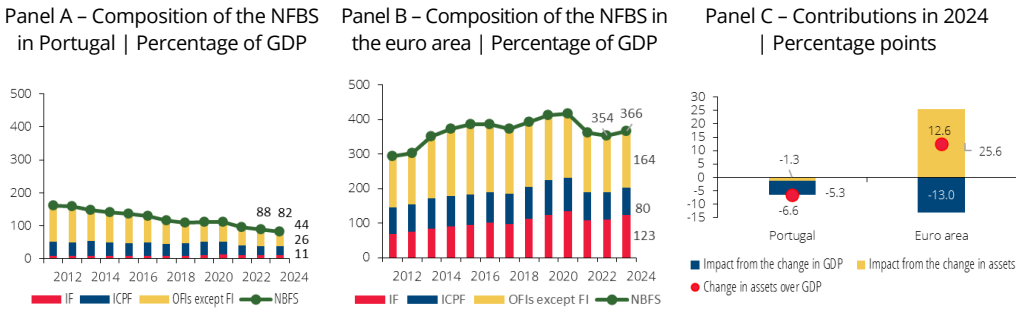
1.3.4 Non-banking financial sector

Financial stability risks associated with the non-bank financial sector (NFBS) in Portugal remain limited. The sector is small, with financial assets accounting for 82% of GDP at the end of 2024, slightly more than one-fifth of the euro area average, 366% (Chart I.1.34 – Panels A and B). There is high

heterogeneity across countries, most notably in Luxembourg, the Netherlands and Ireland. The banking sector accounts for 167% of GDP in Portugal, compared to 243% in the euro area.

In Portugal, the ratio of NFBS assets to GDP fell by 6.6 p.p., as a result of the decrease in financial assets (-1.3 p.p.) and an increase in nominal GDP (-5.3 p.p.) (Chart I.1.34 – Panel C). By contrast, in the euro area, there was an increase in this ratio (+12.6 p.p.), reflecting an increase in investment fund assets.

Chart I.1.34 • Evolution and composition of the NFBS in Portugal and the euro area

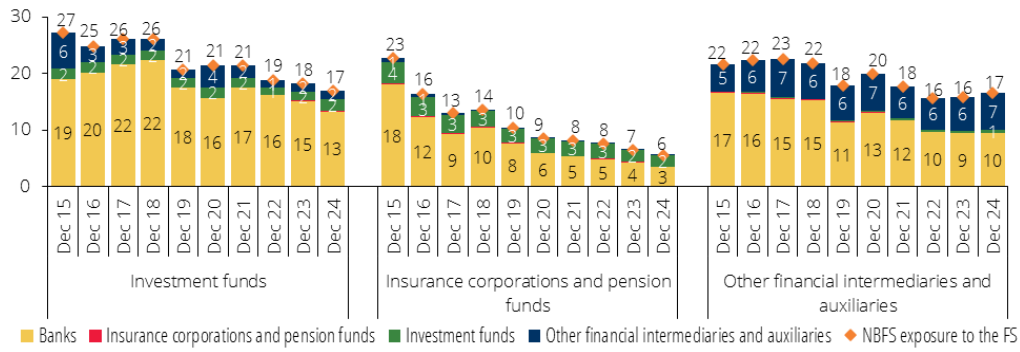


Sources: ECB and Banco de Portugal. | Notes: Non-consolidated figures. IFs: Investment funds; ICPFs: Insurance corporations and pension funds; OFIs exc. IFs: Other financial intermediaries except investment funds.

Direct or indirect interlinkages of the NFBS with the various resident, financial and non-financial institutional sectors remain negligible and have been declining over the last decade. Direct exposures of the various NFBS sub-sectors (investment funds, insurance corporations and pension funds and other financial intermediaries) to financial institutions showed a decreasing trend, mostly consisting of deposits with banks (Chart I.1.35). Non-residents were the largest counterparty sector, in terms of the origin and application of funds intermediated by the NFBS (34% of liabilities and 40% of assets). This predominance of external counterparties limits contagion effects to other resident sectors if risks materialise in the NFBS (Box 3 – *Financial Stability Review*, Banco de Portugal, November 2024).

The small size of the financial intermediation activity carried out by this type of institution limits the risks associated with them. In turn, a dynamic NFBS expands the range of alternatives for the use of household savings, fostering competition and enhancing better returns. Likewise, firms benefit from complementary forms of financing.

Chart I.1.35 • NFBS assets vis-à-vis Portuguese financial sector sub-sectors | As a percentage of financial assets



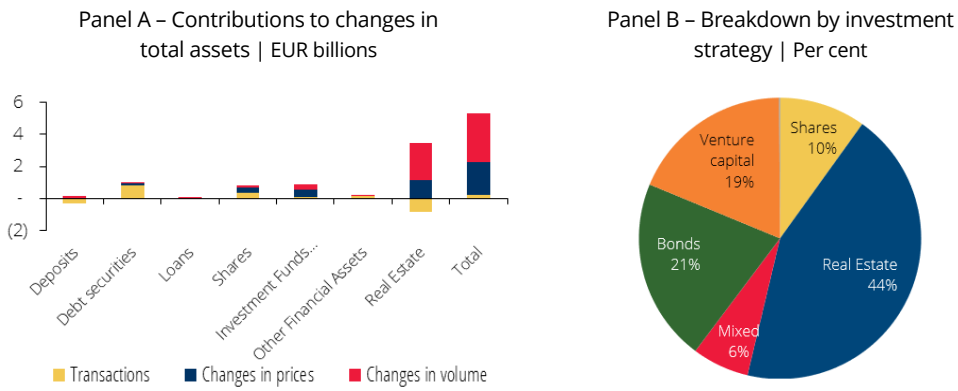
Source: Banco de Portugal – Financial accounts. | Notes: Non-consolidated figures. Financial assets include deposits, debt securities, loans, shares and other investment fund units and listed shares. Each column represents the percentage of financial assets of the different sub-sectors identified on the x-axis compared to each sub-sector of the resident financial system. The remainder corresponds to resident non-financial counterparties, e.g. households and firms, and non-residents. For instance, in December 2024, 13% of the financial assets of investment funds corresponded to claims on Portuguese resident banks.

Investment funds

The value of the main categories of assets under management rose, on average, by 4%. Assets under management recorded positive changes in volume and value, amounting to €5.1 billion (Chart I.1.36 – Panel A), reaching €52.3 billion, a peak since January 2000. Subscriptions net of write-offs of investment fund units decreased (€0.1 billion).

Securities investment funds (SIFs) accounted for 56% of total assets under management. These are bond, venture capital, equity and mixed funds (Chart I.1.36 – Panel B). In turn, real estate investment funds (REIFs) accounted for the remaining 44%, with their asset portfolio consisting mainly of real estate (86% in December 2024).

Chart I.1.36 • Investment fund assets in 2024 | EUR billions



Source: Banco de Portugal. | Notes: Changes in volume include reclassifications of entities. At the end of the year, firms from the real estate activities sector were converted into REIFs, namely fixed capital real estate investment companies (*Sociedades Imobiliárias de Capital Fixo* – SICAFI).

The predominance of closed REIFs, which account for 78% of assets under management, helps to mitigate liquidity risk. This risk, associated with the possibility of redemption arising before the assets can be sold without incurring significant losses, may be particularly relevant in REIFs, due to the less liquid nature of real estate assets. Given that they issue a fixed number of shares/units that are not tradable continuously, closed-ended funds are less sensitive to changes in market conditions.

Maintaining a portfolio of liquid assets also helps to mitigate liquidity risk. Currency and deposits accounted for 8% of Portuguese investment fund assets (13% of financial assets), exceeding the euro area average (6%).

Insurance corporations and pension funds

The life and non-life segments grew markedly, both in Portugal and in the euro area. In terms of life insurance, production rose by 35% from 2023, interrupting the downward trend seen in previous years. There was also a 13% reduction in amounts paid out, including redemptions. In the non-life segment, production increased across the core business segments (11% overall), with the delinquency rate remaining similar to 2023.[3]

[3] *Relatório de Evolução da Atividade Seguradora* – fourth quarter of 2024, Portuguese Insurance and Pension Funds Supervisory Authority.

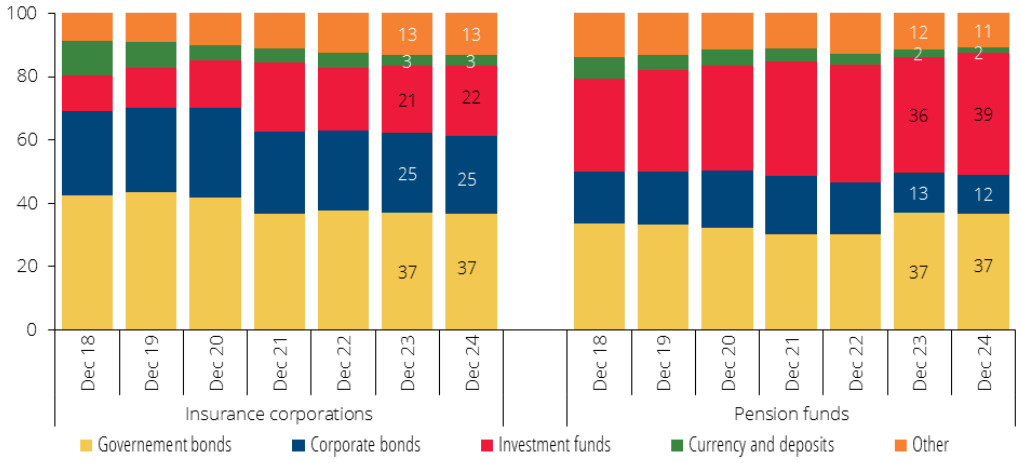
Pension fund contributions grew by 48%,[4] reflecting extraordinary contributions and the significant increase in individual memberships of open funds and, to a lesser extent, to retirement savings plans. According to the Portuguese Insurance and Pension Funds Supervisory Authority, the financing of defined benefit pension plans remained comfortable.

Developments in the life segment and in pension funds are likely to be related to the increase in the saving rate of households, whose investments in these instruments accounted for 11% of their financial assets.

Total financial assets of the insurance sector and pension funds rose by 6%. In terms of transactions, there was a net acquisition of long-term debt securities. Disinvestment in Portuguese public debt was offset by an increase in investment in debt issued by non-residents. Among changes in volume and price, the valuation of shares and other equity stood out.

The weight of investment fund shares/units in the investment portfolios of insurance corporations and pension funds increased. Although government bonds still account for the largest share of insurance corporations' assets (37%), in the case of pension funds, investment fund shares/units are now the weightiest asset (39%) (Chart I.1.37).

Chart I.1.37 • Assets of insurance corporations and pension funds | As a percentage of the total portfolio



Source: Insurance and Pension Funds Supervisory Authority.

The devaluation of portfolio securities poses a substantial risk to the business of these institutions. In terms of market risk, the predominance of sovereign debt securities in investment portfolios minimises any losses stemming from investors' risk-averse behaviour. Still, significant exposures to private debt and investment funds remain, which are the main channels of exposure to this risk.

The decline in interest rates may imply a partial erosion of the positive effects in recent years associated with the rise in discount rates. Given that in these sectors the duration of liabilities is longer than that of assets in the portfolio, all else being equal, and for the same decrease in interest rates, this tends to lead to an increase in liabilities exceeding the valuation of assets.

[4] *Relatório de Evolução da Atividade dos Fundos de Pensões* – fourth quarter of 2024, Portuguese Insurance and Pension Funds Supervisory Authority.

The Insurance and Pension Funds Supervisory Authority highlights the resilience of the sector, supported by solvency materially above the regulatory minimum.[5] Furthermore, there is high portfolio liquidity, limited use of derivatives and a recovery in the life segment. In the case of non-life insurance, there is the use of risk management and transfer practices, such as reinsurance in the international market.

1.4 Emerging risks and challenges for financial stability

Risks associated with climate change and digitalisation affect all sectors of the economy, including the financial sector, and therefore require particular attention from a financial stability perspective. It is also important to monitor new forms of exposure to money laundering and terrorist financing risks that could undermine the stability of the financial system.

Climate systemic risks and regulatory developments

Climate systemic risks, due to their structural and cross-cutting nature, pose significant challenges to financial stability, aggravated by the geopolitical context that hampers international cooperation. Postponing the transition to trajectories compatible with the Paris Agreement increases physical risks – due to persistent greenhouse gas (GHG) emissions – and transition risks. The resilience of the banking sector may also be affected by the low levels of insurance protection of assets used as collateral in credit operations.

Recent European regulation reflects the increasing integration of climate-related risks. On 19 June 2024, the revision of the Capital Requirements Directive and Regulation (CRD6/CRR3) was published, which addresses climate-related and environmental considerations in the various areas of banking activity. More recently, on 26 February 2025, the European Commission presented the Omnibus I package, which aims to simplify sustainability reporting and due diligence requirements, enhancing competitiveness and investment in the EU. This initiative provides for: (i) the two-year postponement of sustainability reporting for certain firms (Stop-the-Clock Directive, adopted on 14 April 2025); (ii) the reduction in the number of entities covered by the Corporate Sustainability Reporting Directive (CSDR) and (iii) the simplification of the information to be reported.

Institutions are expected to continue to integrate climate-related and environmental factors into all dimensions of their activity by strengthening their resilience to these risks. To that end, and in line with Article 87-A(5) of Directive 2013/36/EU, in January 2025, the European Banking Authority (EBA) published the Guidelines on the management of environmental, social and governance (ESG) risks (EBA/GL/2025/01).

At the same time, it is essential to establish mechanisms to encourage harmonised reporting by firms at European level, ensuring robust risk management in the banking sector. Achieving the EU's climate targets requires high volumes of investment, which is an important challenge given the specificities of institutional framework and the fragmentation of European capital markets.

Based on the Draghi report, the European Commission adopted its strategy for the Savings and Investments Union on 19 March 2025. This initiative, which will be based on legislative and non-legislative measures adopted by Member States, aims to better channel savings towards productive investment, promote economic growth and strengthen the integration and competitiveness of the banking sector, including by deepening the Banking Union. In a Communication of April 2025, the IMF also highlighted the importance of these drivers for the EU's competitiveness.

[5] *Relatório de Estabilidade Financeira do Setor Segurador e dos Fundos de Pensões* – March 2025, Insurance and Pension Funds Supervisory Authority.

Digitalisation and cybersecurity

Technological development is also crucial for the banking sector, and it is essential to manage its associated risks. New technologies, such as artificial intelligence and cloud computing, generate efficiency and productivity gains, but also introduce new risks such as cyber risk, fraud, and reliance on a limited set of technology service providers. In particular, the growing use of artificial intelligence increases the disruptive potential of these risks, including other ethical ones.

At European level, there is an increase in the frequency and sophistication of cyber incidents. The report of the European Union Agency for Cybersecurity (ENISA) of February 2025 flags banks as the main targets, with denial-of-service incidents linked to geopolitical events. Cyberattacks on the financial sector's technology providers – with financial losses, data leaks, and reputational damage – and financial fraud through social engineering targeting individuals and institutions also gain relevance. The ECB's analysis of cyber incidents reported by significant banks corroborates ENISA's information. In this context, financial authorities must include within their scope of analysis and action third-party technology providers (Box 1 – Technological interconnections in the Portuguese financial system).

Despite advances in operational resilience and cybersecurity, it is crucial to consolidate progress and respond to new risks and demands. It is essential to complete the regulatory framework, in particular the legislative package on digital operational resilience for the financial sector (DORA), as communicated by the Banco de Portugal on 17 January 2025. Specific measures are needed to ensure regulatory compliance in fields such as network and information security, reporting and sharing of information on incidents, digital resilience testing and articulation between Portuguese and European sectoral authorities.

The banking sector's exposure to crypto-assets is reduced. However, recent market trends enhance the importance of maintaining continuous monitoring of those assets. The new US administration has boosted the crypto-assets markets, increasing their volatility. While its impact on financial stability remains limited given its small size, it is important to continue monitoring them, mainly due to potential interconnections with regulated markets, and discussing their regulatory framework. In this context, the digital euro emerges as an alternative for digital payments supported by a European infrastructure that enables the reinforcement of the EU's strategic autonomy and economic efficiency. This solution seems to meet consumer preferences (see SPACE, Study on the payment attitudes of consumers in the euro area), while financial stability risks will be mitigated by setting holding limits.

Box 1 • Technological interconnections in the Portuguese financial system

Cyber security is crucial to preserve financial stability, given the increased number and severity of cyber incidents. Against this backdrop, it is essential to identify and mitigate operational vulnerabilities in the financial system, including those associated with technology service providers. The identification of systemically important entities/infrastructures and concentration risks justifies carrying out exercises to map interconnections between the financial system and its third-party technology service providers (hereinafter "technology providers") – Cyber and Operational Mapping, as recommended by the European Systemic Risk Board (ESRB). This box presents the methodology and main findings of the mapping exercises applied to the Portuguese banking system.

Cyber and Operational Mapping of the Portuguese banking system

The Cyber and Operational Mapping of the Portuguese banking system was developed from a macroprudential perspective, based on data from about 10 thousand contractual relationships between credit institutions (about 90% of the banking system, including all O-SIIs) and approximately 230 technology providers. The latter provide services such as cloud services, support in the implementation and maintenance of technology systems, infrastructure management, cyber security services and software development, among others. On average, each institution engages 33 technology providers and about half of all contractual relationships cover highly relevant services to credit institutions.

The analysis focused on the key economic functions of the financial system – deposits; lending; capital markets; operations between financial institutions; and payments, clearing, custody and settlement – subdivided into specific segments (e.g. deposits were broken down into households, small enterprises, medium-sized and large enterprises, and general government). This structure has made it possible to identify relevant institutions and technology providers for each segment, regardless of their size. This structure has made it possible to identify relevant institutions and technology providers for each segment, regardless of their size.

At the first stage, the importance of each technology provider to each institution and key economic function was assessed using metrics such as service relevance, provider substitutability, contractual information and degree of connectivity. These metrics were aggregated into a composite indicator.

At the second stage, the institutions and technology providers deemed system-critical were identified. Technology providers were deemed critical where, in a key economic function, they (i) provide services to several O-SIIs, (ii) serve a significant share of the sector or (iii) have high composite indicator values for multiple institutions. This approach is aligned with the criteria set out in the Digital Operational Resilience Act (DORA) and the recommendations of the European Supervisory Authorities on the digital operational resilience of financial entities.

Main findings

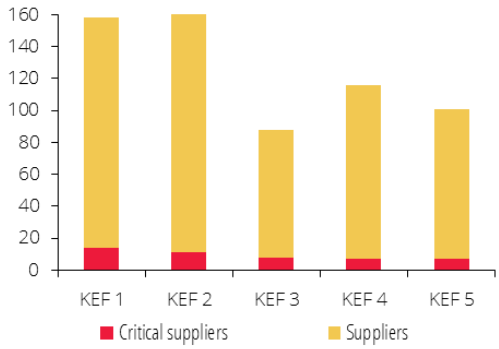
This exercise identified 21 critical technology providers, corresponding on average to 8% of providers per key economic function (Chart B1.1)**.** These critical suppliers provide services to institutions representing between 12% and 100% of each segment's activity, with a higher concentration in payment and cash services.

Of the 21 critical technology providers, 11 were identified as critical in more than one economic function (Chart B1.2)**.** Note that two technology providers are critical across all key economic functions.

The risk linked to technology providers, identified in this exercise, is similar to that observed for most European countries, according to the report by the European Supervisory Authorities**.** The assessment of cyber resilience in the banking sector should consider not only the resilience of institutions, but also that of their technology providers. This analysis becomes even more relevant due to the concentration in a limited number of providers, which generates interdependencies across institutions, and is a channel of potential contagion for cyber incidents. DORA aims to address this concern, establishing an oversight framework for critical technology providers at European level.

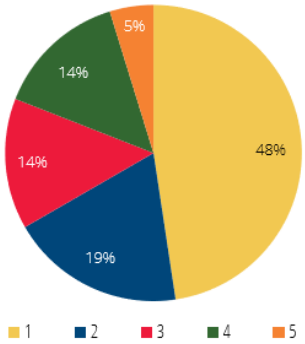
The Cyber and Operational Mapping of the banking sector provides key input for the competent authorities to analyse and to define and/or calibrate mitigation measures. This analytical tool should continue to be used and improved, benefiting from the availability of the necessary data. It will be important to expand coverage to other financial institutions and assess potential interdependencies between technology providers.

Chart B1.1 • Technology providers by key economic function (KEF) | In number



Source: Banco de Portugal. | Notes: Deposits (KEF 1); Lending (KEF 2); Capital Market (KEF 3); Operations with other financial entities (KEF 4); Payments, Cash, Clearing, Custody and Settlement (KEF 5).

Chart B1.2 • Critical technology providers and number of key economic functions for which they are critical | Per cent



Source: Banco de Portugal.

Money laundering

Adequate prevention of money laundering and terrorist financing (ML/TF) is necessary for the resilience of the banking sector and financial stability. This is a key issue, which, first and foremost, has justified continuous action by regulatory and supervisory authorities.

For the prevention of ML/TF, the new Authority for Anti-Money Laundering and Countering the Financing of Terrorism (AMLA) was established and initiated its activity: this is a milestone in strengthening European supervision and coordination in this area. The Banco de Portugal has had national representation at the meetings of the General Council of that Authority.

At national level, on regulation and supervision, Circular No CC/2024/00000052 was published containing procedures on updating identification data pursuant to Law No 83/2017 of 18 August 2017. In addition, two thematic inspection cycles focused on assessing control environments applicable to entities operating with virtual assets and cross-border transfers were initiated. In parallel, offsite supervisory work continued, including the verification of compliance with previously imposed supervisory measures on six banks.

In the context of the Forum of the Banco de Portugal on the Prevention of ML/TF, best practices were shared with supervised entities in the context of the ML/TF prevention workstream in the context of digital fraud, given their relevance and practical applicability.

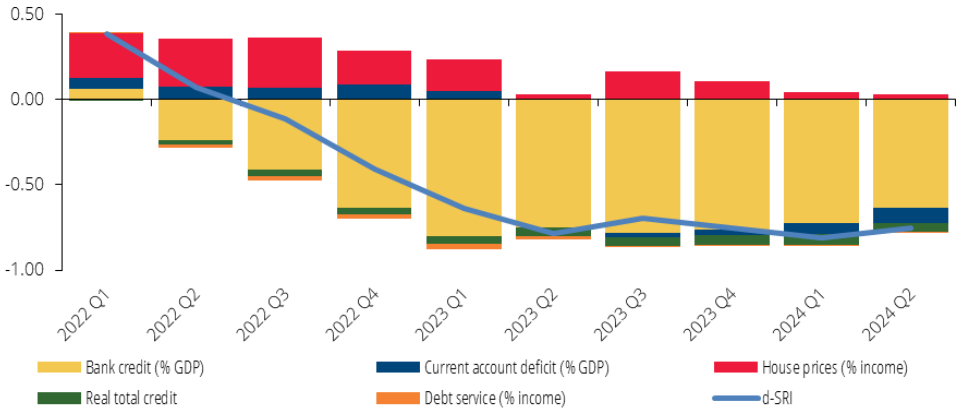
2 Macroprudential policy

Macroprudential policy aims to preserve financial stability by seeking to ensure that the financial system can withstand unanticipated shocks. To this end, macroprudential authorities

assess different sources of systemic risk (cyclical and structural) and implement capital measures as well as borrower-based measures (BBMs).[6]

The indicator used to measure the build-up of cyclical systemic risk in Portugal continues to signal a neutral risk environment, without any evidence of a build-up or materialisation of this type of risk (Chart I.2.1). In the second quarter of 2024, this indicator rose slightly from the previous quarter, driven by the recovery in lending to firms and households. Residential real estate prices continued to contribute to cyclical systemic risk, albeit to a lesser extent, a trend observed since the first quarter of 2022, only interrupted in the third quarter of 2023.

Chart I.2.1 • Domestic cyclical systemic risk indicator | Standard deviations from the median



Sources: ECB and BIS (Banco de Portugal calculations). | Notes: The domestic systemic risk indicator (d-SRI), developed by Lang et al. (2019), is an aggregate indicator to identify the build-up of cyclical imbalances in the domestic non-financial private sector. The sub-indicators bank credit-to-GDP ratio and debt service-to-income ratio are expressed by the average change over a two-year period. Real total credit is measured by the rate of change over the same period. For residential real estate price-to-income ratio, average change covers a period of three years. The contribution of each sub-indicator to the evolution of d-SRI is obtained by multiplying the observed value of the sub-indicator by its weight. For further details on the domestic systemic risk indicator for Portugal, see Box 3 in the June 2019 issue of the *Financial Stability Report*.

2.1 Capital measures

Currently, there are four capital buffers applicable to the Portuguese banking sector: the capital conservation buffer (CCoB), the other systemically important institutions (OSII) buffer, the sectoral systemic risk buffer (sSyRB) and the countercyclical capital buffer (CCyB).[7] All these buffers must be fully composed of Common Equity Tier 1 capital (CET1), which together form the combined buffer requirement (CBR). At the end of 2024, the CBR reached 3.27% of the risk-weighted exposure amounts, i.e. €5.9 billion.

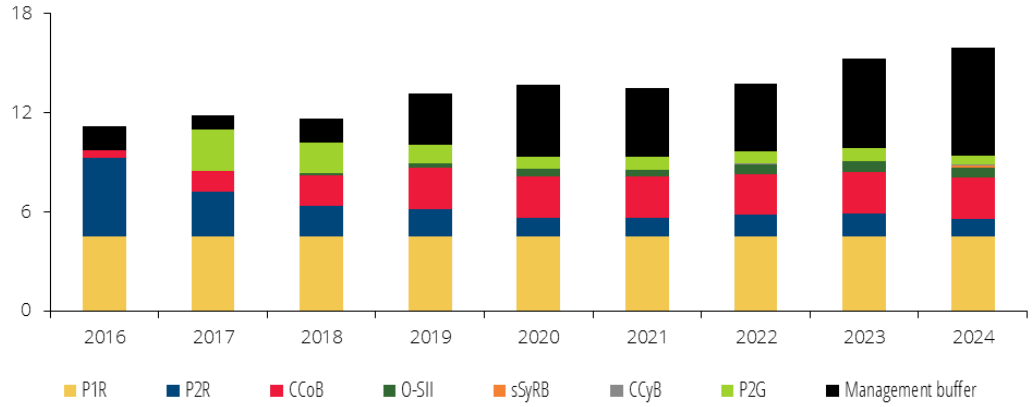
Developments in CET1 requirements reflected a relative increase in the macroprudential buffers, accompanied by an increase in management buffers. The CBR interacts with other CET1 requirements, such as: (i) the minimum regulatory requirements (P1R) and (ii) the Pillar 2 requirements (P2R) imposed by the microprudential authority. In order to estimate the management buffer, Pillar 2 guidance (P2G) set by the microprudential authority should also be considered, although it does not correspond to a regulatory capital requirement. With the progressive implementation of macroprudential capital measures, there was a redistribution in the composition of requirements, in particular the increase

[6] The Banco de Portugal, as national macroprudential authority, publishes a report annually, the Macroprudential Measures in Portugal - Progress Report.

