

# Financial Stability Report

December 2019



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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# Content

Overview | 5

## I Financial stability outlook | 9

- 1 Vulnerabilities, risks and macroprudential policy | 11
  - 1.1 Vulnerabilities and risks | 11
  - 1.2 Macroprudential policy | 25
- 2 Macroeconomic and markets environment | 34
  - 2.1 Macroeconomic situation and short-term prospects | 34
  - 2.2 Financial markets | 37
  - 2.3 Residential real estate market | 43
- 3 Financial position of the general government and the non-financial private sector | 50
  - 3.1 General government | 50
  - 3.2 Non-financial private sector | 53
- 4 Banking system | 74
  - 4.1 Profitability | 75
  - 4.2 Asset quality | 79
  - 4.3 Concentration of exposures | 82
  - 4.4 Credit standards | 85
  - 4.5 Liquidity and funding | 87
  - 4.6 Capital | 88

## II Special issues | 113

A review of the literature on the impact of the increase in financial institutions' capital ratios | 115

Housing price assessment methodologies applied to Portugal | 136



# Overview

In 2019 the Portuguese economy and the Portuguese banking system continued to consolidate the progress achieved over the past few years. However, and as already pointed out in the June 2019 issue of the *Financial Stability Report*, adjustments have become less intense in some dimensions.

The economic and financial environment was characterised by continued economic growth above estimates for potential output as well as an additional decline in interest rates, which were already at a very low level across a wide range of maturities. Unemployment continued to decline and consumer confidence remained at high levels, resuming an upward path in the second quarter of the year. The outlook for the current and capital account balance remains positive for 2019 as a whole, although the projected surplus is clearly below that observed in the previous two years. The adjustment in the fiscal balance has continued, despite projected progress being slower than in the recent past when adjusted for temporary measures. Against a background of rising investment and decreasing non-financial private sector savings, indebtedness levels of non-financial corporations and households and, in particular, general government remained high both by historical standards and compared with the euro area, despite declining in recent years. This continues to be one of the main vulnerabilities for the Portuguese economy and is especially important when linked both to the Portuguese economy's high sensitivity to possible adverse external shocks and potential economic growth remaining relatively limited.

Turning to the banking system, there were aggregate improvements in a number of relevant dimensions in the first half of 2019. First, profitability increased, reflecting, on the one hand, factors of a structural nature, such as efforts to promote the sector's efficiency and, on the other, developments of a more cyclical nature, most notably the reduction of costs with provisions and impairments. Moreover, the non-performing loans (NPL) ratio remained on the downward trend that began in June 2016, mainly reflecting the reduction in the stocks of NPLs on balance sheets, in line with the guidelines and plans to reduce non-performing loans submitted to supervisory authorities which have been put in place by banks. In this context, in the first half of the year NPLs were chiefly reduced through write-offs, with the maintenance of a relatively stable NPL impairment coverage ratio. Finally, it is worth mentioning that the banking system proceeded on its path to strengthen capital ratios. The increase in own funds was chiefly due to developments in Common Equity Tier 1 capital (CET1), particularly reflecting developments in the retained earnings and other comprehensive income components, but also benefited from a number of debt securities issues, with effect on Additional Tier 1 capital (AT1) and Tier 2 capital (T2). The latter also contributed to compliance with the minimum requirement for own funds and eligible liabilities able to absorb losses and contribute to the recapitalisation of the institution in case of resolution (MREL).

Compared with the June *Financial Stability Report*, economic growth estimates for 2019 and beyond were revised downwards for the euro area, largely due to a slowdown in global economic activity. This is associated with geopolitical disruptive factors (e.g. trade tensions and Brexit). Should the negative effects of these factors on economic activity increase, the slowdown of economy worldwide and, more specifically, in the euro area, could be more marked. This would tend to have considerable repercussions for the Portuguese economy, given the high interconnectedness between the two geographies.

In a context of a downward revision of economic growth forecasts in the euro area and inflation persisting below target, in September 2019 the ECB announced a package of monetary stimulus measures. As a whole, this package envisages a scenario of lower interest rates during a more protracted period of time (so-called lower for longer). The decline in medium and long-term interest rates signals that the Euribor will only turn positive over a significantly longer horizon than that anticipated by market agents at the time of preparation of the previous issue of the *Financial Stability Report*. In this context, many European countries currently have negative yields across a wide range of maturities.

The very low interest rate environment has been reflected in financing costs at global level, which is particularly favourable for highly indebted economic agents. Reducing interest rates makes it possible, on the one hand, to ease debt service and, on the other hand, to improve these agents' ability to obtain financing at lower costs and/or with longer maturities, reducing also the rollover risk in the short to medium term. At the same time, asset markets (equity, bond and real estate) have experienced a marked valuation, with no visible match in economic fundamentals, particularly economic growth and corporate earnings.

In contrast to these short-term gains, the maintenance of this lower-for-longer interest rate environment increases risks to financial stability, at both national and international level. Overall, the main risks stem from excessive risk-taking incentives (search for yield), with repercussions also in the form of deteriorating credit standards and the potential increase in indebtedness to unsustainable levels.

Indeed, a prolonged environment of very low interest rates leads to increased challenges in generating profitability in the traditional financial intermediation activity. These difficulties tend to be exacerbated due to the entry of new players into this activity, with access to a wide scope of information and technological know-how of its management and use. The aforementioned challenges create a framework of incentives for search-for-yield behaviours, stemming, on the one hand, from the rigidity in investors and shareholders' expectations about the return on their financial investments and, on the other hand, from the return commitments made by some financial intermediaries to their clients. The latter is most notable in (but not exclusive to) the insurance and pension funds sectors, which, given their business model, must ensure a stable yield profile over long periods of time.

Pressure to reach for yield has also been reflected in the composition of investment fund portfolios, and, also in the euro area, there has been an increase in exposure to less liquid assets and some geographies where positive returns are still possible, in tandem with more similar investment strategies. The latter factor tends to strengthen the interconnection and correlation between different asset markets, exacerbating the transmission of shocks across market segments and economies worldwide. It should be noted that, in contrast to the euro area, where the systemic importance of investment funds has been on the rise and accounted for around 100% of GDP in June 2019, in Portugal this sector represented only 9% of GDP on that date.

In the short run, the search-for-yield behaviour leads to a compression in risk premia and underpins valuations in financial and non-financial assets, most notably real estate. As for the Portuguese economy, this environment also contributes to the valuation of fixed rate debt securities (particularly those issued by the sovereign), real estate assets and even NPLs, which makes it easier to sell them. The current lower-for-longer and lower financing costs setting has also made it possible to issue eligible instruments for compliance with the MREL.

However, the maintenance of search-for-yield movements makes financial markets vulnerable, to the extent that they foster the inadequate valuation (overvaluation) of some asset classes. In the medium to long term, these situations will tend to be corrected, while there is a great number of events, both economic and geopolitical, that may set out such a process. More marked slowdowns in economic activity, where significant and unexpected, may be instrumental events at this level. Yet, this may also result from a credit event involving non-financial corporations at international level, against the current background of high indebtedness. The costs of this correction will be higher the greater the imbalances cumulated in the past and the more sudden the correction.

With regard to banking activity, the low interest rate environment may also have unintended consequences to the maintenance of financial stability. By posing challenges to the sustainability of new loans' net interest income, due to unfavourable price effects, it reinforces incentives to expand lending, aimed at achieving an offsetting quantity effect. In the short run, the net effect may be positive on the profitability of banks. However, and to the extent that changes to credit supply conditions signal an easing in credit standards, over a protracted horizon this may result in a mismatch between interest rates and the risk taken.



Nevertheless, it should be highlighted that in recent years Portugal has experienced a differentiation in interest rate spreads by risk class in new loans granted to non-financial corporations by the main banks of the banking system. Likewise, the risk profile in new loans to this institutional sector has been gradually improving. In the case of households, new loans for house purchase have also been granted to borrowers with a lower risk profile, also reflecting the effects of the macroprudential policy measure applied by Banco de Portugal. However, there is evidence of a low differentiation in spreads on new loans for house purchase according to the borrowers' credit risk. What's more, over time, these spreads have narrowed. In the consumer credit segment, two facts ought to be emphasised. On the one hand, the stock has remained at a higher annual rate of change (close to 10%). On the other hand, new consumer loans, most notably, personal credit, interrupted the slowdown observed since mid-2018. Furthermore, maturities associated with new car and personal loans continued to be extended.

It should be noted that maturity is a highly relevant parameter in credit risk assessment. For banks, the extension of maturities in consumer credit signals that credit exposures, potentially without any collateral or linked to less liquid assets which may also have a depreciation period below the loan maturity, will be vulnerable to fluctuations in the business cycle for longer periods. This effect is particularly significant, given that a considerable share of new consumer loans have been taken out by borrowers with lower income, potentially more exposed to labour market fluctuations. In this context, it may constrain future developments in NPLs and, at the same time, credit risk cost.

For borrowers, developments in maturities, which are beneficial to the extent that they reduce debt service, may be associated with a mismatch between the credit maturity and the outlook for the maintenance of a favourable business cycle. Risks arise from the possibility of consumers extrapolating the current economic buoyancy to the entire credit maturity period, failing to properly incorporate into their decisions an economic slowdown and the accumulation of downside risks. These risks are particularly significant in light of the aforementioned recent developments in consumer confidence. In this context, incentives to reduce the sector's indebtedness levels decrease.

Banco de Portugal will continue to monitor credit market developments, assessing as a factor contributing to vulnerabilities, most notably in consumer credit, the continued increase in car and personal loan maturities.

As mentioned in previous issues of this Report, the Portuguese banking sector is materially exposed to some asset classes whose value is liable to being affected in the case of a sudden and substantial reassessment of risk premia in international financial markets, with a probability of adversely affecting the sector's profitability and capital. These assets include real estate assets, exposures collateralised by real estate and government debt securities, particularly those issued by the domestic sovereign, but also other European geographies whose valuations are highly correlated across markets. Turning to public debt, not only exposure to these securities has been on the rise, but maturities and the average duration have also increased, giving rise to greater sensitivity to market risks. Moreover, these assets are mostly measured at fair value, with an impact on capital. Hence, notwithstanding the more favourable regulatory treatment of this exposure, it is instrumental that banks have capital buffers suited to a possible materialisation of this risk, which can still be mitigated with the adoption of coverage measures.

With regard to real estate assets or assets collateralised by real estate, price developments in the real estate market have benefited from a strong buoyancy in tourism and direct investment by non-residents, which means that the market sensitivity to non-residents' behaviour is likely to have increased further. Also, in recent quarters, the evidence of an overvaluation in residential real estate in aggregate terms remained, which warrants particular caution when conducting transactions collateralised by such assets, and therefore credit standards must be commensurate with the credit risk involved.

Another type of exposure which still warrants a closer look, given its associated risks, relates to the international activity of some banks in certain geographies – most notably those that are particularly sensitive to a potential context of a greater slowdown worldwide, especially given their vulnerability

to commodity price developments, namely oil. Direct exposure to these geographies is sensitive to credit, foreign exchange and market risks. As for indirect exposures, the slowdown in economic activity may be reflected in the credit quality of loans granted to firms whose activity is particularly dependent on more affected countries.

Furthermore, banks should adjust their business models – particularly through investment in digitalisation – in order to remain technologically efficient and competitive, especially given the entry of new players into the financial intermediation activity (e.g. BigTechs). Reflecting technological developments associated with information access, maintenance and management, as well as regulatory changes, this investment will be a fundamental way to safeguard the use of traditional operators to financial services customers and, as such, the value of their activity. Increased investment in information technology may be supplemented by partnerships with new players that may add value to the activity, taking advantage of scale, learning and scope economies. Technological security must be adequately safeguarded (by minimising cyber risk, which is more likely to arise in this new environment of rising communication and information technologies), together with risk management, on the whole, and internal control.

Likewise, it is vital to adapt internal control systems used in the prevention of money laundering and terrorist financing. Against this background, special mention should be made to the upcoming conclusion of the country-level exercise to update the national risk assessment of money laundering and terrorist financing. This exercise is expected to allow for a mapping of the main national threats in this field, together with an assessment of key sectoral vulnerabilities and controls, based on which response measures will be identified to address the detected weaknesses.

Financial institutions must also incorporate into their activity the financial risks from climate change and the transition to a sustainable low carbon economy. The acknowledgement of the intensity and the cross-cutting nature of the challenges posed by climate change, requiring global responses across several economic policy aspects, has led this issue to a prominent place on the international political agenda, especially in the EU, with emphasis on the priorities set for the new institutional cycles of the European Commission and the European Central Bank (ECB). Regulatory and tax changes are likely to shift incentives for the behaviour of the various economic agents, which may have global macroeconomic consequences and generate mixed impacts. All these developments must be closely monitored by institutions, given the potential importance of their impact on the sector's financial situation and performance.

Finally, it is important to note that in an international environment favourable to the accumulation of vulnerabilities and intensification of risks to financial stability, concluding a robust Banking Union continues to be imperative, in order to effectively reduce the fragmentation of the institutional architecture of the European financial sector.

In sum, in an environment of heightened uncertainty surrounding developments in economic activity and overvaluation of a wide range of financial and real assets, including residential real estate, economic agents should continue to adjust their financial position, namely by reducing their indebtedness, to increase their resilience to future shocks. Credit institutions in particular should pursue cautious policies in controlling their exposure to risk and strengthening their ability to absorb the risks listed in this Report, were they to materialise, with implications for the dividend distribution policy.



# I Financial stability outlook

- 1 Vulnerabilities, risks and  
macroprudential policy
- 2 Macroeconomic  
and markets environment
- 3 Financial position of the general  
government and of the  
non-financial private sector
- 4 Banking system



# 1 Vulnerabilities, risks and macroprudential policy

## 1.1 Vulnerabilities and risks

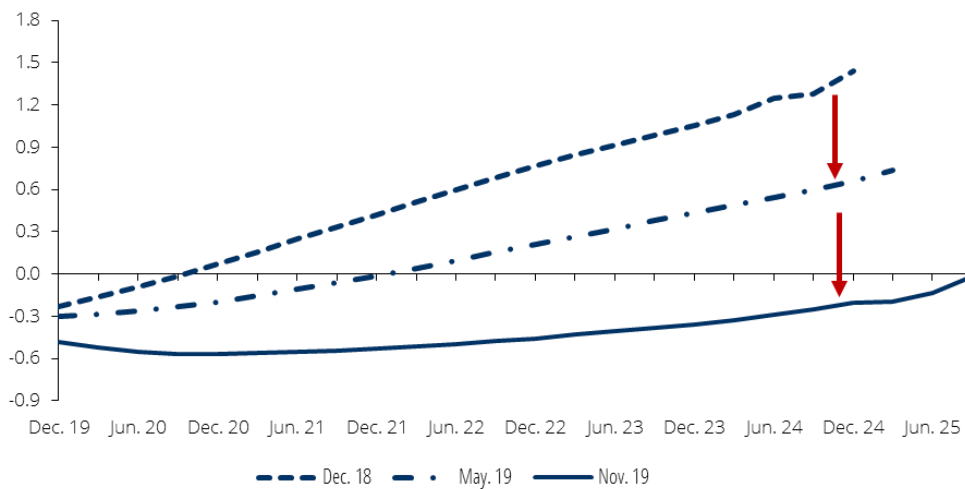
Compared to the previous issue of this Report, the emphasis is on a further extension of the very low interest rate environment. This environment led to a drop in financing costs, helping economic agents service their debt, particularly those with higher levels of indebtedness. Nevertheless, it created favourable conditions for the intensification of risks related to search for yield, potentially resulting in excessive risk-taking and asset mispricing. Against this background, the accumulation of vulnerabilities made economic agents more sensitive to a potential and sharper slowdown in economic activity, with an impact on their debt servicing capacity. In addition, a significant and abrupt reassessment of risk premia may occur, with consequences for the financing conditions in financial markets.

The current macrofinancial environment is characterised by low interest rates (lower-for-longer) and a slowdown in economic activity

The economic and financial environment of the Portuguese economy is largely determined by the euro area framework. In turn, the high degree of economic and financial integration of the euro area in the world economy explains the overall extent of the risks listed in this Report. The risks identified herein may interact together and, should they materialise, mutually reinforce one another.

In a context of an outlook for inflation at levels below the central banks' targets and a slowdown in economic activity amid high uncertainty, the main central banks (ECB and Fed) adopted a further accommodative monetary policy stance in 2019. In particular, in September 2019 the ECB announced a new package of monetary policy measures,<sup>1</sup> which contributed, inter alia, to a further decrease in euro area sovereign yields. Following the measures taken, especially during the past year, the prospects for short-term market interest rates point to a decrease in the key interest rates to even lower (negative) levels over a longer time horizon – lower-for-longer interest rates (Chart I.1.1). This macrofinancial environment is reflected in overall lower financing costs.

<sup>1</sup> For detailed information on the monetary policy measures announced by the ECB on 12 September 2019, see Section 2.2.

**Chart I.1.1 • Implied interest rate in the three-month EURIBOR futures contract | Per cent**

Source: Refinitiv. | Notes: Latest update: 15 November 2019. The line from May 2019 corresponds to the *Financial Stability Report* of June 2019.

The deterioration of the macroeconomic outlook, underlying monetary policy decisions, has been reflected in successive downward revisions of economic projections released by the main international bodies, largely anticipating the possibility of intensified global trade and geopolitical tensions, and the underlying uncertainty environment. For the euro area,<sup>2</sup> the latest projections point to a significant deceleration in GDP in 2019 and a relative stabilisation in the period 2020-21 (Chart I.1.2). These developments reflect the possibility of increased geopolitical risks, particularly from trade tensions, whose materialisation has already been damaging to international trade and economic activity, and especially to the manufacturing sector (Chart I.1.3). For the time being, the services sector remains resilient. However, taking into account the positive correlation between the two sectors, developments in the manufacturing sector are also likely to occur in the services sector, especially if the situation persists.<sup>3</sup>

## Global economic activity slowdown emphasises risks to financial stability

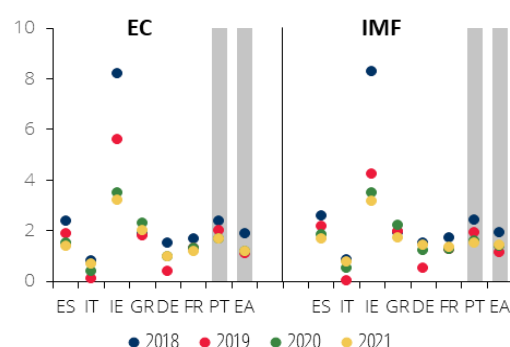
Recent developments in world trade remained a predominant factor in the context of increasing uncertainty (Chart I.1.4). In particular, negative externalities from the US-China trade negotiations impact on the economic agents' investment decisions, global economic activity and financial markets. In the first half of 2019, imports and exports continued to follow a sharp downward trend, and foreign direct investment (FDI) flows declined worldwide. The deceleration in international trade is one of the main downside risks for economic projections. In financial markets, successive

<sup>2</sup> See the *ECB staff macroeconomic projections for the euro area*, September 2019, the *World Economic Outlook* projections, IMF, October 2019, and the European Commission's Autumn forecasts, November 2019.

<sup>3</sup> "Development in the services sector and its relationship with manufacturing", *Economic Bulletin*, Issue 7, ECB, November 2019. In Portugal, the services sector decelerated somewhat in the second quarter of 2019. However, the components of trade, transportation and storage, accommodation and food services kept growing in a sustained manner.

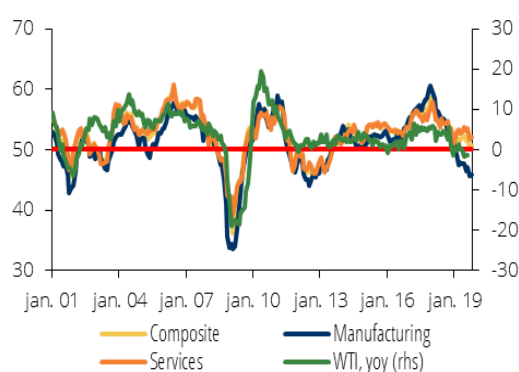
developments, deadlocks and news on the US-China negotiations have been reflected in episodes of volatility and movements of increased risk-aversion (Section 2.2).

**Chart I.1.2 • GDP growth in 2018, Macroeconomic projections and forecasts for the period 2019-2021 | Per cent**



Sources: European Commission (EC) and International Monetary Fund (IMF). | Notes: Data from the *European Economic Forecasts – Autumn 2019* (CE) and *World Economic Outlook – October 2019* (IMF).

**Chart I.1.3 • Euro area PMI and World Trade Index | Per cent**



Sources: IHS Markit and CPB World Trade Monitor. | Notes: Purchasing Managers Index (PMI) – Composite, Manufacturing and Services – at levels below (above) the threshold (PMI=50) are in contraction (expansion) comparing with the previous period. WTI refers to the World Trade Index. Seasonally adjusted data. Last observations: August 2019 for WTI and October 2019 for PMIs.

Moreover, some episodes of political tension continued to exist at global level, and in the European context, uncertainty about the outcome of the United Kingdom's withdrawal from the European Union (Brexit), despite the smaller probability of a no-deal Brexit after the last deadline extension – flexextension –, by 31 January 2020,<sup>4</sup> and some political instability in a number of euro area Member States. In the global context, episodes of tension in Hong Kong and the Middle East were particularly important.

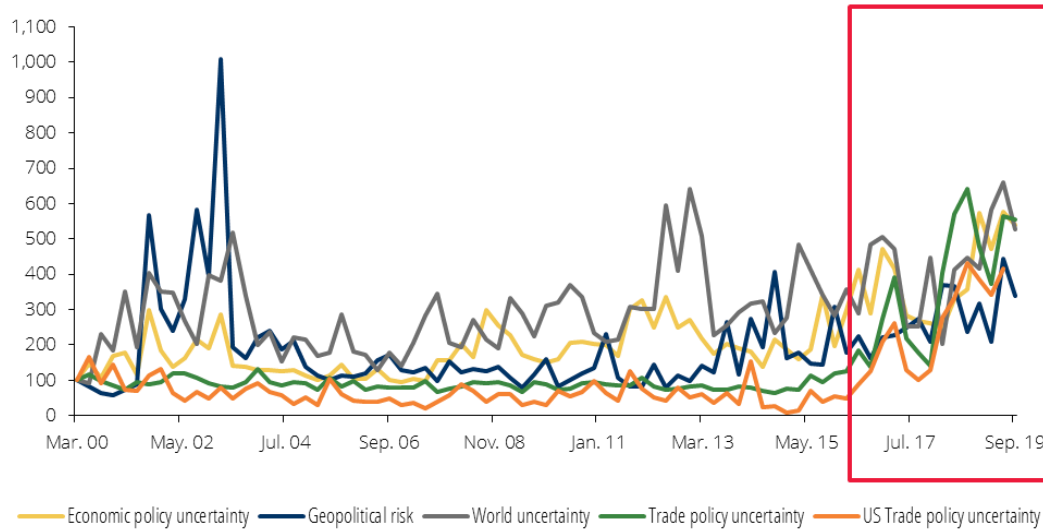
A potential further slowdown in euro area economic activity would probably lead to considerable repercussions on the Portuguese economy, given the cyclical correlation between the two geographical areas,<sup>5</sup> even though the short and medium-term central scenario for Portugal appears to be relatively favourable, with projections pointing to the maintenance of a growth rate above the euro area average at least until 2021<sup>6</sup> (Chart I.1.2 and Section 2.1). However, since the second half of 2017, GDP developments in Portugal have reflected a less buoyant external demand, as in the euro area, mirroring weaker international trade.

<sup>4</sup> Nevertheless, the UK may leave the EU earlier if a deal is reached on the withdrawal terms. Such a deal with the EU excludes any negotiation of the future EU-UK relationship until the Brexit is formalised.

<sup>5</sup> Box 9 entitled “Cyclical synchronisation between Portugal and the euro area over the last decade”, *Economic Bulletin*, Banco de Portugal, May 2018.

<sup>6</sup> See the European Commission's Autumn forecasts for Portugal, available at [https://ec.europa.eu/economy\\_finance/forecasts/2019/autumn/ecfin\\_forecast\\_autumn\\_2019\\_pt\\_en.pdf](https://ec.europa.eu/economy_finance/forecasts/2019/autumn/ecfin_forecast_autumn_2019_pt_en.pdf).

Chart I.1.4 • Uncertainty Indexes | Index 2000Q1=100



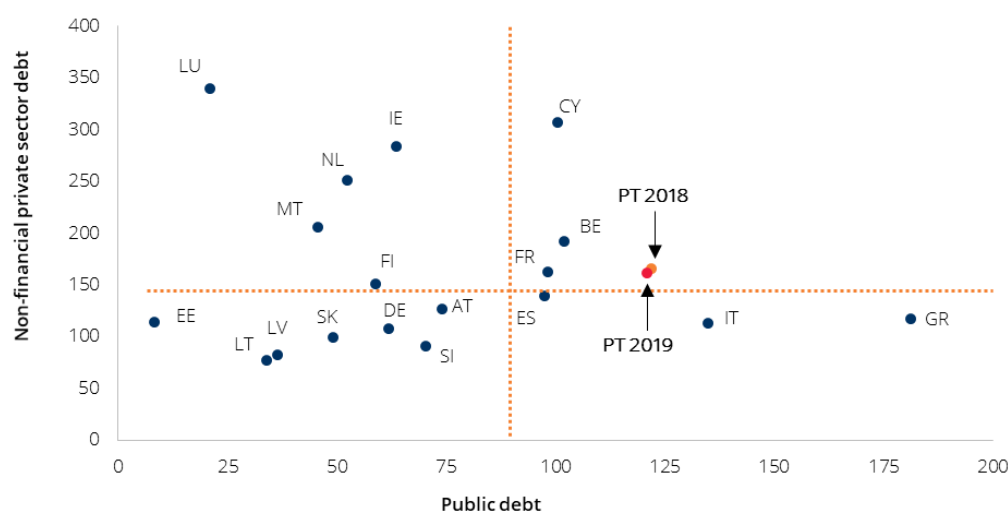
Source: Economic Policy Uncertainty webpage. | Notes: The indexes are derived from frequency of which a certain word or expressions, related with the subject, or articles which contain those words or expressions appear in newspapers of reference. Economic policy uncertainty index is based on the article from Davis (2016) "An Index of Global Economic Policy Uncertainty". Geopolitical risk index based on the article from Caldara and Iacoviello (2017) "Measuring Geopolitical Risk". World uncertainty index based on Ahir, Bloom and Furceri (2018) "World Uncertainty Index". Trade policy uncertainty index from the article of Caldara, Iacoviello, Molligo, Prestipino, and Raffo (2019) "The Economic Effects of Trade Policy Uncertainty". US trade policy uncertainty based on the article from Baker, Bloom and Davis (2016) "Measuring Economic Policy Uncertainty".

Against this background, there was a greater need to reduce non-financial private and public sectors' indebtedness in Portugal, in order to increase resilience to a potential less favourable macroeconomic situation. The Portuguese economy continued to record high levels of indebtedness within the euro area (Chart I.1.5), despite the deleveraging processes initiated after the financial crisis by the non-financial private sector and, to a smaller extent, the public sector. The non-financial private sector's indebtedness ratio declined sharply from the peak observed at the end of 2012 (Box 3), while the public sector maintained the downward path in the ratio, which was initiated in 2015. However, these sectors' high indebtedness, combined with low levels of saving, particularly for households, contributed to a lower capacity to absorb potential adverse shocks on income in a scenario of a potentially sharper slowdown in economic activity.

The lower-for-longer interest rate environment has contributed to the maintenance of low financing costs in the economy



**Chart I.1.5 • Indebtedness of non-financial private and public sectors – 2018 | Percentage of GDP**



Sources: Banco de Portugal and Eurostat. | Notes: PT 2019 corresponds to the ratios from the first half of 2019. Dashed lines refer to the euro area average for both sectors in 2018. Indebtedness comprises total debt (loans, securities and trade credits of non-financial corporations and households). Public debt is calculated according to the definition used in the excessive deficit procedure (Regulation (EC) No 479/2009), i.e. gross general government consolidated debt at nominal or face value, the so-called Maastricht debt.

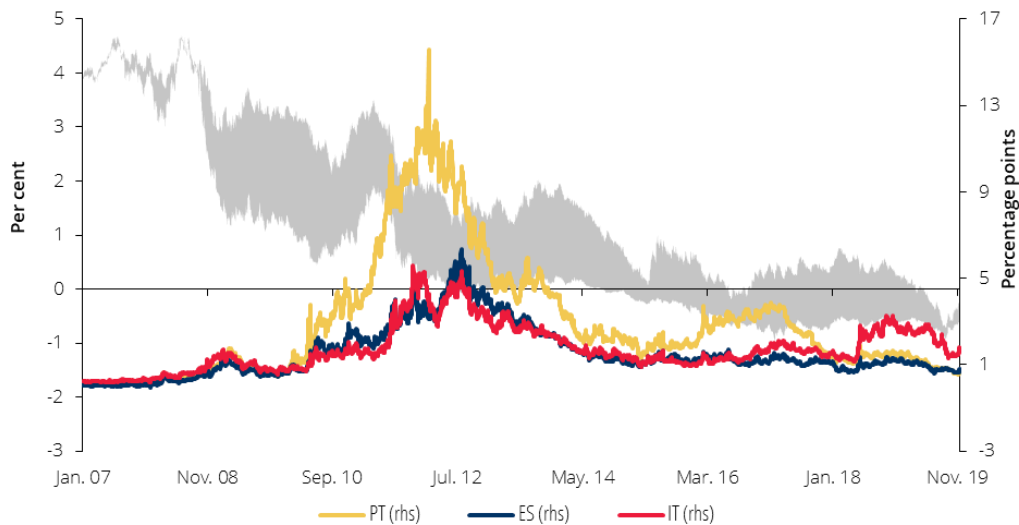
The very low interest rate environment has been reflected in global financing costs. In Europe, many countries have negative yields across a wide range of maturities.<sup>7</sup> In Germany, the maturities of the yield curve were generally below zero, while there was a decrease in the spread between long and short-term rates. Also, countries such as Spain, Portugal and Italy showed a narrowing of 10-year yield spreads versus Germany (Chart I.1.6).

In the first half of 2019, there was also a significant increase in the amount of debt securities with negative yields, particularly public debt issued by Japan and the euro area countries (Chart I.1.7). In the latter case, this was somewhat significant for corporates.<sup>8</sup> In Europe, debt securities with negative yields accounted for a large share of the total outstanding amount of sovereign debt securities (Chart I.1.8).

<sup>7</sup> As of late May 2019, Portugal began to present negative yields up to the 5-year maturity.

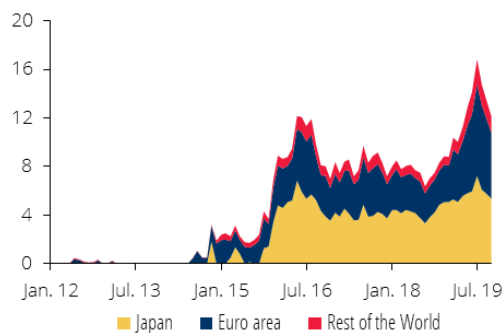
<sup>8</sup> In October 2019, about 38% of the total outstanding balance of euro-denominated debt securities with negative yields had been issued by corporates.

**Chart I.1.6 • Germany's (DE) yield curve and 10-year yield spreads from DE | Per cent and percentage points**

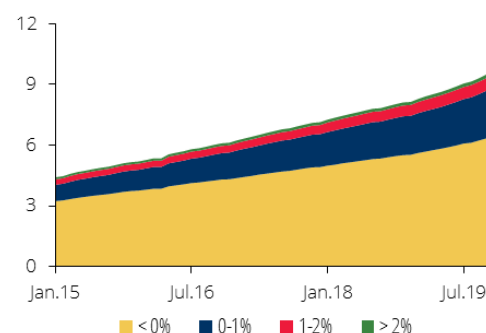


Source: Refinitiv (Banco de Portugal calculations). | Notes: The grey area refers to the yield curve from Germany (proxied by the difference between 10-year and 2-year yields). Latest update: 15 November 2019.

**Chart I.1.7 • Debt securities with negative yield | Eur Trillions**



**Chart I.1.8 • Public debt by Yield-to-Maturity interval | Eur Trillions**



Sources: Bloomberg (Banco de Portugal calculations). | Notes: Monthly data. The values correspond to the amount outstanding of the debt securities in each period. Latest update: 15 November 2019.

The current context is particularly favourable for economic agents with high levels of indebtedness. The decrease of interest payments creates the conditions, on the one hand, to ease debt servicing and, on the other hand, to improve these agents' ability to access the markets to obtain financing at lower costs or with longer maturities, thus reducing the rollover risk in the short to medium term. However, maintaining this lower-for-longer interest rate environment may result in incentives to raise indebtedness to unsustainable levels, to an easing of credit standards and to excessive risk-taking.

## Search for yield, and the resulting overvaluation of some asset classes, has contributed to the accumulation of vulnerabilities and risks to financial stability at global level

A prolonged environment of very low interest rates leads to increased difficulties in generating profitability in the financial intermediation activity, which may lead to increased stimuli for search-for-yield behaviours. These behaviours are reflected in a greater narrowing of risk premia.

In 2019, equity and bond markets recorded a significant valuation, without a match in economic fundamentals, particularly in economic growth, confidence or corporate earnings (Chart I.1.9).<sup>9</sup> This historical valuation trend makes financial markets vulnerable, especially to the extent that it may reflect mispricing in some asset classes, thus contributing to the accumulation of risks and vulnerabilities to financial stability, which may increase given the current prospects that this framework will persist for an extended period.<sup>10</sup>

While institutional investors have benefited from the valuation trend in equity and bond markets, fixed rate coupon bond yields have been declining in recent years,<sup>11</sup> posing additional challenges to long-term investors in the euro area. These challenges will be particularly important for the insurance and pension funds sectors, which, given their business model, must ensure a stable yield profile over a longer period. Accordingly, and to ensure a match between their return on assets and the payments underlying their bonds, at the euro area level these two sectors have increased their exposure to assets with lower credit quality and higher expected return (some of which issued outside the euro area), thus making their investment portfolios particularly sensitive to credit and foreign exchange risks and, in some cases, to real estate prices. This behaviour reflects the need to obtain profitability given the successive decrease in discount rates considered for the valuation of these financial institutions' liabilities, which result in an increase in the current value of the liabilities of insurance companies, particularly life insurers, and a decrease in the funding levels of pension funds covering defined-benefit plans.

Also in the euro area, high-quality liquid assets (HQLA) have been decreasing in investment fund portfolios.<sup>12</sup> This trend results, on the one hand, from deposit-related costs and, on the other, from the prolonged low interest rate environment that has reduced the yields on assets usually considered as substitutes, such as repurchase agreements ("repos") and short-term sovereign debt securities. These two effects together have contributed to increased exposure to less liquid assets. This is particularly visible in certain investment fund segments (e.g. fixed-income), where there is an increase in exposure to assets from geographies that still have positive yields. The decline in this sector's liquidity levels and the similarity in investment strategies introduce potential procyclicality in the euro area financial system, making investment portfolios especially vulnerable to abrupt market price corrections and redemptions.<sup>13</sup>

<sup>9</sup> See also Section 2.2.

<sup>10</sup> In this regard, see the opening remarks by the Governor of Banco de Portugal, Carlos da Silva Costa, at Banco de Portugal's 2019 Conference on Financial Stability: <https://www.bportugal.pt/en/intervencoes/opening-remarks-governor-carlos-da-silva-costa-banco-de-portugals-2019-conference>.

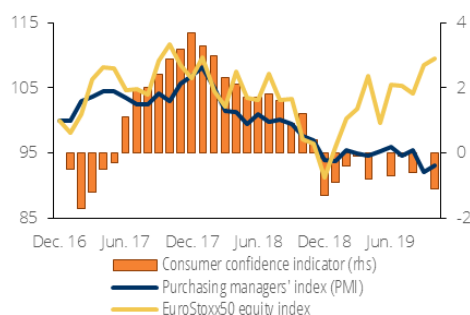
<sup>11</sup> ECB, *Financial Stability Review*, November 2019.

<sup>12</sup> The share of highly liquid bonds in euro area investment fund portfolios decreased from 40% in 2013 to only 30% in June 2019.

<sup>13</sup> Given the participants' commitment to liquidity and immediate redemption, stress in international financial markets may trigger or reinforce a possible widespread devaluation of assets with higher credit quality in order to obtain the liquidity needed to meet redemptions, collateral haircuts and margin calls.

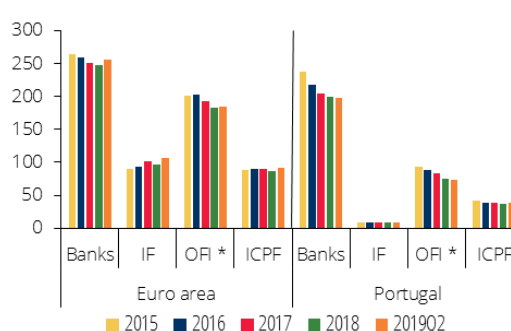
In fact, by creating a channel where shocks propagate across different market segments and world economies, the interconnection and correlation resulting from the similarity of investment strategies may contribute to a reassessment of risk premia of a systemic dimension, with direct and immediate impact on the financing costs of sovereign and private debt in the euro area. However, the likelihood of a sudden and widespread sale of assets in financial markets (fire-sale) remains relatively low for now, especially as long as most investors expect interest rates to stay at record low levels. Additionally, in Portugal, unlike in the euro area, the weight of investment funds has not increased in recent years and it continued to play a less important role in the overall financial system (Chart I.1.10).

**Chart I.1.9 • Purchasing managers' index, stock market and consumer confidence in euro area | Index**



Source: Refinitiv. | Notes: The evolution shown for the consumer confidence indicator is calculated by difference to December 2016. Last observation: October 2019.

**Chart I.1.10 • Financial system assets' breakdown – Euro area and Portugal | As percentage of GDP**



Source: ECB. | Note: IF – Investment funds, OFI\* – Other financial intermediaries (excluding FIs) and ICPF – Insurance companies and pension funds.

Adopting search-for-yield-related investment strategies may result in increased exposure of the financial sector to agents with a higher risk profile, with return not appropriately reflecting the risk. The recent momentum of the leveraged loan market<sup>14</sup> at the international level is an example of this trend and, although most recently there has been a decline in issuances of this type of asset by the non-banking sector in Europe, almost all new loans are covenant-lite loans,<sup>15</sup> indicating a deterioration of the conditions for granting these loans.

