

FINANCIAL STABILITY REPORT

DEC. 2021



BANCO DE
PORTUGAL
EUROSYSTEM

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



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SHORT TERM

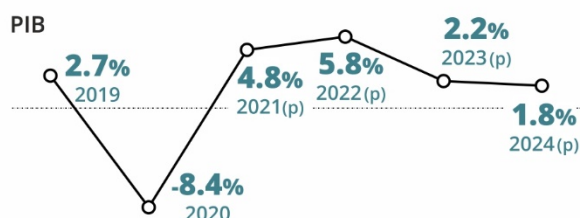


RESPONSE TO PANDEMIC

Economic recovery above expectations

• Economic Activity

Faster recovery, albeit with heterogeneity across sectors of activity



Source: Economic Bulletin, December 2021. | Note: (p) projected.

• Credit

Increase, in particular credit to the most affected sectors and for house purchase

Bank loans to NFCs (ARC)

-0.3% Dec. 2019
4.3% Sep. 2021

Bank loans for house purchase (ARC)

0.1% Dec. 2019
4.1% Sep. 2021

• Banking system

Favourable evolution, with profitability recovery, additional reduction of NPLs and stable capital ratios

Return on assets

0.1% 2020 HY1
0.4% 2021 HY1

Own funds ratio

18.0% Dec. 2020
17.9% Jun. 2021

Gross NPL ratio

4.9% Dec. 2020
4.3% Jun. 2021

NPL coverage ratio NFCs

56.5% Dec. 2020
56.9% Jun. 2021

Sectors most affected

80.1% Dec. 2020
87.4% Jun. 2021

MEDIUM TERM



VULNERABILITIES

Build-up of vulnerabilities, which may result in the materialisation of medium-term risks

• Non-financial sector

High indebtedness

- General Government: pandemic support, weight on indebtedness
- Firms: heterogeneity in recovery
- Households: growth in loans for house purchase

Public debt (Maastricht)/GDP

117% 2019
135% 2021 HY1

Household debt/Avail. income

95% 2019
98% 2021 HY1

Financial debt NFC/GDP

86% 2019
93% 2021 HY1

• Financial markets

Exuberance and some volatility with the low interest rate environment spurring search for yield

• Real estate

Slowdown of residential real estate and some stabilisation of market indicators of overvaluation

House prices (YOY)

8.9% 2019 Q4
6.6% 2021 Q2

• Banking system

Low profitability and high exposure to certain assets, albeit with reduction of sovereign debt as a percentage of total assets

Change on return on assets

Total NFC

-1.9pp 2020
0.8pp 2021 HY1

Services, excl. trade, transport and storage

-1.7pp 2020
0.2pp 2021 HY1

Public debt secur./Banking system assets (Dom. activity)

14.6% 2020
13.5% 2021 HY1

SHORT TERM



MEDIUM TERM



RISKS

Mitigated risks in the short term, although uncertainty remains

- Disruptions in economic activity with an impact on non-financial corporations and households
- Inflation developments and investors' response

Timelag until the overall impact of pandemic crisis on the economy can be assessed

Medium-term risks

- International financial market shocks impacting financing conditions, financial asset prices and the value of real estate collateral
- Deterioration in financing conditions of resident sectors
- Increased default on bank lending
- Business model adjustment: climate transition and digitalisation (incl. cybersecurity)
- Money laundering/terrorist financing



THE AUTHORITIES' RESPONSE: THE NEED TO COMBINE SHORT AND MEDIUM-TERM EFFECTS

The dilemma in the time horizon of monetary and macroprudential policies

Monetary policy

- **Early normalisation**
Negative impact on the economy and potential abrupt financial market corrections
- **Late normalisation**
A build-up of vulnerabilities, in a context where there are already signs of exuberance in international financial and residential real estate markets

Macroprudential policy in Portugal

- The Banco de Portugal maintained the CCyB rate at 0%
- Institutions designated as O-SII and their capital buffer requirements and implementation periods were maintained
- Institutions have generally complied with the guidelines set out in the macroprudential Recommendation on new loans for house purchase and for consumption

In a context of recovery in economic activity, the Banco de Portugal may take macroprudential measures aimed at mitigating the potential build-up of systemic risk in some sectors

Executive summary

The process of adjustment observed in the Portuguese economy after the international financial crisis, albeit incomplete, has increased its resilience to adverse shocks, which was particularly important in the response to the emergency caused by the pandemic crisis.

The progress made by the financial sector, framed by the convergence to more stringent regulatory and supervisory requirements, helped the sector continue to finance the Portuguese economy, in particular the agents and sectors that had their activity, profitability and liquidity jeopardised by the effects of the economy. The financial sector's role during the crisis was also the result of a swift and coordinated adoption of measures by domestic and international authorities at fiscal, monetary, regulatory and supervisory level, without historical parallel in its range and intensity. These measures have mitigated the adverse effects of the pandemic on financial institutions and helped them take on a central role in reducing the adverse effects on economic activity and the financial situation of economic agents.

However, the evolution of the pandemic continues to have an impact on the assessment of risks to financial stability. Health uncertainty persists and some vulnerabilities have accumulated, which may result in the materialisation of medium-term risks. The effects of the pandemic have still not been overcome or fully materialised yet, and their full extension is still uncertain.

In addition, the measures taken to mitigate the impact of the pandemic and support economic activity have led to increased use of public and private debt. As past experience has shown, the accumulation of debt is a vulnerability that boosts the materialisation of credit and market risks for resident sectors.

Lastly and also pandemic-related, inflation has increased significantly at international level, reflecting inter alia the fact that the recovery in supply has lagged behind demand in relevant sectors and activities. This has been assessed by the European Central Bank (ECB) and other central banks as temporary. However, if this becomes more persistent than expected, there is a risk it may generate excessive volatility in financial markets and become more structural in the expectations of economic agents, influencing their spending and saving decisions, which might ultimately limit the conduct of monetary policy.

Given this general environment, the main vulnerabilities and risks to financial stability in the medium term are the following:

- Reassessment of risk premia as a result of increased uncertainty on the part of investors about inflation developments and the response of monetary authorities;
- Changes in financing conditions on international markets, with an impact on residential real estate market prices and the cost of financing the sovereign and other institutional sectors;
- The impact of disruptions in non-financial corporations' activity on default and credit risk materialisation, particularly in the sectors most affected by the pandemic;
- Increase in the debt to disposable income ratio of households, owing in particular to the growth in housing loans, with a bearing on the financial resilience of the sector to changes in unemployment and related falls in income.
- For the Portuguese banking sector:
 - Deterioration in asset quality and credit risk materialisation: importance of a proper credit impairment recording;
 - Market risk materialisation stemming from an increase in long-term interest rates resulting in a devaluation of financial assets in the portfolio, most notably government debt,

- Low profitability levels, amid low interest rates, limited expansion of the domestic credit market and increased competition in more profitable segments;
- Challenges arising from the digitalisation process in banking activity, including cybersecurity, and the transition to a sustainable economy.

At the current stage, economic policies must support a sustainable and lasting economic recovery in all sectors, continuing to help mitigate the risks and vulnerabilities created by the pandemic shock. This is a considerable challenge, given the need to combine the short and medium-term effects of both monetary and macroprudential policies and policies to support firms.

This process should prevent negative impacts on the economy that lead to abrupt financial market corrections, while simultaneously controlling a build-up of vulnerabilities, in a context where there are already signs of exuberance in international financial and residential real estate markets.

As for support to firms, it is important to promote the solvency of those that remain viable, despite facing financial difficulties. In parallel, conditions should be created for greater efficiency in the restructuring and liquidation proceedings of non-viable firms that help preserve physical and human capital.

There are also challenges for the banking sector. In addition to weighting risks, banks must always consider in their decision-making processes the inevitable return to the prudential rules that were in force and/or scheduled to come into effect before the pandemic crisis.

Preserving financial stability in Portugal will crucially depend on the financial situation of domestic agents and the responsiveness of national authorities. Thus, it is of paramount importance to resume the pre-pandemic adjustment paths.

In a context of recovery in economic activity, the Banco de Portugal may take macroprudential measures aimed at mitigating the potential build-up of systemic risk in a number of sectors.

I Financial stability outlook

- 1 Vulnerabilities, risks and
macroprudential policy
- 2 Banking system

1 Vulnerabilities, risks and macroprudential policy

1.1 Main risks and vulnerabilities

The COVID-19 pandemic remains a challenge to the resilience of the financial system at both national and international level. Due to its intensity, reach and persistence, which are not yet fully known, the pandemic has confirmed how important it was to reduce vulnerabilities previously – such as excessive debt and high default ratios in the loan portfolio – as well as the financial regulation implemented in the years following the great international financial crisis. The reduction of risk and the regulatory framework were central to strengthening the international and national policy response and enhancing the impact of coordinating the various policy aspects – monetary, governmental, fiscal, micro- and macroprudential regulatory and supervisory policies. This allowed for a multidimensional approach to the challenges posed by the pandemic.

A stronger than anticipated recovery in economic activity contributed to the mitigation of near-term risks to the financial stability. However, supply chain disruptions and energy price developments have intensified risks to economic growth and inflation, which are expected to be temporary. Monetary and fiscal policy measures mitigated the negative effects on the financial situation of firms and households and on financial markets, maintaining favourable financing conditions. Financial assets and real estate markets supported the general trend of rising prices, driven inter alia by search-for-yield behaviours.

Although financial stability has successfully been safeguarded, some of the effects of the pandemic will tend to persist over time, notably the rise in public and private debt. In the coming months, a prudent and careful approach to adapting support measures is key to preserving value and economic relations, but without preventing the necessary adjustment process of the economic fabric, as non-viable firms exit the market.

The outlook for financial stability in the medium term, however, remains constrained by uncertainty surrounding the evolution of the pandemic, as well as developments in economic growth and inflation.

The main vulnerabilities and risks to financial stability in the medium term are the following:

- **Reassessment of risk premia as a result of increased uncertainty by investors about price developments and the response of monetary authorities.** In a context where there are already signs of some exuberance in financial markets, a reassessment of risk premia might trigger global contagion effects, with an impact on the financial system, especially in terms of portfolio valuation. Regarding financing costs, the ECB has reiterated its commitment to maintaining favourable conditions that do not jeopardise the recovery of economic activity, mitigating the likelihood of an abrupt deterioration in financing conditions and fragmentation in the euro area.
- **Less favourable cyclical developments and/or international changes in financing conditions with an impact on residential real estate market prices.** In line with international developments, residential real estate market prices remained resilient in Portugal during the pandemic crisis. Domestic bank credit has not been the main factor behind the rise in demand in this market and, consequently, the increase in house prices. The macroprudential recommendation on new credit agreements relating to residential property and consumer credit led to an improvement

in the risk profile of borrowers and in the characteristics of the housing loan portfolio. The loan-to-value (LTV) ratio indicates that banks are resilient to a potential correction in residential real estate prices. Continued pressure on house prices, arising, for example, from housing loans, should be avoided, in order not to lead to overvaluation.

- **Impact of disruptions in the activity of non-financial corporations (NFCs), with potential consequences for default and credit risk materialisation, considering the high levels of NFC debt, particularly in the sectors most affected by the pandemic.** The heterogeneous impact of the pandemic crisis on the indebtedness ratios of the various sectors of activity, which is more pronounced in accommodation and food services, increases the potential impact of further disruption on their activity. Despite prospects of improvement in the financial situation of firms, including those most affected by the pandemic, risks persist due to (i) differentiated prospects for recovery, which may be accentuated by further constraints on activity stemming from the evolution of the pandemic; (ii) disruptions in production chains and higher commodity prices; (iii) a potential increase in financing costs. The success of credit institutions in designing solutions for loan financing/restructuring that foster the recovery of viable firms will be key to mitigating the impact in terms of default and credit risk materialisation. The adequacy of support measures and the timeliness of the implementation of the Recovery and Resilience Plan (RRP) may also mitigate these risks.
- **Increase in unemployment and related reduction in income, which, were they to materialise, would affect the financial resilience of households. However, in the current macroeconomic environment, this scenario is strongly mitigated.** A sustained increase in housing loans, resulting in an additional rise in the debt to disposable income ratio of households, may make this sector more vulnerable to adverse shocks, such as a potential increase in financing costs. The decrease in indebtedness observed in the pre-pandemic period and the improvement in the risk profile of new borrowers, as a result of the macroprudential Recommendation, act as mitigating factors of such an impact.
- **Deteriorating financing conditions at international level, which may have an impact on the cost of financing the sovereign.** Pursuing a credible fiscal consolidation plan is important in order to mitigate such a risk, particularly by reversing the increase in permanent expenditure above the GDP trend. Projections by the European Commission and other international organisations point to a resumption of the downward trend in the general government debt-to-GDP ratio in coming years, following the deterioration observed as a result of the pandemic crisis.
- **Challenges arising from the digitalisation process, in particular cybersecurity, and from the transition to a sustainable economy.**
- **For the banking system:**
 - **Potential deterioration in asset quality and credit risk materialisation.** Banks continued to reduce the amount of non-performing loans (NPLs), mostly through sales and write-offs. However, the magnitude of the pandemic's impact on asset quality remains uncertain. In addition, a potential rise in interbank interest rates may also cause increased credit risk, unless accompanied by an economic recovery;
 - **Materialisation of market risk stemming from an increase in long-term interest rates resulting in a devaluation of financial assets in the portfolio, most notably public debt.** However, there has been a relative decline in the exposure to domestic public debt. Furthermore, the share of the exposure to public debt at amortised cost has been increasing, mitigating the impact of yield increases, as changes in value are only reflected at the time of sale;

- **Difficulty ensuring adequate profitability, amid low interest rates, limited expansion of the domestic credit market and increased competition from intermediaries in more profitable segments.** Despite the recent improvement in the banking system's profitability, prospects point to the need to continue increasing the sector's operational efficiency, which should be leveraged by the digitalisation process;
- **Risks arising from the digitalisation process of banking activity, including cybersecurity, and from the transition to a sustainable economy.** Although their capital position has been strengthened in the past few years, banks must adjust their business model and include digital transformation in their strategic priorities. This will also allow them to monitor Environmental, Social and Governance (ESG) risks and fund investments required for the economy's energy conversion.

1.2 Implications of the pandemic crisis for economic activity and international financial markets

The improved health situation contributed to a recovery in economic activity. Greater control of the pandemic and a successful vaccination process have supported the economic recovery and were reflected in the confidence of economic agents. According to the Banco de Portugal's projections published in the December 2021 issue of the *Economic Bulletin*, Portuguese GDP is expected to grow by 4.8% in 2021 and by 5.8% in 2022, followed by a more moderate pace of expansion in 2023 and 2024 (3.1% and 2.0% respectively). GDP will reach its pre-pandemic level in the first half of 2022. Inflation is projected to increase to 0.9% in 2021, 1.8% in 2022, 1.1% in 2023 and 1.3% in 2024, with a profile highly influenced by energy prices. Excluding the energy component, inflation is expected to increase gradually over the projection horizon, reaching 1.5% in 2024.

While there are still risks related to the evolution of the pandemic, the likelihood of sharp declines in economic activity has decreased. Despite an improved outlook for the international economic recovery, there is an asynchrony between economies, reflecting, among others, different levels of vaccination and support measures. In the short term, as in previous episodes, a worsening health situation and the adoption of additional containment measures may affect sectors that have yet to reach their pre-pandemic levels and lead to a deceleration in activity. Nevertheless, their impact will tend to be smaller, as containment measures tend to be less restrictive and economic agents have learned to better adapt to these situations. In addition, economic activity will continue to be limited by disruptions in global supply chains, which have been reflected in a shortage of commodities and other goods and an increase in their costs; effects are assumed to dissipate from the second half of 2022 onwards.

Projections for the Portuguese economy point to a faster recovery than that observed in the wake of the sovereign debt crisis. The differentiated impact of these two crises on economic activity reflected to a large extent the different nature of the shocks and a distinct initial situation in terms of the macroeconomic imbalances and the policy measures adopted. In particular, the support measures implemented to mitigate the effects of the pandemic crisis preserved the economy's productive capacity and employment and also had a positive impact on financial stability.

The balance of risks to the projections for economic activity is tilted to the downside in the near term. The main downside risk is related to a more unfavourable evolution of the pandemic. In addition, the duration of the supply chain disruptions remains uncertain and may extend beyond the period considered in the projections. Risks to activity are balanced in the medium term. On the one hand, there is an upside risk to economic activity arising from the possibility that part of the savings accumulated during the pandemic could be channelled to private consumption, which

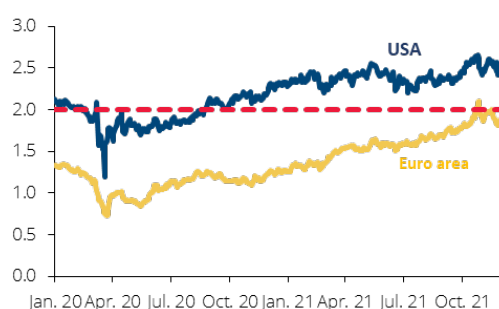
would contribute to stronger growth of economic activity. On the other, there is a risk of more persistent consequences for the economic segments more affected by the pandemic.

Risks to inflation are tilted to the upside and arise mainly from the possibility of a greater pass-through of increases in the prices of commodities and intermediate goods to consumer prices, particularly if these increases are more persistent than anticipated.

The ECB and other central banks have reiterated that the increase in inflation is temporary in nature, although more persistent than expected. At its December meeting, the ECB reiterated that the inflationary pressures are temporary and that the medium-term inflation outlook remains below the monetary policy target. The upswing in inflation largely reflects higher energy prices, the impact of a stronger rebound in demand than supply and base effects related to the end of the VAT cut in Germany. In the United States, in light of the current inflation and employment levels, the Federal Reserve has so far maintained the target range for the monetary policy rate, but has announced it will start to reduce the monthly pace of asset purchases. In turn, the Bank of England announced it would increase the interest rate from 0.1% to 0.25% in its December meeting, based on the labour market dynamics and signs of more persistent inflation.

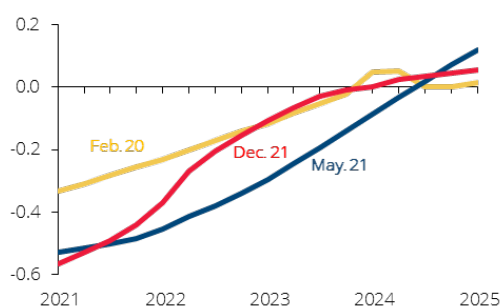
Market expectations also signal inflation rate increases in the medium term, although at lower levels in the euro area than the United States (Chart I.1.1). Investors continue to discount in inflation swaps higher inflation rates than those projected by the central banks. Short-term interest rate futures also signal expectations by investors that the normalisation of monetary policy in the euro area might occur sooner than reaffirmed by the ECB (Chart I.1.2).

Chart I.1.1 • 5y5y inflation swaps – euro area and USA | Per cent



Source: Refinitiv. | Notes: Inflation expectations implied in the 5-year, 5-year inflation swaps contracts. Closing market quotes. Last observation: 3 December 2021

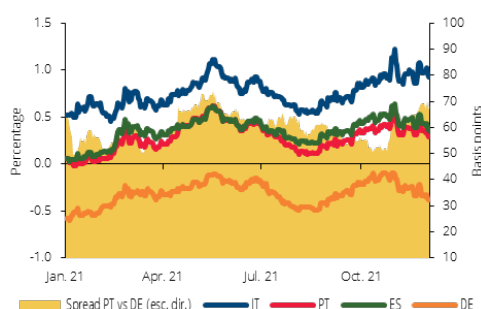
Chart I.1.2 • Implied interest rate in the 3-month EURIBOR futures contracts | Per cent



Source: Refinitiv. | Notes: 30-day average value of the interest rate implicit in the 3-month EURIBOR futures. Last observation: 3 December 2021..

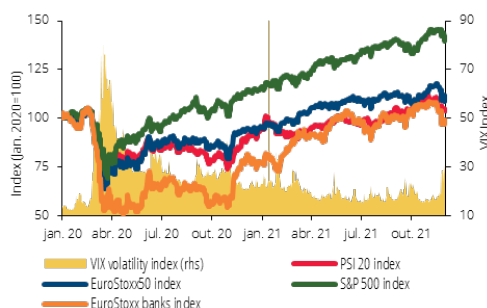
In recent months, expectations that the inflation increase might not be temporary have been reflected in investor's behaviour. There were momentary increases in the volatility of the yields and spreads of sovereigns with higher debt, including Portugal (Chart I.1.3). However, stock markets (Chart I.1.4) continued to appreciate and credit spreads remained subdued, coming close to pre-pandemic levels (Chart I.1.5). Likewise, financial sector securities continued to appreciate considerably. Other assets have also appreciated, namely commodities (Chart I.1.6), partly due to the disruptions to production and distribution chains, and alternative assets, such as crypto-assets, which investors increasingly also use as an instrument to hedge inflation.

Chart I.1.3 • Euro area 10-year sovereign debt securities yields



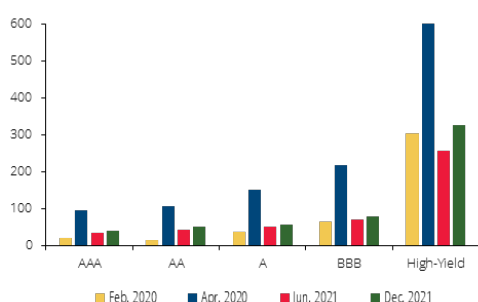
Source: Refinitiv. | Notes: Data series correspond to the closing quote of General Government debt yields with maturity of approximately 10 years. Last observation: 3 December 2021

Chart I.1.4 • Stock market indexes and volatility



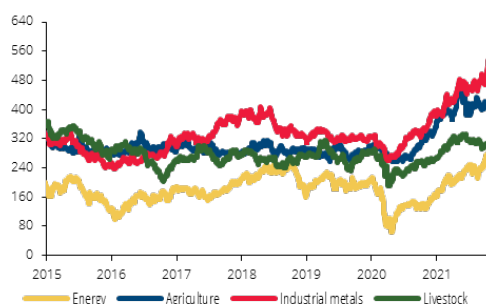
Source: Refinitiv. | Notes: The chart shows the evolution of stock market indexes with the base value set at 100 in January 2020. Quotes are shown at the right hand side for the VIX volatility index. Closing market quotes. Last observation: 3 December 2021.

Chart I.1.5 • Average yield of euro area non-financial corporations debt securities
| Basis points



Source: Refinitiv. | Notes: Average yield of iBoxx indexes for non-financial corporations by credit rating. Last observation: 1 December 2021.

Chart I.1.6 • Commodities Prices | Index



Source: Bloomberg. | Notes: S&P Commodity Index. Last observation: 3 December de 2021.

In view of the potential overvaluation of financial assets, an adverse exogenous shock might trigger a reassessment of risk premia and consequently a worsening of financing conditions. The ECB has reiterated its commitment to maintaining favourable financing conditions, which do not jeopardise the recovery of economic activity in the euro area, thus mitigating the likelihood of an abrupt deterioration in financing conditions in the euro area. However, a correction in financial markets could be triggered by lower than expected economic growth and the resulting difficulties for NFCs, spillovers of adverse developments in emerging market economies or a sharp adjustment to the outlook for monetary policy normalisation at a global level. This possible reassessment could interact with vulnerabilities that have persisted or even strengthened during the pandemic in some market segments, namely increasing indebtedness and search for yield induced by the low interest rate environment. Potential spillovers to Portugal cannot be excluded given the high levels of indebtedness in the country, particularly in the general government, as well as the non-financial private sector, even if these are below the levels of the previous crisis.

The current situation is particularly complex for the conduct of monetary policy. On the one hand, a premature normalisation of monetary policy will have a negative impact on the economy, in a situation where the recovery is not complete and may lead to abrupt corrections in financial

markets. On the other, a late normalisation of monetary policy will tend to translate into a build-up of vulnerabilities, in a context where there are already signs of exuberance in financial assets and residential real estate markets at international level. This makes it all the more urgent for the authorities to have an appropriate policy mix, in particular involving monetary, micro and macroprudential components.

1.3 Economic sectors and the coordination of policy measures

1.3.1 Non-financial corporations

In 2021 the evolution of non-financial corporations (NFCs) was characterised by an increase in profitability and savings, a reduction in insolvencies and an increase in debt. Firms increased their liquidity amid total credit growth, which was also fostered by moratoria and State-guaranteed credit lines. Credit moratoria for all sectors of activity expired in the course of 2021. The available data show the importance of these measures for firms' performance in Portugal. The still limited information for the post-moratoria period does not indicate growth in non-performing loans.

The financial situation of NFCs was affected heterogeneously by the pandemic. This risk adds to: (i) the impact of disruptions in production chains and higher commodity prices; (ii) uncertainty associated with the evolution of the pandemic; and (iii) a possible increase in financing costs. Taking into account the indebtedness of Portuguese NFCs, the materialisation of these risks would have significant consequences on delinquency and materialisation of losses for financial institutions. However, credit granted to NFCs without an indication of vulnerability made the largest contribution to this aggregate's growth, and only firms in the accommodation and food services sector showed a broadly based increase in their indebtedness ratios. Against this background, it is important to monitor the other factors mitigating these risks, including the adequacy of support measures, control of the pandemic and its effects on the economy, and the timeliness of the implementation of the Recovery and Resilience Plan (RRP).

Over a forecast horizon until 2023, the estimate of the NFCs' average profitability is projected to gradually recover and exceed that observed in 2019. The accommodation and food services and trade sectors are expected to recover more slowly and also present a higher insolvency risk.

Against the background of digitalisation and the need to adapt the productive structure, resulting from climate change and modifications introduced following the pandemic, it is important to assess the viability of firms' business models. Among those that present a viable business model but face difficulties in resuming payments after the end of the moratorium and other support measures, debt restructuring and a possible recapitalisation may be successful. In the case of firms considered non-viable, expediting insolvency and liquidation proceedings takes on particular relevance. A time lag can be expected until the overall impact of the pandemic crisis on firms' defaults can be assessed.

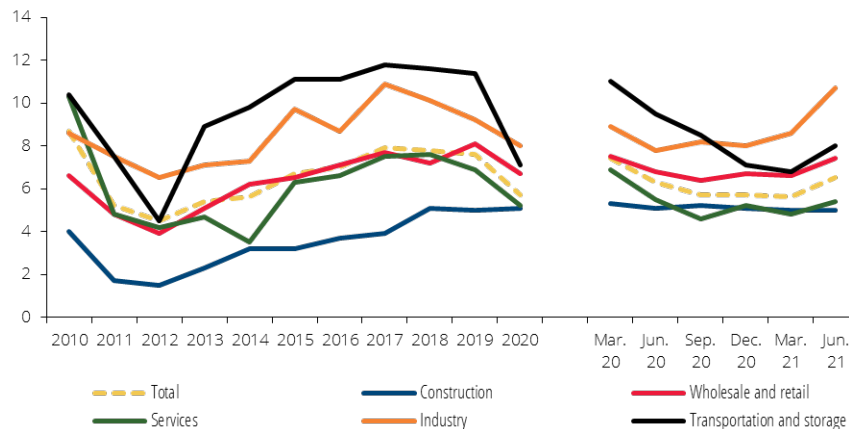
In 2020, NFC turnover fell by 9.7% in aggregate terms. This fall was particularly sharp in the accommodation and food services, entertainment and transport and storage sectors (Table I.1.1).

Table I.1.1 • Change in turnover and gross value added (GVA), by sector of activity
| As a percentage

	Sector share in GVA		Change in turnover
	2019	2020	2020
 Non-financial corporations	-	-	-9,7
 Accommodation and food services	6.1	3.6	-42.5
Artistic, performing, artistic and recreational activities	1.0	0.7	-35.5
 Transport and storage sectors	5.1	3.9	-24.2
 Construction	4.4	4.8	3.0
Information and communication activities	3.9	4.4	4.4

The reduction in activity affected firms' earnings (EBITDA – Earnings before Interest, taxes, deductions and amortization), which decreased by 18.9% in 2020 compared with 2019. No comparable information is available for 2021, and these indicators are expected to recover according to the available intra-annual information. Like turnover, the fall in EBITDA was particularly sharp in the accommodation and food services sector (-129.5%), where the aggregate EBITDA was negative in 2020, and the transport and storage sector (-72.4%). The construction sector recorded the largest increase in EBITDA as a percentage of assets in this period (10.3%). Similarly, aggregate profitability, measured as a percentage of assets, fell to 5.9% (7.6% in 2019), while the fall was more pronounced for firms in the accommodation and food services sector (-9.2 p.p.; -2% in 2020) and in the transport and storage sector (-7.3 p.p.; 2.9% in 2020).

The lockdown period in the first quarter of 2021 did not cause an additional reduction in NFCs' profitability, which, throughout the pandemic crisis, remained above the levels observed during the sovereign debt crisis. The heterogeneous impact of the crisis has led to patterns of differentiated developments by sector of activity: in June 2021, the profitability of industry had already recovered to a higher level than in 2019, in contrast to the gradual recovery in the trade and services sectors (Chart I.1.7). For NFCs as a whole, in the second quarter of 2021 return on assets increased by 0.8 p.p. from the end of 2020. The profitability of the industry increased by 2.7 p.p., after a 1.2 p.p. decrease in 2020. As regards the transport and storage sector, there was a 0.9 p.p. increase in return on assets in the first half of 2021, after a 4.3 p.p. decrease in 2020. In turn, the return on assets in the services sector, excluding trade and transport and storage, grew by 0.2 p.p. until June 2021, after a 1.7 p.p. fall in 2020.

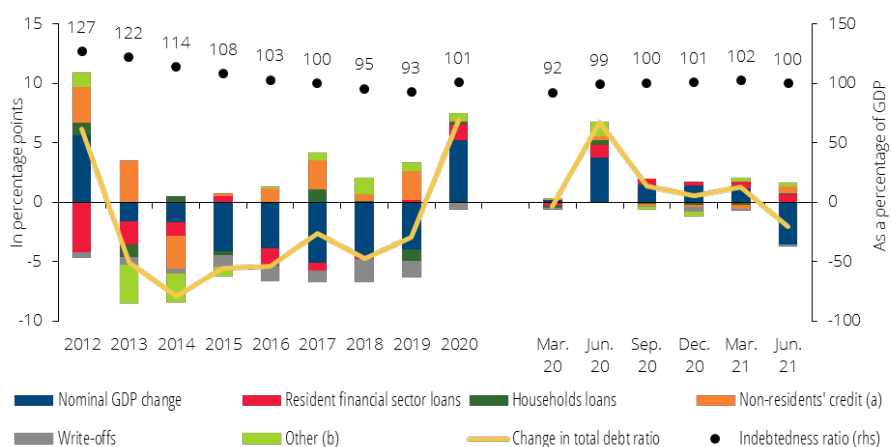
Chart I.1.7 • Profitability ratio (EBITDA/Total assets), by sector of activity | As a percentage

Sources: Banco de Portugal and INE | Note: (a) Includes services except trade and transport and storage (identified in the chart).

Despite the impact of the pandemic crisis on NFCs' gross value added (GVA) and profitability, until June 2021 there was no increase in NFC insolvencies, which were concentrated among firms that had a less robust financial situation at the beginning of the pandemic crisis (Box 1).

According to the results presented in the Special issue "The financial position of firms in the post-COVID-19 pandemic", until 2023 NFCs' average profitability is expected to gradually recover and exceed that observed in 2019, albeit with heterogeneity by sector of activity and an increase in dispersion across firms. Heterogeneity is more pronounced in microenterprises and the accommodation and food services and trade sectors. Over the projection horizon, the number of firms with negative equity or in a situation of insolvency is expected to increase. This increase is also estimated to be more pronounced for smaller firms and the accommodation and food services sector is estimated to show a larger increase in the number of insolvent firms.

In the first half of 2021, the NFC debt-to-GDP ratio remained broadly unchanged. In 2020 NFCs interrupted the process of reducing this ratio, which had started in 2012, mostly reflecting the nominal GDP contraction and the increase in indebtedness from the resident financial sector (Chart I.1.8). Over the past ten years, Portugal has followed the third quartile of the distribution of the ratio of debt to aggregate capital and debt of NFCs, remaining consistently above the euro area average. However, this declined in 2020.

Chart I.1.8 • Contributions to the changes in NFCs total debt / GDP

Sources: Banco de Portugal and INE. | Notes: (a) Loans and debt securities held by non-residents are considered in Non-residents' credit; (b) Corresponds to credit written off from the balance sheet of resident monetary financial institutions; (c) It includes securities in resident's portfolio, commercial credits and advances and other changes in volume and value.

In 2020 the NFC debt-to-GDP ratio increased both in Portugal and the euro area. This increase was broadly based across several euro area countries and was reflected in the distribution quartiles (Table I.1.2). Over the past few years, Portugal underwent a sharper reduction than the euro area average, and even reduced its gross debt more strongly than the first quartile of the euro area, consistently moving closer to the euro area average.

Table I.1.2 • NFCs' total debt | As a percentage of GDP

	Dec. 13	Dec. 17	Dec. 18	Dec. 19	Dec. 20	Jun. 21
Gross debt						
Portugal	122	100	95	93	101	100
Euro area	91	90	90	90	97	
1 st Quartile	76	64	61	61	67	
3 rd Quartile	123	129	130	130	138	
Debt net of deposits						
Portugal	103	79	74	69	71	70
Euro area	72	67	67	66	66	

Sources: Banco de Portugal and Eurostat. | Notes: Total consolidated debt includes loans, debt securities and trade credits and advances. Euro area figures refer to the total consolidated debt of the 19 countries of the euro area. The quartiles refer to the total consolidated debt ratio figures considering the 19 countries of the euro area.