[7] Some credit institutions hold a CCyB up to 2.5%, as a result of mandatorily reciprocating the CCyB implemented by other Member States of the European Economic Area (EEA).

in CCoB from 0.45% in 2016 to 2.5% since 2019 and in the O¬SII capital buffer from 0.13% in 2018 to 0.54% in 2024 (Chart I.2.2). Management buffers increased by more than 5 p.p. between 2016 and 2024, reflecting banks' greater ability to generate capital internally.

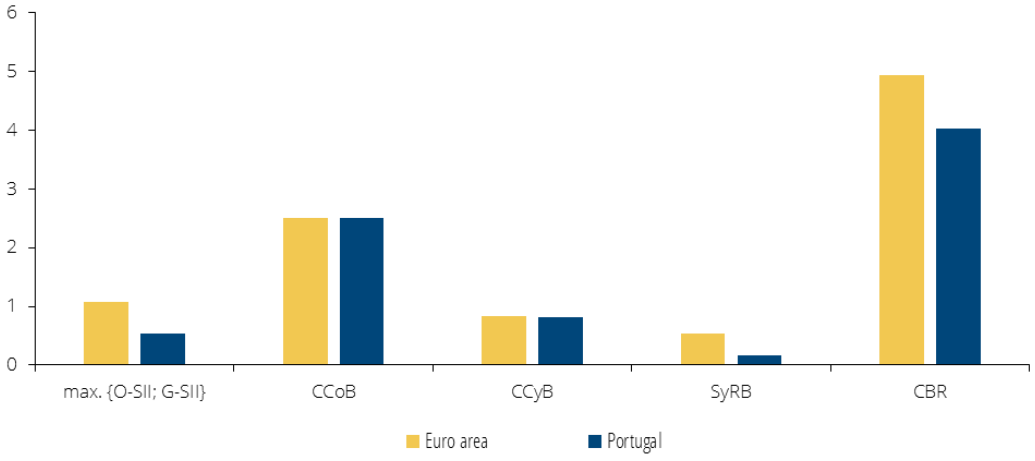
Chart I.2.2 • Developments in regulatory capital requirements for CET1 and management buffers in the Portuguese banking system | Per cent



Source: Banco de Portugal. | Notes: P1R – Pillar 1 Requirements; P2R – Pillar 2 Requirements; P2G – Pillar 2 Guidance. Average values were calculated as a percentage of risk-weighted exposure amounts (RWAs). CCyB only includes the specific CCyB.

Capital buffers in Portugal have been close to the average of euro area countries (Chart I.2.3). With the activation of the CCyB, scheduled for 1 January 2026, the Portuguese CBR will cover 4.02% of risk-weighted assets, bringing Portugal closer to the euro area average (4.94%). The adoption of the sSyRB, which at the end of 2024 accounted for around 0.17% of risk-weighted assets relative to an average of 0.53% in the euro area, also contributed to these developments. Finally, the average O¬SII capital buffer in Portugal was 0.54%, which is lower than in the euro area, standing at 1.07%.

Chart I.2.3 • Capital measures in Portugal and the average of euro area countries | Per cent



Sources: ECB, Banco de Portugal, ESRB and Orbis. | Notes: The O¬SII/G-SII buffer is based on end-2023 figures, except for Portugal (end of 2024). SyRB includes sSyRB expressed as total risk-weighted assets, if applicable. France and Slovenia do not disclose this buffer as a percentage of total risk-weighted exposure amounts. CCyB reflects the announced percentage, without being weighted by non-financial private sector exposure amounts. For Portugal, a CCyB of 0.75% is scheduled to enter into force on 1 January 2026; for Spain, it will enter into force on 1 October 2026 (1%). In Latvia, the CCyB will increase to 1% as of 18 June 2025. In Greece, a 0.25% CCyB will gradually increase to reach the target rate of 0.5%.

2.1.1 Releasable buffers

On 1 October 2024, an sSyRB of 4% was implemented on the risk-weighted exposure amounts of the household loan portfolio secured by residential real estate in Portugal, applicable to institutions using the internal ratings-based (IRB) approach. This measure aims to strengthen institutions' resilience against a possible materialisation of systemic risk in the residential real estate market. The calibration of this buffer will be assessed by the Banco de Portugal during the course of 2025.

In 2024 the Banco de Portugal adopted a CCyB buffer of 0.75%, to be in place from 1 January 2026 (see Special issue on the November 2024 issue of the Financial Stability Report**).** This decision took place in an environment of neutral cyclical systemic risk, i.e. neither building up nor materialised. This buffer aims to make institutions more resilient so that they can absorb losses from unexpected shocks without restricting lending.

Should the source of systemic risk underlying these buffers (sSyRB and CCyB) materialise, the Banco de Portugal may release them in part or in full, mitigating the effects of the shock on institutions' ability to continue lending to the economy.

2.1.2 Unreleasable buffers

Credit institutions must have a CCoB of 2.5% of total risk-weighted exposure amounts on an individual and consolidated basis.

In November 2024, the Banco de Portugal identified seven banking groups as O¬SIIs. Capital buffer requirements, expressed as a percentage of total risk-weighted exposure amounts, have been defined for each of these groups (Table I.2.1). Compared with the previous year, there was an increase in the buffer required of Santander Totta group. The phased regime of Novo Banco for the introduction of the 0.5% O¬SII capital buffer remains in place in 2025.

Table I.2.1 • O¬SII capital buffer | Basis points and as a percentage of total risk exposure amount

Institutions	Consolidation level	Score (2025)	Buffer as of:		
			1 July 2024	1 January 2025	1 July 2025
Banco Comercial Português, S. A.	Consolidated	2,207	1.00%	1.00%	1.00%
Caixa Geral de Depósitos, S. A.	Consolidated	1,722	0.75%	0.75%	0.75%
Santander Totta, SGPS, S. A.	Consolidated	1,542	0.50%	0.75%	0.75%
LSF Nani Investments S.à.r.l.	Consolidated	1,129	0.50%	0.50%	0.50%
Novo Banco, S. A.	Sub-consolidated	1,129	0.25%	0.25%	0.50%
Banco BPI, S. A.	Consolidated	838	0.50%	0.50%	0.50%
Caixa Económica Montepio Geral, Caixa Económica Bancária, S. A.	Consolidated	461	0.25%	0.25%	0.25%
Caixa Central – Caixa Central de Crédito Agrícola Mútuo, S. A.	Consolidated	352	0.25%	0.25%	0.25%

Source: Banco de Portugal.

In April 2025, the Banco de Portugal revised the methodology framework to identify O¬SIIs and determine their buffer. This revision stems from the transposition of the CRD V into Portuguese law, which increased the ceiling of the O¬SII capital buffer from 2% to 3%, and from the implementation of the revised ECB methodology, in force since 1 January 2024. The revision also considered developments in the Portuguese banking system. The new methodology (see Box 2 – New methodological framework for the identification and setting of the O¬SII capital buffer) will be adopted for the 2025 exercise and effective in 2026.

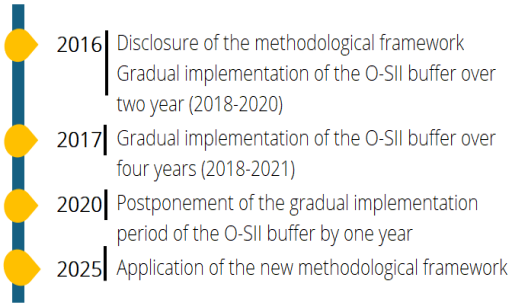
Box 2 • New methodological framework for the identification and setting of the O-SII buffer

As macroprudential authority, every year the Banco de Portugal identifies "Other Systemically Important Institutions" (O-SIIs) and sets the corresponding O-SII buffer. These institutions, due to their size, the complexity of their business model, the degree of interconnectedness with other institutions and importance to the national economy, pose an increased risk to financial stability and, as such, an additional buffer is required. This O-SII buffer aims to mitigate the risk associated with potential contagion effects in the financial system by limiting the incentives that "too-big-to-fail" institutions may have by taking excessive risks in their business. This box presents the new methodological framework for identifying and calibrating the O-SII buffer (Figure B2.1).

Systemic importance of O-SIIs

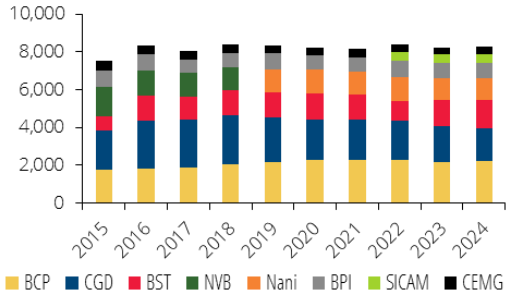
The aggregate systemic importance of these institutions has remained stable, despite the variation in individual scores and the identification of an additional O-SII in 2022, bringing the total to seven (Chart B2.1). In the 2024 fiscal year, the systemic importance of O-SIIs, measured by the aggregate value of those scores, stood at 82.5% of the Portuguese banking system.

Figure B2.1 • Main decisions regarding the identification of O-SIIs and setting of the corresponding buffer



Source: Banco de Portugal.

Chart B2.1 • Evolution of the systemic importance of O-SIIs in Portugal | Basis points



Source: Banco de Portugal.

New O-SII identification methodology

In early 2025, the Banco de Portugal revised the O-SII identification methodology framework. This revision reflected changes in the regulatory framework and developments in the Portuguese banking system. The new methodology entered into force in April 2025 and will be applied in an exercise at the end of this year. The new methodological framework includes identifying[8] O-SIIs, in line with the European Banking Authority (EBA) Guidelines, and calibrating the corresponding buffer (Figure B2.2).

[8] The methodological note is available on the Banco de Portugal's website.

Figure B2.2 • New O-SII methodological framework

1. IDENTIFICATION

Criteria	Weight	Mandatory indicators (as % of banking system)	Weight
Size	25%	• Total assets *(worldwide)*	25%
Importance (including substitutability/ financial system infrastructure)	25%	• Value of domestic payments transactions *(worldwide)*	8.33%
		• Private sector deposits from depositors in the EU *(EU only)*	8.33%
		• Private sector loans to recipients in the EU *(EU only)*	8.33%
Complexity/ Cross-border activity	25%	• Value of OTC derivatives (notional) *(worldwide)*	8.33%
		• Cross-jurisdictional liabilities *(worldwide, except home country)*	8.33%
		• Cross-jurisdictional claims *(worldwide, except home country)*	8.33%
Interconnectedness	25%	• Intra-financial system liabilities *(worldwide)*	8.33%
		• Intra-financial system assets *(worldwide)*	8.33%
		• Debt securities outstanding *(worldwide)*	8.33%

If score ≥ 275 bp

Identification of O-SIIs

2. CALIBRATION

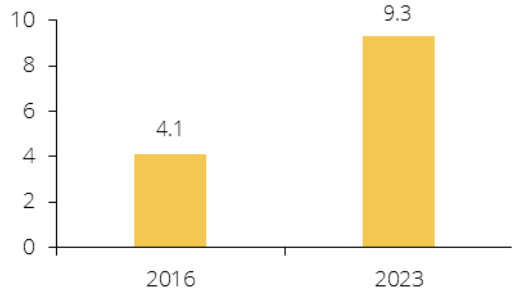
Capital buffers for identified O-SIIs

Buckets	Scores	O-SII buffer
1	275-649	0.25%
2	650-1299	0.50%
3	1300-1949	0.75%
4	1950-2599	1.00%
5	2600-3249	1.25%
6	3250-3899	1.50%
7	3900-4549	2.00%
8	≥4550	3.00%

Source: Banco de Portugal.

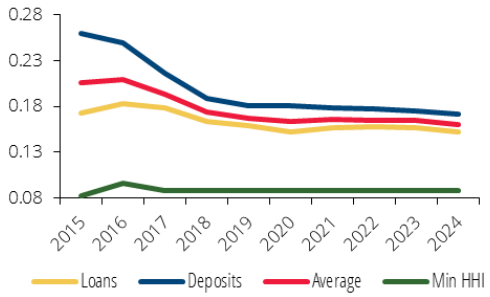
Identification is based on a quantitative analysis of four criteria assessing the systemic importance of institutions, using data at the highest level of consolidation for the purposes of prudential supervision in Portugal. For each criterion, composite indicators set out in EBA Guidelines are used. The score of each institution is calculated by comparing its composite indicator and the system as a whole, including branches of credit institutions that are not eligible as O-SIIs having their head office in other EU countries. The Banco de Portugal also has the discretion to consider qualitative information when identifying these institutions.

Chart B2.2 • Share of the systemic importance of branches for the banking system | Per cent



Source: Banco de Portugal.

Chart B2.3 • Concentration index of banking activity (deposits and loans) in the Madeira and Azores autonomous regions



Source: Banco de Portugal.

The increase in the systemic importance for the Portuguese banking system of banking groups' branches having their head office in other EU countries **has led to a gradual reduction in the relative importance of institutions identified as O-SIIs (Chart B2.2)**. In 2016, branches accounted for 4.1% of total systemic importance, which had more than doubled by 2023, reaching 9.3%. This justified the downward revision of the O-SIIs identification threshold, within the flexibility provided by EBA Guidelines, from 350 to 275 b.p. By setting a lower threshold, it is expected that the methodology will be aligned with market developments while ensuring stability in the identification process.

Since 2016, the methodology has included two additional indicators in the "Importance" criterion to capture the concentration of banking activity in the Madeira and Azores autonomous regions. This decision was consistent with the margin of discretion granted by EBA Guidelines. With activity in several credit institutions becoming increasingly dispersed, these indicators have become less relevant and have now been removed from the identification methodology, thereby simplifying the process and bringing it closer to that used by the European Central Bank (ECB) (Chart B2.3).

New O-SII buffer calibration methodology

At the same time, the Banco de Portugal has revised its calibration methodology for the O-SII buffer, maintaining the bucketing approach defined according to score ranges (buckets). Each O-SII is allocated to a bucket, taking into account its score in the identification exercise corresponding to a specific buffer rate.

Table B2.1 summarises the main changes in the O-SII buffer calibration methodology. With the reduction of the identification threshold by 75 b.p., the lower threshold for the first bucket to which a 0.25% buffer is associated was changed to 275 b.p. The O-SII buffer associated with the highest bucket increased from 2% to 3% of the total risk-weighted exposure amount,[9] in line with the change in the regulatory framework. The number of buckets has been extended from five to eight, allowing for greater granularity in the calibration process. It was also ensured that the Banco de Portugal's new methodology complies with the ECB floor methodology, based on systemic importance score (Chart B2.4). In the exercise of its powers as macroprudential authority, the ECB may require an O-SII buffer higher than that set by national authorities, underlining the importance of that threshold when calibrating the O-SII buffer. The methodology was revised in 2019 and entered into force in January 2024. This lead to a reassessment of the methodological framework for determining the O-SII buffer in Portugal.

Table B2.2 • Comparison of the calibration thresholds of O-SII buffers between the previous and the new calibration methodology

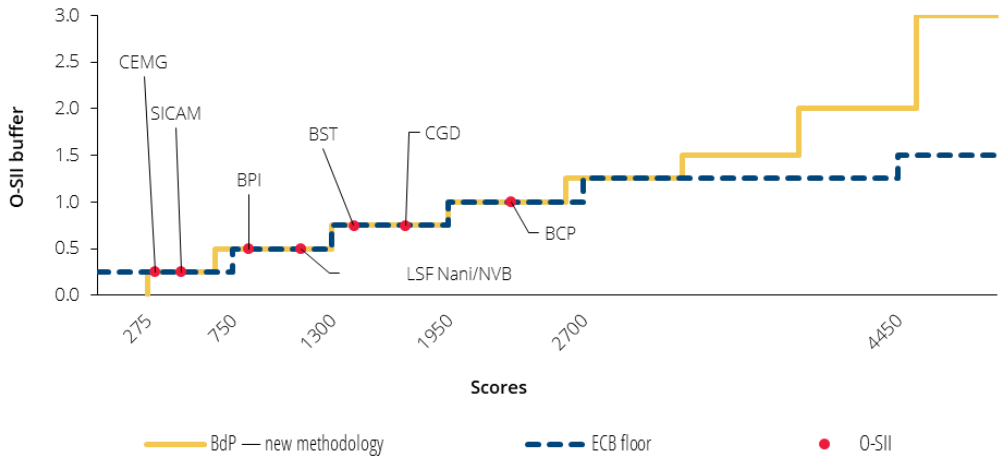
O-SII buffer	Previous methodology (in force in 2015-24)	New methodology (in force since 2025)
0.00%	<350	<275
0.25%	350 – 699	275 – 649
0.50%	700 – 1,399	650 – 1,299
0.75%	1,400 – 2,099	1,300 – 1,949
1.00%	2,100 – 2,799	1,950 – 2,599
1.25%		2,600 – 3,249
1.50%		3,250 – 3,899
2.00%	>2,800	3,900 – 4,549
3.00%		>4,550

Source: Banco de Portugal.

O-SII buffer rates are calibrated with 25 b.p. increases, except for the two highest buckets. These increases are intended to mitigate excessive growth in the systemic importance of institutions, as they will have to comply with a progressively more demanding O-SII buffer, up to the 3% limit, when moving to longer ranges. This approach aims to strengthen the resilience of the financial system and ensure that institutions internalise the risks associated with greater systemic importance.

[9] Figures above 3% can be allocated, but are subject to approval by the European Commission.

Chart B2.4 • Ratio of the systemic importance of O-SIIs to the corresponding buffer | Per cent



Source: Banco de Portugal. | Note: The red dots represent the allocation of O-SIIs on the basis of the score obtained in the 2024 financial year, with end-2023 data.

Under certain circumstances, and within a limited scope, the flexibility provided by law to adjust the allocation of O-SIIs to the respective buckets may be exercised, provided that the ECB floor methodology is complied with.

Revision of the O-SII buffer calibration methodology in the EU

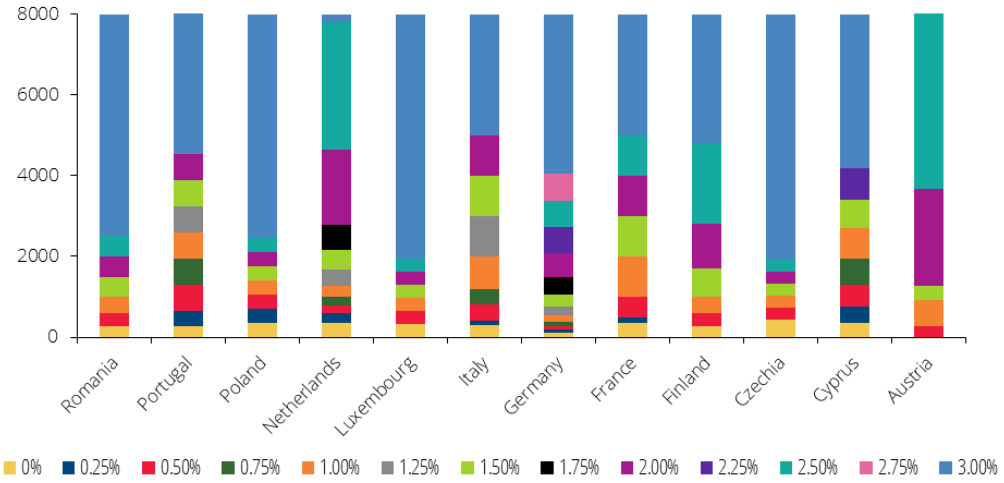
By the end of 2024, 11 macroprudential authorities in EU countries had also revised their calibration methodologies, adjusting them to the new 3% O-SII buffer cap. Among those adopting the bucketing methodology, there was an increase in the level of granularity applied when setting buffers (Table B2.2). In addition, there is some heterogeneity in the methodologies adopted, both in the buffer increases across buckets – with some authorities opting for 50 b.p. jumps – and in the more substantial differentiation of requirements applicable to more systemically important institutions, through more marked increases for the highest buckets (Chart B2.5).

Table B2.3 • EU countries that revised their calibration methodology based on the bucketing approach

Country	Year of revision	Number of buckets	
		New methodology	Previous methodology
Germany	2020	12	4
Austria	2024	5	3
Czechia	2021	6	a)
Cyprus	2021	7	4
Finland	2021	7	4
France	2022	7	5
Italy	2023	8	6
Luxembourg	2021	6	4
Netherlands	2023	10	b)
Poland	2022	8	b)
Portugal	2025	8	5
Romania	2021	6	b)

Source: ESRB. | Notes: a) with no previous methodology; b) different calibration methodology.

Chart B2.5 • Ratio of the systemic importance of O-SIIs to the corresponding buffer | Per cent



Source: ESRB.

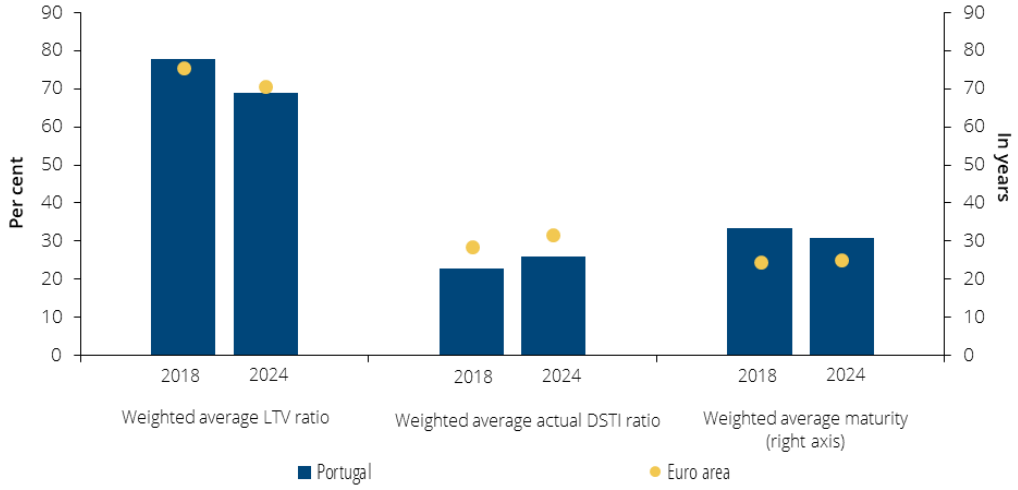
2.2 Borrower-based measures

The macroprudential Recommendation, in force since 2018, has been broadly adhered to by credit institutions, with a sustained improvement in the risk profile of borrowers. The Progress report on macroprudential measures (in Portuguese only) shows that, for the majority of new credit agreements, the limits set have been observed. From July 2018 to the end of 2024, the weighted average LTV ratio decreased from 78% to 69% (Chart I.2.4). The reduction was particularly sharp from 2022 onwards, stabilising in 2024. The average actual DSTI ratio increased compared to 2018, driven by the increase in interest rates observed between 2022 and mid-2024. In the second half of 2024, as interest rates fell and household disposable income increased, the actual DSTI ratio declined, standing at 26.1% at the end of the year. The weighted average maturity of new credit for house purchase was 31 years, 2.4 years below that of July 2018. It followed a downward path until the third quarter of 2023, approaching the recommendation of a 30-year maturity, with the path oscillating in 2024. Finally, since 2018 there has been a high degree of compliance with the regular payments requirement, with only 2% of new credit for house purchase failing to meet it.

In Portugal, the actual LTV and DSTI ratios and the average maturity of new credit agreements for house purchase have gradually converged towards the euro area average (Chart I.2.4). In 2018, Portugal's LTV ratio exceeded the euro area average by 2.4 p.p., but gradually moved closer to the levels seen in other Member States. The average maturity that year was around nine years higher than the euro area average, a difference that narrowed to around six years in 2024. In the case of the actual DSTI ratio, on both dates the figures for Portugal were slightly below the euro area average, with no significant changes between 2018 and 2024.

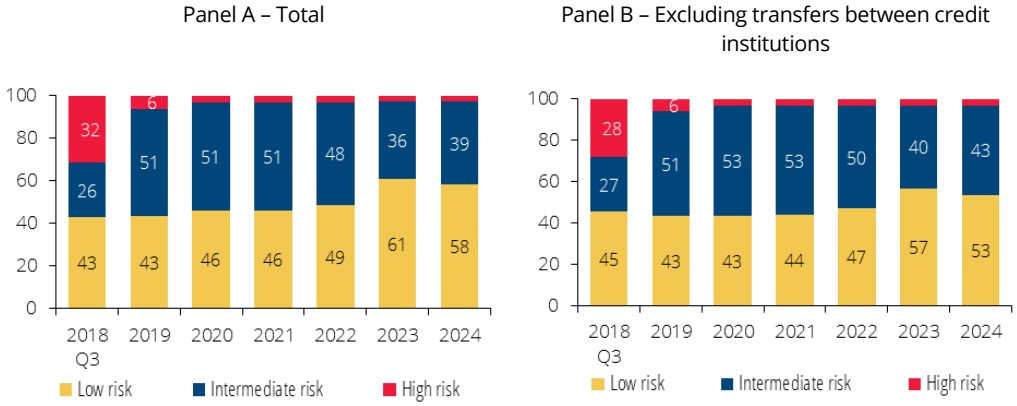
Loans for house purchase granted to borrowers with a high-risk profile (stressed DSTI ratio above 60% and/or LTV ratio above 90%) decreased significantly, from 32% (third quarter of 2018) to 3% (2020), and have remained stable since then. At the same time, the share of credit granted to borrowers with a low and intermediate risk profile increased. These positive developments in the risk profile of borrowers also occur when excluding the effect of transfers between credit institutions (Chart I.2.5).

Chart I.2.4 • Evolution of BBMs on loans for house purchase in Portugal and average of euro area countries



Source: Information published by the respective national authorities. | Notes: The euro area average was calculated on the basis of the countries reporting data for 2018 and/or 2024; Germany, Belgium and the Netherlands were not considered as they did not present figures for any of the years. For Croatia, Ireland and Luxembourg, 2024 data refers to the first half of the year.

Chart I.2.5 • Borrowers' risk profile in new credit for house purchase per year | Per cent



Source: Banco de Portugal. | Notes: Based on information reported by a sample of nine institutions that accounted for around 96% of the housing credit market in 2024. Low risk: DSTI≤50% and LTV≤80%; High risk: DSTI> 60% and/or LTV>90%; Intermediate risk: other cases.