In addition to the global development of this market, a significant part of these loans is securitised through Collateralised Loan Obligations (CLOs). Notwithstanding the differences between CLOs and other financial instruments behind the 2007 financial crisis (such as the Collateralised Debt Obligations (CDOs)), notably the lower associated complexity,<sup>16</sup> this market continued to be prone to increasing interconnections within the financial system, particularly due to the increased ownership of these assets by the non-banking sector (including open-ended investment funds). While this market is not a direct vulnerability for Portugal, the materialisation of risks linked to these financial instruments may result in greater international financial market volatility, with an

<sup>14</sup> Broadly defined as loans to firms with high indebtedness and low interest coverage ratios.

<sup>15</sup> 'Covenant-lite loans' are loans with less protective clauses for creditors and less restrictive clauses for debtors, which increases risk and significantly reduces the quality of the credit portfolio. See Chart 2.4. 2. of the *Global Financial Stability Report*, IMF, October 2019.

<sup>16</sup> Box B entitled "Structured finance then and now: a comparison of CDOs and CLOs", *BIS Quarterly Review*, September 2019.

impact on Portuguese economy's financing conditions, especially given its high levels of indebtedness.

Search for yield by international investors, coupled with the lower-for-longer interest rate environment, has also been reflected in an improvement in external financing conditions of developing economies through a marked increase in market debt issuances (mainly denominated in US dollars) and at lower interest rates. However, the number of economies at high risk of debt default has been on an upward path since 2016, showing some signs of deterioration in their debt servicing capacity.<sup>17</sup>

Also important is the increased demand for other assets, such as commercial or residential real estate in the euro area. Despite the distinct nature of this type of asset due to both the greater fragmentation in these markets and the different tax frameworks between the Member States, the role of non-resident investors has intensified. These investors tend to be more sensitive to changes in relative conditions in international markets and to adjust their portfolio more quickly, which may lead to abrupt price adjustments in the assets in which they invest. In the case of commercial real estate, there was an increase in non-resident investment, particularly in investment funds, whose evidence points to search-for-yield behaviours with effect on price dynamics and increased transactions in the euro area.<sup>18</sup> In the case of residential real estate, the European macroprudential authorities have carried out analysis given recent developments in this market, especially price growth in several Member States, albeit at varying degrees of intensity, and the expansion of loans for house purchase. Although the low interest rate environment may have contributed to these developments, the heterogeneity between countries may reflect other characteristics and/or vulnerabilities (Box 1).

## Portuguese banks should step up efforts to reduce non-performing loans, while benefiting from a still favourable economic environment

In the banking sector, the prolonged lower-for-longer interest rate environment poses a challenge to the sustainability of new loans' net interest income and reinforces the incentives to expand lending. An easing of credit standards may lead to a mismatch between the pricing of operations and the risk taken, posing a risk to financial stability. Nevertheless, in recent years Portugal has experienced a differentiation in spreads by risk class in new loans granted to non-financial corporations by the main banks of the banking system (Section 4.4). Furthermore, new loans have been granted to debtors with a less risky profile, both in non-financial corporations and households, the latter also reflecting the effect of the macroprudential measure adopted by Banco de Portugal (Section 1.2).<sup>19</sup> However, spreads on loans for house purchase have been narrowing, with evidence pointing to no significant differentiation in the spread on new loans for house purchase based on the borrowers' credit risk (Section 4.4).

<sup>17</sup> IMF, *Global Financial Stability Report*, October 2019. The list of countries in debt distress can be found at <https://www.imf.org/external/Pubs/ft/dsa/DSAList.pdf>.

<sup>18</sup> Box 1 entitled "Explaining cross-border transactions in the euro area commercial real estate markets" of the *Financial Stability Review*, ECB, November 2019.

<sup>19</sup> The general level of interest rates has probably contributed to the increase in demand for loans for house purchase, according to Banco de Portugal *Bank Lending Survey* of October 2019.

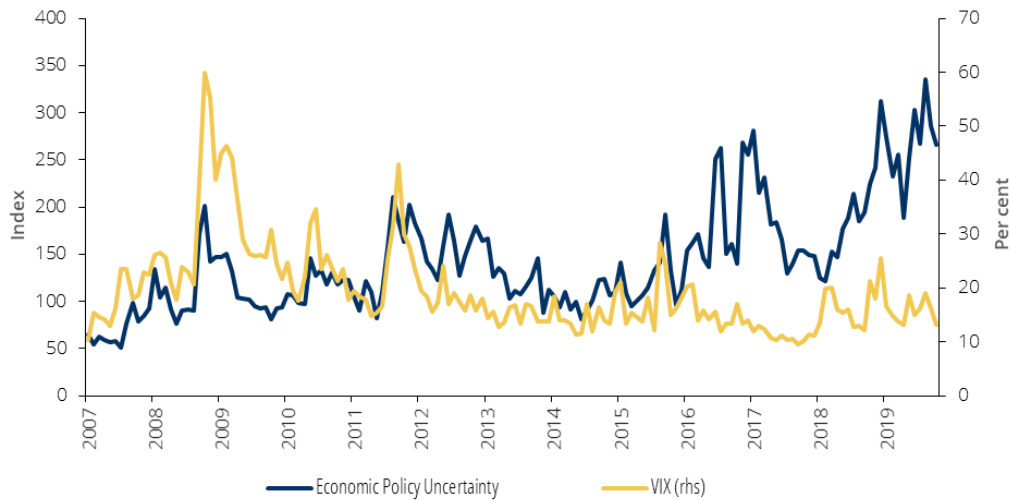
In the case of consumer credit, particularly personal credit, the increase in new business in the third quarter of 2019 interrupted the slowdown observed since mid-2018. Maturities associated with new car and personal loans continued to be extended, enhancing the trend observed since 2012 (Section 3.1.1). The expansion of consumer credit translates into increased exposure of the banking system to borrowers who tend to be less resilient to a possible deterioration in labour market conditions. Given the higher average maturities, these developments may constitute an additional vulnerability for financial institutions, notably amid prospects of deceleration in economic activity.

Despite the challenges associated with search for yield, this has been reflected in a favourable environment for the sale of non-performing loans (NPLs). These operations have been important to reduce the stock of NPLs, making it easier to comply with the NPL reduction plans submitted to supervisors (Section 4.2). Additionally, banks need to properly assess the cyclical sensitivity of credit quality in order to incorporate this risk into their pricing. Only then will it be possible not to jeopardise the maintenance of the downward path of NPL stocks in the medium term, especially given the risk of a stronger slowdown in economic activity that may negatively affect the flow of new NPLs.

### In a search-for-yield context, a possible sharper slowdown in economic activity may lead to episodes of abrupt risk premia reassessment in international financial markets

Despite the mitigating effect of monetary stimuli, a potentially sharper slowdown in economic activity may lead to renewed uncertainty as to the sustainability of public and private debt. Lower financing costs have contributed to mitigate the main risks in the sovereign debt market. However, given the high level of indebtedness in some euro area countries, events of political and economic uncertainty may lead to episodes of differentiation and significant reassessment of sovereign risk premia in financial markets (Chart I.1.11). This is particularly relevant for countries such as Portugal, which continues to record high levels of indebtedness, despite the reduction observed in recent years.

Chart I.1.11 • Economic policy uncertainty and VIX



Sources: Economic Policy Uncertainty webpage and Refinitiv (Banco de Portugal calculations). | Notes: Monthly data. The index measures global economic policy uncertainty, as based on newspaper search in 20 countries (aggregation to the global index is GDP-weighted). For further details, see Davis (2016), "An Index of Global Economic Policy Uncertainty," *Macroeconomic Review*; and Baker/Bloom/Davis (2016), "Measuring Economic Policy Uncertainty", *Quarterly Journal of Economics*. The VIX represents the implied volatility in options prices on the S&P 500 equity indices. Last observation: October 2019.

Against a background of high liquidity in the banking sector and lending opportunities constrained by the still high level of indebtedness of the non-financial private sector, exposure to public debt by the banking sector has been increasing, particularly to the domestic sovereign, together with an increase in the portfolio's average duration, also reflecting the longer maturities of issues. In the first half of 2019, the dynamics in exposure to public debt of the Portuguese banking system resulted mainly in net acquisitions, although the valuation effect and other changes in value were also positive.<sup>20</sup>

An increase in exposure to public debt securities, combined with an increase in maturities and average duration, results in higher sensitivity to market risks and may amplify the impact of adverse developments in these assets' risk premia, especially on exposures measured at fair value. While the Portuguese banking sector has sought to diversify the geographical basis of public debt securities since the sovereign crisis, investment in other jurisdictions has been mainly directed to Spain and Italy (Section 4.3), whose yields tend to be positively correlated with yields on domestic public debt in situations of financial stress, thus limiting diversification gains. The sensitivity analysis conducted by Banco de Portugal shows that a possible 100 b.p. rise in public debt yields in Portugal, Spain and Italy would have a negative impact of around 73 b.p. on the CET 1 ratio of the main Portuguese banks. However, the impact of this shock depends on each bank's management model of the fixed-rate securities portfolio, which affects the classification of these assets and the adoption of hedging strategies. Thus, notwithstanding the more favourable regulatory treatment of this exposure, banks must hold capital buffers that are suitable for the possible materialisation of this risk.

<sup>20</sup> For an analysis of the possible determinants of public debt exposure of the Portuguese banking system, see Campos, Mateus and Pina (2019), "Sovereign exposures in the Portuguese banking system: determinants and dynamics", *Working Papers*, Banco de Portugal.

Lower financing costs have also led to an increase in the leverage of non-financial corporations in the euro area, leaving this sector particularly vulnerable to the risks underlying a deceleration in economic activity. Together with a worsening in profitability prospects, this is likely to lead to a credit risk rise and reassessment, which may bring additional difficulties in renewing the financing sources (rollover risk), particularly for more leveraged companies. In addition, in the current context of high indebtedness, a non-financial corporations' credit event at international level could also trigger a global reassessment of risk premia. In Portugal, the leverage of non-financial corporations has been declining in the post-crisis period and liquidity levels have been increasing (Box 3). However, corporate indebtedness remains high in the European context.

Despite the still high level of indebtedness observed in some euro area countries, household debt servicing capacity has improved in some Member States, including Portugal. However, a potential and sharper slowdown in economic activity, with negative consequences for the labour market, may reduce household income and put additional pressure on their debt servicing capacity.

## Residential real estate prices continued to show signs of overvaluation; however, the stock of loans for house purchase continued to fall

Many European countries have experienced a momentum of increase in residential real estate prices and, in some cases, credit for house purchase has also grown (Chart I.1.12). In Portugal, residential real estate prices remained on a growth path in more recent quarters, resulting in a further overvaluation in aggregate terms (see first Special issue in this Report). This momentum has stemmed from high demand by non-residents, buoyant tourism, high consumer confidence, but also from the prolonged low interest rates and high liquidity environment, thus encouraging economic agents to search for yield, as already mentioned (Section 2.3). However, in the second quarter of 2019 price growth was accompanied by a fall in total value and more sharply in the number of transactions in family dwellings.

However, the current momentum in the real estate market can be interrupted by a set of factors, such as the materialisation of geopolitical stress events and/or a sharper slowdown in global economic activity, which may limit or reduce external demand for Portuguese goods and services, as well as changes in the Portuguese real estate tax framework. This lower demand by non-residents may be due, on the one hand, to the impact on the tourism sector and, on the other, to the change in the financing and confidence conditions of non-resident investors, which tend to adjust at a faster pace. Altogether, the likelihood of these events may lead to a significant adjustment in prices, with an impact on these assets' holders and in some sectors of activity (e.g. real estate).

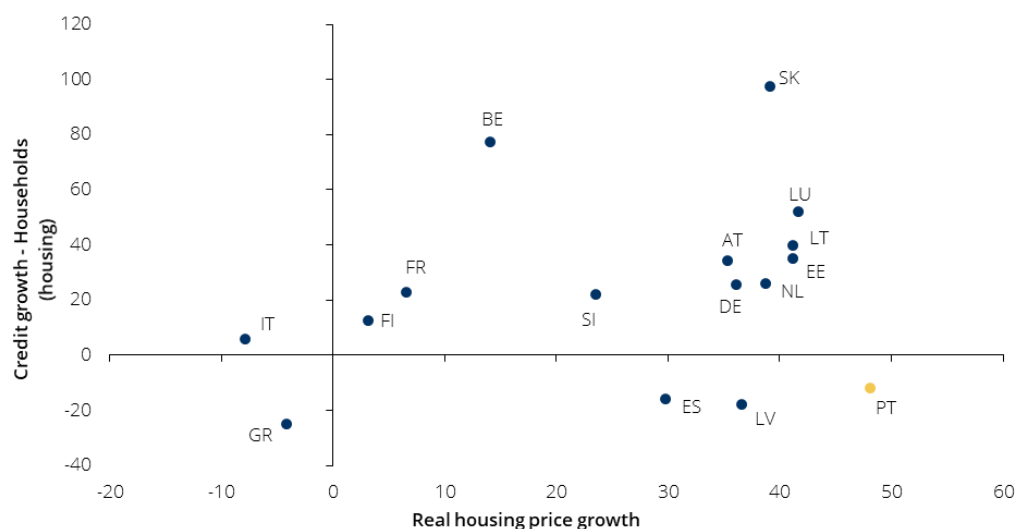
Looking ahead, the slowdown in economic activity, the decline in demand for real estate for local accommodation and the increase in supply are expected to contribute to moderate real estate price growth in 2019. Nevertheless, a protracted very low interest rate environment at a global level may create incentives to sustain price growth in this market.

In this context, Banco de Portugal's macroprudential Recommendation, which mitigates these risks by reducing the interaction between new credit agreements for households and real estate prices,



becomes more relevant. In the latest Bank Lending Survey,<sup>21</sup> most institutions reported relatively unchanged credit standards, despite the slight increase in demand for loans for house purchase. As such, it is important to guarantee that the pricing policy for new loans matches the borrowers' credit risk, making it possible to mitigate losses in the event of more adverse scenarios, while ensuring borrower's ability to comply with debt servicing.

**Chart I.1.12 • Cumulative changes in residential real estate prices and in loans for house purchase | Per cent**



Sources: ECB and Organization for Economic Co-operation and Development (OECD). | Notes: Cumulative changes between 2013 and 2019 Q2. Cyprus and Malta are excluded from the sample due to the lack of data. The cumulative change in loans (-8.7%) and real estate prices (68.7%) for Ireland are not shown in the chart for visual sake. Cumulative changes in the stock of loans to households for house purchase.

## The current framework poses additional challenges for the Portuguese banking system

Portuguese banking sector's exposure, whether direct or indirect,<sup>22</sup> to international activity in certain geographies remains relevant, especially those which are particularly sensitive to a potential global framework of greater economic slowdown. Direct exposure to these geographies is particularly sensitive to credit risk (sovereign rating and default), foreign exchange risk and market risk (commodity prices). On the one hand, given the close link between the economic activity of these countries and commodity prices, episodes of volatility and market risk materialisation – especially a sharp fall in oil prices – may result in contagion and immediate deterioration in the creditworthiness of counterparties in these countries. On the other hand,

<sup>21</sup> Available at [https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/results\\_oct2019\\_en.pdf](https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/results_oct2019_en.pdf).

<sup>22</sup> Exposure of the banking system to firms residing in Portugal with relationships with other geographies, either through commercial activity or capital relations.

these exposures show a significantly higher risk cost, with NPL ratios largely exceeding the values inherent in domestic activity. Accordingly, the performance of those economies and exposures should be closely monitored. As for indirect exposures, the slowdown in economic activity, particularly a cross-cutting and global slowdown, may be reflected in the credit quality of loans granted to firms whose activity is particularly dependent on more affected countries.

Banks should seek to adjust their business models – particularly investment in digitalisation – in order to remain technologically efficient and competitive, especially given the entry of new players into the financial intermediation activity. In addition, this adjustment should be made without jeopardising the investment required for risk management and internal control functions, particularly money laundering and terrorist financing and cyber-risks.

Also, and compared to the last issue of the *Financial Stability Report*, there are still risks to financial stability, associated with (i) the banking system's transition to the new regulatory framework, particularly those associated with the challenge posed by compliance with the minimum requirement for own funds and eligible claims able to absorb losses and contribute to the recapitalisation of the institution in case of resolution (MREL), and (ii) the fragmentation of the European institutional architecture, mainly related to the incompleteness of the Banking Union. However, the current lower-for-longer interest rates and lower financing costs context have enabled the issuance of eligible instruments for compliance with the MREL (Section 2.1 and Chart 2.2.7).

In addition, awareness of the significance of the financial risks from climate change and the transition to a sustainable low carbon economy has solidified and, therefore, its potential impact on financial stability.<sup>23</sup> The fact that this topic has risen to a prominent place on the political agenda, both internationally and especially in the EU, with emphasis on the priorities set for the new institutional cycles of the European Commission and the European Central Bank, reflects the underlying paradigm shift and the acknowledgement of the intensity and the cross-cutting nature of the challenges posed by climate change and requiring global responses – which naturally include the transformation and adjustment process imposed on financial sector activity.

Since June 2019 a number of initiatives have been taken to promote sustainable finance, including the creation, on 18 October, of the “International Platform on Sustainable Finance” at the International Monetary Fund/World Bank Annual Meetings held in Washington. This EU initiative incorporates countries from around the world, and is part of international efforts to meet the targets set out in the Paris Agreement. Given the substantial (public and private) financial resources needed to meet climate targets, the Platform aims to promote investment and redirect capital flows on the scale needed for the transition to a sustainable low carbon economy, and is intended to be a forum enabling experience exchange and effort coordination on initiatives to promote sustainable finance.

Banco de Portugal has been fulfilling its commitment to contribute, within its mandate, to the global effort to promote environmental objectives and, particularly to fight climate change. Among all the initiatives taken, in December 2018 Banco de Portugal joined the Central Banks and Supervisors Network for Greening the Financial System (NGFS). This network established in 2017 aims to define and promote best practices to be implemented in the financial system and to conduct or commission analytical work on green finance to support the transition to a sustainable economy.

<sup>23</sup> For risks to financial stability associated with climate change, see the June 2019 issue of the *Financial Stability Report*, notably Box 2 entitled “Risks to financial stability resulting from climate change”.

## Recent European anti-money laundering initiatives emphasise the highly critical nature of the subject and the importance of Banco de Portugal's initiatives in this field

In compliance with the December 2018 Action Plan of the Council of the European Union, intended to strengthen preventive supervision of money laundering and terrorist financing, European initiatives have been further developed to prevent the emergence of new cases of money laundering associated with European banks.

In this context, the European Commission adopted on 24 June 2019 a communication to promote a better response from European and national authorities to the risks of money laundering and terrorist financing and refers to the approval of four reports on the following subjects:

- Update of the supranational risk assessment of money laundering and terrorist financing affecting the internal market;
- Assessment and lessons learned from recent cases of money laundering in the European Union;
- Analysis of cooperation mechanisms between Financial Intelligence Units;
- Work on the interconnection of central bank account registers.

As far as the financial system is concerned, the Commission Communication proposes to increase cooperation between the various relevant stakeholders and to consider a greater harmonisation in European legislation and institutional framework in this field, especially by establishing a European Union Regulation and a supranational supervisory authority specifically focusing on financial groups with cross-border activities.

At the domestic level, the national risk assessment of money laundering and terrorist financing continued to be updated and is expected to be completed in the short term. The exercise under consideration is expected to allow for a mapping of the main national threats in this field, together with an assessment of key vulnerabilities and sectoral controls, based on which response measures will be identified to address the detected weaknesses.

In terms of Banco de Portugal's supervisory work in the prevention of money laundering and the financing of terrorism, a number of cross-cutting inspections and a cycle of thematic inspections were carried out in 2019. The latter focused on group policies and controls adopted by the supervised institutions regarding their international activity, with particular emphasis on branches and subsidiaries abroad. In addition, and in the context of the traditional off-site monitoring of supervised institutions, Banco de Portugal continued to assess internal control systems dedicated to the prevention of ML/TF, particularly assessing compliance with previously issued supervisory measures.

## 1.2 Macroprudential policy

In order to ensure the financial system's resilience, Banco de Portugal, in its capacity as the Portuguese macroprudential authority, has several instruments at its disposal, which may be used jointly or separately depending on the type of cyclical or structural systemic risk to be mitigated.

### Increase in the O-SII buffer of Banco Comercial Português from 0.75% to 1.00%

In the second half of 2019, Banco de Portugal identified domestic systemically important institutions and assessed the appropriateness of the calibration of the O-SII (Other Systematically Important Institution) buffer established in 2018. This macroprudential instrument is used to mitigate structural systemic risk associated with excessive risk-taking by institutions whose bankruptcy can have a significant impact on the financial system and the economy. The buffer rate is revised annually or in the event of a significant restructuring process, such as a merger or acquisition.

O-SIIs identification is based on the highest level of consolidation of institutions for supervisory purposes and closely follows the methodology proposed by the European Banking Authority (EBA).<sup>24</sup> This methodology consists in calculating a score, which measures the relative systemic importance of each institution. The score is based on four criteria for assessing systemic importance that include: (i) the institution's size; (ii) its importance for the economy of the relevant Member State or of the European Union; (iii) the complexity of its business model, as well as its cross-border activity; and (iv) the interconnectedness of the institution with the rest of the financial system. Institutions with a score exceeding the threshold of 350 b.p. are identified as O-SIIs.<sup>25</sup> In 2019 six institutions are listed as O-SII in Portugal: Caixa Geral de Depósitos (CGD), Banco Comercial Português (BCP), Santander Totta, LSF Nani Investments, Banco BPI (BPI) and Caixa Económica Montepio Geral (CEMG). This list coincides with that published in 2018, except for Novo Banco (NvB) which was replaced by LSF Nani Investments following the change in the shareholder structure in October 2017.

The calibration of the O-SII buffer is based on the cluster methodology, which consists in the allocation of each O-SII to a cluster according to its score. Five clusters were set up, to which an O-SII buffer rate is associated. Institutions with a higher score are required to have a higher buffer. No institution is allocated to cluster 5, thus enabling institutions that may become more systemically important in the future to move to the last cluster.

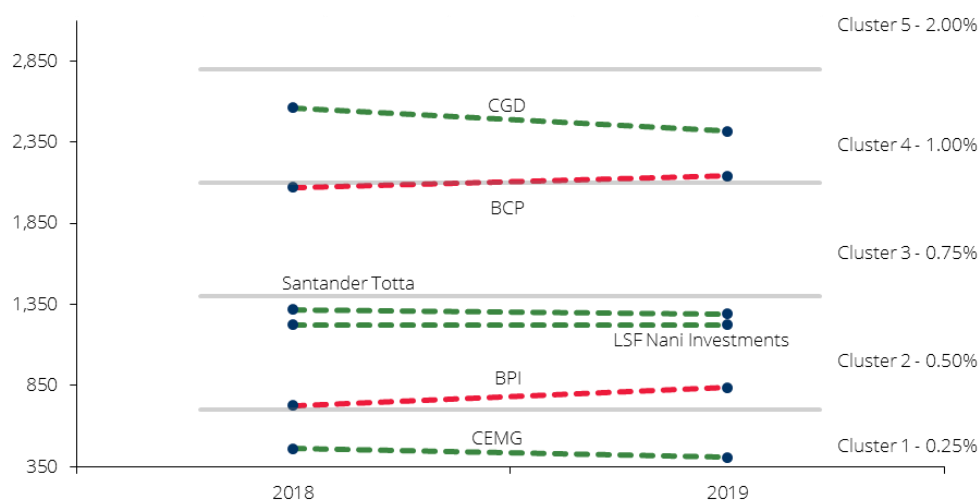
Between 2018 and 2019, two of the six institutions increased their relative systemic importance, measured in terms of their score, while the other four institutions reduced their relative systemic importance (Chart I.1.13). In addition, the increase in BCP's score implies its transition from cluster 3 to cluster 4, resulting in a 0.25 p.p. increase in the O-SII buffer requirement.

With regard to the phase-in period established in 2017, Banco Comercial Português will have one additional year to comply with the 0.25 p.p. increase, i.e. this institution's O-SII buffer should be fully completed as of 1 January 2022 (Table I.1.1). For the other banking groups, the O-SII buffer rate and the phase-in period defined in 2017 are maintained.

<sup>24</sup> For further details, see EBA/GL/2014/10 entitled "Guidelines on the criteria to determine the conditions of application of Article 131(3) of CRD IV in relation to the assessment of other systemically important institutions (O-SIIs)", available at <https://eba.europa.eu/sites/default/documents/files/documents/10180/930752/964fa8c7-6f7c-431a-8c34-82d42d112d91/EBA-GL-2014-10%20%28Guidelines%20on%20O-SIIs%20Assessment%29.pdf?retry=1>.

<sup>25</sup> For further details, see the methodological note entitled "Identification of other systemically important institutions (O-SIIs) and calibration of O-SII capital buffers" available on Banco de Portugal's website at [https://www.bportugal.pt/sites/default/files/anexos/doc\\_osii\\_en\\_0.pdf](https://www.bportugal.pt/sites/default/files/anexos/doc_osii_en_0.pdf).

Chart I.1.13 • O-SII score evolution | Basis points



Source: Banco de Portugal. | Notes: For this analysis we consider the scores of Novo Banco in 2018 and LSF Nani Investments in 2019. The green line indicates a decrease in the relative systemic importance of an O-SII, while the red line represents an increase. Gray lines indicate the lower bounds of four of the five clusters defined in the cluster methodology. For each cluster, the respective O-SII buffer expressed as a percentage of total risk exposure amount is identified.

Table I.1.1 • Other systemically important institutions capital buffer | As a percentage of total risk exposure amount

O-SIIs	O-SII buffer	Implementation date		
		1 January 2020	1 January 2021	1 January 2022
Caixa Geral de Depósitos	1.000	0.750	1.000	1.000
Banco Comercial Português	1.000	0.563	0.750	1.000
Santander Totta	0.500	0.375	0.500	0.500
LSF Nani Investments	0.500	0.375	0.500	0.500
Banco BPI	0.500	0.375	0.500	0.500
Caixa Económica Montepio Geral	0.250	0.188	0.250	0.250

In the context of the Single Supervisory Mechanism, the ECB has been given powers on macroprudential matters with regard to measures and instruments provided for in European legislation, known as harmonised measures. Thus, the ECB's Governing Council may object to decisions taken by national macroprudential authorities on harmonised instruments, explaining the reasons for its disagreement, or decide to impose higher requirements or more stringent measures than those applied by macroprudential authorities (top-up powers). Against this background, the ECB, in cooperation with the national macroprudential authorities, has developed a methodology to assess national decisions on the O-SII buffer. This methodology, called the floor methodology, establishes a floor buffer rate to be required to O-SIIs on the basis of the score they

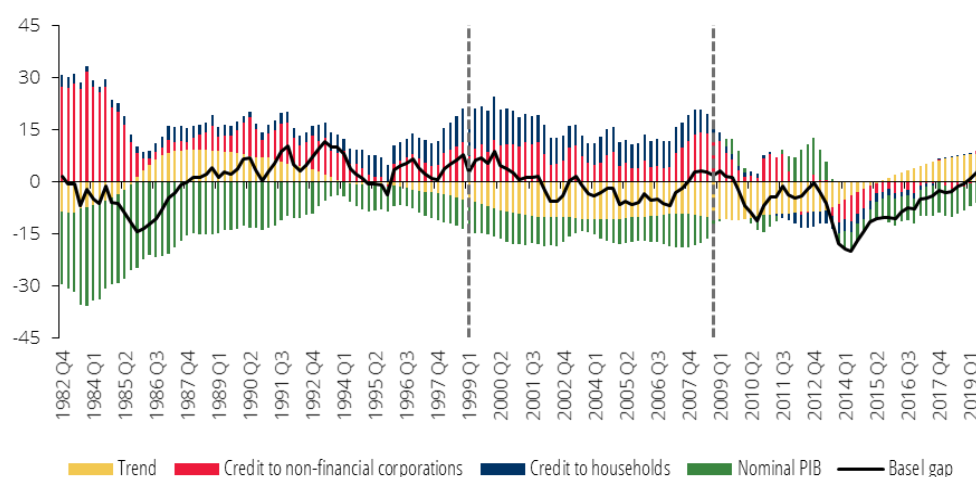
obtained in the identification phase.<sup>26</sup> Banco de Portugal's calibration of the O-SII buffer takes these floor buffer rates into account.

## Banco de Portugal maintained the countercyclical capital buffer unchanged at 0% of the total risk exposure amount

The countercyclical capital buffer aims to increase the banking system's capacity to absorb losses during the downturn phase of the financial cycle, contributing to the mitigation of its procyclicality. In the third quarter of 2019, when the decision on the countercyclical capital buffer to be applied in the last quarter of that year was taken, the available quantitative and qualitative information pointed to the maintenance of the countercyclical capital buffer at zero per cent, despite developments observed in the residential real estate market.

The credit-to-GDP gap in relation to its long-term trend, commonly referred to as the Basel gap, remains negative. However, since the second quarter of 2014, the year-on-year change in the Basel gap has been increasingly less negative, mainly influenced by a slower deleveraging in the non-financial private sector and the adjustment in the long-term trend (Chart I.1.14). This adjustment, which consists in a long-term trend decrease, reflects the persistence of nominal GDP growth rates much higher than the growth rates of credit to the non-financial private sector since the second quarter of 2013. The year-on-year change in the gap has been positive since the beginning of 2019, with no positive contributions from credit to the non-financial private sector since the third quarter of 2011, which were quite relevant in previous periods.

**Chart I.1.14 • Year on year change of Basel gap and contributions of the components |**  
Percentage points

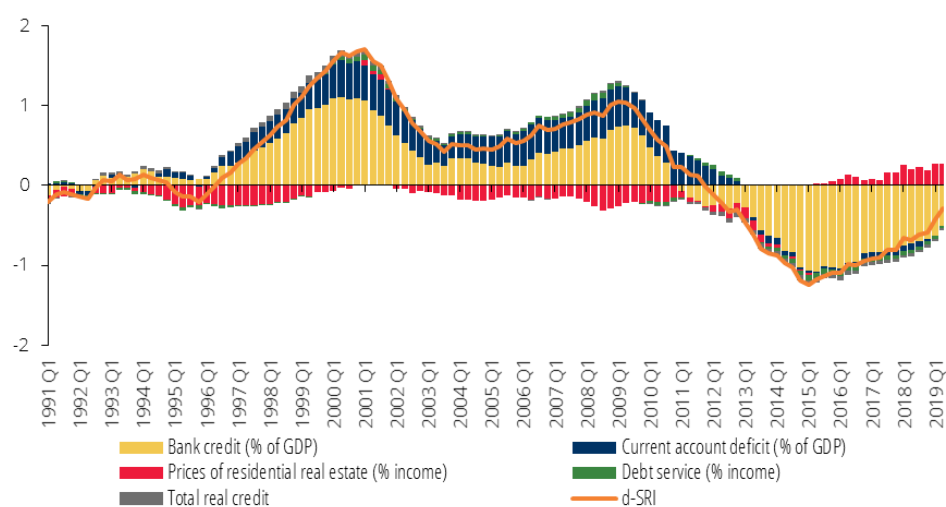


<sup>26</sup> For further details, see Chapter 1 entitled "ECB floor methodology for setting the capital buffer for an Other Systemically Important Institution (O-SII)", *Macroprudential Bulletin*, ECB, June 2017.

Sources: Banco de Portugal and Statistics Portugal (Banco de Portugal calculations). | Notes: Last observation: 2019Q2. Dashed vertical lines signal the onset of systemic financial crises in Portugal as defined in the ESCB Heads of Research Group's banking crises database.

Additionally, in the first half of 2019, the composite indicator for domestic systemic risk (d-SRI) continued the recovery observed since 2015 (Chart I.1.15).<sup>27</sup> The indicator aggregates several sub-indicators which have good signalling properties for the build-up of cyclical vulnerabilities before systemic banking crises, which are normalised using the median and the standard deviation of the euro area. Thus, the indicator's recovery implies that, on average, all sub-indicators are approaching their historical median. The recovery is explained by developments in house prices, which have contributed to the build-up of cyclical vulnerabilities since the second quarter of 2015. This mainly reflects a persistent increase in house prices relative to disposable income of resident households, in a context of economic activity growth, maintenance of low financing costs and a sharp increase in tourism and non-resident demand for housing.<sup>28</sup> As already mentioned, the deleveraging process of the non-financial private sector has continued, but at an increasingly slower pace. This results in an increasingly smaller contribution made by the bank credit-to GDP ratio to the decline in the level of cyclical systemic risk. However, d-SRI remains negative, thus not signalling the accumulation of cyclical systemic risk.

**Chart I.1.15 • Developments in the d-SRI and breakdown of contributions by sub-indicator**  
| Standard deviations from the median



Sources: ECB and Bank for International Settlements (BIS) (Banco de Portugal calculations). | Notes: Last observation: 2019Q2. The contribution of each sub-indicator to the evolution of d-SRI is obtained by multiplying the observed value of the sub-indicator with its weighting.

<sup>27</sup> For further details, see Box 3 entitled "A cyclical systemic risk indicator in Portugal" in the June 2019 issue of the *Financial Stability Report*.

<sup>28</sup> For further details on developments in the residential real estate market, see Section 2.3.

Each institution's specific countercyclical buffer rate corresponds to a weighted average of the buffer rates applicable in the countries where the institution's exposures are located. Thus, the buffer rate is dependent not only on the decisions of Banco de Portugal (on domestic exposures or exposures to third countries<sup>29</sup> identified as relevant), but also on decisions that are taken by macroprudential authorities from other countries. The importance of reciprocity and recognition of decisions on the countercyclical capital buffer has been increasing as macroprudential authorities of EU Member States and third countries activate this buffer. In fact, nine EU countries<sup>30</sup> and a third country member of the Basel Committee (Hong Kong) have already applied a countercyclical buffer rate above zero per cent.

Banco de Portugal regularly monitors the risks associated with excessive credit growth in third countries relevant to the Portuguese banking system. Therefore, it discloses the list of third countries relevant to the Portuguese banking system annually. During the first half of 2019, Banco de Portugal identified the following countries as relevant third countries: Republic of Angola, Republic of Mozambique and Macao Special Administrative Region of the People's Republic of China. Changes to this list depend on inclusion and exclusion criteria set by Banco de Portugal on the basis of developments in the relative amount of exposures to a third country.<sup>31</sup> In 2019, the three third countries identified as relevant were already identified as such in 2018, as they did not exceed the reference values for their exclusion from the list and no other third country met the criteria for inclusion in the list. Banco de Portugal regularly analyses a set of macroeconomic and financial indicators to assess the need to define a countercyclical buffer rate applicable to relevant exposures to those countries.

The above macroprudential policy instruments aim to make institutions more resilient to absorb losses from unanticipated negative shocks through increases in capital requirements. However, using these instruments may also come at a cost depending, among other factors, on the strategies used by institutions to comply with increases in capital requirements, as discussed in detail in the special issue entitled "A review of the literature on the impact of the increase in financial institutions' capital ratios".

## Convergence towards the limits set in the macroprudential Recommendation for new credit agreements relating to residential immovable property and consumer credit and improvement in the borrowers' risk profile

<sup>29</sup> 'Third country' refers to any jurisdiction outside the European Economic Area. The European Economic Area includes the Member States of the European Union, Iceland, Liechtenstein and Norway.

<sup>30</sup> The EU countries that have already applied the countercyclical capital buffer are: Bulgaria, Czech Republic, Denmark, France, Ireland, Lithuania, Norway, Slovakia and Sweden.

<sup>31</sup> For further details, see the methodological document entitled "Institution specific countercyclical capital buffer", available on Banco de Portugal's website at [https://www.bportugal.pt/sites/default/files/anexos/documentos-relacionados/institution\\_specific\\_countercyclical\\_capital\\_buffer.pdf](https://www.bportugal.pt/sites/default/files/anexos/documentos-relacionados/institution_specific_countercyclical_capital_buffer.pdf).



Banco de Portugal has been assessing the degree of implementation of the macroprudential Recommendation on new credit agreements for consumers <sup>32</sup> (hereinafter the Recommendation). From its implementation until September 2019, for a sample of 13 institutions,<sup>33</sup> a significant convergence has been observed towards the established limits.<sup>34</sup>

With regard to the loan-to-value (LTV) ratio,<sup>35</sup> and although the average LTV ratio of new credit business remains at around 75%, since the entry into force of the Recommendation the share of new business regarding credit relating to residential immovable property with an LTV ratio above 90% has decreased from 22% in July 2018 to 2% in September 2019. The range of the ratio with the largest increase in credit granted is from 80% to 90% (Chart I.1.16).

For the debt service-to-income (DSTI) ratio, in September 2019 around 87% of new business regarding credit relating to residential immovable property and consumer credit was granted to borrowers with a DSTI ratio of 50% or less.<sup>36</sup> The share of credit relating to residential immovable property and consumer credit with a DSTI ratio of over 60% declined from 16% to around 3% between July 2018 and September 2019, i.e. below the 5% limit provided for the exceptions. Furthermore, in September 2019 only 6% of total new business regarding credit relating to residential immovable property and consumer credit was granted to borrowers with a DSTI ratio between 50% and 60%, which is below the 20% exception established in the Recommendation (Chart I.1.17). Limits to maturity (maximum of 40 years for credit secured by a mortgage or equivalent and 10 years for consumer credit agreements) were generally respected in both types of credit. The weighted average maturity per credit amount reached 32.9 years for credit relating to residential immovable property and 7.9 years for consumer credit in September 2019. For credit relating to residential immovable property, it is recommended that the average maturity of the set of new credit agreements relating to residential immovable property and credit secured by a mortgage or equivalent guarantee granted during each year for each institution gradually converges toward 30 years until 2022. Finally, the regular principal and interest payments requirement showed a high degree of compliance with the Recommendation.<sup>37</sup> The Recommendation seems to have contributed to the reduction in the share of credit relating to residential immovable property granted to borrowers with a higher risk profile, as there is a higher share of credit granted to borrowers with a lower DSTI ratio and a lower LTV ratio (Chart I.1.18). As

<sup>32</sup> For a detailed analysis on Banco de Portugal's Recommendation on new credit agreements for consumers, see Banco de Portugal's website at <https://www.bportugal.pt/en/page/ltv-dsti-and-maturity-limits>.

<sup>33</sup> Representing around 93% of new household credit.

<sup>34</sup> Banco de Portugal published the first *Macroprudential Recommendation on new credit agreements for consumers – progress report* on 29 May 2019, which is available on Banco de Portugal's website. The first few months of implementation of the Recommendation were affected by credit business for which the borrower's creditworthiness assessment was carried out prior to the Recommendation's entry into force. This was particularly evident in credit relating to residential immovable property. Hence, as at July 2018, also due to some difficulties involved in the Recommendation's operational implementation by the institutions, credit agreements were mostly based on solvency criteria that did not coincide with those established in the Recommendation. Therefore, data for July 2018 were used as a starting point to assess the evolution of the borrower's risk profile throughout the period under review.