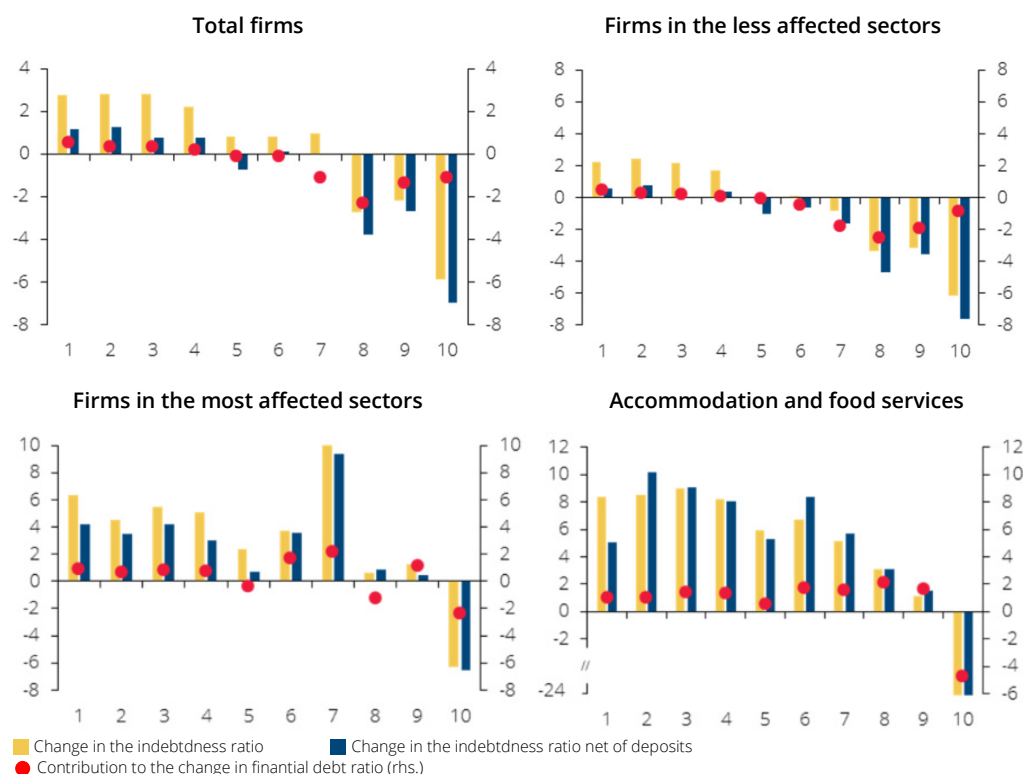
In 2020 credit granted to firms without an indication of financial vulnerability made the largest contribution to the year-on-year change in credit granted to NFCs, although credit granted to firms that became financially vulnerable in 2020 had the highest growth rate. In September 2021, year-on-year credit growth decelerated sharply, but the largest contribution remains that of firms without an indication of financial vulnerability (Box 2). This outcome is consistent with the fact that some firms operating in the most affected sectors had good credit quality and lower indebtedness ratios before the onset of the pandemic. An analysis of the viability of firms' business models that benefited from State-guaranteed loans led to the conclusion that, in 2019, only a small percentage of these firms could be included in the zombie or almost zombie category (Box 3).

In the case of Portuguese NFCs, the increase in funding was accompanied by building up liquidity buffers, while the ratio of indebtedness net of deposits decreased in aggregate terms. In June 2021, the ratio of currency and deposits to financial debt stood at 32.6%, from 27.3% in March 2020, reflecting the average increase in NFCs' liquidity after the onset of the pandemic crisis.

Data at the firm level, shows that the largest growth in the ratio of financial debt to assets occurred in firms that had lower debt ratios before the pandemic crisis. However, when segmenting between sectors more and less affected by the pandemic, the financial debt ratio of the first set of firms increased across the board. In the least affected sectors, the pattern observed is similar to that for the aggregate of firms (Chart I.1.9).

For firms in the most affected sectors, the financial debt ratio and the financial debt ratio net of deposits generally increased, as opposed to firms in the least affected sectors. In the accommodation and food services sector, increases in the two ratios were more pronounced in all indebtedness deciles. In these sectors, there was also an increase in the concentration of firms with higher debt ratios net of deposits (Box 2).

Chart I.1.9 • Change, in 2020, in the debt to assets ratio and in the debt-net-of-deposits to assets ratio, by debt deciles in 2019 | In percentage points



Source: Banco de Portugal. | Notes: Debt to assets ratio is defined as the quotient between financial debt and total assets of the firm. Debt-net-of-deposits to assets ratio is defined as the quotient of the difference between the financial debt of companies and total cash and bank deposits and total assets of companies. Deciles are based on the distribution of the financial debt ratio in December 2019. The most affected sectors are those listed in Decree-Law 22-C/2021 and the sectors eligible for the economic recovery support line - Retomar programme.

State-guaranteed credit lines contributed significantly to the increase in the stock of loans granted to NFCs. The criteria associated with access to these lines, including the ex-ante assessment of the beneficiaries, aimed at excluding firms in financial difficulties before the pandemic crisis from the potential beneficiaries of this measure, limiting the moral hazard and contingent liabilities of the Portuguese State.

State-guaranteed loans were granted with long maturities and grace periods of up to 18 months, reducing their rollover risk in the short term. In October 2021, the average residual maturity of loans stood at about 4.5 years. From the onset of the pandemic until October 2021, the amount of new State-guaranteed loans granted amounted to €8,870 billion, most of which was contracted in 2020 (€7,500 billion). In March 2021 firms were allowed to extend the grace period for the principal for a maximum of nine months and, for the same period, the maturity of the loan, with a the maximum maturity as conveyed in the European Commission's temporary framework for State aid. The extension of the grace period covered State-guaranteed loans worth around €4,100 million, mainly associated with firms in the sectors most affected by the pandemic, for whom access to the extension was automatic.

In October 2021 the total amount of loans to NFCs under moratoria was €2,707 million, corresponding to 3.6% of total credit to this segment, of which 51.3% was concentrated in the sectors most affected by the crisis. This amount relates to loans that benefited from the moratorium from the first three months of 2021 onwards only, which was in force until the end of the year at the latest. The amount of NFC loans under moratoria had decreased from a maximum

of 34.1% of total loans in this segment, in September 2020, to 28.5% in August 2021, of which 36.6% was granted to borrowers operating in the most affected sectors. In particular, the accommodation and food services sector maintained 55% of loans under moratoria in August 2021.

The measures supporting the economy have been adapted to the evolution of the pandemic, in full respect of the European framework. In the course of 2021, measures supporting firms have focused on grants to the activity of the most affected sectors, in contrast to the widespread liquidity support at the onset of the pandemic. In September 2021, non-refundable aid totalled 2% of 2019 GDP, especially support granted under the lay-off (furlough) regime and related measures, as well as the “Apoiar” programme. In the course of 2021, tax measures were also implemented that allowed for the delayed fulfilment of obligations, providing additional support to firms’ liquidity management.

The impact of the end of liquidity support measures, such as moratoria, on the financial situation of NFCs depends on a number of interdependent factors. Notably, the recovery of the economy, the measures that the Government adopted to facilitate the transition process for the most affected firms (by replacing expired measures with new measures) and the success of credit institutions in designing financing solutions/restructuring of loans that foster recovery of viable firms.

The EIB created the Pan-European Guarantee Fund (EGF), with contributions from the Member States (EU27), intending to increase the financing of firms affected by the pandemic crisis, particularly small and medium enterprises (SMEs) and Mid-Caps. Several Portuguese financial institutions have concluded protocols with the European Investment Fund in order to intermediate the granting of EGF-guaranteed loans (usually 70% of the loan). In general, the protocols are not very restrictive regarding the purpose of the loans, which may be working capital. However, a firm’s viability analysis is always required (Section 1.3.6).

In 2021 the Fundo de Capitalização e Resiliência (Fund for Capitalisation and Resilience) was established to strengthen NFCs’ solvency and avoid their over-indebtedness, with an allocation of €1,3 billion. Public investment in restructuring firms’ balance sheets and their recapitalisation may take the form of capital, quasi-capital or debt (including subordinated) instruments and can also include the provision of guarantees to capital instruments underwritten by third parties. Investments must be in line with EU State aid rules, namely State intervention should be temporary and an exit strategy should be established in advance. That fund is covered by the RRP. At the same time, some State-guaranteed credit lines and public loans offer the possibility of converting 20% of the loan into a grant if criteria for preserving employment are met, resulting in additional support for the solvency of these firms.

1.3.2 Households

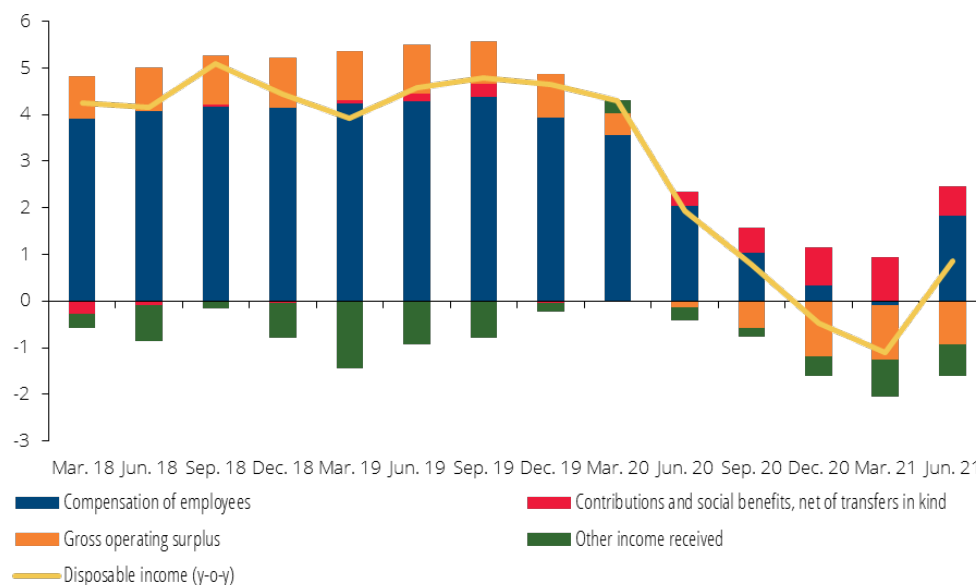
In 2021 household income developed more favourably, even increasing in the second quarter, and savings were higher than in the pre-pandemic period, albeit lower than in 2020. Loans to households continued to increase. Households’ financial resilience continued to be supported by a very positive labour market performance, with a continued fall in the unemployment rate and an increase in the participation rate, as well as the effect of support measures, namely moratoria and support for the maintenance of employment and the income of the unemployed.

In the short term, there was a decrease in unemployment, which is the main risk to households’ financial resilience and is usually associated with income reduction. In the medium term, the persistence of the increase in indebtedness, as observed in 2020 and 2021, together with a potential change in financing conditions, which are currently particularly favourable, may have an impact on households’ financial situations, particularly the most indebted households.

It is therefore essential that credit granted to households takes into account the identified medium-term risks. Likewise, the upward trend in the household indebtedness ratio should not continue, as higher indebtedness levels constitute a vulnerability to adverse shocks.

In the year ending in the second quarter of 2021, disposable income in nominal terms increased year on year (0.9%), counterbalancing the negative changes recorded since the onset of the pandemic (Chart I.1.10). In 2020 the fall in disposable income (-0.5%) was much lower than the fall in GDP (-6.7%) owing to public policies supporting income and employment. This decrease was also much lower than that observed in previous crisis periods.

Chart I.1.10 • Households' disposable income evolution (y-o-y) | As a percentage and percentage points



Source: INE (Banco de Portugal calculations). | Note: (a) Households disposable income in nominal values.

In the first half of 2021, in Portugal and the euro area, household savings as a percentage of disposable income continued to be above that observed in 2019, but decreased compared to the first half of 2020. The increase in household savings since the onset of the pandemic crisis was broadly based across the euro area countries. In Portugal, it translated into an increase in investment in financial assets, especially in bank deposits, which showed, in June 2021, an increase of 3.6 p.p. of the ratio in terms of disposable income, vis-à-vis June 2019 (Table I.1.3).

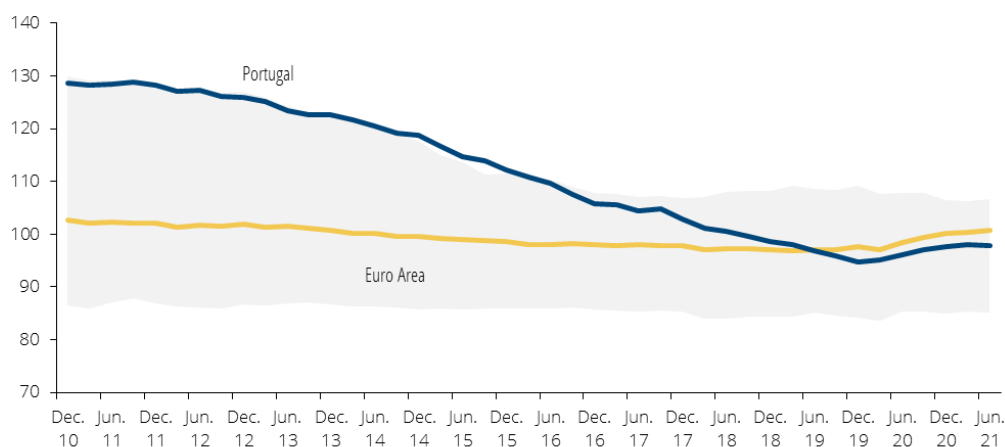
Table I.1.3 • Source and application of household funds | As a percentage of disposable income

	2018	2019	2020	2018 H1	2019 H1	2020 H1	2021 H1
Current savings in the euro area	12.7	13.3	19.7	13.9	14.8	22.2	21.3
Current savings in Portugal	6.8	7.2	12.8	4.9	5.5	13.5	10.9
Assets							
Investment in real assets ^(a)	4.8	5.0	4.6	4.7	5.2	4.8	5.0
Balance of capital transfers	-0.6	-0.4	-0.5	-0.5	-0.3	-0.6	-0.4
Net acquisition of financial assets	3.2	3.8	10.8	1.1	2.6	11.0	9.6
o.w. Currency and deposits with resident banks	5.9	3.6	8.2	5.1	4.9	10.5	8.7
Liabilities							
Financial debt ^(b)	0.4	1.0	1.9	0.1	0.7	0.8	3.0
Net purchases of other financial liabilities ^(c)	0.2	0.2	0.3	0.3	1.3	0.9	0.3

Sources: Banco de Portugal, Eurostat, INE (Banco de Portugal calculations). | Notes: Consolidated figures in nominal terms. Half-yearly figures correspond to the half-year. (a) Corresponds 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. (b) Corresponds to the sum of loans and debt securities. (c) Other financial liabilities include liabilities associated with all financial instruments, as defined in national financial accounts, except loans and debt securities (financial debt). It also includes the statistical discrepancy between the balances of net lending/net borrowing in the capital account and in the financial account.

In 2020, households reversed the pre-pandemic downward trend in their indebtedness ratio in terms of disposable income. However, this ratio remained below the euro area average. In the first half of 2021, the ratio remained broadly the same as that observed at the end of 2020 (Chart I.1.11). Increased leverage boosted the impact of possibly less favourable developments in the labour market and also from the normalisation of monetary policy, reflected in the financing conditions. However, the decrease in indebtedness observed in the pre-pandemic period and the improvement in the risk profile of new borrowers, as a result of the macroprudential Recommendation acted as mitigating factors of such an impact.

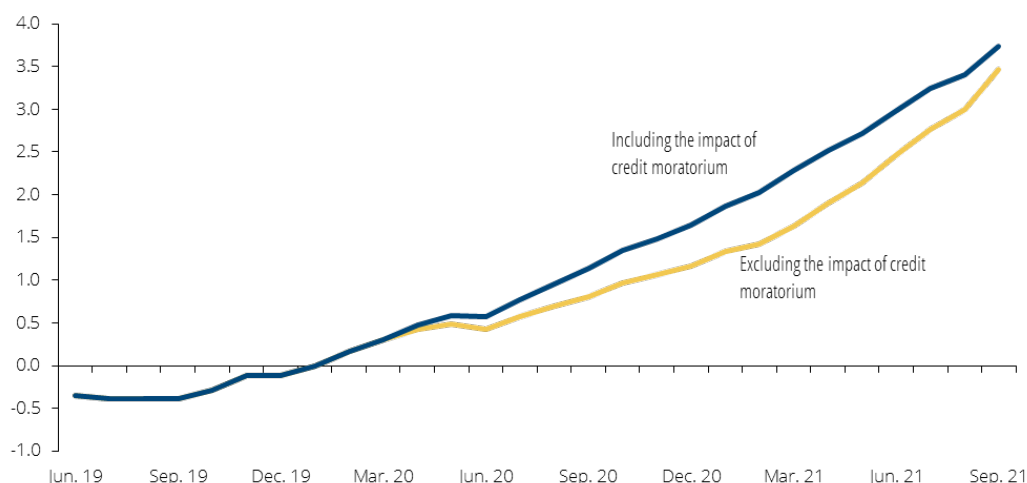
Chart I.1.11 • Evolution of the indebtedness ratio of households in the euro area and in Portugal | As a percentage of disposable income



Sources: Banco de Portugal, Eurostat (Banco de Portugal calculations). | Notes: Non-consolidated figures. The blue area corresponds to the interval between the third and the first quartile of the distribution for a set of euro area countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Slovenia and Spain).

In September 2021, total loans granted to households accelerated (annual rate of change of 3.1%), particularly loans for house purchase (annual rate of change of 3.7%). Suspension of payments due to the moratorium (repayments and, in some cases, interest) is estimated to have contributed 0.4 p.p. to growth in loans for house purchase. As private moratoria expired and the public moratorium termination date was approaching, their contribution to the annual rate of change has been decreasing (Chart I.1.12). The acceleration in new loans, supported by low interest rates and an improved labour market, is the key factor behind the growth of this aggregate (Section 2.2).

Chart I.1.12 • Impact of the credit moratorium on the annual rate of change of loans for house purchase rate of change in housing credit | As a percentage



Source: Banco de Portugal | Note: The annual rate of change corresponds to the year ended in the reference month.

Temporary measures taken in response to the pandemic's impact on households' and firms' financial resilience are gradually being withdrawn. On 30 September 2021, the public moratorium on the repayments ended for most loans. The amount of loans to households under moratoria has been declining from a maximum of 17.1% in September 2020 to 11.1% in August 2021, essentially regarding loans for house purchase. In October 2021, a total amount of €424 million of loans to households was still under moratoria. These moratoria, with a maximum maturity of nine months, will have expired by the end of 2021.

With the re-establishment of debt service for all loans, contagion effects may occur in default on loans to households for various purposes. (Box 4). Nevertheless, a significant impact on households' default is not expected and it will tend to spread over time. For private moratoria already expired, the impact on increased default has been small (Section 2.3), as a significant share of borrowers probably joined the moratorium for precautionary reasons. The same rationale may have supported part of the build-up of bank deposits observed in this period, which constituted a buffer for resuming regular loan payments.

In advance of exiting the credit moratorium, the Portuguese authorities adopted measures to support consumers in financial difficulties. In particular, the legal and regulatory framework for managing credit at default risk or past due (PARI and PERSI), in force since 2013, was strengthened by requiring credit institutions to take a more proactive approach to prevent arrears.

1.3.3 General government

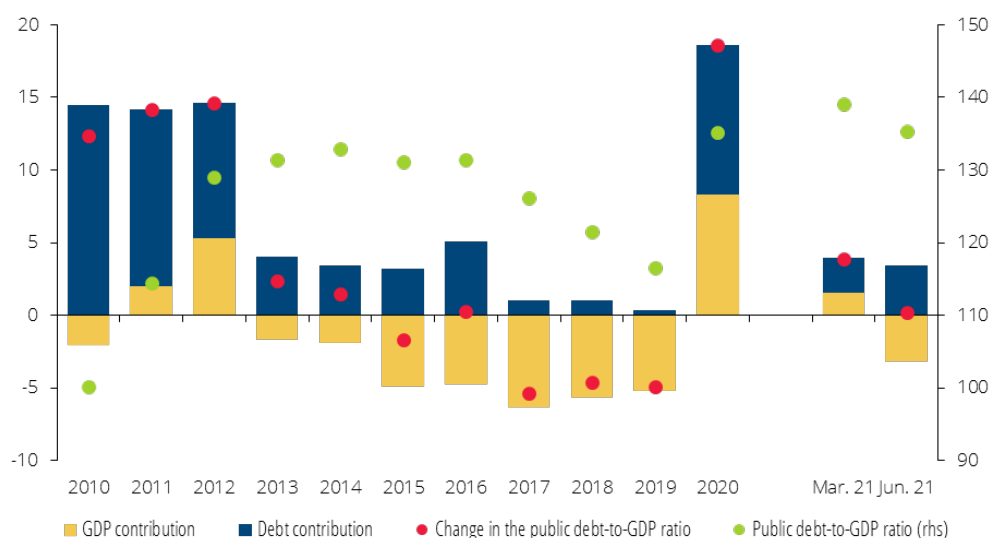
The general government resumed its downward trend of indebtedness as a percentage of GDP in 2021. Its financing costs remained particularly low amid continued favourable financing conditions. Since the onset of the pandemic crisis, the sector has significantly

augmented its exposure to NFCs through an increase in State guarantees, one of the measures supporting firms in the context of the pandemic.

The increase in financing costs and the need to adopt public support measures for economic agents in a situation of a worsening of the pandemic constitute an added risk to the reduction path currently envisaged for the general government debt to GDP ratio. Pursuing a credible fiscal consolidation plan is important in order to mitigate such a risk, particularly by reverting the increase in permanent expenditure above the GDP trend.

At the end of the first half of 2021, the public debt ratio remained virtually unchanged compared to the end of 2020, accounting for 135.4% of GDP (Chart I.1.13). In 2020 this ratio increased by 18.6 p.p. to 135.2%, interrupting the reduction observed since 2016. With the pandemic crisis outbreak, the public deficit increased to 5.8% of GDP, amid a sharp contraction in GDP in nominal terms (-6.7%). This increase was broadly based across the euro area economies, with the average ratio increasing by 12.9 p.p. to 90.1% of GDP.

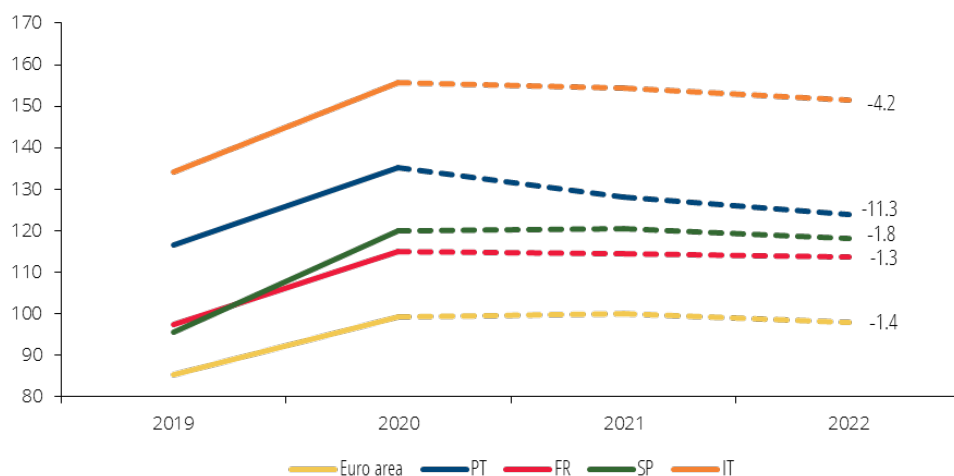
Chart I.1.13 • Contributions to the change in public debt



Sources: Banco de Portugal and INE

Available projections for Portugal (European Commission and IMF) point to a resumption of the downward trend in the public debt ratio, a result which is not shared by all euro area countries (Chart I.1.14).

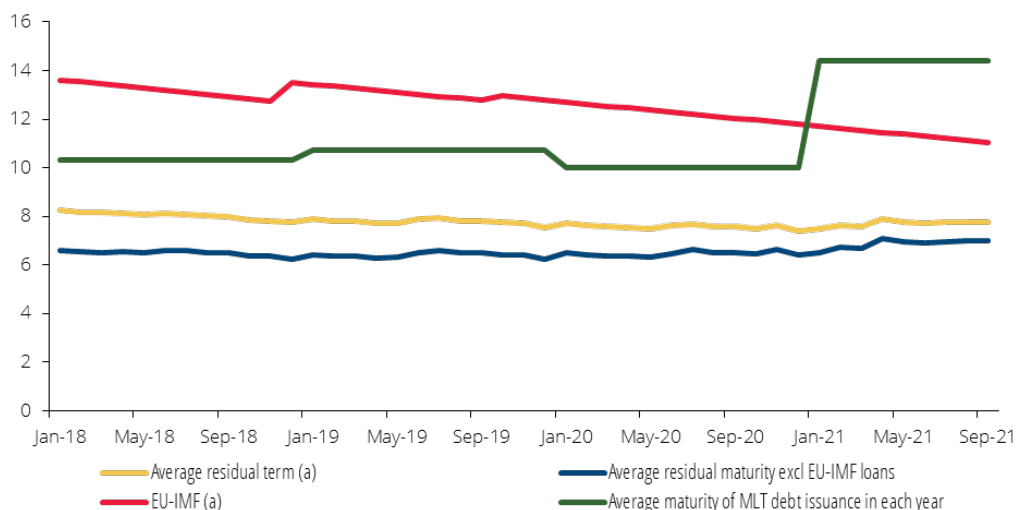
Chart I.1.14 • Projections for the evolution of public debt | As a percentage of GDP



Source: European Commission. | Notes: European Commission Autumn 2021 projections published on November 11, 2021. Values (in percentage points) refer to the expected change in the debt ratio between 2022 and 2020. PT - Portugal, FR - France, SP - Spain, IT - Italy.

Throughout 2021 financing costs remained at historically low levels. Despite the increase in the amount of debt, interest expenditure has continued to decline, owing to the very low interest rate environment and the compression of spreads paid by Portugal. In addition, the issuance of debt securities with longer maturities and bond swap operations allowed for an increase in the average debt maturity and a reduction in the short-term refinancing risk (Chart I.1.15).

Chart I.1.15 • Average residual maturity of public debt | In years



Source: Instituto de Gestão do Crédito Público. | Note: (a) The average residual maturity takes into account the refinancing of EFSM loans yet to be realised.

Fiscal consolidation is needed to support the expected normalisation of monetary policy and the resulting increase in financing costs (Section 1.2). The ECB's extraordinary public and private debt purchase programme (PEPP) is scheduled to end in March 2022, maintaining the reinvestment of redeemed securities. The ECB has already started to reduce the pace of purchases moderately. In case of market pressures to increase yields, the reduction in flexibility now ensured by the PEPP

could pose a risk to Portugal. However, the ECB has already reiterated its intention to support economic recovery and avoid the fragmentation of the public debt market in the euro area.

The criteria for granting State-guaranteed loans and the ex-ante assessment of beneficiaries mitigate the risk on contingent liabilities. An analysis of the viability of firms' business models that benefited from this support led to the conclusion that, in 2019, only a small percentage of these firms could be included in the zombie or almost zombie category (Box 3). This outcome is consistent with the fact that some firms operating in the most affected sectors had good credit quality before the onset of the pandemic. In addition, collateral enforcement has been very low. In terms of the impact on the budget balance, an estimate of the losses associated with these guarantees was already recorded in 2020. Therefore, future collateral enforcements of COVID-19 support lines granted in 2020 will not be recorded again as general government capital expenditure, up to the limit of EUR 326.1 million.

Over the next few years, the implementation of the RRP, using the funds allocated to Portugal under the "Next Generation EU" (NGEU), may contribute to reducing the debt-to-GDP ratio. In addition to the structural impact on economic growth, the RRP allows public and private investments without imposing burdens on the deficit and public debt in the short term. However, in implementing the RRP, the challenges inherent to the very short time window for using the funds (2021-26) and compliance with intermediate targets should be taken into account.

1.3.4 Residential and commercial real estate market

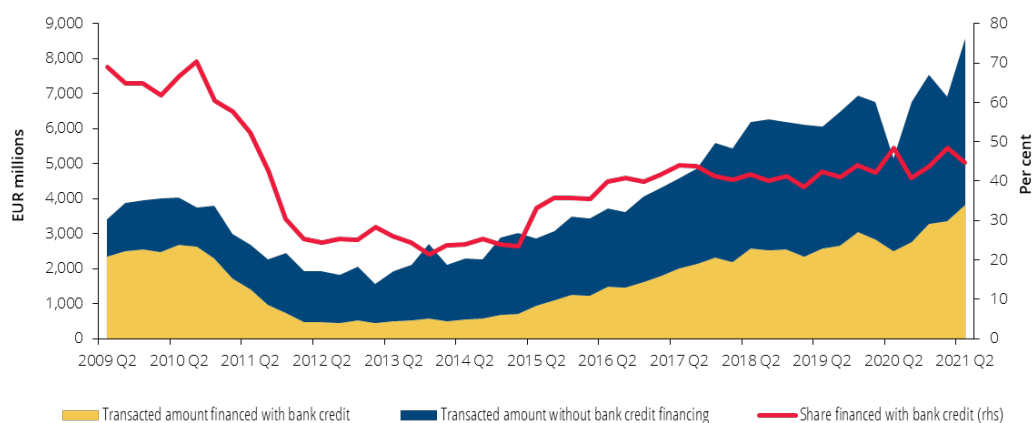
The residential real estate market featured an increase in prices and number of transactions, in contrast to the commercial real estate market where no clear-cut trend could be seen, with lower prices and volume of transactions in some segments. Signs of price overvaluation remained subdued, with some indicators becoming stable after recently peaking. Credit increased, but banks' indicators of credit quality and real estate market exposure show the banking sector's resilience against potential corrections in this market.

In Portugal, as in Europe, residential real estate prices continued to increase during the pandemic period, despite slowing down. In the first and second quarters of 2021, the housing price index grew by 5.2% and 6.6% year on year. In the euro area, growth in the second quarter of 2021 was almost identical (6.8%).

The number and amount of residential real estate transactions continued to increase in the first half of 2021, by 12% and 27% respectively compared with the same period in 2019, and 26% and 30% respectively compared with the same period of 2020. The share of residential real estate transactions financed by domestic credit remained much lower than in the period prior to the sovereign debt crisis (66% in 2009), at 45% in the second quarter of 2021 (Chart I.1.16).

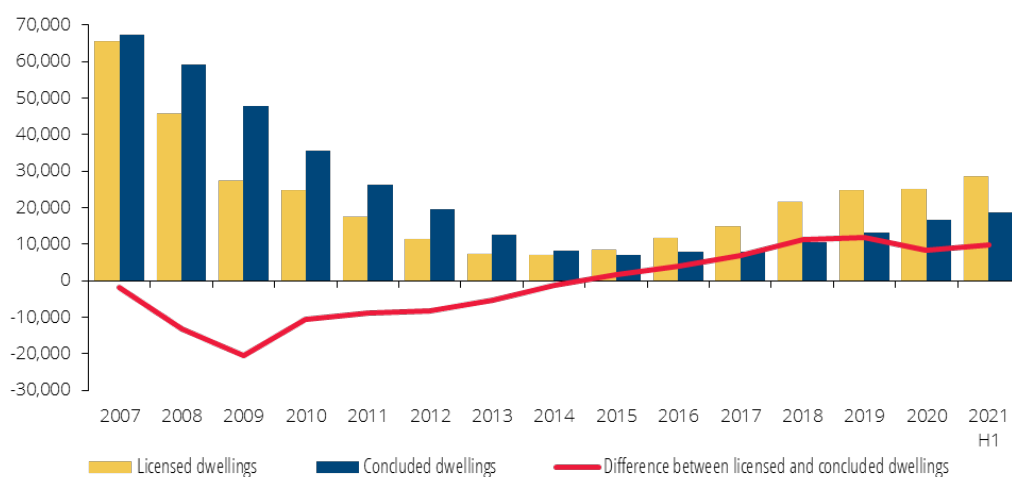
Housing supply shortages, reflecting low construction activity in the years prior to the pandemic crisis, contributed to the increase in residential real estate prices. However, the construction sector remained resilient throughout 2020 and 2021, showing a recovery in building permits (Chart I.1.17). In the first half of 2021, Gross Value Added (GVA) and investment in construction increased by 4.1% and 3.2% year on year respectively (3.1% and 1.6% in 2020). Despite this growth, the increase in construction costs observed in recent months, coupled with labour and materials shortages, is an additional factor of upward pressure on residential real estate prices, but not of overvaluation.

Chart I.1.16 • Transactions in dwellings *versus* new housing loans



Sources: Banco de Portugal and Statistics Portugal.