In 2024 credit standards – LTV and DSTI ratios and the maturity of new agreements – were influenced by several factors: (i) interest rate reduction in the second half of the year; (ii) 7.8% increase in real disposable income, compared to 2.7% in 2023; (III) credit transfers that, although below 2023, continued to have a higher share than in the 2018-22 period; and (iv) legislative measures of tax exemptions to support house purchase by young people.

Recent developments in loans for house purchase

Several measures targeting borrowers aged up to 35 have influenced recent dynamics in the housing credit market in Portugal. Among others, the following are particularly important: exemptions from the municipal real estate transfer tax, stamp duty and fees, in force since August 2024, and the

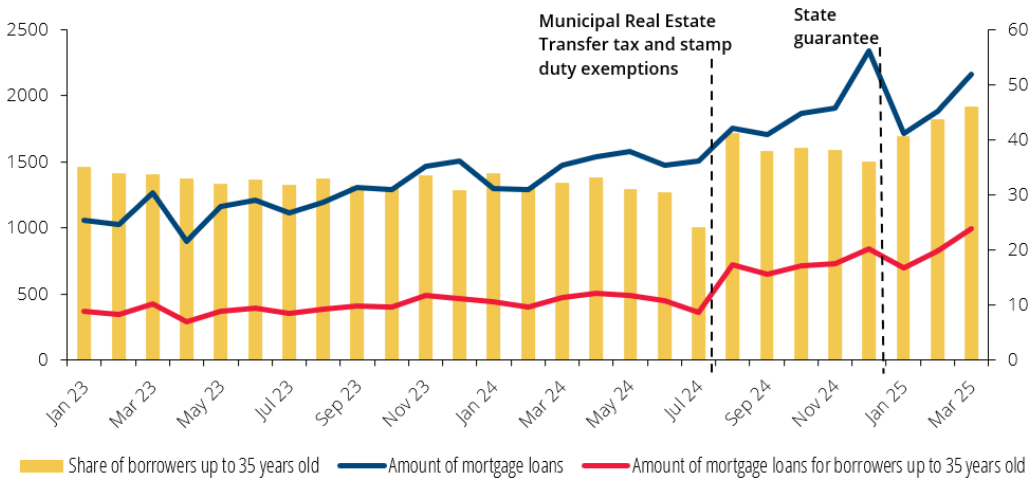
extension of the regime on personal income tax for young people.[10] The State guarantee scheme has also been implemented since January 2025, through which the State can provide a guarantee to credit institutions of up to 15% of the transaction value in the event of financing of up to 100% of the purchase price of a first own and permanent residence (Decree-Law No 44/2024 of 10 July 2024).

The data we have up to the date of publication of this report only refer to the first quarter of implementation of the guarantee scheme, which does not yet allow for an analysis of its impacts, but only a description of the evolution of the relevant variables in a short period.

The introduction of the legislative package aimed at young people coincided with the period of decreasing key interest rates, which contributed to greater buoyancy in the housing credit market. Between July and December 2024, the amount of credit increased by 55%, compared with a rise of 35% in the same period a year earlier. In loans granted since August 2024, there is a higher share of borrowers aged up to 35, a segment whose figure more than doubled. This change could be due to the positive tax discrimination introduced by the legislator. Between June and December 2024, house prices increased by 6.8%, compared with 3.2% in the same period of 2023. In the euro area, prices rose by 2.2% between June and December 2024. The average amount of new agreements increased gradually from €121 thousand in July to €133 thousand in December 2024, reaching €147 thousand in March 2025.

After a slight decline in January 2025, the amount of credit increased further in the first quarter (Chart I.2.6). In agreements concluded under the State guarantee scheme (hereinafter guaranteed credit), the average amount totalled €190 thousand. In the case of loans to borrowers eligible for the guarantee that the State grants to credit institutions – borrowers aged up to 35, who reside in Portugal, have not previously been granted a loan for house purchase and who are purchasing their first own permanent residence with a transaction price of up to €450 thousand[11] – but who did not use the guarantee, the average amount of each agreement is €173 thousand in March 2025 (Chart I.2.7).

Chart I.2.6 • Amount of loans for house purchase and share of borrowers aged up to 35
| EUR millions and per cent



Source: Banco de Portugal. | Notes: Amounts of loans for house purchase granted under the macroprudential Recommendation. Percentage of the number of agreements granted to borrowers aged up to 35. The left-hand vertical axis represents the total amount of loans for house purchase, in EUR millions. The right-hand vertical axis represents the share of borrowers aged up to 35 in the housing credit market as a percentage.

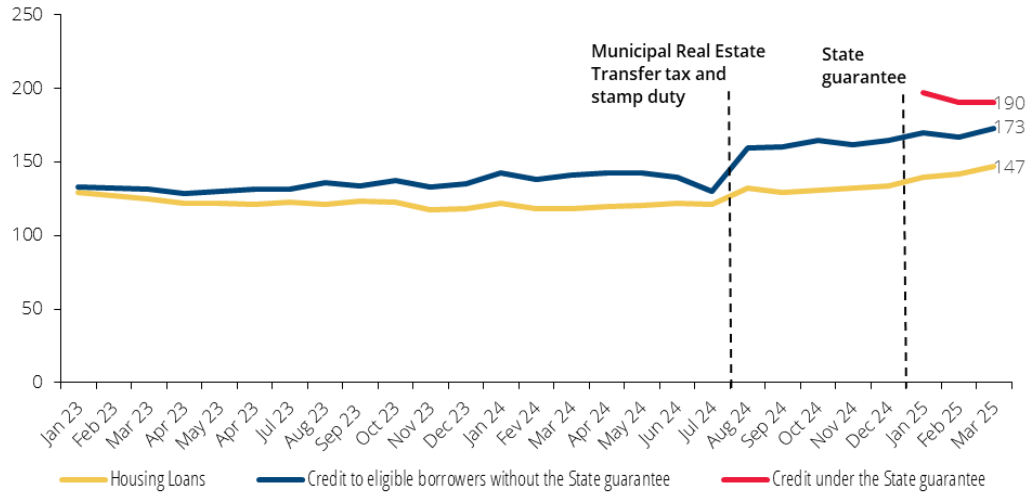
[10] In 2024, there were also changes to specific withholding tables for personal income tax, as reflected in September and October.

[11] The income-related eligibility criterion (income up to the eighth personal income tax bracket) was not considered in the characterisation of eligible borrowers due to lack of information.

In the first quarter of 2025, guaranteed credit represented 9% of the number and 13% of the total amount of new credit agreements for house purchase. When considering only eligible borrowers – both with and without a guarantee – 59% of new agreements to eligible borrowers did not use the guarantee. For credit granted to eligible borrowers in the first quarter of 2025, 44% of the amount is covered by the guarantee scheme (Table I.2.2). Geographically, the majority of properties purchased under this scheme were located in the metropolitan areas of Lisbon and Porto, with particular emphasis on the municipalities of Sintra, Vila Nova de Gaia and Seixal.

For the total of banks that joined the protocol to access the State guarantee, the amount granted stood at 10% of the maximum amount available (Table 1.2.2). However, use of the guarantee varied across institutions; some used more than 30% of the allocated limit, while others did not reach 5%.

Chart I.2.7 • Average amount of new credit agreements for house purchase | EUR thousands



Source: Banco de Portugal. | Notes: Average amounts of loans for house purchase granted under the macroprudential Recommendation. Eligible borrowers without a guarantee are individuals aged up to 35, who reside in Portugal, have not previously been granted a loan for house purchase and who are purchasing their own permanent residence with a transaction price of up to €450 thousand and who did not use the guarantee.

Table I.2.2 • Representativeness of credit granted under the State guarantee | Per cent

		2025			
		Jan	Feb	Mar	Q1
As a % of new loans for house purchase	No of agreements	2.6	9.7	14.6	9.4
	Amount	3.7	13.1	19	12.5
As a % of total new credit agreements to eligible borrowers	No of agreements	13.2	43.1	57.8	41.1
	Amount	15.0	46.3	60.1	43.9
As a % of the maximum amount of the guarantee to be granted by the State	Amount	0.8	3.2	55	9.6

Source: Banco de Portugal. | Notes: Eligible borrowers are individuals aged up to 35, who reside in Portugal, have not previously been granted a loan for house purchase and who are purchasing their own permanent residence with a transaction price of up to €450 thousand, regardless of whether they used the guarantee.

Over this period, the LTV ratio increased, with loans covered by the State guarantee recording values above those observed for total loans for house purchase. The ratio increased from 68% to 72% between July and August 2024 and remained stable until the end of 2024, before the entry into force of the guarantee scheme. In the first quarter of 2025, the LTV ratio continued to grow, reaching

75% in March 2025. Guaranteed loans recorded an average LTV ratio of 99%, with 89% of these agreements recording a ratio of 100%. Among the remaining eligible borrowers without a guarantee, the ratio remained stable and lower, at around 83% (Chart I.2.8).

The DSTI ratio of borrowers who used the guarantee is, on average, 6 p.p. higher than that observed for all new loans for house purchase and 2 p.p. higher than that of eligible borrowers who did not use the guarantee (Chart I.2.9). On average, younger borrowers have lower incomes and higher amounts of debt in relative terms. The start of the process of declining interest rates coincided with the introduction of legislative measures, with a dampening impact on the actual DSTI ratio. With the decline in key interest rates, the actual DSTI ratio decreased to 23% in December 2024. Part of this decrease was reversed in the first quarter of 2025, with a 1 p.p. increase in the actual DSTI ratio, despite a continued decline in interest rates, reflecting the higher indebtedness of young people using the guarantee scheme.

Chart I.2.8 • Weighted average LTV ratio for new credit for house purchase | Per cent

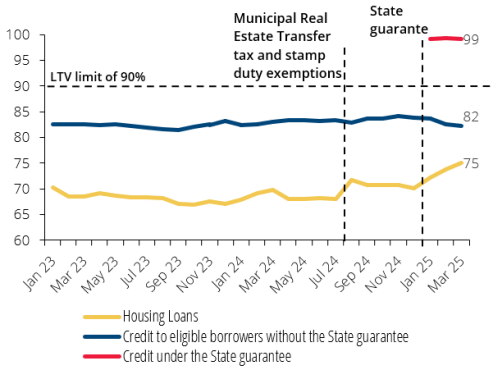
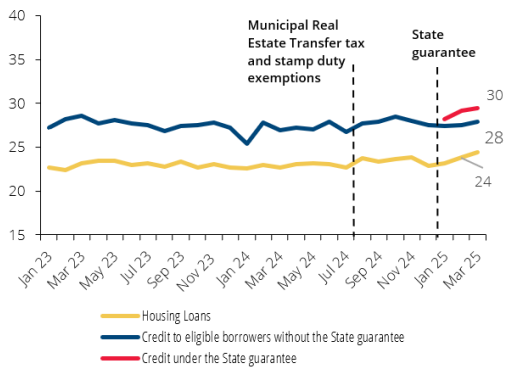


Chart I.2.9 • Average actual DSTI ratio for new credit for house purchase | Per cent

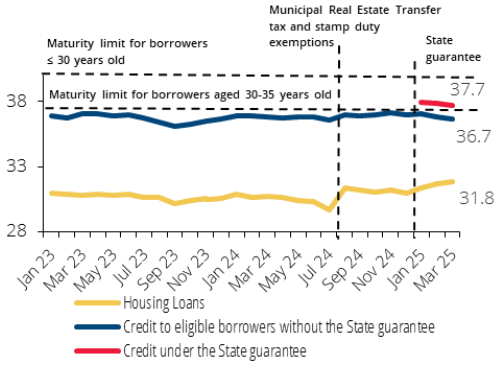


Source: Banco de Portugal. | Notes: "Credit under the State guarantee" includes credit granted to borrowers eligible under the State guarantee scheme, whereas "Credit to eligible borrowers without the State guarantee" includes credit granted to eligible borrowers who did not use the State guarantee scheme. Eligible borrowers are individuals aged up to 35, who reside in Portugal, have not previously been granted a loan for house purchase and who are purchasing their own permanent residence with a transaction price of up to €450 thousand.

Agreements concluded by borrowers covered by the legislative measures have longer maturities. In August 2024, the weighted average maturity of all new agreements increased by one year and eight months compared with July 2024, to 31 years and five months. This increase is due to a higher share of borrowers aged up to 35 in the housing credit market. In the last quarter of 2024, the average maturity declined slightly to 31 years, a trend that was reversed in March 2025, reaching an average maturity of 31 years and 10 months. Credit agreements with a guarantee had an average maturity of 37 years and eight months, five years and ten months above the average of total agreements for house purchase. Among eligible borrowers, agreements with a guarantee had an average maturity one year higher than that of agreements without a guarantee. These loans are being granted with maturities close to the ceilings set in the Recommendation, depending on the borrowers' age range (Chart I.2.10).

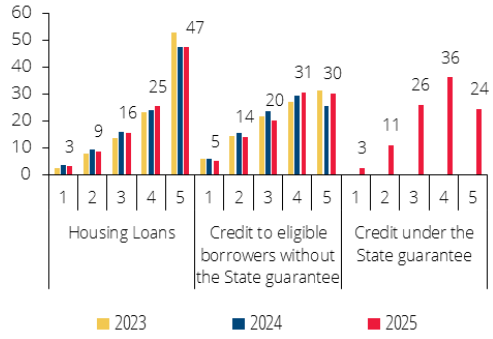
Borrowers who used the guarantee have, on average, a higher income than young people who take out credit without the guarantee. Borrowers with lower incomes are less represented in this scheme, both in terms of amount of credit and number of agreements, when compared to eligible borrowers. Considering the first two quintiles, this difference is 5 p.p. (Chart I.2.11).

Chart I.2.10 • Weighted average maturity of new credit for house purchase | In years



Source: Banco de Portugal. | Notes: "Credit under the State guarantee" includes credit granted to borrowers eligible under the State guarantee scheme, whereas "Credit to eligible borrowers without the State guarantee" includes credit granted to eligible borrowers who did not use the State guarantee scheme. Eligible borrowers are individuals aged up to 35, who reside in Portugal, have not previously been granted a loan for house purchase and who are purchasing their own permanent residence with a transaction price of up to €450 thousand.

Chart I.2.11 • New credit agreements by income quintile and year | As a percentage of the amount



Source: Banco de Portugal. | Notes: Income quintiles, calculated on the basis of net income, were established on the basis of the total universe of new loans and remain constant in the three groups analysed. "Credit under the State guarantee" includes credit granted to borrowers eligible under the State guarantee scheme, whereas "Credit to eligible borrowers without the State guarantee" includes credit granted to eligible borrowers who did not use the State guarantee scheme. Eligible borrowers are individuals aged up to 35, who reside in Portugal, have not previously been granted a loan for house purchase and who are purchasing their own permanent residence with a transaction price of up to €450 thousand.

2.3 Recent topics in the macroprudential policy framework

2.3.1 Non-bank financial intermediation

In 2024, the European Commission (EC) launched a targeted consultation to assess the adequacy of macroprudential policies for non-bank financial intermediation (NBFI).[12] This consultation focused on (i) assessing the effectiveness of existing measures, (ii) analysing possible revisions to the scope of those measures, and (iii) exploring the introduction of new measures and mechanisms to improve coordination at the EU level. The EC received 86 responses to support future work in this field, including the development of macroprudential tools for the NBFI and the strengthening of governance and institutional coordination mechanisms in this sector.

NBFIs are subject to structural vulnerabilities that may contribute to market disruptions. Potential vulnerabilities such as excessive leverage, maturity and liquidity mismatches and interconnections with the banking sector increase the risk of propagation to the banking sector of shocks occurring in non-bank financial entities. Amplification of such shocks can undermine the stability of the financial system.

Given the diversity of business models and regulatory frameworks across the various entities, a regulatory approach that combines the current focus on the nature of entities (banks versus other entities) with a focus on the nature of their activities may be adopted in the coming years. In response to the EC targeted consultation, the European Systemic Risk Board (ESRB) proposed a holistic approach to macroprudential policy, which combines these two perspectives. This approach

[12] NBFI includes a very diverse set of entities, including, namely, investment funds, insurance companies, pension funds and other financial intermediaries. In contrast to the trend observed in the euro area, NBFI's weight in the Portuguese economy has declined (Section 1.3.4).

makes it possible to assess, on a case-by-case basis, whether an activity should be regulated based on the entity carrying it out, on its own activity, or a combination of both. According to the ESRB, this approach would ensure a consistent regulation when the same activity is performed by different types of entities, allowing for an adjustment of each entity's level of resilience according to its contribution to systemic risk.

The discussion on the NBFI's macroprudential framework becomes more relevant in the context of the European project for a Savings and Investments Union. Diversifying funding sources is essential to ensure stable and integrated capital markets. Future developments depend on the adoption of a legislative proposal by the EC.

2.3.2 Climate-related risk

Climate-related risks have a systemic dimension and may affect different regions, sectors and institutions at the same time. There is a European consensus on their importance, and a debate is underway on the most appropriate macroprudential framework to mitigate and reduce the impact of climate-related risk. These discussions, which are not yet conclusive, reflect the complexity and novelty of the new topic. Conceptually, capital measures and BBMs can be designed to increase the financial system's resilience to systemic climate risk **(Special issue "A macroprudential approach to systemic climate risk")**.

The macroprudential policy framework in force in Portugal is considered appropriate to mitigate this risk.

2.3.3 Cybersecurity risk

Cyber-risk has also a systemic nature, as interconnections among financial institutions, infrastructures and technology networks allow for the spread of cyber incidents, affecting several entities and the financial system as a whole. In this area, the Banco de Portugal has developed indicators and methodologies to monitor this risk (Box 1 – Technological interconnections in the Portuguese financial system). It has also put procedures in place to ensure effective reporting and cooperation between financial entities and national competent authorities in the event of a potential severe and systemic cyber incident. The Banco de Portugal also participates in relevant European fora, platforms and bodies.

3 Banking system

In 2024, the Portuguese banking system's profitability remained high and above the euro area average, reaching 1.38% of assets. However, the reduction in interest rates has penalised net interest income, a trend that is expected to continue in 2025. The contribution of net interest income is anticipated to remain above that observed during the period of very low interest rates (2009-21).

Indicators on asset credit quality remained stable. The gross non-performing loans (NPL) ratio decreased slightly to 2.4%, nearing the euro area median (1.8%). Across firms, this reduction was broadly based across sectors with the highest share of banks' loan portfolios, while in the housing segment this indicator remained stable. The ratio of loans with a significant increase in credit risk (stage 2) declined to 9.8%, broadly based across the main credit segments. The transition to lower interest rates should further contribute to reducing the credit risk of borrowers.

The Portuguese banking system maintained a high exposure to government securities and to the real estate sector. In 2024, the share of government debt securities in assets increased to 19%. There was greater geographical diversification of these securities, with most of them being recorded at

amortised cost. In the real estate sector, loans to households secured by a mortgage stand out, accounting for 25% of total assets. The share of the stock of loans with high LTV and LSTI ratios (above 80% and 40% respectively) is very small, contributing to banks' resilience to potential adverse shocks.

The annual flow of new housing loans accelerated in 2024, driven by factors such as interest rate developments, rising disposable income and legislative measures to support the purchase of housing by young people. These dynamics brought the annual rate of change in the stock to 3.2% in December. Consumer loans have maintained stable growth rates since 2021, reaching 7.5% at the end of the year.

Among firms, the annual rate of change recovered over the year and became positive in December. In a context of subdued economic activity and still high financing costs, there was an increase in the proportion of loans to firms classified as medium risk, while a decrease was observed in low and high-risk classes. Spreads on new loans continued to reflect risk differentiation and remained higher for high-risk firms.

The liquidity and capital of the domestic banking system remained high. Customer deposits weighed more in the funding structure, 74% of the total balance sheet, which contributed to the reduction in the loan-to-deposit ratio. Funding from the Eurosystem continued to decrease and was approximately zero at the end of 2024. The bulk of the banking system's liquidity, which accounted for 7% of assets in December 2024, was remunerated at the deposit facility rate in the Banco de Portugal's liquidity-absorbing operations. Prudential ratios such as the liquidity coverage ratio (LCR) and net stable funding ratio (NSFR) increased to 272% and 158% respectively, widening the spread from the regulatory minimum of 100%. Similarly, the total capital ratio rose to 20.5% via organic capital generation, amplifying the spread in relation to the euro area average.

The uncertain environment has demonstrated the importance of the adjustments made by banks since the sovereign debt crisis. Institutions' prudent provisioning and capital conservation was instrumental and enhanced their resilience and ability to finance the economy. Recent macroprudential measures adopted by the Banco de Portugal, namely the implementation of the sSyRB in October 2024 and the application of the 0.75% CCyB as of January 2026, alongside the Recommendation, have strengthened the sector's resilience.

3.1 Profitability

In 2024, return on assets (ROA) increased further to stand at 1.38% at the end of the year, up 0.10 p.p. from 2023 (Table I.3.1). The dispersion of ROA across banking institutions, measured by the difference between the 90th and 10th percentiles, remained stable. In the first three quarters of the year, the Portuguese banking system's ROA was 0.74 p.p. higher than in the euro area. Net interest income remained the most relevant component of earnings, supporting the historically high ROA figures and the positive difference from the euro area average.

The increase in ROA in 2024 reflected the decrease in provisions and impairments (Chart I.3.1), in particular the reduction in credit impairment losses and provisions net of reversals and write-offs. Net interest income and net fees and commissions provided a modest contribution to profitability growth (+0.03 p.p. each) compared to 2023. Conversely, the decrease in income from financial operations and the increase in operating costs and average assets dampened the rise in ROA. Unlike ROA, the recurring operating result, which corresponds to the aggregate of net interest income and (net) fees and commissions minus operating costs, recorded a 0.15 p.p. decrease, standing at 1.99% of average assets. This decrease resulted mainly from the increase in operating costs and average assets.

Table I.3.1 • Profitability | As a percentage of average assets

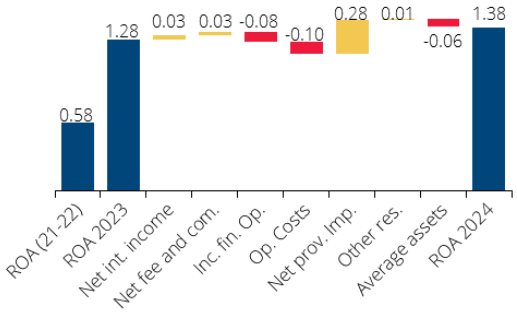
	2021	2022	2023	2024
Net interest income	1.42	1.65	2.80	2.69
Net fees and commissions	0.71	0.72	0.74	0.73
Operating costs	-1.24	-1.30	-1.40	-1.43
Income from financial operations	0.15	0.10	0.15	0.06
Net provisions and impairments	-0.49	-0.33	-0.60	-0.30
o.w. credit impairments	-0.19	-0.17	-0.27	-0.07
Other results	-0.09	-0.15	-0.40	-0.37
ROA	0.46	0.69	1.28	1.38
10th percentile	0.03	0.14	0.85	0.79
90th percentile	0.77	1.21	1.88	1.78

Source: Banco de Portugal. | Notes: Return on assets (ROA) consists of the net result as a percentage of average assets. 'Other results' includes other operating results, appropriation of income from subsidiaries, joint ventures and associates, income from non-current assets held for sale and not qualifying as discontinued operations, results from contractual changes/renegotiations of cash flows, profit or loss of discontinued operations before tax and tax on profit for the year.

In the context of declining interest rates, net interest income expressed as a percentage of assets reversed its growth trend but remained high. While this path is expected to continue, net interest income is expected to remain above that observed in the period of very low interest rates (Box 3 – *Financial Stability Report*, November 2023).

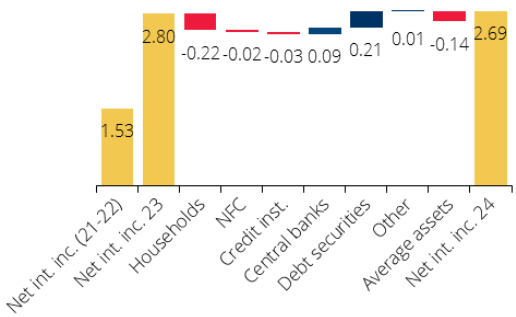
In 2024, the decrease in net interest income as a percentage of assets, was mainly due to the contribution of operations with households, as a result of an increase in interest paid on deposits higher than the increase in interest received on loans and to a lesser extent, than the increase in average assets (Chart I.3.2). These effects were partially mitigated by a rise in interest received on debt securities (mainly government debt) and a higher spread between interest received and paid in central bank operations.

Chart I.3.1 • ROA and contributions to changes | Per cent and percentage points



Source: Banco de Portugal. | Notes: Return on assets (ROA) consists of the net result as a percentage of average assets. 'Other results' includes other operating results, appropriation of income from subsidiaries, joint ventures and associates, income from non-current assets held for sale and not qualifying as discontinued operations, results from contractual changes/renegotiations of cash flows, profit or loss of discontinued operations before tax and tax on profit for the year.

Chart I.3.2 • Net interest income and contributions to changes | Per cent and percentage points



Source: Banco de Portugal. | Notes: Net interest income is analysed as a percentage of average assets. "Other" includes interest receivable on loans to general government, loans to other financial institutions, trading derivatives, other assets, government deposits, deposits from other financial institutions, financial derivatives, securities issued, other financial liabilities and other liabilities.

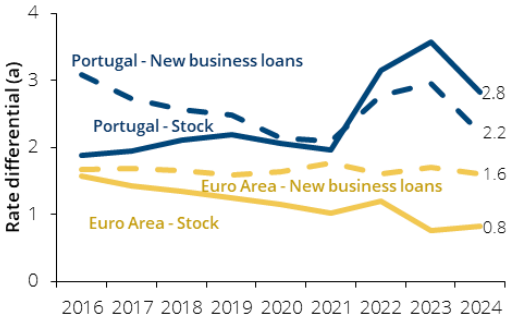
The difference between interest rates on loans and deposits with the non-financial private sector (NFPS) narrowed for both stock and new business (Chart I.3.3). This development was

caused by the pass-through of declines in interbank interest rates to interest rates on loans, especially in segments with a higher share of floating rate contracts, such as housing and firms, and a slight increase in deposit interest rates. Despite the decrease, the difference between interest rates on stocks of loans and time deposits in Portugal remained 2 p.p. above that of the euro area.