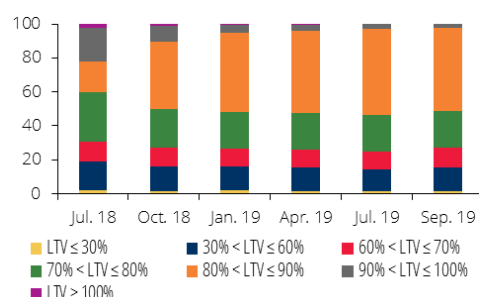
<sup>35</sup> "Loan-to-value (LTV) ratio" means the ratio of the total amount of credit agreements secured by immovable property to the minimum value between the purchase price or the appraisal value of the immovable property pledged as collateral for credit relating to residential immovable property and credit secured by a mortgage or equivalent guarantee, calculated pursuant to Article 3 of the Recommendation.

<sup>36</sup> "Debt service-to-income (DSTI) ratio" means the ratio of the monthly amount of instalments calculated considering the borrowers' total debt to their net monthly income. For the purposes of this calculation, the instalments of the new credit agreement are assumed to be constant, and the impact of an interest rate rise should be considered for this agreement, in accordance with the provisions of an Instruction of Banco de Portugal. In the case of a borrower aged 70 and over at the planned expiry of the agreement and not retired yet, a reduction of income of at least 20% of current annual income should be considered, weighted by the ratio of the number of years of the agreement in which a borrower is aged 70 and over to the total maturity of the agreement. See Article 4 of the Recommendation for further details.

<sup>37</sup> For further details see the document entitled *Macroprudential Recommendation on new agreements for consumers – progress report* published on Banco de Portugal's website ([https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/acompanhamento\\_recomendacao\\_macroprudencial\\_2019\\_en.pdf](https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/acompanhamento_recomendacao_macroprudencial_2019_en.pdf)).

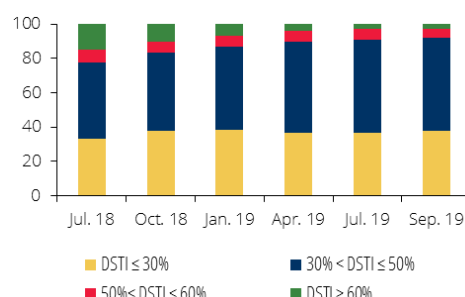
a result, an increase in institutions' resilience to a possible deterioration of economic conditions is expected, as well a reduction in their potential losses given a possible decline in the price of real estate collateral.

**Chart I.1.16 • Distribution of new housing loans by LTV ratio | Percentage of total housing loans**



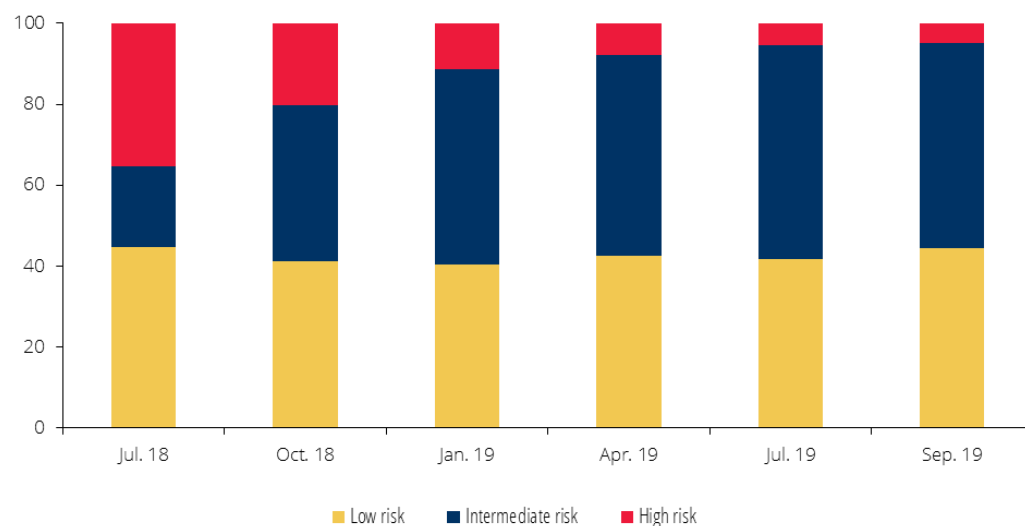
Source: Banco de Portugal. | Notes: Based on information reported by a sample of 13 institutions. LTV ratio calculated as defined in Articles 2 and 3 of the Recommendation.

**Chart I.1.17 • Distribution of new household loans by limit to the DSTI ratio | Percentage of total credit**



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

**Chart I.1.18 • Borrowers' risk profile in new housing loans | Percentage**



Source: Banco de Portugal. | Notes: Based on information reported by a sample of 13 institutions. Low risk: DSTI ≤ 50% and LTV ≤ 80%; Intermediate risk: 50% < DSTI ≤ 60% and 80% < LTV ≤ 90%; High risk: DSTI > 60% and LTV > 90%. LTV ratio is the ratio between the total amount of credit agreements relating to residential immovable property and the minimum between the purchase price or the valuation value of the property given as collateral for housing credit (s) and secured credit (s) mortgage or equivalent. DSTI is the ratio of the amount of the monthly installment calculated on all loans from the borrower(s) to their monthly income(s).

The European Systemic Risk Board (ESRB) considered the macroprudential Recommendation to be appropriate and sufficient to mitigate the risks identified in the Portuguese residential real estate market (Box 1).

## Banco de Portugal has decided to reciprocate the measure imposed by the Swedish macroprudential authority

Since 31 December 2018, the Swedish macroprudential authority (Finansinspektionen) has a macroprudential measure in force imposing a floor of 25% for the exposure-weighted average of the risk weights applied to the portfolio of retail exposures to obligors residing in Sweden secured by immovable property. Banco de Portugal has assessed the exposures of each of the Portuguese credit institutions covered and concluded that they are non-material. Nevertheless, it has decided to reciprocate this macroprudential measure.

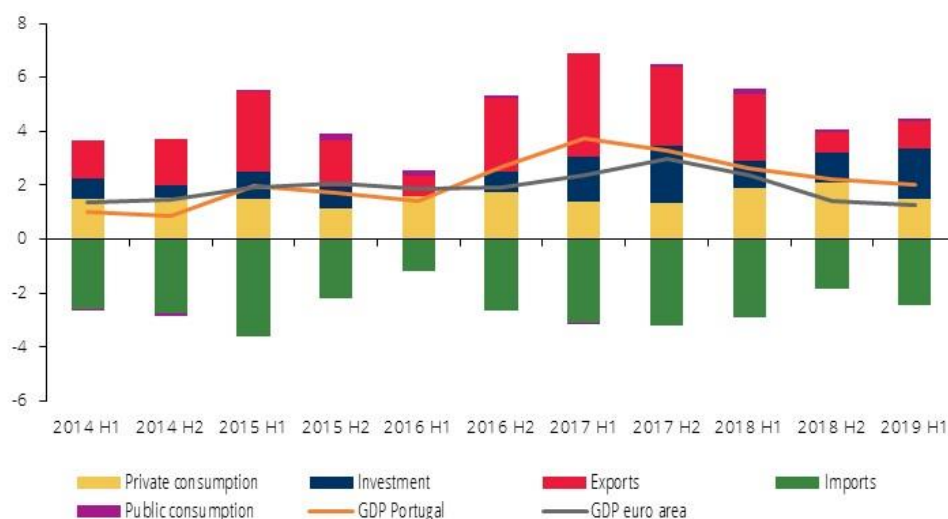
## 2 Macroeconomic and markets environment

### 2.1 Macroeconomic situation and short-term prospects

The Portuguese economy decelerated slightly in the first half of 2019

In the first half of 2019, the Portuguese economy grew by 2%, year on year, compared with 2.4% growth in 2018 as a whole, maintaining the slowdown observed since mid-2017 (Chart I.2.1).<sup>38</sup> The deceleration in Portuguese GDP was due to the loss of export momentum compared with previous years (notwithstanding the slight acceleration compared with the previous half-year) – in line with the slowdown in international trade – in parallel with continued growth in domestic demand. However, economic activity in Portugal continued to be relatively resilient compared to developments in the euro area as a whole, which slowed down more sharply, largely associated with GDP deceleration in Italy and Germany.

**Chart I.2.1 • Developments in GDP and contributions from its components |** Year on year rate of change in percentage, and contributions in percentage points



Source: Banco de Portugal.

<sup>38</sup> The analysis undertaken in this chapter incorporates the revisions of balance of payments and international investment position statistics, as well as the revision of the national accounts benchmark disclosed by Statistics Portugal on 23 September.

All these developments occurred against a background of a slowdown in the world economy. This slowdown cut across advanced economies and emerging markets and was more significant in sectors more exposed to international trade, amid increasing protectionism and trade tensions between the United States and China, and high political and economic uncertainty surrounding the United Kingdom's withdrawal from the EU. These factors, allied to persistent below-target inflation led the European Central Bank (ECB) to reinforce its commitment in September 2019 to maintaining interest rates at low levels over the coming years.<sup>39</sup>

## Developments in economic activity in Portugal in the first half of 2019 reflected the slowdown in exports and in private and public consumption and greater dynamism in corporate investment

Underlying the relative stabilisation of the contribution of domestic demand to GDP developments in the first half of 2019, was on the one hand a slowdown in public and private consumption and on the other a strong acceleration in investment. Private consumption grew by 2.3% year on year, compared to 3.2% in the previous half, reflecting the slowdown in current consumption and contraction in car purchases. Despite sustained growth in real disposable income, the saving rate fell slightly.

GFCF had a year-on-year rate of change of 9.5% (compared with 5.5% in the second half of 2018). This was essentially due to the contribution of construction and, to a lesser extent, components associated with machinery and equipment. Thus there was an acceleration in investment by the public and private sectors, especially the corporate component, particularly in the construction and real estate activities sector. More specifically, private corporate GFCF recorded a year-on-year rate of change of 10.1% in the first half of 2019, compared with 5.3% for the previous half-year. This development reflects the need to recover and renew the capital stock, after an extended period of contraction in investment, against a background of low funding costs.

GVA growth in the first half of 2019 mainly reflects the contribution of the services sector and, to a lesser extent, construction. GVA growth has decelerated since the beginning of 2018 on account of a slowdown in industrial GVA, which fell further in the first half of 2019.

Portuguese economic growth over the past few years has continued to be reflected in improvements in the labour market, including increasing wage growth. According to Statistics Portugal's Labour Force Survey, the unemployment rate remained on a downward trend in the first half of 2019, albeit more modestly than in recent years, standing at 6.5%, which is lower than that observed in the euro area. GVA per worker increased somewhat in the first half of the year, although a considerable negative differential still subsists against the euro area average.

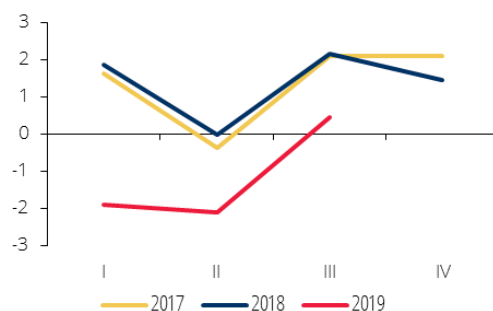
The inflation rate, measured by the year-on-year rate of change in the Harmonised Index of Consumer Prices (HICP) fell 0.6 p.p. compared with the preceding half-year, reaching 0.7% with a negative differential of -0.7 p.p. against the euro area. Inflation rates in the euro area also remain very low considering the phase of the business cycle, namely given the positive gap in the product markets and acceleration in unit labour costs, against a background of a reduction in inflation expectations.

<sup>39</sup> See Section 2.2 for a more extensive analysis.

The current and capital accounts recorded a deficit of 2% of GDP at the end of the first half of 2019, compared to a nil balance in the same period in 2018 (Chart I.2.2). However, in recent years the current and capital accounts have registered lower balances in the first half of the year compared to the second due to the seasonality of operations. In terms of external trade in goods and services, trade flows accelerated, with emphasis on imports of capital goods, in line with the strong momentum of corporate investment. Import growth was greater than that of exports, which translated into a deterioration of the goods and services account balance, due to the deterioration in both the energy and non-energy goods balance. Exports grew less in real terms than in previous years, although their performance was better than in the second half of 2018. Against this background, Portuguese exports recorded further market share gains, following the reduction registered at the end of 2018, associated with a particularly positive trend for car and tourism exports.

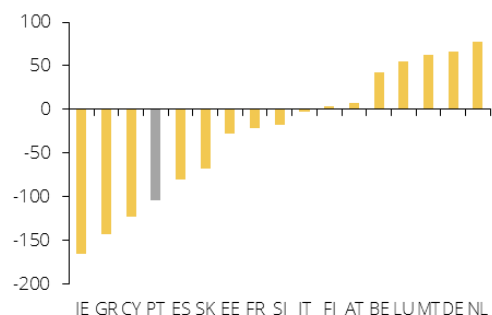
Despite the international investment position of the Portuguese economy registering successive improvements, reaching -104.4% of GDP in the first half of the year (1.2 .p.p. higher than observed in late 2018), it remains among the most negative in the euro area, being mainly composed of net external debt (-90.9%) (Chart I.2.3).

**Chart I.2.2 • Developments in current and capital accounts | Accumulated balance in percentage of GDP**



Sources: Banco de Portugal and Statistics Portugal (Banco de Portugal calculations).

**Chart I.2.3 • International Investment Position | Percentage of GDP**



Source: Eurostat (Banco de Portugal calculations). | Note: The data refers to the first trimester of 2019 except for GR, CY, SK, EE and BE, which refers to the second semester of 2018.

## The risk factors to economic activity in 2020 are significant

At global level, the IMF and European Commission (EC) project a GDP slowdown in 2019 across the main advanced and emerging market economies as a result of developments in international trade and the increase in uncertainty. The projections presented in *World Economic Outlook* of October 2019 and in *European Economic Forecast* of November 2019 represent a downward revision compared with the April 2019 and May 2019 issues respectively, reflecting the intensification of risk factors in recent months (Table I.2.1).

Banco de Portugal's projections suggest that the Portuguese economy is expected to grow by 2% over 2019 as a whole (compared with 2.4% in 2018). This projection coincides with that released by the EC in November 2019. In line with the first half of the year, the deceleration in economic activity is based on the weaker contribution of exports, the cooling down of private consumption and greater buoyancy of GFCF. Employment is likely to continue to grow and the unemployment rate should fall, albeit at a

slower pace. The projection for inflation is 0.4% in 2019, which reflects a reduction compared to 2018 (1.2%) and a downward revision compared to the June projection (0.9%). In turn, the net lending position of the Portuguese economy is expected to fall (from 1.4% of GDP in 2018 to 0.5% of GDP in 2019) due to a deterioration in the goods and services account (from 0.8% of GDP to -0.7% respectively).

**Table I.2.1 • GDP growth | Annual rate of change, per cent**

	2018	2019 <sup>P</sup>	2020 <sup>P</sup>	2019 <sup>P*</sup>	2020 <sup>P*</sup>
<b>Portugal</b>	<b>2.4</b>	<b>1.9</b>	<b>1.6</b>	<b>0.2</b>	<b>0.1</b>
<b>World economy</b>	<b>3.6</b>	<b>3.0</b>	<b>3.4</b>	<b>-0.3</b>	<b>-0.2</b>
Advanced economies	2.3	1.7	1.7	-0.1	0.0
<b>USA</b>	<b>2.9</b>	<b>2.4</b>	<b>2.1</b>	<b>0.1</b>	<b>0.2</b>
<b>Euro area</b>	<b>1.9</b>	<b>1.2</b>	<b>1.4</b>	<b>-0.1</b>	<b>-0.1</b>
Germany	1.5	0.5	1.2	-0.3	-0.2
France	1.7	1.2	1.3	-0.1	-0.1
Italy	0.9	0.0	0.5	-0.1	-0.4
Spain	2.6	2.2	1.8	0.1	-0.1
United Kingdom	1.4	1.2	1.4	0.0	0.0
<b>Emerging market and developing economies</b>	<b>4.5</b>	<b>3.9</b>	<b>4.6</b>	<b>-0.5</b>	<b>-0.2</b>
China	6.6	6.1	5.8	-0.2	-0.3
Brazil	1.1	0.9	2.0	-1.2	-0.5
Russia	2.3	1.1	1.9	-0.5	0.2

Source: IMF | Note: The projections are those published by the IMF in the *World Economic Outlook*, October 2019. p – projected. \* Revisions compared to that presented in the *World Economic Outlook*, April 2019.

As far as projections for 2020 are concerned, the IMF points to an acceleration of global economic activity, albeit with a downward revision compared to the April projection. Furthermore, this acceleration does not include all major advanced and emerging market economies. In particular, expectations for the United States, China and Japan are of a slowdown in GDP growth. For Portugal, the IMF predicts that the deceleration in economic activity will continue, in contrast with the moderate acceleration projected for the euro area. The projections for global economic activity, for the euro area and for Portugal in 2020, as presented by the EC in *European Economic Forecast* of November 2019 are in line with those described previously, having been revised down at global and euro area level in comparison to the previous publications.

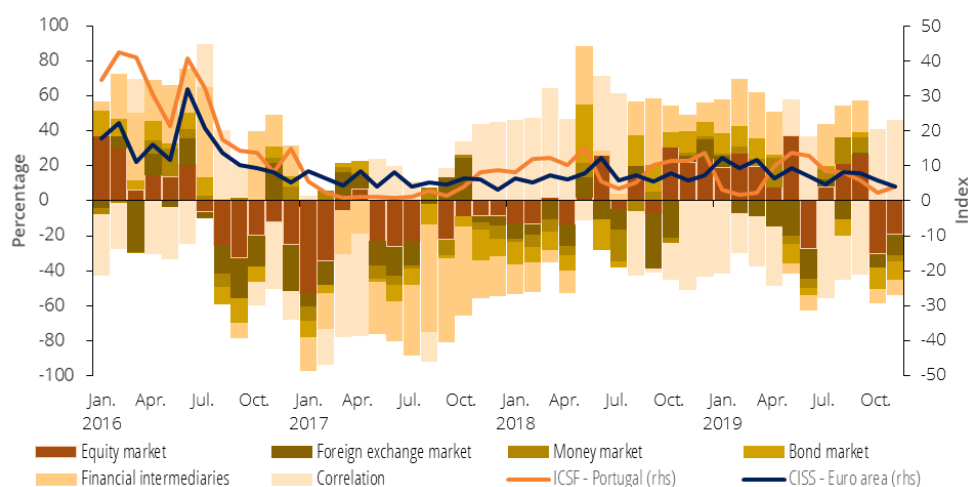
Economic activity in Portugal is subject to predominantly downside and external risks. A more adverse deterioration in the external environment than currently estimated could result in a slowdown in the main export markets, namely due to intensifying protectionist trends or increased geopolitical tensions, as well as being subject to the effects of the United Kingdom's withdrawal from the EU. The materialisation of these risks may lead to a further downward revision of these projections.

## 2.2 Financial markets

During 2019 and despite specific episodes of volatility, the conditions in international financial markets changed due to the tension observed at the end of 2018, particularly owing to the significant reduction in the systemic component (Chart I.2.4). The most accentuated slowdown in global economic activity compared to that expected at the beginning of this year, the trade tension

between the United States and China, the uncertainty surrounding the United Kingdom leaving the European Union (Brexit) and the intensification of geopolitical tension in the Persian Gulf, all caused periods of volatility in certain market segments and geographies. However, these disruptions were mitigated, on the one hand, by the subsequent attenuation of some of these factors and, on the other, by the expectation and materialisation of a more accommodative monetary policy stance than initially foreseen at the beginning of the year. In particular, the monetary stimuli announced by the European Central Bank (ECB) and the United States Federal Reserve (Fed) have, in general, driven a narrowing of risk premia and stock market valuations.

**Chart I.2.4 • Composite indicator of financial stress for Portugal (ICSF) and Composite indicator of systemic stress (CISS) for the euro area**



Sources: Banco de Portugal and ECB. | Notes: Bars represent the relative weight of the different CISS<sup>40</sup> components in the euro area. The systemic risk component is calculated based on the correlations between different market segments. Latest observation: 15 November 2019.

## Most central banks opted to maintain or reinforce accommodative monetary policies during 2019

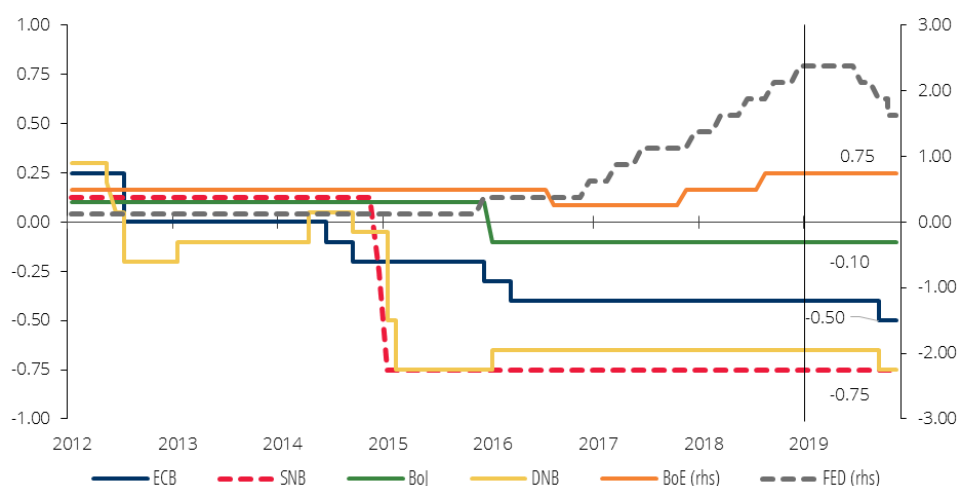
In the case of the United States, and following a total increase in the Fed Funds rate of 1 p.p. in 2018 (to a range of 2.25%-2.5%), in 2019 the Fed reduced the reference rate range to 1.5%-1.75% on three occasions (Chart I.2.5). Despite the favourable developments in the labour market – with the unemployment rate reaching a 50-year low (3.5% in September 2019) – this reduction in Fed Funds rates comes amid greater uncertainty surrounding economic growth in the United States, reflecting tension in trade relations with China and the possible dissipation of the effects of

<sup>40</sup> For further details, see: [https://www.bportugal.pt/sites/default/files/anexos/papers/paper\\_1\\_en.pdf](https://www.bportugal.pt/sites/default/files/anexos/papers/paper_1_en.pdf).



budgetary stimuli started in 2018. Finally, it is important to highlight that the US money market experienced some occasional episodes of a shortage of reserves at the beginning of the third quarter, with the overnight repo rates reaching 9%.<sup>41</sup> This market distortion led the New York Fed to carry out, for the first time since 2008, one-off repo operations and announce new balance sheet expansion measures in October (purchase of T-bills).

**Chart I.2.5 • Deposit facility rates | Per cent**



Sources: Refinitiv. | Notes: The central banks shown in the chart are Danish National Bank (DNB), European Central Bank (ECB), Swiss National Bank (SNB), Bank of Japan (BoJ), Bank of England (BoE) and Federal Reserve (FED). The dotted lines refer to the average of the Libor rate at 3-months (SNB) and the Fed Funds (FED) average. Last observation: 15 November 2019.

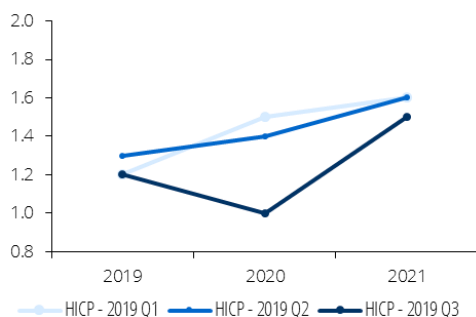
In a context of a downward revision of economic growth forecasts in the euro area and inflation persisting below target, in September 2019 the ECB announced a package of additional monetary measures. Considering the deceleration in economic activity, a slowdown in global trade and a weak manufacturing sector, the ECB staff projections<sup>42</sup> for economic growth in the euro area were revised downwards once again in September to 1.1% in 2019 and 1.2% in 2020 (0.1 and 0.2 p.p. respectively, compared to the June projections). Furthermore, and as a result of energy and food price developments, inflation estimates for the euro area have been successively revised downwards (Chart I.2.6). According to the ECB's macroeconomic projection exercise of September 2019, the harmonised index of consumer prices (HICP) is expected to grow by 1.0% and 1.5% in 2020 and 2021 respectively (0.4 and 0.1 p.p. less than in the June projection exercise). Market expectations of medium-term inflation for the euro area have also fallen (Chart I.2.7), revealing that market participants attribute a low probability of inflation recovering to levels close to the ECB's objective.

<sup>41</sup> The sudden increase in overnight repo rates appears to be explained by three factors: (i) policy to reduce the Fed's balance sheet, (ii) significant US Treasury issues, given equally significant maturing sums due only two weeks later, and (iii) significant withdrawals by non-financial corporations to cover tax payments.

<sup>42</sup> See *ECB staff macroeconomic projections for the euro area, September 2019*.

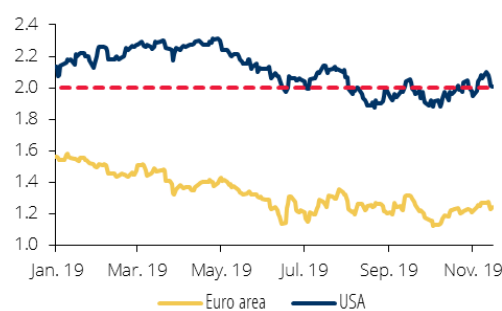
Among the monetary stimulus measures is the taking-up of the asset purchase programme (APP) as of 1 November, with a monthly sum of EUR 20 billion, which should remain in force for as long as necessary to reinforce the accommodative impact of the policy rates. Moreover, the ECB reduced the deposit facility rate for the first time since March 2016, by 10 b.p., to -0.5%. This shift was followed by the introduction of a tiering system<sup>43</sup> for excess reserves as a way of mitigating the impact of negative interest rates on the profitability of credit institutions. The ECB also announced a new series of targeted longer-term refinancing operations (TLTRO-III), aiming to encourage granting credit to the economy, with the first operation taking place in September 2019.

**Chart I.2.6 • HICP projections | Per cent**



Sources: ECB Macroeconomic projections.

**Chart I.2.7 • Inflation expectations in euro area and USA | Per cent**



Source: Refinitiv. | Notes: Inflation expectations implicit in the 5y5y inflation swaps in the euro area and USA. Closing market quotes. Last observation: 15 November 2019.

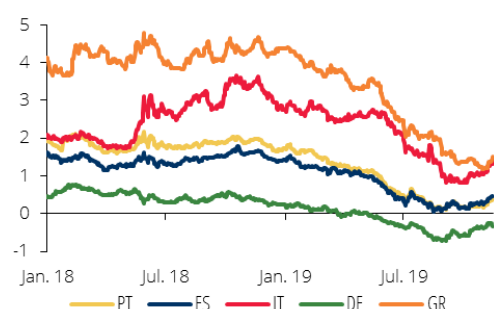
In a global environment surrounded by uncertainty, the year 2019 has been characterised by a general narrowing of sovereign yields, with the 10-year government debt yields showing a downward trend in most euro area countries (Chart I.2.8). Contributing to this trend was the downward revision of the global economic growth forecast, as well as the announcement on the restarting of the net asset purchase programme and details referring to the new TLTRO-III series. Since the beginning of the year, the reduction was particularly significant for countries such as Greece, Italy, Portugal and Spain, whose market funding costs (10 years) fell 2.87 p.p., 1.44 p.p., 1.35 p.p. and 0.96 p.p. respectively. In the context of the reinforcement accommodative nature of monetary policy by the ECB, the Greek Treasury issued, for the first time since the conclusion of the third adjustment programme in August 2018, a 3-month bills with negative yield (-0.02% in October).

The downward trend of the government debt ratio as a percentage of GDP was the main factor referred to by international agencies for the improvement in the rating of the Portuguese Republic

<sup>43</sup>A two-tier system for credit institutions' excess reserve remuneration, in which part of these reserve holdings are exempt from the negative deposit facility rate. The multiplier applied to calculate the exempt amount was fixed at 6x the value of the required reserves. This multiplier compares with, for example, the value of 20x set by the SNB.

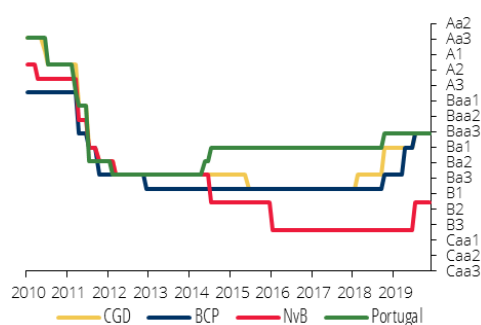
The reduction in the funding cost of the Portuguese sovereign also benefited from the improvement in the Portuguese economy as perceived by international investors (Chart I.2.9). During 2019, the rating agencies S&P and Fitch revised the outlook for Portuguese sovereign debt from stable to positive, keeping the rating at BBB. DBRS upgraded the Portuguese Republic's rating to BBB (high), highlighting the significant reduction in the public-debt-to-GDP ratio observed in recent years. The tender cost for the benchmark bond for the 10 years issue (OT 1.95% 15 June 2029) reached a historical minimum in September, with an allotment rate of 0.264%.

**Chart I.2.8 • 10-year Sovereign debt securities yields | Per cent**



Source: Refinitiv. | Last observation: 15 November 2019.

**Chart I.2.9 • Moody's rating for Portugal, CGD, BCP and NvB**



Source: Refinitiv. | Last observation: 15 November 2019.

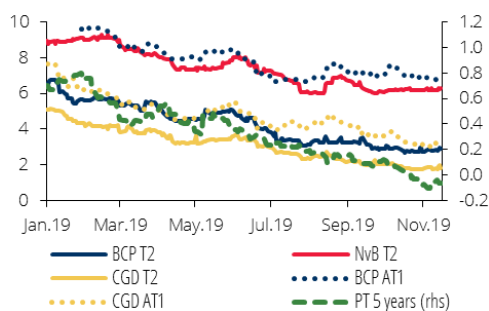
The situation of the financial markets has also favoured debt issuance by banks and Portuguese non-financial corporations

During 2019, there has also been a downward trend in bank debt market yields. In Portugal, amid very low interest rates and anticipating the need to diversify funding sources to comply with requirements such as the MREL, banks have continued to issue debt securities (Chart I.2.10). In 2019, BCP undertook a first issuance in January, of EUR 400 million in AT1 debt, at a yield of 9.25% and a second issuance in September, of EUR 450 million in 10-year Tier 2 (T2) subordinated debt at a rate of 3.87%. In April, Caixa Económica Montepio Geral issued EUR 100 million of 10-year subordinated debt at a rate of 10.5%. CGD undertook its first issuance of senior non-preferred debt in November, to the sum of EUR 500 million at an interest rate of 1.25% and a 5-year maturity. Within the scope of covered bonds, there were also three issuances by Portuguese banks in 2019, totalling over EUR 2 billion. Thus, there are important developments in the legal framework governing the European bond market ahead, with the publication of the new regulation in December 2019 (Box 2).

Expectations of maintenance of an accommodative monetary policy also favoured the debt securities market of non-financial corporations in the euro area. In a context of greater search for yield by investors, and since the beginning of 2019, there has been an increase in issuance and narrowing of spreads in both the investment grade (Chart I.2.11) and lower credit quality

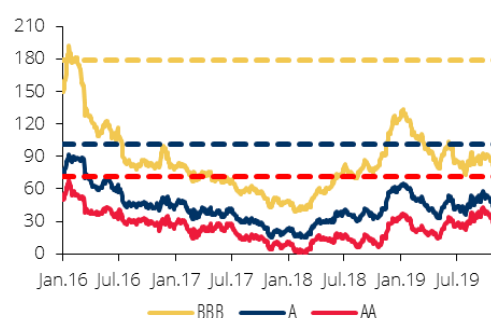
(high yield) debt segments. It is also important to highlight lower restrictiveness in the conditions associated with these issuances (cove-lite) and a larger number of issuances with a negative yield (Chart I.1.7). Within the scope of the Portuguese bond market, two issuances in the second half-year stand out: TAP and Mota-Engil, amounting to EUR 200 and EUR 140 million respectively, at a coupon rate of 4.375%.

**Chart I.2.10 • Yields of Portuguese banks issuances | Per cent**



Source: Refinitiv. | Notes: PT 5 years represents the closing bid yield of the government bond that, in that moment in time, was representative of the yield of the government debt bond with 5 years maturity. The Tier 2 (T2) and Additional Tier 1 (AT1) yields shown in the chart consider the call date and closing ask. Last observation: 15 November 2019.

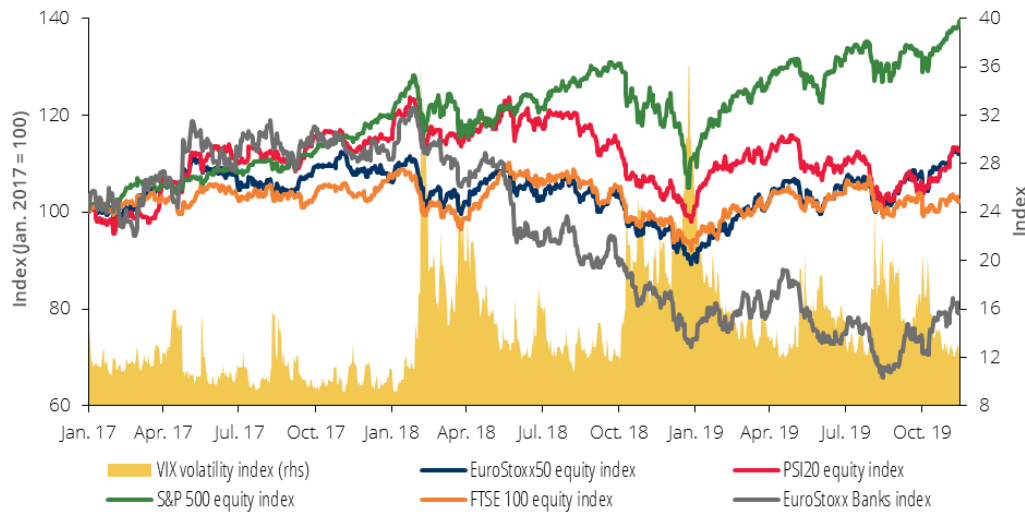
**Chart I.2.11 • Private sector risk premia | Basis points**



Sources: Refinitiv and Banco de Portugal. | Notes: Spread between the average yield of iBoxx Index of private non-financial corporations and the average mid-swap interest rate for the maturities of one to ten years, by credit risk notation. The dashed lines represent the 2000-19 averages. Latest observation: 15 November 2019.

Despite the climate of uncertainty worldwide, there has been a historical valuation of the equity market in the United States (Chart I.2.12). The expectations and decisions surrounding monetary policy, economic growth in the United States and the maintenance of high levels of liquidity in the financial markets enabled the S&P500 to appreciate by approximately 25% between the end of 2018 and November this year. Similarly, the performance of the EuroStoxx50 index, which was marked by bouts of volatility-related with political instability in Italy and uncertainty surrounding Brexit, increased in value by a comparable amount, approximately 20%. In the European banking sector, and considering the difficulties shown by credit institutions in improving their operational results, there was a more modest valuation, of 4%. Therefore, the index stood significantly lower than the level observed at the end of 2017. The Portuguese stock market index (PSI20) followed the trend set by the main European stock markets, albeit recording an increase of approximately 10%.

Chart I.2.12 • Stock market indices



Source: Refinitiv. | Notes: The chart shows the evolution of the stock market indices with the base value set at 100 at 1 January 2017. For the VIX volatility index quotes are shown. Closing market quotes. Last observation: 15 November 2019.

## 2.3 Residential real estate market

In the first half of 2019, house prices remained on the growth path that had started at the end of 2013. Continued strong price growth in the residential real estate market resulted in persisting overvaluation in aggregate terms. In parallel, dwelling transactions continued to decelerate, with a year-on-year fall in the value and number of transactions in the main regions in the second quarter of the year. New housing loans also decelerated, so the share of these transactions financed by domestic credit remained virtually unchanged and much lower than before the crisis. The main drivers of house price growth were still the continued growth of economic activity, which has been reflected in the improvement of labour market conditions and high levels of consumer confidence, continued low financing costs, the increase in the foreign population residing in Portugal<sup>44</sup> and the search-for-yield behaviour of private and institutional investors, both resident and non-resident.

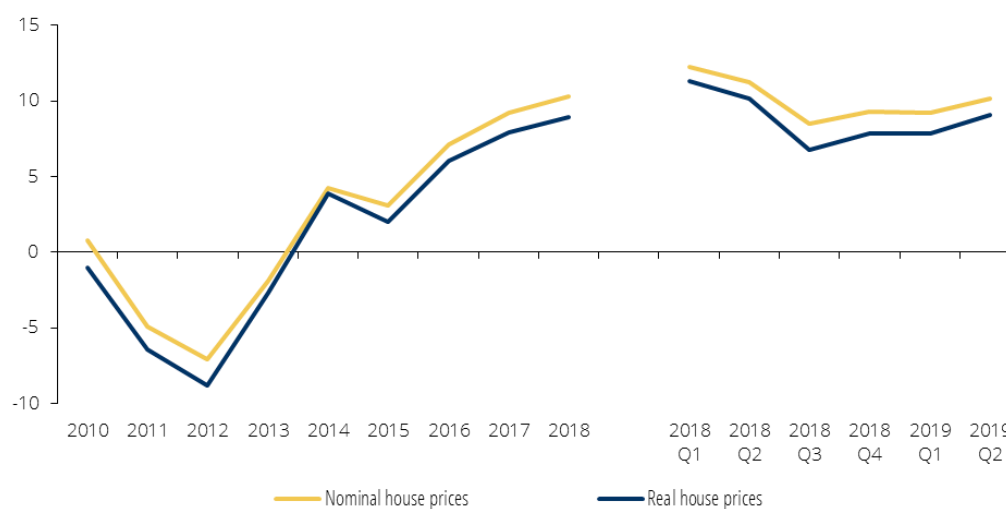
The residential real estate market remained buoyant, although transactions continued to slow down

In the second quarter of 2019 house prices showed a year-on-year rate of change of 10.1% in nominal terms and 9.1% in real terms, corresponding to a slight increase compared to the last quarter of 2018 (Chart I.2.13). These developments are compatible with a stabilisation of price growth year on year, which reached a peak in the first quarter of 2018 (12.2% in nominal terms).