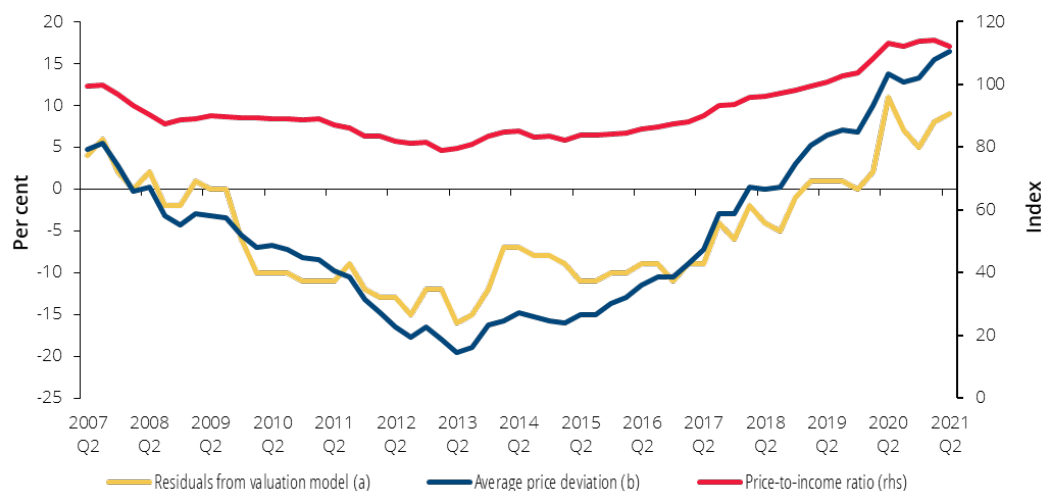
Chart I.1.17 • Licensed and concluded dwellings in new construction for family housing | Units



Source: Statistics Portugal (Banco de Portugal calculations). | Notes: quarterly data annualized.

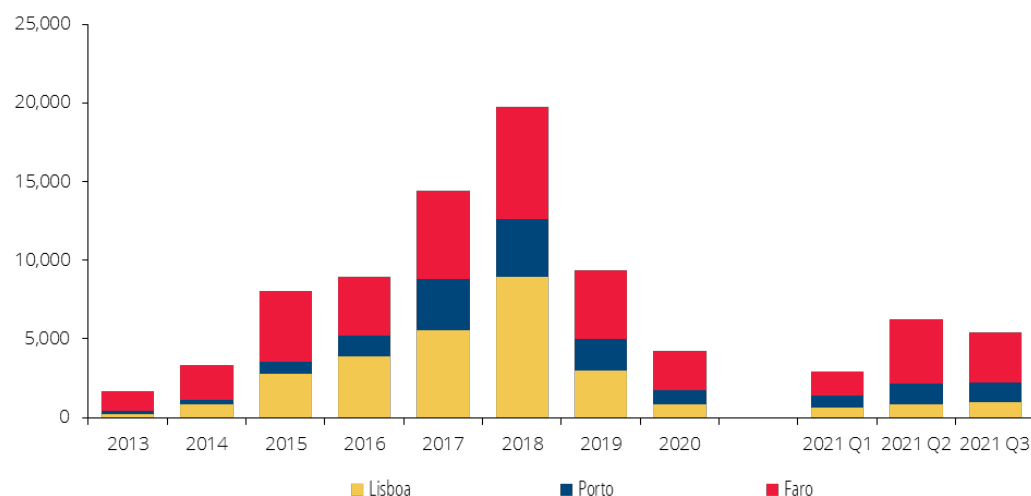
Available estimates suggest some overvaluation of residential real estate since 2018, in aggregate terms, but it has receded in the most recent periods (Chart I.1.18). Of the three indicators, two stabilised or even decreased in 2020 and 2021. However, these estimates do not include key factors such as demand by non-residents and demand for tourism activities, which contributed to price developments in this market in the run-up to the pandemic crisis and should be taken into account when assessing an indicator of market overvaluation. In 2019 non-residents accounted for 13% of the total value of real estate purchases in Portugal and growth in the tourism sector in recent years intensified demand for residential real estate. The increase in new local accommodation registrations contributed to a buoyant market, with an impact on the valuation of residential real estate assets (Chart I.1.19), but of a limited magnitude (see the Box entitled “Impact of non-resident investment and tourist accommodation on local house prices”, *Economic Bulletin*, December 2021).

Chart I.1.18 • Valuation measures of house prices in Portugal



Sources: European Central Bank and OECD. | Notes: Positive values signal the existence of overvaluation. (a) The residuals from the valuation model result from the estimation of a model of house prices based on their economic fundamentals. (b) The average price deviation is a synthetic measure based on four valuation metrics considering indicators both related to housing demand and to asset pricing methods. The price-to-income ratio corresponds to the ratio between the nominal house price index and nominal disposable income per capita.

Chart I.1.19 • New local accommodation registrations | Units



Source: National Tourism Registration (Banco de Portugal calculations). | Notes: quarterly data annualized.

Demand for housing by non-residents declined from 2019. Foreign direct real estate investment grew by 8.2% in 2020 (10% in 2019), but in the first half of 2021 it fell by 12% from the same period in 2019. Investment in real estate through the Golden Visa regime continued to be significant in 2020 and 2021, possibly anticipating the end of the regime in the Lisbon, Porto and Algarve regions scheduled for the beginning of 2022. Since it started in 2012, this scheme has accounted for 40% of foreign direct investment in the real estate sector.

In recent years, growth in residential real estate prices in Portugal occurred alongside contained developments in housing loans, contrary to other euro area countries. However, the stock of loans for house purchase accelerated over the course of 2021 and in September grew by 3.7% compared with the same period a year earlier (3.5% excluding the effect of the moratoria), with a

marked increase in new loans for house purchase. These figures have been moving closer to those observed in the euro area. In December 2019, the annual rate of change of the stock of housing loans in Portugal stood at -0.1%.

Housing loans should not become key for price developments in residential real estate, preventing the creation of a spiral between credit and prices in this market.

The current distribution of the housing loan portfolio's loan-to-value (LTV) ratio reflects the banking sector's resilience to a correction in house prices. As at June 2021, around 90% of the financial institutions' housing loans portfolio had an LTV of less than 80% (Section 2.4). However, there has been a reduction in the average interest rate on new loans for house purchase, which is among the lowest of the euro area countries where variable rate loans are predominant.

In Portugal, as in the euro area, prices for some commercial real estate sub-sectors proved less resilient during the pandemic, although there were no signs of overvaluation. According to the Morgan Stanley Capital International (MSCI) index, commercial property prices fell by 3.8% in 2020. In turn, Statistics Portugal's Commercial Property Price Index (*Índice de Preços das Propriedades Comerciais*) increased by 1.7% in 2020. This discrepancy may be due to differences in the real estate sample used, which, in the case of the MSCI, is largely composed of retail real estate in prime locations.

Underlying developments in the aggregate commercial property price index is a large diversity across sub-sectors. The retail segment devalued in 2020 due to restrictions on mobility and in-person sales. However, changing consumption habits and increased appreciation of convenience and proximity stores contributed to the recovery of retail sales. In the office segment, the shortage of quality supply in Portugal contributed to price and rental resilience in the prime segment, despite the uncertainty introduced by the possibilities of new distance-working practices. As in the year of 2020, the deterioration of the pandemic situation in early 2021 negatively affected the hotel sector, with uncertainty still surrounding the normalisation of demand levels. The decline in business tourism, caused by an increase in remote working, is expected to have a more limited impact on the Portuguese hotel sector, since business tourism is less relevant in Portugal than at an international level (in 2016, business tourism represented only 8% of tourism in Portugal).

Notwithstanding the pandemic, investment in commercial real estate remained significant, totalling €2.7 billion in 2020 and €1.2 billion until September 2021, compared with €3.3 billion in 2019. In 2021, international investors accounted for 70% of the investment volume.

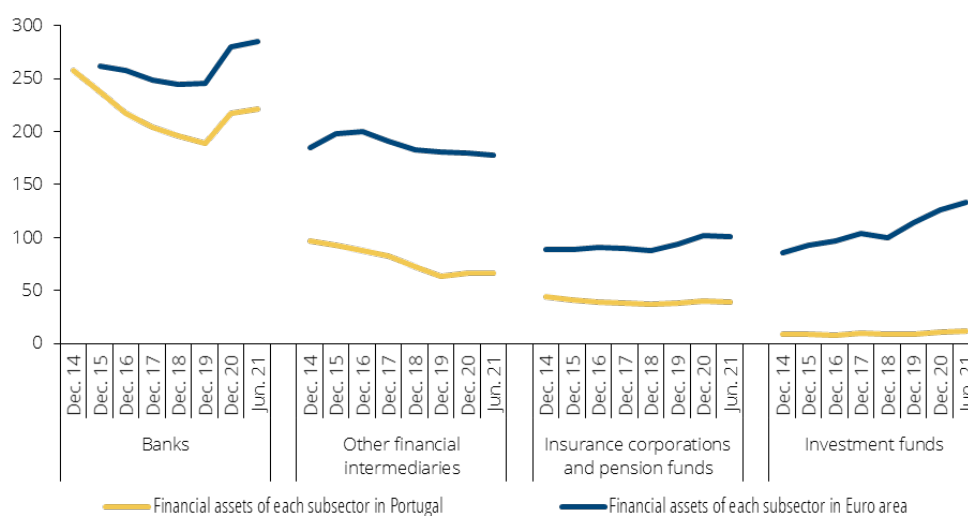
A correction in commercial real estate prices should have a reduced impact on the stability of the banking sector considering that the on-balance sheet exposure is limited and considerably lower than that of residential real estate (Table I.2.13).

1.3.5 Non-banking financial sector

The non-bank financial sector in Portugal continues to account for a small share in financing the economy compared to the euro area and the share of the banking sector.

In June 2021, the financial assets of the non-bank financial sector represented around 117% of GDP, compared with around 220% of GDP in the banking sector (in the euro area these figures were 412% and 285% respectively) (Chart I.1.20). Thus, any disruption to the non-bank financial sector would have a small direct impact on financial stability in Portugal.

Chart I.1.20 • Relative size of the financial system subsectors and direct interlinkages
– Portugal and euro area | As a percentage of GDP



Sources: Banco de Portugal and European Central Bank. | Note: Total non-consolidated assets of each sector were considered. To calculate the exposure, the following financial assets were considered: deposits, debt securities, loans, shares and other participations of investment funds and quoted shares. Other financial intermediaries refer, for simplification, to the sum of the following subsectors: S125 – Other auxiliary financial intermediaries except SSFP, S126 – Financial auxiliaries and S127 – Captive financial institutions and lenders. In Portugal, this sector is mostly made up of captive financial institutions and lenders. For more details on this classification, see “Disaggregation of institutional sectors – SEC2010” of the Statistical Bulletin.

The insurance and pension fund sectors are exposed to macroeconomic risks in their environment, as well as to the materialisation of an abrupt correction in the financial market, resulting notably from an increase in risk premia. Given the business model of these sub-sectors, there is a predominance of debt securities, some private, but mainly public, in investment portfolios, in order to meet the time horizon of their liabilities. This exposes sub-sectors to changes in financial market conditions, although these are mitigated by the moderate duration profile of the debt portfolio. Moreover, in the Solvency II regime, while assets are valued at market price, the value of liabilities is determined with risk-free discount rates, which are at very low levels. In the Portuguese insurance sector, there is also a material exposure to private debt securities at the threshold of investment-grade, which increases vulnerability to a potential scenario of downward credit revisions and financial market fragmentation, amid uncertainty surrounding the economic recovery and inflationary pressures.

The insurance and pension fund sectors continue to be under pressure from the low interest rate environment. The very low interest rate environment puts pressure on their solvency positions and their profitability, a vulnerability to which institutions have been adjusting, seeking to pass-through the very low yield environment to their products. Like other segments of the financial

system, these sectors still face challenges associated with the digitalisation of business, in relation to both customers and operations, increasing the relevance of cybersecurity. Also noteworthy are climate change-related risks, notably transition risks on investment portfolios and the impact of physical risks on the insurance sector, given the significant exposure of its business model to losses arising from natural disasters.

In June 2021, investment funds in Portugal accounted for about 12% of GDP, in contrast to around 130% of GDP in the euro area. Even by adding the non-financial assets in investment funds, the weight does not exceed 17% of GDP. At the end of September 2021, units accounted for €33.2 billion, the highest value since April 2008. The main risk associated with this sector relates to possible liquidity issues. It should be noted, however, that in the case of securities investment funds, for the past year there have been more units issued than redemptions.

1.3.6 Banking system

In 2021 the banking system continued to recover the profitability indicators affected by the pandemic crisis, accompanied by a reduction in the NPL ratio. The moratoria, one of the pillars of the country's financial resilience, were monitored closely by the banking system, which, over the course of the year, prepared the transition of borrowers at the end of the moratoria. Available indicators, which are still limited, suggest that this transition is taking place in an appropriate manner, with a slight increase in default by firms after the end of the moratoria. The banking system is expected to face the challenge of digitalisation, especially in terms of cybersecurity, and the challenges associated with the transition to a sustainable economy, while avoiding disruptive situations.

The banking system has kept financing the economy, taking advantage of the support measures adopted during the pandemic crisis and of the sector's adjustment process in recent years. However, it is constrained by the evolution of the pandemic and by structural challenges to its activity. In particular, (i) the possibility of the deterioration of asset quality through the credit risk materialisation, due to either the impact of the pandemic or a possible rise in interbank market interest rates; (ii) the devaluation of financial assets in the portfolio, in particular the public debt portfolio, resulting from an increase in long-term interest rates; (iii) the difficulty of securing adequate profitability in a domestic credit market with limited expansion potential amid increased competition from other intermediaries in more profitable segments; and (iv) the risks of digitalisation, including cybersecurity, and of the transition to a sustainable economy.

The NPL ratio continued to decrease in the first half of 2021. Sales and write-offs remained the main contributors to the reduction in NPLs (Section 2.3). However, in the short to medium-term NPLs are expected to increase, albeit moderately. It is essential for banks to carefully assess their portfolio's credit risk and the timely coverage of potential losses.

Existing data do not yet make it possible to determine the impact of the end of the moratorium on the banking system's asset quality. In the first half of 2021, loans under the moratorium showed some credit risk deterioration, especially in NFCs (Table I.2.12). Banks, as indicated by the supervisor, have been closely monitoring loans under a moratorium, providing solutions aimed at safeguarding borrowers' debt servicing capacity, including the renegotiation and restructuring of credit agreements. The public moratorium ended in September 2021 for most loans. Information gathered from major banks suggests that default risks are better controlled than initially expected, despite the remaining uncertainty. Overall, the household sector has proven to be more resilient, while firms, especially in the most vulnerable sectors, may experience more difficulties as they resume their debt servicing. In this regard, the legal and regulatory framework for managing credit at default risk or past due (PARI and PERSI), in force since 2013, was strengthened in August 2021, by requiring credit institutions to take a more proactive approach to prevent arrears, including the need for banks to monitor the difficulties of debtors that benefited from public moratorium.

A viability assessment and a proactive approach to finding solutions that contribute to the recovery of borrowers are key to the efficient management of credit risk. In the case of viable but distressed borrowers, banks may play a key role in their recovery through the timely renegotiation and restructuring of credit operations. Banks have at their disposal instruments with favourable conditions that allow them to support the recovery of borrowers, such as the Retomar credit line and the EGF-guaranteed loans (Table I.1.4). However, the improvement in the financial situation of firms must also be achieved by strengthening their equity.

Table 1 • Retomar credit line and EGF-guaranteed loans

	Retomar credit line	EGF-guaranteed loans
Borrowers covered	Viable NFC of the most affected sectors with loans under the moratoria ^(a)	Small and Medium enterprises (SME) and <i>Mid-caps</i> ^(b)
Scope	Credit institutions	Banks which have signed an agreement with EIF under the EGF
Purpose	Restructuring operations, partial refinancing of loans under moratoria and/or additional loans ^(c)	Additional financing to mitigate the economic impact of the COVID-19 pandemic and to promote medium-term growth and investment. In general, these operations are intended to firm's working capital needs and investment in tangible and intangible assets
Guarantee	Up to 25% of eligible operations to be restructured and of additional liquidity credit lines, and up to 80% of the credit used to refinance eligible operations. Maximum credit line amount of 10 million euros by borrower; over 1 million euros only when loans involved are covered by mortgage collateral with LTV of 80% or greater	70% of the loan amount until the portfolio limits agreed with the EIF. In some cases, banks defined maximum loan amounts by activity sector and/or by firm size ^(d)
Maximum amount of the guarantees (M€)	1000	3456 ^(d)
Duration	31 st December 2021	31 st December 2021 (can be extended)

Sources: Banco de Portugal, European Investment Bank (EIB), Banco Português de Fomento, European Investment Fund (EIF) and internet sites of the major Portuguese banks. | Notes: The table includes the main features of the guaranteed credit lines. Specific lines, such as EIF credit lines for agriculture or agro-industrial firms resulting from a conclusion of a Protocol between the Portuguese government and the EIB/EIF under the Rural Development Program (RDP2020), are not included. (a) Other conditions apply, such as the fall in operational turnover of 15% or greater in 2021 Q2 vis-à-vis 2019 Q2 (or in the last available 3 months of 2021 when compared with the same period in 2019); cannot not be considered companies in difficulty at 31st December 2021; at the date of contracting the guarantee do not have any default with the banking system for more than 90 days or are not in insolvency; have their situation regularized with the Tax Administration and Social Security. (b) The eligibility criteria includes, among others, that the firm has no defaults with the banking system, Tax Administration and Social Security, is not in a situation of non-Exclusion or insolvency, demonstrates a balanced economic and financial situation and its activity is carried out in Portugal or in another adhering Member State to the EGF. (c) The amount of funding cannot exceed 25% of turnover in 2019 or double the salary bill. In the case of the Retomar credit line, it applies to restructuring operations. (d) Maximum amount of guarantees granted for the major Portuguese banks. It includes the amounts of uncapped and capped guarantees. In the case of the capped guarantees, the value is obtained from the application of the cap rate to the amount of guarantee to be provided by the EGF. The total amount of guarantees attributable may exceed the guarantee amount provided by Portugal to the EIF in the creation of the EGF.

The favourable evolution of the pandemic contributed to an improvement in the banking system's profitability in the first half of 2021, although the outlook remains constrained by economic uncertainty and structural challenges to banking activity. Despite the increase in the first half of

2021, return on assets remained lower than in 2019 (Section 2.1). This improvement was not accompanied by an increase in net interest income. The decrease in credit impairment caused a reduction in the loan loss charge ratio in line with European peers. However, banks should take into account the uncertainty about future developments of credit risk in the loan portfolio by ensuring that impairments match the expected losses at any point in time.

In view of the challenges of profitability generation, of digitalisation and competition from new intermediaries with a tech background, banks should continue to increase their operational efficiency. The share of operational costs in average assets has been falling since 2013, pointing to greater efficiency. Banks should continue to adapt their business model to the environment of digitalisation of financial services and to increased competition from new players in the business areas usually provided by the banking system, such as payment systems. However, the reduction in operational costs should not jeopardise investment in risk management functions, in particular compliance with banking conduct regulations, control of money laundering and terrorist financing and cybersecurity.

The adoption of digital transformation plans is critical to maintain the sector's competitiveness in an environment where digitalisation is increasingly dominating business models. The Banco de Portugal has been monitoring the digital transformation plans of Portuguese banks. Box 5 provides an overview of this topic, underlying the projections reported by banks under the funding and capital plans for 2020-23.

Cyber resilience has become critical for banking. Assessing the banks' ability to defend themselves from a potential materialisation of cyber risks is one of the supervisory priorities of the SSM/ECB and of the Banco de Portugal. With digitalisation, there has been an increase in points of entry for cyberattacks, whether through the increased use of digital channels by customers, remote work at banks or the increased use of IT service providers. This concern extends to supply-chain attacks, as reported by the European Union Agency for Cybersecurity.

A cyber risk event can be systemic. Given the interlinkages between institutions and the use of common IT service providers, the possibility of systemic risks is not negligible. A broader analysis and mitigation of risks is therefore required. In addition, the information available on cyber risk events remains fragmented and non-harmonised, hampering a cross-sectional view, including between supervisors.

The normalisation of monetary policy by the ECB in the medium term will have implications for the banking system's profitability prospects. Rising interest rates in the interbank market will tend to have a positive impact on net interest income. However, the resulting increase in debt service may lead to the credit risk materialisation and the need to build up impairment provisions.

The increase in long-term interest rates will have an effect on the valuation of the portfolio's financial assets. The increase in the weight of the public debt securities portfolio in recent years, together with the lengthening of the average maturity, increased the sensitivity of Portuguese banks to changes in yields (Section 2.4). However, the increase in this exposure took place through the amortised cost portfolio, mitigating the impact of yield increases, since changes in value are only reflected at the time of sale. The issue cost of instruments eligible for compliance with the minimum requirement for eligible liabilities and own funds (MREL) will also tend to increase.

Despite the recovery observed, the prospects of continued low profitability constrain the accumulation of capital in the sector. However, the capital position has been strengthened in recent years, allowing banks to accommodate potential losses resulting from the materialisation of risks stemming from the pandemic crisis.

Climate-related risks may affect financial stability over the next few decades. Regulators and supervisors have intensified the call for financial institutions to integrate climate-related and environmental risks into their risk management policies and assessments of resilience to physical and transition risks.

The European framework for prudential regulation and supervision for credit institutions is evolving and adapting to ESG risks. In prudential regulation, the microprudential framework has been adapted to contemplate ESG risks in its three pillars. Important initiatives will take place in the short term, and in 2022, the ECB will conduct the supervisory stress test on climate-related risks and a thematic review of the environmental and climate-related risk management practices of the institutions under its supervision, the results of which may be incorporated into the SREP. From the macroprudential point-of-view, the EBA and the ESRB are expected to support the European Commission's assessment by 30 June 2022 on existing macroprudential tools for managing financial stability risks related to climate change, among others. By the end of 2022, a report and, if appropriate, a legislative proposal for the revision of the banking macroprudential framework will be presented.

In addition, on 6 July 2021 the European Commission adopted measures to strengthen the EU's ambition on sustainable finance and fighting climate change, which comprise (i) the above-mentioned new Sustainable Finance Strategy, (ii) a proposal for a European Green Bond Standard and (iii) a Delegated Act on information to be disclosed by financial and non-financial corporations on the sustainability of their activities under Article 8 of the Taxonomy Regulation.

Despite these developments, the process of adapting the European regulatory and supervisory framework to climate-related and environmental risks will take time. More so because it requires a process of (i) "interpretation" and integration into the prudential taxonomy of the scientific taxonomy on risks related to climate change, and (ii) to identify the channels of transmission of such risks to the financial system, namely how such risks translate into the "conventional" risk classes set out in the prudential framework and supervisory activities (e.g. credit risk, liquidity risk, market risk and operational risk).

The European economic recovery process should not sideline the importance of completing the Banking Union. The current focus of policymakers on adopting economic recovery and resilience measures in Member States should not be seen as an alternative to efforts to complete the Banking Union. Strengthened European integration, driven by these initiatives, should aim at the establishment of a European Deposit Insurance Scheme (the third pillar of the Banking Union) that envisages a prior reduction of risk but also the full mutualisation of losses. It is important to ensure the alignment in Europe between the responsibility for decision-making and the financing of decisions – paramount to mitigate the nexus between banks and their sovereigns –, the protection of depositors and their confidence in the system, to decrease fragmentation risks and achieve a fully-fledged Banking Union that promotes financial stability in the Union and each Member State.

The Banco de Portugal strengthened the prevention of money laundering and terrorist financing. The Banco de Portugal participated in supervisory colleges dedicated to the preventive supervision of ML/TF, issued information for the private sector and initiated work on the revision of the risk-based supervision model, under the framework developed with the support of the European Commission.

The supervisory activity concluded crosscutting inspections of the ML/TF systems of two supervised financial entities, reviewed the annual reports submitted in 2021 regarding this topic and verified compliance with measures prescribed.

On 20 July 2021 the European Commission presented a package of legislative proposals – the AML Package – which aims to strengthen the EU's AML/CFT regulatory and institutional framework in response to weaknesses exposed by money laundering cases in European banks brought to the public in recent years. These proposals are expected to further harmonise and strengthen supervisory practices, alongside the decline in regulatory arbitrage resulting from the different national approaches to money laundering and terrorist financing risks.

1.4 Macroprudential policy

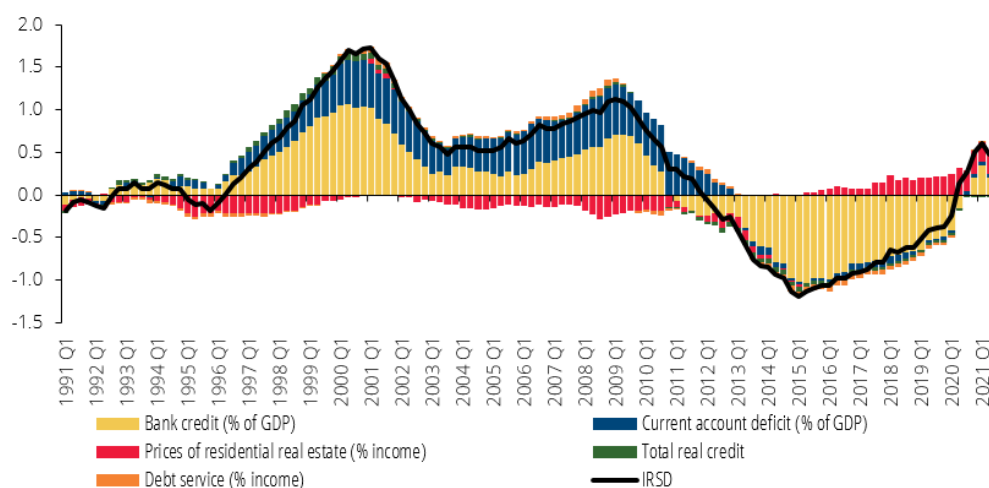
Growth-at-Risk (GaR), a “tail risk” measure, and the systemic risk indicator for Portugal evolved positively with the economy. In the pre-pandemic period, GaR signalled GDP growth over a one-year horizon with a probability of 90%, indicating low risk. This outcome was in line with expectations for economic activity at the end of 2019. At the start of the pandemic, “tail risk” increased and GaR was negative for the one-year projection horizon, a situation that was gradually reversed. The latest projections for GaR are positive, reflecting buoyant economic activity. During the period under review, the year-on-year rate of change in GDP is the main factor behind the improvement dynamics seen in GaR.

In 2021 the domestic systemic risk indicator (d-SRI) partially reversed its path, following sharp growth, reflecting the mechanical effect of a fall in economic activity during the pandemic crisis. This indicator had been on an upward path since the first quarter of 2015, driven by growth in residential real estate prices and an increasingly less negative contribution from bank credit up to 2019 (Chart I.1.21). With the pandemic crisis, in the first quarter of 2020 the upward path of the d-SRI accelerated considerably with the significant and positive contribution from bank credit growth as a percentage of GDP that was substantially influenced by a sharp drop in activity.

More recently, in the second quarter of 2021, developments in the d-SRI had already been reversed. As economic activity gradually normalises, the reversal of the d-SRI is expected to become more significant over the course of 2021 and 2022. Once the mechanical effect of the fall in GDP during the pandemic has been eliminated, the future trend of this indicator will chiefly depend on developments in the residential real estate market and on the indebtedness of firms and households.

Therefore, some caution should be exercised when using this indicator to assess the build-up of cyclical systemic risk.

Chart I.1.21 • Domestic Systemic Risk Indicator | Standard deviations from the median



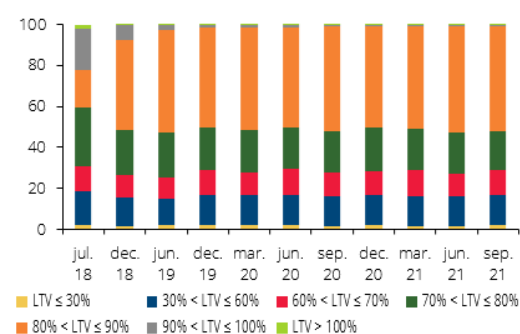
Sources: European Central Bank and Bank for International Settlements (BIS) (Banco de Portugal calculations). | Notes: Last observation: 2021 Q2. The d-SRI, developed by Lang et al. (2019) is an aggregate indicator aimed at identifying the accumulation of cyclical imbalances created in the domestic non-financial private sector. For further details on the domestic systemic risk indicator for Portugal, see Box 3 in the June 2019 issue of the *Financial Stability Report*.

Against this background, the Banco de Portugal maintained the countercyclical capital buffer rate for credit exposures to the domestic private non-financial sector at 0% of total risk exposures. Developments in cyclical systemic risk will continue to be monitored, taking into account the current and projected impact of the pandemic, including that of the measures adopted.

The Banco de Portugal held the regular exercise of identifying Other Systemically Important Institutions (O-SIIs) and calibrating their capital buffers. The following were identified as O-SIIs, in order of systemic importance: Banco Comercial Português (BCP); Caixa Geral de Depósitos (CGD); Santander Totta, SGPS (BST), S. A.; LSF Nani Investments S.à.r.l. (LSF Nani); Banco Português de Investimento (BPI) and Caixa Económica Montepio Geral (CEMG). In 2021 the list of institutions designated as O-SIIs and respective capital buffer requirements and phase-in periods coincides with that published in 2020.

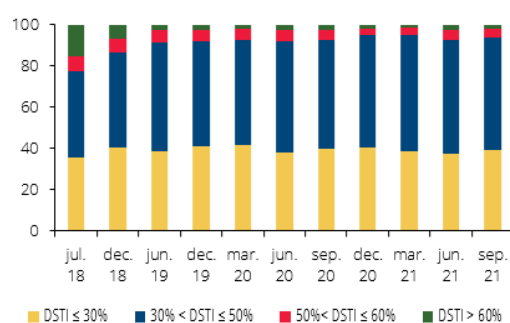
Institutions have generally been complying with the guidelines set out in the macroprudential Recommendation relating to new credit for house purchase and new consumer credit. At the end of the third quarter of 2021 almost all new loans for the purchase of own and permanent residence recorded a loan-to-value (LTV) ratio below the 90% threshold (Chart I.1.22). With regard to the debt-service-to-income (DSTI) ratio,¹ in September 2021 around 94% of total new credit for house purchase and new consumer credit was granted to borrowers with a DSTI of less than 50%, with this share remaining stable from the beginning of the year. Only 4% of new business was associated with borrowers with a DSTI between 50% and 60%, lower than the 10% exception provided for in the Recommendation, while around 2% of new credit was granted with a DSTI of over 60% (within the 5% exception provided for in the Recommendation) (Chart I.1.23).

Chart I.1.22 • Distribution of new credit for house purchases by LTV ratio | Per cent



Source: Banco de Portugal. | Notes: : Based on information reported by a sample of 9 institutions. LTV ratio calculated as defined in articles 2nd and 3rd of the Recommendation.

Chart I.1.23 • Distribution of new credit for house purchases by DSTI ratio | Per cent



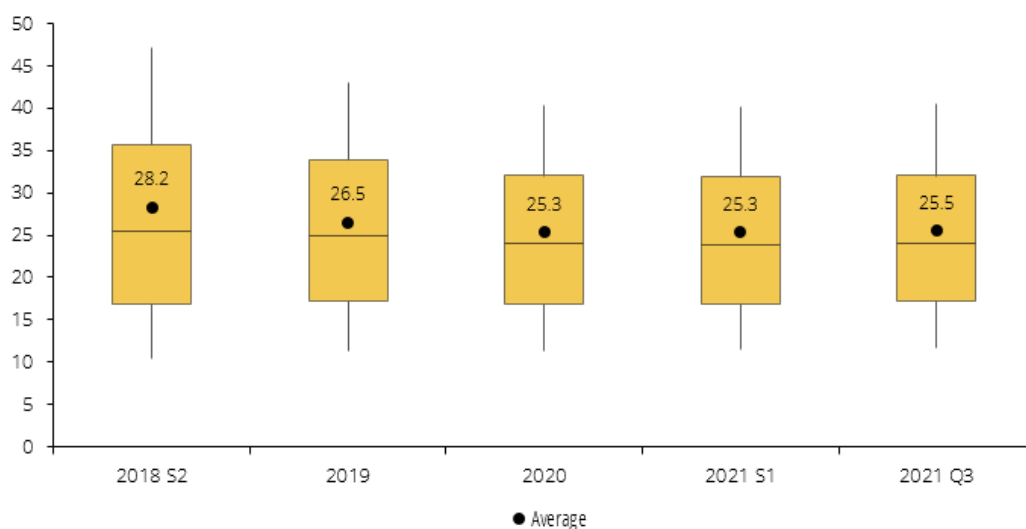
Source: Banco de Portugal. | Notes: Based on information reported by a sample of 13 institutions. DSTI ratio calculated as defined in articles 2nd and 4th of the Recommendation.

In September 2021 the average actual DSTI, i.e. without taking into account interest rate and income shocks, remained stable at 25.5% compared with the end of 2020, after a 3 p.p. decrease from the second half of 2018. Around 75% of new loans to households had a DSTI of less than 32% at the end of the third quarter of 2021 (Chart I.1.24).

¹ The DSTI ratio is the ratio of the total amount of monthly instalments of a borrower's total debt to his/her monthly income less taxes and compulsory social security contributions. For the calculation of the DSTI ratio, the instalments of the new credit agreement are assumed to be constant, and the impact of an interest rate rise should be considered according to maturity in the case of variable and mixed interest rate agreements. A shock on the interest rate of 1 p.p. should be considered for new business with a maturity of up to and including 5 years, of 2 p.p. for agreements with a maturity of 5 to 10 years, and of 3 p.p. for agreements with a maturity of over 10 years. In the case of credit agreements at a mixed interest rate, the heavier instalment for the customer is considered, between that resulting from applying the increase in the index, taking into account the maturity of the agreement in the variable interest rate period, and that resulting from the fixed rate period. A reduction of the borrower's income is also taken into account, where the borrower's age at the planned expiry of the agreement is 70 or over, except where at the time of the creditworthiness assessment the borrower is already retired.