The cost-to-core income ratio increased slightly in 2024, to 41.7%, remaining below the euro area average. This change reflected the increase in operating costs, most notably staff costs and, to a lesser extent, IT expenditure. Although the increase in operating costs was broadly based across the main institutions of the banking system, there was an increase in the dispersion between institutions in this ratio, as evidenced by the reduction in the 10th percentile and, above all, the increase in the 90th percentile, which stood at 25.9% and 50.8% respectively (Chart I.3.4). Based on the annualised value of the first three quarters of 2024, the Portuguese banking system maintained a ratio below the euro area average, which stood at 60.6%.

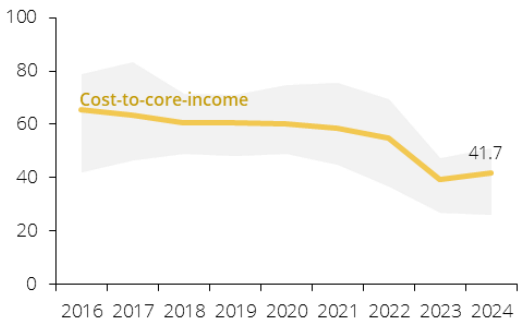
The decrease in credit impairments caused a 0.33 p.p. reduction in the loan loss charge to 0.12%. The change in this indicator, which consists of the flow of credit impairments as a percentage of average gross credit to customers, reversed the increase observed in 2023, which may indicate an improvement in banks' perception of their customers' credit risk of their customers.

Chart I.3.3 • Interest rate differentials between NFPS loans and deposits | Percentage points



Source: Banco de Portugal. | Notes: The NFPS includes firms and households. The series refers to the reporting on an individual basis of the other monetary financial institutions resident in Portugal. New business includes average annual rates weighted by their respective amounts. (a) Difference between the interest rates on loans and on time deposits.

Chart I.3.4 • Cost-to-core-income ratio | Per cent



Source: Banco de Portugal. | Notes: Cost-to-core-income consists of the ratio between operating costs and the sum of net interest income and net fees and commissions. The yellow line indicates the value of the aggregate of the banking system's institutions, while the shaded area corresponds to the difference between the 90th and 10th percentiles of its distribution, with figures weighted by the sum of net interest income and net fees.

3.2 Credit standards

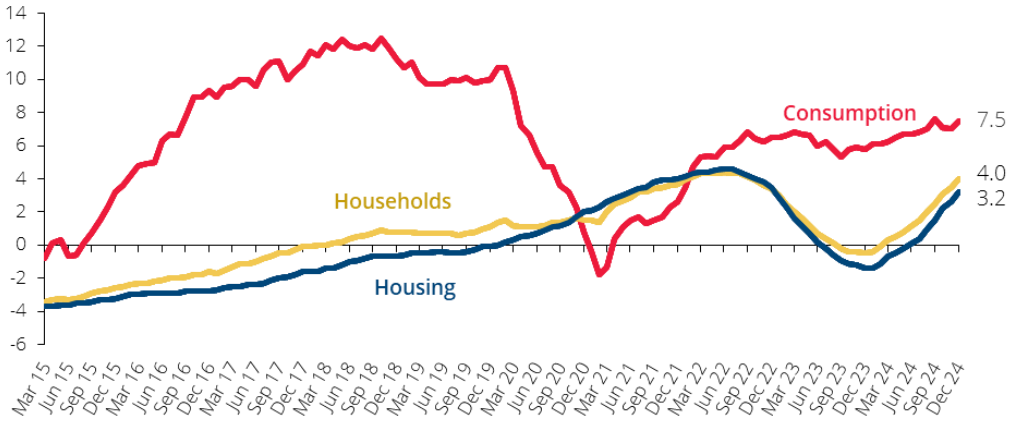
Loans to households

In 2024, the adjusted annual rate of change in the stock of bank loans to households grew further, reaching 4.0% in December (Chart I.3.5). This increase was driven by the acceleration in loans for house purchase, while growth rates in consumer loans have been relatively stable since 2022. Loans for house purchase, representing 77.1% of the total stock of loans to households, recorded an annual rate of change of 3.2% at the end of the year, while consumer loans, accounting for 15.2% of the total, posted an annual rate of change of 7.5% in December.

At the end of 2024, the annual flow of new loans for house purchase, excluding renegotiations, increased by 34.3%, totalling €17.6 billion, close to its 2022 levels (Chart I.3.6). This growth, one of the highest in the

euro area (Chart I.3.7), was registered following a reduction in 2022 and 2023. Interest rate developments, rising disposable income and legislative measures in place since August supporting house purchase by young people, are also likely to have contributed to this increase Credit transfers between institutions, which had been increasing since October 2022, started on a downward path as of March 2024, accounting for 21.2% of the annual flow of new loans for house purchase in 2024 (down from 26.1% in 2023).

Chart I.3.5 • Adjusted annual rate of change in the stock of loans to households | Per cent



Source: Banco de Portugal. | Notes: Annual rates of change are adjusted for securitisation and loan transfers. Annual rates of change are calculated on the basis of end-of-month stock changes in bank loans, adjusted for changes not defined as transactions, namely reclassifications, write-offs and exchange rate and price revaluations. Latest observation: December 2024.

Chart I.3.6 • New credit agreements for house purchase (12-month cumulative figures)

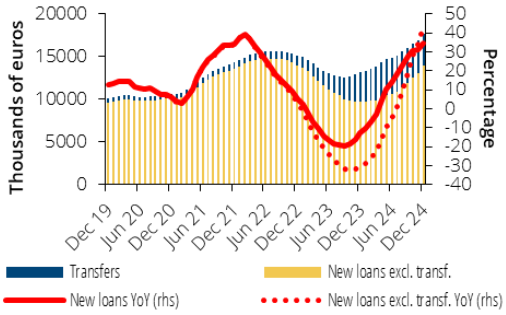
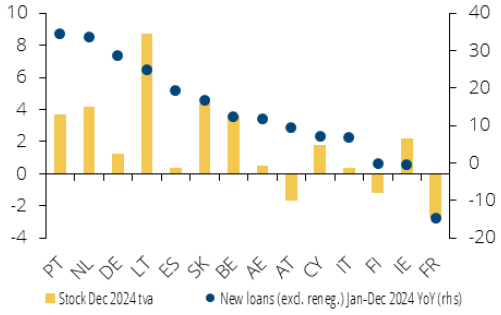


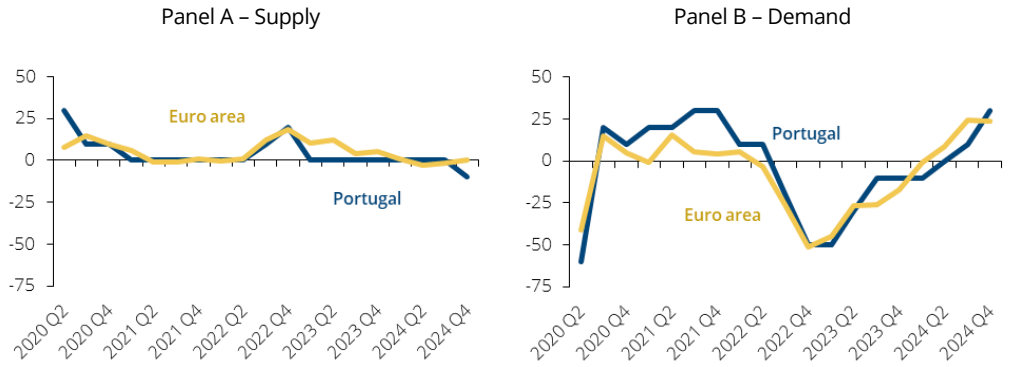
Chart I.3.7 • Annual rate of change in the stock and year-on-year rate of change in new loans for house purchase between January and December 2024 | Per cent



Source: Banco de Portugal. | Notes: New credit agreements for house purchase in both charts above exclude renegotiations and, in the case of Chart I.3.7, they also exclude transfers. The annual rates of change in Chart I.3.7 are not adjusted for securitisation and loan transfers, owing to unavailability of information for euro area countries. These operations have been residual in Portugal recently, so the rate of change and the adjusted rate of change are very close.

In 2024, Portuguese financial institutions reported in the Bank Lending Survey (BLS) that credit standards for loans for house purchase remained unchanged and that demand had increased (Chart I.3.10). Among the factors contributing to this increase in demand, banks highlighted the improvement in consumer confidence, lower interest rates and legislative measures supporting house purchase by young people. This perception was also reflected in the Consumer Expectations Survey (CES) for December 2024, where consumers signalled easier access to loans for house purchase, corroborating the message expressed by financial institutions in the BLS. In the European context, developments in the supply of and demand for loans for house purchase were similar to those observed in Portugal.

Chart I.3.8 • Supply and demand for loans for house purchase | Diffusion index

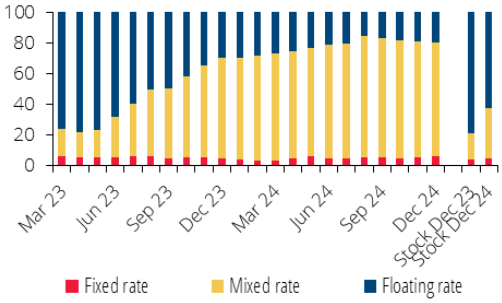


Sources: ECB and Banco de Portugal. | Notes: Credit supply corresponds to credit standards reported by banks. An increase (decrease) in the diffusion index means a tightening (easing) by institutions and an increase (decrease) in demand in the credit segment. The last observation for each variable reflects the institutions' expectations for the second quarter of 2025 (dashed part).

Despite a slight fall since August 2024, the mixed interest rate regime is still predominant in new loans for house purchase, accounting for 73.8% of the total in December (Chart I.3.9). These developments were accompanied by an increase in the importance of the variable rate regime, a trend which is expected to persist in the short term, considering the expected lower interest rates and the usual practice in Portugal.

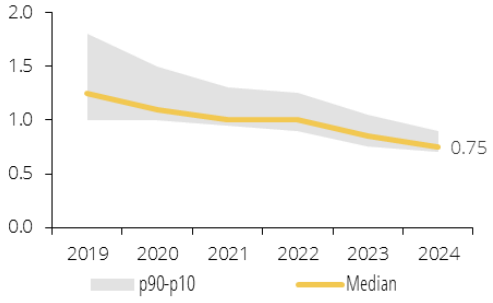
The average interest rate on new loans for house purchase continued on the downward path that started in October 2023, standing at 3.2% in December 2024 (1.0 p.p. lower than in 2023), moving closer to the euro area average. This development mainly reflects the decline in EURIBOR rates. In 2024 the downward trend in spreads on new agreements concluded and their dispersion continued. This development may be linked to increased competition between banks, in particular by offering promotional spreads in the early years of the agreement, including, in some cases, zero spreads. In particular, the median spreads on variable-rate agreements edged down by 0.1 p.p., to 0.75% (Chart I.3.10).

Chart I.3.9 • Monthly flow of new loans and stock of loans for house purchase by type of interest rate | Per cent



Source: Banco de Portugal. | Notes: The 'mixed rate' classification is based on the date the agreement is signed, during which a fixed rate period is in force, which varies in length depending on the agreement. The share of the mixed rate stock may include agreements that are already within the variable rate period or close to the end of the fixed rate period.

Chart I.3.10 • Spreads on new loans for house purchase by year of loan initiation | Percentage points



Source: Banco de Portugal. | Notes: Amount-weighted figures. The distribution shown in the chart only covers the universe of variable rate loans for house purchase.

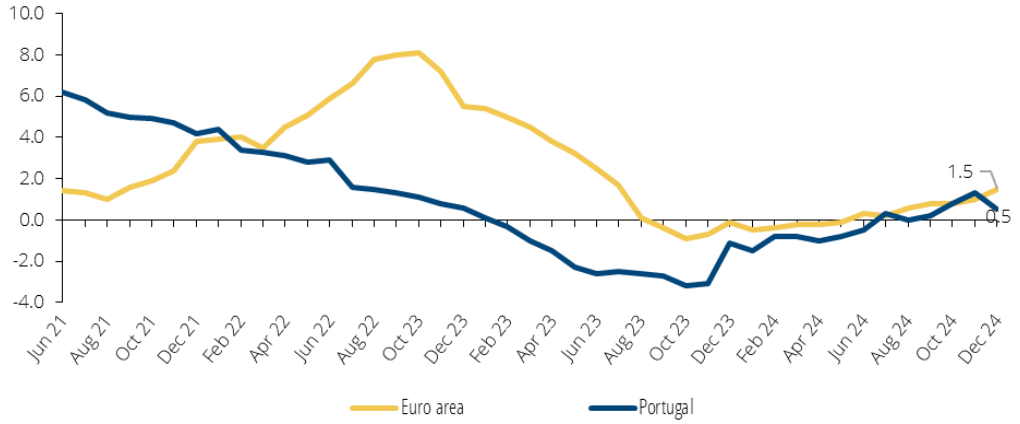
In consumer credit, the annual flow of new business grew by 11.6% (-2.2% in 2023). In the euro area, changes in this segment stood at 4.4% in 2024 (-0.9% in December 2023). **In Portugal, the average interest rate stood at 8.6% in December 2024, broadly unchanged from the same period in 2023**

(8.5%). According to the BLS, Portuguese banks reported for this segment a maintenance of tight credit standards and relative stabilisation of demand.

Loans to firms

In 2024, the annual rate of change in the stock of bank loans to firms was on a recovery path, reaching 0.5% in December (Chart I.3.11). There was some sectoral heterogeneity, with a focus on negative rates in the transportation and storage (-6.7%), industry (-4.3%) and trade (-1.0%) sectors, and, on the other hand, positive rates in real estate activities (7.0%), professional and administrative activities (5.7%) and construction (3.3%) (Table I.3.2). In the accommodation and food services sector, the annual rate of change turned positive at the end of the year, following an extended period of negative changes since the second half of 2022. Overall, in 2024 the annual rate of change in the stock of loans in Portugal was in tandem with the recovery observed in the euro area.

Chart I.3.11 • Annual rate of change in the stock of loans to firms | Per cent



Source: Banco de Portugal. | Note: Annual rates of change are calculated on the basis of monthly stock changes in resident banks' loans to resident firms, adjusted for changes that do not correspond to transactions, namely reclassifications, write-offs and exchange rate and price revaluations.

Table I.3.2 • Annual rate of change in loans to firms by sector and size | Per cent

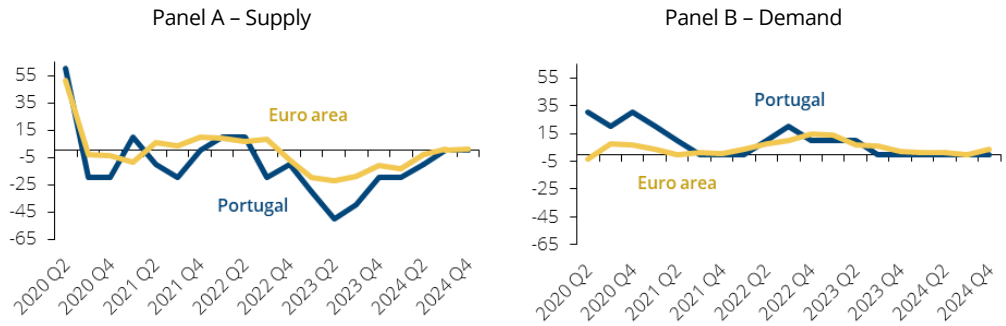
	% stock Dec. 24	Dec. 22	Jun. 23	Dec. 23	Jun. 24	Dec. 24
Industry	19	2.1	-6.0	-9.1	-7.3	-4.3
Trade	18	5.5	1.5	-0.3	-0.9	-1.0
Transport and storage	6	-2.2	-1.7	-2.5	-5.2	-6.7
Accommodation and food services	9	-6.7	-7.3	-4.5	-2.6	0.9
Construction	9	0	-1.2	1.9	1.9	3.3
Real estate activities	13	6.1	5.3	2.3	3.8	7.0
Professional and admin. activities	7	2.3	1.4	3.3	5.4	5.7
Micro-enterprises	29	5.7	2.4	4.0	5.4	7.2
Small enterprises	25	-2.2	-3.8	-3.7	-3.9	-1.4
Medium-sized enterprises	23	-1.9	-4.8	-5.7	-6.0	-5.2
Large enterprises	20	1.6	-5.4	-1.9	0.6	0.3

Source: Banco de Portugal. | Notes: The table shows a number of sectors which in total account for 81% of the stock of loans to firms. Industry, accommodation and food services and trade correspond, respectively, to the following sectors: "Manufacturing and Mining and quarrying", "Accommodation and food service activities" and "Wholesale and retail trade; repair of motor vehicles and motorcycles". The series shown are not adjusted for loan transfers which have a residual impact on loan developments in 2024.

Loans to small and medium-sized enterprises declined further throughout 2024, albeit at a more moderate pace while micro-enterprises continued to grow steadily (7.2%). In turn, loans to large enterprises continued to recover, with a 0.3% change in December 2024. In addition to loans, bank lending to firms also grew through banks' holdings of corporate sector securities, which increased by 15% in 2024 and accounted for 20% of total credit at the end of the year. This type of financing has more weight in the case of head offices and large enterprises.

According to the BLS, credit standards for loans to firms remained unchanged in 2024, while demand stabilised in the second half of the year (Chart I.3.12). Supply conditions have remained relatively stable since mid-2023, although some banks have identified a further tightening of the terms and conditions applied to energy-intensive manufacturing firms. After a decreasing period, demand for corporate loans has stabilised from the second half of 2024, reflecting the decline in interest rates and the recovery in financing needs related to investment. In the euro area, by contrast, credit supply tightened and demand increased moderately over the same period.

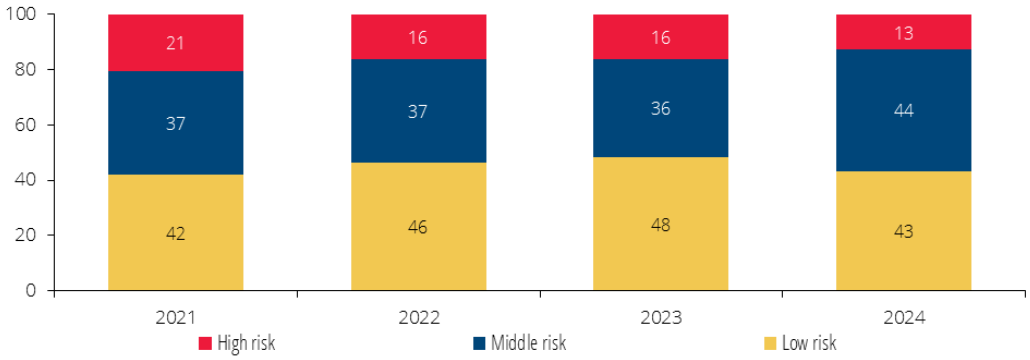
Chart I.3.12 • Supply and demand for loans to firms | Diffusion index



Sources: ECB and Banco de Portugal. | Notes: Credit supply corresponds to credit standards reported by banks. An increase (decrease) in the diffusion index means a tightening (easing) by institutions and an increase (decrease) in demand in the credit segment.

In 2024, new loans to firms continued to be concentrated in lower and medium-risk classes. Amid subdued economic activity and higher financing costs compared to the period before 2021, there was an increase in the share of loans granted to medium-risk firms and a decrease in in both low-risk and high-risk classes (Chart I.3.13). The weight of the stock of loans to high-risk firms maintained the downward trend seen in recent years (Box 3 – Evolution of firm credit risk and loan pricing).

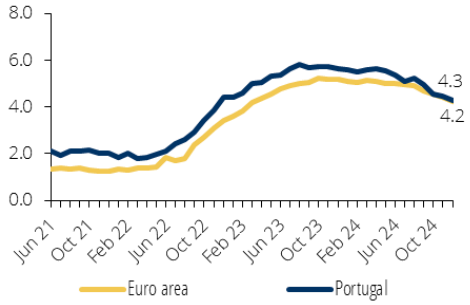
Chart I.3.13 • New loans to firms by credit risk class | Per cent



Source: Banco de Portugal. | Notes: Credit risk, as measured by probability of default (PD), is calculated on the basis of credit ratings available in the Banco de Portugal's Internal Credit Assessment System (ICAS). Classes 1, 2 and 3 correspond to PD ≤ 1%, 1% < PD≤ 5 % and PD > 5% respectively.

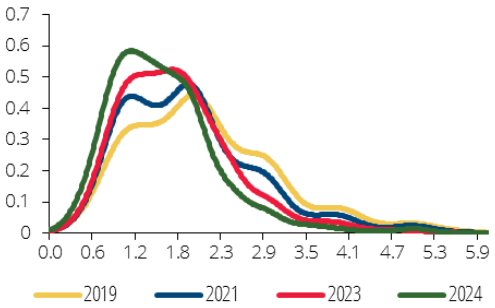
The average interest rate on new loans to firms decreased from 5.7% in December 2023 to 4.3% in December 2024, reflecting the reduction in EURIBOR rates at different maturities and a slight narrowing of spreads. The distribution of spreads has gradually shifted to the left in recent years, with a reduction in their dispersion (Chart I.3.14).

Chart I.3.14 • Interest rate on new loans | Per cent



Sources: Banco de Portugal. | Note: Annualised agreed interest rate on new loans to firms.

Chart I.3.15 • Distribution of spreads on new loans to firms



Source: Banco de Portugal. | Notes: Distribution of spreads on variable rate loans. Amount-weighted figures..

Spreads on new loans continued to reflect risk differentiation, remaining higher for high-risk firms. In 2024 spreads narrowed across risk classes, new loans and the stock (Table I.3.3). Despite the overall narrowing trend in spreads in recent years, banks have continued to adjust the price of loans according to loan specific characteristics and the risk profile of firms (Box 3 – Evolution of firm credit risk and loan pricing).

Table I.3.3 • Average spread on the stock and new loans to firms, by risk class | Percentage points

	December 2021	December 2022	December 2023	December 2024
Stock	**2.1**	**2.0**	**1.9**	**1.8**
Low risk	1.6	1.6	1.6	1.5
Medium risk	2.2	2.1	2.1	1.9
High risk	2.6	2.5	2.4	2.2
	2021	**2022**	**2023**	**2024**
New loans	**2.0**	**1.9**	**1.8**	**1.6**
Low risk	1.5	1.5	1.5	1.3
Medium risk	2.2	2.1	1.9	1.7
High risk	2.5	2.4	2.2	2

Source: Banco de Portugal. | Note: Spread on variable rate loans presented with amount-weighted figures.

Box 3 • Evolution of firm credit risk and loan pricing

At a time when the Portuguese banking system shows increased resilience – reflected in robust indicators of liquidity, capital, asset quality and profitability – the ongoing assessment of banks' risk-taking remains crucial. This box analyses loans to firms, which accounted for 35% of total loans to the non-financial private sector at the end of 2024, and their risk profile.

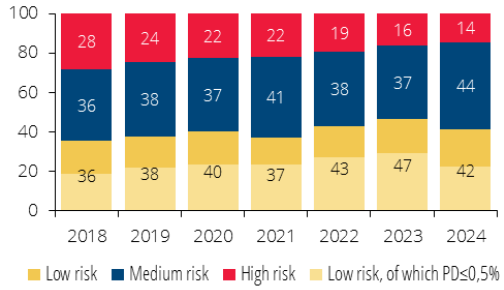
The share of the stock of loans to high-risk firms continued to decline, from 28% at the end of 2018 to 14% at the end of 2024, driven by the improvement in firms' financial situation. However, the proportion of medium-risk firms increased, mainly due to firms previously classified as low risk transitioning. Firms that moved into a higher risk class generally presented a weaker financial situation, characterised by higher leveraging, higher funding costs and lower liquidity and profitability. Overall, spreads on new loans declined, but remained differentiated according to risk profile. In 2024, high-risk firms paid 75 basis points (b.p.) more than low-risk firms on average.

Developments in loans by firms' risk profile

Over the past six years, the quality of loans to firms in the Portuguese banking system has improved. The proportion of loans to high-risk firms, measured by probability of default (PD), decreased from 28% at the end of 2018 to 14% at the end of 2024 (Chart B3.1). Between 2018 and 2023 the share of low-risk firms increased, while the share of medium-risk firms remained stable. However, the trend reversed in 2024: the share of medium-risk firms increased while that of low risk decreased.

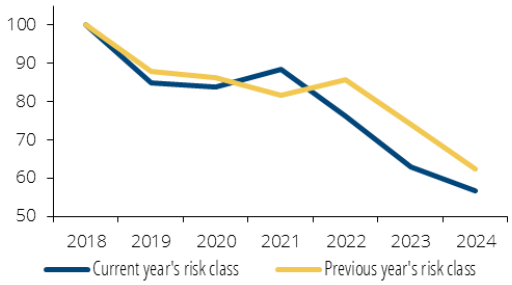
The reduction in the *stock* of loans to high-risk firms has mainly been driven by the improvement in their financial situation (Chart B3.2). This trend is visible when comparing the stock of loans based on the current year's risk class and the stock based on the previous year's classification (constant risk classification). With the exception of 2021, the stock of loans to high-risk firms is always higher when using the previous ranking, reflecting the improvement in firms' risk profile over time. Firms' entries and exits from the credit market affected the stock only to a limited extent. On average, new firms accounted for 2.6% of stock, and firm exits for 2.8%. In the high-risk category, the net entries effect (extensive margin) is residual.

Chart B3.1 • Stock of loans by credit risk clas | Per cent



Source: Banco de Portugal | Notes: Stock of loans by credit risk class as a percentage of the total credit stock in the last quarter of each year. Credit risk is measured by PD and is divided into three classes: Low risk (PD ≤ 1%), medium risk (1% < PD ≤ 5%) and high risk (PD > 5%).

Chart B3.2 • Stock of loans to high-risk firms | Index (December 2018 = 100)



Source: Banco de Portugal. | Notes: Data refer exclusively to firms with PD assigned in the current and previous year. On average, the stock of loans held by these firms accounts for 97% of the total credit stock.

The share of loans classified as high-risk also declined in 2024, despite higher financing costs (Section 1.3.2). Nevertheless, the share of loans to medium-risk firms increased, owing to transfers from the low and high-risk classes (12% and 6.8% of the stock respectively) (Table B3.1).

In December 2024, 18.1% of the stock of loans shifted to a higher risk class, while 13.7% moved to a lower risk class. These dynamics reflected changes in the cost of financing and the financial position of firms. The increase in bank lending costs and leverage was associated with a higher likelihood of a deterioration in risk, while higher liquidity and profitability reduced that likelihood (Table B3.2).