<sup>44</sup> In 2018 the foreign population with resident status in Portugal increased by 14.6%, 8.6 p.p. more compared to the previous year, according to Statistics Portugal.

However, price developments have shown some degree of heterogeneity at a regional level. In aggregate terms, the rise in the median value of sales of family dwellings per square meter has shown some stabilisation after reaching its peak in the second quarter of 2018. This development was also observed in the Lisbon Metropolitan Area and in the Algarve, while the Centro region showed a significant decline in the year-on-year rate of change in the median value of sales of family dwellings per square meter in the recent period and the Porto Metropolitan Area reached a peak in the second quarter of 2019. House price growth is widespread across most euro area countries, but is more pronounced in Portugal after a period of substantial decline between 2010 and 2013.

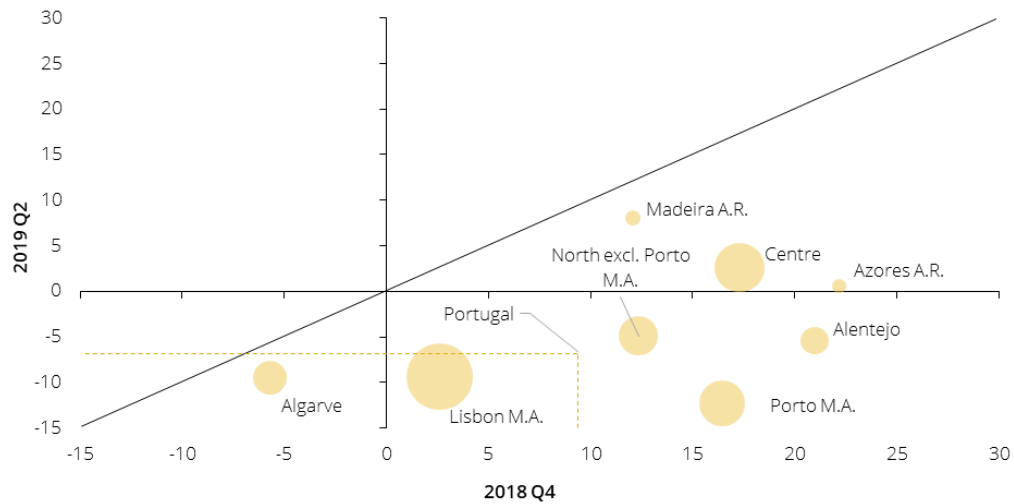
**Chart I.2.13 • Rate of change of house prices | Per cent**



Source: Statistics Portugal (Banco de Portugal calculations). | Notes: The rate of change associated with annual data corresponds to the annual average rate of change and the one associated with quarterly data corresponds to the year-on-year rate of change. The real house price index was calculated using the private consumption deflator.

Price growth was accompanied by a deceleration in value and more sharply in the number of dwelling transactions. In the second quarter of 2019, the value and number of transactions decreased by 1.9% and 6.6% respectively year on year, compared with increases of 10.7% and 9.4% in the last quarter of 2018 (Chart I.2.14). Transactions have been on a deceleration path since the third quarter of 2018, which is widespread across the main regions, although more pronounced in the Lisbon and Porto metropolitan areas and in the Algarve, which accounted for 74% of the value and 60% of the total number of transactions in the first half of the year.

**Chart I.2.14 • Year-on-year rate of change in the number of dwelling transactions | Per cent**



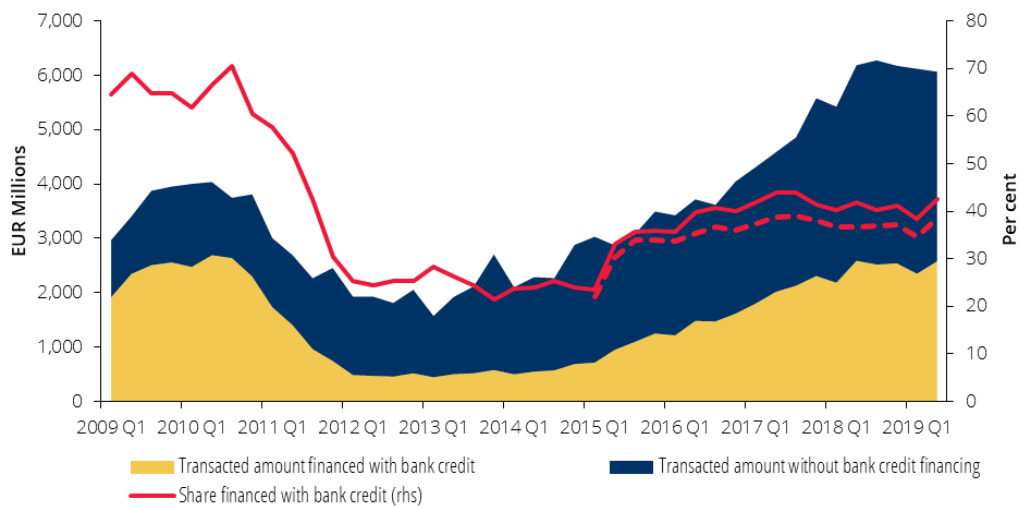
Source: Statistics Portugal (Banco de Portugal calculations). | Notes: The circle size corresponds to each region's number of transactions as a share of the total transacted number in Portugal in 2019 Q2.

## The share of transactions financed using domestic bank credit has remained stable at around 40%

The buoyancy and overvaluation in the residential real estate market (Special issue on "Housing price assessment methodologies applied to Portugal") were accompanied by a slowdown in new housing loans, which grew by 7.5% in the first quarter of 2019 and remained virtually unchanged in the second quarter, year on year (Section 3.2.1).<sup>45</sup> In a context of deceleration in transactions and new housing loans, the share of transactions financed using domestic bank credit remained stable at around 40%, compared to around 65% in the period before the sovereign debt crisis (Chart I.2.15). However, there is some regional heterogeneity in this indicator. The regions with a lower percentage of transactions financed by domestic credit are the Algarve, the Lisbon Metropolitan Area and the Porto Metropolitan Area, which are also the regions with the highest growth of the median value of sales per square meter (Chart I.2.16). This behaviour indicates that prices may be growing more significantly in regions where there are less transactions using credit and where there is increased demand from non-residents (Chart I.2.17) and tourism is more dynamic and plays a bigger role.

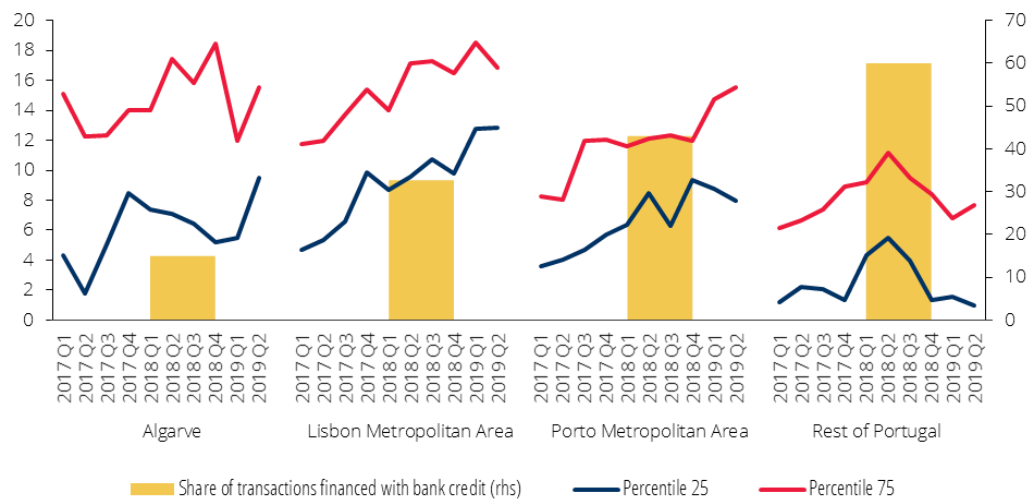
<sup>45</sup> In the third quarter of 2019 the year-on-year rate of change of new housing loans was 5.1%, as described in Section 3.2.1 on the financial situation of households.

Chart I.2.15 • Dwelling transactions versus new loans for house purchase



Sources: Statistics Portugal and Banco de Portugal | Notes: The dashed series corresponds to the share financed with domestic bank credit excluding renegotiations in loan contracts for house purchase. Renegotiations are a residual component of new loans for house purchase and, with the exception of punctual situations, without material impact in the evolution of new loans for house purchase. Nonetheless, these operations are not generally associated with transactions in a given period.

Chart I.2.16 • Year-on-year growth of the median transaction value per square meter and share of transactions financed with domestic bank credit per region | Per cent



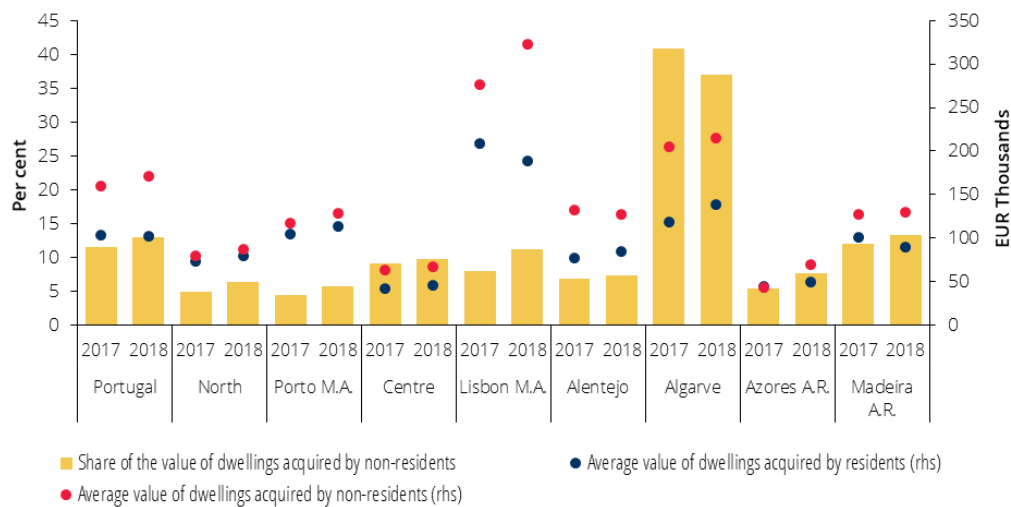
Sources: Statistics Portugal and Banco de Portugal | Notes: The growth percentiles of the median transaction value per square meter were obtained for the presented regions considering county-level data, with the exception of the rest of Portugal, where NUTS III-level data was used. The share of transactions financed with bank credit corresponds to the average for 2018.



## The purchase of real estate by non-residents continued to significantly drive demand

In 2018 the value of real estate purchased by non-residents increased by 22.2%, compared with a 5.6% increase by residents.<sup>46</sup> The acquisition of real estate by non-residents accounted for 13.0% of the value and 8.2% of the total number of transactions in the same year, 1.6 p.p. and 0.6 p.p. more than in 2017 respectively (Chart I.2.17). In regional terms, there is also heterogeneity in the relevance of non-residents in the real estate market. The Algarve was the region where non-residents accounted for a larger share of the total value of real estate purchased (36.9%), followed by the Autonomous Region of Madeira (13.3%) and the Lisbon Metropolitan Area (11.3%). In general terms, the average value of real estate purchased by non-residents is higher than the average value of real estate purchased by residents, and there is significant divergence in the recent evolution of the two indicators in the Lisbon Metropolitan Area. In addition to the increase in the foreign population residing in Portugal, the increase in non-residents' participation in the real estate market in Portugal should also reflect investors' search-for-yield behaviour, as the low interest rate environment persists.

**Chart I.2.17 • Share of dwellings purchased by non-residents and average value of dwellings purchased by residents and non-residents**



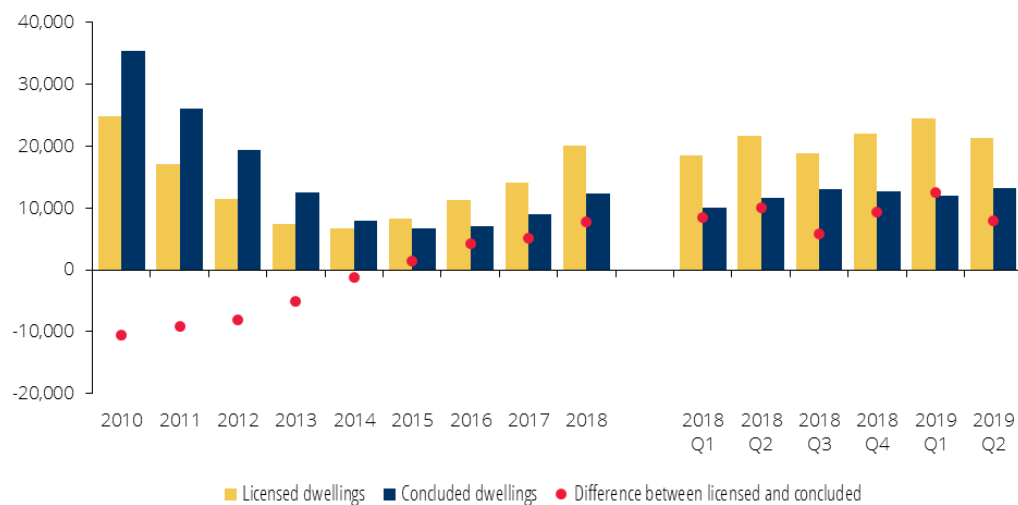
Source: Statistics Portugal.

<sup>46</sup> Information on the acquisition of real estate by non-residents is broader in scope than information on real estate transactions in the context of the publication of the House Price Index, including real estate other than housing. There is, however, a predominance of residential properties.

## The continuing strong growth in house prices takes place in a context of increased supply of new construction, albeit at a slower pace than in the recent period

In the second quarter of 2019 the number of building permits fell by 1.5% and the number dwellings completed increased by 14.6% year on year, with a significant gap remaining between permits and completions (Chart I.2.18). This development has been accompanied by a reduction in the number of enterprises in the construction sector, reporting barriers to their activity, although the lack of a skilled workforce continued to gain relevance as the main obstacle mentioned.<sup>47</sup> The persistence of a gap between the number of permits and completions and the recovery of the construction sector should continue to translate into an increase in the supply of new housing, which could contribute to moderate growth in house prices. In turn, a gradual acceleration of the cost of building new housing, in particular the cost of labour, was observed, which is expected to exert upward pressure on prices. In this context, in order to promote a sustained adjustment of supply and demand, it will be important to ensure the stability of the regulatory institutional framework so as to enable an increase in housing supply.

**Chart I.2.18 • Licensed and concluded dwellings in new construction for house purchase | In number**



Source: Statistics Portugal (Banco de Portugal calculations). | Note: Quarterly data was annualised.

<sup>47</sup> According to the results of the *Construction and Public Works' survey* published by Statistics Portugal and the European Commission.

Residential real estate market developments continued to reflect the buoyancy of tourism, despite a lower demand for local accommodation services. In the first half of 2019 the number of new local accommodation registrations decreased by 36.4% compared with the same period of 2018.<sup>48</sup> Considering the three largest districts in terms of total number of local accommodation registered in Portugal, namely Lisbon, Porto and Faro, new registrations decreased by 52.3%, 30.3% and 31.8% respectively, which could be linked to the amendment to the local accommodation scheme that entered into force in October 2018.<sup>49</sup> The number of guests and total income in tourist accommodation establishments continued to grow in the first half of 2019, recording a 7.7% and 7.6% year-on-year increase respectively.

The continued buoyancy in the residential real estate market expressed in the significant growth of house prices in Portugal has resulted in a continuous overvaluation in the market since the beginning of 2018. As analysed in detail in the special issue on “Housing price assessment methodologies applied to Portugal”, house prices are above their fundamentals, whether they represent historical price developments or a range of variables such as economic growth, household disposable income or the level of interest rates. In this context, it is important that the banking system adequately assess its exposure to assets in the residential real estate market in order to prevent potential risks arising from price correction in this market.

<sup>48</sup> According to data from the National Tourism Registration.

<sup>49</sup> The legislative amendment refers to Law No 62/2018, published in the *Official Gazette* on 22 August 2018, which seeks to amend the regime granting permits for operating local accommodation.

# 3 Financial position of the general government and the non-financial private sector

## 3.1 General government

Economic growth and continued low financing costs contributed to the ongoing downward trend in the public debt-to-GDP ratio

In the first half of 2019, the downward trend in the public debt-to-GDP ratio that began in 2016 continued, since when the ratio declined by around 10.3 p.p. of GDP. These developments continued to benefit from a positive economic growth environment, accommodative monetary conditions and the ongoing decline in the risk perception among national and international investors, resulting in record low financing costs. Although more recently risks to public debt sustainability have declined,<sup>50</sup> the impact of a potentially sharper economic slowdown may trigger an abrupt reassessment of sovereign risk premia at a global level, which remains the main risk factor. Over a longer horizon, structural factors such as the Portuguese demographic structure, which should have an impact on potential growth through a decline in the labour force, as well as public spending on health and the pension system, are important sources of risk at this level.

In the first semester of 2019, the fiscal deficit stood at 0.8% of GDP, compared to 2.2% in the same period of the previous year. Excluding temporary measures, the fiscal surplus stood at 0.3% of GDP, with the fiscal balance continuing the improvement seen in recent years (October 2019 issue of the *Economic Bulletin*). Developments in the budget balance are the result of an improvement in the primary balance (1.2 p.p.), owing to an increase in revenue as a percentage of GDP (0.8 p.p.) and a decline in primary expenditure as a percentage of GDP (-0.4 p.p.), together with a decrease in the interest expenditure ratio (-0.2 p.p.).

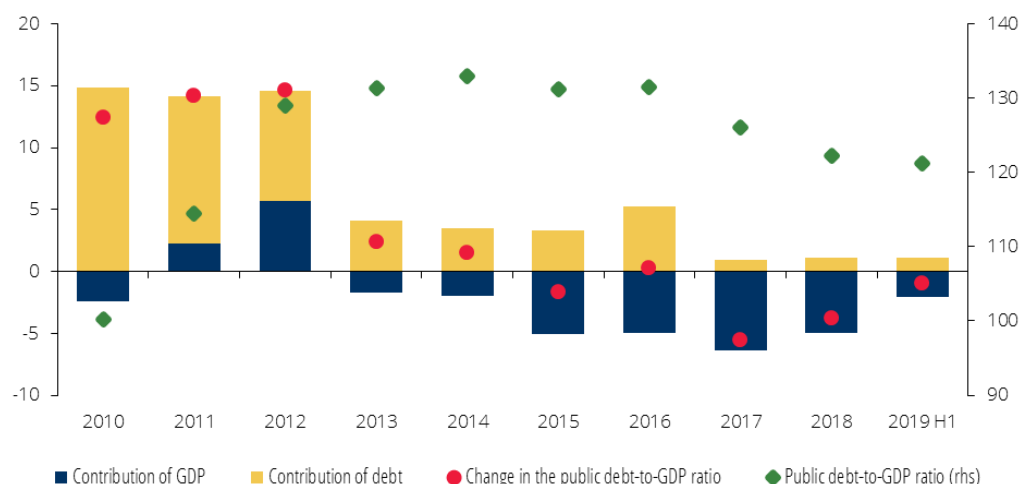
Developments in the budget balance led to a decline of 1 p.p. in the public debt-to-GDP ratio compared to the end of 2018, which stood at 121.2% of GDP in June 2019 (Chart I.3.1).<sup>51</sup> This was mainly owing to the primary surplus and the dynamic effect, which results from the difference between the implicit interest rate on debt and nominal GDP growth. According to the European Commission's Autumn 2019 Economic Forecast, the downward trend observed in the public debt-

<sup>50</sup> For a detailed analysis of public debt sustainability in Portugal, see Braz, C. and Campos, M. M. (2019). "An analytical assessment of the risks to the sustainability of the Portuguese public debt". *Economic Studies*, Banco de Portugal, 5(4), 1-26.

<sup>51</sup> The national accounts were revised on 23 September 2019, leading to an upward reassessment of the public debt stock following the inclusion of capitalised interest, partially offset by a revision of nominal GDP. For more information on this reassessment, see Box 5 "Revision of the national accounts and balance of payments statistics" in the October 2019 issue of the *Economic Bulletin*.

to-GDP ratio should continue over the next few years, with the forecast pointing to a ratio of 119.5%, 117.1% and 113.7% at the end of 2019, 2020 and 2021 respectively. This will certainly depend on continuing the fiscal adjustment process, which must be furthered in the current environment of economic deceleration, taking advantage of the increased degree of monetary policy accommodation.

**Chart I.3.1 • Public debt and contributions to changes in the public debt-to-GDP ratio | Percentage points of GDP and percentage of GDP**



Source: Banco de Portugal. | Note: The public debt-to-GDP series presented corresponds to the Maastricht public debt.

## In the first half of 2019, market-based financing of general government from non-residents increased

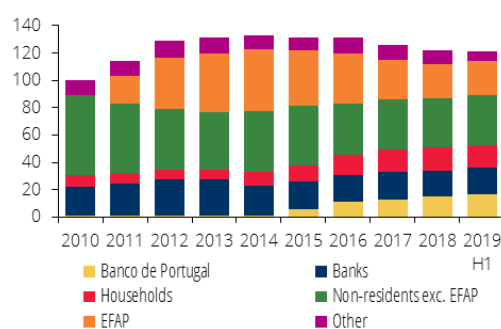
Against a background of declining risk perception among international investors and the improvement of the rating of the Portuguese Republic (Section 2.2), market-based financing of general government from non-residents increased by 1.3% of GDP in the first half of 2019 from 0.6% of GDP in the same period of the previous year. The portfolio of Portuguese government debt held by Banco de Portugal also continued to grow following the public sector purchase programme (PSPP),<sup>52</sup> albeit at a slower pace than before, increasing by 0.6% of GDP in the first half of 2019. In contrast, general government financing from resident banks decreased by 0.3% of GDP, remaining virtually unchanged for households and insurance corporations and pension funds (ICPFs). In the case of financing from resident banks, these developments are compatible with an

<sup>52</sup> The PSPP is one of four Eurosystem asset purchase programmes within the expanded asset purchase programme (APP). More information can be found here: <https://www.bportugal.pt/en/page/monopol-eurosystems-asset-purchase-programmes>.

increase in the exposure of the banking sector to the Portuguese sovereign as a percentage of assets (Section 4.3).

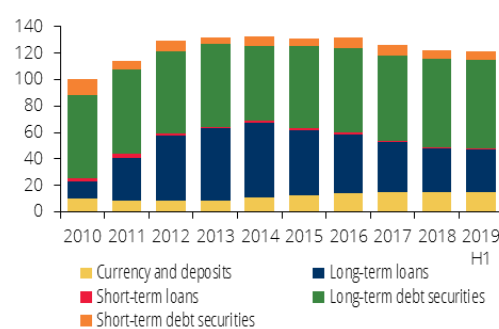
Since 2015, the breakdown of the public debt-to-GDP ratio by counterparty has shown that Banco de Portugal, under the PSPP, households and resident banks have increased in importance, despite a more recent decline. In turn, the share of non-residents has decreased, reflecting for the most part the early redemption of loans under the Economic and Financial Assistance Programme (EFAP) (Chart I.3.2). By type of instrument, cash and deposits<sup>53</sup> and debt securities have increased, while long-term loans have declined (Chart I.3.3).

**Chart I.3.2 • Breakdown of the public debt-to-GDP ratio by counterparty | Percentage of GDP**



Source: Banco de Portugal.

**Chart I.3.3 • Breakdown of the public debt-to-GDP ratio by instrument | Percentage of GDP**



Source: Banco de Portugal.

## Over the course of 2019, the average maturity of Portuguese public debt increased slightly

Continued low financing costs led to further drops in interest expenditure, enabling the ongoing downward trend in the cost of issued debt,<sup>54</sup> which stood at 1.4% in the first half of 2019, 0.4 p.p. less than at the end of 2018. The average allotment rate in Treasury bond tenders with an approximate maturity of 10 years reached 1.0% for tenders conducted in 2019 until October, 0.9 p.p. less than in the same period in 2018. In turn, the average allotment rate stood at -0.41% in Treasury bill tenders conducted until October 2019, compared with -0.34% in the same period of the previous year.

The average residual maturity of the Portuguese public debt stock excluding loans under the EFAP increased slightly over the course of 2019, compared with the end of 2018, standing at 6.5 years

<sup>53</sup> General government liabilities classified in the System of National Accounts as deposits are made up of savings certificates and Treasury certificates.

<sup>54</sup> The cost of issued debt corresponds to the average cost of issued Treasury bills, Treasury bonds, floating rate Treasury bonds and medium-term notes, weighted by amount and maturity. For further details, see the *Monthly Bulletin* of the IGCP.

in September 2019 according to the Portuguese Treasury and Debt Management Agency (IGCP). However, it is still one of the lowest in the euro area. These developments are likely associated with a number of bond exchanges by the IGCP during the course of 2019 to extend the average maturity of the public debt stock and reduce related debt service costs.

## 3.2 Non-financial private sector

In the first half of 2019,<sup>55</sup> the net borrowing position of the non-financial private sector stood at 5.1% of GDP, worsening compared with the same period in 2018 (1.9%). These developments mainly reflected an increase in investment in real assets, but also a decline in households' saving, which is particularly low in this sector. The saving rate of households and non-financial corporations (NFCs) remains below the euro area average.

In the first half of 2019, households' investment in real estate assets and bank deposits increased, in contrast to the divestment seen in other financial assets.

In the third quarter of 2019, new housing loans and, in particular, new consumer loans reversed the slowdown observed since mid-2018. The amount of new housing loans with an initial rate fixation period of up to one year increased, partly reversing the decline seen from 2016 to 2018. In turn, the average maturity of new consumer loans increased, continuing a pattern observed since 2012. The increase in new consumer loans to households takes place against a background of high consumer confidence. However, a significant share of borrowers of consumer loans is particularly vulnerable to a potential deterioration in labour market conditions.

NFCs' liquidity accumulation continued to increase, particularly in more indebted firms. NFCs also continued to increase equity in their financing structure, with less indebted firms investing the most. Corporate investment was mainly financed by the sector's saving, with growth in annualised flows of new bank loans to firms moderating compared with 2018.

NFCs' profitability decreased slightly in the first half of 2019. Nevertheless, the resilience of firms to adverse shocks, measured by the financing expenses coverage ratio, increased compared with the period preceding the financial crisis. This increase was broadly based across firm sizes, although a share of financial debt remains close to the vulnerability threshold in large firms.

Both firms and households reduced their indebtedness ratios<sup>56</sup> compared with December 2018. Despite a decline in indebtedness in the post-crisis period (Box 3), the amount still remains high and

<sup>55</sup> The analysis in this Report incorporates the new national accounts series with 2016 as benchmark year, with Statistics Portugal publishing final results for 2017 and preliminary results for 2018. As a result, the aggregates that are usually analysed were revised. For information concerning the revisions, refer to the Statistics Portugal website. For an analysis of the impact of the revisions, see Box 5 "Revision of the national accounts and balance of payments statistics" in the October 2019 issue of the *Economic Bulletin* of Banco de Portugal. In parallel, revisions were made to the statistics published by Banco de Portugal, with corresponding information available in *Statistical Press Releases* "Revisão da base das contas nacionais em 2019" (in Portuguese only) and "National financial accounts - 2nd quarter of 2019 and revision of national financial accounts and external statistics". International comparisons incorporate revisions made by other countries (for further details, see the Eurostat's website).

<sup>56</sup> As a rule, data on loans borrowed and securities issued by sector (households and NFCs) is obtained on the basis of data reported by creditor sectors (i.e. referring to data from assets in creditor sectors and not liabilities in debtor sectors). Consequently, when for example a bank writes off a loan granted

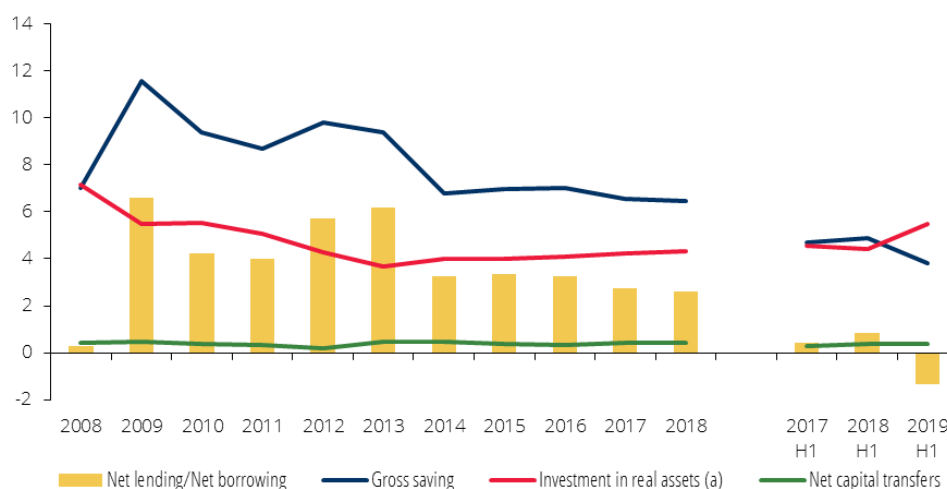
is a vulnerability from a financial stability standpoint. Against the background of a potentially sharper downturn in economic activity, it is therefore necessary to proceed with the deleveraging process.

### 3.2.1 Households

## Households recorded a net borrowing position in the first half of 2019, as a result of decreased saving and increased investment

In the first half of 2019, households' net borrowing position was 1.3% of disposable income, which contrasts with net lending of 0.8% of disposable income in the same period of 2018 (Chart I.3.4). Net borrowing in the first half of 2019 stands in contrast to euro area net lending during the same period (Chart I.3.5).<sup>57</sup> A 1.1 p.p. increase in investment in real assets, which reached 5.5% of disposable income, and a 1.1 p.p. decline in saving to 3.8% of disposable income contributed to households' net borrowing.

**Chart I.3.4 • Saving, investment and net lending/net borrowing of households | Percentage of disposable income**



Source: Statistics Portugal (Banco de Portugal calculations). | Notes: Half-year figures are calculated from the quarterly national accounts. (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.

to a private individual or a NFC, the debt in the corresponding sector declines by the same amount, although that in itself does not mean that the borrowers' liabilities cease to exist. Financial account data are considered on a consolidated basis.

<sup>57</sup> Households' net borrowing in the first half of 2019 partly reflects the seasonal pattern of this item, in particular the seasonality of households' income. Nevertheless, this conclusion is also valid for net lending/net borrowing for the year ending in the first half of 2019.

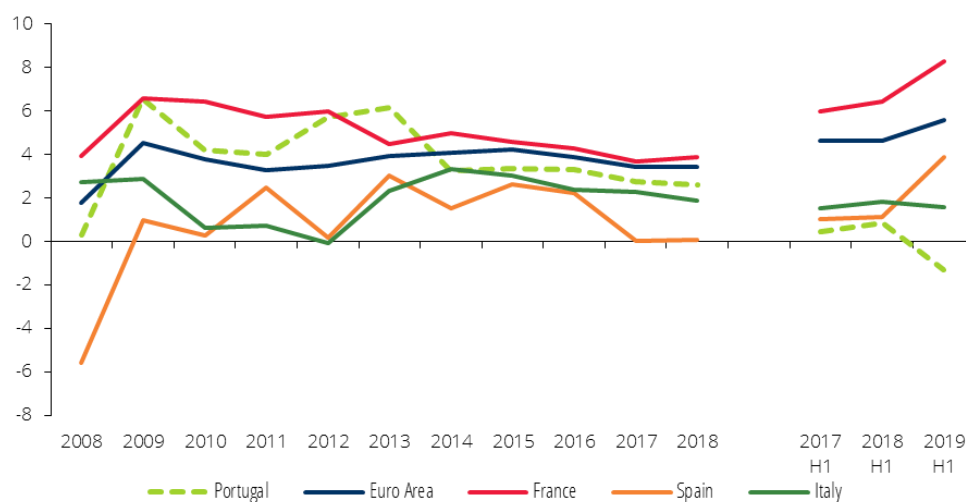


Against the background of favourable financing conditions and strong growth in housing prices (Section 2.3), residential real estate investment has increased significantly. However, the stock of housing loans has continued to decline.

Households' disposable income increased by 2.5% compared with the same half-year period a year earlier, decelerating from the 4.5% increase observed during that period. The deceleration in disposable income was the result of a decline in property income received, largely owing to a decrease in distributed income of corporations and lower growth in compensation of employees. The decline in the households' saving rate may be partly related to a drop in property income received, as this component is traditionally associated with a higher propensity for saving (Chart I.3.6).<sup>58</sup>

A comparison of the first half-year periods in the entire historical series shows that the households' saving rate was one of the lowest, continuing the downward trend observed since 2013 and remaining below the euro area average.<sup>59</sup> This difference was more pronounced in the period 2014-18, reaching 5.8 p.p. in 2018 (Box 3, in particular Chart C.3.6).

**Chart I.3.5 • Net lending/Net borrowing of households | Percentage of disposable income**

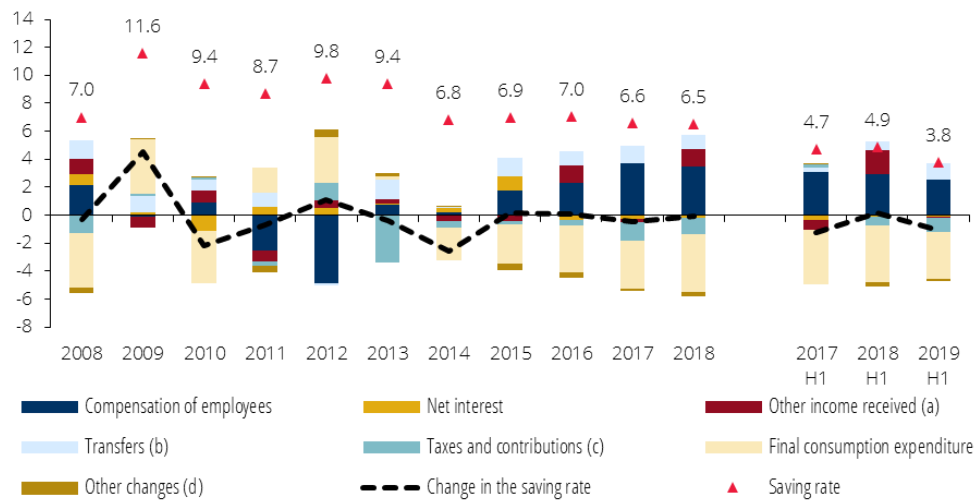


Source: Eurostat (Banco de Portugal calculations). | Notes: Euro area values correspond to the ratio of the sum of net lending/net borrowing of its Member States to the sum of disposable income in those countries (cross-border flows within the euro area are consolidated). Half-year figures are calculated from the quarterly national accounts.

<sup>58</sup> See Box 5.1 "The rise in households' saving rate in 2012: an explanation based on macro and microeconomic evidence", *Annual Report – The Portuguese economy in 2012*, Banco de Portugal.

<sup>59</sup> The lower saving rate in the first half of 2019 partly reflects the seasonal pattern of households income, in particular compensation of employees. However, the conclusions for the saving rate are also valid for the saving rate for the year ending in June 2019.

**Chart I.3.6 • Contributions to changes in the households' saving rate | Per cent and percentage points of disposable income**



Sources: Statistics Portugal and Eurostat (Banco de Portugal calculations). | Notes: Half-year figures are calculated from the quarterly national accounts. (a) 'Other income received' includes gross operating surplus, gross mixed income, distributed income of corporations, net rents and property income attributed to insurance policy holders. (b) 'Transfers' refers to other current transfers. (c) 'Taxes and contributions' includes taxes on income and social contributions. (d) 'Other changes' include changes in disposable income and the adjustment for changes in net equity of households in pension funds.

The real estate price increase may be stimulating consumption through a wealth effect. However, for households whose own and permanent residence is their sole source of real estate wealth, persistently low saving rates may limit their ability to maintain their consumption patterns in the future and keep up their debt service payments in a less favourable economic environment.<sup>60</sup> The increase in household income in the last few years has resulted in a decline in the share of households reporting an inability to face unexpected financial expenses. However, in 2018 this share was still higher than that of the euro area as a whole, in contrast to the higher resilience identified by households in Portugal compared with the euro area average in the period before the economic and financial crisis.<sup>61</sup>

## Households' investment in bank deposits continued to rise despite divestment in other financial assets

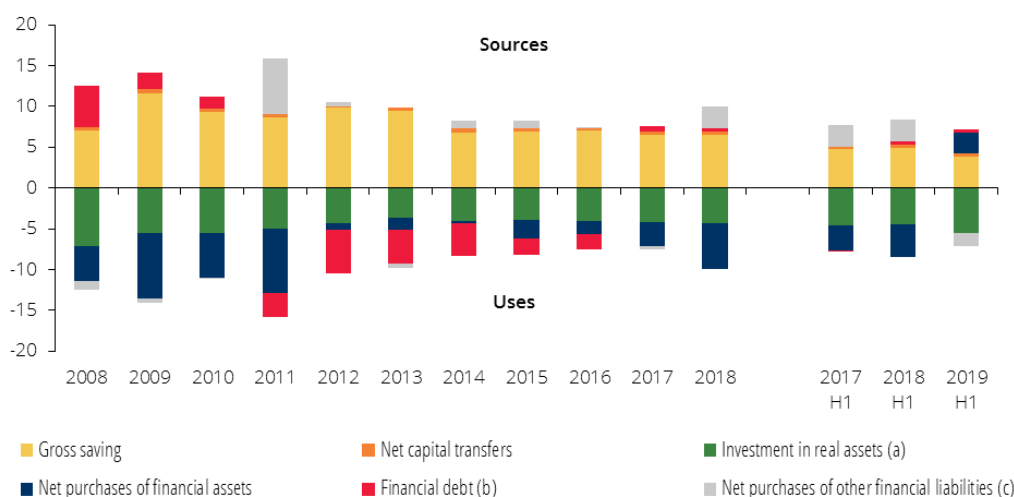
<sup>60</sup> The *Portuguese Household Finance and Consumption Survey* for 2017 suggests that the main residence is more important in total real assets of households belonging to lower income groups.

<sup>61</sup> According to Eurostat's *European Union-Statistics on Income and Living Conditions* (EU-SILC), in 2018 the share of respondents who reported an inability to face unexpected financial expenses was 35% in Portugal, compared to 32% in the euro area. This share was 26% in Portugal and 32% in the euro area in 2008 and 43% in Portugal and 36% in the euro area in 2013.