Chart I.1.24 • Distribution of the actual DSTI ratio for new loans to households

| Per cent



Source: Banco de Portugal. Notes: Based on Central Credit Register data. Actual DSTI ratio (excluding shocks on the interest rate and income). The chart represents the distribution of quartiles of the actual DSTI ratio, where the lower and upper ends correspond to the 10th percentile and to the 90th percentile respectively, whereas in the box the lower and upper ends correspond to the 25th and 75th percentile respectively.

The limits to the maximum maturity established in the Recommendation were generally complied with since the macroprudential measure was implemented. However, the average maturity of new loans for house purchase remained relatively stable at around 33 years. After a decline from 33.5 years in July 2018 to 32.6 years in December 2019, there was an increase to 33.0 years in September 2021. In addition to setting out a maximum maturity of 40 years for this type of credit, the Recommendation establishes gradual convergence of the average maturity towards 30 years by the end of 2022.

Macroprudential authorities in some Member States have adopted measures to mitigate the build-up of cyclical systemic risk, especially in the residential real estate sector, to strengthen the resilience of the financial system and tighten credit standards (Table I.1.5).

Table I.1.4 • Description of the measures adopted and/or extended by some Member-states

Country	Measure	Implementation
Bulgaria	Increase in the CCyB rate	October 2022
Norway	Increase in the CCyB rate	June 2022
Czech Republic	Increase in the CCyB rate	July 2022
Sweden	Increase in the CCyB rate	September 2022
Netherlands	Extension of the use of article 458 CRR	January 2022
Estonia	Extension of the use of article 458 CRR	September 2021
Lithuania	Requirement of additional capital (SyRB) for exposures to residential real estate sector	July 2022
Finland	Reinstatement of maximum LTV limit to mortgage loans (except to first mortgage) to the pre-pandemic level	October 2021
Lithuania	Reduction of maximum LTV limit applicable to subsequent mortgages	January 2022
France	Extension of the use of article 458 CRR to limit large exposures of O-SIIs to over indebted firms	June 2020

Source: European Systemic Risk Board (ESRB) and national authorities.

In a context of recovery in economic activity, the Banco de Portugal may take macroprudential measures aimed at mitigating the potential build-up of systemic risk in a number of sectors.

Despite the recovery in economic activity, there is still uncertainty about the effects of the pandemic crisis on the banking sector. The special issue "Rebuilding capital buffers: a discussion on different paces of convergence" makes a conceptual assessment of the implications for financial stability and economic activity of distinct periods for the gradual rebuilding of capital buffers. The analysis confirms that rebuilding capital buffers too rapidly enhances bank resilience, but may cause significant disruptions to lending in the process of converging towards a new equilibrium. Allowing for longer transition periods rather than an abrupt transition period reduces the effects of an abrupt adjustment on the flow of credit and reduces the volatility of GDP and credit, although slightly diminishing bank resilience. As announced by the ECB in July 2020, banks will not be required to start rebuilding their capital buffers, which have been or will have been used in the meantime, at least before the end of 2022.

Following the ESRB decision, the ECB and the Banco de Portugal did not extend the restrictions on dividend distribution and other forms of capital distribution to the institutions under their supervision beyond September 2021. With the reduction in uncertainty and the path of economic recovery, the authorities highlighted the importance of a prudent approach by institutions. They should ensure that sufficient capital is retained to cope with a possible deterioration in asset quality, thereby preserving financing to the economy. Microprudential supervisory authorities will carry out their monitoring role on a case-by-case basis.

In September 2020 total dividends for 2019 not distributed amounted to around €26 billion in the euro area (Dautovic et al., 2021) and €800 million in Portugal. This is without prejudice to the possibility of banks distributing an amount of dividends that may offset this amount in the near future. Microeconomic evidence suggests that, on average, banks that followed the recommendations reduced lending less and increased provisioning more than banks not affected by the recommendations (Dautovic et al., 2021 and Martínez and Vegas, 2021).

It is essential to continue reinforcing the regulatory framework with the purpose of ensuring the resilience of the financial system in the medium to long term. This reinforcement consists of, among other things: (i) completing the implementation of Basel III reforms; (ii) reviewing the macroprudential framework; and (iii) reinforcing measures targeted at the non-bank financial sector.

The European Commission published a proposal for the revision of banking regulation consisting of three pillars. The purpose of this legislative package is to finalise implementation in the EU of the reforms of the Basel Committee on Banking Supervision (BCBS) standards – the Basel III reforms 2017-20, set out in the more extensive proposed revision of the Capital Requirements Regulation (CRR). In addition, the aim is to reinforce the supervisory framework applicable to credit institutions, as well as several aspects of risk management and internal governance, by enhancing its harmonisation across the EU through proposals to revise the CRD. The pandemic situation has led the BCBS to postpone the adoption of the final revisions to Basel III (Basel Committee on Banking Supervision, 2017) for one year to 1 January 2023. Given the importance of strengthening the regulatory framework to increase the banking system's resilience, the Banco de Portugal has joined other European Union central banks and supervisory authorities with the purpose of emphasising the importance of full, timely and consistent implementation of the last set of Basel III reforms.

A review of the European legal framework for macroprudential policy is under way, aiming to enhance its effectiveness, efficiency and transparency. The European Commission should present a legislative proposal to review the macroprudential rules in the Capital Requirements Regulation (CRR) and the Capital Requirements Directive (CRD) to the Council and the European Parliament by December 2022. In the context of this macroprudential review, the European Commission's consultation phase is under way. The European Commission has called for advice in four areas: (i) design and functioning of the buffer framework; (ii) missing or obsolete instruments; (iii) internal market considerations; and (iv) global risks.

A relevant source of global risks under discussion in the macroprudential revision and in other fora, are money market funds (MMFs), which are considerably relevant at international level for the short-term financing of financial institutions, NFCs and governments. Units issued by these funds are perceived by the market as having quite a similar risk to that associated with bank deposits. However, the turmoil in international financial markets in March 2020 resulting from the COVID-19 pandemic highlighted structural vulnerabilities of MMFs, in particular a large liquidity mismatch. In this context, several institutions such as the FSB, the ESRB and the European Securities and Markets Authority (ESMA) have been discussing measures to mitigate the risks identified.

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2 Banking system

The banking system's return on assets (ROA) increased to 0.44% in the first half of the year, in line with the euro area, although it remains low. These developments reflect the reduction in credit impairments associated with the pandemic and, to a lesser extent, the decrease in operating costs, while increases in operational efficiency are expected following the implementation of restructuring plans as announced by some institutions. Nevertheless, profitability challenges persist: the low interest rate environment, uncertainty about credit risk materialisation, and increased competition.

Despite the recent momentum in housing loans, the weight of the real estate sector in banks' balance sheets continued to decline in the first half of 2021. In June 2021, around 90% of the housing loan portfolio had an LTV ratio of 80% or less, allowing the banking sector to accommodate a potential fall in residential property prices without incurring large losses. Turning to loans to NFCs, a deceleration was observed, narrowing the growth differential between the sectors most and least affected by the pandemic. However, the stock of loans to NFCs continued to increase (4.3% annual rate of change in September 2021) and the sectors most affected by the pandemic increased their weight in the portfolio of loans to firms to 28.2%, of which 9.9 p.p. in the accommodation and food services sector.

The NPL ratio continued on the downward path that started in June 2016. NPL ratios gross and net of impairments stood respectively at 4.3% and 1.9% in June 2021. The reduction was due to sales and write-offs, but also to an increase in cash balances at central banks and credit institutions (denominator effect). The narrowing of the NPL ratio net of impairments was also explained by the growth in the NPL impairment coverage ratio (to 55.5%), which was particularly notable in sectors more affected by the pandemic (to 87.4%).

At the end of the first half of 2021, however, some signs of deterioration in credit quality were observed for some of the borrowers benefiting from moratoria and for firms in the most affected sectors. In June 2021, loans to the non-financial private sector under moratoria (15.9% on a consolidated basis) and under expired moratoria (5.3%) saw increases in the NPL, stage 2 loan and forborne loan ratios. In turn, impairment coverage ratios for loans under moratoria or under expired moratoria have widened, reflecting the increased risk associated with these loans perceived by banks. Preliminary data for October 2021 for major institutions do not suggest a substantial deterioration in the quality of loans under moratoria. Credit risk monitoring requires a proactive approach by banks in developing recovery solutions for viable borrowers and, where not viable, the timely recognition of losses.

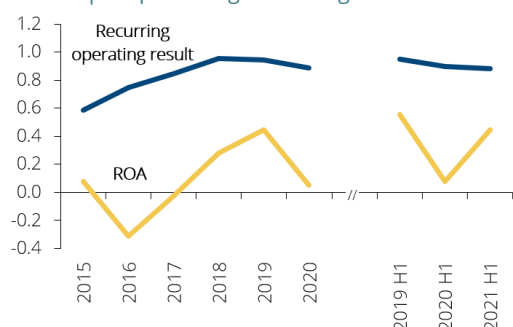
The system's structural liquidity, as measured by the loan-to-deposit ratio, continued to rise. Customer deposits increased in the first half of the year, remaining at peaks within the series (67.8% of assets in June 2021). Central bank funding reached 9.3% of assets in June, 1.5 p.p. up from December 2020. Developments were broadly based across Portugal and the euro area, in the context of monetary policy supporting the banking system's liquidity. The liquidity coverage ratio continued its upward trend seen over the past few years as a result of an increase in reserves in central bank. As part of the funding plans for compliance with MREL requirements, most major Portuguese banking institutions issued MREL-eligible instruments in the course of 2021, totalling approximately €3.5 billion.

Solvency stabilised in the first half of 2021, with the total capital ratio standing at 17.8% and the CET1 ratio at 15.3%. In view of the end of the supervisory recommendations for non-distribution of income in September 2021, dividends should be distributed with caution, in view of the challenges faced by the banking sector.

2.1 Profitability

In the first half of 2021, ROA rose by 0.37 p.p. year on year, to 0.44% (Chart I.2.1). Behind this increase was, on the one hand, the rise in income from financial operations, by 0.30 p.p., due to the unwinding of the effect of losses on equity instruments and derivatives in the first half of 2020. On the other hand, there was a 0.19 p.p. drop in provision and impairment costs as a result of the decrease in credit impairment flows (Table I.2.1). ROA dispersion among institutions decreased: percentile 5 of the asset-weighted ROA distribution was -0.34%, compared to -2.43% for the same period in 2020. The number of banks with negative ROA edged downward year on year, from 26 to 22 in the first half of 2021. Return on equity (ROE) increased by 4.3 p.p. from the same period a year earlier to 5.2%.

Chart I.2.1 • ROA and Recurring operating result | As percentage of average assets



Source: Banco de Portugal. | Notes: The return on assets (ROA) is calculated as the net result as a percentage of average assets. Recurring operating result corresponds to net interest income plus net fees and commissions less operational costs. Annualised figures.

Table I.2.1 • Profitability | As percentage of average assets

	2019	2020	2019 H1	2020 H1	2021 H1
Net interest income	1.64	1.52	1.64	1.55	1.44
Net fees and commissions	0.76	0.70	0.74	0.69	0.68
Income from financial op.	0.05	0.03	0.11	-0.05	0.25
Operating costs	-1.46	-1.33	-1.43	-1.34	-1.23
Net provisions and imp.	-0.38	-0.84	-0.36	-0.68	-0.49
o.w. credit imp.	-0.33	-0.61	-0.26	-0.57	-0.20
Other results	-0.17	-0.03	-0.14	-0.09	-0.20
ROA	0.45	0.05	0.55	0.08	0.44
Recurring operating result	0.94	0.89	0.95	0.90	0.88

Source: Banco de Portugal. | Notes: The return on assets (ROA) is calculated as the net result as a percentage of average assets. Recurring operating result corresponds to net interest income plus net fees and commissions less operational costs. Annualised figures.

ROA dropped by 0.11 p.p. from the first half of 2019, mainly reflecting the decrease in recurring operating result to 0.88% of assets. Developments in this component were driven by lower net interest income and net fees and commissions and dampened by a drop in operating costs.

As a percentage of average assets, net interest income decreased compared to the same half-year periods in 2020 and 2019 (Table I.2.2). The reduction from the first half of 2019 was due to a decrease in interest on loans, particularly those of the non-financial private sector (NFPS), and debt securities, especially those on sovereign debt, and was mitigated by a drop in interest on deposits. This development mainly stemmed from lower implied interest rates (price effect), larger for assets than liabilities. Interest paid to the NFPS on deposits accounted for 0.07% of assets, while the weight of these deposits totalled more than 60% of assets.

Turning to domestic activity, the interest rate spread on loans and deposits on new business with the NFPS continued to narrow, converging towards that of balances in 2020 and the first half of 2021. The narrowing of the spread on new business in the first half of 2020 and 2021 was broadly based across NFCs and households. In both cases, the decreases in interbank market interest rates in this period contributed to the decline in the interest rate on new loans. In the case of NFCs, this adds to the impact of State-guaranteed credit lines with lower interest rates (Section 2.2). For households, the weight of loans for consumption and other purposes fell, which also contributed to a narrowing of the differential, given that these loans are characterised by higher interest rates.

Table I.2.2 • Net interest income | As percentage of average assets

	2019	2020	2019 H1	2020 H1	2021 H1
Total	1.64	1.52	1.64	1.55	1.44
Derivatives	0.04	0.02	0.04	0.03	0.00
Debt securities	0.36	0.30	0.38	0.32	0.26
Loans	1.64	1.44	1.63	1.50	1.30
o.w. NFC	0.68	0.60	0.67	0.62	0.56
o.w. Households	0.82	0.73	0.81	0.76	0.66
Other assets	0.02	0.00	0.02	0.01	0.00
Deposits	-0.27	-0.12	-0.29	-0.19	-0.02
Debt securities issued	-0.09	-0.08	-0.09	-0.08	-0.07
Other liabilities	-0.06	-0.04	-0.06	-0.04	-0.04

Source: Banco de Portugal. | Note: Annualised figures.

The Portuguese banking system is more sensitive to a rise in interbank market interest rates. Compared with the euro area, the Portuguese banking system has a higher share of floating rate loans. Since 2003, on average, around 90% of new loans to the NFPS had a floating rate, compared with 71% in the euro area. This difference is greater for housing loans, with 87% compared to 32%.

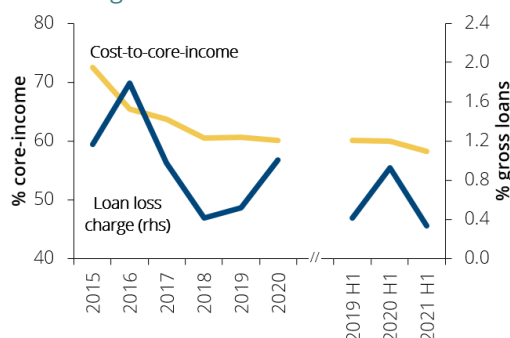
After stabilising in the first half of 2020 compared with the same period a year earlier, in the first half of 2021 the cost-to-core income ratio fell to 58.3% (-1.8 p.p. from 2019 H1) (Chart I.2.2). The improvement reflects the drop in operating costs (-3.8 p.p. contribution), mitigated by a decrease in net interest income and net fees and commissions (+2.0 p.p. contribution). However, the reduction in operating costs should not jeopardise the financing of activities in the field of prevention of money laundering and terrorist financing, and cybersecurity.

Despite the lower flow of provisions and impairments in the first half of 2021, it was still higher than in the first half of 2019, albeit with a different composition. On the one hand, provisions have increased owing to the optimisation of the branch network and investment in processes, digitalisation and technology by one institution and potential losses related to legal risks by another. On the other hand, the flow of impairments on financial assets fell below pre-pandemic levels (0.26%) and the flow of impairments on non-financial assets dropped to close to zero.

Institutions must ensure that, at each point in time, the impairment record is appropriate to address the outlook for risk materialisation and must tailor it to the uncertainty about losses following the pandemic. In the first half of 2021, the loan loss charge decreased by 0.59 p.p. year on year to 0.33% (Chart I.2.2), standing below the levels seen in the first half of 2019, in line with European peers. These developments were essentially due to a reduction in credit impairments, following a marked increase in the first half of 2020.

The banking system's profitability was in line with that of the euro area (Table I.2.3). However, the composition is different. The Portuguese banking system has, on the one hand, a larger contribution from net interest income and, on the other, more provisions and impairments. Net fees and commissions as well as operating costs are in line with the euro area average.

Chart I.2.2 • Cost-to-core-income and loan loss charge



Source: Banco de Portugal. | Note: Annualised figures.

Table I.2.3 • Profitability – International comparison | As percentage of average assets

	PT		EA	
	2020 H1	2021 H1	2020 H1	2021 H1
Net interest income	1.55	1.44	1.15	1.06
Net fees and commissions	0.69	0.68	0.62	0.65
Income from financial op.	-0.05	0.25	0.11	0.17
Operating costs	-1.34	-1.23	-1.26	-1.21
Net provisions and imp.	-0.68	-0.49	-0.54	-0.20
Other results	-0.09	-0.20	-0.04	-0.01
ROA	0.08	0.44	0.04	0.46
Recurring operating result	0.90	0.88	0.51	0.50

Source: Banco de Portugal and European Central Bank (Consolidated Banking Data). | Note: Annualised figures.

2.2 Credit standards

In June 2021, the portfolio of loans to customers (net of impairments) rose by 3.3% year on year. Loans to NFCs contributed 1.8 p.p. and loans to households 1.2 p.p. There was an increase in performing loans (4.0%) and a continued reduction in non-performing loans (-18.9%). Over the same period, exposure to debt securities issued by NFCs decreased by 7.8%. Domestic activity contributed the most to developments in loans and securities, accounting for 70% of total exposures.

The annual rate of change in the stock of bank loans to households stood at 3.5% in September 2021, reflecting an increase in consumer and housing loans (Table I.2.4). After the reduction in consumer loans in 2020 and early 2021, from February 2021 onwards a reversal took place, with growth reaching 1.6% in September.

The stock of housing loans accelerated throughout 2020 and 2021, with the annual rate of change standing at 4.1% in September 2021. It is estimated that it would be about 0.3 p.p. lower if the impact of the moratoria were excluded. The annual rate of change (not adjusted for securitisation and credit sales) in the stock of housing loans was lower than that in the euro area in September 2021 (4.3% and 5.5% respectively). Unlike in other euro area countries, house price growth had so far not been accompanied by a strong momentum in lending. However, compared to December 2019, the differential between the growth rate of the stock of housing loans in Portugal and the euro area narrowed. This was due to a higher acceleration in Portugal (in December 2019 the annual rates of change were 1.0% and 3.9% respectively).

Table I.2.4 • Annual rate of change of bank loans to households - domestic activity | Per cent

	Dec. 15	Dec. 16	Dec. 17	Dec. 18	Dec. 19	Dec. 20	Mar. 21	Jun. 21	Sep. 21
Total	-2.4	-1.7	-0.3	0.8	1.1	1.6	1.9	3.0	3.5
Housing	-3.1	-2.8	-1.7	-0.6	0.1	2.0	2.7	3.4	4.1
Consumption	3.3	9.2	10.7	11.0	8.2	0.6	-1.1	1.5	1.6

Source: Banco de Portugal. | Notes: Annual rates of change adjusted for securitisation operations, reclassifications, write-offs and exchange rate and price revaluations and, when relevant, adjusted for the effect of sales of credit portfolios. Loans granted by monetary financial institutions resident in Portugal to euro area residents. Activity on an individual basis.

New loans for house purchase continued to grow in the first nine months of 2021. The year-on-year rate of change was 37.8% and 47.3% compared to 2019. In the euro area, new business increased by 9.5% and 19.5% respectively. The average interest rate on new housing loans, at 0.8%, is 0.2 p.p. lower than in 2020. The annual percentage rate of charge (APRC), which includes

charges other than interest, especially insurance, has been on the decline since 2012. In the first nine months of 2021 it decreased by 1 p.p. from the end of 2020, to stand at 2%, i.e. 0.4 p.p. above the euro area average.

In the first nine months of 2021, new consumer loans grew by 9.0% year on year. However, this segment fell by 14.1% from the same period in 2019. The interest rate on these loans decreased and the APRC remained unchanged in the first nine months of the year, compared with the end of 2020, standing at 6.5% and 8.6% respectively (5.2% and 5.8% in the euro area).

In the first three quarters of 2021, credit standards for loans to households remained broadly unchanged according to the Bank Lending Survey (BLS). While in the first quarter there was only a tightening in credit for consumption and other purposes, stemming from an increased perception of risks associated with the economic situation, in the second quarter there was a slight narrowing of spreads on housing loans, reflecting a lower perception of risks and competitive pressures. In the October 2021 survey, banks anticipated the maintenance of credit standards for the fourth quarter of 2021. Since the entry into force of the Banco de Portugal's Macprudential Recommendation, the borrowers' risk profile associated with new loans to households has improved (Section 1.4).

The stock of bank loans to NFCs has increased since the start of the pandemic crisis, but a slowdown has been observed since the first quarter of 2021. In September 2021, the annual rate of change stood at 4.3%. In sectoral terms, there was notably an increase in the stock of bank loans to the manufacturing and accommodation, food services and trade sectors and, by size, to SMEs (Table I.2.5). Compared with other euro area countries, Portugal has the third highest annual rate of change (not adjusted for securitisation and credit sales), which may be associated with higher amounts of loans under moratoria, resulting in a reduction in redemptions.

Table I.2.5 • Annual rate of change of bank loans to NFC - domestic activity | Per cent

	Dec. 15	Dec. 16	Dec. 17	Dec. 18	Dec. 19	Dec. 20	Mar. 21	Jun. 21	Sep. 21
Total	-1.5	-2.2	-0.8	0.8	-0.3	7.8	9.3	5.6	4.3
Industry	0.7	0.7	2.1	1.7	2.8	10.4	15.7	10.3	8.7
Construction and real estate	-5.1	-5.4	0.7	2.4	-0.8	5.3	5.7	3.2	2.5
Accom. & food s. and Trade	1.6	2.4	2.9	-1.3	3.4	14.2	14.3	7.7	6.7
SME	-3.0	-2.1	0.6	2.6	2.8	11.6	12.6	7.9	6.4
Large firms	0.3	-2.7	-6.8	-4.3	-10.2	-6.0	-2.3	-3.1	-3.1

Source: Banco de Portugal. | Notes: Annual rates of change adjusted for securitisation operations, reclassifications, write-offs and exchange rate and price revaluations and, when relevant, adjusted for the effect of sales of credit portfolios. Loans granted by monetary financial institutions resident in Portugal to euro area residents. Activity on an individual basis. 'Industry' includes Manufacturing and Mining and quarrying; 'Accom. & food s. and Trade' includes the sectors of Accommodation and food services and Wholesale and retail trade; repair of motor vehicles and motorcycles.

The stock of loans to firms that used funding support measures increased in September 2021, but decelerated from December 2020. These firms made a positive contribution to the growth in the stock of loans, while firms that did not make use of these measures made a negative contribution. The largest stock growth was posted by firms that only used State-guaranteed credit lines, and the smallest growth by those that only took up moratoria (Table I.2.6).

The stock of loans increased for both the sectors most affected and those least affected by the pandemic crisis. The annual rate of change in the stock of loans to firms in the most affected sectors was higher than that for the other sectors (8.0% and 0.4% respectively). However, since March 2021 the spread between the growth rates of the stock of loans across the most and least affected sectors has narrowed. In both cases, the stock of loans has decelerated since March 2021 (Chart I.2.3). This spread was probably due mainly to credit granted under State-guaranteed lines.

Table I.2.6 • Year-on-year rate of change of the stock of loans from credit institutions to NFCs | Per cent

	December 2020			September 2021		
	Total	SMEs	Large firms	Total	SMEs	Large firms
Total	5.9	9.4	-7.6	2.5	3.4	-1.9
Firms with financing support measures:						
Loans with state Guarantee	42.5	51.3	1.7	19.4	21.0	9.8
Moratoria	-3.2	1.0	-13.9	-3.1	-2.7	-4.1
Loans with state guarantee and moratoria	19.4	25.0	0.0	7.5	8.3	3.6
Total	12.5	18.8	-6.9	5.4	6.6	0.7
Firms without financing support measures:						
	-6.1	-5.6	-9.9	-3.8	-2.8	-10.5

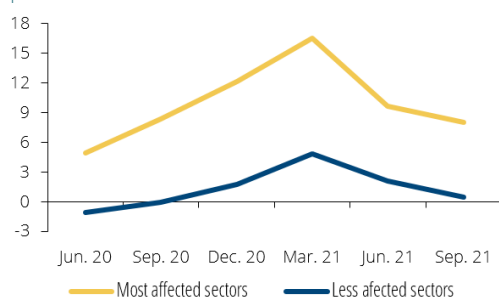
Source: Banco de Portugal. | Notes: Information from the Central Credit Register (CRC). Year-on-year rates of change are calculated on the basis of end-of-month balances, with no adjustments being made for sales, reclassifications, write-offs or exchange rate and price revaluations. The use of support measures has been assessed for the period March 2020 to September 2021, being sufficient to have financing support measures in one of the months of this period for a company to be classified in the branch of companies that have used measures.

New bank loans to NFCs declined in the first nine months of 2021, following a period of a more intense increase in lending. The decrease in the year-on-year rate of change compared to 2020 was -26% (-5% from the same period in 2019). Both the sectors most affected and those least affected by the pandemic crisis contributed to the reduction observed. The weight of affected sectors in total new loans decreased from 26% in 2020 to 24% in the first nine months of 2021. Turning to new loans under State-guaranteed lines, total new loans have been on the decline, standing at 10% in the first nine months of 2021 (34% in the same period in 2020).

As in the euro area, the average interest rate on new loans to NFCs remained constant in the first nine months of the year, compared with the same period in 2020. The differential vis-à-vis the euro area average remained at 0.8 p.p. State-guaranteed credit lines that were granted in the first nine months of 2021 had an average interest rate of 1.3%, compared to 2.0% for loans without State guarantee. The lower weight of new loans with State guarantee contributed to an increase in the interest rate. However, the reduction in the rate on the remainder loans offset this effect. The lower interbank market interest rates are likely to have contributed to this decline.

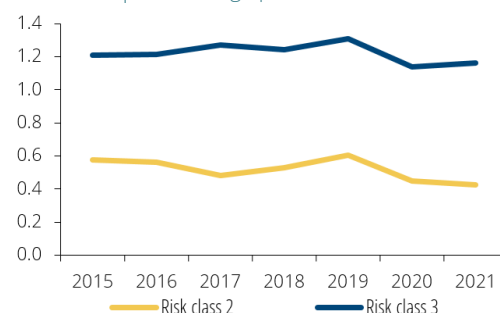
In the first nine months of 2021, and compared with the previous year, the differentiation in spreads on new loans to NFCs granted by the seven largest banking groups increased somewhat for the highest risk class. The risk premium for class 2, with a probability of default between 1% and 5%, vis-à-vis class 1, with a probability of default of less than 1%, is estimated to have decreased by 2 b.p. from 2020. This is partly linked to the narrowing of the spreads on State-guaranteed loans, which are more sizeable for class 2 firms. This factor was also behind the reduction in the differentiation observed in 2020. However, in 2021 the differentiation increased by 2 b.p. in the highest risk class (with a probability of default of more than 5%), to stand at 1.2 p.p. (Chart I.2.4).

Chart I.2.3 • Year-on-year rate of change of the stock of loans to NFCs – domestic activity
| Per cent



Source: Banco de Portugal. | Notes: Information from the Central Credit Register (CRC). Year-on-year rates of change are calculated on the basis of end-of-month balances, with no adjustments being made for sales, reclassifications, write-offs or exchange rate and price revaluations. The most affected sectors are considered to be those listed in Decree-Law 22-C/2021 and the sectors eligible for the support line for economic recovery - Retomar programme (see the Retomar disclosure document at the Banco Português de Fomento website, only in Portuguese).

Chart I.2.4 • Risk premium of credit risk classes vis-à-vis the lower risk class - New business
| Percentage points



Source: Banco de Portugal. | Notes: The attribution of risk information to each enterprise follows the methodology of Antunes, A. et al. (2016), "Firm default probabilities revisited", Economic Studies, Banco de Portugal. New operations regarding enterprises are used, with the risk information available, to calculate the shares of each risk class and the total new operations series. Lower risk class (risk class 1) corresponds to the enterprises with a probability of default (PD) in one year of 1% or less; risk class 2 corresponds to enterprises with a PD in one year of above 1% and below or equal to 5% and the higher risk class (risk class 3) corresponds to the enterprises with a PD in one year of above 5%.

The weight of the lower risk class in new loans to NFCs was similar to that recorded in 2019, but lower than in 2020, a development which was offset by a higher weight of the intermediate risk class. The same trend was also observed in the stock of loans to NFCs. As a whole, the two highest risk classes continue to account for a greater share in the stock, due to higher lending to intermediate or high risk classes in the past (Table I.2.7). In the most affected sectors, the weight of the lower risk class in the stock of loans and new business decreased, to stand below the average for firms. In turn, the higher risk class increased and was above the average for firms (26% and 21% of the stock respectively). The increase in representativeness of the higher risk classes in the stock of loans to the most affected sectors was mainly due to a risk reclassification of part of the portfolio from risk class 1 in 2020 to higher risk classes in 2021. The accommodation and food services sector contributed mostly to this.

According to the BLS, credit standards for loans to firms tightened somewhat in the first two quarters of 2021. The main factor identified was the increase in risks associated with the situation and the outlook for specific sectors and firms. This tightening was reflected in most terms and conditions, with the exception of spreads on average loans. Credit standards remained unchanged in the third quarter of 2021, with banks expecting the same to happen in the fourth quarter.

Table I.2.7 • Loans to NFC by risk class | Per cent

			Risk class 1 (low risk)	Risk class 2	Risk class 3 (high risk)
Total	New business	2019 Q1-Q3	48.7	36.2	15.1
		2020 Q1-Q3	53.2	32.9	13.9
		2021 Q1-Q3	50.3	36.4	13.3
	Stock	Sep.19	36.5	38.4	25.1
		Sep.20	40.1	37.6	22.3
		Sep.21	37.5	41.5	21.0
Most affected sectors	New business	2019 Q1-Q3	49.9	35.8	14.3
		2020 Q1-Q3	52.7	30.8	16.4
		2021 Q1-Q3	44.3	38.6	17.2
	Stock	Sep.19	41.6	41.1	17.3
		Sep.20	43.6	36.2	20.2
		Sep.21	28.7	45.0	26.3

Source: Banco de Portugal. | Notes: The attribution of risk information to each enterprise follows the methodology of Antunes, A. et al. (2016), "Firm default probabilities revisited", Economic Studies, Banco de Portugal. New operations regarding enterprises are used, with the risk information available, to calculate the shares of each risk class and the total new operations series. Lower risk class (risk class 1) corresponds to the enterprises with a probability of default (PD) in one year of 1% or less; risk class 2 corresponds to enterprises with a PD in one year of above 1% and below or equal to 5% and the higher risk class (risk class 3) corresponds to the enterprises with a PD in one year of above 5%. Domestic activity. The most affected sectors follow the definition in the note to Chart I.2.3.

2.3 Asset quality

In June 2021, non-performing loans continued to decline. The gross NPL ratio decreased by 0.6 p.p. from the end of 2020 to 4.3% (Table I.2.8). The contribution made by the increase in the denominator, via cash balances at central banks and credit institutions and performing loans, was similar to that associated with the reduction in non-performing loans through sales and write-offs (Table I.2.9). The decrease in non-performing loans was mainly due to the reduction in loans more than 90 days past due. The range between percentiles 5 and 95 of the gross NPL ratio remained on a downward path, which is in line with more marked falls in institutions where the ratio was higher. The spread between the indicator for Portugal and the median of the euro area ratio remained on the downside, albeit more contained than in recent years, stemming from the convergence seen over that period, from around 10 p.p. in December 2017 to 2 p.p. in June 2021.

The gross NPL ratio of loans to households for house purchase decreased by 0.2 p.p. from the end of 2020, to stand at 1.7% in June 2021. In the case of loans for consumption and other purposes, the ratio also narrowed, standing at 8.1%. Over the same period, the gross NPL ratio of NFCs decreased by 1.0 p.p. from December 2020 to 8.7%. The main driver of the reduction was NPL sales. In contrast, new NPLs net of cures increased, following the trend that started in 2020.

Table I.2.8 • Gross NPL ratio | Per cent

	Dec. 17	Dec. 18	Dec. 19	Dec. 20	Jun. 21
Total gross NPL ratio ^(a)	13.3	9.4	6.2	4.9	4.3
Percentile 5 ^(b)	6.2	3.3	2.4	2.1	1.8
Percentile 95 ^(b)	27.9	22.6	11.8	9.4	7.7
Non-financial private sector	14.6	10.5	7.0	5.8	5.3
Non-financial corporations	25.2	18.5	12.3	9.7	8.7
Most affected sectors ^(c)	25.8	18.8	14.6	11.6	11.2
Households	7.1	5.1	3.7	3.4	3.1
House purchase	5.7	3.8	2.4	2.0	1.7
Consump. and other purp.	13.1	10.5	8.2	8.5	8.1
Euro area median	3.5	3.1	2.9	2.5	2.3

Sources: Banco de Portugal and European Central Bank (Consolidated Banking Data). | Notes: (a) Corresponds to the ratio between the gross value of NPLs and the total gross value of loans. Includes loans and cash balances at central banks and credit institutions, loans to general government, other financial corporations, non-financial corporations and individuals. (b) Percentiles were obtained from the asset-weighted distribution of the gross NPL ratio. (c) The most affected sectors correspond to the CAE sections (H, I, M, N, P, Q, R and S) in which the stock of loans granted to the sectors identified in Decree-Law 22-C/2021 and to those eligible for the economic recovery support line (Retomar programme), represents at least around 50% of the total exposure of the respective section.