Table B3.1 • Transition matrix by risk profile – Stock of loans as at December 2024 | Per cent

		Risk class 2024			
		Low risk	Medium risk	High risk	% stock 2024, risk class 2023
Risk class 2023	Low risk	33.8	12.0	0.7	46.4
	Medium risk	6.3	23.6	5.4	35.2
	High risk	0.6	6.8	7.6	15.0
	% stock 2024, risk class 2024	40.6	42.4	13.6	

Source: Banco de Portugal. | Notes: Share of the stock of loans that shifted between risk classes, considering only firms with PD assigned in 2023 and 2024. These firms accounted for 97% of the stock of loans at the end of 2024.

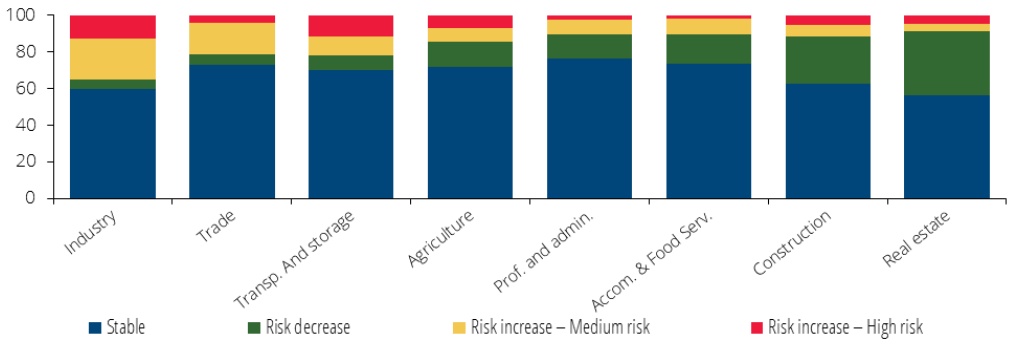
Table B3.2 • Probability of transfer to a higher risk class in 2024

	Impact
Δ Leverage	+
Δ Cost of bank loans	+
Δ Liquidity	-
Δ Profitability	-
Number of observations	226,271
R2	0.118
Industry fixed effects	Yes
Firm size fixed effects	Yes

Source: Banco de Portugal. | Notes: Results from a logit model, which includes firm size and sector fixed effects, and the change in firms' main financial indicators in 2023: (i) leverage, measured as the ratio of financial debt to total assets; (ii) cost of bank loans, measured as the average interest rate paid on the stock of bank loans; (iii) liquidity, measured as the ratio of cash plus deposits to total assets; and (iv) profitability, defined as the ratio of EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortisation) to total assets. The dependent variable is the probability of a firm experiencing a downgrade in 2024. The standard errors are robust (Huber-White), and all estimated coefficients are significant at 1% level.

The deterioration in risk was most pronounced in industry, transport and storage, and trade (Chart B3.3). In these sectors, while a higher share of loans shifted to higher risk classes (yellow and red bars), most of the changes corresponded to a transfer from low to medium risk (yellow bar). On the other hand, there was more risk improvement than deterioration in sectors related to real estate, construction, accommodation and food services, professional activities and administrative services. Overall, the financial situation of firms remained robust, which helped to prevent the deterioration in the risk profile of the loan stock.

Chart B3.3 • Loan stock by change in risk class and sector in 2024 | As a percentage of loan stock by sector



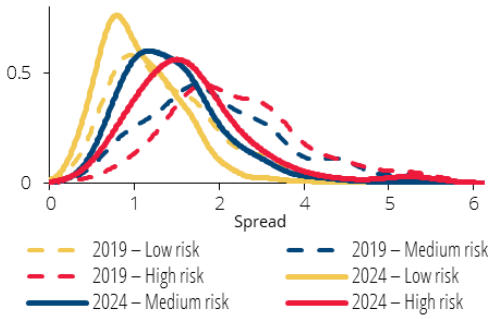
Source: Banco de Portugal. | Notes: Sectors ranked by the net percentage of loans downgraded in 2024. "Risk increase – High risk" considers transitions from low and medium risk to high risk (red bar). "Risk increase – Medium risk" considers transitions from low to medium risk (yellow bar).

Developments in spreads on new loans by firms' risk profile

Spreads on new loans to high-risk firms remained higher than those of the other risk classes, even in a context of general narrowing in spreads and some compression of distributions (Chart B3.4). Firms' permanence or transition between risk classes was also associated with different average spread levels. Firms that remained in the high risk class faced higher spreads on average than those that were newly classified as high risk.[13]

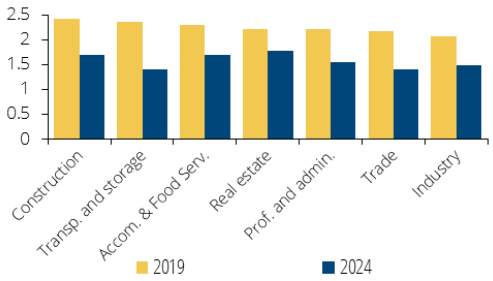
The downward trend in spreads on new loans was observed across most sectors (Chart B3.5). However, the magnitude of the decline varied, also reflecting different starting points. The most significant reductions occurred in transport and storage, and trade, while the decreases were more moderate in manufacturing and real estate sectors.

Chart B3.4 • Spreads distribution on new loans, by credit risk profile | In percentage points



Source: Banco de Portugal. Distribution of spreads in variable rate loans (amount-weighted figures). The spread is the difference between the interest rate charged by the bank and the reference rate used to determine the loan price.

Chart B3.5 • Spreads on new loans, by activity sector | In percentage points



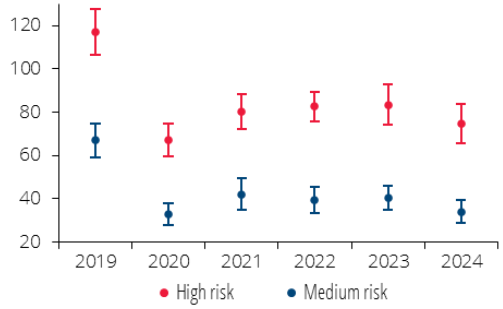
Source: Banco de Portugal. | Note: Average spread on new loans (weighted by loan amount).

Despite the broad-based narrowing of spreads since 2019, banks continued to differentiate loan pricing according to the risk profile of firms. In 2024, high-risk firms paid 75 b.p. more than low-risk firms on average, and medium-risk firms paid 34 b.p. more (Chart B3.6). These figures are close to those observed between 2020 and 2023 (78 b.p. and 38 b.p. respectively).

Spreads continued to reflect the probability of default, although the sensitivity to this factor varied over time. Between 2020 and 2023, an increase of 1 percentage point (p.p.) in the probability of default corresponded, on average, to 5.6 b.p. more in the spread. In 2024, this sensitivity increased to 7.8 b.p. per 1 p.p. (Chart B3.7).

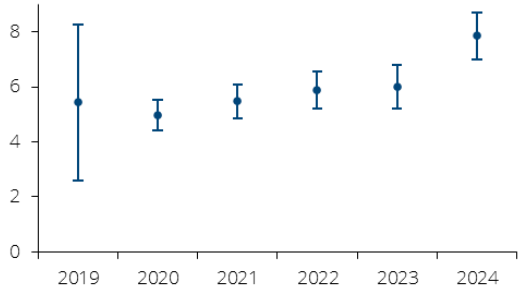
[13] This result is observed by comparing the average spread on new loans to firms that remain in a certain risk class with the average spread for firms entering or leaving the same class.

Chart B3.6 • Spread differences in relation to loans to low-risk firms | Basis points



Source: Banco de Portugal. | Notes: Results derived from a regression in which low-risk firms form the baseline group. The model includes dummy variables for high and medium-risk firms interacting with year dummies, controlling for the amount and maturity of loans, for the existence of government-guaranteed credit lines and other guarantees and fixed effects for bank*year-month, industry*year-month, and firm size. Standard errors are clustered at firm level, and the error bands represent the 95% confidence interval.

Chart B3.7 • Spread sensitivity to PD over time | Basis points



Source: Banco de Portugal. | Notes: Sensitivity of spreads to a 1 p.p. increase in PD. The regression includes the same set of control variables as Chart B3.6. Standard errors are clustered at firm level, and the error bands represent the 95% confidence interval.

3.3 Credit quality of assets

In 2024 the share of NPLs in the total portfolio decreased further. At the end of the year, the gross NPL ratio stood at 2.4% (Table I.3.4), 0.2 p.p. less than at the end of 2023 and continued to converge towards the euro area median (1.8% in September 2024). In a context of relative stabilisation of performing loans, this reflected a decrease in NPLs that are not past due or past due for less than 90 days. The main contribution to this improvement came from institutions with the highest NPL ratios, thereby reducing heterogeneity in the banking system.

Table I.3.4 • Gross NPL ratio | Per cent

	December 2019	"	December 2022	December 2023	December 2024
Total gross NPL ratio[a]	6.2		3.0	2.7	2.4
5th percentile[b]	2.2		0.9	0.8	0.8
95th percentile[b]	11.8		4.6	5.5	4.1
Firms	12.3		6.5	5.0	4.3
Households	3.7		2.3	2.4	2.3
House purchase	2.4		1.1	1.3	1.3
Consumption and other purposes	8.2		6.9	6.2	6.1
Other sectors[c]	4.8		0.9	1.4	1.1
Euro area median	2.9		1.7	1.7	1.8[d]
Firms	4.1		3.0	3.3	3.4
Households	3.0		2.1	2.0	2.1

Sources: ECB and Banco de Portugal. | Notes: (a) Corresponds to the ratio of gross NPLs to total gross loans, including loans and cash balances at central banks and credit institutions, loans to the general government, other financial corporations, non-financial corporations and households. (b) Percentiles were calculated through a weighted distribution on the basis of the gross NPL ratio's total loans. (c) "Other sectors" includes central banks, general government, credit institutions and other financial corporations. (d) Data refer to September 2024.

The share of NPLs in NFPS loans decreased mainly through a reduction in the NPLs of firms. The gross NPL ratio of firms fell by 0.8 p.p. to 4.3%, reflecting write-offs and NPL sales (Table I.3.5). This reduction was broad-based across industries with a higher share in banks' credit portfolios, such as manufacturing, which accounted for 18% of loans to firms and whose ratio declined to 5% (-0.4 p.p.). In loans to households, there was an increase in the flow of new NPLs, which was fully offset by developments in the remaining components. In loans for house purchase, the positive and negative effects cancelled each other out, with the ratio remaining at 1.3%. In loans for consumption and other purposes, the ratio declined slightly to 6.1%

Table I.3.5 • Gross NPL ratio – contributions to changes

	Total	Firms	Households	
			House purchase	Consumption and other purposes
Gross NPL ratio, Dec. 2023 (%)	2.7	5.0	1.3	6.2
Write-offs (p.p.)	-0.20	-0.42	-0.01	-0.53
NPL sales (p.p.)	-0.18	-0.38	-0.02	-0.58
New NPLs, net of cures (p.p.)	0.15	-0.01	0.04	1.22
Other denominator effects (p.p.)	-0.01	0.01	-0.06	-0.30
Gross NPL ratio, Dec. 2024 (%)	2.4	4.3	1.3	6.1

Source: Banco de Portugal. | Notes: NPL sales include securitisations. The "New NPLs, net of cures" item reflects all other NPL inflows and outflows, including inflows of loans as NPLs (net of outflows), amortisations and foreclosures. The "Other denominator effects" item reflects changes in the stock of loans that are not linked to the NPL stock (e.g. net flow of performing loans).

Total NPL impairment coverage remained stable in 2024, albeit with changes within the NFPS. In loans to firms and households for consumption and other purposes, the ratio increased to 62.2% (+1.4 p.p.) and 61.3% (+1.1 p.p.) respectively (Table I.3.6). Conversely, in loans to households for house purchase, which recorded lower levels of NPLs, the ratio decreased by 2.4 p.p. to 35.7%. It should be noted that the degree of impairment coverage does not consider the value of collateral, which represents a significant guarantee in loans for house purchase, mitigating the risk of loss given default. The NPL ratio net of impairments decreased slightly to 1.1%, close to the euro area median (1.0%).

Table I.3.6 • NPL impairment coverage ratio | Per cent

	December 2019	"	December 2022	December 2023	December 2024
NPL coverage ratio[a]	51.5		55.5	55.4	55.4
5th percentile[b]	35.7		40.3	38.0	37.9
95th percentile[b]	71.1		74.9	73.0	71.9
Firms	56.5		56.0	60.7	62.2
Households	42.3		55.1	50.8	50.4
House purchase	26.3		40.4	38.0	35.7
Consumption and other purposes	58.8		64.1	60.3	61.3
Other sectors[c]	46.4		48.4	37.4	35.2
Euro area median	43.2		43.7	42.8	40.5[d]
Memo items:					
NPL ratio net of impairments[e]	3.0		1.3	1.2	1.1
Euro area median	1.4		1.0	1.0	1.0[d]

Sources: ECB and Banco de Portugal. | Notes: (a) Corresponds to the ratio of accumulated impairments on NPLs to gross NPLs. (b) Percentiles were calculated through a weighted distribution on the basis of the NPL impairment coverage ratio's total NPLs. (c) "Other sectors" includes central banks, general government, credit institutions and other financial corporations. (d) Data refer to September 2024. (e) Corresponds to the ratio of NPLs net of impairments to total gross loans.

The favourable macroeconomic environment and declining interest rates contributed to a broad-based reduction in credit risk in 2024. The stage 2 loan ratio decreased to 9.8%, moving closer to the figure recorded in 2019 (Table I.3.7). This improvement was visible in loans to households, with ratios of 8.3% in the housing segment and 11.2% in the consumption and other purposes segment, as well as in loans to firms, with a ratio of 12.3%. These indicators were lower than those observed for the set of significant institutions participating in the Single Supervisory Mechanism.

Table I.3.7 • Stage 2 loan ratio | Per cent

	December 2019	"	December 2022	December 2023	December 2024
Stage 2 loan ratio[a]	9.4		10.3	10.7	9.8
Firms	12.6		16.0	13.5	12.3
Households	7.7		8.2	10.4	8.9
House purchase	n.a.		7.5	9.8	8.3
Consumption and other purposes	n.a.		10.8	12.4	11.2
SSM – significant institutions[b]	n.a.		9.6	9.7	9.9
Firms	n.a.		13.8	13.7	13.9
Households	n.a.		8.4	8.9	9.6
Memo items:					
Stage 2 loan coverage ratio[c]	5.0		6.8	7.6	6.8

Sources: ECB and Banco de Portugal. | Notes: (a) Corresponds to the ratio of total gross stage 2 loans to total gross loans. (b) Stage 2 loan ratio for all 109 significant institutions (SIs) participating in the Single Supervisory Mechanism. (c) Corresponds to the ratio of accumulated impairments to gross stage 2 loans.

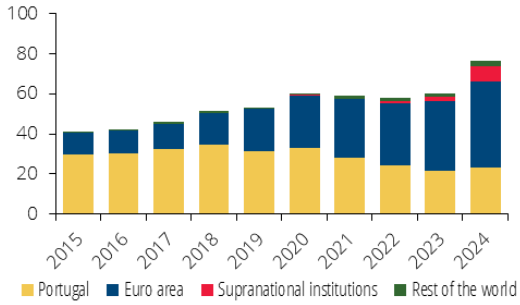
3.4 Concentration of exposures

The Portuguese banking system is highly exposed to sovereign debt securities, real estate assets and, to a lesser degree, assets issued by other sub-sectors of the national financial sector.

In 2024, the share of sovereign debt securities in assets increased to 19% (+3.3 p.p. from the end of 2023), continuing the downward trend in the share of Portuguese sovereign debt. This movement occurred in a context of moderate developments in credit and a reduction in the loan-to-deposit ratio, leading banks to expand their portfolios of sovereign debt securities. This expansion has been accompanied by increased geographical diversification. Based on information on domestic activity, which does not consider activity carried out by subsidiaries abroad, the share of Portuguese sovereign debt decreased by 49 p.p. to 30% over the past ten years, while the share of exposure to euro area countries has increased gradually, reaching 57% (Chart I.3.16). In the sovereign debt portfolio, the exposure to Spain, Italy and France (totalling 45%) is particularly significant, followed to a lesser degree by Belgium, Germany, Ireland and the Netherlands (totalling 11%) and the United States (3%). In 2024, there was a significant increase in the exposure to supranational institutions, reflecting the issuance of bonds by the European Commission (9%).

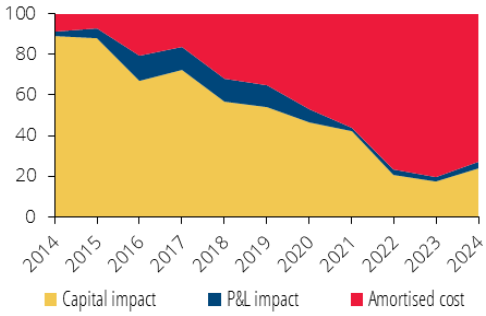
Sovereign debt securities at amortised cost continued to be the main component of this portfolio. Despite the general increase in exposure, there was a reduction in the share of securities at amortised cost to 73% (-7 p.p.), contrasting with the rise in the share of fair value securities, whose changes in value affect both capital and earnings (Chart I.3.17). The significant change in the composition of this portfolio over the past ten years, together with the decrease of its average duration in recent years, mitigates the impact of market changes on banks' balance sheets. However, any latent losses accumulated in this portfolio will have to be recognised in case of sale of these instruments.

Chart I.3.16 • Sovereign debt securities – domestic activity | EUR billions



Source: Banco de Portugal. | Notes: The series refer to the reporting on an individual basis of the other monetary financial institutions (OMFIs) resident in Portugal. Thus, the analysed information is exclusively based on domestic activity; the activity carried out by subsidiaries abroad is not considered.

Chart I.3.17 • Sovereign debt securities by portfolio – consolidated basis | Per cent



Source: Banco de Portugal.

Loans to households secured by real estate continued to be the main component of exposure to the real estate sector, representing 25% of assets in December 2024 (Table I.3.8), with a small fraction of loans having high LTV and LSTI ratios. Considering a representative sample of loans for house purchase, 85% presented LTV and LSTI ratios between 0-80% and 0-40% respectively, indicating lower risk (Chart I.3.18). The share of the portfolio that combines high ratios (above 80% and 40% respectively), which increases the likelihood of risks materialising, is very small (0.4%).

Table I.3.8 • Exposure to real estate | As a percentage of assets

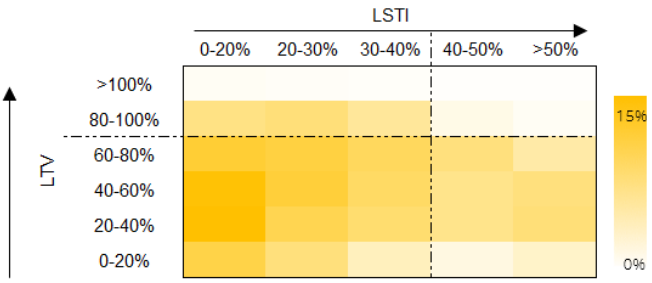
	2022	2023	2024
Exposure to real estate	34.7	34.6	33.2
Loans to households collateralised by RE	26.0	25.6	24.6
Loans to firms in construction and RE activities[(a)]	4.2	4.1	4.0
Loans to firms collateralised by RE(b)	3.2	3.7	3.5
Real estate funds(c)	0.9	0.9	0.9
Real estate assets(d)	0.5	0.3	0.2

Source: Banco de Portugal. | Notes: (a) not excluding loans granted to projects unrelated to the real estate sector, such as public works; (b) excluding loans to firms in the construction and real estate activities sectors; there was a change in methodology in one of the main institutions when reporting loans to firms secured by real estate as of 2023, leading to a break in the series; (c) including loans and mutual funds shares; (d) gross values.

Loans to firms in the construction and real estate activity sectors remain a relevant component of exposure to the real estate sector (4% of assets), although their importance has dwindled over the past 15 years.

In 2024, the exposure of banks to counterparties of the Portuguese financial sector stood at 14% of its assets, 8 p.p. below that of 2012. Most of this exposure continues to be directed at resident banks, in the form of deposits and debt securities, accounting for 11% of total exposure. These changes contributed to decrease the risk of transmission and amplification of adverse shocks through interconnections in the Portuguese financial sector, namely through exposure to non-resident counterparties, such as non-domestic government bonds (Special issue – Interconnectedness and contagion for the Portuguese banking system – a cross-country perspective).

Chart I.3.18 • Current LSTI and LTV of the stock of loans for house purchase[a] [b] | Per cent



Source: Banco de Portugal. | Notes: (a) colour intensity reflects the percentages of the portfolio in each range, considering a sample that represents around 70% of the amount of loans to households collateralised by real estate; (b) the LTV, defined as the ratio of the value of the loan to that of the property, was calculated based on CCR data, at loan level; whenever the date of the last property appraisal precedes the third quarter of 2024, its current value is estimated using Statistics Portugal's Housing Price Index; the LSTI, defined as the ratio of the instalment of the loan for house purchase to the borrowers' average monthly income (annual income divided by 12 months), was calculated based on data from the CCR and from Instruction No 33/2018.

3.5 Financing and liquidity

The liquidity position of the banking system remained robust in 2024. The loan-to-deposit ratio decreased by 3.1 p.p. to 75.0% (Table I.3.9), reflecting the -5.4 p.p. contribution from the increase in deposits, of which -4.3 p.p. correspond to household deposits. The rise in the average remuneration of deposits compared to 2023, especially of time deposits, is likely to have contributed to this increase (Box 4 – Loan-to-deposit ratio: evolution, risks and challenges for the Portuguese banking sector).

Table I.3.9 • Financing and liquidity indicators | Per cent

	2021	2022	2023	2024
Loan-to-deposit ratio (LtD)	81.1	78.2	78.0	75.0
Liquidity coverage ratio (LCR)	260.0	229.3	249.8	271.9
Net stable funding ratio (NSFR)	142.9	145.8	150.3	157.8
Highly liquid assets (% customer deposits)	37.0	31.7	33.8	36.4
Asset encumbrance ratio	18.1	11.2	9.1	6.1
Eurosystem net lending[a] (% assets)	-4.5	-8.0	-10.3	-9.1

Source: Banco de Portugal. | Notes: The liquidity coverage ratio corresponds to the ratio of available liquid assets to net cash outflows calculated under a 30-day stress scenario. The net stable funding ratio is the ratio of available stable funding to required stable funding. (a) Eurosystem net lending is calculated through deposits from central banks net of cash balances and loans to central banks.

Customer deposits remained the banking system's main source of funding, accounting for 74% of assets (+1 p.p. from 2023). The share of debt securities issued and funding from other credit institutions stood at 6.2% (+0.7 p.p.) and 8.2% (-1.0 p.p.) respectively. The predominance of customer deposits contributes to lower sensitivity of Portuguese banks to changes in investors' risk perception.

The share of central bank funding continued to drop in 2024, being virtually nil by the end of the year. Financing (net of investments) remained negative (-9.1% of assets), reflecting claims on central banks that, despite having decreased, remained at high levels. In addition, the fall in encumbered assets and collateral received resulted in a decrease in the asset encumbrance ratio, which stood at 6.1%.

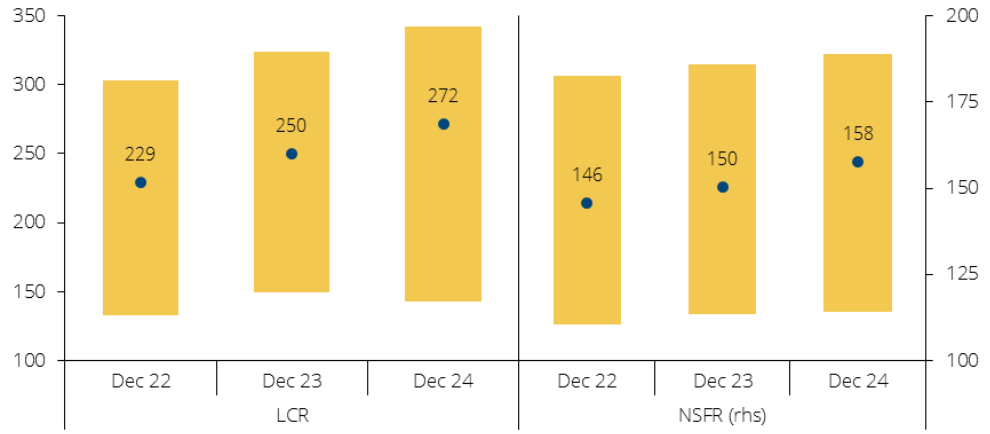
The prudential ratios also continued to signal high liquidity levels in the Portuguese banking system. In 2024, the LCR and the NSFR widened the difference in relation to the minimum requirement of 100%. In the context of a reconfiguration that favoured general government assets and reduced

exposure to central bank assets, highly liquid assets rose, representing 36.4% of customer deposits (+2.6 p.p. from 2023). This rise sustained the increase in the LCR to 272% (+22 p.p.) in December 2024. There was greater dispersion of this ratio among institutions, due to an increase in the 90th percentile of the distribution and a slight decrease in the 10th percentile (Chart I.3.19).

The increase in available stable funding, mainly composed of retail deposits, greatly exceeded the increase in required stable funding, leading to a rise in the NSFR to 157.8% (+7.5 p.p.). The component of instruments requiring stable funding continued to be mainly comprised of loans. Compared to recent years, there was a rise in the dispersion of the NSFR between institutions, larger increases occurring in those with higher ratios, with an increase in the 90th percentile.

In 2024, the main institutions within the Portuguese banking system issued more than €4 billion in eligible instruments to fulfil the minimum requirement for own funds and eligible liabilities (MREL). According to the BLS, most institutions reported having maintained conditions of access to funding through medium and long-term debt securities.

Chart I.3.19 • Distribution of the LCR and the NSFR[a] | Per cent



Source: Banco de Portugal. | Notes: The liquidity coverage ratio corresponds to the ratio of available liquid assets to net cash outflows calculated under a 30-day stress scenario. The net stable funding ratio is the ratio of available stable funding to required stable funding. (a) The bars show the difference between the 90th percentile and the 10th percentile of the distribution of the banking system's institutions.

Box 4 • Loan-to-deposit ratio: evolution, risks and challenges for the Portuguese banking sector

Since 2010, the Portuguese banking sector has undergone a significant balance-sheet adjustment, which can be observed in the reduction in the loan-to-deposit ratio, which expresses loans to customers as a percentage of deposits. This box analyses the evolution of that ratio over the past 14 years and its main impacts on the composition of assets and liabilities, with a focus on liquidity, market risk and profitability.