In the first half of 2019, the net borrowing position of households led to an increase in financial debt (0.4% of disposable income) and divestment in financial assets (0.5% of disposable income)<sup>62</sup> (Chart I.3.7). The rise in households' financial debt was similar to that seen in the first half of 2018 (0.5% of disposable income) and considerably lower than the increases in financial debt observed in the period preceding the economic and financial crisis. In turn, divestment in financial assets was largely the result of declines in long-term loans to NFCs, equity and general government debt securities, which totalled -2.9%, -2.6%, -0.9% respectively of disposable income in the first half of 2019.<sup>63</sup>

These developments show a shift in households' portfolio of financial assets towards currency and deposits, in particular bank deposits, where investment accounted for 5.6% of disposable income (Chart I.3.8).<sup>64</sup> Household investment in deposits declined by 0.4 p.p. of disposable income in the first half of 2019, compared with the same period a year earlier, mostly as a result of weaker investment in savings and Treasury certificates,<sup>65</sup> (0.7% of disposable income, compared to 1.1% in the same period a year earlier). Investment in bank deposits increased marginally year-on-year (i.e. with monetary financial institutions) and remained virtually unchanged at 5.0% of disposable income.

**Chart I.3.7 • Sources and uses of funds by households | Percentage of disposable income**



Sources: Banco de Portugal and Statistics Portugal. | Notes: Half-year figures are calculated from the quarterly national accounts. (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) 'Net purchases of other financial liabilities' includes all liabilities defined on national financial accounts other than financial debt.

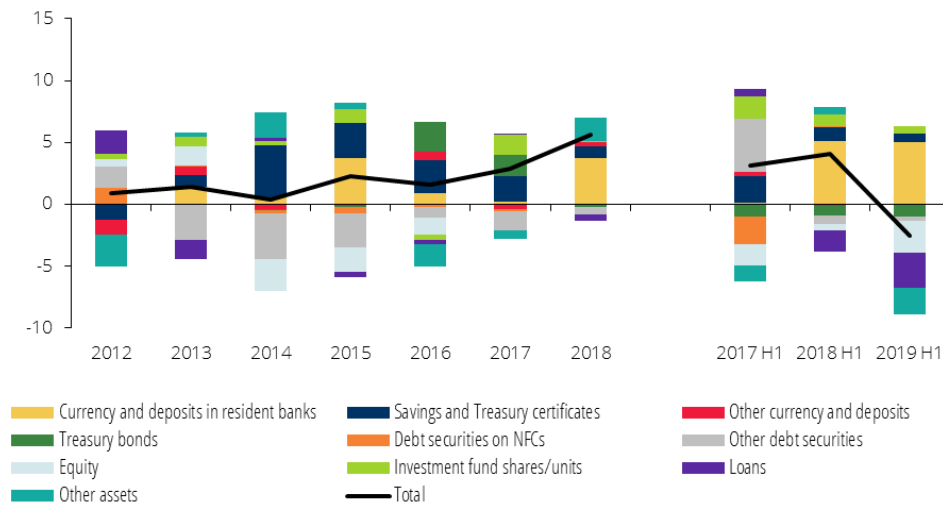
<sup>62</sup> Taking into account net other accounts receivable/payable, excluding trade credits and advances (F89), with transactions in assets totalling -3.5% of disposable income and transactions in liabilities totalling -2.1% of disposable income.

<sup>63</sup> Divestment by households in financial assets occurs for the first time since the first half of 2014. However, there is a persistent seasonality in net asset flows, given that, in each year with net divestment in financial assets in the first half of the year, end-year figures posted net investment in financial assets in the entire series.

<sup>64</sup> Net divestment in listed and unlisted shares did not lead to a decrease in the value of the stock of equity held by households because of significant increases in the value of unlisted shares and other equity in the first half of 2019. Indeed, the rise in deposits and the increase in the value of equity led to an increase in the value of households' stock in financial assets.

<sup>65</sup> According to the European System of Accounts (ESA 2010), savings and Treasury certificates are designated as currency and deposits.

Chart I.3.8 • Households' transactions in financial assets | Percentage of disposable income



Sources: Banco de Portugal and Statistics Portugal.

In a context of low returns on bank deposits, households continued to prefer highly liquid deposits (redeemed without restriction or penalty). In addition, net divestment in financial assets other than deposits has taken place in a context of real asset purchases, in particular investment in real estate assets. A persistent increase in the value of real estate assets and an increase in return on these assets have helped increase households' real estate wealth. Indeed, households' non-financial wealth in real estate assets is projected to have increased by 6.5% in real terms from 2016 to 2018.<sup>66</sup>

## New housing loans have been slowing down compared with the second quarter of 2018, but accelerated slightly in the third quarter of 2019

In the third quarter of 2019, the year-on-year rate of change in flows of new housing loans was 5.1%, compared to 28.2% in the second quarter of 2018 and -0.3% in the second quarter of 2019.

The low interest rate environment and changes to the type of rate applicable to housing loan agreements (in particular from variable rate to mixed or fixed rate) fostered the renegotiation of mortgage loan agreements. The interest rate is usually fixed for a limited initial period which does

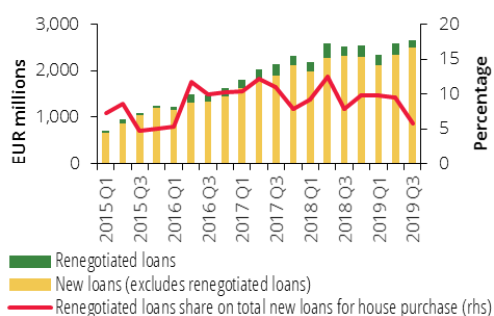
<sup>66</sup> Estimates for household wealth are annexed to the *Economic Bulletin* on a yearly basis. The series has an annual reference period. As yet there are no data available for 2019. However, other indicators suggest the findings for the first half of 2019 will persist, in particular the year-on-year rate of change in gross fixed capital formation in dwellings in the first half of 2019 (corresponding to 12.1% and 7.1% in nominal and real terms respectively).

not correspond to the entire maturity of the loan. The amount of renegotiated housing loans tripled from 2015 to 2018 (Chart I.3.9).

In the third quarter of 2019, compared with the average figure for 2018, average rates on new housing loans declined by 0.3 p.p., standing at 1.1%.<sup>67</sup> It is important to assess developments in the cost of all charges associated with new housing loans, namely through the annual percentage rate of charge – APRC. The average APRC on new housing loans was 2.2% in the third quarter of 2019, declining by 0.3 p.p. compared to the average for 2018.

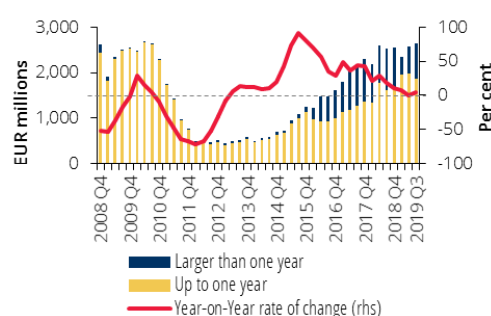
The share of new loans with an initial interest rate fixation period of up to one year increased in the third quarter of 2019, compared with the last quarter of 2018. The share of new housing loans with an initial interest rate fixation period of up to one year in the first three quarters of 2019 was higher than from 2016 to 2018, which suggests a reversal of the downward trend seen in 2016 and 2017 (Chart I.3.10). Loans granted with an initial interest rate fixation period of over one year continued to be mostly associated with mixed-rate loans.<sup>68</sup> The share of new mixed-rate loans declined to 11.0% in 2018 (compared to 15.6% of agreements concluded in 2017, which saw the highest share of agreements granted at a mixed rate in the period 2016-18).

**Chart I.3.9 • New loans for house purchase by inception type**



Source: Banco de Portugal. | Note: The breakdown between new loans and renegotiated loans for new loans for house purchase is available from December 2014.

**Chart I.3.10 • New loans for house purchase by initial rate fixation period**



Source: Banco de Portugal. | Note: New loans with initial rate fixation up to one year include new variable rate loans.

Taking out housing loans with fixed rates limits the risk of borrowers defaulting as a result of increases in short-term interest rates. However, prospects of continued low interest rates tend to reduce households' incentives to take out loans with this type of rate.

<sup>67</sup> These developments take into account annualised agreed rates on new housing loans, which only consider interest payments on loans. The annual percentage rate of charge – APRC, in turn, includes all charges related to the loan, in addition to interest payments, such as maintenance costs for accounts required to conclude the credit agreement and insurance costs required to obtain the loan.

<sup>68</sup> A mixed-rate housing loan agreement has an initial period during which the rate is fixed, followed by a variable rate until the contract's final maturity.

Demand for housing loans continued to increase, against the background of heightened risks to economic activity, but persistently high consumer confidence, supported by expectations of continued growth in disposable income.<sup>69</sup>

In particular, low interest rates contributed the most to the increase in demand for housing loans in the second and third quarters of 2019, according to the *Bank Lending Survey* of July and October 2019 respectively.

However, the macroprudential measure introduced by Banco de Portugal in July 2018, which considers the borrower's debt service capacity in scenarios of higher interest rates than at the time when the loan is taken out, aims to ensure sustainable access to mortgage loans, limiting excessive risk-taking by households against a context of historically low interest rates. In particular, the macroprudential measure considers an increase in the reference rate when calculating the debt-service to income (DSTI) ratio of borrowers in new consumer credit agreements with a variable and mixed rate, where the increase to the reference rate grows with the loan's maturity.<sup>70</sup>

### New consumer loans grew by 11.6% in the third quarter, compared with the same quarter a year earlier, with personal credit making a significant contribution

New consumer loans increased by 11.6%<sup>71</sup> in the third quarter of 2019, compared with the same quarter a year earlier, mainly owing to an increase in personal credit<sup>72</sup> (a contribution of 9.2 p.p.). The positive changes in consumer credit observed during this quarter interrupted the slowdown seen since mid-2018 (Chart I.3.11). Car loans and other consumer credit also rose in this quarter, albeit to a much smaller extent (contributions of 0.5 p.p. and 1.9 p.p. respectively).

The drop in car loans and the stabilisation in personal credit in the first half of 2019, in parallel with growth in household consumption of durable goods led to a decrease in the share of new consumer loans in total household consumption during this period.<sup>73</sup>

In the first three quarters of 2019, new agreements with higher maturities continued to increase (Chart I.3.12), as well as the average maturity of new car loans and personal credit agreements. Average maturity has been increasing since 2012 for these two types of loans (27% and 40% for car loans and personal credit respectively) (Chart I.3.13).

In contrast to developments observed since 2012, the average amount of car loans declined in the first three quarters of 2019. In turn, the average amount and maturity of new credit agreements increased further for personal credit, continuing an overall trend observed since 2012.

<sup>69</sup> Projections published in the June 2019 issue of the *Economic Bulletin* of Banco de Portugal (in particular, Chart I.3.3) point to disposable income growth stabilising in 2020 and 2021, after a slight increase in 2019. However, projections point to downside risks to activity, mostly related to risks arising from the international environment.

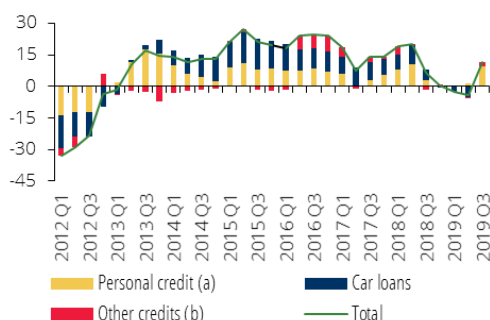
<sup>70</sup> For further details on increases in the reference rates according to different maturities, see table 2 in the *Background document* of the macroprudential measure.

<sup>71</sup> Data on new consumer loans refers to Instruction of Banco de Portugal No 14/2013. New consumer loans comprise the following credit categories: personal credit, car loans, credit cards, credit lines, bank credit accounts and overdraft facilities with a repayment term of more than one month.

<sup>72</sup> Developments in personal credit may reflect an increase in loan consolidation agreements.

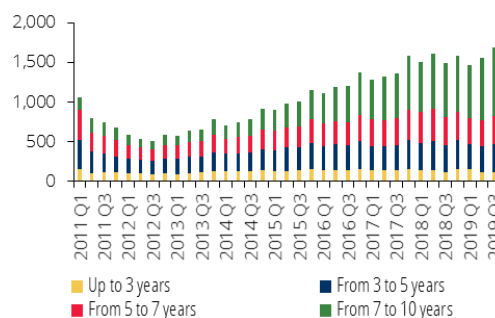
<sup>73</sup> This ratio takes into account new consumer credit including car loans and personal credit, as well as private household consumption excluding food and beverage products. See Banco de Portugal, *Economic Bulletin*, October 2019, Chapter 3. Monetary and financial conditions, in particular Chart 3.10.

**Chart I.3.11 • Year-on-Year rate of change in new consumer loans | Per cent and percentage points**



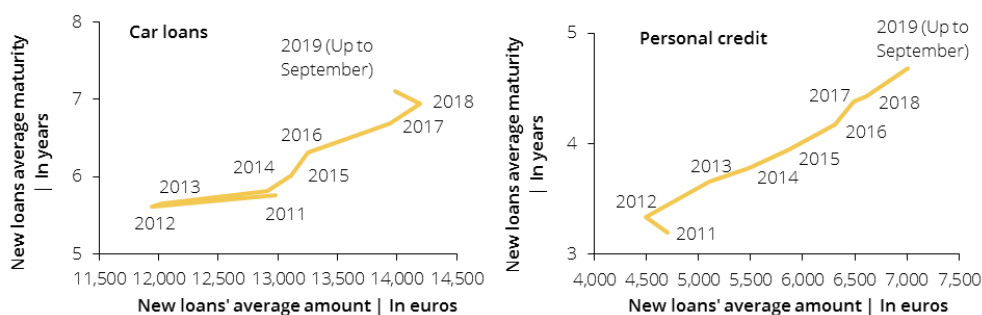
Source: Banco de Portugal. | Notes: Data on new consumer loans refers to Instruction of Banco de Portugal No 14/2013. (a) Personal credit includes new consumer loans for home improvements, a category which is independently reported from the first quarter of 2018. (b) Includes credit cards, credit lines, bank credit accounts and overdraft facilities with a repayment term of more than one month.

**Chart I.3.12 • New car loans and personal credit | EUR millions**



Source: Banco de Portugal. | Notes: Data on new consumer loans refers to Instruction of Banco de Portugal No 14/2013. Includes new car loans and personal credit. Excludes new consumer loans with undefined maturity or maturity of more than 10 years.

**Chart I.3.13 • New consumer loans: car loans and personal credit | Average amount and average maturity**



Source: Banco de Portugal. | Notes: Data on new consumer loans refers to Instruction of Banco de Portugal No 14/2013. Includes new car loans and personal credit. Excludes new consumer loans with undefined maturity or maturity larger than 10 years.

The increase in the maturities of car loans and personal credit may constitute a significant vulnerability for households, as it implies that credit exposures, potentially without any collateral or linked to less liquid assets which may have a depreciation period below the loan maturity, will be exposed to fluctuations in the business cycle for longer periods. This effect is significant, given that a considerable share of new consumer loans have been taken out by borrowers that are more exposed to a potential deterioration in labour market conditions.<sup>74</sup>

<sup>74</sup> The share of households with loans that are non-mortgage debt is higher for households in the lowest net wealth group. According to the *Portuguese Household Finance and Consumption Survey* for 2017, 27% of households in the lowest net wealth group had non-mortgage debt, the highest figure among all net wealth groups. This share increased from 2013, when it reached 24.4%.

Although the majority of new consumer credit agreements are concluded at a fixed rate and the share of this type of agreement has increased recently (irrespective of maturity), the continued increase in the maturities of this type of credit will imply a greater exposure of borrowers to potential shocks to their income.

Interest rates on new consumer loans declined by 0.2 p.p. in the third quarter of 2019 compared with the 2018 average, with the average rate standing at 7.0%.<sup>75</sup> Taking into account total costs related to consumer loans (the APRC), there was a 0.1 p.p. increase to an average of 9.5% during the same period.

Costs related to new flows of car loans and personal credit increased in the first three quarters of 2019 for all maturities, with the average APRC<sup>76</sup> on car loans and personal credit exceeding average figures observed in 2018. In the third quarter of 2019, the average APRC stood at 8.5% and 10.4% for car loans and personal credit respectively.

## Households' total debt increased slightly in the year ending in June 2019

The annual rate of change in households' total debt stood at 0.4% at the end of June, with distinct contributions by type of loan.<sup>77</sup> The stock of housing loans recorded an annual rate of change of -0.3%, compared to -0.6% in December 2018 (Chart I.3.14). Consumer loans continued to grow significantly, with an annual rate of change of 9.8%, albeit at a slower pace than in December 2018 (12.3%).

As growth in outstanding amounts of household's total debt (0.2%) stood considerably below disposable income growth (3.4%), the ratio of households' indebtedness to disposable income continued to decline, reaching 97.2% of disposable income in June 2019 (Chart I.3.15). Write-offs in other monetary financial institutions also contributed to this decrease, making a more significant contribution to the decline in debt than in the same period a year earlier (0.7 p.p. in June 2019, compared to 0.3 p.p. in June 2018). In turn, households' financial debt declined by 3.2 p.p. to 94.8% of disposable income from June 2018 to June 2019.

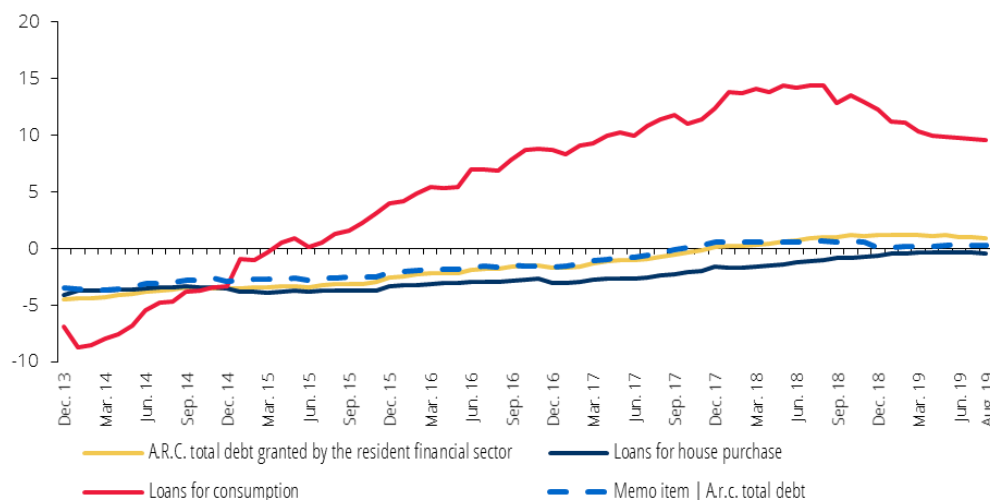
<sup>75</sup> Taking into account new consumer loans granted by other monetary financial institutions.

<sup>76</sup> Average APRCs on new flows of car loans and personal credit correspond to the average weighted by the loan amount on new agreements in each of these types of loans and take into account loans granted by other monetary financial institutions and other financial intermediaries except insurance corporations and pension funds.

<sup>77</sup> Households' total debt corresponds to the sum of loans and trade credits (households do not issue securities). Annual rates of change in households debt are calculated on the basis of an index constructed using adjusted transactions, i.e. changes in end-of-period outstanding amounts adjusted for reclassifications, write-offs, exchange rate and price revaluations and, where relevant, for the effect of securitisation and sales.

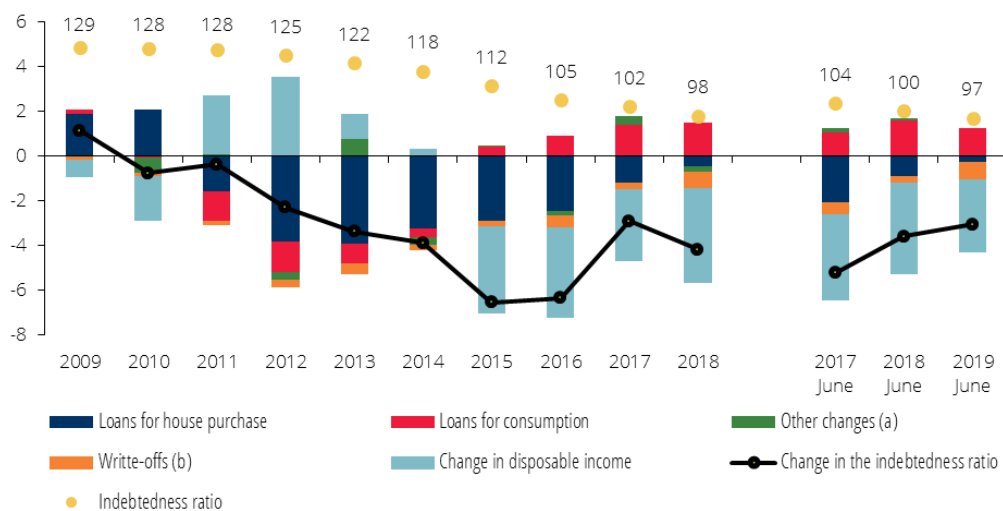


**Chart I.3.14 • Annual rate of change in households' total debt granted by the resident financial sector | Per cent**



Source: Banco de Portugal. | Notes: Total debt includes loans and trade credits from the resident financial sector. Annual rates of change (a.r.c.) are calculated on the basis of an index constructed using adjusted transactions, i.e. changes in end-of-period outstanding amounts adjusted for reclassifications, write-offs, price and exchange rate revaluations and, where relevant, for the effect of securitisation and sales. The annual rate change in debt stems from adjusted transactions associated housing loans and loans for consumption (whose a.r.c. is depicted in the graph) and other purposes as well as adjusted transactions associated with trade credits. The series Memo item | a.r.c. total debt includes loans and trade credits granted by the resident financial sector, other resident sectors (excluding households) and non-residents.

**Chart I.3.15 • Contribution to the changes in households' total debt | Percentage of disposable income**



Source: Banco de Portugal. | Notes: Changes in total debt regarding June refer to year changes ending in that month. The breakdown in total debt by loans for house purchase, loans for consumption and other loans is obtained from annual rate changes of each category. (a) 'Other changes' includes loans for other purposes (other than house purchase or consumption), trade credits, accrued interest (regardless of the type of credit) and other changes in volume and price. (b) Corresponds to write-offs in the balance sheet of resident monetary financial institutions.

The decrease in the households indebtedness ratio, observed in Portugal since 2010, has brought this variable closer to the euro area average (Box 3, Chart C.3.1). However, the current level of

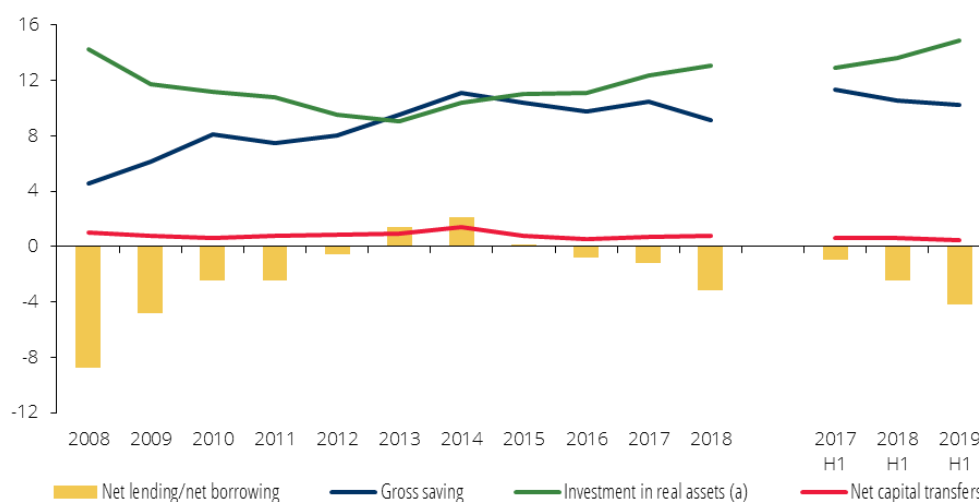
household indebtedness, which still remains high, together with a low saving rate, continues to be a vulnerability of the Portuguese economy, and could have a potential impact on financial stability. For this reason, and against the background of a potentially sharper deceleration in economic activity, a reduction in households' leverage is desirable, particularly to mitigate the risk arising from unexpected decreases in household income.

### 3.2.2 Non-financial corporations

#### There was an increase in the net borrowing of NFCs in the first half of 2019

The net borrowing of NFCs reached 4.2% of GDP in the first half of 2019, a 1.8 p.p. increase from the first half of 2018<sup>78</sup> (Chart I.3.16). This essentially reflected a 1.3 p.p. increase in the rate of investment in real assets, which stood at 14.9% of GDP, and a slight reduction in the saving rate to 10.2% of GDP.

**Chart I.3.16 • Savings, investment and net lending/net borrowing of NFCs | Percentage of GDP**



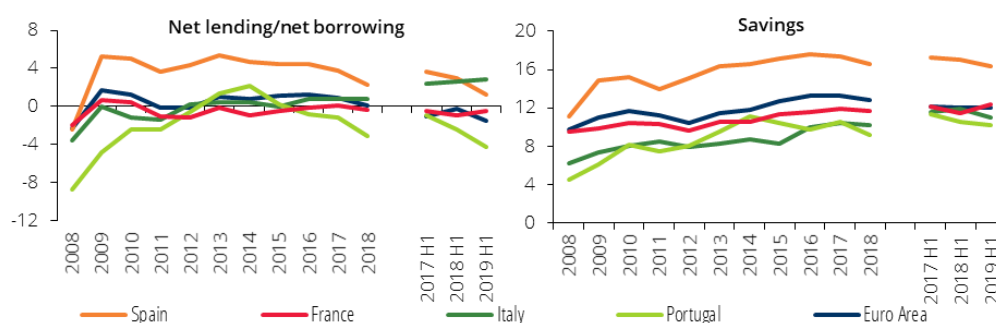
Source: Statistics Portugal (Banco de Portugal calculations). | Notes: The half-year figures are calculated from the quarterly national accounts. (a) Corresponds to the sum of gross fixed capital formation, changes in inventories, acquisitions less disposals of valuables and acquisitions less disposals of non-produced non-financial assets.

This sector's net borrowing remained among the highest in the euro area countries (Chart I.3.17). At the same time, the saving rate continued to be higher than before and during the crisis, but lower than that of most euro area countries. The decrease observed in the first half of 2019 was

<sup>78</sup> NFC net borrowing increased from 3.2% of GDP in 2018 to 4.0% in the year ending in the second quarter of 2019.

driven by the reduction in the gross operating surplus (-0.8 p.p. of GDP), although it was partially offset by the decline in distributed income and interest expenses balances. The reduction in the gross operating surplus resulted from the increase in compensation of employees and a slight decrease in gross value added.

**Chart I.3.17 • Net lending/net borrowing and savings of NFCs | Percentage of GDP**



Source: Eurostat (Banco de Portugal calculations). | Notes: Euro area figures consolidate cross-border flows within the euro area. The half-year figures are calculated from the quarterly non-financial accounts.

## Corporate investment was mainly financed with sector's savings, but also through net recourse to financial debt and equity

In the first half of 2019, NFCs' investment in real assets continued to be mostly financed with sector's savings. Compared to the same period in 2018, it is noteworthy a net recourse to financial debt and a decrease in recourse to other financial liabilities. There was also lower recourse to equity, mainly corresponding to the issuance of non-listed shares and other equity, and an increase in financial assets in currency and deposits, albeit smaller than in the first half of 2018 (Chart I.3.18).

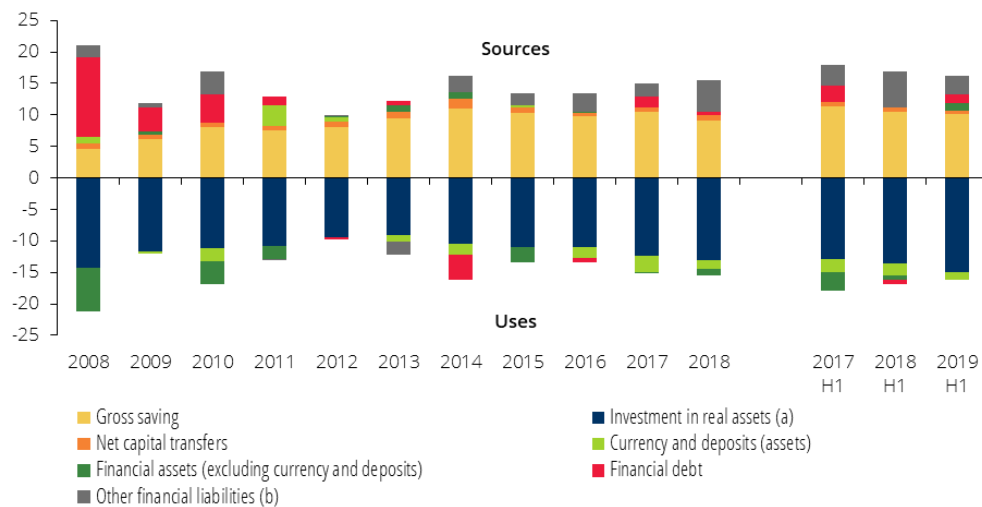
NFCs continued to accumulate liquidity in the six-month period under review, with the ratio of currency and deposits to financial debt standing at 26% (a 0.7 p.p. increase from the end of 2018). This outcome may have as underlying caution reasons, safeguarding any possible temporary restrictions on access to external financing in the future, the low opportunity cost of holding liquid assets and/or the lack of investment opportunities.

Less indebted firms continue to have, on average, higher cash holdings. However, these firms recorded a reduction in liquidity, in contrast to the average liquidity of more indebted firms, which increased between 2017 and 2018 (Chart I.3.19).

NFCs' deposits increased in the first half of 2019, reflecting growth in transferable deposits. Total deposits have recorded positive annual rates of change,<sup>79</sup> but there has been a decrease in the growth pace of NFCs' deposits since 2017.

<sup>79</sup> Annual rates of change are calculated on the basis of the relationship between end-of-quarter positions and quarterly transactions, adjusted for changes not stemming from financial transactions. The annual rate of change in deposits includes transferable deposits and other deposits.

Chart I.3.18 • Sources and uses of funds by NFCs | Percentage of GDP



Sources: Banco de Portugal and Statistics Portugal. | Notes: The half-year figures are calculated from the quarterly national accounts. (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) Other financial liabilities include liabilities associated with all financial instruments excluding loans and debt securities (financial debt) and include an adjustment for the statistical discrepancy between net lending/net borrowing computed within the scope of the national financial and non-financial accounts.

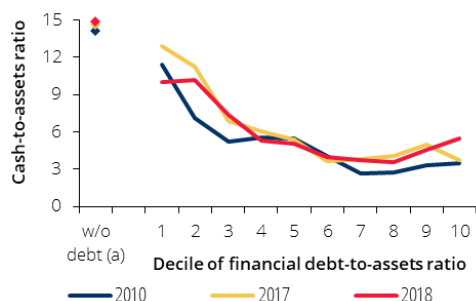
As mentioned in Section 2.1, the Portuguese economy's gross fixed capital formation accelerated in the six-month period under review, reflecting the dynamism of the construction component in particular, as well as that of machinery and equipment, which fostered growth in corporate investment, with NFCs' investment rate reaching values close to those observed in the period immediately prior to the recent crisis.

In the first half of 2019, NFCs' investment in real assets continued to benefit from favourable financing conditions. However, according to Statistics Portugal's *Investment Survey*, the share of firms with investments or intending to invest has been declining in the recent period. There was an increase in firms reporting investment limitations,<sup>80</sup> with the deterioration of sales prospects as the main factor limiting investment (30.5%). The share of firms identifying the difficulty in obtaining bank loans and in hiring qualified labour force as the main limiting factors increased slightly to 11.4% and 7.4% respectively.

In 2018 the sectors of activity that stood out for posting the largest increases in gross fixed capital formation were construction and real estate activities, agriculture and manufacturing, mining and quarrying, while trade, accommodation, food services and the like only increased slightly compared to 2017. Firms with lower indebtedness ratios (financial debt as a percentage of assets below 50%) continued to record a higher median investment rate than the other firms (Chart I.3.20), while firms that invested the most increased, albeit slightly, their indebtedness level. This led to an increase in their indebtedness ratios, particularly for the group of micro and small-sized enterprises, as well as for the group of less risky NFCs.

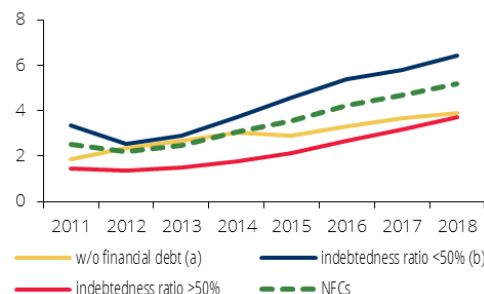
<sup>80</sup> The results of the *Investment Survey* are provisional until the survey in June of the following year.

**Chart I.3.19 • NFCs' available cash, by decile of the financial debt ratio | Percentage of total assets**



Source: Banco de Portugal. | Notes: The cash-to-assets ratio is defined as the ratio of the firm's liquid financial assets (currency and bank deposits) to total assets. The financial debt ratio is defined as the ratio of the firm's financial debt to total assets. Decile 1 includes the less indebted firms (with the lowest financial debt ratio), while decile 10 includes the most indebted firms. (a) NFCs without financial debt.

**Chart I.3.20 • Median investment rate of NFCs that increased its investment | Percentage of total assets**



Source: Banco de Portugal. | Notes: (a) Includes firms that in a given year (t) and the previous year (t-1) had no financial debt. (b) Includes firms with no financial debt in the previous year (t-1) that recorded financial debt in the following year (t). The investment rate results from the ratio of investment to total assets of firms which, in any given year, have increase its investment. Investment was computed using a proxy of the gross fixed capital formation (GFCF) estimated for each firm. The indebtedness ratio results from each firm's ratio of financial debt to total assets.

## The annual rate of change in total credit to NFCs increased in the first half of 2019, nonetheless there was a deceleration in bank credit granted to this sector

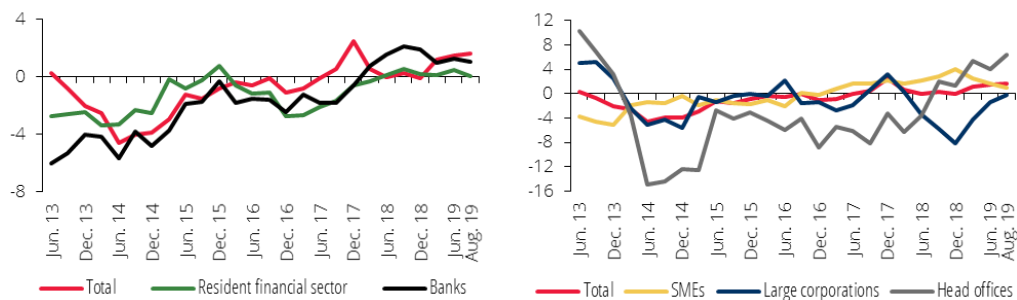
The annual rate of change in total credit<sup>81</sup> to NFCs was 1.5% in June 2019 (0.0% in December 2018). This essentially reflects the 12.1% increase in debt securities, as loans decreased by 0.9%. The annual rate of change has accelerated in most sectors of activity,<sup>82</sup> with the construction and real estate sector's high growth (12.1%) being noteworthy. Credit granted to SMEs recorded a positive annual rate of change, but lower than at the end of 2018, while credit granted to large enterprises continued to decline (-1.3%), nevertheless recording a less negative annual rate of change than in December 2018 (Chart I.3.21).

Bank credit decelerated in the six-month period under review, increasing by 1.3% in June 2019 (1.9% in December 2018). This reflected lower growth in debt securities held by institutions (3.6% compared to 7.7% in December 2018), with bank loans increasing 0.9%, the same as in December 2018.

<sup>81</sup> It comprises loans, debt securities and trade credits granted by the resident sectors (excluding intra-sector transactions) and the non-resident sector. Annual rates of change are calculated on the basis of an index constructed using adjusted transactions, i.e. changes in end-of-period outstanding amounts adjusted for reclassifications, write-offs, price and exchange rate revaluations and, where relevant, for the effect of securitisation and sales.

<sup>82</sup> Except for credit granted to the trade, accommodation and food services sector, which in June 2019 decreased by 4.6%, following a 2.5% growth in December 2018.

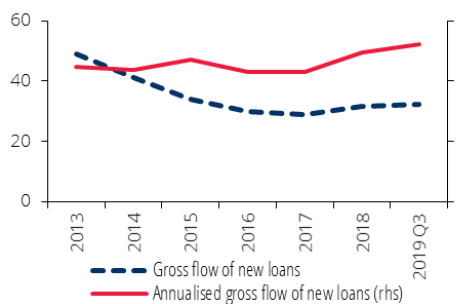
Chart I.3.21 • Annual rate of change in total credit granted to NFCs | Per cent



Source: Banco de Portugal. | Notes: Annual rates of change were calculated on the basis of an index constructed using adjusted transactions, i.e. changes in end-of-period outstanding amounts adjusted for reclassifications, write-offs, price and exchange rate revaluations and, where relevant, for the effect of securitisation and sales.

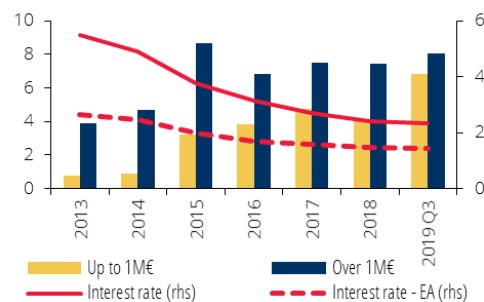
The annualised gross flow<sup>83</sup> of new bank loans to NFCs increased by 5.1%, a deceleration from 2018 (15.7%) (Chart I.3.22). The weight of new loans with an initial rate fixation period of over one year increased significantly, mainly for lower-value loans (Chart I.3.23). In parallel, there was an increase in new loans with a maturity over one year, but the average maturity of new bank loans granted to NFCs declined somewhat. The interest rate underlying these operations remains at historical lows, with the differential vis-à-vis the euro area remaining unchanged from the end of 2018.

Chart I.3.22 • Annualised gross flow of new bank loans to NFCs | EUR billions



Source: Banco de Portugal. | Notes: The figures of the third quarter of 2019 correspond to the year ending in that quarter. The annualised gross flow of each loan was calculated by multiplying the loan amount, for loans with maturity of less than one year, by its annualised maturity (ratio of the number of days in a loan and 365).