Table I.2.9 • Gross NPL ratio – contributions to the evolution

	Total	NFC	Households
Gross NPL ratio, Dec. 2020 (%)	4.9	9.7	3.4
Write-offs (p.p.)	-0.16	-0.33	-0.12
NPL sales (p.p.)	-0.17	-0.40	-0.04
New NPL net of cures (p.p.)	0.03	0.12	-0.03
Other denominator effects (p.p.)	-0.31	-0.34	-0.06
Gross NPL ratio, Jun. 2021 (%)	4.3	8.7	3.1

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

The NPL ratio of firms in the sectors most affected by the pandemic stood at 11.2% in June 2021, down by 0.4 p.p. from December 2020. However, in four sectors, which account for 12.7% of total loans to NFCs, the gross NPL ratio widened. The sectors with the largest increases were accommodation and food services (8.2% of loans to NFCs) and arts, entertainment and recreation services (1.3% of loans to NFCs), with gross NPL ratios of 12.0% (+1.9 p.p.) and 34.2% (+1.4 p.p.) respectively.

In June 2021, the banking system's NPL impairment coverage ratio increased by 0.5 p.p. from the end of 2020 to 55.5 %, to stand 14.1 p.p. above the euro area median (Table I.2.10). In loans to NFCs, the ratio widened by 0.4 p.p. to 56.9%. However, the sectors most affected by the pandemic increased by 7.3 p.p. to 87.4%. In loans to households for house purchase, the coverage ratio rose by 3.9 p.p. from December 2020, to 34.4%, reflecting the reduction in the stocks of NPLs and the increase in impairments. The coverage ratio of loans for consumption and other purposes decreased by 2.3 p.p. to 64.1%.

Likewise, the NPL ratio net of impairments declined by 0.3 p.p. from the end of 2020 to 1.9%. The decrease extended to loans to NFCs and households for house purchase, which stood at 3.8% (-0.4 p.p.) and 1.1 % (-0.2 p.p.) respectively. In loans for consumption and other purposes, the net NPL ratio widened by 0.1 p.p. to 2.9%. The decrease in the indicator for the Portuguese banking system was similar to that of the euro area median.

Table I.2.10 • Gross NPL impairment coverage ratio | Per cent

	Dec. 17	Dec. 18	Dec. 19	Dec. 20	Jun. 21
Gross NPL impairment coverage ratio ^(a)	49.4	52.0	51.5	55.0	55.5
Non-financial corporations	53.9	56.5	56.5	56.5	56.9
Most affected sectors ^(b)	58.3	63.0	70.3	80.1	87.4
Households	37.1	40.7	42.3	50.4	51.2
House purchase	22.8	27.1	26.3	30.6	34.4
Consumption and other purposes	62.6	59.8	58.8	66.4	64.1
Euro area median	42.5	43.7	43.2	43.0	41.4
<i>Memorandum items:</i>					
Net NPL ratio ^(c)	6.7	4.5	3.0	2.2	1.9
Euro area median	2.1	1.9	1.4	1.5	1.2

Sources: Banco de Portugal and European Central Bank (Consolidated Banking Data). | Notes: (a) Corresponds to the ratio between the accumulated impairments on NPLs and the gross value of NPLs. (b) The most affected sectors correspond to the CAE sections (H, I, M, N, P, Q, R and S) in which the stock of loans granted to the sectors identified in Decree-Law 22-C/2021 and to those eligible for the economic recovery support line (Retomar programme), represents at least around 50% of the total exposure of the respective section. (c) Corresponds to the ratio of NPLs net of impairments to total gross loans.

In June 2021, the ratio of forborne loans stood at 4.1%, down by 0.6 p.p. from December 2020. In the first half of 2021, the volume of forborne loans remained on a downward path, following a slight increase in the first half of 2020. Forborne loans decreased by 5.9%, while the non-performing component of these loans fell more markedly, by 7.2%.

The weight of loans classified as stage 2 (which includes loans with a substantial increase in credit risk) in total loans remained stable compared to the end of 2020. In June 2021, loans in stages 1, 2 and 3 accounted for 84.2% (+0.9 p.p.), 10.9% (-0.2 p.p.) and 4.9% (-0.7 p.p.) of the total respectively. The gross amount of loans in stage 2 remained unchanged from the end of 2020, with the 4.3% decrease in the household segment being offset by a 2.4% increase in the NFC segment.

In June 2021, loans under moratoria to the NFPS accounted for 15.9% on a consolidated basis. Over the same period, and on the same basis, the share of loans under moratoria granted to NFCs and households stood at 26.2% and 9.4% respectively. In the latter case, mostly loans for house purchase, in line with the gradual end of private moratoria, the last one on 30 June 2021, which covered a significant share of credit for consumption and other purposes. In August 2021, and as regards domestic activity, a considerable share of loans under moratoria remained in the various segments of NFCs, particularly in the accommodation and food services sector (54.9%), and, in the case of households, for house purchase (12.9%) (Table I.2.11). The marked decrease in October reflected the end of the public moratorium on 30 September 2021 for most loans. Credit agreements still under public moratoria during this period will cease to benefit from this measure until the end of the year, given that the take-ups in the first quarter of 2021 may remain under the scheme for a period of no more than nine months.

Table I.2.11 • Loans to NFCs and households under moratoria – domestic activity

Non-financial corporations	Sep. 20	Dec. 20	Mar. 21	Jun. 21	Aug. 21	Oct. 21
EUR millions						
Total	25.2	24.8	24.3	22.3	21.5	2.7
As a % of total loans to NFC						
Total	34.0	33.7	32.6	29.5	28.5	3.6
Manufacturing	6.6	6.4	6.0	5.2	4.9	0.3
Construction and real estate activities	7.7	7.6	7.0	6.5	6.2	0.9
Wholesale and retail trade	4.7	4.5	4.3	3.8	3.7	0.3
Accommodation and food services	4.9	5.2	5.6	5.6	5.4	0.9
Other sectors	10.2	9.9	9.7	8.4	8.3	1.2
SMEs	28.5	28.4	27.6	25.1	24.5	2.9
Large firms	5.5	5.3	5.0	4.4	4.0	0.7
As a % of total loans in each category						
Manufacturing	34.2	33.3	30.3	26.2	24.7	1.5
Construction and real estate activities	33.1	33.0	31.6	29.5	28.4	4.2
Wholesale and retail trade	26.5	24.8	24.3	21.7	20.9	1.7
Accommodation and food services	57.2	57.2	58.9	56.0	54.9	9.7
SMEs	33.9	33.3	32.7	29.8	28.7	3.4
Households	Sep. 20	Dec. 20	Mar. 21	Jun. 21	Aug. 21	Oct. 21
EUR millions						
Total	21.1	20.1	17.1	14.4	14.1	0.4
As a % of total loans to households						
Total	17.1	16.2	13.7	11.5	11.1	0.3
House purchase	14.3	13.8	11.9	10.4	10.1	0.3
Consumption and other purposes	2.8	2.4	1.8	1.1	1.1	0.1
As a % of total loans in each category						
House purchase	18.5	17.8	15.3	13.2	12.9	0.3
Consumption and other purposes	12.4	10.7	8.0	5.2	4.8	0.3

Sources: Banco de Portugal. | Notes: Loans on the portfolio of entities of the financial sector supervised by Banco de Portugal. Domestic activity. The households segment includes sole proprietors and non-profit institutions serving households.

In June 2021, the quality of loans under moratoria showed some signs of deterioration. The gross NPL ratio in loans under moratoria stood at 8.3% (Table I.2.12), 4.1 p.p. above the gross NPL ratio in total loans and 1.1 p.p. higher than in December 2020. The ratios of forborne loans (9.2%) and loans in stage 2 (27.3%), as a percentage of loans under moratoria, also stand above their December 2020 figures. Over the same period, the spread between loans under moratoria and total loans in ratios of NPLs, forborne loans and loans in stage 2 widened, although only mutedly. The gross NPL ratio in loans under moratoria to NFCs stood at 11.5% in June 2021, 2.8 p.p. above the ratio in total loans in the segment. In the case of loans under moratoria to households for house purchase and for consumption and other purposes, the gross NPL ratio stood at 2.2% and 11.8% respectively, 0.4 p.p. and 3.7 p.p. above the respective ratios in total loans.

The NPL impairment coverage ratio increased for loans under moratoria and loans under moratoria that expired in June 2021, reflecting the increased risk associated with these loans perceived by banks. The NPL impairment coverage ratio in loans under moratoria rose by 2.6 p.p. from the end of 2020 to 45.2% in June 2021. For NFCs and households, the indicator stood at 47.3% (+1.9 p.p.) and 29.7% (+1.5 p.p.) respectively. There was also an increase in the NPL impairment coverage ratio in loans under expired moratoria, by 5.2 p.p. from December 2020, to stand at 39.9%.

Table I.2.12 • Forborne and stage 2 loans | Per cent

	Total			NFC			Households		
	Jun. 20	Dec. 20	Jun. 21	Jun. 20	Dec. 20	Jun. 21	Jun. 20	Dec. 20	Jun. 21
% of total gross loans:									
Forborne loans ratio	5.0	4.7	4.1	10.1	9.4	8.4	3.3	3.2	3.0
<i>of which: under moratoria^(a)</i>	1.1	1.4	1.1	2.6	3.1	3.2	0.6	0.6	0.3
Stage 2 loans	8.8	11.1	10.9	11.9	18.6	18.5	7.5	7.8	7.3
<i>of which: under moratoria^(a)</i>	2.7	3.7	3.3	5.1	8.1	8.2	2.1	2.5	1.9
% of loans under moratoria ^(a) :	Jun. 20	Dec. 20	Jun. 21	Jun. 20	Dec. 20	Jun. 21	Jun. 20	Dec. 20	Jun. 21
Forborne loans ratio	6.4	8.3	9.2	9.1	11.6	12.3	3.5	4.1	3.3
Stage 2 loans	15.2	25.0	27.3	17.6	30.0	31.2	12.3	18.6	20.0
Gross NPL ratio	5.4	7.2	8.3	8.1	10.5	11.5	2.4	3.0	2.8

Source: Banco de Portugal. | Note: (a) The information on loans in default for June 2020 refers only to the eight largest institutions in the banking system.

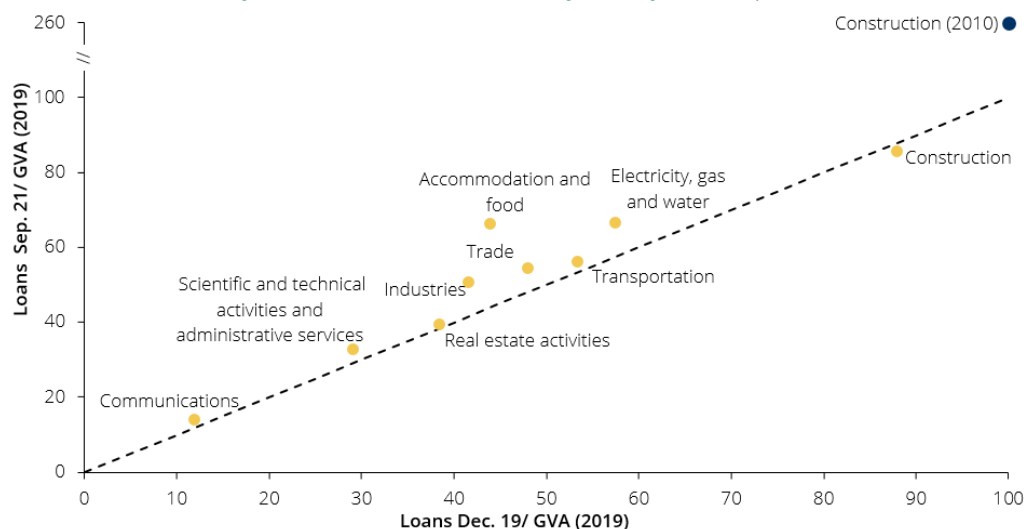
In June 2021, asset quality indicators suggested some deterioration in loans under expired moratoria, despite their negligible weight in total loans to the NFPS (5.3%). A significant share of credit under expired moratoria related to households (67%). In this segment, the gross NPL ratio in loans under expired moratoria stood at 4.3%, 1.1 p.p. above the ratio in total loans. In loans to households for house purchase, the indicator stood at 3.3%, 1.6 p.p. above the ratio in total loans. Conversely, in loans for consumption and other purposes, the indicator was 0.8 p.p. lower than in total loans, standing at 7.3%. Over the same period, the ratios of forborne loans and loans in stage 2, as a percentage of total loans under expired moratoria, stood at 6.9% and 18.5% respectively. Preliminary data for October 2021 for major institutions do not suggest a substantial deterioration in the quality of loans that benefited from moratoria.

The measures taken in response to the pandemic crisis, namely moratoria and State-guaranteed credit lines, made it possible to mitigate credit risk materialisation, although some uncertainty remains after the end of the moratoria period. Despite positive developments in the various indicators when analysing the banks' aggregate portfolio, the adverse effects of the pandemic were reflected in a deterioration in the quality of loans to firms in some of the most affected sectors, particularly for borrowers benefiting from moratoria. In these cases, it is crucial to adopt a proactive approach and efficient credit risk management, based on the timely recognition of losses for non-viable situations and the implementation of solutions that contribute to the recovery of viable borrowers.

2.4 Concentration of exposures

The impact of the pandemic on the composition of Portuguese banks' portfolio of loans to firms reflects an increase in the weight of exposure to some of the most affected sectors of activity, most notably the accommodation and food services sector, accounting for around 10% of the total portfolio of loans to firms in September 2021. Business specificities in each sector of activity may justify differences in the intensity of recourse to debt to finance activity and, in particular, differences in the use of bank loans compared with the sector's contribution to GVA in the economy. This indicator increased in some sectors compared with the pre-pandemic period (Chart I.2.5). However, this is not the same, in any way, as that seen in the construction sector during the financial crisis. Even this sector has a much lower intensity of recourse to bank loans these days.

Chart I.2.5 • Intensity of recourse to bank loans by activity sector | Per cent



Sources: Banco de Portugal and Statistics Portugal.

Despite the recent momentum in housing loans, the Portuguese banking system's exposure to the real estate sector as a percentage of assets continued to decline in the first half of 2021. These developments chiefly reflect the increase in total assets (5.7% in the first half of 2021). In the first half of 2021, the share of exposure to the real estate sector dropped by 1.5 p.p. to 34.5%. This was due to a reduction in the weight of loans to households secured by real estate and, to a lesser extent, in the weight of loans to firms in the construction and real estate activities sectors (Table I.2.13).

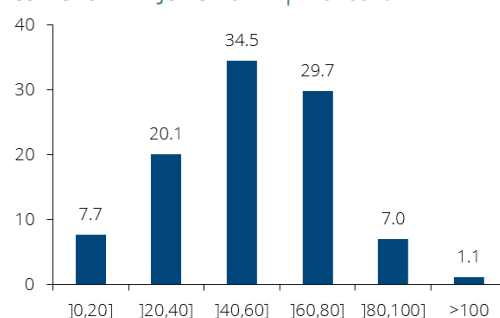
In June 2021, approximately 90% of the stock of loans to households for house purchase had a loan-to-value (LTV) ratio of 80% or less (around 60% had an LTV of less than 60%) (Chart I.2.6). The distribution of the LTV ratio of the loan portfolio for house purchase allows the Portuguese banking sector to better accommodate a potential fall in residential real estate prices without incurring high losses.

Table I.2.13 • Exposure to real estate | As a percentage of assets

	Dec. 15	Dec. 17	Dec. 19	Dec. 20	Jun. 21
Loans to HH collateralized by RE	26.8	28.0	27.1	26.1	25.2
Loans to NFC of const. and RE act. sectors ^(a)	5.4	5.2	4.9	4.5	4.2
Loans to NFC collateralized by RE ^(b)	3.0	3.2	3.5	3.4	3.3
Real estate funds ^(c)	1.7	1.5	1.1	1.0	0.9
Real estate owned ^(d)	1.7	1.9	1.1	0.9	0.9
Total	38.6	39.8	37.7	35.9	34.5

Source: Banco de Portugal. | Notes: (a) It does not exclude loans granted to projects not related to the real estate sector, such as public works; (b) excludes loans to NFCs in the construction and real estate activities sectors; (c) includes loans and mutual funds shares; (d) gross values.

Chart I.2.6 • Distribution of housing loans' current LTV– June 2021 | Per cent



Source: Banco de Portugal. | Notes: LTV: loan-to-value, ratio between the value of the loan and the value of the property pledged as collateral. Indicator based on granular data at the loan level (Central Credit Register). Whenever the date of the last valuation of the property is prior to 2021Q1, its current value is estimated using Statistics Portugal Housing Price Index.

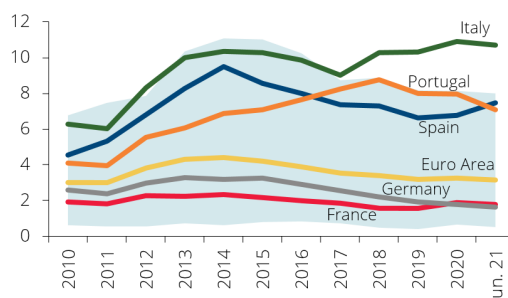
In the first half of 2021, Portuguese banks' exposure to sovereign debt securities, on a consolidated basis, rose by around €3 billion but remained broadly unchanged as a percentage of assets. In June, the sovereign debt securities portfolio accounted for 16% of total assets on a consolidated basis (-0.2 p.p. than at the end of 2020). The weight of debt securities valued at amortised cost, whose value changes are recognised only at the time of sale of these instruments, rose to more than half of the portfolio (8.3% of assets). In domestic activity, exposure to Portuguese sovereign debt securities declined by 0.9 p.p. to 7.1% of total assets (Table I.2.14). In turn, the weight of exposure to Spanish and Italian sovereign debt remained virtually unchanged, while exposure to sovereign debt of other euro area countries increased. In Portugal, exposure to domestic sovereign debt securities remained higher than for the euro area average, but has been on a gradually downward path, as opposed to other countries such as Spain and Italy (Chart I.2.7). The significant share of the sovereign debt portfolio classified at amortised cost mitigates the impact of potential international financial market turmoil on Portuguese banks. With reference to June 2021, a possible 100 b.p. rise in the government bond yield curve in Portugal, Spain and Italy would have an estimated impact of around -0.8 p.p. on the Common Equity Tier 1 (CET1) ratio, on a consolidated basis, among the main Portuguese banks as a whole.

Table I.2.14 • Sovereign debt securities – domestic activity | As a percentage of assets

	Dec. 15	Dec. 17	Dec. 19	Dec. 20	Jun. 21
Portugal	7.1	8.3	8.0	8.0	7.1
Spain	1.2	1.4	2.5	3.3	3.4
Italy	1.3	1.6	2.3	2.4	2.5
Other	0.1	0.4	0.9	1.0	1.5

Source: Banco de Portugal. | Note: The series refers to the reporting on an individual basis of the other monetary financial institutions resident in Portugal.

Chart I.2.7 • Sovereign debt securities – International comparison | As a percentage of assets



Source: European Central Bank. | Notes: The series refers to the reporting on an individual basis of the other monetary financial institutions resident in each country. The shaded area corresponds to the difference between the 90th percentile and the 10th percentile of the indicator in all euro area countries. Unweighted figures.

In the first half of 2021, direct interlinkages within the financial system continued to decline. Assets held by banks (deposits, debt securities, loans, shares and other investment funds' holdings and listed shares) that have as their counterpart the different financial system sub-sectors (other banks, other intermediaries and financial auxiliaries, investment funds, insurance corporations and pension funds) accounted for 15.5% of total assets in June 2021, 1.1 p.p. less than at the end of 2020 and 4 p.p. less than the peak reached at the end of 2016. This reduction reflects a denominator effect, against a background of growing Portuguese banks' balance sheets, but also a reduction in deposits with other resident banks.

At the end of 2020, approximately 60% of the portfolio of loans to NFCs was associated with climate-policy-relevant sectors (CPRS). More carbon-intensive sectors or sectors indirectly responsible for a high volume of greenhouse gas (GHG) emissions (e.g. production of electricity or road and air transport) accounted for 28% of bank loans to NFCs. These sectors will probably be the most affected by policy measures adopted to meet the GHG emission reduction targets by 2050 (Marques and Carvalho (2021), "Assessment of the exposure of the Portuguese banking system to non-financial corporations sensitive to climate transition risks", Banco de Portugal *Occasional Papers*). Loans to firms in sectors for which the impact of the climate transition is more uncertain (e.g. most construction, real estate and accommodation sub-sectors) accounted for

around 30% of the total. For these, uncertainty lies in the fact that such sectors are not directly affected by the introduction of a carbon tax or because they carry out ancillary activities, where the impact depends on the adjustment in sectors that will be directly affected by the increase in carbon costs. In turn, exposure to firms that should benefit from the transition to a low-carbon economy (e.g. firms producing or using renewables) was residual.

2.5 Liquidity and funding

In the first half of 2021, customer deposits remained prominent in the financing structure of the banking system, making Portuguese banks less sensitive to changes in the risk perception of international investors (Table I.2.15). The increase in customer deposits from December 2020 was 5.6%, with contributions of 2.1 p.p. and 3.0 p.p. from NFCs and households respectively. The loan-to-deposit ratio, i.e. the ratio of loans to customers net of impairment to customer deposits, decreased from the end of 2020 to 82.5%. Customer deposits and loans contributed -4.6 p.p. and +2.2 p.p., respectively, to this development.

The role of monetary policy in the financing structure of the banking system continued to rise. Central bank funding accounted for 9.3% of assets in June 2021, 1.5 p.p. up from December 2020. These developments were broadly based across the sector in Portugal and the euro area, arising within the framework of the monetary policy supporting the banking system's liquidity in the context of the pandemic, which includes the Eurosystem's asset purchase programmes and refinancing operations, in particular TLTRO III operations. According to the BLS, the main Portuguese banks did not use the September targeted longer-term refinancing operations and only two of the banks in the sample admitted to possibly using such operations going forward.

The funding profile of the banking system was stable with regard to asset composition and off-balance-sheet positions. In June 2021, the net stable funding ratio (NSFR), i.e. the ratio of available stable funding to the required stable funding, stood at 144.4%, significantly above the 100% minimum requirement in place since the same period. This indicator requires a minimum amount of funding that is expected to be stable over the one-year time horizon, based on liquidity risk factors assigned to net asset exposures and off-balance-sheet positions. This requirement was introduced as part of the regulatory process implemented since the previous international financial crisis and which contributed to the resilience of the banking system during the pandemic crisis.

In the course of 2021, most major institutions in the Portuguese banking system issued instruments eligible for compliance with the minimum requirement for own funds and eligible liabilities (MREL), totalling around €3.5 billion, in particular preferred and non-preferred senior debt. The current market environment favours issuances providing for compliance with the requirement, with intermediate targets set to start from January 2022 onwards.

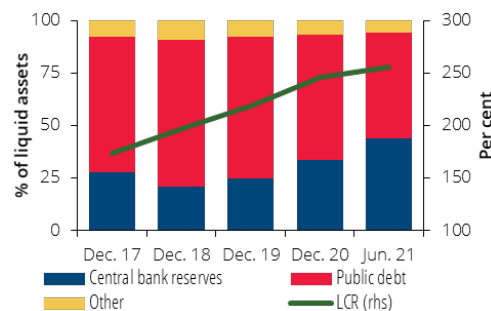
The liquidity coverage ratio (LCR) stood at 255.3% in June 2021, up by 9.4 p.p. from December 2020 (Chart I.2.8). There was a decrease in the dispersion of this indicator among institutions. The increase in the liquidity buffer contributed to the widening of the ratio (+40.2 p.p.), more than offsetting the negative contribution from the rise in net liquidity outflows (-30.8 p.p.). Developments in the liquidity buffer reflected the increase in reserves in central banks, whose weight in net assets was close to that of unencumbered sovereign debt securities at the end of the first half of 2021.

The share of total assets and collateral received and which is used as collateral for obtaining liquidity rose by 0.9 p.p. from the end of 2020, to stand at 18.2% in June 2021. The share of unencumbered assets eligible for monetary policy operations was 24.8%, down by 1.2 p.p. from December 2020 via the denominator effect.

Table I.2.15 • Financing structure and loan-to-deposit ratio

% of total assets	Dec. 17	Dec. 18	Dec. 19	Dec. 20	Jun. 21
Central banks deposits	6.3	5.3	4.4	7.8	9.3
Other CI deposits	8.8	9.3	9.2	7.3	6.5
Customer deposits	65.5	67.1	68.5	67.9	67.8
Debt securities issued	4.8	4.2	4.1	3.6	3.5
Other liabilities	5.2	5.0	4.6	4.7	4.4
Equity	9.5	9.1	9.3	8.7	8.5
% of customer deposits	Dec. 17	Dec. 18	Dec. 19	Dec. 20	Jun. 21
Loan-to-deposit ratio	92.5	89.0	87.1	84.9	82.5

Source: Banco de Portugal. | Notes: The loan-to-deposit ratio corresponds to the ratio of loans to customers net of impairment to customer deposits. Customers are households, non-financial corporations, general government, and other financial corporations (excluding credit institutions).

Chart I.2.8 • Liquid assets and liquidity coverage ratio (LCR)

Source: Banco de Portugal. | Note: The liquidity coverage ratio corresponds to the ratio of available liquid assets and net cash outflows calculated under a 30-day stress scenario.

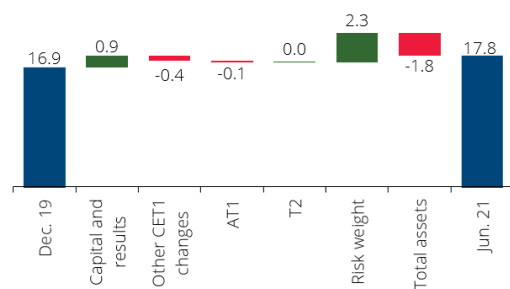
2.6 Capital

Following substantial growth in 2020, the Portuguese banking system's solvency levels stabilised in the first half of 2021. In June 2021, the total capital ratio stood at 17.8%, down by 0.1 p.p. from December 2020. This reflects the reduction in Additional Tier 1 (AT1) instruments. The CET1 and Tier 2 (T2) ratios remained unchanged over the same period.

The recommendation for non-distribution of dividends is likely to have contributed to the strengthening of solvency levels in the post-pandemic period. The total capital ratio increased by 0.9 p.p. between December 2019 and June 2021, partly reflecting CET1 growth via retained earnings (Chart I.2.9). This increase is likely to have been driven by the recommendations from the Banco de Portugal, the European Central Bank and the European Systemic Risk Board for a non-distribution of dividends by institutions, in force until September 2021. Although these recommendations have ceased to apply since September 2021, it is important that dividends are distributed prudently, while taking into account the various challenges that institutions will have to face in the short to medium term.

The average risk weight continued its downward trend as a result of the marked increase in the share of public debt and cash balances at central banks (Table I.2.16). The risk weight stood at 46.7% in June 2021, i.e. -1.9 p.p. and -6.6 p.p. than in December 2020 and 2019 respectively. These decreases mirror the banking system's balance sheet increase by more than 10% since December 2019 through assets with a lower risk weight, such as cash balances at central banks and sovereign debt securities (contributions of 6.9 p.p. and 2.4 p.p. respectively). The growth of loans to customers helped mitigate the decrease in the weight (2.9 p.p. contribution to the increase in assets), mitigated by the fact that part of those loans are backed by a State guarantee. To this also contributed the change in the supporting factor for exposures to SMEs in June 2020, under the CRR quick fix setting a lower risk weight for these exposures.

Chart I.2.9 • Total own funds ratio - level and contributions to variation | In percentage and percentage points



Source: Banco de Portugal.

Table I.2.16 • Original and risk-weighted exposures | Euro millions

Change compared to Dec. 19	Original exposures	Risk-weighted exposures
Central governments or central banks	41,496	424
Corporates	5,550	-125
Retail	6,756	-1,164
Defaulted exposures	-2,255	-1,390
Others	-1,935	-1,867

Source: Banco de Portugal.

The leverage ratio remains above the minimum requirement. In June 2021, the leverage ratio was 7.4%, down from December 2019 (-0.5 p.p.) and 2020 (-0.3 p.p.). This decrease reflects the aforementioned expansion of the balance sheet, mitigated by a smaller increase in Tier 1 capital. The banking system's minimum ratio value in June 2021 was 5.4%, significantly above the 3% requirement, which entered into force on 28 June 2021.

Box 1 • Characterisation of firms with insolvency applications during the pandemic

As the pandemic crisis unfolded, concerns about the number of insolvencies emerged in Portugal as well as internationally, especially in the sectors most affected by the crisis. Measures to support business and amendments to rules/suspension of deadlines for applying for insolvency (insolvency moratorium) prevented that number from increasing, which would have had adverse consequences for the economic recovery and the financial system. This Box analyses the characteristics of firms that applied for insolvency in 2020 and the first half of 2021.

The number of firms that initiated insolvency proceedings decreased between 2015 and 2019, at an average rate of change of -13% (Table B1.1). This trend was interrupted in 2020, with a growth of 8.6% compared to 2019. However, the number of insolvency proceedings initiated remained below the average recorded between 2015 and 2019 (years of economic growth). In the first half of 2021, the number of insolvency proceedings initiated in Portugal fell by 21.5% from the same period in 2019.

In 2020, in comparison with 2019, the number of firms applying for insolvency increased by 7% in micro, 14% in small and 19% in medium-sized enterprises. The decrease in the first half of 2021 compared with the first half of 2019 was broadly based, but more significant among small enterprises (-34%). In terms of composition, the share of small enterprises in total insolvency proceedings initiated is greater than their proportion in the business population, with the situation being the opposite for microenterprises.

Table B1.1 • Firms that initiated insolvency proceedings

	2015	2016	2017	2018	2019	2020	2019 H1	2020 H1	2021 H1	Memo item: Share in total NFCs (2020)
Number	3744	2905	2459	2156	2095	2275	1063	1170	834	
By size As a percentage										
Micro	82.5	83.1	80.7	77.9	78.2	77.0	78.5	74.8	81.3	89.4
Small	15.5	14.5	16.3	19.5	19.4	20.4	19.1	22.1	15.9	9.0
Medium	2.0	2.2	2.7	2.4	2.3	2.5	2.3	3.1	2.2	1.4
Large	0.1	0.1	0.3	0.2	0.1	0.1	0.2	0.1	0.6	0.2
By sector of activity As a percentage										
Real estate activities	3.3	4.2	3.3	3.5	2.7	1.9	2.9	2.2	3.0	9.7
Accommodation and food services	9.6	9.2	9.8	9.6	8.4	14.5	8.3	12.5	15.6	10.5
Professional, adm., support service activities	8.1	7.6	8.0	8.2	7.4	7.0	7.9	6.5	7.0	11.4
Wholesale and retail trade	30.2	29.3	29.1	26.6	28.0	24.1	29.1	24.9	26.6	23.7
Construction	17.5	15.7	13.4	13.4	10.2	10.2	9.9	10.5	11.3	11.0
Manufacturing	16.2	17.5	20.4	23.0	27.5	25.2	27.7	27.9	20.0	9.2
Transportation and storage	4.7	4.7	4.6	4.8	4.9	4.3	4.5	4.0	4.1	5.2
Other	10.4	11.8	11.3	11.0	10.9	12.7	9.8	11.5	12.5	19.5
Most affected sectors	35.3	36.0	37.1	38.3	37.9	45.9	37.7	42.2	46.2	39.5

Sources: Banco de Portugal and Citius. | Notes: Initiating insolvency proceedings corresponds to any formal act whereby a creditor or debtor brings an application for insolvency before a judicial court. Excludes public corporations, head offices and the classes under sections K, O, T and U of the Portuguese Classification of Economic Activities (CAE) Rev.3. The sectors set out in Decree-Law No 22-C/2021 and the sectors eligible for the support line for economic recovery – Retomar programme (see online disclosure document Retomar at the Banco Português de Fomento [website](#), only in Portuguese) were considered the most affected sectors.

The sectors most affected by the pandemic crisis posted an increase of 31% in the number of firms with insolvency proceedings initiated in 2020, as opposed to the less affected sectors, which fell by 5%. In the first half of 2021 the number of firms with initiated insolvency proceedings,

compared with the first half of 2019, decreased by -4% and -33% for the sectors most and least affected, respectively. Notably, the accommodation and food services sector posted an increase in initiated insolvency proceedings (87% in 2020 and 48% in the first half of 2021 compared with the first half of 2019).

In 2020 and the first half of 2021, the manufacturing and accommodation and food services sectors accounted for a greater share in total insolvency proceedings initiated compared with their share in total NFCs, while the real estate and professional and administrative activities sectors had a lower share in total insolvency proceedings initiated than in the aforementioned set. The accommodation and food services sector is the main sector responsible for the increase in the share of the most affected sectors, while some trade sub-sectors were also noteworthy in the first half of 2021.

Using the Simplified Corporate Information (Informação Empresarial Simplificada – IES), it is possible to characterise the economic and financial situation that firms initiating insolvency proceedings in 2020 and the first half of 2021 had before the pandemic. For that analysis, information for 2019 (or 2018 in the case of non-availability of data for 2019) was taken into account.