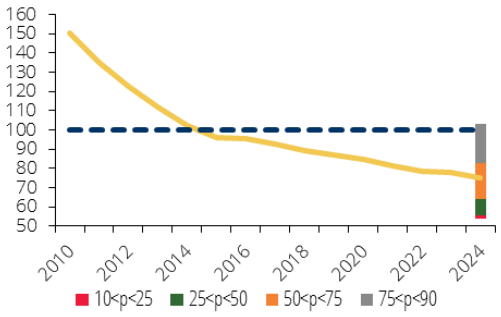
Evolution of the loan-to-deposit ratio since the global financial crisis

The loan-to-deposit ratio stood at 150% in 2010, declining to 75% at the end of 2024 (Chart B4.1). By that time, the ratio of most institutions was below 100%, with a median of 64%. The Portuguese loan-to-deposit ratio stood some 20 percentage points (p.p.) below the euro area average. This difference

reflects distinct features of institutions' business models, their size and presence in other countries, as well as structural/cultural aspects (e.g. the willingness to take on risk) that contribute to the ratio and differ across countries and institutions.

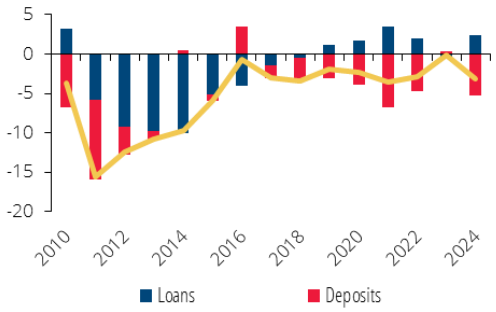
The reduction in the ratio started in a period marked by deteriorating conditions for access to international financial markets following the global financial crisis, particularly between 2010 and 2015. In 2010 and 2011 the decrease in the ratio resulted mainly from the increase in customer deposits, while other financial investments declined, investment funds and insurance products among them. Between 2012 and 2015 the decline in the ratio was largely marked by a decline in loans to customers, a period in which adverse domestic economic and financial conditions fuelled a retrenchment in credit demand from households and firms, and a tightening in credit supply. Since 2015, the ratio has continued to decline, less markedly, driven by the growth in customer deposits, partially offset in some years by an increase in credit (Chart B4.2). This development followed the downward path of indebtedness of households and firms. In the case of firms, there was also increased recourse to financing from abroad and other debt instruments.

Chart B4.1 • Loan-to-deposit ratio – Evolution and distribution in 2024 | Per cent



Source: Banco de Portugal. | Notes: End-of-year figures. Distribution weighed by the ratio denominator.

Chart B4.2 • Loan-to-deposit ratio – Contributions to changes | Percentage points



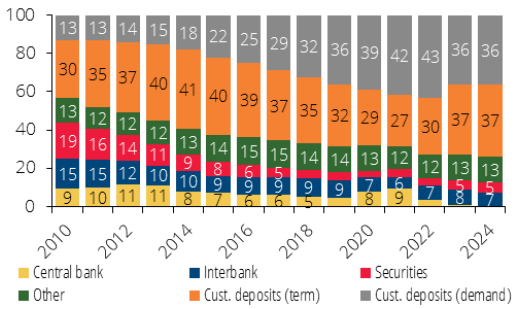
Source: Banco de Portugal | Note: End-of-year figures.

Impact on assets and liabilities associated with the loan-to-deposit ratio adjustment

Between 2010 and 2024, the increase in deposits in the funding structure was offset by a reduction in the take-up of debt securities and funding from other credit institutions. The shares of these two forms of financing as a percentage of total assets fell to one-quarter and half of the 2010 levels respectively (Chart B4.3). Deposits, especially demand deposits, remained on a growth path, in contrast to time deposits, which varied little. In the most recent period, total customer deposits have been fairly stable. Customer deposits account for three-quarters of total assets, half of which are demand deposits.

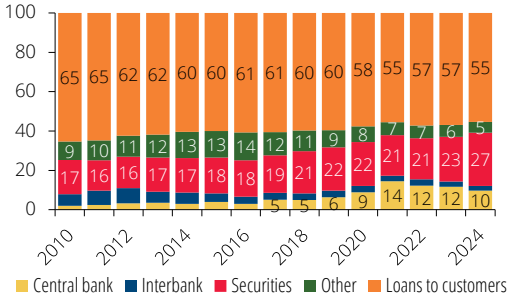
The interaction between deposit growth and the monetary policy measures taken in recent years, including central bank asset purchase programmes, has contributed to high liquidity in the banking sector, with an impact on debt securities portfolios, particularly public debt, and on exposure to central banks (Chart B4.4). Since 2010 the weight of the debt securities portfolio in total assets has almost doubled while exposure to central banks has increased more significantly, from less than 2% to over 10% of total assets in 2024. Liquidity developments are linked to the deleveraging process of the non-financial private sector, with the portfolio of loans to customers declining from 70% in 2010 to 55% by 2024. Half of this decline corresponds to a decrease in loans to firms, while lending to households remained relatively stable, with its share of the total portfolio reaching approximately 50% (compared with 40% in 2010).

Chart B4.3 • Liabilities and equity | Percentage of total assets



Source: Banco de Portugal. | Note: End-of-year figures. "Other" includes equity.

Chart B4.4 • Assets | Percentage of total assets



Source: Banco de Portugal. | Note: End-of-year figures.

Risks and challenges for the Portuguese banking sector

Prudential liquidity ratios – Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) – have remained above the regulatory minimum of 100%. Public debt instruments and central bank reserves are the main component of highly liquid assets considered in the calculation of the LCR. Increased investment in public debt and exposure to central banks has contributed to strengthening banking sector liquidity and improving capital ratios, as these are less risky assets.

No negative implications for the banking sector in terms of credit quality of assets are expected. Exposures to sovereign securities and central banks are of no relevance to credit and the loan portfolio has shown a downward trend in exposure to riskier customers (Box 3 – Evolution of firm credit risk and loan pricing).

The increase in debt securities portfolios, however, implies an increase in exposure to market risk, notably to possible losses associated with investors' risk-averse behaviour. This risk is mitigated by the prevalence of public debt instruments in the investment portfolios, three-quarters of which are recorded at amortised cost, and by factors such as geographical diversification, maturity management and hedging instruments. In the Eurosystem's current monetary policy framework, where public debt securities are considered high-quality liquid assets, the likelihood of incurring (possible latent) losses due to fire sales of such securities in a liquidity shock scenario is low. However, this does not prevent investors and customers from factoring the considerable share of sovereign securities recorded at amortised cost in a context of heightened uncertainty and volatility into their assessments.

The increase in the fixed-rate debt securities portfolio may have negative implications for profitability, as this portfolio tends to have a maturity higher than most liabilities (Special issue – Interest Rate Risk in the Banking Book | Financial Stability Report November 2024 – Chart 1). Applying fixed interest rates on this component of assets may negatively affect institutions' profitability through net interest income in a scenario where funding costs increase. Therefore it is essential that institutions adopt prudent management to mitigate that risk. However, the increase in the share of customer deposits and the reduction in the importance of funding via debt securities help mitigate this risk as the implicit interest rate on deposits is structurally lower and less sensitive to rising interest rates. This lower sensitivity reflects, among other things, the rigidity of the remuneration of demand deposits. Bonfim and Queiró (2024) show that in Portugal, the pass-through of monetary policy to deposit interest rates is incomplete and less strong than in the euro area.[14]

[14] Bonfim, D. and Queiró, L. (2024), "Deposit interest rates and monetary policy transmission", *Banco de Portugal Economic Studies*, Vol. X, No 4, Banco de Portugal.

A low loan-to-deposit ratio may be associated with a reduced transformation of risk and an underutilisation of the banking system's financial intermediation capacity to finance the economy. This may reflect the lower demand and/or more conservative approach that followed the global financial crisis and may constrain the sector's profitability and thereby affect its attractiveness for new investors. On the other hand, a low loan-to-deposit ratio and the excess liquidity it represents could induce institutions to be less cautious, leading to less demanding credit standards and even to excessive risk-taking.

3.6 Capital

In 2024, the Portuguese banking system strengthened its capital ratios, amplifying the positive spread in relation to the euro area average. The total capital ratio and the Common Equity Tier 1 (CET1) ratio increased by 0.9 p.p. and 0.8 p.p. respectively to 20.5% and 18.0% compared with 2023 (Table I.3.10). These developments mainly reflected growth in CET1, partly offset by an increase in risk exposures. The differential between these indicators and the euro area average widened to 0.6 p.p. and 1.5 p.p. respectively.

Table I.3.10 • Capital ratios and average risk weight | Per cent

	Dec. 2014	"	Dec. 2019	"	Dec. 2022	Dec. 2023	Dec. 2024
Total capital ratio[a]	12.3		16.9		18.2	19.7	20.5
5th percentile[b]	8.7		13.9		12.3	15.8	17.9
95th percentile[b]	16.3		19.5		21.1	21.5	23.3
Euro area	15.9		18.4		19.1	19.6	19.9[c]
CET1 ratio[d]	11.3		14.3		15.4	17.1	18.0
Euro area	13.0		15.1		15.7	16.3	16.4[c]
Average risk weight[e]	60.9		53.3		43.2	42.7	42.6
5th percentile[f]	41.9		35.6		29.1	28.3	28.6
95th percentile[f]	77.7		64.8		49.6	52.0	50.9
Euro area	38.8		39.3		35.8	36.1	35.8[c]

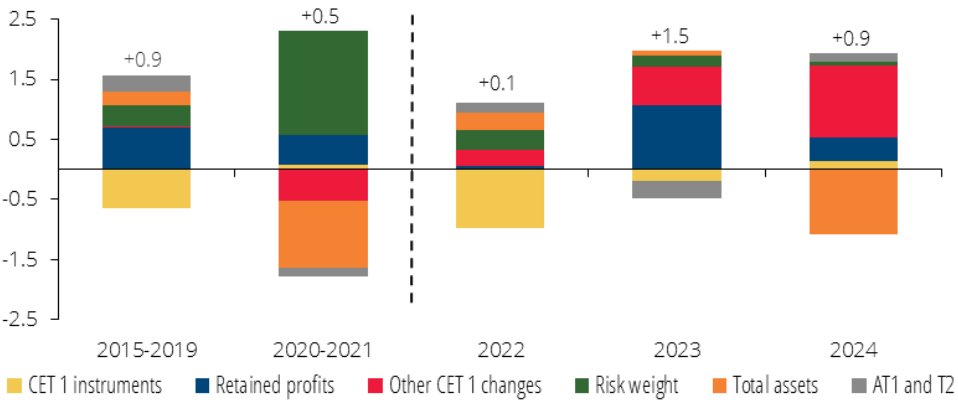
Sources: ECB and Banco de Portugal. | Notes: (a) Ratio of total capital to risk-weighted assets. (b) Percentiles obtained from the weighted distribution of risk-weighted assets of total capital ratio. (c) Data refer to September 2024. (d) Ratio of Common Equity Tier 1 capital to risk-weighted assets. (e) Ratio of risk-weighted assets to total assets. (f) Percentiles obtained from asset-weighted distribution of average risk weight.

The increase in the total capital ratio has been supported by several factors over the past decade, most notably profit growth over the past two years (Chart I.3.20). Until 2019 retained earnings were the main positive contribution to developments in this ratio. During the pandemic period, between 2020 and 2021, the reduction in risk-weighted assets and the expansion of the balance sheet became more relevant, being associated with the increase in cash balances at central banks and the provision of State-guaranteed credit lines. In 2022 there was a reduction in CET1 justified by the resumption of dividend distributions, after the interruption during the pandemic, and the loss recorded on securities measured at fair value, stemming from rising interest rates. Over the past two years, the increase in profitability, benefiting from the positive impact of rising interest rates on net interest income, has allowed significant organic generation of capital (reflected in retained earnings and other CET1 changes). In 2024, the capital increase was partly offset by balance sheet expansion.

Although the risk-weighted exposure amount increased, its proportion to total assets decreased by 0.2 p.p. to 42.6%. The high liquidity of the banking system coupled with subdued demand for credit from the NFPS has allowed an increase in the sovereign debt securities portfolio,

which mostly has a zero risk weight. This effect was partially offset by declines in cash balances at central banks and growth in exposures to credit risk, mainly in firms, and operational risk. The reduction in the average risk weight was driven by institutions with higher ratios, contributing to reducing heterogeneity within the system. Despite the decrease, the average risk weight of the banking system remained above the euro area average (35.8%), which is partly justified by the greater use of internal rating-based (IRB) models for prudential purposes by credit institutions in other countries.

Chart I.3.20 • Total capital ratio – contributions to changes | Percentage points



Source: Banco de Portugal. | Notes: The left-hand side of the chart depicts the average contribution to annual changes in the total capital ratio, while the right-hand side shows contributions to the annual change. The contribution of the risk weight represents the change in the risk structure of assets in the total capital ratio.

Prudential leverage ratio increased by 0.4 p.p., reaching 7.7%, exceeding the minimum regulatory requirement of 3%. This reflected the increase in Tier 1 capital exceeding that of the total exposure for prudential purposes. This indicator was 1.8 p.p. above that observed for significant institutions participating in the Single Supervisory Mechanism, which aligns with the developments of recent years.

The high levels of solvency and the leverage ratio increase the banking system's resilience in a highly uncertain macroeconomic environment. These factors contribute to the sector's stability and to maintaining the lending function in the event of adverse shocks.

II Special issues

A macroprudential approach to systemic climate-related risk

Interconnectedness and contagion for the Portuguese banking system — a cross-country perspective

A macroprudential approach to systemic climate-related risk[1]

Introduction

Climate change is an unprecedented and rapidly accelerating challenge. According to the United Nations' Intergovernmental Panel on Climate Change (2021), even with significant cuts in greenhouse gas (GHG) emissions, severe social and economic impacts remain inevitable (Carbon_Brief, 2018). To drive innovation and steer consumers and firms toward sustainability, governments can deploy policy instruments, such as carbon pricing, emissions trading schemes, subsidies, regulation and public infrastructure investments. The financial sector plays a crucial role in reallocating capital to green initiatives and supporting carbon-intensive industries in their transition, adopting a risk-based approach. A smooth and orderly transition to a carbon-neutral economy is crucial for ensuring long-term financial stability and sustainable economic growth.

Financial institutions should integrate climate-related risks into their risk management and governance frameworks, as they represent the first line of defence. Prudential regulation plays a key role incentivising institutions to mitigate risk accumulation. While supervisors have implemented microprudential measures to address institution-specific climate-related risks, these are insufficient to tackle systemic risk that may disrupt the functioning of the broader financial system.

Building on discussions at the European level, this special issue describes how climate-related risk can expose the financial system to systemic risk, and outlines key elements for an effective and pre-emptive macroprudential policy. In this vein, macroprudential policy should strengthen financial system resilience to support a smooth and orderly transition to a carbon-neutral economy.

In fact, climate-related risks may materialise through traditional channels, such as credit, liquidity, market and operational risks, as well as being amplified due to common exposures and interlinkages within the financial system (EBA, 2023). Based on the discussion provided in this special issue, the Portuguese macroprudential framework, in place since 2014, appears to be adequate to address systemic climate-related risk, as it already foresees a set of tools to mitigate these sources of risks - capital and borrower-based measures - that can be deployed, also for climate-related purposes.

There is a consensus on the importance of climate-related risks, and ongoing discussions at European level focus on the most appropriate macroprudential framework to mitigate or prevent these risks. Although still at an early stage, these discussions reflect both the complexity and novelty of the issue, as well as current limitations in data availability and modelling capacity. While the risks are significant, there is still a need to improve data quality, comparability and coverage, and to further develop the analytical tools required to assess their impact on the economy as a whole and, in particular, on banks' balance sheets and financial position.

[1] Prepared by Daniel Abreu, Fátima Silva, Laura Bartolomeu and Wildmer Gregori.

Section 2 presents the systemic dimension of climate risk, while section 3 focuses on the macroprudential approach to systemic climate risk. Section 4 discusses macroprudential measures to tackle these sources of risk, and section 5 concludes.

The systemic dimension of climate-related risk

Climate-related risks have a systemic dimension, as they are widespread, irreversible, and materially impact multiple regions, sectors and institutions simultaneously. In this context, these challenges stem primarily from two key categories: physical and transition risks. Physical risks include the economic costs and financial losses associated with the increasing severity and frequency of climate-related events, such as heatwaves, floods, or wildfires, as well as longer-term shifts in climate patterns, like rising sea levels and changes in precipitation. These risks not only directly impact the value of real estate and financial assets, but also have indirect effects on economic activity.

Transition risks can arise as economies intend to support the smooth and orderly transition to a carbon-neutral economy. These efforts can be costly as may require adjustments to meet changes in government policies, technological advancements, shifts in consumer and investor behaviours, and increased litigation. Such changes can erode the value of certain financial system's exposures and collateral, posing significant risks to financial institutions.

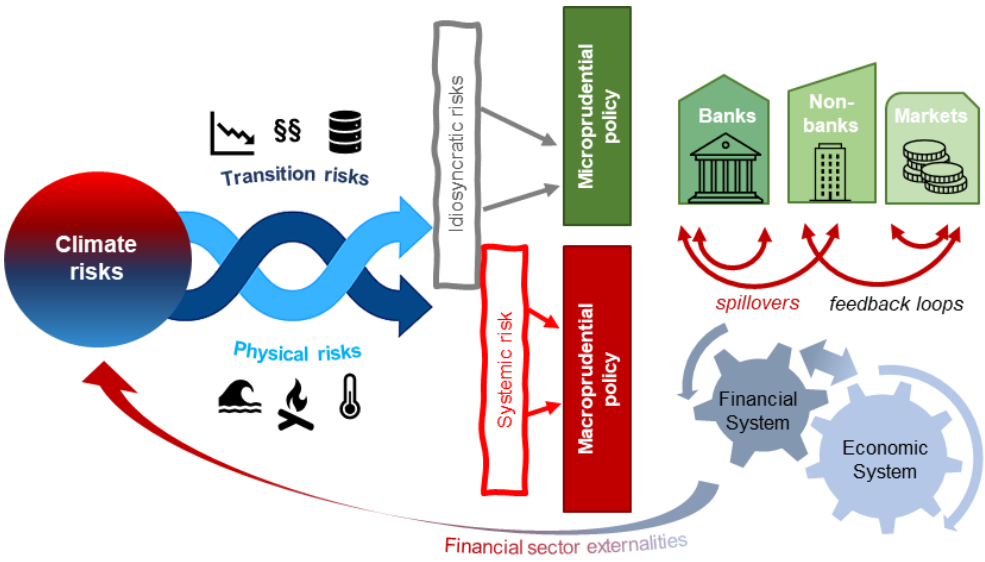
The widespread adverse effects of climate-related risks on the economy and financial system can propagate through different channels. Their materialisation could lead market participants to adjust their investment portfolios and the pricing of financial assets, especially when they are not yet incorporated into prices. Loan defaults may increase if borrowers' ability to repay and service debt is significantly reduced (income effect), along with sharp and sudden devaluations in real estate assets used as collateral in credit to households and corporates, potentially leading to significant unexpected losses (wealth effect). Banks' access to stable sources of funding could be reduced as market conditions change, because counterparties might draw down deposits and credit lines. Lending could decline, particularly in regions and industries heavily impacted by these risks. The insurance sector, directly exposed to physical risks, may face rising claims and increased pressure on capital reserves, leading to higher premiums and reduced coverage availability, particularly in vulnerable areas (ECB/ESRB, 2023). For asset managers, the need to reassess portfolio allocations in response to the declining value of carbon-intensive assets could lead to increased market volatility. The common exposure of many financial institutions towards the same sector or geography implies a systemic dimension of climate-related risk (BCBS, 2021).

Furthermore, economic and financial impacts of climate-related risks can be amplified due to potential concentrations, spillovers and interlinkages within the financial system, spreading losses beyond initial exposures (Figure I.2.1). For example, a disorderly climate transition due to climate-related policies being delayed or divergent across countries and sectors could significantly increase defaults. Climate-related risks might also be transmitted internationally through financial institutions with cross-border exposures, as well as through capital flows, or trade linkages, potentially leading to global contagion and further amplifying the consequences of these risks (Financial Stability Board, 2020).

Finally, the lending decisions of individual banks can have significant externalities on the financial system, increasing systemic risk (Stiroh, 2022). For instance, funding to high-emitting industries may delay the transition to a carbon-neutral economy, possibly heightening physical risks resulting in higher long-term

costs. Furthermore, a firm willing to implement the transition from a high to a low-emitting business model may require high investment and funding, increasing banking exposure to high-emitting firms.

Figure 1 • Stylised view of climate-related risk and prudential policy



Source: ECB/ESRB (2023).

A macroprudential approach to systemic climate risk

This section outlines nine key elements that are considered by the Banco de Portugal to be appropriate in a macroprudential approach to climate risks.

1) Macroprudential policy aims at strengthening the resilience of the financial sector and mitigating the sources of systemic risk, also in what concerns climate-related risks

Macroprudential policy should incorporate the systemic climate dimension in its main objectives. Thus, it should: (i) make the financial sector more resilient and capable to support the smooth and orderly transition to a carbon-neutral economy; (ii) prevent the excessive build-up of systemic climate risk; (iii) limit contagion effects; and (iv) provide the right set of incentives for market participants to foster transition plans that would promote long-term financial stability.

2) Macroprudential policy should be part of a holistic approach to climate risk, complementing other economic policies

Macroprudential policy complements microprudential and public policies in mitigating climate risks within the financial system. Indeed, while microprudential policies focus on individual institutions, they do not consider collective actions of economic agents. In contrast, a macroprudential approach considers the impact of climate risks on the financial system as a whole, considering its interdependence and second-round effects. To safeguard financial stability, an effective policy mix is desirable, requiring coordination between microprudential and macroprudential policies.

While macroprudential policies are important to safeguard financial stability in the face of climate risks, they are not a substitute for public measures, by governments, aimed at climate change mitigation and adaptation. Indeed, public policies like carbon pricing are generally seen as being the first-best policy to address climate change. Effective public policies are even more necessary to prevent the worst impacts

of climate change and lead the transition towards a carbon-neutral economy, while macroprudential tools provide financial stability support during the transition to a sustainable economy.

3) Macroprudential policy should encompass the entire financial system

Targeting climate risks only in the banking system can incentivize a shift of activity toward other sectors (non-bank leakage) or other type of assets (risk-shifting effects). The macroprudential framework for non-bank entities from the financial sector is less developed. However, having a system-wide perspective on climate risks is crucial to avoid the migration of risks within the financial system.

4) Macroprudential policy should be flexible within a harmonised and coordinated international approach, especially at the European Union level

Coordinating climate-related policies at the international level is essential for a cohesive and effective response. Climate risks are global and transcend borders, so inconsistent regulations can lead to fragmentation and risk spillovers across sectors and countries, undermining the achievement of climate goals. Disparities in regulations may also encourage regulatory arbitrage, weakening overall financial stability. A harmonised approach ensures consistent standards, preventing the migration of risks.

5) Macroprudential policy should have the capacity to identify, monitor and assess systemic climate risk, including the build-up of risks through time and interconnectedness within the financial sector

Early identification of risks is an essential first step in the policy-setting process supported by early warning indicators and models to predict potential sources of systemic risk. In particular, assuring access to appropriate data and information is critical to enable a timely risk assessment.

Further development of impact assessment models to understand the financial implications of the materialisation of systemic climate risk and to assess spillovers within and across countries, sectors and regions is crucial. Identifying linkages between different parts of the financial system through common or correlated exposures is particularly important to identify, monitor and assess systemic climate risk.

6) Macroprudential policy should be pre-emptive and balance the net benefits of early action based on imperfect information against the risk of acting too late

A pre-emptive macroprudential approach informed by forward-looking cost-benefit analysis can help avoid inaction bias and ensures timely adjustments. In an environment of uncertainty and incomplete information, macroprudential policy shall balance the costs of early action, against the risk of acting too late. Climate events are acknowledged as inevitable, though their exact severity, timeframe and form remain uncertain and also depend on the transition pathway to a carbon-neutral economy.

A forward-looking approach based on stress testing exercises that identify banks' vulnerabilities and resilience to the materialisation of climate-related risks is being widely adopted. A macroprudential approach, aiming to reduce the accumulation of such risks, could counter this inaction bias through a preventative (and not just corrective) action to contain financial risk.

7) Macroprudential policy should adopt a gradual approach and align incentives

An effective macroprudential response should be gradual, focusing on aligning incentives with macroprudential goals rather than imposing excessively restrictive capital requirements or excessively tight concentration limits to higher-risk sectors. This approach prevents undue strain on financial institutions by ensuring that any additional requirements do not hinder their ability to finance the necessary transition towards a more sustainable economy.

Excluding exposures associated with credible transition plans from macroprudential measures would help avoid unwanted restrictions on transition financing. The development of comparable,

accurate and reliable detailed data on firms' roadmaps for the reduction of emissions and transition investment contributes to better risk evaluation and supports the design and calibration of potential policy measures. Efforts to implement standardised disclosures of forward-looking information from firms are currently underway.

8) Macroprudential policy should have the flexibility to address increases in broad and sectoral risks

Broad risks refer to overall increases in risk across the financial system, which can be mitigated through macroprudential capital buffers that enhance the overall resilience of the banking system.

Sectoral risks involve heightened exposures in particular sectors or geographies, which can be managed with more specific tools that target areas with concentrated risks, without unduly restricting necessary climate transition financing. This feature of the macroprudential policy is particularly important as physical risks tend to be regionally concentrated, while transition risks are concentrated in certain sectors, namely those with higher carbon emissions.

Additionally, a forward-looking approach in calibrating these measures is essential. When implementing a macroprudential measure, the level of capitalisation and profitability of the financial system, as well as country-specific characteristics, should be taken into account. It is also acknowledged that corporates' forward-looking transition plans could be considered to make macroprudential tools more efficient and limit possible side effects (ECB, 2023).

9) Macroprudential policy should be flexible to allow adjustments, as new sources of climate-related financial risk emerge, understanding evolves and the regulatory architecture develops

To tackle the complex and evolving nature of climate risks, macroprudential policy should adopt a flexible and adaptive approach. This allows for differential adjustments based on the significance of specific climate-related risks, which may vary over time.

Policy options

In Portugal, the macroprudential policy framework, in place since 2014, considers two main groups of policy instruments, capital-based and borrower-based measures, which appear to be adequate to address systemic climate-related risk.[2] This section explores in greater detail the potential suitability of these macroprudential instruments in addressing climate-related risks.