Chart I.3.23 • Annualised gross flow of new bank loans to NFCs with initial rate fixation period of more than 1 year | Per cent



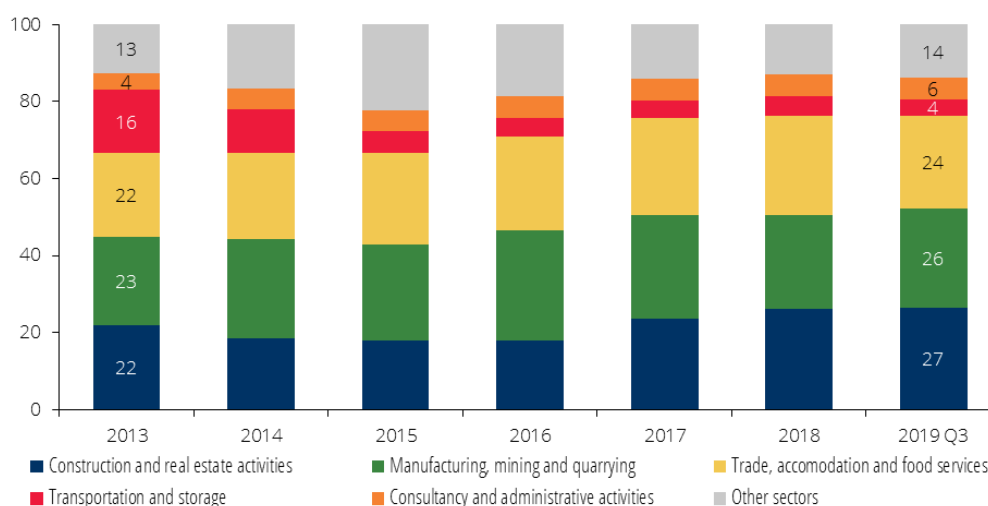
Sources: Banco de Portugal and ECB. | Notes: The figures of the third quarter of 2019 correspond to the year ending in that quarter. The bars illustrate the percentage of new loans with initial rate fixation period of more than one year. The interest rates correspond to the annual mean of new loans. EA - euro area.

<sup>83</sup> The annualised gross flow of each new loan was calculated by multiplying the amount of the loan, if it has a maturity of less than one year, by its annualised maturity (ratio of the number of days of the loan to 365).

In recent years, there has been an increase in the weight of the construction and real estate activities and manufacturing, mining and quarrying sectors in the flow of new bank loans granted to NFCs (Chart I.3.24).

Compared to 2018 as a whole, the proportion of new loans to less risky firms increased and the weight of new flows to more risky firms decreased (Section 4.4).

**Chart I.3.24 • New bank loans granted to NFCs | Per cent**



Source: Banco de Portugal. | Notes: The annualised gross flow of new bank loans given to each sector in percentage of the total annualised gross flow of new bank loans is depicted. The loans to NFCs identified as activities of financial services and head offices, activities of households and extraterritorial organisations and public administration firms were not considered. None of the sectors of activity included in 'Other sectors' held a larger share than the individual sectors of activity depicted in the chart.

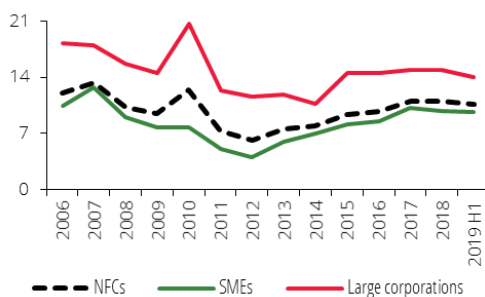
## NFCs' profitability decreased marginally in the first half of 2019, although it continued to stand at historically high levels

NFCs' profitability ratio<sup>84</sup> decreased slightly in the first half of 2019 compared to 2018, but remained high by historical standards<sup>85</sup> (Chart I.3.25). This decrease was more apparent in large enterprises, and in the sectors of electricity, gas and water and manufacturing, mining and quarrying. After a recovery in corporate profitability, the gross operating surplus decelerated in the last few years in Portugal and in the euro area average (Chart I.3.26). In the first half of 2019 the gross operating surplus decreased slightly in Portugal, while in most euro area countries it continued to grow, albeit at a slower pace than in the last two years.

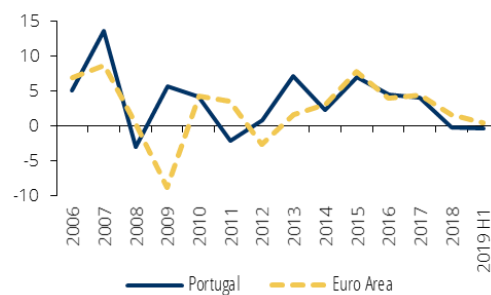
<sup>84</sup> The profitability ratio is calculated as the ratio of EBITDA (earnings before interest, taxes, depreciation and amortisation) to equity plus obtained funding. Obtained funding includes loans from financial institutions, subsidiaries and shareholders, and debt securities issued.

<sup>85</sup> The first data of the set of series of the Central Balance Sheet Database correspond to December 2006.

**Chart I.3.25 • Profitability ratio of NFCs, by enterprise size | Per cent**



**Chart I.3.26 • Year-on-year growth rate of the gross operating surplus | Per cent**



Sources: Banco de Portugal and Eurostat. | Notes: The profitability ratio is calculated as the ratio of EBITDA (earnings before interest, taxes, depreciation and amortisation) to equity plus obtained funding (statistics from the Central Balance Sheet Database). The half-year figures correspond to the year ending in that period.

## The reduction in the indebtedness ratio of NFCs in the first half of 2019 reflected a nominal increase in debt lower than that of GDP

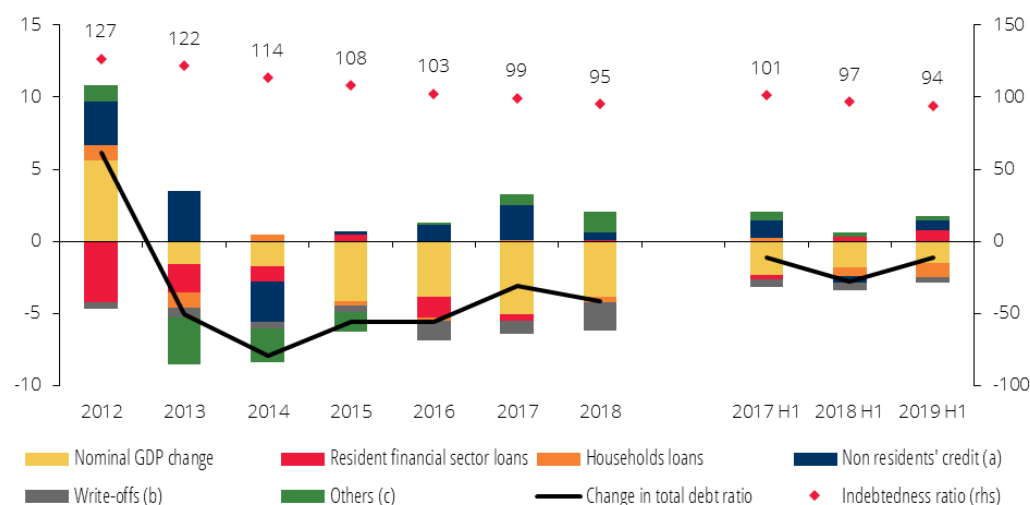
In the first half of 2019 NFCs' indebtedness ratio<sup>86</sup> decreased by approximately 1 p.p. compared to the end of 2018, to 94% of GDP (Chart I.3.27). This development was driven by the growth in nominal GDP (-1.5 p.p. contribution), with debt increasing by 0.4%. This increase reflects the repayment of loans from households (contribution of -1.0 p.p.) and, in contrast, the increase in loans from the resident financial sector and credit from non-residents. Despite the very significant reduction observed over the last few years, the present value of the ratio of total debt to GDP remains high in the European context and represents a vulnerability from a financial stability standpoint (Box 3, in particular Chart C.3.2).

The net flow of NFCs' financial debt was positive (1.3% of GDP) in the first half of 2019, which had already been recorded at the end of 2018. This outcome reflected a positive net flow of credit granted by the resident financial sector (2.0% of GDP) and by non-residents (1.3% of GDP), the latter contrasting with the net repayment observed in the first half of 2018. Conversely, a net repayment of loans from households was observed (2.0% of GDP).

<sup>86</sup> Ratio of NFCs' total debt (which includes financial debt - debt securities and loans - and trade credits) to GDP.



Chart I.3.27 • Contributions to the changes in NFCs total debt | Percentage of GDP



Source: Banco de Portugal and Statistics Portugal. | Notes: (a) Non-residents' credit includes liabilities on account of loans and debt securities held by non-residents. (b) Corresponds to credit written off against assets in the balance sheets of resident monetary financial institutions. (c) Includes debt securities held by residents, trade credits and advances and other changes in volume and in prices.

The persistence of low interest rates tends to have a positive impact on the debt service, mitigating the impact of the economic slowdown on the firms' financial situation. The financing expenses coverage ratio<sup>87</sup> of Portuguese NFCs remained unchanged compared to 2018 (7.1). Nevertheless, there was a slight reduction of this ratio in the manufacturing, mining and quarrying, electricity, gas and water sectors (Chart I.3.28).

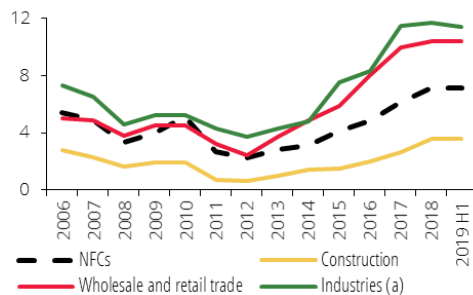
The reduction in interest rates, combined with the increase in firms' operational income in the aftermath of the economic and financial crisis, contributed to the reduction of the financial vulnerability of firms, as measured through the financing expenses coverage ratio, which was higher than in 2010 and 2012 (Chart I.3.29). This trend was widespread across all sectors of activity and enterprise sizes. However, compared to 2010 (the year before the EFAP), the increase in large enterprises was less significant and a proportion of these firms' financial debt was still associated with their financing expenses coverage ratio being close to 2.<sup>88</sup>

The aforementioned increase in liquid asset holdings and favourable financing conditions contributed to mitigating the vulnerability associated with this institutional sector's still high debt. Nevertheless, in the context of a reduced capacity of firms to generate income, notably in a context of economic slowdown, and/or increased financing costs, firms that are more leveraged will find it more difficult to service debt.

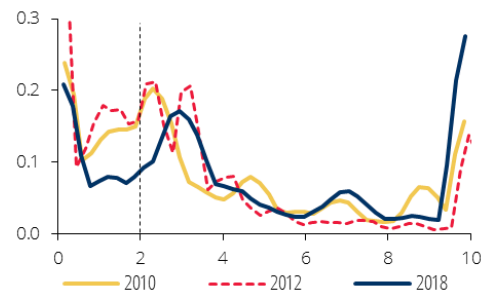
<sup>87</sup> Ratio of EBITDA to financing expenses. A corporation is deemed to be vulnerable if the ratio falls below two.

<sup>88</sup> Considering the distribution of the financing expenses coverage ratio, 2018 brought about a reduction in the share of financial debt of large enterprises with a ratio below 2 in the total debt of large enterprises (from 13% to 7%) and an increase in the proportion of financial debt of large enterprises with a ratio above 2 and below 4 (from 34% to 40%), compared with 2010. Conversely, and in the same period, the share of financial debt of SMEs with a ratio below two in SMEs' total debt decreased (from 53% to 42%), which was also observed for SMEs with a ratio above two and below four (19% to 16%).

**Chart I.3.28 • Financing expenses coverage ratio of NFCs | Number of times**



**Chart I.3.29 • Distribution of the financing expenses coverage ratio | Probability density**



Source: Banco de Portugal. | Notes: (a) Manufacturing, mining and quarrying. The financing expenses coverage ratio is calculated as the ratio of EBITDA (earnings before interest, taxes, depreciation and amortisation) to financing expenses. In the distribution of this ratio (right-hand chart), NFCs with a ratio above 10 were considered as having a ratio equal to 10. For NFCs with negative EBITDA, the ratio is equal to 0. The density values were weighted by the value of financial debt of each firm.

While the improvement in the capitalisation of firms continued to contribute to a lower leverage ratio, the current environment makes it crucial for this process to continue

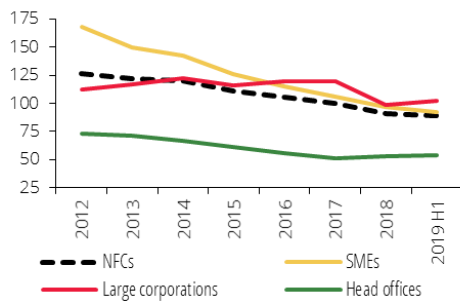
In the first half of 2019, and against end-2018, the leverage ratio, defined as the ratio of obtained funding to equity, increased by 3 p.p. to 102% in large enterprises, while SMEs had a 5 p.p. reduction of this ratio to 92% (Chart I.3.30).

The ratio of debt to equity continued to decline in the six months under review as a result of the net issuance of equity and of the higher market value of existing shares and other equity, reflecting, among other things, the retention of earnings by firms (Chart I.3.31). The positive capital flow increased mainly as a result of the net issuance of unlisted shares and other equity, purchased by the resident financial sector, in particular by other financial intermediaries and financial auxiliaries, and by non-residents (1.9% and 1.6% of GDP, respectively). There was, however, a deceleration of this type of transactions with non-residents in comparison with the same period of the previous year. Despite being increasingly closer to the euro area average, at the end of 2018 Portuguese NFCs continued to have one of this ratio's highest values in the context of the euro area (Box 3, in particular Chart C.3.12).

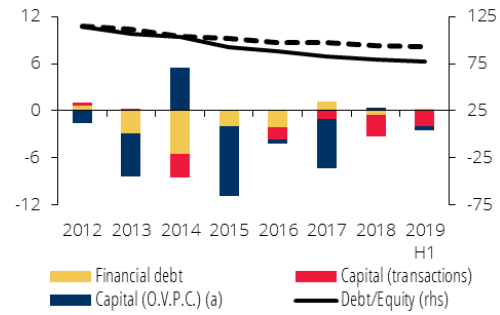
In the first half of 2019 the increase in the capitalisation of NFCs was reflected in an increase in the Portuguese NFCs' equity ratio, defined as the ratio of equity to assets, to 38% (0.8 p.p. more than in June 2018). This increase was seen across all sectors of activity and enterprise sizes, with the increase in SMEs and in the sectors of transportation and storage and electricity, gas and water being noteworthy.

Despite these positive developments, the reduction of NFCs' profitability has taken place along with the economic slowdown. In an external context of high uncertainty (Section 1.1), a potential and sharper reduction of demand, even in a low interest rate environment, is expected to result in a lower capacity of firms to generate profits, which would have a negative impact on some firms' ability to service their debt. This context makes the increase of equity in NFCs' financing structure, particularly through retained earnings, and the continuation of the deleveraging process of the most indebted firms crucial, allowing them to move towards more sustainable positions.

**Chart I.3.30 • Leverage ratio of NFCs, by enterprise size | Per cent**



**Chart I.3.31 • Developments in the debt to equity ratio and contributions | Per cent and percentage points**



Source: Banco de Portugal. | Notes: The leverage ratio is defined as the ratio between obtained funding and equity (statistics from Central Balance Sheet Database). The debt to equity ratio corresponds to the ratio of financial debt to the amount of shares and other equity (values from the financial accounts). The dashed line shows the ratio excluding the impact of value fluctuations. In order to exclude the impact of value fluctuations in the value of the stock of shares and other equity of NFCs, the market value of 2012 was considered as the basis from which net transactions observed in this instrument were added in each year. (a) O.V.P.C. corresponds to Other Volume and Price Changes.

## 4 Banking system

In the first half of 2019 there was an increase in the Portuguese banking system's profitability. This increase was due, on the one hand, to factors of a structural nature, such as efforts to promote the sector's efficiency and, on the other, developments of a more cyclical nature, among which in particular the reduction of costs with provisions and impairments. However, the more pronounced economic slowdown potential in the next few years, jointly with still high indebtedness levels and the maintenance of low interest rates, creates considerable challenges for the sector.

Banks should take advantage of the favourable economic conditions to continue reducing non-performing loans, in line with the guidelines and plans to reduce non-performing loans submitted to supervisory authorities, against a more demanding background, namely in terms of prudential provisioning. In spite of the progress made since 2016, the ratio of non-performing loans (NPLs) net of impairments remains one of the highest within Europe.

The challenges posed to income generation in an economy with a still high indebtedness level make it even more imperative to adopt pricing properly adjusted to the different asset classes, as well as timely control of borrowers' creditworthiness, so as to avoid inadequate search for yield behaviour and to safeguard banking system solvency over the operations' whole time horizon.

The available evidence continues to point to the new loans granted to NFCs being largely associated with lower risk classes, as well as a lending policy with greater differentiation in spreads according to the NFCs' risk profile than before the crisis. In addition, institutions are converging their household lending practices towards the provisions of Banco de Portugal's macroprudential Recommendation. However, overvaluation in the residential real estate market, particularly in some geographical areas and market segments, also advises banks to be prudent when setting credit standards, namely in a context of reduction in the already low interest rates on new housing loans. In 2018 no significant differences were observed in spreads on new housing loans by borrower risk level, when considering a simple breakdown of Loan-to-Value and Loan-service-to-income.

Against this background, institutions' efforts to improve efficiency by containing operational costs should continue, namely through investment in digitalisation. However, this should not compromise appropriate control and assessment of financial and operational risks, namely as regards prevention of money laundering and terrorist financing, as well as cyber-risk mitigation.

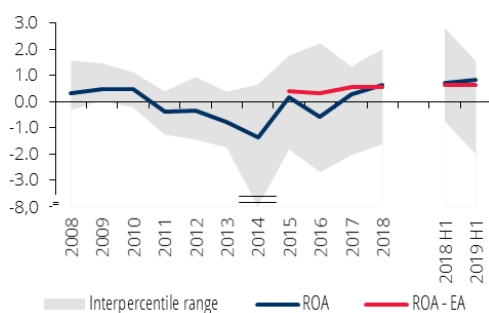
In a context of improved liquidity position, there was also an increase in the Portuguese banking system's exposure to public debt securities of euro area issuers, in particular Portuguese public debt. Holding these assets makes it possible to comply with the liquidity coverage ratio minimum requirements and reduce the average risk weight. However, considering that these assets are mostly measured at fair value, with an impact on capital, the banking system is more exposed to market risk volatility. Hence, notwithstanding the more favourable regulatory treatment of this exposure, it is instrumental that banks have capital buffers suited to a possible materialisation of this risk, which can still be mitigated with the adoption of hedging measures. Within a framework of recovery of profitability, continued organic capital generation therefore assumes a more important role.

## 4.1 Profitability

Profitability increased in the first half of 2019, chiefly supported by a reduction in provisions and impairments

After an extended period of losses, in the first half of 2019 the Portuguese banking system's profitability continued to follow the recent recovery trend<sup>89</sup> (Chart I.4.1). Return on assets (ROA) increased by 0.12 p.p. from the first half of 2018, to 0.84%, reflecting an improvement in most institutions' profits. Return on equity (ROE) rose by 1.5 p.p. to 9.2%, due to an increase in earnings, given that leverage<sup>90</sup> remained unchanged. Earnings before taxes remained stable compared to the same period of the previous year, due to a tax increase.

**Chart I.4.1 • ROA | Percentage of average assets**



**Chart I.4.2 • ROA – Level and contributions to change | Per cent and percentage points of average assets**



Sources: Banco de Portugal and ECB (*Consolidated Banking Data*). | Notes: Return on assets (ROA) is computed using Profit or Losses before taxes, as percentage of average assets. The interpercentile range was obtained by the difference between the 95 and 5 percentile of the indicator's asset-weighted distribution. Annualised figures.

Source: Banco de Portugal. | Notes: The blue bars correspond to the level of the variable. The other bars correspond to contributions its change. Annualised figures.

In the first half of 2019 the evolution of ROA chiefly reflected a decline in provisions and impairments net of reversals and, to a lesser extent, an increase in other operating income and net interest income, in a context of a 2.5% increase in average assets, after an extended downturn (Chart I.4.2). The increase in profitability was mitigated, among other factors, by a decrease in income from financial operations.

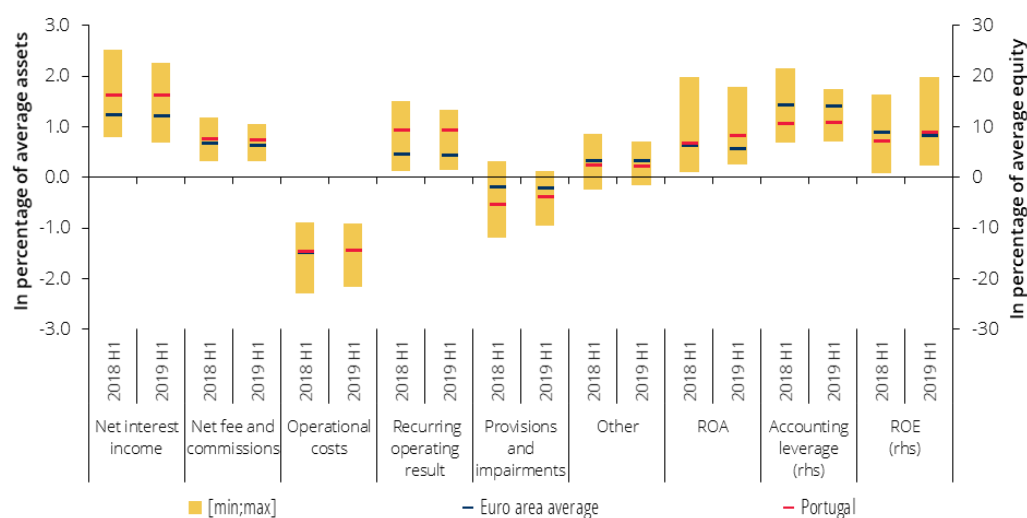
In the first half of 2019 the Portuguese banking system's return on assets was above the euro area average (Chart I.4.3). Compared to the same half-year in 2018, this position improved both as a result of the aforementioned improvement in the Portuguese banking system's profitability, as well

<sup>89</sup> Return on assets (ROA) and return on equity (ROE) correspond to the ratios of annualised earnings before tax to average assets and average equity respectively.

<sup>90</sup> Leverage is measured by the ratio of assets to equity.

as a slight deterioration in the results of the euro area on average. This improvement resulted both from an increase in net interest income and a reduction in the Portuguese banking system's provisions and impairments, as well as a slight decrease in net interest income and a slight increase in provisions and impairments of the euro area on average. The Portuguese banking system had a lower leverage level and ROE slightly higher than the euro area average. However, the still high stock of non-performing loans of some Portuguese banks suggests that the recognition of impairment losses is likely to continue in the near future, despite the sharp reduction observed in recent years.

**Chart I.4.3 • ROA, ROE and leverage – international comparison**



Sources: Banco de Portugal (internal calculations) and ECB (Consolidated Banking Data). | Notes: The items Net interest income, net fee and commissions, recurring operating result, provisions and impairments and others represent contributes to ROA. The 'Other' item includes negative goodwill, appropriation of income from subsidiaries, joint ventures and associates, and income from non-current assets held for sale and not qualifying as discontinued operations. Data for some items are unavailable for certain countries. However, this should not affect the analysis substantially. Annualised figures.

## The recurring operating result remained stable as a percentage of average assets

The rise in the recurring operating result<sup>91</sup> was similar to that of average assets, with the contribution to return on assets thus remaining stable against the same half-year in 2018, at 0.95% of average assets. The evolution of the recurring operating result is due to a rise in net interest income, mitigated by an increase in operational costs, amid a stabilisation in income from net commissions.

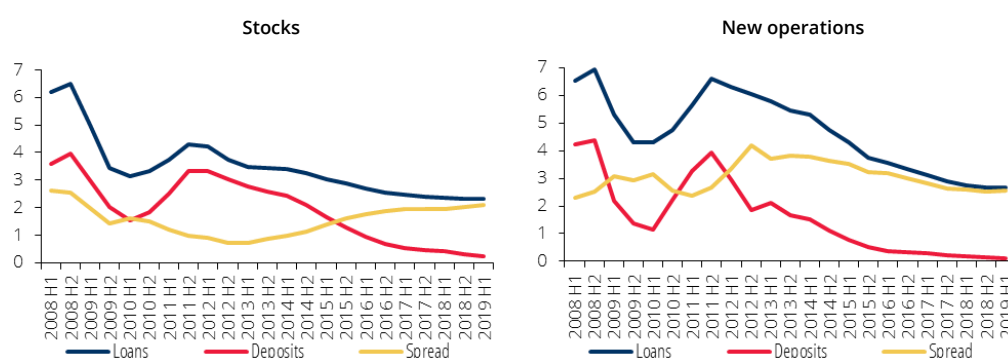
The 3.4% rise in net interest income was mainly due to a decline in the implicit interest rate on liabilities, higher than the decline seen in the implicit interest rate on assets, in line with domestic activity (Chart I.4.4). The decline in the implicit interest rate on liabilities was mainly due to a

<sup>91</sup> The recurring operating result is defined by aggregate net interest income and net commissions less operational costs.

reduction in the implicit interest rate on household deposits. Interest rates on new business with the non-financial private sector remained relatively stable, with a higher implicit spread than in balances (Chart I.4.4). The spreads between lending and deposit interest rates tended to stabilise, both on new business and balances. In addition, albeit to a lesser extent, the rise in net interest income also benefited from an increase in the public debt portfolio (quantity effect), in spite of a decline in the respective implicit rate (price effect).

In fact, amid low interest rates and abundant liquidity in institutions, public debt securities held saw an increase and made a positive contribution to net interest income. However, it is important to take into account the risks associated with a high level of concentration to these assets, namely their potential impact on capital (Sections 1.1 and 4.3).

**Chart I.4.4 • Interest rates on loans and deposits, private non-financial sector – Domestic activity | Per cent**

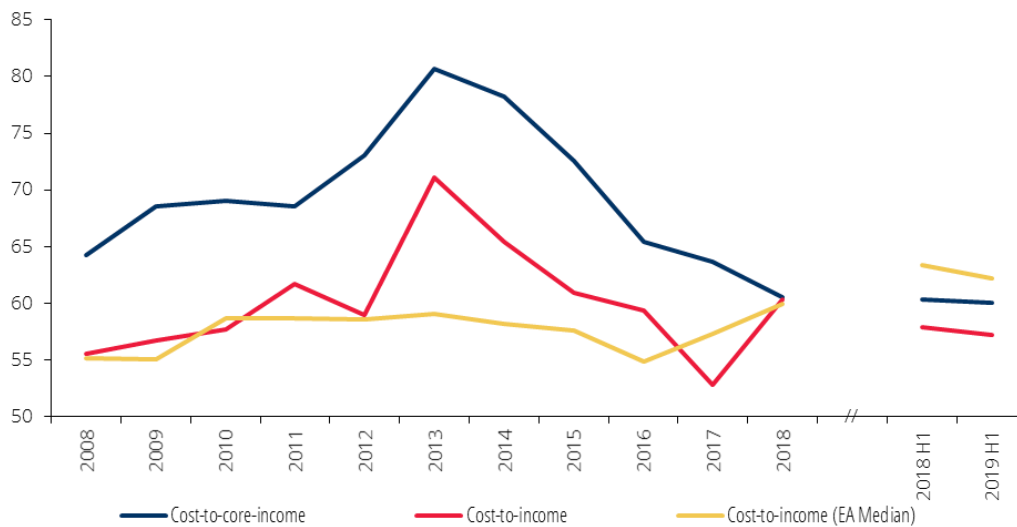


Source: Banco de Portugal. | Notes: Includes loans to non-financial corporations and households. Annual average of interest rates weighted by stocks of loans and deposits. The series refer to the reporting on an individual basis of the other monetary financial institutions resident in Portugal.

In the first half of 2019 operational costs rose by 1.9% year on year. This mainly reflected an increase in depreciation and to a lesser extent in staff costs. Despite this increase in costs, their contribution to ROA continues to be among the lowest of the past decade. This reflects an effort made by the system's main institutions over the last few years to rationalise structures and optimise costs. As already mentioned, this effort cannot, however, neglect appropriate risk assessment and control, as well as the ongoing investment needed for the digitalisation of banking activity.

The efficiency of the banking system, as measured by the cost-to-income ratio,<sup>92</sup> went up, reflecting a greater increase in total operating income than in costs (Chart I.4.5). In the first half of 2019 the cost-to-income ratio stood at 57.2%, i.e. 0.8 p.p. less than in the same period of the previous year, below the euro area median. This decline in cost-to-income was accompanied by an increase in heterogeneity across institutions, with institutions with the highest cost-to-income raising the ratio and those with the lowest reducing it.

<sup>92</sup> The cost-to-income ratio corresponds to the ratio of operational costs to total operating income.

**Chart I.4.5 • Cost-to-income and cost-to-core-income ratios | Per cent**

Sources: Banco de Portugal and ECB (*Consolidated Banking Data*). | Notes: The cost-to-income ratio corresponds to the ratio operational costs and total operating income. The cost to-core-income ratio corresponds to the ratio between operating costs and the sum of net interest income and net commissions. Annualised figures.

The other operating income contributed to a 0.09 p.p. rise in ROA, due to a decline in the other operating costs component. Conversely, the rise in ROA was mitigated by a decrease in income from financial operations, reflecting losses associated with capital instruments, derivatives and debt securities, partially offset by a rise in debt security gains.

## The loan loss charge declined in a context of reduction in non-performing loans

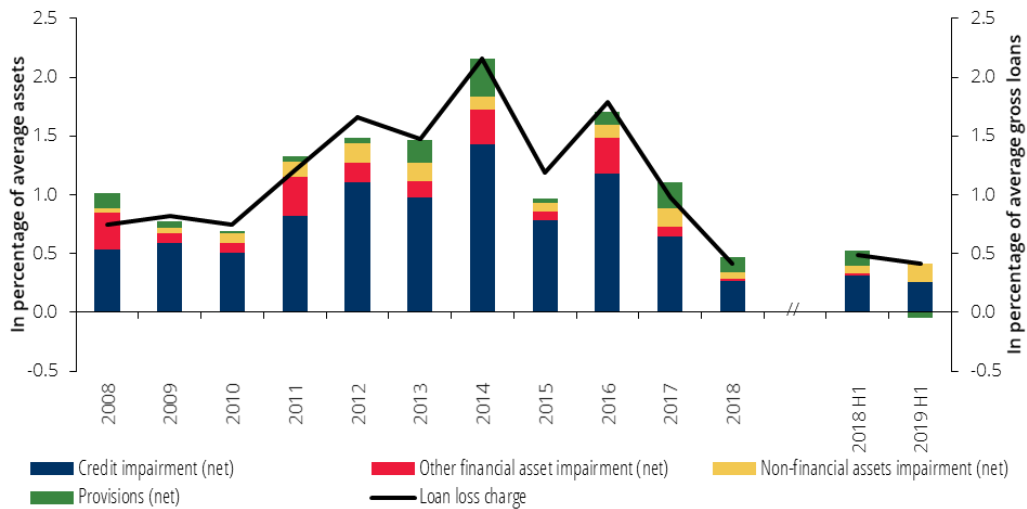
Provisions and impairments net of reversals declined by 28%, contributing 0.15 p.p. to the rise in ROA (Chart I.4.6). In particular, provisions net of reversals declined sharply, and during the first half-year there was a net reversal of EUR 88 million. In the same vein, financial asset impairments declined by around 20%. By contrast, non-financial asset impairments rose considerably, accounting for 41% of provisions and impairments net of reversals in the first half of the year.

Credit impairments decreased by 16% from the same period in 2018. This decrease was higher than the decline in average gross credit, and thus the loan loss charge<sup>93</sup> declined by 0.07 p.p., to stand at 0.41% (lower than before the crisis). The reduction in the loan loss charge was broadly based across the system's institutions, and higher in institutions with a higher loss charge.

<sup>93</sup> The loan loss charge corresponds to the flow of credit impairments as a percentage of total average gross credit granted to customers.



Chart I.4.6 • Provisions, impairments and loan loss charge



Source: Banco de Portugal. | Notes: The loan loss charge corresponds to the flow of credit impairments and provisions as a percentage of total average gross credit granted to customers. Annualised figures.

## 4.2 Asset quality

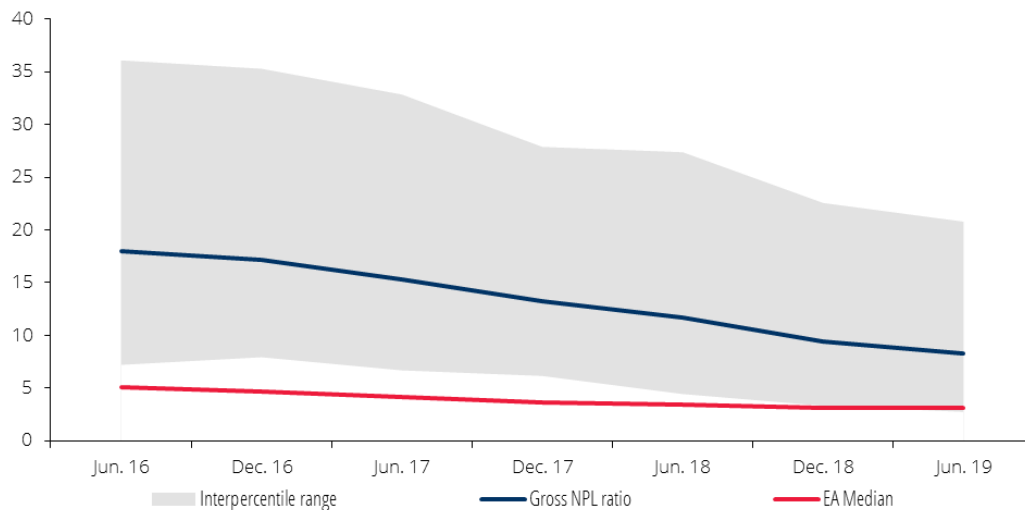
In the first half of 2019 the improvement in the NPL ratio chiefly reflected write-offs and an increase in performing loans

In the first half of 2019 the NPL ratio maintained the downward trend started in June 2016, standing at 8.3% in June 2019, which corresponded to a reduction of 1.1 p.p. from December 2018 and of 9.7 p.p. from June 2016 (Chart I.4.7).

The improvement in the NPL ratio reflects the reduction in the volume of non-performing loans in the banks' balance sheets, in line with the guidelines and plans to reduce non-performing assets that have been submitted to the supervisory authorities and implemented by banks. The reduction in the NPL ratio from its historical peak was chiefly due to the reduction in non-performing loans from EUR 50 billion in June 2016 to EUR 23 billion in June 2019, as a result of the combined effect of write-offs, sales and cures, which contributed 8.5 p.p. to the reduction in the NPL ratio.

In the first half of 2019 the reduction in the NPL ratio resulted not only from the reduction in non-performing loans mainly due to write-offs, which contributed with 0.5 p.p. to the decline in the ratio, but also from a 4.5% rise in performing loans,<sup>94</sup> which in turn accounted for 0.3 p.p.

Chart I.4.7 • Gross NPL ratio | Per cent



Sources: Banco de Portugal and ECB (Consolidated Banking Data). | Notes: NPLs according to the EBA definition. The interpercentile range was obtained by the difference between the 95 and 5 percentile of the indicator's asset-weighted distribution.

The contribution from write-offs to the reduction in non-performing loans assumed a more relevant role in the first half of the year, while there is a series of operations, namely credit sales, that will be reflected in figures for the second half of the year. In spite of a slowdown in sales and cures (net of new NPL), these operations continued to make a positive albeit less significant contribution to the reduction in the NPL ratio.

The reduction in the NPL ratio was widespread across the banking sector, and institutions with a higher ratio recorded a greater decline, leading to a reduction of heterogeneity.

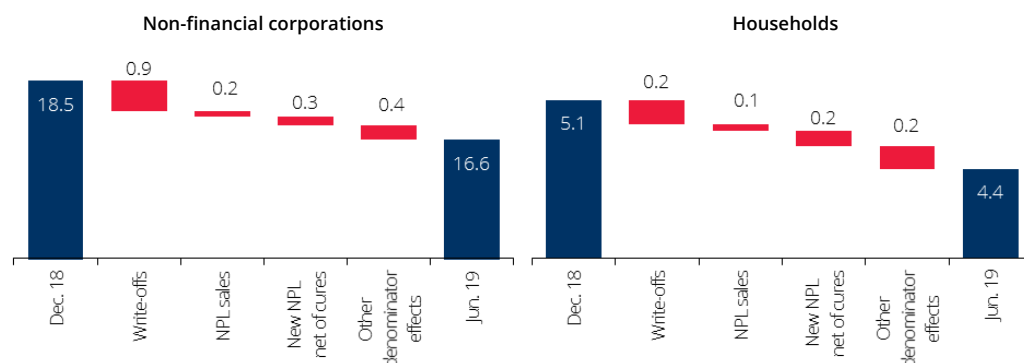
The fall in the NPL ratio was seen in a context of maintenance of a relatively stable NPL impairment coverage ratio, at around 52%. This occurred when, as already mentioned, write-offs assumed a more relevant role in the reduction of the NPL ratio. Expectations to recover these loans were quite low, which is why they were covered by impairments. Excluding the effect of write-offs, the coverage ratio would have increased.

The reduction in the NPL ratio was broadly based across the different institutional sectors, but was more significant in loans to NFCs. In this segment, the ratio declined by 1.8 p.p. in the first half of 2019 to 16.6% in June 2019. This was associated with a higher volume of write-offs, which contributed 0.9 p.p. to the reduction in the ratio, and to a lesser extent to the increase in

<sup>94</sup> Developments in performing loans were partly due to an increase in BCP's international activity, as a reflection of the Polish economy's growth dynamics and the acquisition of Euro Bank S.A. In addition, the sale of Deutsche Bank's retail operations in Portugal to ABANCA led to a reclassification of the assets acquired as ABANCA's current business, since in early 2018 they had been classified as non-current assets available for sale on Deutsche Bank's balance sheet.

performing assets (0.4 p.p. contribution to the reduction) (Chart I.4.8). The impairment coverage ratio in this segment increased slightly, from 56.3% in December 2018 to 57.0% in June 2019.