Firms that initiated insolvency proceedings in 2020 or 2021, compared with total firms with IES information, had lower cash holdings in 2019, indicating higher cash needs, and greater difficulties in addressing short-term liabilities (lower current ratio) (Table B1.2). They also had lower profitability and lower capital ratio and higher indebtedness and leverage ratios (median values of 38% and 67% respectively, compared with 27% and 41% respectively for total firms in 2019). There was a higher share of firms initiating insolvency proceedings with negative equity (52%, as opposed to 27% for total firms in 2019). Firms that initiated insolvency proceedings also had lower ability to service their debt (as measured by the financing expenses coverage ratio). About 71% of firms that initiated insolvency proceedings between 2020 and 2021 had financial debt, compared with around 52% for all firms in 2019.

The sectors most affected by the pandemic crisis generally showed economic dynamism in the pre-pandemic period. Firms that initiated insolvency proceedings from the sectors most affected by the crisis had median values of the profitability ratio greater than the total of insolvent firms, while median indebtedness and leverage ratios were lower than those posted for the same total of insolvent firms. However, these firms had lower median values of capital ratio. Compared with the total number of firms in these sectors, those applying for insolvency were in a more fragile financial situation.

In 2020, there was a deterioration in profitability, indebtedness and financing expenses coverage ratios for total firms, observed throughout the corresponding distributions (percentiles). Despite these developments, the situation of total Portuguese firms remained much more favourable than that of firms that registered insolvency in 2020 and the first half of 2021. This conclusion also applies to firms in the sectors most affected by the pandemic, which maintained more robust financial ratios in 2020 than firms from the same sectors that initiated insolvency proceedings, except for the profitability ratio, an indicator that declined significantly for the firms from the sectors most affected in 2020.

Of the firms that initiated insolvency proceedings in 2020 or 2021, 56% had bank credit at the time of registering. This share is similar across sectors of activity that were more and less affected by the pandemic crisis (57% and 55% respectively). In June 2021, the banking sector's exposure to firms that initiated insolvency proceedings amounted to a total of €450 million, of which 32% related to firms from the sectors most affected by the pandemic. This exposure accounted for only 0.6% of the stock of loans to firms, with 57% of this amount being associated with loans that had already credit overdue.

Table B1.2 • Economic and financial ratios for total NFCs and NFCs that initiated insolvency proceedings in 2020 or 2021

	NFC - insolvency proceedings			NFC (2019)			NFC (2020)			Most affected sectors (p50)		
	p25	p50	p75	p25	p50	p75	p25	p50	p75	Insolvency proceedings	Total 2019	Total 2020
As a percentage												
Cash to assets ratio ^(a)	0	1	3	0	2	9	1	3	10	1	3	4
Profitability ^(b)	-5	2	8	5	10	19	2	7	17	6	12	5
Capital ratio ^(c)	-10	8	22	15	33	60	17	37	59	5	33	34
Leverage ratio ^(d)	38	67	85	6	41	65	7	41	64	55	37	40
Indebtedness ratio ^(e)	16	38	59	3	27	52	4	30	52	37	25	29
In number												
Current ratio ^(f)	1	1	2	1	2	4	1	2	4	1	2	2
Financing expenses coverage ratio ^(g)	0	0	5	3	8	32	2	6	28	1	11	4

Sources: Banco de Portugal and Citius. | Notes: Asset-weighted figures. Excludes public corporations, head offices and the classes under sections K, O, T and U of the Portuguese Classification of Economic Activities (CAE) Rev.3. Around 12% of the firms that initiated insolvency proceedings were not taken into account in the analysis because they had no information available in IES. The sectors set out in Decree-Law No 22-C/2021 and the sectors eligible for the support line for economic recovery – Retomar programme (see online disclosure document Retomar at the Banco Português de Fomento [website](#), only in Portuguese) were considered the most affected sectors. (a) Corresponding to the ratio of the firm's liquid financial assets (currency and bank deposits) to total assets; (b) Calculated as the ratio of EBITDA (earnings before interest, taxes, depreciation and amortisation) to equity plus obtained funding. Obtained funding includes loans from financial institutions, subsidiaries and shareholders, and debt securities issued. Equity and obtained funding are measured at book value; (c) Ratio of equity to assets; (d) ratio of obtained funding and the sum of equity and obtained funding; (e) ratio of current assets to current liabilities; (f) only for firms with financing expenses, corresponding to the ratio of EBITDA to financing expenses.

The business shock caused by the COVID-19 pandemic put many firms under extreme financial pressure, which did not materialise in a significant increase in insolvencies. Measures supporting business and the moratorium on insolvency proceedings are likely to have contributed to that outcome. There is currently a risk of increased insolvencies as the support measures expire. For non-viable firms, swift and effective proceedings should be ensured to allow them to exit the market, and resources could be reallocated to other activities. Swift corporate restructuring measures for viable firms should also be ensured.

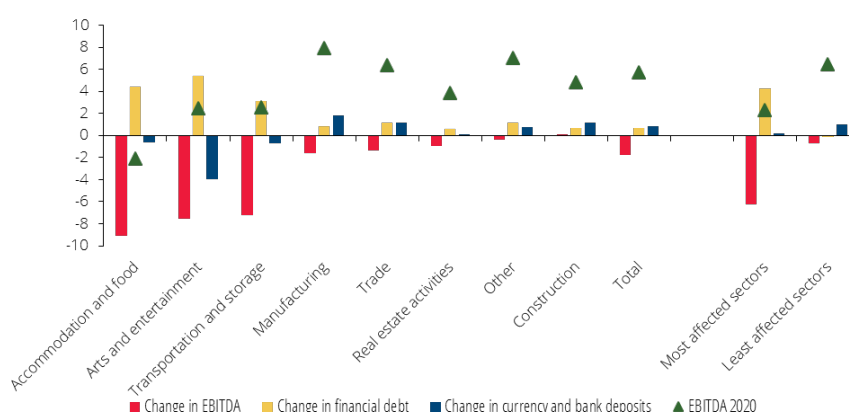
Box 2 • Heterogeneity of the impact of the pandemic on corporate indebtedness in 2020

The pandemic crisis has led to an increase in demand for credit by firms. The supply of bank credit, sustained by support measures, such as credit moratoria and State-guaranteed loans, as well as by the ongoing accommodative monetary policy, addressed this increase in demand, resulting in an increase in corporate debt. Using the Simplified Corporate Information (Informação Empresarial Simplificada – IES) database, this box analyses developments in corporate indebtedness throughout 2020, focusing on the asymmetry observed in the accumulation of debt across sectors of activity.

In 2020, despite the increase in firms' financial debt, its weight in assets remained unchanged at around one-third. At the same time, deposits increased more than debt, with the cash-to-assets ratio rising by 0.9 p.p. to 9.2%.

However, these aggregate figures underlie differentiated developments across firms. The asymmetric impact of the pandemic crisis was reflected in different sectoral developments in debt and deposits (Chart B2.1). Accommodation and food services, arts and entertainment, and transportation and storage sectors, most affected by the pandemic, recorded a significant increase in debt and a reduction in deposits. In turn, in less affected sectors, such as manufacturing and construction, the increase in debt was smaller than the increase in deposits. The trade sector, which includes some sub-sectors most affected by the pandemic, recorded similar debt and deposits increases.

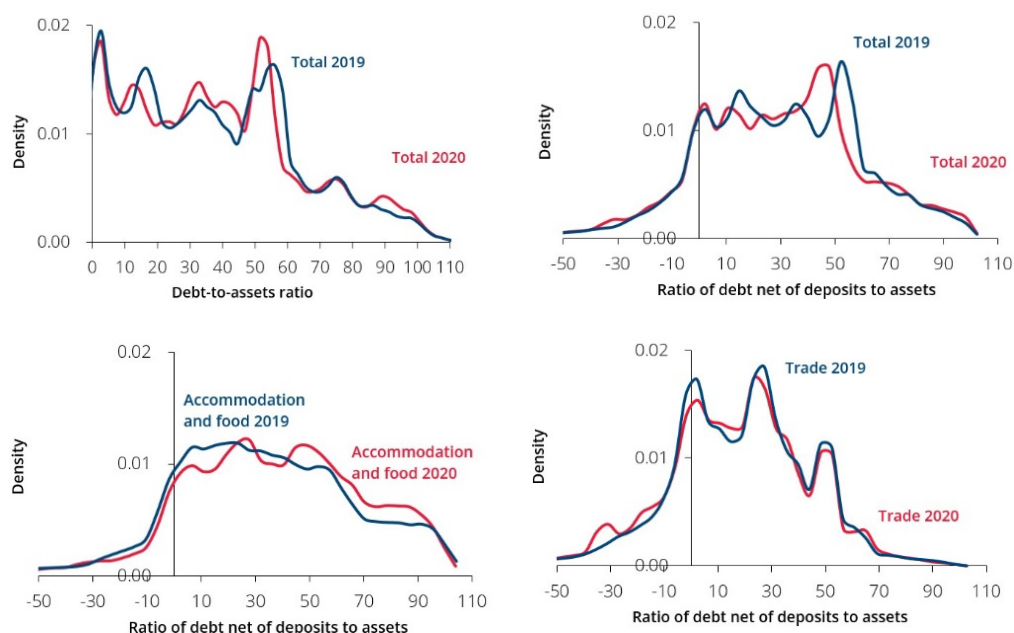
Chart B2.1 • Change in EBITDA, financial debt and currency and deposits in 2020 | As a percentage of assets



Source: Banco de Portugal. | Notes: Excluding head offices and holding companies. Also excluded are firms following an economic year other than the calendar year and that, for this reason, did not submit the 2020 IES up to the cut-off date for this Report. Sectors are shown in order of change in EBITDA in 2020. The sectors classified as most affected are the ones set out in Decree-Law No 22-C/2021 and those eligible for the support line for economic recovery: Retomar programme (see online disclosure document Retomar at the Banco Português de Fomento website, only in Portuguese).

The distribution of the debt-to-assets ratio changed slightly in 2020, in line with aggregate developments. In particular, as regards the debt ratio net of deposits, there was no accumulation of firms with excessively high debt net of deposits to assets, compared with 2019 (Chart B2.2). However, the accommodation and food services sector shows a more marked distribution shift, a pattern similar to that in the arts and entertainment and in transportation and storage sectors. On the other hand, trade does not see an increase in density at higher ratios of debt net of deposits.

Chart B2.2 • Distribution of the debt ratio and of the ratio of debt net of deposits as a percentage of assets in 2019 and 2020 | Per cent

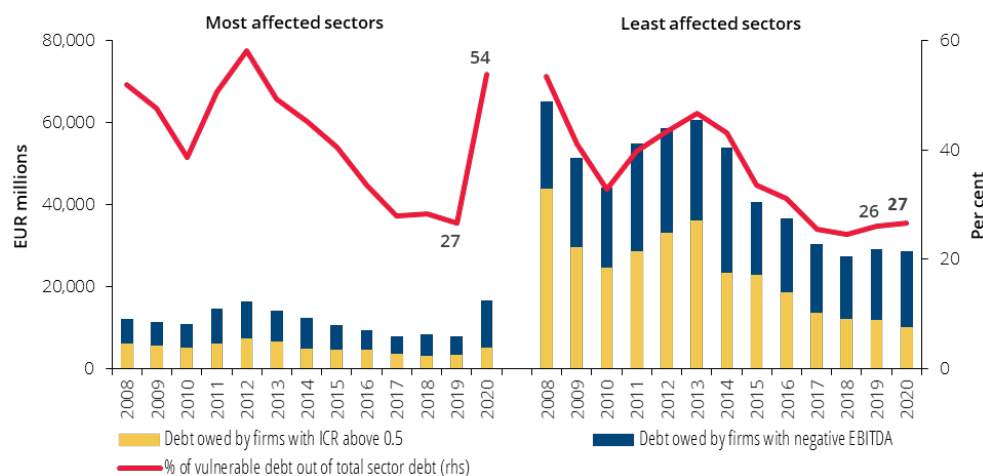


Source: Banco de Portugal. | Notes: Excluding head offices and holding companies. Also excluded are firms following an economic year other than the calendar year and that, for this reason, did not submit the 2020 IES up to the cut-off date for this Report.

However, the analysis of corporate indebtedness should take into account developments in firms' financial situations, notably their viability and their ability to service debt. Chart B2.3 shows the evolution of debt in financially vulnerable firms. This financial vulnerability indicator is calculated on the basis of the proportion of operating income allocated to interest payments in each firm. Debt of these firms in the most affected sectors doubled between 2019 and 2020. These developments mainly reflect a composition effect associated with firms that started posting negative EBITDA in 2020. In least affected sectors, where this effect was residual, debt associated with vulnerable firms remained unchanged.

Firms that became financially vulnerable in 2020 increased their bank loans by 30%, a significant increase compared with that observed for other firms (Table B2.1). However, these firms' contribution to the increase in loans to NFCs was lower than the contribution from firms with no indication of financial vulnerability (4.5 p.p. and 5.6 p.p. respectively). In September 2021 loans to NFCs decelerated strongly, particularly in firms that became vulnerable in 2020, whereby firms with no indication of financial vulnerability continued to make the largest contribution to aggregate developments in this indicator.

Chart B2.3 • Developments in debt owed by financially vulnerable firms



Source: Banco de Portugal | Notes: Excluding head offices and holding companies. A firm is defined as being financially vulnerable in a given year if the ratio of interest expenses to EBITDA is above 0.5 or if EBITDA is negative. For more details, see Augusto, F., and Mateus, M. (2021). "Portuguese firms' financial vulnerability and excess debt in the context of the COVID-19 shock". *Banco de Portugal Economic Studies*, Vol. VII, No 1.

Table B2.1 • Developments in bank loans to NFCs according to their vulnerability | Year-on-year rate of change, per cent, and contributions, percentage points

Financially vulnerable NFCs ^(a)	Share in total	YoY rate of change		Contribution to the YoY rate of change	
	Dec 20	Dec 20	Sep 21	Dec 20	Sep 21
In 2019 and 2020	16.3	2.7	-3.0	0.5	-0.5
Only in 2020	17.8	30.0	8.0	4.5	1.4
Only in 2019	5.5	-8.9	-6.8	-0.6	-0.4
Neither year	57.6	9.9	6.8	5.6	3.9
Not allocated ^(b)	2.8	-24.8	-30.4	-1.0	-0.9
NFCs	100.0	9.0	3.5	9.0	3.5

Source: Banco de Portugal | Notes: (a) Excluding head offices and holding companies. A firm is defined as being financially vulnerable in a given year if the ratio of interest expenses to EBITDA is above 0.5 or if EBITDA is negative. For more details, see Augusto, F., and Mateus, M. (2021). "Portuguese firms' financial vulnerability and excess debt in the context of the COVID-19 shock". *Banco de Portugal Economic Studies*, Vol. VII, No 1. (b) The "not allocated" component includes companies that, according to the Central Credit Register (CCR), have loans but did not submit the IES files in 2019 or 2020.

Vulnerable firms' increase in debt should be considered alongside the outlook for economic activity in the coming years. To the extent that a large share of firms and sectors of activity are expected to return, in 2022 and 2023, to the profitability observed before the pandemic (Special issue "Portuguese firms' financial situation in the aftermath of the COVID-19 pandemic") the increase in this indicator in 2020 is expected to be significantly reversed. Nevertheless, it is essential that banks maintain a careful policy of assessing credit risk on their balance sheets and are, at the same time, proactive in designing loan refinancing/restructuring solutions that promote the recovery of viable firms.

Box 3 • Measuring the share of loans with public guarantees and under moratorium granted to zombie firms

The Covid-19 crisis has had a severe impact on the world economy. In Portugal, as in many other countries, businesses had to close or reduce their opening hours during lockdown periods. In response, the Portuguese government set up different state support measures, such as state guarantees for new loans and a public moratorium for existing ones. Non-financial corporations (NFCs) could only access the public moratorium, as there were no private ones. Against this background, it is important to understand what kind of firms have benefitted from these support measures. Did the loans with state guarantee only go to firms with viable business models, or did they lead to an increase in the credit granted to so-called zombie firms? What type of firms accessed the public moratorium?

This box presents an overview of the evolution of the share of zombie firms in Portugal and then examines how zombie firms accessed loans with state guarantees and the moratorium.

What is a zombie firm?

There is currently no consensus in the economic literature on how to define a zombie firm. The best-known approach has been championed by McGowan et al. (2018) and is based on two cumulative criteria. First, the firm exhibits an interest coverage ratio² below one for three consecutive years. Second, it has to be at least ten years old. The second criterion takes into account that young firms are often not yet financially stable and can therefore too easily fall into the first criterion.

Another popular definition is the one by Storz et al. (2017). They classify a firm as a zombie if it exhibits, for two consecutive years, (i) a ROA (net income / total assets) < 0, (ii) net investment < 0 and (iii) debt-servicing capacity (EBITDA/financial debt) < 5%. In both cases, the proposed definitions are binary. Thus, a firm might well be close to the respective cut-off values for the zombie definition but will be classified as a non-zombie and vice-versa. Mingarelli et al. (forthcoming) address this issue by taking the original definition of Storz et al. (2017) and transforming it into a fuzzy one, i.e., their zombie score is bounded between 0 and 1 but continuous within this interval. Firms with a zombie score “Z” equal to 1 are denominated zombie firms or full zombie firms. Firms whose zombie score lies in the range between 0 and 1 ($0 < Z < 1$) are called quasi-zombies and firms with a zombie score equal to 0 are classified as non-zombies.

Share of zombie and quasi-zombie firms in Portugal

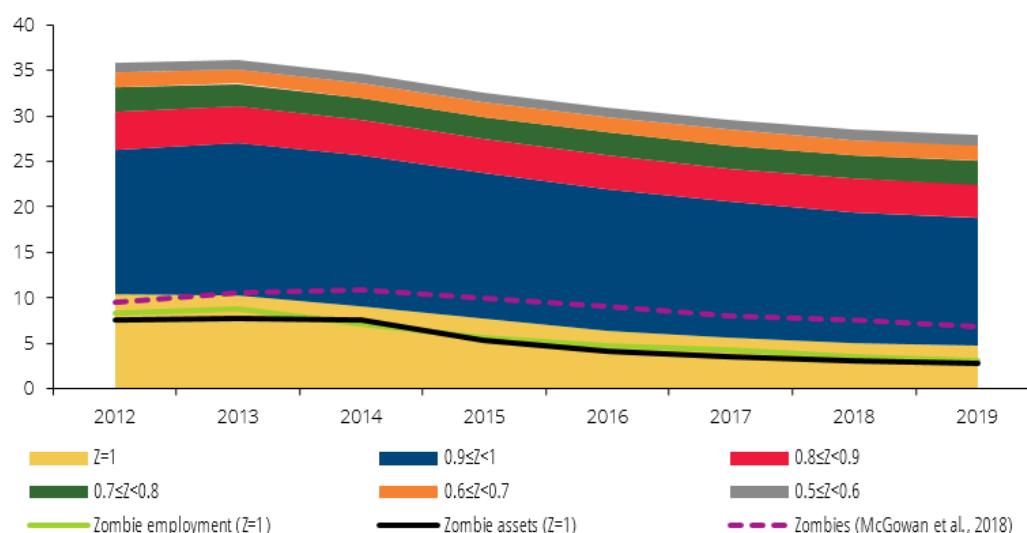
Chart B3.1 compares the results of the McGowan et al. (2018) zombie definition with those of the approach proposed by Mingarelli et al. (forthcoming) for firms in Portugal. Results indicate a decline in the share of zombie firms over time. Using the McGowan et al. (2018) definition, the share of zombie firms stood at 6.9% in 2019, a decline of 4 pp from its peak in 2014. Using the definition of Storz et al. (2017), the zombie share is only 4.8% in 2019 (down from 10.4% in 2012). Chart B3.1 also plots the share of firms with a fuzzy zombie score of 0.5 or higher. In 2019, 28.1% of Portuguese firms fell into this range. 14.0% were in the range between 0.9 and 1, i.e., they were relatively close to being full zombies ($Z=1$). The large share of firms in this range is mainly driven by small firms with zero net investment. 9.3% of the firms had a zombie score between 0.5 and 0.9. As in the binary definition, the share of firms with a zombie score above 0.5 has been declining steadily since its peak in 2013 (36.1%).

This decline is also observed when looking at the employment- and asset-weighted shares of full zombie firms, obtained by weighting the full zombies by their respective shares of employment and assets within the overall population of firms. The share of employment-weighted zombie firms stood

² The interest coverage ratio is calculated as the ratio of EBITDA (earnings before interest, taxes, depreciation and amortisation) to interest expenses.

at 8.8% in 2013 and declined to 3.1% in 2019, whereas the share of asset-weighted zombies declined from 7.7% in 2013 to 2.9% in 2019. These results indicate that Portuguese zombie firms are smaller than the average firm, accounting for less employment and total assets.

Chart B3.1 • Share of zombie and quasi-zombie firms in Portugal | Per cent

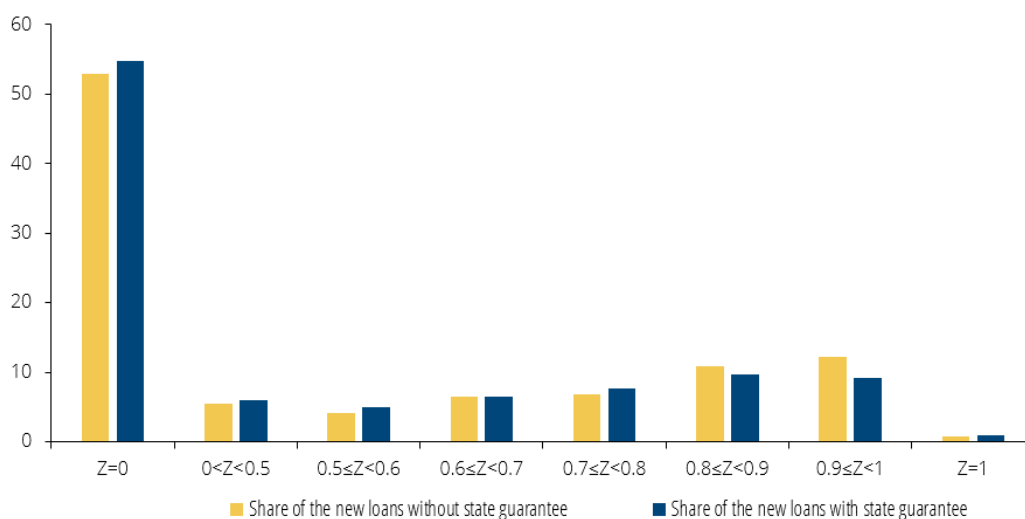


Source: Banco de Portugal. | Notes: The graph depicts the share of firms in Portugal for different levels of “zombification”, calculated according to the methodology by Mingarelli et al. (forthcoming). The yellow part depicts the share of full zombies, i.e., firms that exhibit the following characteristics: (i) ROA < 0, (ii) net investment < 0 and (iii) debt-servicing capacity < 5%, for two consecutive years. The green line weighs the full zombie firms by their share in the number of employees, the black line by their share in total assets. The dashed line gives the share of zombie firms calculated with the methodology of McGowan et al. (2018).

Zombie firms, state-guaranteed loans and moratoria during the pandemic

Between March 2020 and June 2021, 54.8% of the amount of the new loans with state guarantees went to non-zombie firms (firms’ level of zombieness was assessed based on the data available up to 2019, i.e., before the pandemic), whereas this share was 52.9% for new loans without state guarantees (Chart B3.2). Only 0.9% of the amount of new loans with a state guarantee was granted to full zombie firms.

The proportion was almost identical for new loans without a state guarantee, about 0.8%. 38.4% of new loans with a state guarantee were obtained by firms with scores below 1 and higher than or equal to 0.5. About half of this amount went to firms with a zombie score of 0.8 or higher but below 1. The fact that loans with state guarantees predominantly went to non-zombie firms or firms with low zombie scores reflects the strict access conditions for these types of loans.

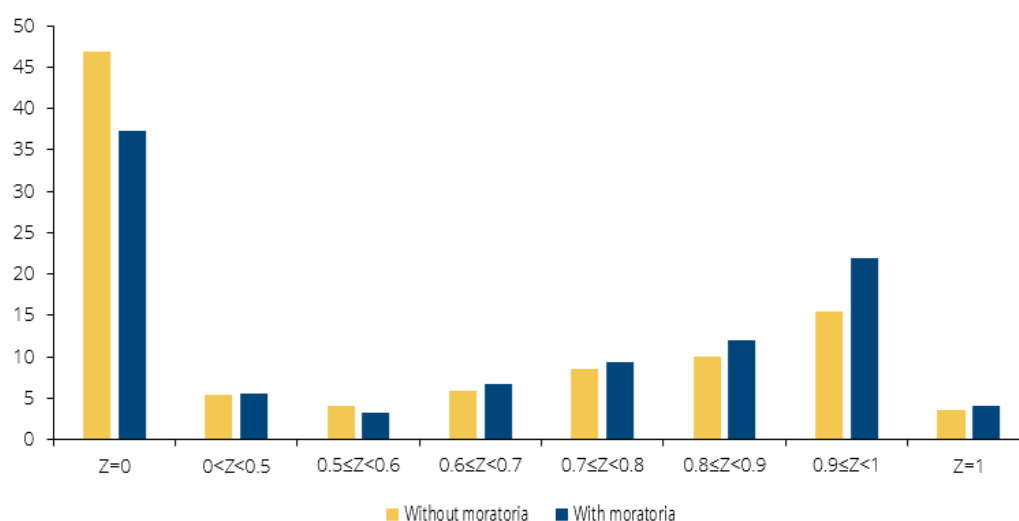
Chart B3.2 • Share of the amount of new loans granted to zombie, quasi-zombie and non-zombie firms | Per cent

Source: Banco de Portugal | Notes: The graph depicts the share of the amount of new bank loans, with and without a state guarantee, allocated to zombie, quasi-zombie and non-zombie firms between March 2020 and June 2021. The zombie score of the firms is based on financial data available up to 2019. Yellow bars represent the share of the new loans without a state guarantee. Blue bars refer to the share of new loans with a state guarantee.

Access requirements were softer for the moratorium than those for state-guaranteed loans. Nevertheless, only 4.0% of the amount of the loans under moratorium belong to full zombie firms (firms' level of zombieness was assessed based on the data available up to 2019, i.e., before the pandemic). The respective share is 53.1% for firms with zombie scores above (or equal to) 0.5 and below 1 (Chart B3.3). This indicates that the share of loans under moratorium that belongs to lower-quality firms is larger than that of higher-quality firms. However, it is noteworthy that also a large share of loans under moratorium belongs to non-zombie firms (37.3%).

Summing up, the share of new loans with a state guarantee belonging to full zombies and full zombies' share in the stock of loans under moratorium was relatively low. Nevertheless, a significant share of these loans was associated with quasi-zombie firms with a high level of "zombification" (zombie score greater than or equal to 0.5 and less than 1). After the moratorium has expired, it will become clear whether these firms will be able to resume paying back their loans, whether they will be able to do so after a successful restructuring, or whether there will be an increase in the level of "zombification" of Portuguese firms.

Chart B3.3 • Share of the stock of pre-pandemic bank loans allocated to zombie, quasi-zombie and non-zombie firms | Per cent



Source: Banco de Portugal | Notes: The graph depicts the share of the stock of bank loans, with and without moratorium, granted to zombie, quasi-zombie and non-zombie firms. The zombie score of the firms is based on financial data available up to 2019. The loan stock analysed is referenced to March 2020, the start of the COVID-19 pandemic. Access to the moratorium was evaluated with reference to the end of March 2021, the deadline for requesting access to the access to the moratorium. Yellow bars refer to the share of the amount of loans that did not benefit from the moratorium, blue bars to the share of the amount of loans under moratorium.

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- Mingarelli, L., Ravanetti, B., Shakir, T., and Wendelborn, J. (forthcoming). "On the identification of zombie firms: Methodological perspectives", *ECB Working Paper Series*.
- Storz, M., Koetter, M., Setzer, R., and Westphal, A. (2017). "Do we want these two to tango? On zombie firms and stressed banks in Europe", *ECB Working Paper Series* (2104).

Box 4 • Default contagion between different segments of credit to households

Default in one credit segment may constitute an advanced indicator of future default by the same debtor in another segment. Identifying trends associated with default contagion between different credit segments, namely between consumer credit and housing loans, is important for financial stability, allowing effects on the balance sheets and profitability of financial institutions to be anticipated. From the institutions' perspective, the timely identification of borrowers with a greater likelihood of contagion allows renegotiation proceedings to be triggered to maximise the probability of recovery and prevent contagion spreading to other loans.

This Box analyses the borrowers who, between early 2009 and June 2021, simultaneously held a housing loan and consumer credit and registered a credit event in at least one of these segments, with the same institution or different credit institutions. A credit event is considered to have occurred in a loan when, for three consecutive months, there is a delay in meeting the loan's credit obligations, the amount past due is greater than €100 and the fraction of credit past due is greater than one per cent of the total exposure. The consumer credit segment includes credit cards, car loans and personal loans. The analysis uses data reported by financial institutions to the Banco de Portugal's Central Credit Register.

The sample chosen covers approximately 307 thousand borrowers. The majority of these borrowers (67.6%) registered a credit event in only one of the credit segments (Table B4.1). Notwithstanding, the contagion between different credit segments was frequent (30% of borrowers), being that contagion from consumption to housing was more frequent (21.7% of borrowers) than contagion from housing to consumption (8.3% of borrowers). Finally, 2.3% of borrowers registered credit events in both segments simultaneously.

Chart B4.1 presents the contagion survival rates between different credit segments, based on the estimated Kaplan-Meier survival function (Kaplan and Meier, 1958). The chart illustrates the probability of borrowers avoiding a second credit event over a time horizon of up to 24 months after having registered a first credit event (in consumer credit or housing loans). The probability of surviving contagion falls quickly in the first months after the first credit event and more slowly thereafter. This result suggests that contagion occurs more frequently as soon as the first credit event is registered. This development is known in the literature on credit scoring models as early default syndrome. Three months after an event involving consumer (housing) credit, the probability of the housing (consumer) credit not being contaminated is 79% (71%). After 24 months, the probability of surviving contagion falls to 33% and 29% respectively. The survival function associated with consumption-housing contagion is always higher than the survival function associated with housing-consumption contagion. This difference in level shows that the probability of contagion of consumption is greater after an event involving a housing loan than the probability of contagion of a housing loan following a consumer credit event.

Table B4.1 • Characterisation of debtors in the sample according to the segment in which the credit events occurred | Per cent and number (thousands)

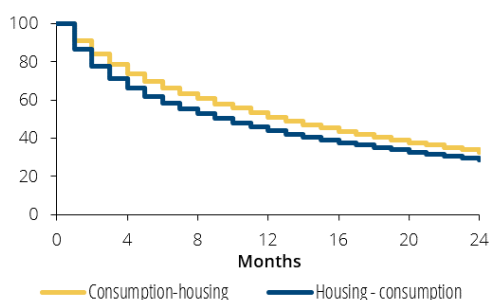
	Per cent of debtors with credit events	Product in which the consumer credit event took place			Memo item: Number of debtors on the CCR at end-June 2021 ^(a)
		Credit card	Personal loan	Car loan	
Only housing	15.2	-	-	-	714.7
Only consumption	52.4	25.7	17.9	8.8	1,825.5
Consumption and housing	32.4	11.6	16.0	4.7	1,396.8
Simultaneous in consumption and housing	2.3	0.5	1.7	0.2	-
Consumption first	21.7	8.2	10.0	3.6	-
Housing first	8.3	3.0	4.3	1.0	-

Source: Banco de Portugal. Notes: (a) The final column shows the total number of debtors in each credit segment, based on information available in the CCR at end-June 2021. Debtors whose amounts outstanding were under €50 were not accounted for.

The probability of surviving contagion following a credit event in the consumption segment is negatively correlated with the debtor's exposure. For those debtors who owe more than €200 thousand (about 4% of debtors), the probability of surviving beyond 24 months was about 19%. For those debtors who owe less than €100 thousand (about 79% of debtors), the probability of surviving was 35% (Chart B4.2). The economic literature suggests a negative relationship between the amount of credit for house purchase by households, which typically represents the largest part of their indebtedness, and the probability of default (Farinha and Lacerda, 2010). All other things being equal, higher amounts of indebtedness are associated with debtors with higher incomes and lower risk. Notwithstanding, this analysis focuses on debtors who were already in financial distress, being reasonable to presume that a higher amount of indebtedness can contribute to increase the probability of contagion.

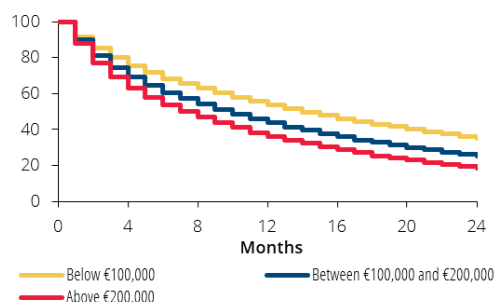
Debtors whose weight of consumer credit as a proportion of their total exposure was above the sample's median (14%) showed a greater likelihood of contagion following a credit event in consumer credit. The probability of surviving contagion by these debtors after 24 months was about 24%, significantly lower than those debtors whose weight of consumer credit was below the median (40%) (Chart B4.3).

Chart B4.1 • Kaplan-Meier survival function:
Consumption - housing and housing -
consumption contagion | Per cent



Source: Banco de Portugal. | Note: The survival functions presented are based on debtors who registered credit events in both credit segments during the period analysed.