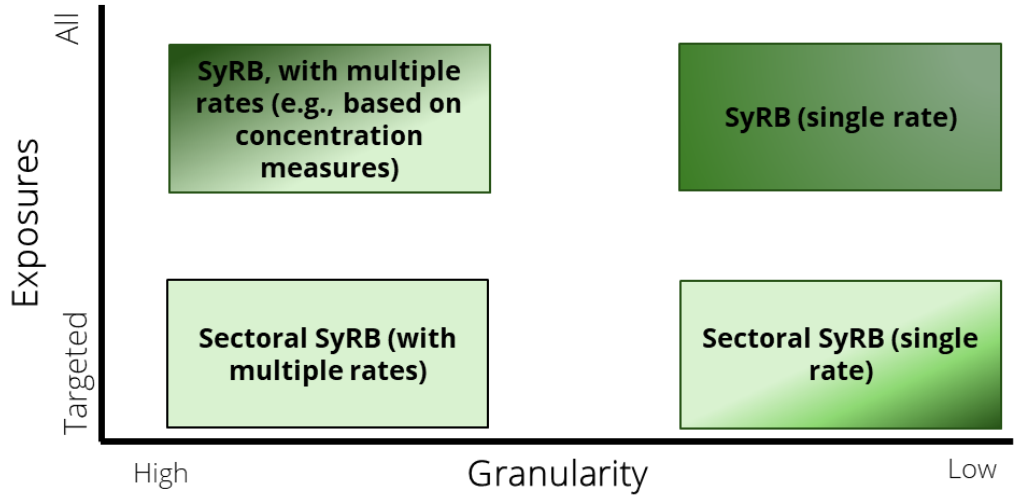
Capital-based measures

Within capital-based measures (CBMs), the systemic risk buffer (SyRB) is a flexible and already available instrument, which can be adaptable to various design options, including exposure types and buffers rate structures. As highlighted in Figure I.2.2, the SyRB scope can range from a broad buffer applied uniformly across all exposures to more targeted approaches focusing on certain bank exposures that are more vulnerable to climate-related risks (sectoral SyRB). Additionally, different levels of granularity can be used. A multi-rate approach that reflects the heterogeneity of banks' exposure to climate risks can be used instead of applying a single rate buffer to all banks.[3] This adaptability helps manage policy trade-offs, allowing the buffer to be tailored to the risk profiles of different groups of institutions.

[2] According to the ECB/ESRB (2023) report, implementing a unified macroprudential strategy to address systemic climate-related risk across European Union (EU) countries is feasible with currently available macroprudential policy tools.

[3] The SyRB has been explored in the EU as a macroprudential tool that can be used to address the systemic dimension of climate risk, and the European Commission, the ECB and the ESRB recognise its potential to enhance banking system resilience against climate-related risks (ECB/ESRB, 2023).

Figure 2 • A stylised representation of SyRB design options



Source: ECB/ESRB (2023) and Banco de Portugal.

Four primary design options for the SyRB have been identified as the most promising (ECB/ESRB, 2023). Each option presents distinct trade-offs between costs and benefits, with no single choice emerging as the definitive best solution. The first design option is the application of a SyRB (single rate) across all banks. This approach would enhance the overall resilience of the banking sector by creating a system-wide buffer against the possibility of climate-related risk materialisation. A key advantage is its ease of implementation, requiring minimal adjustments to the existing regulatory framework. The SyRB remains a simple and flexible tool, and it could incorporate varying buffer rates for different groups of banks (see, for example, Bartsch et al., 2024). However, its broad scope limits its ability to specifically target high-risk exposures, and it may not create the right incentives for banks to adjust their portfolios in line with climate objectives.

The second and third options are sectoral SyRB with single or multiple rates, which focus specifically on exposures that are highly affected by climate-related risks. By adjusting capital buffers according to the level of risk associated with different sectors, this design would reduce the appeal of lending to high-risk sectors. The sectoral SyRB could face implementation difficulties, such as the definition of risky sectors and the accurate assessment of their risk levels.

A fourth design option involves differentiating the SyRB based on bank-level measures of climate-related concentration risk. To measure this risk, a Herfindahl-Hirschman Index modified to consider the weight of exposures more vulnerable to climate risk in banks' loan portfolios can be used. The concentration-related SyRB would apply different buffer rates to groups of banks exceeding predefined thresholds for the level of concentration to climate risks. On one hand, this approach offers the advantage of tailoring the buffer to the specific level of risk each bank faces, while also discouraging excessive concentration in high-risk sectors. On the other hand, the challenge lies in determining accurate thresholds and, similarly to the sectoral SyRB, in correctly defining the exposures.

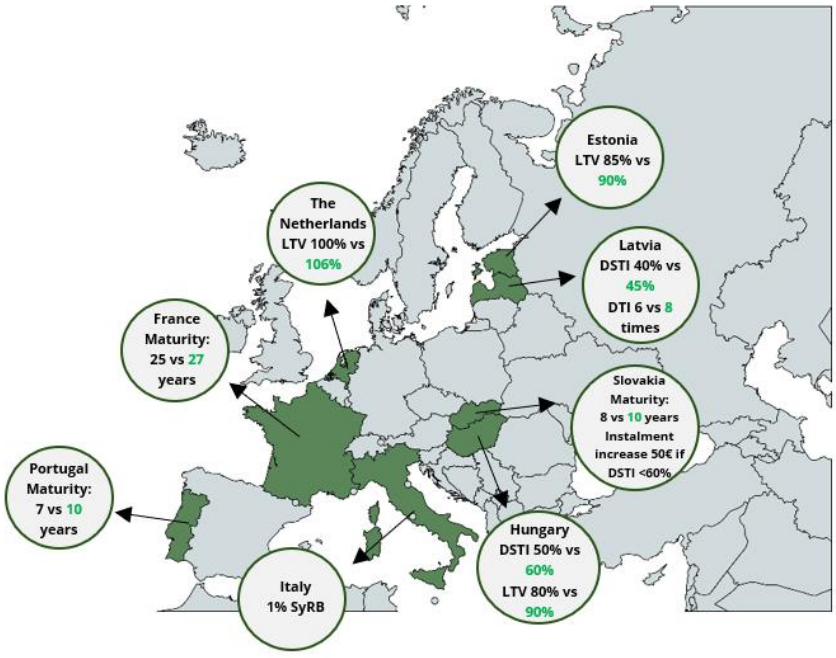
The calibration of the SyRB (broad or sectoral) for climate risks is complex and relies heavily on stress tests, in order to estimate potential bank losses under adverse climate scenarios. Stress tests are particularly useful for capturing the systemic nature of climate-related risks, including the amplification effects that can arise during economic disruptions. The calibration process must also consider overlaps with other capital buffers to prevent double counting and ensure that the SyRB is effectively complementing existing measures.

Despite the challenges involved in designing and calibrating macroprudential capital buffers to account for climate-related risks, this dimension has already started to be incorporated into macroprudential policy frameworks. A prominent example is Banca d'Italia, which introduced a 1% SyRB to face exogenous systemic shocks (Figure I.2.3). Although its calibration did not take into consideration a specific climate-related shock, this buffer can be released in the event of an adverse shock that may include, among other factors, the materialisation of systemic climate-related risk (Catapano et al., 2024).

Borrower-based measures (BBMs)

Climate-related risks pose significant challenges to both borrower solvency and the valuation of real estate collateral, with potential implications for financial stability. Thus, BBMs are well suited to address climate risks. Although the immediate impact of BBMs might be confined to new loans, their early adoption can significantly improve the risk profile of banks' balance sheets in the medium-long run. Several European Economic Area countries are beginning to explore the integration of climate-related risks into their BBMs frameworks (Figure I.2.3 and Table 1). These measures can include adjustments to loan-to-value (LTV), debt-service-to-income (DSTI) and debt-to-income (DTI) limits, or other credit terms based on factors such as the energy efficiency of properties or the borrower's exposure to physical risks.

Figure 3 • International experience in implementing macroprudential measures to address climate-related risk.



Source: Banco de Portugal.

Some countries have introduced measures to support energy-efficient housing. Estonia raised LTV limits for state-backed loans for energy-efficient home purchases or renovations. France adjusted loan maturity limits for housing renovation programs, while Latvia lessened BBM limits (DSTI and DTI) on loans for modernising flats. The Netherlands allows adjustments in LTV limits for energy-efficient properties, Slovakia eased DSTI limits and extended loan maturities for EU-backed home renovation projects, and Hungary decreased LTV and eased DSTI limits for green mortgage loans.

In Portugal, climate-related risks are, to some extent, already reflected in the BBM. Indeed, while the standard maturity limit for consumer credit is seven years, there is a less restrictive maturity limit of 10 years for loans related to renewable energy, education and health to prevent overly restrictive lending practices in priority segments. In addition, in 2024 the concept of renewable energy in consumer credit was broadened, changing the scope from "renewable energy purposes" to "energy transition purposes". Previously, the concept covered only renewable energy equipment, while with this new definition other technologies are now eligible, including construction works to improve building's energy efficiency.[4]

Table 2 • International experience in implementing BBMs for climate-related risk

Country	Measure description
Estonia	Implemented higher LTV limits (90%, instead of 85%) for state-backed housing loans, which are largely intended for borrowers who purchase energy-efficient housing or who renovate their home to improve its energy performance.
France	A grace period of up to two additional years may be added to the 25-year maturity if there is a lag between the loan disbursement and the move-in date due to construction or major renovation work.
Hungary	Implemented higher LTV limit (90%) and a higher DSTI limit (to 60%) in the case of "green" mortgage loans (issued in domestic currency, HUF), the interest rate of which is fixed for at least 10 years and that meet the conditions for green collateral and loan purposes (purchase and construction of energy-efficient apartments, as well as efficiency-enhancing renovations).
Latvia	Higher DSTI limit (45% instead of 40%) and DTI limit (8 times instead of 6 times) are applicable to the mortgage loans for obtaining energy efficient housing with the Energy Efficiency Certificates of classes A+, A, B or C.
Netherlands	Lenders may deviate moderately from the maximum loan amount for the LTV calculation, allowing it to reach up to 106% instead of 100% in the case of flats with extraordinary energy efficiency ratings.
Portugal	Adopted less restrictive maturity limits (ten instead of seven years) for consumer loans to finance not only the purchase of renewable energy equipment, but also interventions, including construction works, to improve buildings' energy efficiency.
Slovakia	Eased the DSTI and maturity limits for loans co-financing home renovations from the EU Recovery and Resilience Facility. The maximum instalment implied under the current DSTI limit (60%) may be increased by €50, and the maximum maturity extended from eight to ten years.

Notes: LTV refers to loan-to-value ratio, DSTI to debt-service-to-income ratio, and DTI to debt-to-income ratio. In Hungary and Latvia, it is implemented the effective DSTI, while in Slovakia the stressed one (i.e. with an interest rate buffer of 2 percentage points above the applicable rate, up to a rate of 6%, under assumption of 30 years maturity).

Conclusion

This special issue discusses the systemic nature of climate-related risks and presents a macroprudential framework to address the systemic climate-related risk, building on discussions at the European level.

The macroprudential framework on systemic climate-related risk emphasizes the need for a holistic approach that considers both physical and transition risks, as well as their potential interactions and amplification effects. It also requires flexibility in the face of uncertainty and evolving climate-related risks, allowing for adjustments to policy measures as necessary. The approach must remain flexible and adaptive, balancing the net benefits of early action with the risk of acting too late. Furthermore, a coordinated approach among financial regulators and policymakers, both domestically and internationally, is crucial.

[4] Another key initiative of Banco de Portugal is the annual Report on the Banking Sector's Exposure to Climate Risk (Banco de Portugal, 2023 and 2024). This report evaluates the Portuguese banking system's exposure, resilience, and adaptation to both physical and transition climate-related risks. Through climate scenarios, it investigates the dynamic relationship between climate risks, the real economy, and financial sector stability.

To mitigate systemic climate-related risk, the available macroprudential tools in the Banco de Portugal's macroprudential framework (Capital-based measures, CBMs, and Borrower-based measures, BBMs) are considered appropriate to address its systemic component.

Indeed, the Systemic Risk Buffer (SyRB) could be used to enhance the resilience of the financial system to climate-related shocks. This buffer can be designed in various ways, such as a broad buffer applied to all exposures or as a targeted buffer focusing on specific sectors or types of exposures, or even differentiating the buffer given bank-level measures of climate-related concentration risk.

In addition, incorporating climate risk factors into the calibration and design of BBMs can enhance their effectiveness in promoting the financial soundness of borrowers and, consequently, the resilience of the financial system. In Portugal, climate-related risks are, to some extent, already reflected in the recently revised consumer credit BBM.

The timing and scale of climate-related risks remain highly uncertain, though they could materialise rapidly. Despite these challenges, significant advancements have been made in methodologies for assessing and managing climate-related risks. Ongoing European and global initiatives aim to reduce data gaps in climate reporting, still a significant challenge.

Finally, addressing the systemic climate-related risk requires a macroprudential approach that complements microprudential measures and other public policies, ensuring that the financial system remains robust and resilient amid the ongoing transition towards a carbon-neutral economy. A well-designed macroprudential framework will not only safeguard financial stability but also support the broader goals of climate mitigation and adaptation.

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Interconnectedness and contagion for the Portuguese banking system – a cross-country perspective[5]

Introduction

Interconnectedness and contagion are key elements in assessing systemic risk and protecting financial stability. The 2007-2008 financial crisis showed that evaluating the solidity of individual institutions is not enough – it is also crucial to monitor both direct and indirect financial linkages that are able to transmit shocks across the system. This applies not only to the interconnections within countries' financial systems, but also across borders.

This Special issue focuses on cross-border interconnectedness and contagion, following an approach aligned with the IMF methodology and consistent with Financial Sector Assessment Programmes (FSAP)[6].

The analysis starts by mapping cross-border exposures, particularly foreign claims (i.e., assets held by foreign counterparties) focusing on interbank exposures and, more broadly, on exposures that include all types of counterparties. The reference date is the last quarter of 2023. For Portugal, it presents the most relevant bilateral links – mainly with European Union Member States and Portuguese-speaking countries. More than 50% of foreign claims are concentrated in Poland, Spain, and France. When broken down by counterparty sector, 50% of the foreign claims held by Portuguese banks are directed towards central governments, with the vast majority comprising sovereign bonds issued by European countries. This study also tracks the evolution of these exposures and includes a view of how other countries are exposed to Portugal. Notably, 84% of the funding received by Portuguese banks originates from Spain and France.

To assess how shocks may spill over through these links, the Espinosa and Solé (2010) model is used to simulate two scenarios: (i) a credit shock (counterparty default), and (ii) a credit-plus-funding shock (where funding is also withdrawn, triggering a fire sale of assets). These simulations provide valuable insights into the vulnerability of financial systems under adverse conditions.

Portugal's peripheral position in the international network limits its systemic impact. This remains true whether considering exposures to all sectors or only the banking sector, with its impact being even lower in the second case, as these claims account for just 2.6% of Portuguese banks' total assets. However, in an extreme scenario where all sectors are included, the shocks could trigger cascading effects that eventually reach Portuguese banks. Given the current soundness of the Portuguese banking system and its relatively low cross-border exposures, such effects only tend to appear in the later rounds of contagion.

Data

The data are extracted mainly from the *BIS' International Consolidated Banking Statistics database*, which provides information on balance sheet figures – namely total assets, foreign claims, and total liabilities

[5] Prepared by Inês Mello and Roberto Panzica.

[6] For example, see the technical notes for the FSAP exercise from Spain (*Financial System Stability Assessment)*, Belgium (*Financial System Stability Assessment)*, Germany (*Financial System Stability Assessment)* and Austria (*Financial System Stability Assessment).*

– and bilateral cross-country exposures. Total equity, computed as total assets minus total liabilities, comprises both Tier 1 and Tier 2 capital instruments. The analysis also uses data from the international banking statistics on a consolidated basis level held by Banco de Portugal, which detail Portuguese banks' foreign claims at consolidated level.

The information on cross-country bilateral exposures considers both all sectors and banks-only counterparties. For exposures to all sectors, data are available under two reporting formats: immediate counterparty basis (ICB) and ultimate guarantor basis (UGB). For exposures that have only banks as counterparties, only UGB data are available. Under UGB, claims are allocated to the countries that ultimately bear the risks - either through a guarantee or as the head office of a legally dependent branch - whereas ICB data allocate claims based on the residency of the immediate counterparty responsible for the obligation. The results presented using UGB reflect a risk-adjusted view of cross-border exposures, focused on the ultimate guarantor's country of residence.

The sample comprises countries that are members of the European Union (EU) and/or of the G20. Portugal's 20 most relevant counterparties are also included, whether or not they belong to the EU or the G20.[7] As a result, the subsequent analyses use 49 countries as the starting point. However, the sample used in each case is constrained by data availability. The reference period for the analysis is the last quarter of 2023.

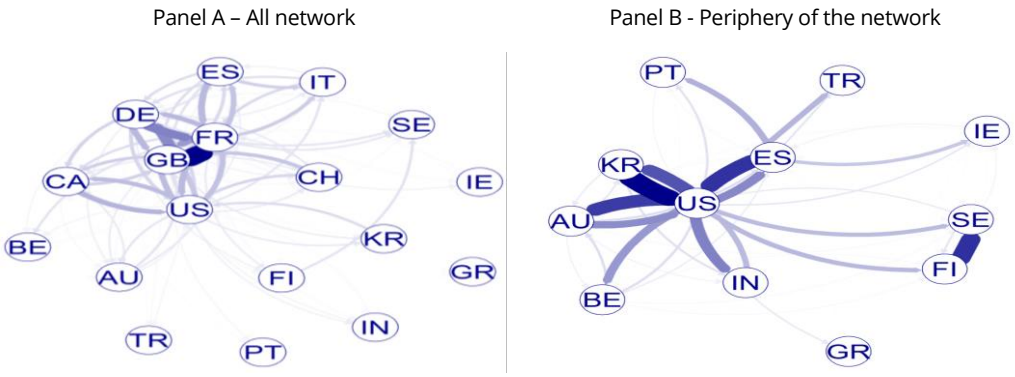
The network of interconnections used in this analysis reflects Portugal's most relevant foreign exposures. However, this may not hold true for all other countries in the sample. To assess the network's coverage, the ratio between each country's exposures to other countries within the sample and its total foreign exposures was calculated. For Portugal, the network captures approximately 83% of total foreign exposures when all counterparty sectors are considered, and around 79%, when focusing exclusively on interbank exposures. For the remaining countries with available information, in the case of all-sector exposures, five countries (Australia, Austria, Finland, South Korea, and Sweden) have less than half of their total cross-border exposures captured by the network. When considering banks-only exposures, this number drops to four countries: Finland, South Korea Netherlands and Türkiye. On average, the countries included in the network account for 60% of their total cross-border exposures as being within the network, when all sectors are considered, and 65% when the analysis is limited to the banking sector. Portugal thus displays a significantly higher level of representativeness compared to the network average.

Overview of existing interconnections and assessment of their relevance

In the mapping of cross-border interconnections, United Kingdom, France, Germany, Spain, Italy, Switzerland, United States and Canada are positioned at the core of the network (Figure 1 – Panel A). Portugal occupies a peripheral position. Even when the analysis is restricted to peripherical countries (excluding core countries except Spain and United States, to illustrate potential contagion paths), Portugal remains one of the least interconnected (Figure 1 – Panel B).

[7] Switzerland, Mozambique, Macau, Angola, Cabo Verde and Hong Kong SAR were included in the sample due to their relevance for Portugal.

Chart 1 • Mapping of cross border exposures (all counterparty sectors) – 2023 Q4

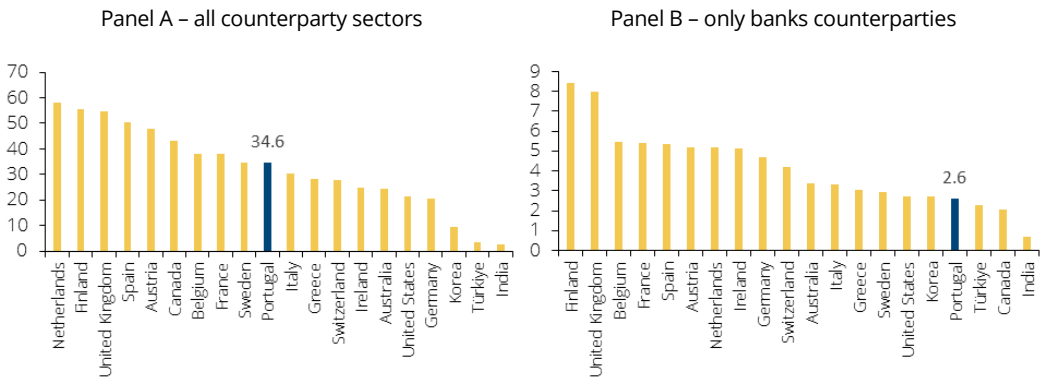


Source: BIS. | Notes: The exposures underlying this network representation do not encompass any restriction in terms of the counterparties that were considered. Thicker arrows are associated with higher exposures. Acronyms for countries are based on those from the BIS (ISO codes): Australia (AU), Belgium (BE), Canada (CA), Finland (FI), France (FR), Germany (DE), Greece (GR), India (IN), Ireland (IE), Italy (IT), Korea (KR), Portugal (PT), Spain (ES), Sweden (SE), Switzerland (CH), Türkiye (TR), the United Kingdom of Great Britain and Northern Ireland (GB), the United States of America (US).

Considering the ratio of total assets allocated to foreign claims, and considering all sectors, Netherlands, Finland and United Kingdom display the highest ratios (above 50%) (Figure 2 – Panel A). In contrast, South Korea, Türkiye and India report the lowest ratios, below 10%. Portugal exhibits a moderate degree of interconnectedness with the rest of the world, with foreign claims accounting for 34.6% of total assets.

When the analysis is restricted to exposures to bank counterparties (Figure 2 – Panel B), Finland and United Kingdom continue to exhibit the highest ratios, around 8%, while Netherlands reduced its importance (about 5.2%). The lowest values remain associated with South Korea, Türkiye and India, together with Canada and Portugal. Portugal's ratio stands at 2.6%, reflecting relatively limited cross-border interbank exposures.

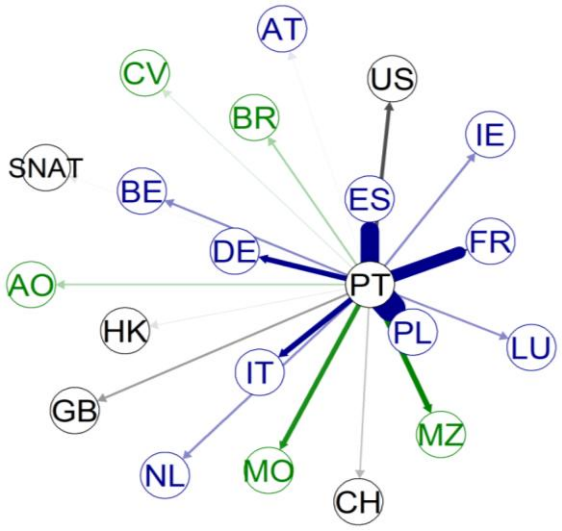
Chart 2 • Foreign claims, by country – 2023 Q4 | In percentage of total assets



Source: BIS.

Portugal's foreign claims (top 20) are primarily concentrated in Poland, Spain and France, followed by Italy and Germany – all belonging to the EU (Figure 3). The relevance of Poland can be justified by the presence of a subsidiary of a major Portuguese bank in the country. The list of the twenty largest exposures also includes five Portuguese-speaking countries, namely Mozambique, Macao, Brazil, Angola and Cabo Verde, highlighting historical and economic ties.

Chart 3 • Portugal's most relevant foreign claims (top 20) – 2023 Q4



Source: Banco de Portugal. | Notes: Blue edges represent direct linkages with European Union countries. Green edges denote direct linkages with Portuguese-speaking countries. SNAT stands for supranational institutions. Thicker arrows are associated with stronger exposures. Acronyms for countries are based on those from the BIS (ISO codes): Angola (AO), Austria (AT), Belgium (BE), Brazil (BR), Cape Verde (CP), France (FR), Germany (DE), Hong Kong (HK), Ireland (IE), Italy (IT), Luxembourg (LU), Macao (MO), Mozambique (MZ), the Netherlands (NL), Poland (PL), Spain (ES), Switzerland (CH), the United Kingdom of Great Britain and Northern Ireland (GB), the United States (US).

Over 50% of Portuguese banks' cross-border exposures are concentrated in Poland (25%), Spain (16%) and France (11%) (Figure 4 – Panel A). Each of the remaining countries account for no more than 6% of total foreign exposures.

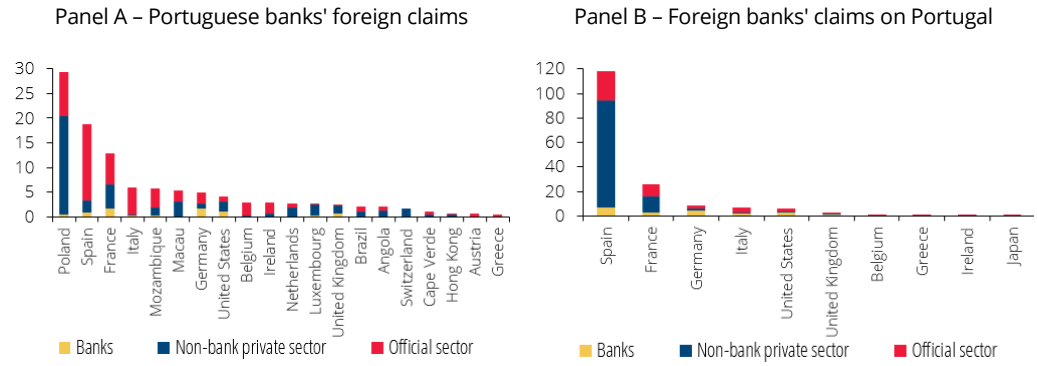
Generally, Portuguese banks' foreign claims are mainly directed towards the non-financial private sector and the official sector. Portugal's cross-border funds are primarily allocated to the official sector (approximately 50%), of which 84% corresponds to sovereign bonds and the remaining 16% to central bank holdings. The remainder is distributed across the non-bank private sector (43%) – particularly the non-financial private sector (36%), a figure significantly influenced by exposures to Poland - and to the banking sector (7%).

Regarding the funds received by Portugal from foreign banks (Figure 4 – Panel B), 68% originate in Spain. Of these, 74% are allocated to the non-bank private sector, reflecting the presence of Spanish banking groups in Portugal. France accounts for 15% of the total foreign claims on Portugal, while no other country exceeds 5%. In terms of global allocation, 62% of foreign funding is directed to the non-bank private sector, of which non-bank financial institutions represent 2%. Claims on the official sector represent 26%, and the banking sector accounts for the remaining 12%.