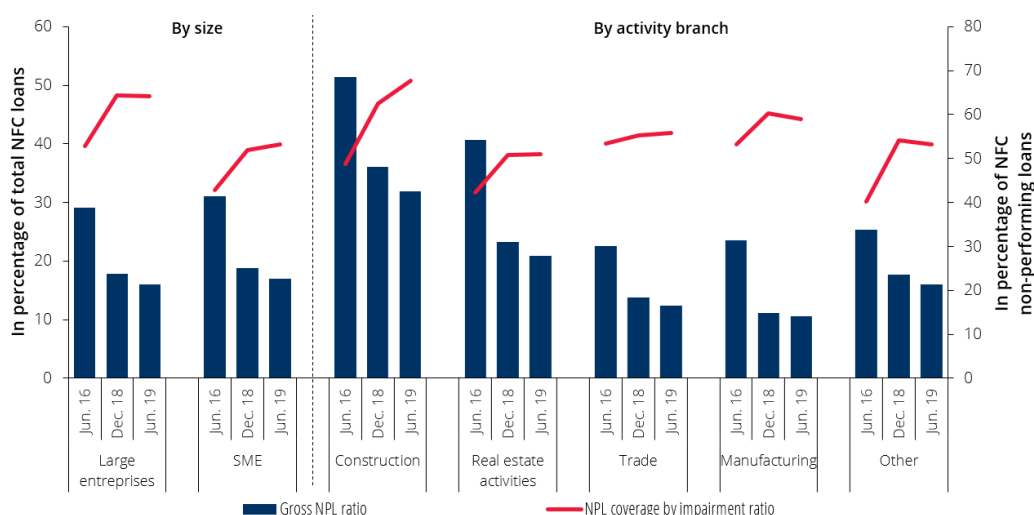
**Chart I.4.8 • NPL ratio – Contributions to change | Per cent and percentage points**



Source: Banco de Portugal (internal calculations). | Notes: NPLs according to the EBA definition. NPL sales include securitisations. The 'New NPLs, net of cures' item reflects all the NPL inflows and outflows for reasons other than write-offs, sales and securitisations, namely 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 reduction in the NFCs' NPL ratio, although broadly based across the different sectors of activity, was more significant in the sectors with a higher NPL ratio, particularly construction and real estate activities, sectors that were quite affected by the economic and financial crisis (Chart I.4.9). The NPL ratio of these two sectors declined by about 4 and 2 p.p. respectively in the first half of the year, and by about 20 p.p. in both segments since June 2016. The construction and trade sectors recorded an increase in the impairment coverage ratio by about 5 and 1 p.p. respectively, while in the other sectors of activity the ratio stabilised somewhat.

**Chart I.4.9 • NFC non-performing loans by firm size and activity sector**



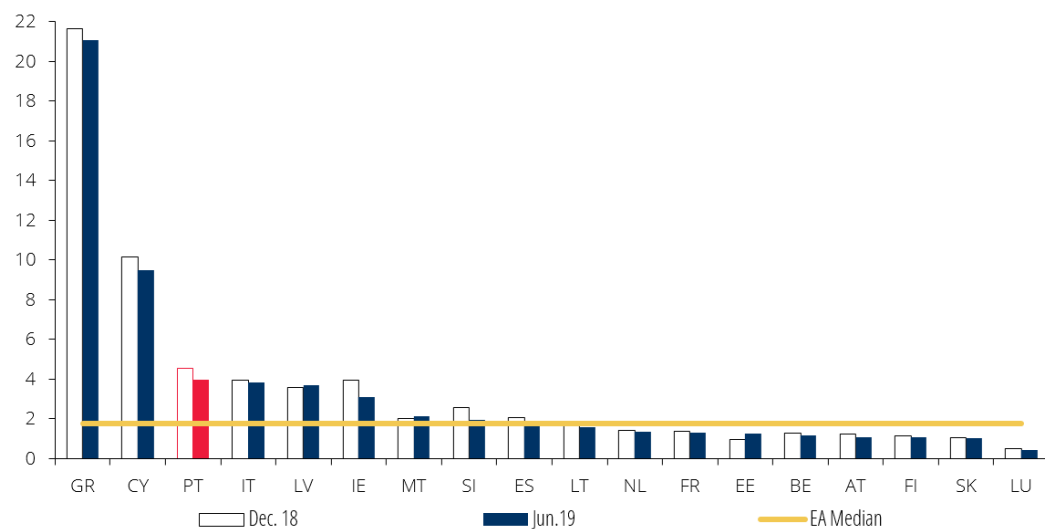
Source: Banco de Portugal. | Notes: NPLs according to the EBA definition. The activity branch "Trade" corresponds to the aggregate of the branches "wholesale and retail trade; repair of vehicles" and "accommodation and food service activities". The "Industry" branch includes the "manufacturing industries" and the "mining and quarrying". "Other" includes branches of activity not individually represented in the chart.

The NPL ratios for small and medium-sized enterprises (SMEs) and large enterprises recorded similar developments, with a greater decline in the NPL ratio for SMEs against June 2016. The coverage ratio in the large enterprises segment stabilised, having increased in the SMEs segment.

As regards households, the reduction in the NPL ratio in the first half of 2019 was more marked in loans for consumption and other purposes than for house purchase (1.7 p.p. and 0.6 p.p. respectively). However, while for the consumption and other purposes segment the reduction in the ratio was chiefly determined by the rise in performing loans (1.2 p.p. contribution to the decrease in the ratio), in the housing segment the main contribution was associated with a reduction in non-performing loans (0.5 p.p. contribution). The impairment coverage ratio of household NPLs was somewhat stable in the first half of the year, standing at around 41%.

The NPL ratio net of impairments decreased by 0.6 p.p., to stand at 4% (4.5% at the end of 2018). In spite of the significant progress already achieved, the Portuguese banking system continues to record one of the highest ratios within Europe, and is 2.2 p.p. higher than the euro area median (Chart I.4.10). Hence, banks should reap the benefits of the favourable economic conditions to continue reducing non-performing loans, in line with the guidelines and plans to reduce non-performing loans submitted to supervisory authorities, against a more demanding background, namely in terms of prudential provisioning (Box 4).

**Chart I.4.10 • NPL ratio net of impairments – international comparison | Per cent**



Source: ECB (Consolidated Banking Data). | Notes: NPLs according to the EBA definition. Certain countries are not represented due to lack of data.

## 4.3 Concentration of exposures

### Exposure to government bonds increased further in the first half of 2019

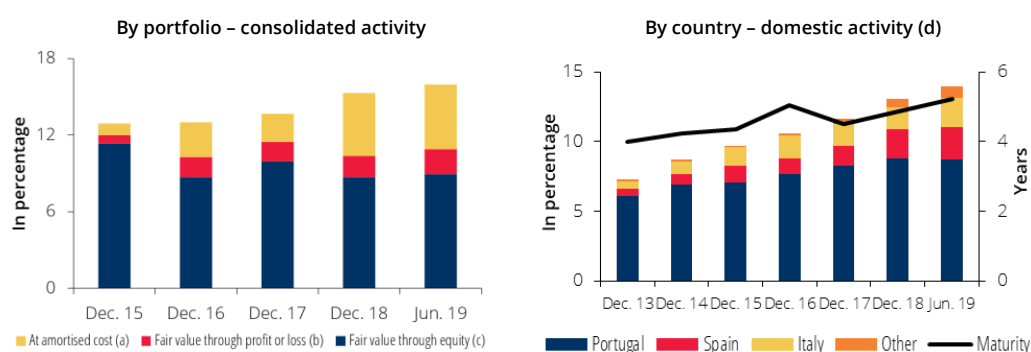
The Portuguese banking system is characterised by high exposure to certain sectors, most notably the public, real estate and financial sectors.

In a context of high liquidity in the banking sector and an extension of the very low interest rate environment, in the first half of 2019 there was an increase in the government bond portfolio, which came to account for 16% of total assets, contributing 1.1 p.p. to the 3% growth in total assets of the banking system. In domestic activity,<sup>95</sup> the rise in exposure to government bonds resulted from the increase in exposure to the Portuguese sovereign, which represents 9% of assets of other monetary financial institutions (OMFIs), as well as to other euro area sovereigns, most notably Spain and Italy, which tend to exhibit sizeable correlations with Portuguese bonds (Chart I.4.11).

The prevalent method used to manage the government bond portfolio intensifies exposure to market risk volatility, given that the fair-valued component represents 10.9% of total assets and 68% of total government bonds (Chart I.4.11). In the first half of 2019 the increase in the average residual maturity of government bonds in the banks' portfolios contributed further to a greater sensitivity to yield changes. Moreover, around 56% of total government debt is accounted at fair value through 'other comprehensive income' with a direct impact on equity. Provided that bonds remain on the balance sheet, this recording/assessment method makes it possible to prevent any devaluation from having an immediate impact on profitability ratios, although still affecting capital ratios.

The impact of the materialisation of this risk also depends on whether coverage measures are taken, and banks must align their exposure to these assets with their capital buffers, which should be sufficient to tackle the effect of potential shocks (Section 1.1).

**Chart I.4.11 • Sovereign debt securities**



Source: Banco de Portugal. | Notes: (a) Includes debt securities recorded in assets held to maturity and other accounts receivable (IAS39), as well as amortized cost (IFRS9); (b) Includes debt securities recorded as held for trading and at fair value through profit or loss (IAS39/IFRS9), as well as non-negotiable assets at fair value through results (IFRS9); (c) Includes debt securities held for trading (IAS39), as well as debt securities at fair value through Other Comprehensive Income (IFRS9); (d) The series refers to the reporting on an individual basis of the other monetary financial institutions resident in Portugal. Exposure by country is expressed as a percentage of OMFI total assets.

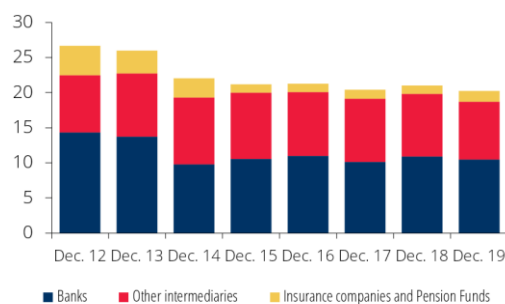
In the post-economic and financial crisis period, interlinkages in the financial sector have been relatively stable, with the banking system's exposure to Financial Sector entities standing at around 20% of total financial assets (Chart I.4.12). The intra-sectoral exposure in the financial system is lower than during the economic and financial crisis, reflecting inter alia a weaker interlinkage with the insurance sector and a reduction in intra-group activity. The existence of direct interlinkages in the Portuguese financial system, amid higher exposure to common risks, in particular, to

<sup>95</sup> In domestic activity, the government bond portfolio includes government bonds held by monetary financial institutions (excluding the central bank) resident in Portugal, on an individual basis. This portfolio accounts for 92% of the Portuguese banking system's portfolio on a consolidated basis.

sovereign risk (indirect interlinkages) may play a relevant role in the pass through of shocks, thereby producing contagion effects.

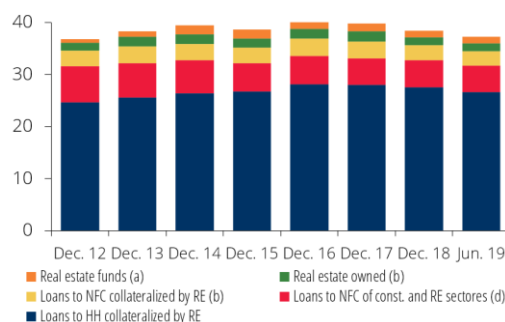
Despite the slight reduction seen since 2016, Portuguese banks continue to concentrate a significant proportion of their direct and indirect exposures to the real estate market (Chart I.4.13), accounting for approximately 37% of total assets in June 2019, 27 p.p. of which correspond to housing loans (indirect exposure). Compared to the period prior to the crisis, it is worth highlighting the reduction in loans to NFCs in the construction and real estate activities sector. Although in recent quarters signs of overvaluation emerged in the residential real estate market in Portugal, this dynamics does not seem to indicate that these developments have been largely driven by domestic bank credit (Section 2.3). This is likely to be due to Banco de Portugal's macroprudential measure on new credit agreements for consumers and residential immovable property, as there was a shift in new operations towards operations with an LTV ratio of 80% to 90%, to the detriment of operations with an LTV ratio of more than 90%, although the average LTV ratio is still at 75%. Furthermore, new operations with a DSTI<sup>96</sup> ratio above 60% decreased (Section 1.2).

**Chart I.4.12 • Banks exposure to the financial sector | Percentage of financial assets**



Source: Banco de Portugal. | Notes: The subsector "Other financial intermediaries" also includes financial auxiliaries. The series refer to the reporting on an individual basis of the other monetary financial institutions resident in Portugal.

**Chart I.4.13 • Banks exposure to real estate assets | Percentage of total assets**



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

<sup>96</sup> For the purposes of calculating this indicator, the instalments of the new credit agreement are assumed to be constant, and the impact of an interest rate rise shall be considered for this agreement, in accordance with the provisions of an Instruction of Banco de Portugal. In the case of a borrower aged 70 and over at the planned expiry of the agreement and not yet retired, a reduction of income of at least 20% of current annual income shall be considered, weighted by the ratio of the number of years of the agreement in which a borrower is aged 70 and over to the total maturity of the agreement. See Article 4 of the Recommendation for further details.

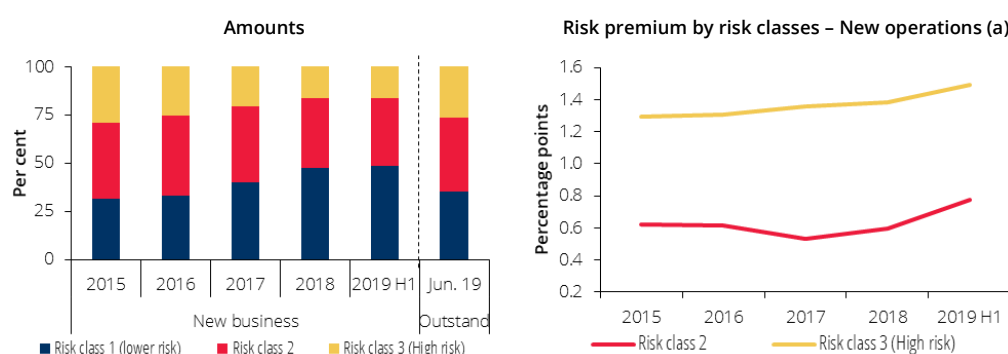
## 4.4 Credit standards

According to the BLS, credit standards remained virtually unchanged in the first nine months of 2019

According to the Bank Lending Survey (BLS),<sup>97</sup> credit standards remained virtually unchanged in the first nine months of 2019, from the last quarter of 2018, and surveyed institutions do not anticipate any changes in the lending policy up to the end of the year. According to the information reported by institutions, credit demand by enterprises did not change markedly in the first nine months of the year, while demand for loans for house purchase declined somewhat in the first quarter of the year, only to increase slightly over the next two quarters. In turn, demand for consumer credit rose somewhat in the second quarter of 2019, and a slight increase is projected for the last quarter of the year.

Amid an acceleration in performing loans and a marked reduction in non-performing loans, bank credit<sup>98</sup> granted to NFCs by resident banks posted a positive adjusted annual rate of change<sup>99</sup> (1.3%) in the course of the first half of 2019, but lower than the one at the end of 2018 (1.9%) (Section 3.2.2). Likewise, new loans to NFCs also decelerated in the year that ended in the third quarter of 2019, representing a growth rate of 5.1%.

Chart I.4.14 • Spreads on new bank loans to private NFCs



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%. (a) Loans granted by the seven largest banking groups operating in Portugal.

New loans to NFCs are still mostly associated with the lowest risk class (class 1), with the share of loans granted to riskier classes experiencing a decrease in the first half of 2019 from the previous

<sup>97</sup> Bank Lending Surveys of April, July and October 2019, Banco de Portugal.

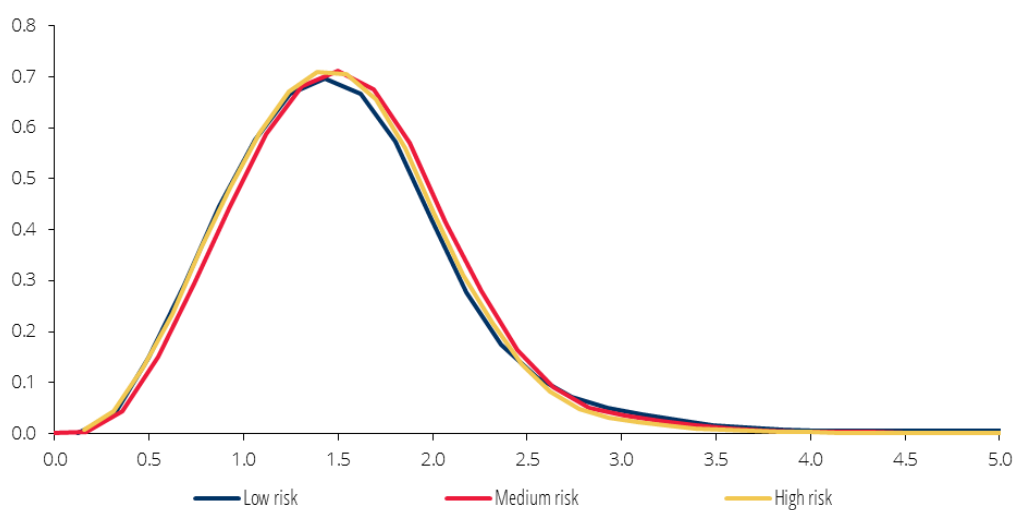
<sup>98</sup> Bank credit here includes debt securities and loans.

<sup>99</sup> Annual rate of change adjusted for securitisation operations, reclassifications, write-offs and exchange rate and price revaluations and, where relevant, for the effects of credit portfolio sales.

half (Chart I.4.14). In recent years, new loans to lower-risk NFCs have increased significantly, while new operations associated with riskier enterprises have declined. The share of new operations associated with lower risk rose by around 17 p.p. in the first half of 2019 compared with total new operations in 2015. This increase may reflect changes to credit standards as well as positive developments in the business cycle, with an impact on (partly structural) improvements in the situation of NFCs, given that over this period there was a transition from riskier classes to lower-risk classes (Section 3.2.2). In particular, for the construction and real estate activities sector, the share of medium-risk enterprises in flows of new operations increased, on account of the reduction in new flows to lower-risk and riskier enterprises. Despite developments in gross flows of new operations by risk class, the composition by risk class of the outstanding amount of loans to NFCs is still dominated by riskier classes.

On the basis of the seven largest banking groups, there has been, in general, greater differentiation in the spreads of loans to NFCs according to their credit risk over the past few years (Chart I.4.14). In the first half of 2019, the spreads on interest rates in new loans to NFCs were more differentiated according to the associated credit risk. This increase was greater in class 2 compared to class 1 (low risk), with a slight decrease in differentiation between class 2 and class 3. In absolute terms, while in class 1 the median level of the spread stabilised, in classes 2 and 3 it increased.

**Chart I.4.15 • Spreads on new bank loans to House Purchase in 2018, by level of implicit risk – Empirical distribution | Density**



Source: Banco de Portugal. | Notes: The level of implicit risk considers the *Loan-service-to-income* (LSTI) and the *Loan-to-value* (LTV) to identify the level of risk of the debtor. Low risk: LSTI≤15% e LTV≤80%; High risk: LSTI>30% or LTV>90%; Medium risk: other.

The annual rate of change in lending to households by resident banks stood at 0.7% in June 2019 (0.8% at the end of 2018). These developments reflected a deceleration in credit for consumption and other purposes (from 6.9% to 5.5%). The annual rate of change in loans for house purchase continued to post negative values (-0.4% from -0.6% in December 2018). In the third quarter of 2019, new loans for house purchase rose by 5.1% and consumer loans increased by 11.6%. In 2018 no significant differences were observed in spreads on new housing loans by borrower risk level, when considering a simple breakdown of Loan-to-Value and Loan-service-to-income (Chart I.4.15) (Section 3.2.1).



## 4.5 Liquidity and funding

### The banking system's liquidity position improved in the first half of 2019

In the first half of 2019, the liquidity coverage ratio<sup>100</sup> (LCR) rose by 16 p.p., to stand at 212%, one of the highest in the euro area. This chiefly reflected the increase in the liquidity buffer (i.e. highly liquid assets available).

As in previous years, developments in the liquidity buffer have reflected the increased exposure to government bonds<sup>101</sup> (Section 4.3). The growing importance of this portfolio makes it possible for institutions to fully meet the minimum LCR requirements simply by holding these assets.<sup>102</sup> It should be noted that debt securities issued by the general government of EU Member States are taken into account in their entirety when calculating the liquidity buffer, unlike other instruments, to which haircuts are applied.

The asset encumbrance ratio<sup>103</sup> narrowed by 1.3 p.p. from December 2018, both due to a decrease in encumbered assets and an increase in assets and collateral available for encumbrance. As such, the ratio stood at 16.2% in June 2019. Asset encumbrance due to market financing has decreased, in contrast to an increase in asset encumbrance related to central bank funding (Section 4.3), reducing potential contagion channels associated with changes in the collateral value.

### Continued upward trend in the importance of customer deposits to asset financing, amid a phasing-in of regulatory requirements associated with MREL

In the first half of 2019 customer deposits continued to grow (4% from the end of 2018). This increase was mostly seen in resident household deposits and, by type of deposit, in demand deposits. The upward trend in customer deposits has contributed to a narrowing in the loan-to-deposit ratio.<sup>104</sup> In fact, despite the aforementioned increase in loans to customers net of impairments (Section 4.2), the loan-to-deposit ratio decreased by 0.8 p.p. during that period, to stand at 88.2%. This level is compatible with a structural abundance of liquidity, which poses challenges, more specifically, to the currently very low interest rate environment across maturities.

<sup>100</sup> The liquidity coverage ratio corresponds to the ratio of available liquid assets and net cash outflows calculated under a 30-day stress scenario (i.e. a scenario with significant liquidity needs for a period of 30 days).

<sup>101</sup> The government debt component in the liquidity buffer mostly comprises Portuguese government bonds.

<sup>102</sup> The determinants of sovereign holdings are analysed in Campos, M. et al (2019) "Sovereign exposures in the Portuguese banking system: determinants and dynamics", *Working Paper Series No 2019*, Banco de Portugal.

<sup>103</sup> The asset encumbrance ratio measures the share of total assets (and collateral received) that is used as collateral to obtain liquidity. For more information on indicators to assess systemic liquidity risk, see the special issue "Monitoring systemic liquidity risk in the Portuguese banking system – some indicators", *Financial Stability Report*, June 2018.

<sup>104</sup> Ratio of customer loans to customer deposits. Customers are households, non-financial corporations, general government and other financial corporations (excluding credit institutions).

Central bank funding decreased by approximately 4% in the first half of 2019, keeping on the downward path seen since 2012. Likewise, and moving along a path seen since 2009, financing through debt securities decreased further, accounting for 3.8% of asset financing in June 2019, compared with 25.4% in December 2009. Despite this reduction, since the beginning of the year, institutions have issued a number of securities, most notably debt instruments eligible for the purpose of the minimum requirements for own funds and eligible liabilities (MREL) (Section 2.2).

Over the next few years, the banks' financing structure (and corresponding average costs) will be conditioned, on the one hand, by the series of monetary policy measures adopted by the ECB (Section 2.2), which are aimed at making it easier to obtain long-term Eurosystem funding and, on the other hand, by the phasing-in of regulatory requirements associated with MREL, which imply the market issuance of instruments eligible for MREL. In the case of Portuguese banks, this scenario is coupled with the aforementioned structural environment of abundant liquidity.

## 4.6 Capital

### The recovery in profitability and the dividend distribution policy made it possible to strengthen own funds

In the first half of 2019, the Portuguese banking system proceeded on its path to strengthen capital ratios. The increase in the amount of own funds (8.0%) exceeded the increase in risk-weighted assets (1.8%), which helped to achieve a total capital ratio<sup>105</sup> of 16.1%, 0.9 p.p. above that seen at the end of 2018 (Chart I.4.16).

The increase in own funds was chiefly due to developments in Common Equity Tier 1 capital (CET1), which correspond to approximately 86% of own funds. The CET 1 ratio<sup>106</sup> went up from 13.2% in December 2018 to 13.9% in June 2019, mostly reflecting developments in the retained earnings and other comprehensive income components, which contributed 0.7 p.p. and 0.2 p.p. respectively to changes in the ratio (Chart I.4.17). Moreover, the aforementioned debt securities issues in the first half of the year contributed to the increase in Additional Tier 1 capital (AT1) and Tier 2 capital (T2).

In the first half of 2019, retained earnings evolved in line with the sector's profitability in 2018, reflecting the lag in recognition of gains in own funds, arising from regulatory provisions (Section 4.6 *Capital*, in the June 2019 *Financial Stability Report*). Other comprehensive income contributed 0.2 p.p. to an increase in the CET1 ratio, reflecting gains on financial assets measured at market value of around 0.4 p.p., partly offset by actuarial losses associated with defined benefit pension funds (-0.2 p.p. of the ratio).

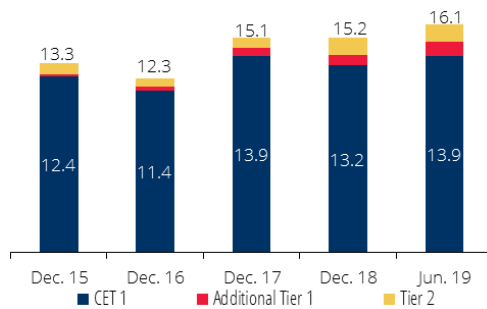
The rise in risk-weighted assets was mainly associated with the increase in retail exposures and, to a lesser extent, in corporate exposures and exposures associated with particular high risk.<sup>107</sup> Also, the decrease in exposures in default, of approximately 6%, made a positive contribution to a reduction in risk-weighted assets. Developments in risk-weighted assets were set against a scenario

<sup>105</sup> Ratio of total own funds to risk-weighted assets.

<sup>106</sup> The CET 1 ratio corresponds to the ratio of Common Equity Tier 1 capital to risk-weighted assets.

<sup>107</sup> These exposures have a 150% risk weight.

Chart I.4.16 • Own funds ratios | Per cent



Source: Banco de Portugal. | Note: The CET 1 ratio corresponds to the ratio between Common Equity Tier 1 capital and risk-weighted assets.

Chart I.4.17 • CET 1 ratio – Contributions | Per cent and percentage points



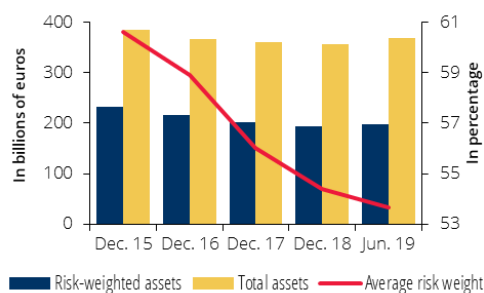
Source: Banco de Portugal.

where total assets of the banking system rose by 3% and exposure to government bonds<sup>108</sup> increased by around 7%. As such, despite the increase in risk-weighted assets, the average risk weight<sup>109</sup> continued on the downward path seen over the past few years, and decreased by 0.7 p.p. from December 2018, to 53.7% (Chart I.4.18).

Given the high average risk weight of the Portuguese banking system (Chart I.4.19), the imposition of an output floor, under Basel II reforms, is not an active constraint (Box 5).

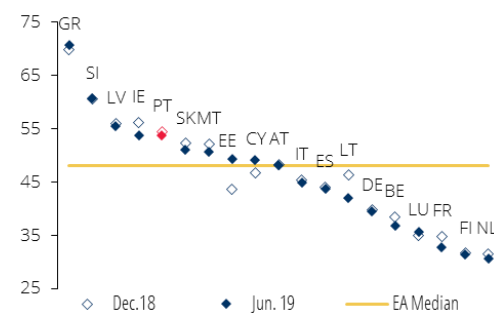
The prudential leverage ratio<sup>110</sup> rose by 0.4 p.p. to 7.7%, reflecting the aforementioned increase in Tier 1 capital, above that in total banking system exposure. This ratio is higher than the minimum benchmark defined by the Basel Committee on Banking Supervision (3%). This requirement will become mandatory as of the new CRR application date (28 June 2021).

Chart I.4.18 • Average risk weight – Contributions



Source: Banco de Portugal. | Note: The average risk weight corresponds to the ratio between the risk-weighted assets and total assets.

Chart I.4.19 • Average risk weight – International comparison | Per cent



Source: ECB (Consolidated Banking Data). | Note: The average risk weight corresponds to the ratio between the risk-weighted assets and total assets.

<sup>108</sup> Government bonds issued by euro area countries, issued in their national currency, are associated with a zero risk weight.

<sup>109</sup> The average risk weight corresponds to the ratio of risk-weighted assets to total assets.

<sup>110</sup> The prudential leverage ratio is the ratio of Tier 1 capital to total exposure.

### Box 1 • Assessment of residential real estate markets by the European Systemic Risk Board

The European and national macroprudential authorities closely monitor developments in residential real estate markets. This results from the relevance and influence of these markets in the value of the real assets of households, in tandem with loans granted by the banking system to finance the purchase of such real estate. This market is therefore an important link between the financial system and the non-financial private sector, and developments in the residential real estate market may be a source of systemic risk.

Empirical evidence shows that financial crises stemming from house price overvaluation, particularly when such overvaluation was bolstered by expansion in credit, are characterised by longer recession periods and greater losses for the economy, when compared to other recessions.<sup>111</sup>

In this context, in 2018, the European Systemic Risk Board (ESRB), in cooperation with the national macroprudential authorities, started a new assessment of the risks and vulnerabilities of residential real estate markets and the results were published on 23 September 2019.<sup>112</sup> This assessment is especially relevant considering recent developments in these markets, which saw prices of residential real estate assets grow across most of Europe, albeit at varying degrees between countries and regions. In addition, some countries simultaneously reported an increase in loans for house purchase. Also, each national real estate market is idiosyncratic, which means that the European market is not homogeneous.

#### Summary of the methodology used by the ESRB

In the first step of the assessment process, the ESRB compiled a set of indicators that show statistical properties signalling risk accumulation. The indicators analysed are grouped by type, namely, (i) indicators that cover changes to collateral pricing (house price growth and estimates of house price overvaluation); (ii) indicators that cover lending for house purchase (credit growth and standards, especially the spread on new housing loans) and (iii) indicators that cover household assets and indebtedness (debt to disposable income, financial assets to debt and debt service to income ratios). Risk is assessed on the basis of the values of the indicators against their historical distribution. The ESRB used this set of indicators, together with a qualitative assessment carried out in cooperation with the national authorities, to assign a risk level to the residential real estate market of each country, i.e. limited or low risk (12 countries), medium risk (13 countries), or high risk (five countries).<sup>113</sup>

In step two, the ESRB evaluated the macroprudential policy of each country, i.e. the set of measures adopted by the authorities to mitigate risks associated with developments in residential real estate markets and/or increase financial sector resilience. This assessment was based on the country's position in the residential real estate cycle and on the indicators listed above,

<sup>111</sup> See for instance Claessens et al. (2008), "What Happens During Recessions, Crunches and Busts?", *Working Paper*, IMF, <https://www.imf.org/external/pubs/ft/wp/2008/wp08274.pdf> and Jordá et al. (2015), "Leveraged Bubbles", *Working Paper* 2015-10, Federal Reserve Bank of San Francisco, <https://www.frbsf.org/economic-research/files/wp2015-10.pdf>.

<sup>112</sup> The first EU-wide assessment of the various residential real estate markets was carried out in 2016 and resulted in eight warnings on medium-term vulnerabilities in the residential real estate sector (Austria, Belgium, Denmark, Finland, Luxembourg, the Netherlands, Sweden and the United Kingdom).

<sup>113</sup> The risk associated to the residential real estate market was considered limited or low in 12 countries (Bulgaria, Cyprus, Croatia, Greece, Hungary, Italy, Latvia, Lithuania, Poland, Romania, Slovenia and Spain). Medium risk was attributed to 13 countries (Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Iceland, Ireland, Malta, Portugal, Slovakia and the United Kingdom). The remaining five countries were classified as high risk (Denmark, Luxembourg, the Netherlands, Norway and Sweden).

supplemented by additional country-specific information. The appropriateness and sufficiency of the policy implemented in each country was assessed.

Assessing the appropriateness of macroprudential policy to mitigate the risks identified takes into account the choice of policy instruments and their interactions, possible unwanted repercussions, possible circumvention of measures, calibration of the requirements and the authorities' ability to implement policy decisions. The policy may be classified as fully appropriate, partially appropriate or not appropriate.

The policy sufficiency assessment builds on the appropriateness assessment. If the policy is not appropriate it cannot be sufficient. A policy is deemed sufficient if it is effective and efficient in order to attain the goals set by the authorities, i.e., the estimated benefits outweigh the estimated costs, which are associated with the restrictions imposed to financial institutions and activities. The policy may be classified as fully sufficient, partially sufficient or not sufficient.

### **ESRB assessment results**

Portugal was classified as medium risk and the ESRB considered that the indicators signalling risk in the residential real estate market are high housing price growth, loose lending standards for new housing loans, and elevated, but declining, household indebtedness.<sup>114</sup> The macroprudential Recommendation on new credit agreements for consumers adopted by Banco de Portugal in 2018 was deemed to be fully appropriate and sufficient to mitigate the risks identified. Another seven countries achieved this outcome in their assessment of appropriateness and sufficiency of macroprudential policy (Austria, Estonia, Ireland, Malta, Slovakia, Slovenia and the United Kingdom).

The ESRB issued warnings or recommendations to 11 countries, regarding which the policies adopted were considered not sufficient and/or appropriate to mitigate the risks identified. Warnings were issued for five countries (Czech Republic, France, Germany, Iceland and Norway) and recommendations to six (Belgium, Denmark, Luxembourg, the Netherlands, Finland and Sweden). The recommendations issued include specific measures deemed necessary by the ESRB, encompassing macroprudential policy and other policies. Recommendations were directed to the authorities of the countries in receipt of 2016 warnings regarding the accumulation of risk in the residential real estate market and whose risk levels remained unchanged or had worsened.

No additional measures were issued to Member States whose residential real estate market was classified as low risk by the ESRB.

The [report on the assessment](#), the [warnings](#) and the [recommendations](#) are available on the [ESRB website](#).

<sup>114</sup> For additional information on recent developments, see Section 2.3 in this Report.

## Box 2 • New European framework for covered bonds

### Background

The legislative package on covered bonds,<sup>115,116</sup> made up of a Directive and a Regulation amending the CRR,<sup>117</sup> aims to fulfil one of the political objectives of the Capital Markets Union<sup>118</sup> by creating a common European framework for the issue of covered bonds. Among the reasons given by the European Commission for this initiative is the level of development of the covered bond market in the European Union, which differs substantially across the 28 Member States. It is even non-existent in a number of countries, with different co-existing national legal frameworks, of differing scopes and depths.

Despite the existence of a reduced number of separate rules, such as the requirements broadly laid down in the so-called UCITS Directive<sup>119,120</sup> or the preferential treatment of covered bonds set out in Article 129 of the CRR, there was no harmonised legal framework dedicated to this issue in the European Union.

Without prejudice to other background factors influencing this legislative proposal, the reports and opinions of the European Banking Authority are particularly relevant, the conclusions of which were published at the end of 2016.<sup>121</sup>

Against this background, the new European legislative package has as main objectives to:

- protect investors in covered bonds (considered low-risk instruments due to their characteristics);
- favour the growth and expansion of a single covered bond market, while fostering the development of covered bond markets in European countries where these are non-existent or negligible;
- strengthen the role of covered bonds as a source of funding for credit institutions in the European Union;
- contribute to preserving financial stability.

### Main highlights of the new European framework for covered bonds

The Directive on covered bonds gives Member States (and, in a number of cases, competent authorities to be appointed for public supervision of covered bonds) a considerable range of options and discretions to be exercised when transposing the Directive into national legal

<sup>115</sup> See the legislative proposal at: [https://ec.europa.eu/info/publications/180312-proposal-covered-bonds\\_en](https://ec.europa.eu/info/publications/180312-proposal-covered-bonds_en). The term 'covered bonds' is taken from the English version of the legislative proposals for a Directive and a Regulation.

<sup>116</sup> The English versions of the approved legislative proposals for a Directive and a Regulation are available for consultation at: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:PE\\_86\\_2019\\_INIT&qid=1574262401571&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:PE_86_2019_INIT&qid=1574262401571&from=EN) and [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:PE\\_85\\_2019\\_INIT&qid=1574262617730&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:PE_85_2019_INIT&qid=1574262617730&from=EN) respectively.

<sup>117</sup> Abbreviation of Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms.

<sup>118</sup> See the Capital Markets Union action plan at: [https://ec.europa.eu/info/publications/mid-term-review-capital-markets-union-action-plan\\_en](https://ec.europa.eu/info/publications/mid-term-review-capital-markets-union-action-plan_en).

<sup>119</sup> Directive 2009/65/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to a number of undertakings for collective investment in transferable securities (UCITS).

<sup>120</sup> The only definition of covered bond is laid down in Article 52(4) of the UCITS Directive. However, this provision, which is amended in this legislative proposal, only laid down general requirements and had the introduction of limits to investments by UCITS as a specific purpose.

<sup>121</sup> Report *Recommendations on harmonisation of covered bond frameworks in the EU* (EBA-Op-2016-23), available at: [https://eba.europa.eu/sites/default/documents/files/documents/10180/1699643/d2b08b75-601f-4de3-ba36-ad674cdc0d46/EBA\\_Report\\_on\\_Covered\\_Bonds\\_\(EBA-Op-2016-23\).pdf](https://eba.europa.eu/sites/default/documents/files/documents/10180/1699643/d2b08b75-601f-4de3-ba36-ad674cdc0d46/EBA_Report_on_Covered_Bonds_(EBA-Op-2016-23).pdf).

frameworks. At the same time, this is considered a minimum harmonisation Directive, allowing Member States to keep a number of specificities of their national frameworks within the margin provided by the European legislator.

For the purposes of this framework, covered bonds are debt obligations issued by credit institutions and secured by cover assets to which (covered bond) investors have direct recourse as preferred creditors, in accordance with the provisions of national law transposing the requirements set out in the Directive.

Overall, the Directive, which is structured in six titles, focuses on the following matters:

- (i) requirements for issuing covered bonds;
- (ii) their structural features (such as dual recourse and bankruptcy remoteness, the types of eligible cover assets, their segregation rules, compliance with the requirement of coverage of liabilities resulting from the issue by assets or the need to maintain a cover pool liquidity buffer);
- (iii) public supervision of covered bonds (enshrining the principle of prior authorisation for covered bond programmes, setting out the powers of competent authorities regarding the supervision of issuers and instruments, as well as the principles of cooperation between authorities);
- (iv) disclosure requirements (requirements for issuers to provide information to investors as well as the obligation of supervisory authorities to publish information, such as the list of credit institutions permitted to issue covered bonds or sanctions applied under sanctioning procedures).