Chart B4.2 • Kaplan-Meier survival function
by amount of debtor's exposure: Consumption
- housing contagion | Per cent



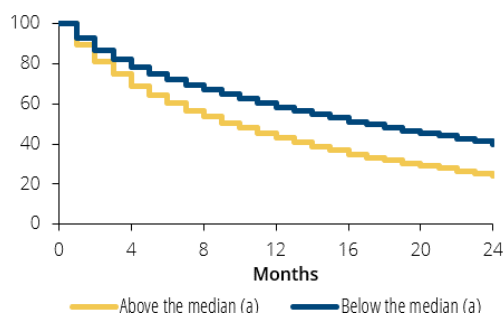
Source: Banco de Portugal. | Notes: The survival functions presented are based on debtors who registered a first credit event in the consumer credit segment and a second event in the housing loan segment. For those debtors who experienced consumption - housing contagion, about 79% had an exposure of less than €100,000; 17% had an exposure between €100 and €200 thousand and only 4% had an exposure above €200 thousand.

The product in which the consumer credit event took place also seems to influence the probability of contagion. When the consumer credit event occurs in personal loans, the probability of contagion of housing loans is greater than when the consumer credit event occurs in car loans (Chart B4.4). The results also show that consumption - housing contagion is more probable when both credit events occur in the same financial institution (Chart B4.5), with debtors with more credit products (Chart B4.6) and debtors who have registered delays in meeting their credit obligations in the past. The effect of the variables analysed on the contagion between housing loans and consumer credit is similar to that reported for the consumption - housing contagion. Finally, the main results presented do not change when the duration of the credit moratoria is excluded.

The results of this analysis thus demonstrate that the contagion between different credit segments of one debtor is relatively frequent. The probability of contagion, on a time horizon of up to 24 months, correlates with the debtor's level of indebtedness, the weight of consumer credit, the product in which the consumer credit event took place, the number of credit products held by the debtor and whether the credit events took place in the same or different institutions. In the context of the end of the moratoria, the timely identification by the financial system of debtors in financial

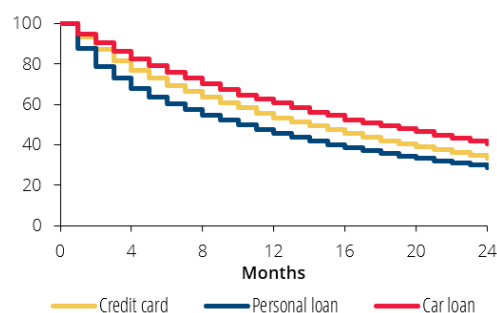
distress is key to trigger credit renegotiation proceedings and thus mitigate contagion between different products and credit segments.

Chart B4.3 • Kaplan-Meier survival function according to the weight of consumer credit in the exposure: Consumption - housing contagion | Per cent



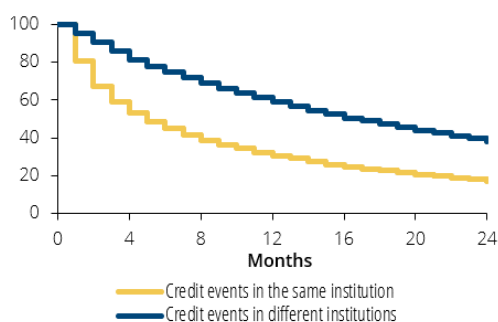
Source: Banco de Portugal. | Notes: (a) The median weight of consumer credit as a proportion of total exposure was approximately 14%. The survival functions presented are based on debtors who registered a first credit event in the consumer credit segment and a second event in the housing loan segment.

Chart B4.4 • Kaplan-Meier survival function by product in which the consumer credit event took place: Consumption - housing contagion | Per cent



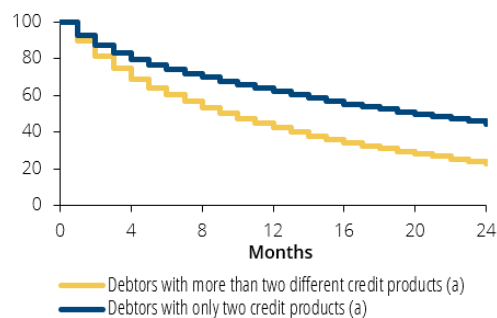
Source: Banco de Portugal. | Note: The survival functions presented are based on debtors who registered a first credit event in the consumer credit segment and a second event in the housing loan segment.

Chart B4.5 • Kaplan-Meier survival function according to whether the credit events occurred in the same institution or different institutions: consumption - housing contagion | Per cent



Source: Banco de Portugal. | Notes: The survival functions presented are based on debtors who registered a first credit event in the consumer credit segment and a second event in the housing loan segment.

Chart B4.6 • Kaplan-Meier survival function by number of different credit products held by the debtor: consumption - housing contagion | Per cent



Source: Banco de Portugal. | Notes: (a) The debtors in the sample may have, at most, four different types of credit: housing loan, credit card, personal credit and car loan. The survival functions presented are based on debtors who registered a first credit event in the consumer credit segment and a second event in the housing loan segment.

References

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Kaplan, E. L., and Meier, P. (1958). "Nonparametric estimation from incomplete observations." *Journal of the American Statistical Association* 53(282), 457-481

Box 5 • Prospects for the adoption of new information technologies by the major Portuguese banks

Technological innovation and digitalisation in financial activities have been affecting the banking sector in different dimensions, a process that intensified in the pandemic context. Faced with business models that are ever more reliant on digitalisation it is important to ensure that digital transformation is a strategic priority for banks to ensure their competitiveness and operational resilience.

Digitalisation requires significant initial investments, but it can promote substantial cost savings by streamlining resources and processes and developing risk management, extracting greater value from customers' data. It also allows banks to adapt to growing customers' demands in terms of convenience and speed, which are essential to face the competition from new market participants (namely FinTechs in the area of payments and BigTechs).

The digitalisation of Portuguese banks is below the European Union (EU) average, although it has shown higher growth in recent years. According to the International Monetary Fund's Financial Access Survey (2021) and using as a reference the number of mobile and internet banking transactions per 1,000 adults, the number observed in Portugal in 2020 was slightly below half the number observed for the EU. However, it registered a growth rate of 137% in the last three years, compared to 21% in the EU. This development should have contributed to maintaining the availability of banking services against a background where a quarter of branches closed between 2017 and 2020. The use of automated teller machines (ATMs) also contributed to this development, considering that in Portugal, the ATM system is highly developed in terms of network, range and quality of banking operations allowed, which mitigates the relevance and added value of digital channels. In Portugal, the number of ATMs per 100,000 adults is roughly double that of the EU average and in this period there was a smaller reduction in ATMs in Portugal than in the EU.

The Banco de Portugal, within the scope of the 2021 Financing and Capital Plans (submitted under Instruction of the Banco de Portugal No 18/2015), requested information from the major Portuguese banks on the digitalisation of their operations. The answers provided by the banks revealed some heterogeneity, which does not invalidate the main prospects for the 2020-2023 period presented in this Box.

Banks plan to maintain investment in digitalisation at 2020 levels, with a slight increase in the non-recurring component. Banks foresee an annual financial allocation in information and communication technologies, digitalisation and cybersecurity (IDC) of 16% of operational costs for the projection period, of which about one-quarter corresponds to non-recurring investment, usually associated with banking transformation processes. The non-recurring component of the investment in IDC varies between 24% and 29% throughout. The institutions project that the human resources allocated to IDC activities will remain at about 10% of total staff or approximately one-quarter of total back-office staff. About 40% of these resources are outsourced. In general, the weight of outsourcing in larger institutions is higher, with values over 60%.

Banks foresee a growth in digital channels' turnover but without a material reflection on the increase in income associated with these operations. The relative importance of digital customers (online and mobile) in banks' active customer base is expected to grow from under 50% in 2020 to around two-thirds in 2023, with the online channel continuing to have the highest share. About one-fifth of the turnover observed in 2020 is associated with digital channels, with a growth rate of approximately 6 p.p. expected by 2023. However, this increase does not have a proportional reflection on the weight of income from digital channels in total income.

Digitalisation should contribute to a reduction in the time and cost of banking services. Banks predict a small reduction in the duration of main front-office and back-office processes. A reduction is also expected in cost-to-serve of around 7% by 2023, being that in the case of digital

customers that reduction is projected to be about 14%. In 2020, the cost-to-serve digital customers was higher than the average cost-to-serve associated with all customers, and there are expectations that it will be lower by 2023.

Portuguese banks invest in digitalisation to remain competitive, aiming to continue to allocate a substantial share of human and financial resources to digitalisation processes. In some cases, this investment is made through outsourcing, which allows to address shortages of qualified resources in these areas but introduces a greater dependence of the institution's digitalisation strategy on third parties.

Despite the projections not suggesting an increase in efficiency in the duration of processes, banks expect to reduce cost-to-serve and other indirect costs such as those associated with the possible replacement of branches by operations through digital channels. This investment is needed to avoid loss of income by enabling banks to meet customers' needs in terms of greater convenience and competitive pressures. Thus, a significant increase in turnover through digital channels is expected.

It should also be emphasised that the growing use of and dependence on new information technologies also entails operational risks for which banks must continue to reinforce their defences. Supervisors have been particularly alert to these risks, including them in their supervisory priorities, namely in terms of cybersecurity and data protection.

II Special issues

Portuguese firms' financial situation
in the aftermath of the COVID-19 pandemic

Rebuilding capital buffers:
a discussion on different
paces of convergence

Portuguese firms' financial situation in the aftermath of the COVID-19 pandemic

1 Introduction

The pandemic and the lockdown measures led to an abrupt and unexpected decline in economic activity, with an immediate impact on the liquidity position of firms. The persistent health crisis has contributed to the risks of liquidity shortages over the short-term translating into insolvency risks in the medium term.

With a view to assessing the impact of the pandemic crisis and the recovery profile on firms' financial situations, this Special issue presents the results of a stylised simulation model for the balance sheet, profit and loss account and cash flow statement at firm level (Augusto et al., forthcoming). The model incorporates firms' heterogeneity, taking into account not only the pre-pandemic financial situation, but also differentiated activity developments over the simulation horizon (2021 to 2023). The macroeconomic scenario adopted, published in the June 2021 issue of the *Economic Bulletin*, encompasses a recovery of economic activity to pre-pandemic level by early 2022, with some of the most affected sectors recovering only in 2023.

Building on this scenario, and following the 2020 decline, average corporate profitability is estimated to gradually recover by 2023 to a level above the pre-pandemic period, with some heterogeneity across sectors and an increase in dispersion across firms within the same sector, particularly in micro firms and firms in the accommodation and food service and trade sectors. Reflecting the recovery in profitability, the liquidity position of firms gradually improves over the simulation horizon, particularly in micro firms.

The capital ratio, which has not dropped, at aggregate level, after the pandemic shock, shows a residual increase over the projection horizon, with sharper rises in construction and real estate activities and trade sectors and a fall in the accommodation and food service sector.

The decline in the profitability and the capital ratio associated with the worst performing firms, measured in the lower percentiles of their distributions, suggests that heterogeneity in recovery could contribute to an increase in the risk of insolvency in these firms, particularly in the most affected sectors.

Reflecting the increased density at low values of the capital ratio, between 2020 and 2023, the number of firms with negative equity or insolvent is expected to rise, in particular in the accommodation and food service sector. This increase is, however, much less sharp when firms are weighted by their assets, reflecting a poorer economic performance of smaller firms.

Deterioration in the financial situation of some firms and insolvency are recurrent events in any economic cycle, varying in intensity according to the performance of the economy. Against this background, the increased share of firms with negative equity is estimated to be higher than in the period preceding the pandemic crisis (2015-2019), but lower than in the sovereign debt crisis period (2010-2014).

The outcome is the result of a stylised exercise founded on assumptions, some of which based on past elasticities and financial decisions, which are deemed to be valid over the projection horizon. As it is always complex to forecast financial variables for firms, this exercise becomes even more

difficult in the current environment of elevated uncertainty and potential discontinuity from the past. This uncertainty was mitigated by sensitivity analyses performed on several assumptions of the model.

2 Modelling firms' balance sheet over the simulation horizon

2.1 Model, universe of firms and key assumptions

The financial situation of each firm is analysed with a simulation exercise of its balance sheet, profit and loss account and cash flow statement. The exercise simulates the evolution up to the fourth quarter of 2023, starting with each firm's situation as at December 2020 and estimating sequentially in each quarter the financial items of the firms. It uses firm level data available at the Central Balance Sheet Database (CBSDB) and Central Credit Register (CCR), combined with the macroeconomic scenario published in the June 2021 *Economic Bulletin*.

The simulation exercise focused on private non-financial corporations with positive equity at end-2019. It considered firms with information in the CBSDB, excluding firms in general government and defence, financial services and head offices and management services sectors. Firms with zero assets, sales or staff expenses in 2019 were excluded. The application of these criteria resulted in a universe of about 241 thousand firms, corresponding to 64% of assets, 87% of GVA and 86% of total staff expenses of all Portuguese firms. This universe was held constant over the simulation horizon 2020-2023.

The operating cash flows of each firm reflect sectoral projections for the respective economic activity and, combined with an idiosyncratic factor, account for sector heterogeneity. In particular, the evolution of each firm was assumed to be randomly defined on the basis of a uniform distribution that simulates profiles around the projection for the average GVA of the firm's sector of activity. The evolution of intermediate and staff expenses depend on their elasticities to operating income. Other variables are simulated under assumptions anchored on firms' tax and accounting background and/or on the historical pattern. The sector of activity, the firms' size and the distinction between crisis and recovery periods are also considered in the assumptions made.

Interest expenses are calculated in reference to the average interest rates and maturities associated with bank loans of each firm between the first quarter of 2020 and the second quarter of 2021. Also included in the cash flow statement is financing raised over the period. It is assumed that each firm seeks financing (i) to suppress the liquidity shortfall that occurs if cash and deposits are insufficient to cover negative operating and financial cash-flows and (ii) to restore the liquidity situation it had before the pandemic, an assumption that corresponds to a liquidity accumulation for precautionary reasons. However, outside the framework of policy measures taken during the pandemic, the firm is deemed to obtain new financing only if its financial debt is below the excess debt threshold defined on the basis of the ratio between interest and EBITDA (as in Augusto and Mateus, 2021) or if the firm was growing before the pandemic (i.e., if its sales increased). Financial debt includes bank loans, debt securities and other financing recognised in the firm's liabilities.

In addition to the different evolution of cash-flows across firms, heterogeneity also results from the specification of the various assumptions (e.g., recourse to support measures and eligibility for new financing), which also consider the firm size and its sector of activity. Augusto et al., (forthcoming) includes a sensitivity analysis of the key assumptions of the exercise.

However, the model does not incorporate any structural changes or exceptional restructuring which might have occurred during this period, nor the dynamics of firm creation/destruction after 2019. In addition, due to lack of information availability, the exercise does not reflect the articulation between firms of the same economic group.

2.2 Firms support measures during the COVID-19 pandemic

The model incorporates the major business and employment support measures adopted by the Portuguese government during the pandemic, namely: (i) public credit moratorium, (ii) State-guaranteed credit lines and (iii) employment support measures herein referred to as 'layoff' (simplified layoff, support for gradual recovery and extraordinary incentive for the normalisation of business activity), considering the conditions outlined in the respective legal acts (Table 1).

Table 1 • Criteria for modelling support measures for businesses

	Public credit moratorium ^(a)	State-guaranteed credit lines ^(a)	Employment support measures (Layoff) ^(b)
Active period	Q2 2020 to Q3 2021	Possibility of applying to the credit lines between Q2 2020 to Q4 2021. Effects are extended up to the maturity of the loan.	Q2 2020 to Q4 2021
Firm selection/identification	CCR	CCR and specific eligibility criteria ^(c)	Assumption based on COVID-IREE ^(d) and firms' profitability after the first shock of the pandemic.
Model integration (main first-order effects)	Grace periods (principal and interest) Extension of loan maturity Access to financing even if the criteria outlined in the general model are not met Prohibition to distribute net income	Access to financing even if the criteria outlined in the general model are not met More favourable financing conditions, with an 18-month interest-only period	Cut in staff expenses supported by the firm in accordance with conditions specific to each quarter/measure Maintaining staff levels Prohibition to distribute net income

Notes: (a) Decree-Law No 10-J/2020 of 26 March 2020, as subsequently amended. (b) The three employment support measures for firms are considered under the term layoff: simplified layoff, support for gradual recovery and extraordinary incentive for the normalisation of business activity. Decree-Law No 10-G/2020 of 26 March 2020, Resolution of the Council of Ministers No 41/2020 and Decree-Law No 27-B/2020 of 19 June, as subsequently amended. The *Apoiar* programme was not considered due to lack of sufficiently detailed information to set assumptions for the incorporation of this support measure in the model. (c) Firms are deemed to be eligible if they have benefited from State-guaranteed credit lines (source CCR) or met all the following criteria in December 2019, i.e., before the pandemic: (i) positive equity, (ii) no overdue loans; and (iii) it is not an undertaking in difficulty, following criteria adapted from Regulation (EU) No 651/2014, which, within the framework of the model is materialised by the following conditions: (i) positive equity, and (ii) not being a SME, has a financial debt to equity ratio of less than 7.5 and interest expenses to EBITDA lower than 1. (d) COVID-IREE stands for the COVID-19 Fast and Exceptional Enterprise Survey launched by the Statistics Portugal and the Banco de Portugal in April 2020, aiming to identify some of the major effects of the COVID-19 pandemic on business activity.

2.3 Definition of indicators to assess firms' financial situation

The simulation of the accounting and financial statements allows for the calculation of several financial indicators. Firms' solvency is analysed based on the following indicators:

Negative equity: indicator used to assess situations where the assets of the firm are insufficient to meet its liabilities (Carletti et al. (2020), Guerini et al. (2020), Ebeke et. al. (2021)). This is a limited indicator because it omits the liquidity position of the firm, and the book value of assets and liabilities may differ from the market value.

Insolvency: indicator based on the definition of insolvency in the Insolvency and Corporate Recovery Code (Decree-Law No 53/2004 of 18 March 2004), which considers a firm that is unable to meet its obligations (liquidity criterion) or has liabilities that clearly surpass its assets (balance sheet criterion). Within the model framework, this definition encompasses firms with cash and other liquid assets below -10% of assets (liquidity criterion) and firms with equity below -30% of assets (balance sheet criterion). Some recent work, in particular Puhr and Schneider (2021), also consider these two dimensions.

Moreover, the **ROA** (EBITDA to assets ratio), the **capital ratio** (equity to assets ratio) and the **cash ratio** (total cash and bank deposits to assets ratio) are evaluated. The analysis of these three ratios' evolution considers the overall value of the set of firms. In turn, the analysis of the distributions is based on the percentiles weighted by each firm's assets as at December 2019.

3 Firms' financial situation in the 2020-2023 horizon

3.1 Evolution of key aggregates and financial indicators

In 2020, the pandemic crisis caused a decrease in the return on assets ratio, an increase in the capital ratio and in the cash ratio, in aggregate terms (Table 2). The rebound of the economy in 2021 and 2022 will enable the aggregate profitability to pick up to the 2019 level. The capital ratio and the cash ratio are also expected to increase. These three indicators will exceed, in 2023, the 2019 values.

The pandemic crisis impacted differently across the sectors of activity, with severe effects on accommodation and food services, where average profitability fell by 11.1 p.p. to -0.7% in 2020, and in transport and storage (-4.7 p.p. to 8.5%).

In the accommodation and food service sector, the shock led to a decline in the capital ratio, the estimated recovery being insufficient to restore the 2019 values (47.3% in 2019 against 43.2% in 2023). In turn, profitability has decreased in the transport and storage sector concurrently with a slight increase in the capital ratio in 2020, albeit due to a decrease in assets greater than the decrease in equity. The capital ratio of this sector in 2023 is estimated to be higher than in 2019 (around 33.4% compared to 32.9%, respectively), with a higher level of equity. These two sectors showed shortfalls in cash ratio in 2020, as opposed to increases in the remaining sectors of activity. However, the cash ratio is expected to increase in both sectors until 2023.

In the remaining sectors, the pandemic crisis brought about a drop in profitability in 2020, which is expected to reverse until 2023.

In 2020 the capital ratio increased in most other sectors of activity. It is expected that this trend continues and that 2023 values are higher than in 2019. This increase is followed by a robust growth in the cash ratio. It should be noted that, on top of improving the operational activity, the increase in the cash ratio for all sectors is associated with the assumption of precautionary liquidity accumulation. This assumption has an average effect of +1 p.p. on the cash ratio and financial debt in the projection.

In 2020, profitability fell across all firm size classes, but was most severe in large enterprises (-2.4 p.p.). Profitability will recover faster in large enterprises and all classes will recover to the pre-pandemic level in 2023. Throughout the horizon, smaller firms' profitability is lower than in larger firms.

The cash ratio is higher in smaller firms, with an estimated sharper increase in micro enterprises, +9.7 p.p. in 2023 compared to 2019, which compares with +1.6 p.p. in large enterprises.

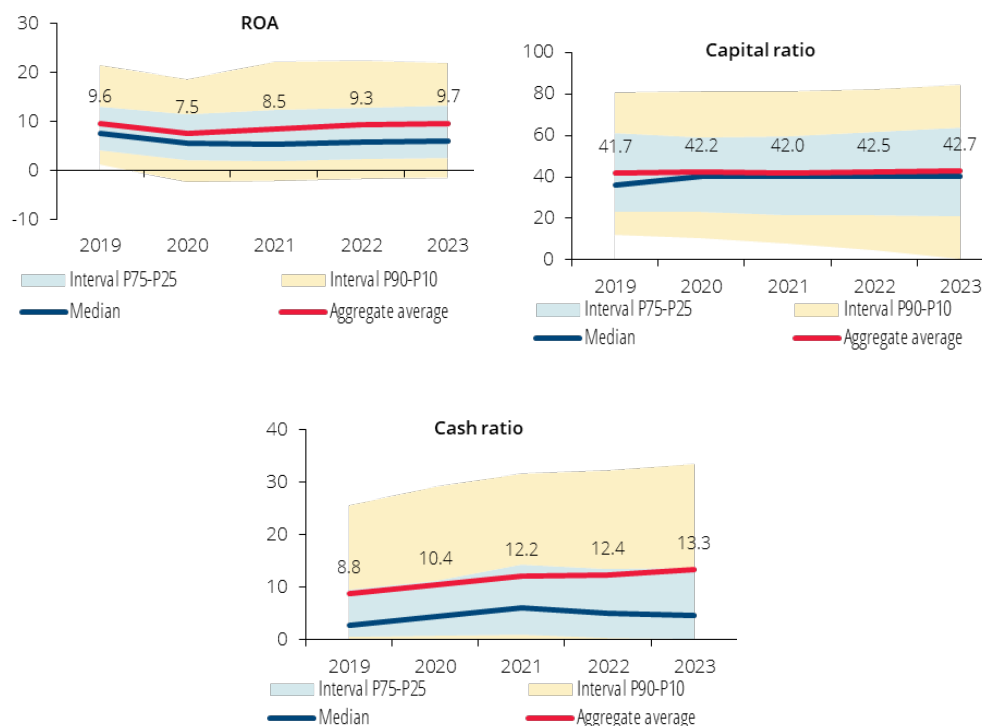
The capital ratio increases for micro and medium sized enterprises between 2019 and 2023, and more markedly for small sized enterprises. In turn, profitability recovery in large enterprises occurs concurrently with a drop in the capital ratio, as a result of an increase in assets and a decrease in equity.

The growth in liquidity and equity of large enterprises is constrained by the fact that a higher profit distribution rate was considered in larger-sized enterprises, in line with historical developments.

Estimates suggest a full recovery of Portuguese firms, across most sectors. There is, however, an increase in profitability dispersion, capital ratio and cash ratio and, in particular, an increase in the number of firms with lower values in these three ratios (Chart 1). This pattern shows an increase in risk associated with firms with the poorest financial performance, even if in a scenario of full recovery, in aggregate terms.

The decrease in ratios in lower percentiles is particularly relevant in micro enterprises (10th percentile of ROA of -1% and -5% and of capital ratio of 9% and -4% in 2019 and 2023, respectively) and in the accommodation and food service sector (10th percentile of ROA of 1% and -3% and of capital ratio of 13% and -10% in 2019 and 2023, respectively) (Table 3). In terms of capital ratio, there has been a drop in the 10th percentile in transport and storage (9% in 2019 and -6% in 2023) and in construction and real estate activities (8% in 2019 and -3% in 2023).

Chart 1 • ROA, capital ratio and cash ratio | As a percentage of assets



Note: The percentiles underlying the P75-P25, P90-P10 intervals and the median are weighted by the firms' assets as at December 2019.

Table 2 • ROA, capital ratio and cash ratio | As a percentage of assets

ROA (EBITDA/assets)					
	2019	2020	2021	2022	2023
Total firms	9.6	7.5	8.5	9.3	9.7
Firm size					
Micro	8.7	6.7	7.3	8.3	8.7
Small	9.2	7.2	7.9	9.0	9.4
Medium	9.7	7.8	8.6	9.5	9.8
Large	10.1	7.7	9.3	9.9	10.1
Sectors of activity (selected)					
Manufacturing	10.4	8.5	9.5	9.9	10.2
Construction and real estate activities	7.2	6.2	6.9	7.0	7.2
Trade	9.0	7.3	8.1	8.8	9.0
Accommodation and food services	10.4	-0.7	3.5	8.9	10.2
Transportation and storage	13.2	8.5	11.6	12.5	12.6
Capital ratio (equity/assets)					
	2019	2020	2021	2022	2023
Total firms	41.7	42.2	42.0	42.5	42.7
Firm size					
Micro	48.5	48.2	48.1	50.0	51.7
Small	46.0	46.1	46.3	48.4	50.1
Medium	42.3	43.0	42.8	43.5	43.7
Large	36.3	36.9	36.2	35.2	33.9
Sectors of activity (selected)					
Manufacturing	45.6	46.3	46.4	47.0	47.2
Construction and real estate activities	44.3	45.1	45.7	47.0	48.0
Trade	40.2	41.2	41.5	42.8	43.8
Accommodation and food services	47.3	42.7	40.2	41.7	43.2
Transportation and storage	32.9	33.3	32.7	33.3	33.4
Cash ratio (cash and bank deposits/assets)					
	2019	2020	2021	2022	2023
Total firms	8.8	10.4	12.2	12.4	13.3
Firm size					
Micro	15.1	16.8	20.4	22.1	24.8
Small	11.4	13.5	16.1	16.2	17.4
Medium	8.4	9.9	11.6	11.2	11.7
Large	5.0	6.1	6.5	6.4	6.6
Sectors of activity (selected)					
Manufacturing	8.1	10.2	11.4	11.0	11.4
Construction and real estate activities	8.9	10.3	12.6	13.4	15.0
Trade	10.6	12.5	14.1	14.4	15.6
Accommodation and food services	9.7	9.6	12.0	12.3	14.0
Transportation and storage	12.0	11.5	14.6	14.7	15.5

Note: The transport and storage sector excludes TAP S.A. as this is a State-owned enterprise as of December 2020.

Table 3 • 10th percentile of ROA and capital ratio in 2019 and 2023 | As a percentage of assets

	ROA		Capital ratio	
	2019	2023	2019	2023
Total firms	1	-1	12	1
Firm size				
Micro	-1	-5	9	-4
Small	1	-2	12	3
Medium	2	0	13	-3
Large	3	0	12	2
Sectors of activity (selected)				
Manufacturing	3	0	14	12
Construction and real estate activities	0	-3	8	-3
Trade	2	-1	11	6
Accommodation and food services	1	-3	13	-10
Transportation and storage	2	1	9	-6

Note: The 10th percentile is weighted by firms' assets in December 2019.

3.2 Evolution of solvency indicators

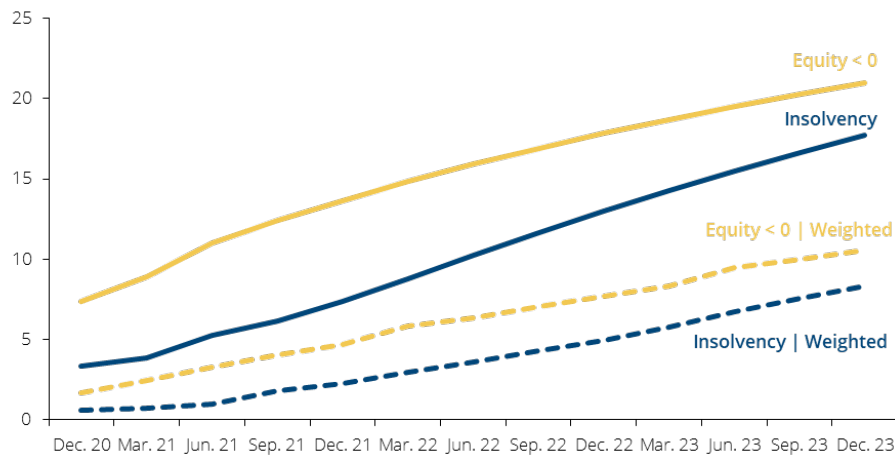
It is estimated that in December 2023, 21% of the firms under review will have negative equity and 18% of the firms will be insolvent (Chart 2). These ratios are in line with the historical financial performance of Portuguese firms throughout different economic cycles (Chart 3).

These metrics were weighted by firms' total assets to reflect the weight of each firm in the economy. Estimates associated with the percentage of firms with negative equity or insolvent weighted by asset value in the 2020-2023 period are halved: 11% of firms with negative equity and 8% of insolvent firms.

This weighting is particularly pertinent because micro enterprises represent a significant share of the total number of firms with negative equity or insolvent over the simulation horizon. Moreover, the share of firms with negative equity or insolvent in total micro enterprises is higher than the shares estimated for larger enterprises.

As regards asset-weighted values, it is estimated that around 15% of firms in the accommodation and food service sector have negative equity in 2023, a share that is higher than that estimated in most sectors of activity, which ranges between 7% and 14%. The share of insolvent firms in the accommodation and food service sector in 2023 is similar to that estimated for the share of firms with negative equity (14%), but lower in most other sectors of activity, ranging between 2% and 13%.

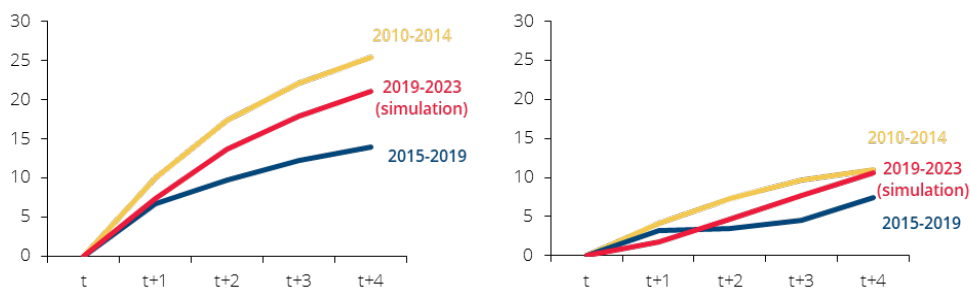
Chart 2 • Percentage of firms with negative equity or insolvent | As a percentage of the number of firms and as an asset-weighted percentage



Notes: Figures weighted by total assets in 2019.

The ongoing increase in the number of firms with negative equity or insolvent in firms with positive equity at a given starting point is a stylised fact, which is related to the life cycle of firms and not only determined by the performance of the economy over that period. However, the intensity of this phenomenon varies across business cycles. Comparing the estimates of the number of firms with negative equity in the 2019-2023 horizon with the 2010-2014 and 2015-2019 periods, the evolution of these indicators is more severe compared to the period preceding the pandemic crisis, but less severe than in the sovereign debt crisis period (Chart 3).

Chart 3 • Percentage of firms with negative equity at different horizons | As a percentage of the total number of firms (left-hand panel) and as an asset-weighted percentage (right-hand panel)



Notes: For each horizon represented in the chart, the reference t on the x-axis corresponds to the first year of the interval (e.g., for the 2010-2014 horizon, t corresponds to 2010 and $t + 4$ corresponds to 2014). At each horizon only firms with positive equity at the starting point are considered. In the right-hand panel the values are weighted by assets at the starting point. The 2010-2014 and 2015-2019 ranges correspond to observed values. The 2019-2023 range corresponds to the simulation exercise, for which 2019 and 2020 have already been observed. In the 2010-2014 and 2015-2019 horizons, the total number of firms defined in t gradually dropped in the years following the starting point. This effect results from firms closing down or not reporting the simplified corporate information (Informação Empresarial Simplificada - IES). To keep the number of firms constant over the comparison horizon it was assumed that firms which in the latest year for which information was available report a negative ROA or a capital ratio below 10% would be firms with negative equity over the remainder of the horizon.

3.3 Analysis of firms that applied for support measures

The model allows for the analysis of the situation of firms that applied for support measures from the Portuguese government during the pandemic. In particular, those firms that applied to the public moratorium on loans or State-guaranteed credit lines were grouped together. The universe of firms in the model covers 70% and 92% of the firms that applied for moratoria or State-guaranteed credit lines, which corresponds to 74% and 95% of the credit associated with these measures, respectively.

These firms were analysed by comparing firms that fulfilled the conditions for accessing the corresponding support measures but have not applied for them (for the sake of simplicity, they are referred to as 'eligible'). The group of eligible firms does not show the same pre-pandemic economic and financial situation as the group of firms that applied for each measure, not allowing for the impact of the corresponding support measure to be gauged.

The profitability evolution of firms that applied for moratoria on loans is similar to that of eligible firms that had not applied for this support measure (Table 4). For firms that applied for moratoria, following the profitability drop in 2020 (-2.7 p.p. to 5.0%), a gradual recovery is estimated between 2021 and 2023 (where it reaches 8.1%). The capital ratio shows a similar evolution profile. In terms of level, these indicators are higher in eligible firms that had not applied for moratoria, before the pandemic and throughout the simulation horizon, maintaining the range of the differential.