The evolution of Portuguese banks' foreign claims over time has been primarily driven by an increase in exposures to the official sector, in absolute terms and as a share of total foreign claims (rising from around 8% in 2009 to 50% in 2023). This has been accompanied by a decline in claims on banks and the non-bank private sector, both in value and relative importance (Figure 5). In fact, since the first quarter of 2009, the share of foreign claims on banks and the non-bank private sector has decreased by approximately 20 percentage points (p.p.) and 25 p.p. respectively, standing at 8% and 42% in the end of 2023. Overall, the total amount of Portuguese banks' foreign claims has decreased by 12% since the beginning of 2009, reaching USD 116.2 billion in the last quarter of 2023.[8]

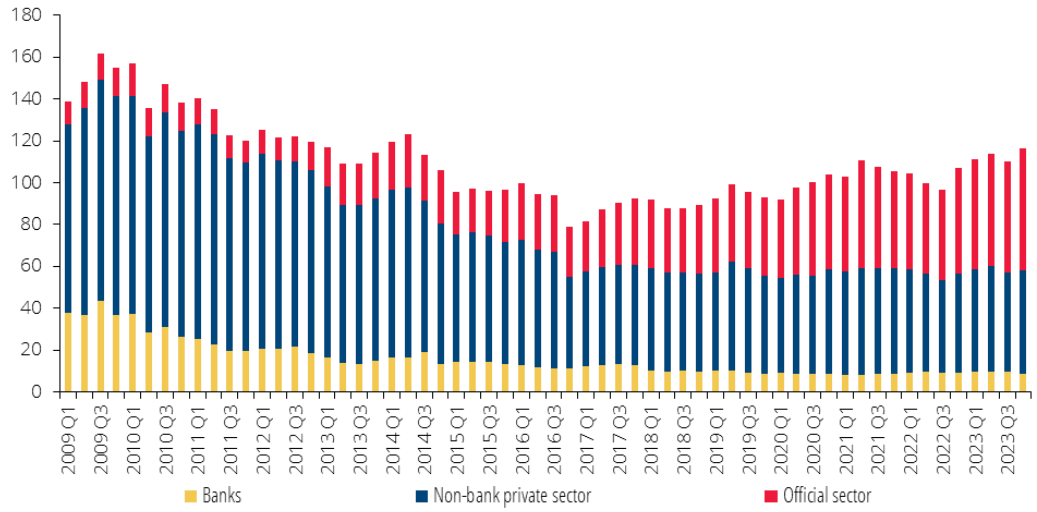
[8] Considering an exchange rate of approximately 1.0389 EUR/USD (31/12/2023), this amount would correspond to 111.8 billion EUR.

Chart 4 • Foreign claims by country and counterparty sector – 2023 Q4 | In billions of USD



Sources: Panel A - Banco de Portugal. Panel B - BIS. | Notes: Sectors are classified into three main categories: *Banks*, *Non-bank private sector* (including non-financial corporations, households, and non-bank financial institutions), and *Official sector*. Further information on the sector breakdown can be found in the "Guidelines to the international consolidated banking statistics" (https://www.bis.org/statistics/consbankstatsguide.pdf).

Chart 5 • Portuguese banks' foreign exposures | In billions of USD



Source: BIS. | Notes: The last observation refers to Q4 2023. Sectors are classified into three main categories: *Banks*, *Non-bank private sector* (including non-financial corporations, households, and non-bank financial institutions), and *Official sector*. Further information on the sector breakdown can be found in the "Guidelines to the international consolidated banking statistics" (https://www.bis.org/statistics/consbankstatsguide.pdf).

The contagion model

Model description

Espinosa and Solé (2010) present a framework to assess the impact of hypothetical credit and funding shocks on the banking system, based on spillover effects through direct financial linkages. The model quantifies the resulting capital losses, both at national and global levels, simulating a domino effect under two scenarios: a credit shock and a credit-plus-funding event.

To measure the systemic impact of a credit shock, the simulation assumes the default of each banking system's obligations, one at a time. The remaining banking systems are required to absorb the immediate losses resulting from this default using their own capital. The magnitude of the losses depending on the

loss given default parameter (λ). A banking system is assumed to have failed if its aggregate capital is insufficient to cover these losses – that is, if the ratio between its aggregate capital and aggregate assets falls below a minimum level. Once initial defaults are identified, the algorithm proceeds iteratively, incorporating the losses of newly failed banking systems in each round, and stops when no further defaults occur.

It is important to note that, in the event of a credit shock triggered by a simulated default in a foreign country, the credit losses incurred by a domestic banking system depend on the counterparties considered. If only banks are included, the losses are limited to interbank obligations. However, when all sectors are taken into account, the initial shock becomes more severe, with the losses encompassing the full range of exposures the domestic banking system holds with the defaulting country.

In the credit-plus-funding event, when only banks are considered to be counterparties, it is assumed that a banking system is not able to replace the interbank funding previously granted by the now-defaulting banking systems, triggering a fire sale of assets. In fact, the ability to replace sudden funding withdrawals depends on the liquidity conditions in the money markets — which typically deteriorate during crises, as observed during the 2007–08 financial crisis. In such scenarios, alternative funding sources become scarce, forcing banks to liquidate part of their assets at a discount. When all sectors are included as counterparties, the funding shock also reflects potential fire sales triggered by the inability to replace the funding entirely provided by the defaulting country.

In this model, raising new capital is not allowed and central bank collateralised funding is excluded from the analysis. It is assumed that the banking system of a country can only replace a fraction $1 - \rho$ of lost funding from another defaulting banking system, and that its assets are sold under distress, represented by the parameter δ (with higher δ values indicating a higher level of distress). Losses resulting from a funding shortfall are assumed to be absorbed by the banking system's capital. The same default condition applies: a banking system fails if its aggregated capital is insufficient to absorb the losses. The simulation stops when no new defaults arise.

To assess the systemic impact of both types of shocks, credit shocks and credit-plus-funding events, the model computes two ratios: contagion index (CI) and vulnerability index (VI). The CI measures system-wide capital losses (excluding country *i*) as a result of the failure of country *i*'s banking system, expressed as a percentage of initial global capital. In turn, the VI quantifies the average loss experienced by country i 's banking system across all simulation rounds (one for each country), as a percentage of its own initial aggregate capital.

Calibration

The model calibration draws on previous FSAP exercises, particularly those conducted for Belgium (2023), Iceland (2023) and Spain (2024), while adopting a more conservative approach than that applied to Austria (2020). Specifically, the key parameters are set as follows: the loss given default (λ) at 65%, the fraction of funding that cannot be replaced (ρ) at 35%, and the discount factor associated with market distress (δ) at 50%. The minimum capital threshold below which a country's banking system is considered to have failed is set at 4.5%, in line with standard FSAP methodology and consistent with the assumption used in other countries' assessments.[9]

[9] In this respect, it is worth to note that the 4.5% threshold is a non-operating condition in the capital requirement regulation framework for risk-weighted exposures. However, the BIS' data are not treated according to capital requirements regulation, since a unique and recognised framework across the reporting countries is missing. As a result, the outcomes may seem more severe than expected, for two main reasons: i) the choice of the parameters does not consider the exposures of Portuguese banks towards low-risk profile securities, such as sovereign bonds of European countries, and ii) the 4.5% ratio is designed for risk-weighted exposures, while in this case the denominator is not risk-weighted, making the threshold more stringent.

Building on the list of 49 countries, results were obtained for 20 countries, based on the availability of data such as balance sheet information and cross-border exposures. While it is not possible to measure losses for the remaining 29 countries using the VI, it is still possible, in some cases – such as Poland, Luxembourg and Brazil – to assess their impact on other countries using the CI. The inclusion of these three countries is justified by their relevance among Portugal's top 20 counterparties (Figure 3).

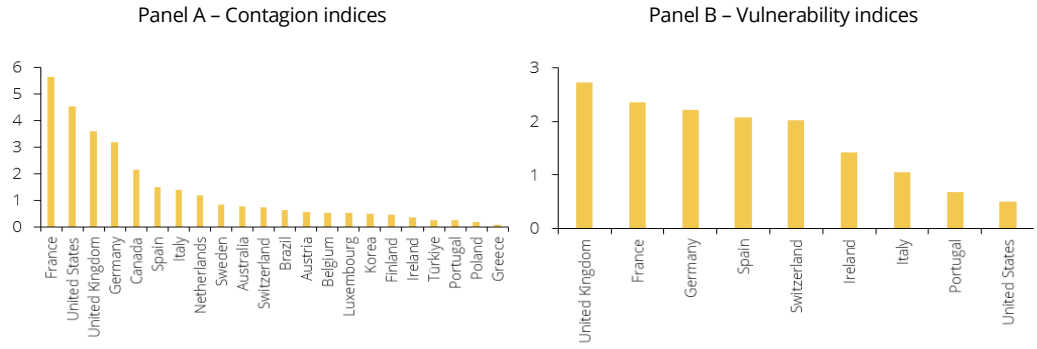
Regarding the VI, comparability across countries may be hampered by the difference in the representativeness of the network (i.e. the extent to which the set of countries included captures the total foreign claims of each country's banking system).[10] To mitigate this limitation, VI results are presented for a subsample of countries based on their geographical proximity and the degree of representativeness of their foreign exposures within the network. Nevertheless, results for United Kingdom and United States are also reported, given their global relevance.

Results are obtained for a credit shock and a credit-plus-funding event. Furthermore, the algorithm is run considering either all sectors or only-banks as counterparties.

i) Credit shock

In the simulation of a credit shock, when only banks are considered as counterparties (Chart 6), France, United States, United Kingdom and Germany stand out as the countries with the highest CI (5.9%, 4.6%, 3.6% and 3.2% respectively). United Kingdom and France, in turn, are also the most vulnerable banking systems, with a VI of 2.7% and 2.3% respectively, in the subsample considered. In contrast, Portugal registers relatively low levels of systemic risk, with both CI and VI among the lowest in the sample, at 0.2% and 0.7%, respectively.

Chart 6 • Contagion and vulnerability indices resulting from a credit shock and considering only banks as counterparties | In percentage

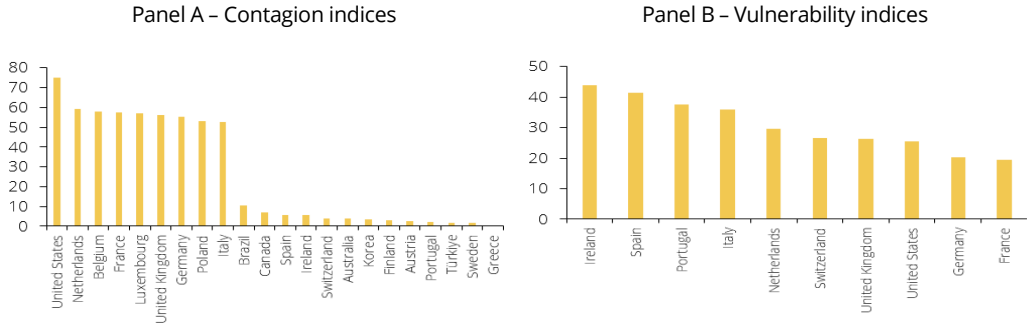


Source: BIS (calculations from Banco de Portugal).

When all sectors are included as counterparties (Chart 7), countries can be divided into two groups based on their CI: one comprising countries with high systemic impact, presenting CI ranging from 50% to 76%, and another comprising countries with more limited systemic reach, presenting CI below 10%. Portugal falls within this second group, with a CI of 2.1%. From a perspective of vulnerability, Ireland has the highest VI (43.8%), followed by Spain (41.3%) and Portugal (37.5%). Portugal's VI is aligned with that of countries whose foreign exposures are equally represented in the sample.

[10] One key limitation of the model is that, to obtain an accurate perception of a country's vulnerability, it must be that all its relevant cross-border exposures are included in the network. Given the differences described in terms of the representativeness of the foreign exposures of each country in the network, it must be assumed that the average loss that a given country would experience because of the failure of the countries that are not included in the network is, on average, equal to that originated by the default of the countries considered.

Chart 7 • Contagion and vulnerability indices resulting from a credit shock and considering all sectors as counterparties | In percentage

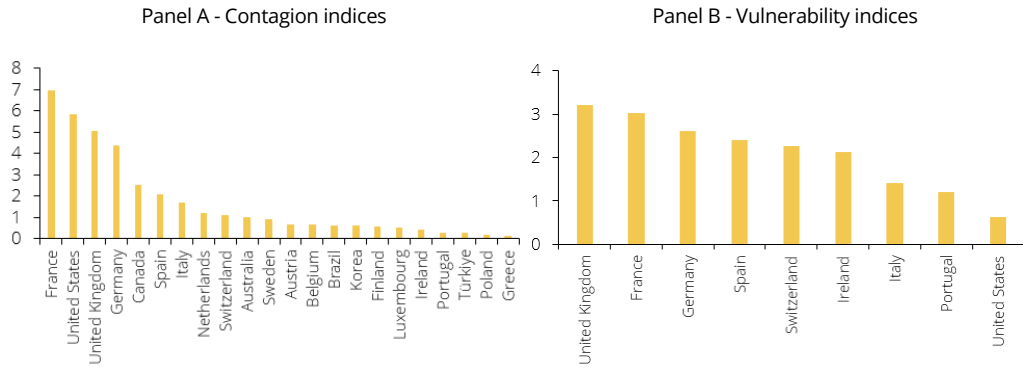


Source: BIS (calculations from Banco de Portugal).

ii) Credit-plus-funding event

Turning to the credit-plus-funding event, when considering exposures exclusively to banking sector counterparties, France emerges as the country with the highest potential of contagion to other countries, with a CI of 6.9% (Chart 8). United States and United Kingdom follow, with indices of 5.8% and 5.1% respectively. All remaining countries register CI below 5%. Portugal's index is 0.3%, one of the lowest figures. From a perspective of vulnerability, the results are presented only for the previously mentioned subsample of countries. In this group, United Kingdom stands out as the most vulnerable country, with a figure of 3.2%. Even though none of the VI of the remaining countries in the subsample exhibit particularly high vulnerability figures, Portugal's is among the lowest (1.2%). These results suggest that Portugal's position remains relatively resilient both in terms of contagion to other countries and of vulnerability to external shocks.

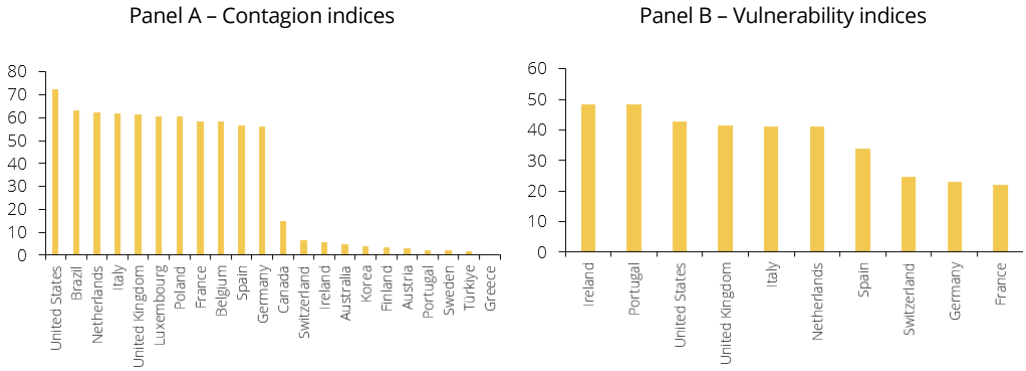
Chart 8 • Contagion and vulnerability indices resulting from a credit-plus-funding event and considering only banks as counterparties | In percentage



Source: BIS (calculations from Banco de Portugal).

When considering all sectors as counterparties, a pattern analogous to that observed under the pure credit shock scenario emerges, also allowing countries to be grouped based on their CI (Chart 9). One group consists of countries with higher CI – varying between 55% and 75% –, while the other includes countries with CI below 15%. Portugal once again belongs to the latter group, recording an index of 2.3%, which represents a slight increase of 0.2 pp compared to the case where only banks are considered.

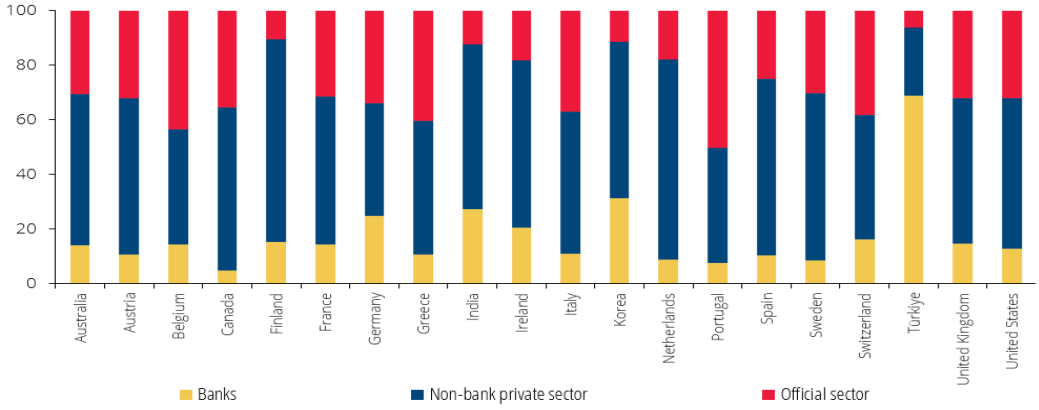
Chart 9 • Contagion and vulnerability indices resulting from a credit-plus-funding event and considering all sectors as counterparties | In percentage



Source: BIS (calculations from Banco de Portugal).

In terms of vulnerability, the top three countries are Ireland, Portugal and United States, with VI of 48.5%, 48.4% and 42.8% respectively. The result observed for Portugal warrants closer examination, particularly given the significant increase in its VI when all sectors are considered, relative to the banks-only counterparties case. This discrepancy can be largely explained by the structure of Portugal's cross-border exposures: only 8% of its foreign claims are directed to the banking sector (Chart 10), which is among the lowest shares in the sample; 50% of Portugal's foreign claims are towards the official sector – the highest proportion recorded among the countries considered.

Chart 10 • Banks' foreign exposures by counterparty sector – 2023 Q4 | In percentage

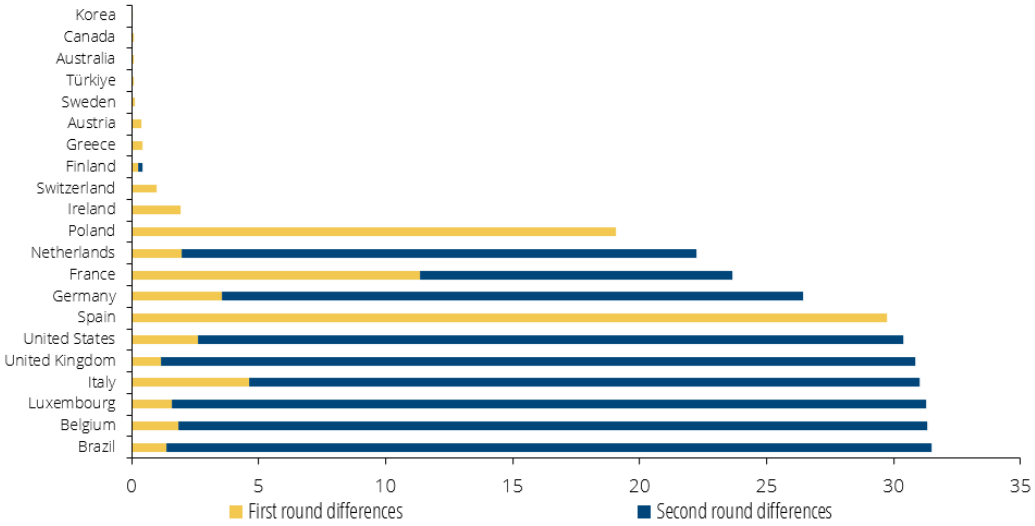


Source: BIS.

Complementary analyses

The results obtained for the Portugal's VI are further examined, with the objective of understanding the impact of including all sectors – besides the banks – as counterparties. Therefore, and within the context of a credit-plus-funding event, chart 11 depicts the differences in the losses for Portugal following each default simulation. It compares the scenario where all sectors are considered as counterparties with one limited to banking sector exposures, and distinguishes between the first round (i.e., direct) losses and the second round (i.e., indirect) losses.

Chart 11 • Differences in the losses registered for Portugal after the initial default of each country in the sample considering all sectors of counterparty vs. considering only banks as counterparties - Credit-and-funding event | In billions of USD

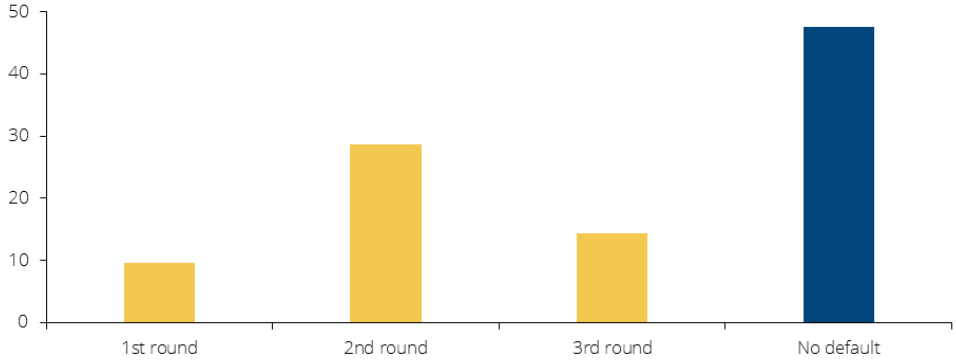


Source: BIS (calculations from Banco de Portugal).

Interestingly, the increase in Portugal's VI when all sector counterparties are included is mainly driven by second round effects, reflecting indirect exposures to several countries, namely Brazil, Belgium, Luxembourg, Italy, United Kingdom and t United States. However, direct exposures also contribute to this result, particularly those to Spain, Poland and, to a lesser extent, France.

A supplemental exercise is conducted to understand the extent to which indirect effects contribute to Portuguese banks' default. In nearly half of the simulations – one for each country, excluding Portugal - the national banking system does not default (Chart 12). Default is triggered in the first round in only 9.5% of cases, indicating limited direct contagion to the initially defaulting countries. Most of the national banking system's defaults occur in the second and third rounds, highlighting the role of indirect effects. These cascade effects contribute significantly to Portugal's losses and consequently to the increase of its VI. Furthermore, when Portugal defaults in the second round, on average, 60.6% of the network is in default. This proportion increases to 63.6% in cases where Portugal defaults in the third round.

Chart 12 • Portugal's defaults in each round | In percentage of the total number of simulations



Source: BIS (calculations from Banco de Portugal).

Sensitivity analyses on the loss given default (λ), the fraction of funding that cannot be replaced (ρ) and the discount factor associated with market distress (δ) suggest that a change in the calibration of these parameters does not have a significant impact on the values of the CI and of the VI and on the standard deviation across countries. For Portugal, the results indicate that both indices tend to increase with higher values for the calibration of each of the three parameters. Nonetheless, changes in the unreplaced funding and market distress parameters have an almost negligible impact on the CI. Furthermore, Portugal is not among the countries that default under all possible combinations of parameter values considered.

The chosen calibration does not reflect the types or risk profile of the securities held by Portuguese banks (debt, equity, or derivatives) which might be associated with an overestimation of losses. For instance, when all sector counterparties are considered, 50% of Portugal's foreign claims are directed to the official sector – the highest allocation among the countries in the sample. According to the "Reporte de Grupos Financeiros" (RGF) dataset, 72% of the foreign securities held by Portuguese banks are issued by six European countries (Spain, Poland, France, Italy, Germany and Ireland), with 88% of this amount allocated to government bonds. This composition suggests that the selected loss given default should overstate actual risks.

The results presented are based on reports submitted through the UGB dataset. They reflect a risk-adjusted view of cross-border exposures, attributing them to the country of residence of the ultimate guarantor – that is, the country that ultimately would bear the risk. Such risk transfers seem to be relevant for countries like Ireland, Luxembourg and Netherlands. For Portugal, using either the UGB or the ICB approach yields only negligible differences in both the CI and the VI (0.23 p.p. and 0.94 p.p., respectively). Therefore, risk transfers are not a material issue for Portugal.

Conclusion

The analysis of cross-border interconnections covers both the mapping and assessment of cross-border exposures, and the evaluation of the financial system implications resulting from credit and funding shocks arising in each country. Drawing on Espinosa and Solé (2010), these implications arise from successive rounds of spillovers via direct financial linkages. The sample includes the 20 most relevant counterparty countries for Portugal, along with all European Union and G20 countries, using data from the last quarter of 2023.

Portugal plays a relatively minor role in the global network of cross-border exposures, even among the less exposed countries. This role diminishes further when focusing solely on exposures to the foreign banking sector, which represent only 2.6% of Portuguese banks' total assets – among the lowest ratios in the sample. Over 50% of foreign claims are concentrated in Poland, Spain and France, while 84% of the funding received by Portuguese banks originates in Spain and France.

Using the direct contagion model, the analysis explores how shocks propagate through cross-border linkages, providing insights into each country's potential for contagion and degree of vulnerability under stress scenarios. Results are sensitive to model parameter calibration, which follows established methodologies, for example, the FSAP exercises. This model tends to overstate risks for Portuguese banks, given the country's significant holdings of low-risk assets, notably sovereign bonds from European countries.

The comparison of results across countries, in particular the Vulnerability Indices (VI), is also affected by differences in the representativeness of foreign exposures, which limits direct comparability. Given these model limitations, the findings presented must be interpreted with caution.

Model simulations show that shocks originating in Portugal would have a minimal impact on the global financial system, either considering all sector counterparties' exposures or only banking sector counterparties. In both credit shock and credit-plus-funding events, Portugal's Contagion Index (CI)

is among the lowest in the sample. Although Portugal's VI is higher when all counterparties are included, this must be assessed against the fact that half of its foreign claims are directed toward to sovereign bonds issued by EU countries.

Furthermore, the analysis highlights that, under certain conditions – such as highly disruptive scenarios, with a conservative calibration of model parameters, and considering all counterparty sectors – the default of another country's banking system could trigger contagion, affecting Portugal through shocks driven by indirect exposures or cascade effects. In most of the simulations, the Portuguese banking system would not default, and in only 9.5% of simulations do Portuguese banks' default in the first round, indicating a limited direct contagion to the initially defaulting countries. In the cases where default happens, in most instances it is triggered by second or third round effects. These cascade effects would amplify losses and consequently contribute to a higher VI.

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