Solvency indicators are estimated to be less favourable in firms that have applied for moratoria compared to eligible firms that have not made use of this measure: +3.2 p.p. in the share of firms with negative equity and +3.8 p.p. in the share of insolvent firms in 2023 (Table 5). The economic recovery of this group of firms is a mitigant to the risk of default on exposures under moratoria.

This assessment is corroborated by the evolution of firms in sectors of activity most affected by the pandemic crisis (as established in Decree-Law No 10-J/2020), which, despite a sharp reduction in profitability in 2020, will recover by the end of 2023.

Table 4 • ROA and capital ratio of firms which applied for the public moratorium on loans
| As a percentage of assets

	ROA			Capital ratio		
	With moratoria	Eligible without moratoria	With moratoria: most affected sectors	With moratoria	Eligible without moratoria	With moratoria: most affected sectors
2019	7.7	10.3	9.8	35.3	42.5	35.6
2020	5.0	8.2	3.3	34.6	43.2	33.0
2021	6.4	9.2	6.6	34.8	43.0	32.3
2022	7.5	9.9	9.2	36.1	43.2	33.5
2023	8.1	10.1	10.1	36.9	43.3	34.4

Notes: Firms with credit exposures under moratoria in December 2020. Eligible without moratoria considers firms with bank loans and no overdue credit in December 2019 and which have not applied for moratoria. Annual figures as at December. Most affected sectors as defined in accordance with Decree-Law No 10-J/2020.

Table 5 • Percentage of firms with negative equity or insolvent having applied for public moratoria on loans | As an asset-weighted percentage

	Negative equity			Insolvent firms		
	With moratoria	Eligible without moratoria	With moratoria: most affected sectors	With moratoria	Eligible without moratoria	With moratoria: most affected sectors
2020	1.9	1.3	3.3	0.4	0.3	0.4
2021	6.0	3.5	8.1	1.4	2.3	2.2
2022	8.6	6.6	10.8	5.0	4.3	7.1
2023	11.6	8.4	13.4	10.3	6.5	12.2

Notes: Figures weighted by total assets in 2019. Firms with credit exposure under moratoria in December 2020. Eligible without moratoria considers firms with bank credit and no overdue credit in December 2019, which have not applied for moratoria. Annual figures as at December. Most affected sectors defined under Decree-Law No 10-J/2020.

In 2019, the profitability and capital ratio of firms that made use of State-guaranteed credit lines were lower than those of eligible firms that had not (Table 6). The decline in 2020 and the subsequent recovery occur in both groups of firms but are stronger in the group of firms that made use of State-guaranteed credit lines.

For firms that applied for State-guaranteed credit lines, the 2020 solvency indicators are broadly similar to those estimated for eligible firms that did not use this measure (Table 7). In 2023, the percentage of firms with negative equity is lower in firms that have drawn on these credit lines. SMEs represent 91% of the exposure associated to this support measure in December 2020. Considering only these firms, we conclude that the percentage of firms with negative equity or insolvent is lower among those that applied for State-guaranteed credit lines.

Table 6 • ROA and capital ratio of firms that used State-guaranteed credit lines | As a percentage of assets

	ROA				Capital ratio			
	With SGL	Eligible without SGL	With SGL: SME	Eligible without SGL: SME	With SGL	Eligible without SGL	With SGL: SME	Eligible without SGL: SME
2019	9.1	10.1	8.9	9.6	38.2	44.6	39.2	48.6
2020	5.8	8.1	5.7	8.1	36.3	45.8	37.0	49.9
2021	7.4	9.0	7.2	8.5	36.4	45.5	37.1	49.8
2022	8.8	9.7	8.6	9.2	38.3	45.8	39.5	50.9
2023	9.4	9.9	9.3	9.5	39.8	45.8	41.4	51.8

Notes: SGL - State-guaranteed credit lines. Firms with State-guaranteed loan exposures in December 2020 (Decree-Law No 10-J/2020 of 26 March 2020, as subsequently amended). SME - Micro, small and medium-sized enterprises. Eligible without State-guaranteed credit line considers firms meeting all the following criteria, as at December 2019, i.e., before the pandemic: (i) positive equity, (ii) no overdue loans; and (iii) it is not an undertaking in difficulty, following criteria adapted from Regulation (EU) No 651/2014, which, within the framework of the model, is materialised by the following conditions: (i) positive equity, and (ii) not being a SME, has a financial debt to equity ratio of less than 7.5 and interest expenses to EBITDA lower than 1. Annual figures as at December.

Table 7 • Percentage of firms with negative equity or insolvent in firms that used State-guaranteed credit lines | As an asset-weighted percentage

	Negative equity				Insolvent firms			
	With SGL	Eligible without SGL	With SGL: SME	Eligible without SGL: SME	With SGL	Eligible without SGL	With SGL: SME	Eligible without SGL: SME
2020	1.8	1.6	1.9	2.0	0.3	0.4	0.4	0.6
2021	4.2	4.1	4.4	5.1	1.2	2.3	1.2	2.2
2022	6.5	7.4	6.8	8.1	4.1	4.6	4.5	5.4
2023	8.9	10.0	9.0	11.9	7.7	7.7	8.2	9.2

Notes: SGL – State-guaranteed credit lines. SME – Micro, small and medium-sized enterprises. Amounts weighted by total assets in 2019. Firms with State-guaranteed credit exposures as at December 2020. Eligible without a State-guaranteed credit line considers firms that in December 2019, i.e., before the pandemic, met all of the following criteria: (i) positive equity, (ii) no overdue loans; and (iii) it is not an undertaking in difficulty, following criteria adapted from Regulation (EU) No 651/2014, which within the framework of the model is embodied by the following conditions: (i) positive equity, and (ii) not being a SME, has financial debt over equity of less than 7.5 and interest over EBITDA of less than 1. Annual figures as at December.

3.4 Sensitivity analyses

The simulation of the balance sheet, profit and loss account and cash flow statement in a medium-term time horizon is a complex exercise, particularly in an environment of high uncertainty. It also depends on assumptions that will not grasp all the idiosyncratic aspects of firms.

With a view to assessing the sensitivity of the results to these assumptions, different hypothesis were considered for relevant variables of the model. Most alternatives had no significant impact on solvency indicators (percentage of firms with negative equity or insolvent), except for more extreme assumptions regarding operational costs rigidity or access conditions to new financing (or refinancing).

In particular, the conditions of access to new financing are crucial to meeting firms' liquidity needs over the simulation horizon. These assumptions, by endogenising the access to financing, differ from the usual assumptions in recent literature where more extreme assumptions are considered, such as the absence of new financing or the full refinancing of loans at maturity.

In view of the baseline lending criteria, two alternative approaches are considered:

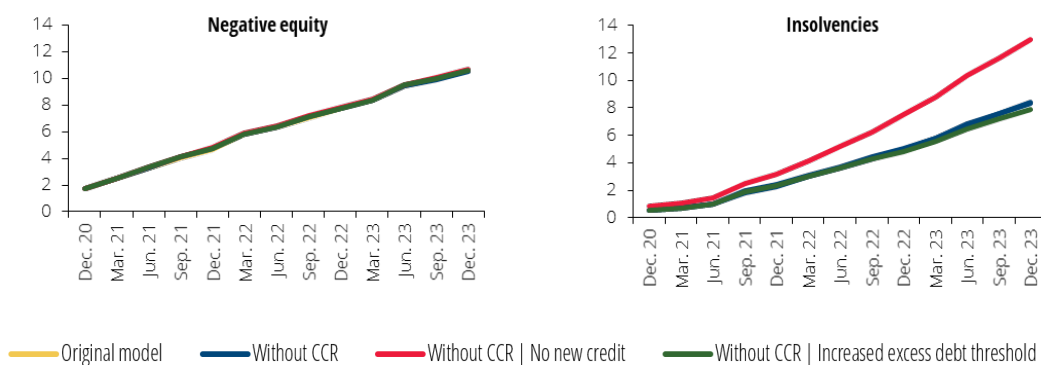
- The first approach makes the access to new credit impossible (refinancing included), except for State-guaranteed credit lines and undrawn loans associated with potential credit under the public moratorium.
- The second approach loosens the excess debt threshold, one of the criteria that firms are required to meet to obtain financing. In the original model, the threshold for interest expenses to EBITDA ratio is set at 0.5; in this alternative, the threshold is 1. This change increases the maximum amount of firms' debt, which will result in an increased risk. According to Klein (2016), interest expenses to EBITDA ratios above 1 correspond to technically defaulting firms, while ratios between 0.5 and 1 correspond to firms with high credit risk. In 2019 and using the universe of firms considered in the simulations as a reference, 0.9% had an interest expenses to EBITDA ratio greater than 1 and 2.8% of the firms a ratio greater than 0.5. It should also be noted that 11% of the firms cannot access new loans due to their negative EBITDA.

The introduction of alternative approaches only impacts the access to bank financing after the second quarter of 2021, as up to this date the bank credit information is that reported in the CCR. To more fully gauge the impact of changes to these assumptions, the original model and the alternative approaches were re-estimated with reference to a scenario where bank credit reported to the CCR is not considered.

The impossibility of obtaining new financing shrinks the financial debt ratio in 2023 (about 5 p.p. less than estimated in the original model). In turn, the definition of a less restrictive excess debt threshold results in a negligible increase in the financial debt ratio (+0.4 p.p.).

Nearly all the changes to the assumptions for access to financing considered have no significant impact on estimates for firms with negative equity or insolvent (Chart 4). Exceptionally, the no new credit scenario resulted in an increase in the share of insolvent firms (+5 p.p. in 2023) reflecting the contribution of the (lack of) liquidity criterion.

Chart 4 • Share of firms with negative equity or insolvent: changes in the assumption for firms' access to financing | As an asset-weighted percentage



Notes: Amounts weighted by total assets in 2019. The original model corresponds to estimates obtained from the model described in Section 2. Without CCR corresponds to simulations that do not consider the reporting to the CCR of credit information between the first quarter of 2020 and the second quarter of 2021, taking as starting point firms' debt as at December 2019. No new credit corresponds to estimates of a model where firms cannot take out new credit, except for that associated with State-guaranteed credit lines and potential credit associated with exposures under moratoria. Increased excess debt threshold corresponds to the loosening of the restriction associated with the definition of the excess debt threshold, having considered an interest expenses to EBITDA ratio equal to 1, instead of the interest expenses to EBITDA ratio equal to 0.5 of the original model.

4 Conclusion

The pandemic crisis was an unparalleled negative shock to Portuguese firms' activity, characterised by a protracted period of restrictions on the regular functioning of economic activity, which resulted in an asymmetric impact across sectors. The temporary nature of the shock and the broad set of policies to support firms and employment helped to mitigate the risks of a sharp deterioration in firms' financial situation, particularly those associated with liquidity shortages.

By combining the macroeconomic projections of the Banco de Portugal for the 2021-2023 horizon with a simulation model for the balance sheet, profit and loss account and cash flows at firm level, it can be concluded that the impact of the pandemic crisis on Portuguese firms will be globally reverted by 2022 and surpassed in 2023. This turnaround is characterised by an increase in profitability, capital ratio and cash ratio in 2023, in aggregate terms, compared to 2019 values.

However, the dispersion of the various indicators has increased, resulting in a higher percentage of firms with a deteriorating financial situation, compared to 2019. This effect is particularly relevant in the accommodation and food service sectors and in smaller-sized enterprises. The

share of firms with negative equity or insolvent in 2023 is lower if weighted by the total assets of firms in 2019. This reduction stems from a greater weight, in 2023, of smaller-sized enterprises in the total number of enterprises in a worse financial position.

The deteriorating financial situation of these firms results in an upward trend in the share of firms with negative equity or insolvent over the projection horizon, but less marked than in the sovereign debt crisis period.

The findings of this Special issue highlight the importance of characterising the heterogeneity of the financial situation of firms throughout the economic cycle driven by the pandemic.

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Rebuilding capital buffers: a discussion on different paces of convergence

1 Introduction

In response to the COVID-19 pandemic crisis, several policy measures have been adopted to mitigate its effects on the economy and the financial sector. In particular, the micro and macroprudential authorities allowed for a temporary relaxation of the requirements regarding the Pillar 2 Guidance and the combined capital buffer. These measures, along with others of a governmental and monetary nature, prevented potential deleveraging resulting from banks' procyclical behaviour, ensuring the maintenance of an appropriate flow of credit to the economy.

In July 2020 the ECB announced that it would not require European banks to start rebuilding their capital buffers, at least until the end of 2022. This decision is intended to ensure that the banking system contributes to a sustainable economic recovery. So far, this temporary relaxation has not been required by Portuguese banks, in general.

The enhanced resilience of the financial system in the run-up to the crisis was a key factor in the sector's responsiveness. This enhancement increases the ability to absorb unexpected losses but also the space for macroprudential policy action in crises. However, it should be considered that rebuilding capital buffers may have procyclical effects on lending if carried out before the recovery process is completed and given the lack of sufficient information on losses incurred by banks.

The magnitude of these effects will depend, among other factors, on the size of banks' voluntary capital buffers (i.e., the level of capital buffers above the requirements set by supervisory authorities) and the actions taken by banks to comply with higher buffer levels. These latter include equity issuance, deleveraging, reducing the voluntary capital buffer, or a combination of the three possible strategies.

This Special issue conceptually assesses the implications for financial stability and economic activity of different periods for the gradual rebuilding of capital buffers. It should be recalled that these periods are known to the financial system, given the decisions communicated by the authorities in due time. The analysis uses a general equilibrium model and focuses on potential costs and benefits of a smoother versus a more abrupt transition, and of different paces in each transition period. Thus, it should be read as flagging the importance of the financial system to trigger an efficient adjustment to these buffers.

2 Methodological approach³

In order to assess the impact of a gradual increase in capital buffers on the banking system and the economy, a general equilibrium model was used, based on Clerc et al. (2015) and calibrated to the Portuguese economy (also known as the 3D model).⁴ This model considers the possibility of economic agents' insolvency and the connections between financial and non-financial sectors.

In the 3D model there are several financial distortions that highlight the role of regulatory capital requirements in the banking sector. One of the distortions arises from the possibility of economic agents' insolvency, resulting in costs and a more restricted access to credit. The model assumes the existence of a deposit guarantee scheme, which creates incentives for excessive risk-taking by banks when lending. Despite these effects, the existence of a deposit guarantee scheme benefits financial stability as, by ensuring the repayment of deposits, it limits the possibility of bank runs and unwarranted negative spillovers on solvent banks, reducing the probability of bank failures. However, the effect of bank runs is not captured in this model. Finally, there are externalities to banks' cost of funding, as the interest rate charged on deposits is determined by the average risk of the banking system and not by each bank's risk profile. In equilibrium, the latter two distortions may entail excessive lending while the first distortion may lead to its scarcity compared to a situation where these costs would be internalised.

In this model, an increase in capital buffers enhances the resilience of the banking sector as it reduces bank failure probabilities and associated costs to society. The decrease in bank failure risk leads to a fall in interest rates payable on deposits, which, *ceteris paribus*, decreases the average cost of bank financing, which causes a decrease in interest rates on lending operations and an increase in credit. Thus, an increase in capital buffers can lead to an increase in investment, consumption, output and social welfare.

However, an increase in capital buffers has also other types of effects, such as deleveraging and higher funding costs for borrowers, in particular in the period of transition to higher levels. A strengthening of capital buffers results in increased demand for capital that makes the average cost of bank funding more expensive. This is transferred to borrowers in the form of higher interest rates, causing a drop in lending.

The ultimate effect of an increase in capital buffers on interest rates and credit will thus depend on the relative magnitude of these two effects. Although monetary policy can mitigate this transmission channel to some extent, this is not taken into account in this model.

2.1 Pace of capital buffer accumulation

This study considers a permanent change in capital buffers. The macroprudential authority requires banks to raise capital, which, once achieved, gives rise to a new economic equilibrium.

Several transition scenarios are put forward. In the first scenario, capital buffers rise sharply. In the other scenario, two transition periods are set to assess the extent to which the effects of a

³Further details on the methodological approach will be available in De Lorenzo Buratta, I., Lima, D. and Maia, D. (forthcoming). "Assessment of prudential policy measures to respond to the Covid-19 pandemic crisis".

⁴ Clerc, L., Derviz, A., Mendicino, C., Moyen, S., Nikolov, K., Stracca, L., Suarez, J., and Vardoulakis, P. (2015). "Capital Regulation in a Macroeconomic Model with Three Layers of Default." *International Journal of Central Banking*, Volume 11(3), pp. 9-63.

potential procyclical role for banks can be mitigated. The shorter transition period lasts four quarters and the longest one 16 quarters. The choice of a one-year period as a minimum is based on countercyclical capital buffer rules. The maximum four-year period is based on rules for the establishment of the capital conservation buffer and the G-SII (Global Systemically Important Institutions) buffer.⁵

In addition to the length of the adjustment period, it is also important to examine the pace at which capital buffers increase. Authorities have been favouring linear regimes over time. In this Special issue, the results of a linear regime are compared with the results of a regime with a faster pace of convergence.

3 Results

3.1 Mechanism for the transmission of an abrupt increase in capital buffers

Firstly, the responses to an abrupt increase of two percentage points in capital buffers are presented. These results should be construed based on the banking system rather than on individual banks.

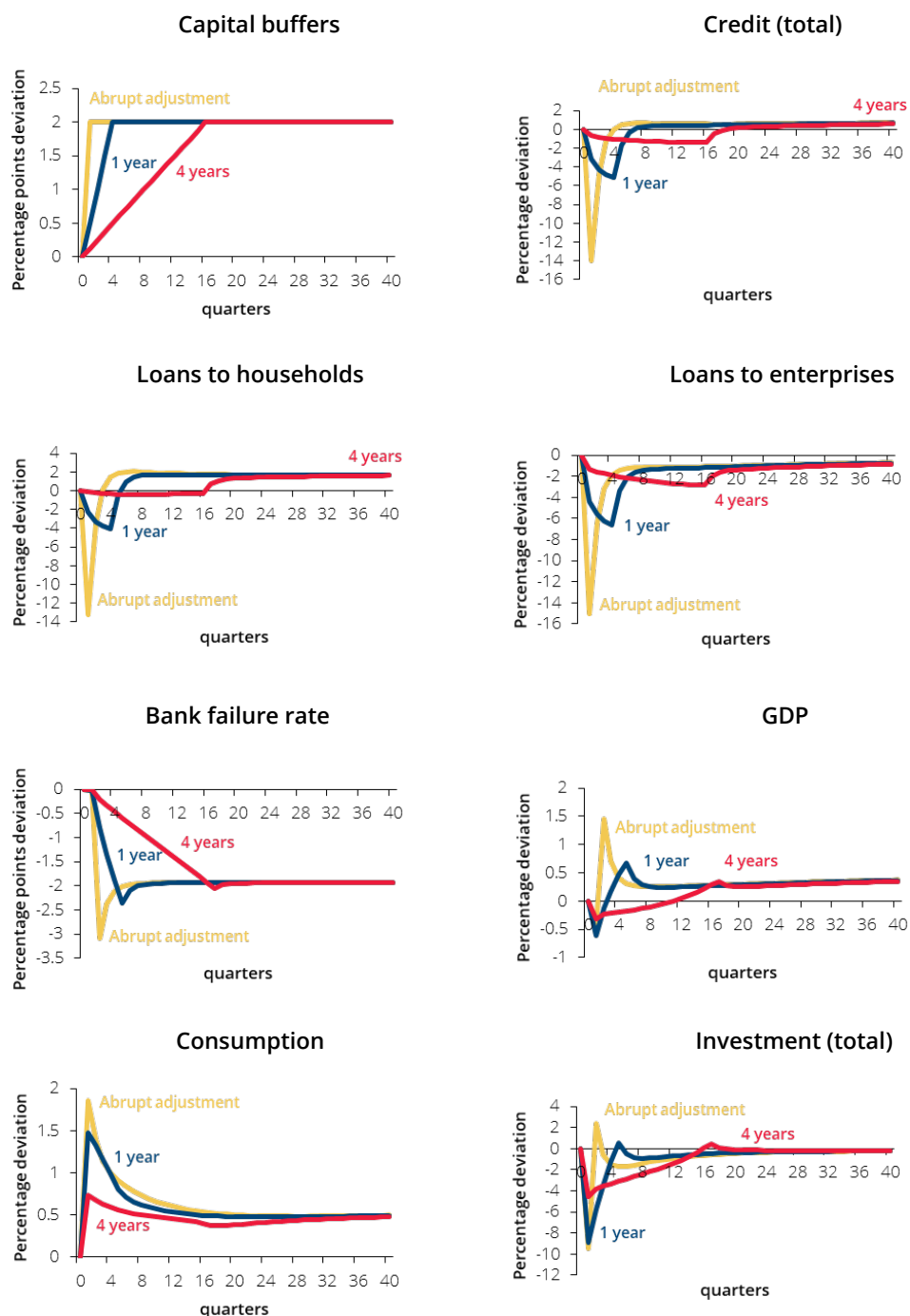
An abrupt adjustment in capital buffers has positive effects by reducing the probability of bank failure more quickly, increasing the resilience of the banking system (Chart 1). However, it also induces higher bank financing costs that are passed on to borrowers as higher spreads. The significant increase in interest rates is associated with a considerable reduction in credit granted to the economy, although more expressive in loans to enterprises, as these bear the brunt of a higher increase in interest rates. This behaviour is also justified by the fact that different and more favourable risk weights are legally established for housing credit than for loans to enterprises.

These effects spill over to the economy: if on the one hand a greater resilience of the banking system leads to positive effects on household income, consumption and output, on the other hand the sharp fall in credit triggers a significant drop in investment. The effects of an abrupt increase in capital buffers unwind after a few quarters, therefore the economy quickly converges to a new equilibrium, where total credit is higher, bank resilience is strengthened, and output is higher.

Results indicate that the permanent increase in capital buffers considered in the model, even if abrupt, has beneficial effects on financial stability and economic activity in the long run, but may trigger severe disruptions in banks' financial intermediation function throughout the process of convergence to the new equilibrium. Therefore, it is important to consider longer transitional periods in order to assess whether they allow the procyclical response of the banking system to be mitigated, without significantly compromising the benefits arising from replenishing capital buffers.

⁵ Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, Article 136(5) (Countercyclical capital buffer), Article 160(2) (Capital Conservation Buffer) and Article 162(5) (G-SII Buffer).

Chart 1 • Linear increase in capital buffers – impulse response functions



Source: Banco de Portugal | Note: Deviations from the initial steady state.

3.2 Gradual increase in capital buffers: linear regime

In general, predictable timing and speed of transition allows banks to anticipate the necessary adjustment in each period, smoothing the rise in spreads and the fall in lending, compared with an abrupt increase. A fall slowdown in loans to enterprises also leads to a less sharp decline in business investment. This improvement over the abrupt adjustment is greater the longer the

transition period. However, the fall in business investment is still more significant than the increase in residential investment, which benefits from house purchase by households that are not dependent on bank financing, determining that, in overall terms, investment remains below, although closer to, its initial value throughout the process of convergence to the new equilibrium.

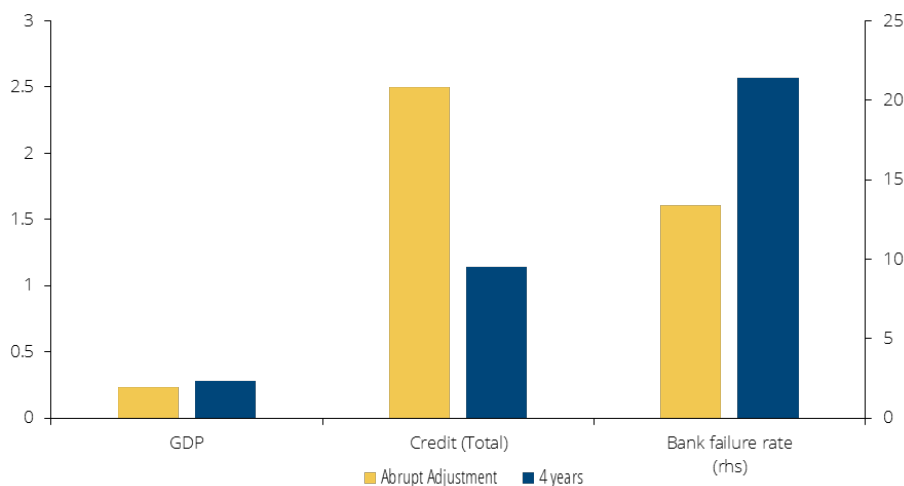
Longer transitions lead to the mitigation of positive effects on the resilience of the banking system when compared with an abrupt adjustment. Longer transition periods cut the bank failure rate, but to a lesser extent than an abrupt adjustment. Moreover, they postpone the convergence of this variable to the new equilibrium. The less favourable behaviour of the bank failure rate has macroeconomic impacts in the form of a lower increase in consumption, as households must bear higher costs associated with deposit guarantees, and consequently in GDP. Also, the speed of adjustment towards equilibrium is slower.

There are thus trade-offs in macroprudential policy. If the macroprudential policy purpose is to strengthen the resilience of the banking system, the model indicates that the choice should be for shorter transition horizons. If the focus is on maintaining the flow of credit to the economy, then longer time horizons are preferable.

In addition to the previous analysis, volatility metrics were developed for the bank failure rate, credit and output, variables that are critical for macroprudential policy. The volatility associated with the behaviour of each of the three variables was calculated on the basis of the impulse response functions arising from the abrupt adjustment and the two transition periods adopted considering a linear pace of capital buffer accumulation (Chart 2).

The analysis indicates that longer transition periods (four years) lead to a significant reduction in overall credit volatility, which can be construed as a benefit associated with longer time horizons. On the contrary, as the transition period is extended, the volatility of GDP and bank failure rate increases, and this can be perceived as a cost associated with longer transition periods.

Chart 2 • Volatility measures – linear regime | Per cent

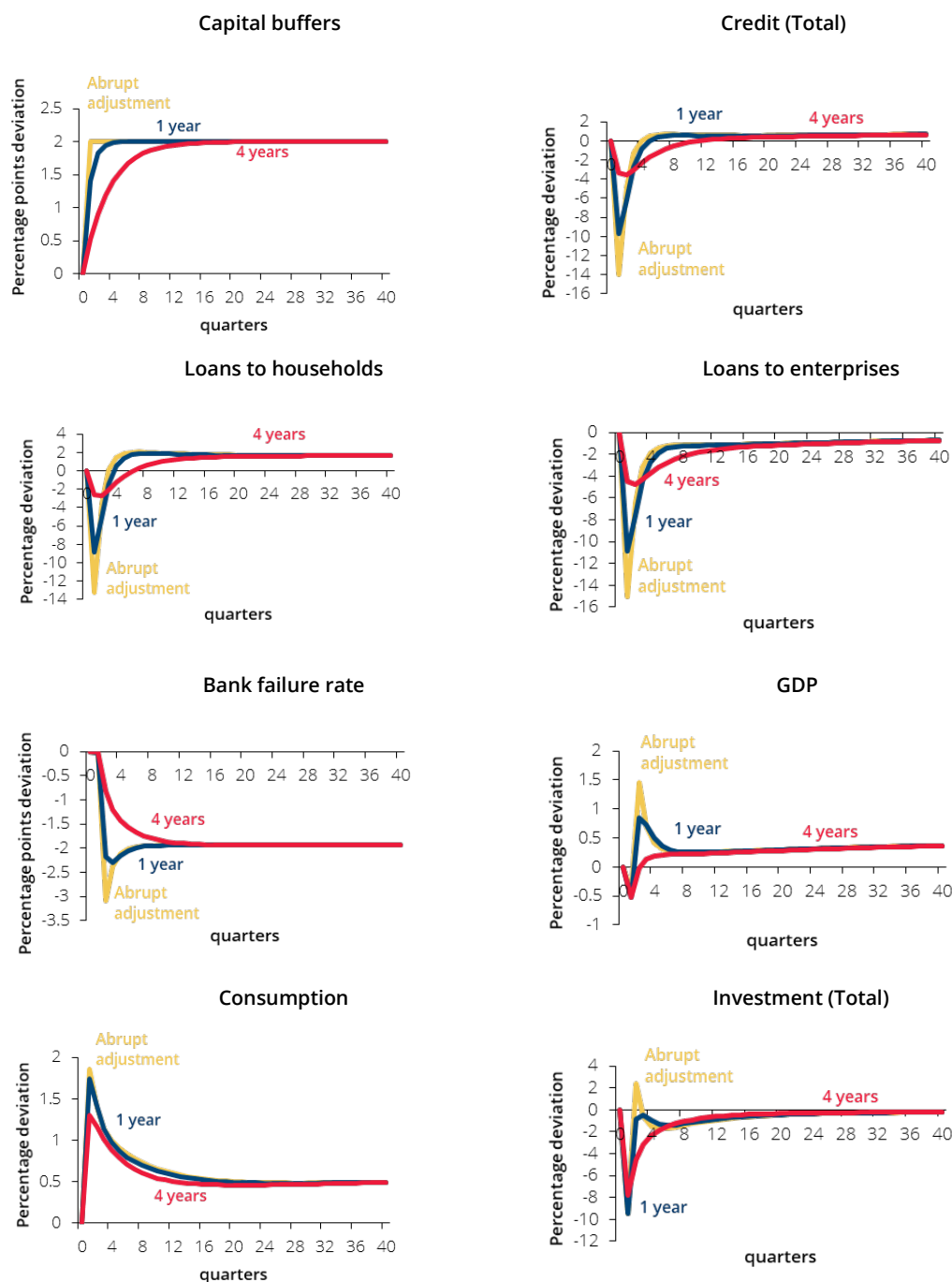


Source: Banco de Portugal | Note: The volatility for each variable is obtained by calculating the standard deviation of the impulse response functions.

3.3 Gradual increase in capital buffers: non-linear regime

This section examines the effects of implementing a scheme under which the rate at which capital buffers are required to be rebuilt is decreasing (Chart 3). This scheme may prove more effective in booming periods in the business and/or credit cycle, where higher buffer requirements can be more easily met by banks, by retaining profits and/or issuing capital, without disrupting lending activity.

Chart 3 • Non-linear increase in capital buffers – impulse response functions

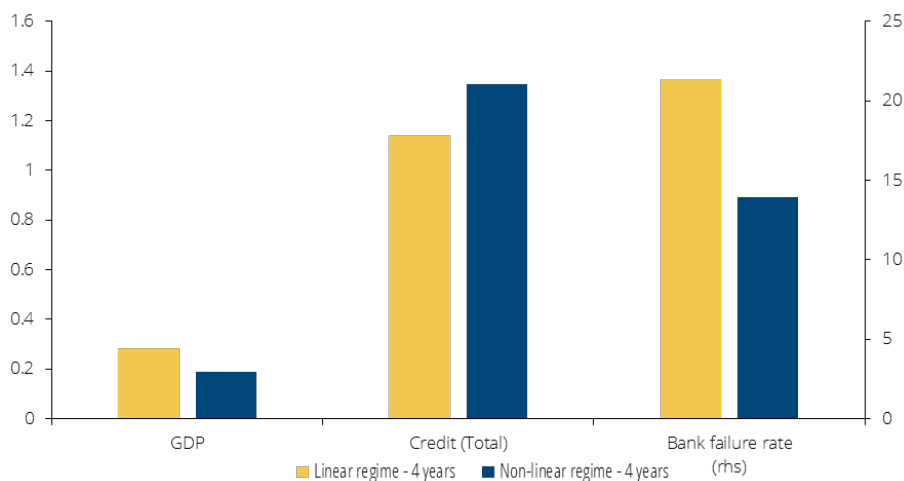


Source: Banco de Portugal | Note: Deviations from the initial steady state.

The results of this exercise are similar to those of the linear regime. Considering longer transition periods - compared to an abrupt adjustment - mitigates the costs of increasing capital buffers, yet it also curtails the development of a more resilient banking system. In a non-linear regime of capital buffer accumulation, the differences in the responses of the variables for each transition period are evident for the shorter horizons but fade out as horizons lengthen.

Compared with results of the linear regime for a four-year transition, the non-linear regime leads to higher credit volatility (Chart 4). On the contrary, the volatility of the output and the bank failure rate are lower in the non-linear regime for a four-year transition.

Chart 4 • Volatility measures – linear and non-linear regimes | As a percentage



Source: Banco de Portugal | Note: The volatility for each variable is obtained by computing the standard deviation of the impulse response functions.

Results from additional simulation exercises for non-linear regimes suggest that transition periods of between 4 and 16 quarters may be more suitable, with no significant benefits from extending the period to longer periods.

4 Conclusions

In the long run, capital buffers rebuilding will move the economy to a new equilibrium, with higher banking resilience, slightly higher credit to economic activity and increases in output also. However, this analysis also confirms that rebuilding capital buffers too quickly can cause negative effects on credit supply and thus on economic recovery, given the negative impact on business investment. A scenario of slower economic growth and heightened uncertainty may call for a later and gradual phase-in of capital buffers. This outcome underlines the importance of the financial system responding in a timely manner to recommendations made by supervisory authorities, and the importance of these drawing an appropriate buffer replenishment plan, which has been standard practice in Europe.

The consideration of transition periods significantly curtails the undesired effects on the flow of credit associated with an abrupt adjustment and decreases GDP and credit volatility. The longer the transition periods, the lower the costs associated with rebuilding capital buffers. However, the benefits of greater bank resilience are also slightly mitigated during the transition process. As announced by the ECB in July 2020, European banks will not be required to start rebuilding capital buffers which have been or will be used in the meantime, at least before the end of 2022.