In turn, the Regulation amends the CRR (as regards the requirements set out in Article 129 on the preferential treatment of exposures in the form of covered bonds).

Specifically, as a requirement related to the quality of the covered bonds eligible for preferential treatment, a minimum level of overcollateralisation (5%) is explicitly set out as a general rule, to be complied with in accordance with the 'nominal principle' (i.e. the total nominal amount of all cover assets shall exceed the total nominal amount of outstanding covered bonds by at least 5%).

Considering their relevance and innovative nature, a number of topics covered by the Directive are highlighted below:

- Liquidity buffer

In order to mitigate liquidity risk and better protect investors, the cover pool is required to include a liquidity buffer composed of liquid assets available to cover the maximum cumulative net liquidity outflow of the covered bond programme over a period of 180 days.

Where credit institutions issuing covered bonds are subject to liquidity requirements set out in other Union legal acts that result in an overlap with the cover pool liquidity buffer requirement, Member States may decide not to apply the national rules transposing the framework described above for the period provided for in those Union legal acts, and may exercise that option only until the date on which an amendment to those legal acts to eliminate the overlap becomes applicable in the Union. In this respect, faced with a possible overlap of this provision in the Directive with the requirements set out in Commission Delegated Regulation (EU) 2015/61, the European Commission is considering amending the Delegated Regulation in due course in order to avoid the overlap.

- Public supervision of covered bonds

In order to ensure the protection of investors, Member States shall provide that the issue of covered bonds must be subject to public supervision and shall designate one or more competent authorities for that purpose. The Directive also requires prior approval of covered bond programmes. In particular, in order to safeguard the rights and interests of investors, the Directive lays down specific rules for insolvency and resolution requiring close cooperation between the authority(ies) designated for public supervision and, where different, the resolution authority.

Member States have the option of providing for the appointment of a special administrator in national transposing measures, who would act in cooperation with the aforementioned authorities.

- Labelling

Issuers shall be allowed to use the European label 'European Covered Bonds' in respect of issues which meet the requirements laid down in the national transposing legislation, as well as the European label 'European Covered Bond (Premium)', provided that issues cumulatively fulfil the requirements set out in the national transposing legislation and the new eligibility requirements set out in Article 129 of the CRR (i.e. additional prudential requirements).

### Next steps and main challenges

In order to contribute to the coherent and consistent implementation of the new European framework on covered bonds by jointly applying the national measures transposing the Directive and the provisions of the Regulation amending the CRR, the European legislator decided that the start of application of the framework set out in the Directive would coincide with that of the Regulation.

Member States shall complete the process of transposing the Directive on covered bonds 18 months after the date of entry into force,<sup>122</sup> ensuring that national transposing measures apply at the latest 30 months after the date of entry into force, which coincides with the start of application of the Regulation.

Under the Directive, the (new) authorisation regime shall not apply to covered bond programmes prior to the start of application of the national transposing measures. However, credit institutions shall comply with all other requirements laid down in the Directive in respect of any new issues of covered bonds under pre-existing programmes occurring after that date.

In addition, the Directive sets out a transitional regime on covered bonds issued within 30 months from the date of entry into force of the new Directive that comply with the requirements laid down in the UCITS Directive. These covered bonds may continue to be referred to as 'covered bonds' in accordance with the new Directive until their maturity and are exempt from complying with a considerable number of its rules.<sup>123</sup>

Within the context of the implementation of the European package on covered bonds at national level, the aim was to ensure that there was an appropriate schedule in place for the application of the new European framework for covered bonds. To this end, although the transition to the new framework remains a challenge, this European package favours planning and early preparation for the legislative changes that are foreseen at national level.<sup>124</sup>

In Portugal, Decree-Law No 59/2006 of 20 March 2006 approving the legal framework on mortgage bonds applies. As for the expected impact on the Portuguese market of transposing the Directive and considering it may not be possible to anticipate the regulatory options of the national legislator, both the legal framework on mortgage bonds and the regulation issued by Banco de Portugal already include a large number of the requirements imposed by the Directive. As a

<sup>122</sup> The Directive and Regulation shall enter into force 20 days after their publication, which should occur in December 2019.

<sup>123</sup> On the following matters respectively: bankruptcy remoteness of covered bonds, eligible cover assets, collateral assets located outside the Union, intragroup pooled covered bond structures, joint funding, composition of the cover pool, derivative contracts in the cover pool, segregation of cover assets, coverage requirements, requirement for a cover pool liquidity buffer, conditions for extendable maturity structures and permission for covered bond programmes.

<sup>124</sup> Among others, subjecting covered bond programmes to prior authorisation, setting out investor information requirements or requiring a cover pool liquidity buffer.



consequence, without prejudice to the new features to be implemented by the national transposing measures, a break from the current framework is not expected.

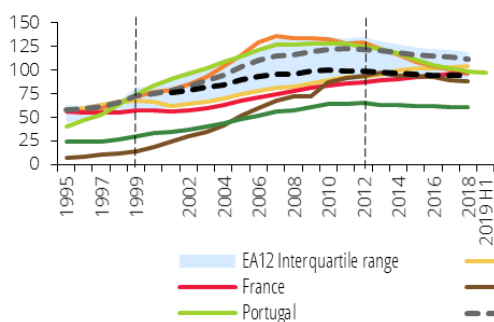
Lastly, the new European legislative package applicable to covered bonds represents considerable progress towards the harmonisation of different national frameworks with the creation of a common regulatory framework for the European Union. However, adopted solutions still lay down a considerable number of options and discretions to be exercised by Member States when transposing the Directive, allowing differences and divergences among national frameworks to remain after full implementation of the new European package.

### Box 3 • Developments in non-financial private sector indebtedness in Portugal and the euro area in the past 30 years<sup>125</sup>

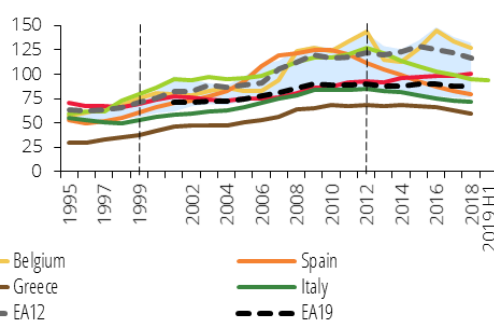
#### The convergence period for participation in the euro area

When Portugal's nominal convergence process began, with a view to its participation in the euro area, the indebtedness ratios of households and non-financial corporations (NFCs) (Charts C.3.1 and C.3.2) were relatively low in the context of the countries that would become part of the euro area (hereinafter EA12). At the beginning of the first stage of EMU<sup>126</sup> in 1990, the average interest rates on bank loans were close to or above 20% depending on their purpose. This was significantly higher than those of countries such as Germany, Belgium, France or the Netherlands (Charts C.3.3 and C.3.4), amid high inflation rates (above 10%) and restrictions on foreign capital inflows.<sup>127</sup> This differential narrowed during the first two stages of EMU, with interest rates on loans for house purchase and to NFCs standing at levels similar to those of the other countries in 1999. In Portugal, domestic economic agents perceived the decrease in the overall interest rate level as irreversible and associated with a new macroeconomic framework characterised by price stability. This expectation, combined with a gradual removal of funding constraints in the Portuguese economy and greater liquidity and competition in the banking sector, contributed to growth in domestic demand, partly based on recourse to credit. As a result, at the beginning of the euro area the indebtedness ratios of Portuguese households and NFCs were already slightly above the EA12 average.

**Chart C3.1 • Total debt of households**  
| Percentage of disposable income



**Chart C3.2 • Total debt of NFCs**  
| Percentage of GDP



Source: Eurostat (Banco de Portugal calculations). | Notes: The EA12 and EA19 series account for the simple average of the countries participating in the EA12 and EA19 respectively. Due to unavailability of information, the EA12 figures do not include Ireland for the period 1995-2000 and Luxembourg for the period 1995-98. Total debt corresponds to financial debt (including debt securities and loans) plus trade credits.

Between 1996 and 2000 the increase in Portuguese households' indebtedness mainly reflected the increase in investment in dwellings.<sup>128</sup> In the same period, NFC financial debt presented a

<sup>125</sup> For the analysis in this box, international comparisons only consider 12 euro area countries: Austria (AT), Belgium (BE), Finland (FI), France (FR), Germany (DE), Greece (EL), Ireland (IE), Italy (IT), Luxembourg (LU), Netherlands (NL), Portugal (PT) and Spain (ES). Financial accounts' data are considered on a consolidated basis.

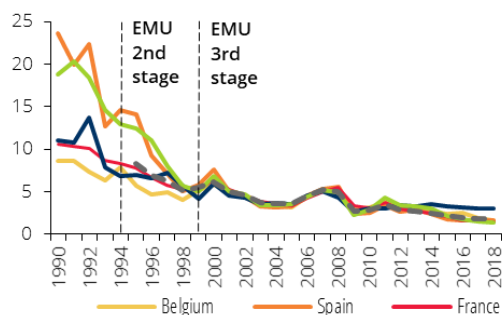
<sup>126</sup> The different stages of EMU and their characteristics can be found at <https://www.ecb.europa.eu/ecb/history/emu/html/index.en.html>.

<sup>127</sup> The full liberalisation of capital outflows and inflows took place in 1992. The experience with joining the exchange rate mechanism of the European Monetary System is described in detail in "The Portuguese Escudo in the ERM", Banco de Portugal, *Economic Bulletin*, December 2003.

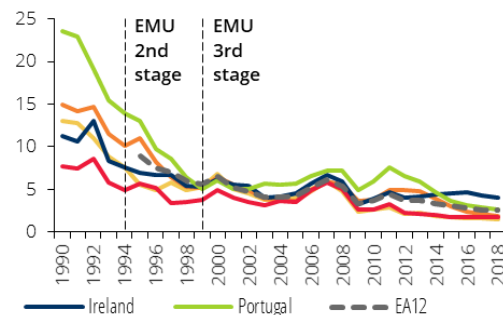
<sup>128</sup> In Portugal, between 1996 and 2000 gross fixed capital formation in housing recorded an average annual rate of change of 6.7% in real terms.

strong positive correlation with investment, and there was also a decrease in the saving rate of this sector. Thus, net lending of the non-financial private sector (NFPS) declined significantly, resulting in an increase in net external debt (Chart C.3.5).

**Chart C3.3 • Nominal interest rate on new loans for house purchase | Per cent**



**Chart C3.4 • Nominal interest rate on new loans to NFCs | Per cent**



Source: ECB (Banco de Portugal calculations). | Notes: Interest rates with an initial rate fixation period of up to 1 year. The EA12 average rate on loans for house purchase does not include Greece for the period 1995-98, while that on loans to NFCs does not include Luxembourg due to unavailability of information. The interest rate on loans to NFCs includes loans of up to EUR 1 million.

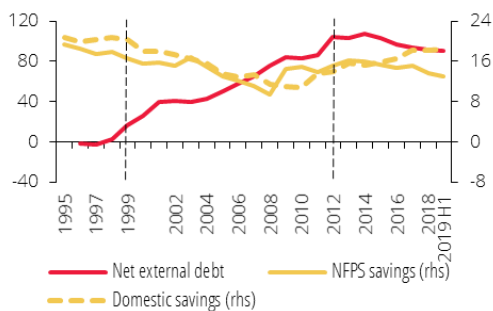
### From the introduction of the euro to the most acute phase of the sovereign debt crisis

In the period between 2000 and the onset of the 2007/08 financial crisis, which was characterised by historically low and less volatile interest rates, credit granted to the NFPS grew well above nominal GDP. The increase in income perceived as permanent by households, the inflow of transfers from the European Union to Spain, Greece, Ireland and Portugal (hereinafter “convergence countries”), and the absence of funding constraints to the banking system and economic agents in general, favoured the decline in domestic savings and the increase in external indebtedness.

Against a background of reduced uncertainty and a generally benign economic climate, the households’ saving rate, which before the creation of the euro area was already slightly below the EA12 average, initiated a downward trend, falling from around 13% of disposable income in 2000 to 7% in 2008 (Chart C.3.6). In turn, from 2000 onwards the investment rate of households decreased, in line with the reduction in investment in dwellings, which contrasts with Spain, Greece and Ireland where investment in dwellings continued to grow until the onset of the financial crisis. The reduction in investment led to the absence of net borrowing by the household sector in Portugal, unlike other convergence countries.

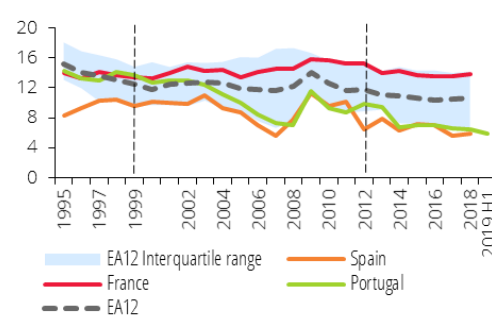
Investment by Portuguese NFCs declined between 2000 and 2003, subsequently resuming its growth path, albeit at a more moderate pace than in the late 1990s. The ratio of business investment to GDP increased until 2008 (Chart C.3.7). In parallel, a significant increase in the distributed income rate was observed as of 2003 (Chart C.3.8). As a result, a larger share of investment was financed through debt, with a growing net borrowing by this sector until the onset of the financial crisis. In Portugal, the debt-to-GDP ratio of NFCs peaked at 127% of GDP at the height of the sovereign debt crisis in the euro area (2012), the moment when the deleveraging process began. This was also evident in other countries, such as Spain and Italy (Chart C.3.2), although the adjustment in Spain began sooner (2010).

**Chart C3.5 • Savings and external debt**  
| Percentage of GDP



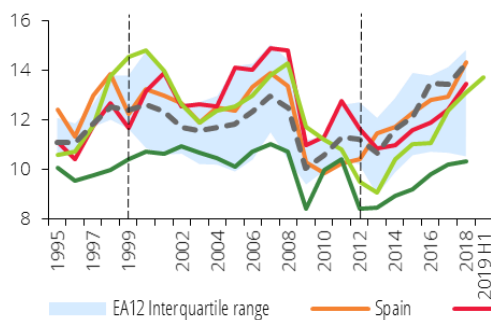
Sources: Banco de Portugal and Statistics Portugal.

**Chart C3.6 • Household savings**  
| Percentage of disposable income

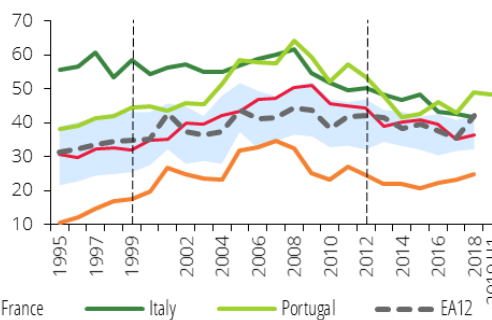


Source: Eurostat (Banco de Portugal calculations). | Notes: The dashed series represents the simple average of the EA12 countries. Disposable income is adjusted for changes in net equity of households in pension funds.

**Chart C3.7 • NFCs' investment in real assets**  
| Percentage of GDP



**Chart C3.8 • NFCs' distributed income rate**  
| Percentage of net entrepreneurial income



Source: Eurostat (Banco de Portugal calculations). | Notes: The dashed series represents the simple average of the EA12 countries. The distributed income rate is the ratio of NFCs' distributed income to net entrepreneurial income (which corresponds to the sum of the balance of primary income, uses for distributed income of corporations and reinvested earnings of foreign direct investment firms, net of taxes on income and wealth).

In Portugal, the household indebtedness ratio increased by about 45 p.p. between 2000 and 2009, the year when it reached a maximum of 129% of disposable income. The other convergence countries presented similar debt developments in this sector, differing in the intensity of the increase and the moment when the maximum was reached. In particular, Ireland reached quite a high indebtedness ratio, followed by Portugal and Spain, while in Greece households recorded a lower level of indebtedness (Chart C.3.1). In these countries, the increase in indebtedness was essentially associated with strong growth in residential property investment, with the loans for house purchase accounting for over 65%<sup>129</sup> of the outstanding amount of bank loans in this sector. In Portugal and

<sup>129</sup> Between 2003 and 2007 the average weight of the outstanding amount of bank loans for house purchase on the stock of bank loans to households was 81% in Ireland, 79% in Portugal, 71% in Spain and 66% in Greece.

Spain, there was also a significant reduction in savings in this sector, which contributed to the increase in indebtedness. In Belgium, France and Italy, the indebtedness ratio remained at contained levels, albeit with an upward trend. The increase in the share of households owning their residence began earlier in these countries than in Portugal, with peaks being reached in the early 1990s. Nevertheless, these figures were lower than those recorded in Portugal, where a significant increase – to around 75% – continued to be observed until the early 2000s. In turn, since 1980 Spain, Greece and Ireland stand out as the countries with the highest share of own residences, recording over 75% in 2007.<sup>130</sup> In the EA12 as a whole, only Germany posted a slight reduction in indebtedness.

### The households' sector during the economic recovery

After the most troubled period of the financial crisis, the countries where the sector was most indebted initiated a phase of adjustment in the households' balance sheet (Chart C.3.9). In countries such as Spain, Greece, Ireland and Portugal this adjustment occurred in parallel with significant reductions in households' disposable income, particularly between 2011 and 2013. In turn, some EA12 countries with lower indebtedness ratios than the median, such as Belgium and France, continued to show an increase in their indebtedness ratios, with loans for house purchase being the main contributor.

Contrary to the saving rate, which kept its downward path, apart from the adjustment period, the investment rate of Portuguese households began to decline slightly in 2013, and a similar behaviour was recorded in Spain. However, in the context of the EA12, saving and investment rates remained low in both countries. Between the end of 2013 and the end of 2018, most EA12 countries recorded a decrease in the saving rate and an increase in the investment rate. In particular, during this period investment in dwellings grew, on average, by 17% in Ireland, 14% in the Netherlands, 7% in Spain, and 4% in Finland and Portugal.

The ratio of new loans<sup>131</sup> for house purchase to disposable income increased in Portugal and Spain as of 2013. However, between 2014 and 2018 the average value of this ratio in these countries was below the EA12 average and that observed before the crisis (Chart C.3.10). The stock of loans for house purchase has continued to decline since 2015, albeit at a slower pace. In the EA12 there has been a moderate increase in the stock of loans for house purchase, with a focus on growth recorded in Austria, Belgium and France. Portugal, as well as Spain and Ireland, recorded a lower share of new loans for house purchase with an initial rate fixation period of up to one year. However, this trend has been reversing more recently, with floating rate loans still in a preponderant position, resulting in high sensitivity of debt service to fluctuations in reference interest rates.

Similarly, in Portugal the ratio of new consumer loans to non-food consumption expenditure has been increasing<sup>132</sup> and in 2018 was similar to the ratio observed at the beginning of the crisis.

<sup>130</sup> According to the *Survey on Income and Living Conditions* (EU-SILC).

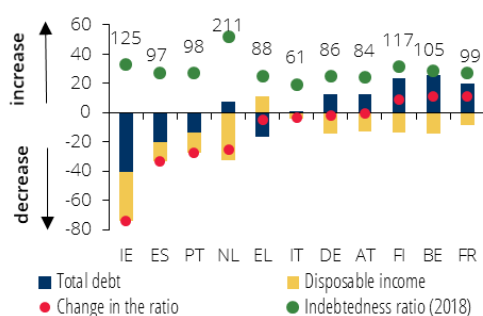
<sup>131</sup> The figures of new loans for house purchase and consumption purposes include renegotiations; however, they have a residual weight in the period under review.

<sup>132</sup> Since the share of consumer credit granted by non-monetary financial institutions increased during the economic recovery, in Portugal the ratio is higher when the amounts granted by these institutions are included (between 2014 and 2018 it stood, on average, at 5.4%, but at 4.0% when only new bank loans are included).

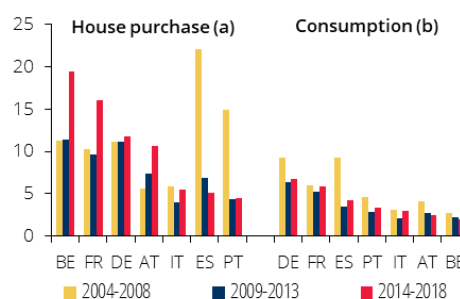
Reflecting these developments, and in line with that observed in countries such as Belgium, Spain and France, the stock of loans for consumption and other purposes has been increasing.

In Portugal and other countries where loans for house purchase, traditionally with a longer maturity, account for a greater share of household indebtedness, deleveraging has been slower than in countries where loans for consumption and other purposes have a greater relative importance.<sup>133</sup> For Portugal, this adjustment is also affected by a longer contractual maturity of loans for house purchase compared to most of the EA12 countries.<sup>134</sup>

**Chart C3.9 • Contributions to the change in households' indebtedness ratio between 2012 and 2018 | Percentage points and percentage of disposable income**



**Chart C3.10 • Developments in new bank loans to households | Per cent**



Sources: Eurostat and ECB (Banco de Portugal calculations). | Notes: (a) Average value of the ratio of new bank loans for house purchase to disposable income; (b) Average value of the ratio between new consumer bank loans to non-food private consumption expenditure.

### The NFCs' sector during the economic recovery

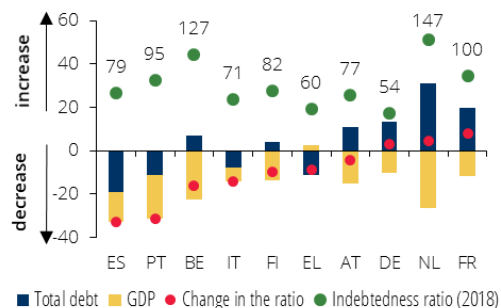
In 2012 the process of reduction of Portuguese NFCs' indebtedness began (Chart C.3.2). The NFCs' debt-to-GDP ratio showed a downward path in most of the EA12 countries, reflecting both the adjustment in firms' balance sheet, particularly in the most indebted countries, and the recovery in economic activity (Chart C.3.11). The adjustment in Spain and, to a lesser extent, in Portugal, was significant, while the Netherlands, France and Germany recorded an increase in their indebtedness ratios. There was an increase of equity in Portuguese NFCs' financial structure, leading to a decrease in the leverage ratio that nevertheless remains high among the EA12 countries<sup>135</sup> (Chart C.3.12).

<sup>133</sup> In 2018, Austria, Greece and Italy were the EA12 countries with the highest share of bank loans for consumption and other purposes in the stock of loans granted to households (over 30%), while Portugal had the fifth lowest share (19%).

<sup>134</sup> According to the report "Hypostat 2018 – A review of Europe's mortgage and housing markets", European Mortgage Federation, in France, Belgium and Germany the average maturity of loans for house purchase was around 18, 23 and 25 years, respectively. This contrasts with the average maturity of 32.7 years in Portugal in 2018 (Banco de Portugal, *Retail Banking Markets Monitoring Report*, 2018).

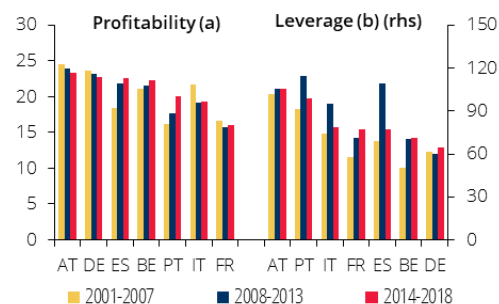
<sup>135</sup> The leverage ratio corresponds to the ratio of NFCs' financial debt to the amount of shares and other equity excluding changes in value (values from the financial accounts). In order to exclude the impact of value fluctuations on the stock of shares and other equity of NFCs, the market value in 2012 was considered as the basis from which net transactions in this instrument were added/deducted in each year. In 2018 this ratio stood at 95% in Portugal, the third highest ratio of the EA12 and higher than the EA12 average of 87%. For an analysis of the latest developments in Portugal, see Chart I.3.31 of Section 3.2.2.

**Chart C3.11 • Contributions to the change in NFCs' indebtedness ratio between 2012 and 2018 | Percentage points and percentage of GDP**



Source: Eurostat (Banco de Portugal calculations). | Notes: Ireland is not represented due to the magnitude of the change in the indebtedness ratio. This country had a significant increase in the NFCs' indebtedness ratio until 2015 and a decrease thereafter.

**Chart C3.12 • Leverage and profitability of NFCs | Per cent**



Source: Eurostat (Banco de Portugal calculations). | Notes: (a) Average value of the ratio of NFCs' gross operating surplus to GDP. (b) Average value of the debt-to-equity ratio, excluding changes in value (Section 3.2.2).

Despite the reduction in leverage, Portuguese NFCs' investment has been recovering since 2013 (Chart C.3.7). At the same time, savings increased, as in Spain and Ireland. Notwithstanding these developments, compared to the other EA12 countries, in 2018 Portuguese NFCs recorded a low saving rate and high net borrowing. The recovery of investment in the post-crisis period is evident in most EA12 countries, together with a recovery in profitability, liquidity build-up and a reduction in the distributed income rate. However, in the most recent period there has been an increase in the distributed income rate in Portugal and in the EA12 (Chart C.3.8).

### Final considerations

The total debt of NFPS in Portugal has been decreasing since the end of the international financial crisis, after reaching high levels both historically and in comparison with other EA12 countries. This is no different from what happened in other countries within the euro area where these sectors were highly indebted, but contrasts with countries which had a more favourable relative position and which have recently recorded increases in the indebtedness ratios of households and NFCs.

Nevertheless, Portuguese households and NFCs have one of the lowest saving rates of the EA12, which stands at a historical low for households. In parallel, the external indebtedness of the Portuguese economy still remains at a high level.

The gradual reduction in NFPS debt results in a decrease in vulnerabilities associated with indebtedness. Despite the progress made, the process of adjusting the financial position of these sectors needs to be maintained in order to make them more resilient to adverse shocks, particularly on income, making it compatible with the need for further investment recovery.

#### Box 4 • Revision of the ECB's supervisory expectations for prudential provisioning of new non-performing exposures

As highlighted in previous issues of the *Financial Stability Report*, the reduction of the high stock of non-performing loans (NPLs), as a result of the economic and financial crisis, was deemed a priority at European level. In this context, it is worth mentioning several initiatives undertaken by the ECB, under the Single Supervisory Mechanism (SSM), as well as the framework introduced by the “Action Plan to Tackle Non-performing Loans in Europe”, which was endorsed in July 2017 by the Economic and Financial Affairs Council (ECOFIN) in the form of Council conclusions.

One of the measures included in the Action Plan is the introduction, for prudential purposes, of common minimum regulatory provisioning levels for newly originated exposures (so-called prudential backstop).<sup>136</sup> This measure was set out in Regulation (EU) 2019/630 of the European Parliament and of the Council of 17 April 2019, amending Regulation (EU) 575/2013 as regards minimum loss coverage for non-performing exposures (NPEs), and entered into force on 26 April 2019. In turn, among other initiatives, the ECB published in March 2018 its supervisory expectations for prudential provisioning of new NPEs.<sup>137</sup>

In very general terms, both initiatives are intended to prevent the excessive build-up of NPEs not sufficiently covered by provisions on banks' balance sheets. On the assumption that the longer an exposure has been non-performing, the lower the probability for recovery of its value, these measures provide for the part of the exposure that should be covered by provisions, other adjustments or deductions to increase with time, following a pre-defined calendar.

Given the close link between both initiatives, the ECB decided, in August 2019, to revise its supervisory expectations, to bring them closer, in a way, to the prudential backstop. The purpose of this box is to outline this revision.<sup>138</sup>

#### Pillar 2 approach set by the ECB in March 2018 ('Addendum')

Supervisory expectations for prudential provisioning of new NPEs were first stipulated by the ECB in March 2018, in the “Addendum to the ECB Guidance to banks on non-performing loans” (hereinafter Addendum).<sup>139</sup> According to the Addendum, the ECB should assess the levels of provisions for NPEs in the significant banks directly supervised by it, taking into account the level of existing credit protection<sup>140</sup> and the length of time an exposure has been classified as non-performing (i.e. its vintage). The supervisory expectations set out in the Addendum distinguish between secured and unsecured parts of NPEs. NPEs are considered unsecured if they do not benefit from credit risk protection as described in the Addendum (Table C4.1).

<sup>136</sup> See *Financial Stability Report*, June 2018 – Box 3.

<sup>137</sup> For the definition of NPE, see Special issue 3. “Concepts used in the analysis of credit quality”, *Financial Stability Report*, November 2016, which follows the definition introduced by the EBA.

<sup>138</sup> This box focuses on the treatment of new non-performing exposures (more specifically, exposures that became non-performing as of 1 April 2018). For the treatment of the stock of non-performing exposures built up before then, see the supervisory expectations for prudential provisioning for the stock of NPEs, released by the ECB on 11 July 2018 and reaffirmed on 22 August 2019.

<sup>139</sup> [https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.npl\\_addendum\\_201803.en.pdf](https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.npl_addendum_201803.en.pdf).

<sup>140</sup> The Addendum outlines the factors to be taken into account when determining the coverage by the credit institution to meet the supervisory expectations for prudential provisioning as well as the types of collateral or other forms of credit risk protection.



**Table C4.1 • Calendar of expectations for coverage of new NPEs to which the Addendum applies (March 2018) | Per cent**

Number of years following its classification as NPE	Unsecured part	Secured part
More than 1	-	-
More than 2	100	-
More than 3	100	40
More than 4	100	55
More than 5	100	70
More than 6	100	85
More than 7	100	100

The ECB assesses NPEs classified as such since 1 April 2018 and, for that purpose, has requested banks to, starting in 2021, inform the ECB of any differences between their practices and the prudential provisioning expectations, as part of the SREP (Supervisory Review and Evaluation Process) supervisory dialogue.

In that process, banks are encouraged to close potential gaps relative to the supervisory expectations by booking the maximum level of prudential provisions possible under the applicable accounting standards. If the applicable accounting treatment does not match the prudential provisioning expectations, banks also have the possibility of adjusting their Common Equity Tier 1 capital on their own initiative. When assessing such divergences, the ECB will consider specific circumstances which may make the prudential provisioning expectations inappropriate for a specific portfolio/exposure.<sup>141</sup>

Finally, the ECB's supervisory expectations for prudential provisioning under Pillar 2 approach are not legally binding and follow a three-step approach: the expectations communicated are (i) a starting point for a supervisory dialogue, (ii) dependent on a case-by-case assessment after being thoroughly discussed during the supervisory dialogue (including analysis of bank-specific circumstances), and (iii) a supervisory measure may be applied under the Pillar 2 framework in the SREP cycle.

<sup>141</sup> More precisely, potential exemptions from supervisory coverage expectations may be considered for NPEs where ongoing regular payments of principal and interest, based on the official debtor's cash flows, will lead to full repayment. The ECB's focus will be on whether the borrower has demonstrated its ability to comply with the post-forbearance conditions (of a sustainable forbearance solution) and/or is expected to be able to repay the outstanding debt in full.

**Pillar 1 approach: the prudential backstop introduced in the CRR**

In early 2019, an amendment to the CRR<sup>142</sup> was approved at European level, establishing prudential minimum provisioning requirements for new exposures when they turn non-performing.<sup>143</sup> This is a Pillar 1 rule, and therefore legally binding and applicable to all banks established in the EU, with the following characteristics:

- It covers exposures originated from 26 April 2019 onwards (when the amendment to the CRR entered into force) when they are classified as non-performing;<sup>144</sup>
- It introduces in the CRR minimum loss coverage for NPEs, which, if not met, obliges banks to make a deduction from their own funds, in an automatic manner;
- The minimum loss coverage for NPEs are (i) progressive depending on the vintage of the NPE and (ii) dependent on the existence and type of eligible collateral for credit risk mitigation.<sup>145</sup>

The following exceptions apply:

- For forbore exposures, the minimum coverage requirement can remain stable for one year after the forbearance measure, without adding to it. This exception is only applicable after the first forbearance measure was applied to each exposure and during the first two (six) years after the uncollateralised (collateralised) exposure is classified as non-performing. After the one-year period, the calendar set by the prudential backstop is resumed, depending on the vintage of the NPE;
- For parts of NPEs guaranteed or insured by an official export credit agency, there are no coverage requirements during interim periods, and the coverage requirement of 100% at the end of the time horizon is that set by the prudential backstop – “after more than 7 years”).

Table C4.2 sums up the minimum coverage requirement for each NPE.<sup>146</sup>

<sup>142</sup> Regulation (EU) No 575/2013 of the European Parliament and of the Council on prudential requirements for credit institutions and investment firms (known as the CRR – Capital Requirements Regulation).

<sup>143</sup> Measure laid down in the “Action Plan to Tackle Non-performing Loans in Europe”, endorsed in July 2017 by ECOFIN in the form of Council conclusions. It is materialised in Regulation (EU) 2019/630 of the European Parliament and of the Council of 17 April 2019, which amends the CRR.

<sup>144</sup> Exposures originated prior to that date are included only if they are forbore after that date and if this forbearance results in an increase in the bank’s exposure to the debtor.

<sup>145</sup> To determine the collateralised part of each exposure, the funded or unfunded credit protection established in the CRR is used as reference, i.e. immovable property, real and financial assets, guarantees and other forms of protection eligible for credit risk mitigation. The factors to be taken into account when determining the coverage of NPEs, for prudential backstop purposes, are outlined in the amendment to the CRR.

<sup>146</sup> The sale/acquisition of NPEs does not interrupt the calendar summed up in Table C4.2.

**Table C4.2 • Prudential backstop (April 2019) | Per cent**

Number of years following its classification as NPE	Unsecured part	Secured part		
		NPEs secured by collateral excluding immovable property	NPEs secured by immovable property	NPEs guaranteed or insured by an official export credit agency
More than 1	-	-	-	-
More than 2	35	-	-	-
More than 3	100	25	25	-
More than 4	100	35	35	-
More than 5	100	55	55	-
More than 6	100	80	70	-
More than 7	100	100	80	100
More than 8	100	100	85	100
More than 9	100	100	100	100

### The ECB's amendment to the Addendum following the publication of the prudential backstop

With the release of the prudential backstop in the beginning of 2019, the ECB started to assess the interaction between the Addendum, under Pillar 2, and the new Pillar 1 rules on the prudential treatment of NPEs, and identified three main differences between the two approaches:

- The prudential treatment of NPEs under the prudential backstop requires all banks to make a deduction from own funds, in an automatic manner, where NPEs are not sufficiently covered by impairments/provisions or other adjustments/deductions. By contrast, the ECB's supervisory expectations, as regards prudential provisioning under Pillar 2, are not legally binding, follow the three-step approach described above, and apply to significant banks directly supervised by the ECB;
- As can be seen in Tables C4.1 and C4.2, the treatment of NPEs under the prudential backstop and in the scope of the Addendum differs in terms of calibration of the calendar's time horizon. The paths towards the adjustments (i.e. 100% coverage) also differ.
- The treatment of NPEs under Pillar 1 only applies to NPEs stemming from new exposures originated from 26 April 2019 onwards,<sup>147</sup> and, as such, does not apply to the stock of NPEs existing prior that date and performing exposures in bank balance sheets originated before 26 April 2019 that may be classified as non-performing in the future.

In that context, the ECB introduced the following changes to the Addendum in August 2019:<sup>148</sup>

<sup>147</sup> Except those mentioned in footnote 144.

<sup>148</sup> [https://www.bankingsupervision.europa.eu/press/letterstobanks/shared/pdf/2019/ssm.supervisory\\_coverage\\_expectations\\_for\\_NPEs\\_201908.en.pdf](https://www.bankingsupervision.europa.eu/press/letterstobanks/shared/pdf/2019/ssm.supervisory_coverage_expectations_for_NPEs_201908.en.pdf)

- The applicability of the ECB's supervisory expectations to the new NPEs, according to the Addendum, was limited to exposures not subject to the prudential backstop. In turn, the NPEs stemming from exposures originated from 26 April 2019 onwards are only subject to the prudential backstop. However, the ECB, within the framework of its supervisory powers, may also apply Pillar 2 measures to such exposures, provided that specific circumstances so warrant it;
- The time horizons relevant to the new NPEs subject to the Addendum were changed, so as to be aligned with those set out in the prudential backstop (Table C4.2);
- For those parts of NPEs guaranteed or insured by an official export credit agency, the expected linear path towards full applicability was eliminated, to align them with that envisaged in the prudential backstop.

The remaining aspects dealing with the treatment of new NPEs included in the Addendum remain unchanged. As such, the Pillar 2 approach continues to differ from the treatment under Pillar 1 as regards forborne exposures, given that coverage expectations will not remain automatically stable in the course of one year, in the case of the first forbearance measure. This is due to the fact that NPEs subject to forbearance measures, under the Pillar 2 approach, are assessed according to bank-specific circumstances

### Box 5 • Basel III – What still needs to change?

In August 2019 the European Banking Authority (EBA) published its response to the European Commission's call for advice on the implementation of the December 2017 Basel III reforms in the European Union. This response includes a wide set of recommendations and a quantitative impact study with respect to the 30 June 2018 baseline, based on a sample of 189 banking groups/institutions from 19 Member States, including Portugal.<sup>149</sup>

Basel III reforms substantiate the set of standards published in December 2017 by the Basel Committee on Banking Supervision (BCBS) which finalise the post-crisis reform package that started in 2010, with the purpose of enhancing the regulatory framework for the banking sector, by changing standards on credit risk, credit valuation adjustment risk (CVA), operational risk, leverage ratio and introducing a new output floor, which will replace the one set in the Basel II agreement.

These reforms aim at reducing the excessive variability of risk-weighted assets (RWAs), seeking to restore credibility in its calculation and enhancing the comparability of capital ratios across institutions and jurisdictions, mainly sustained by increased risk sensitivity of capital requirements calculated according to a standardised approach and the limited use of internal models.

It should be noted that, in January 2019, when the quantitative impact study had already started, the BCBS published the revised market risk standards (the Fundamental Review of the Trading Book – FRTB), thus bringing to a close the reforms launched in 2016 and making profound changes to the architecture and calibration of internal models and the standardised approach used to calculate capital requirements for that type of risk.

#### What will change and what is its expected impact?

- Credit risk – standardised approach (SA)

The Basel III reforms introduce significant changes to the standardised approach for calculating minimum own funds requirements for credit risk. The most relevant of which are:

- subordinated debt, equity and other capital instruments: higher granularity of applicable risk weights, subject to the nature of the exposure (e.g. increase in the risk weight applicable to speculative unlisted equity exposures);
- exposures to institutions (i.e. credit institutions and investment firms): continued possibility of applying risk weights according to external credit assessments, which, in future, must not incorporate assumptions of implicit government support, and, for unrated banks, risk weights will be assigned according to their compliance status to a number of applicable regulatory requirements;
- real estate exposures: higher granularity in the calculation of own funds requirements, based on the type of real estate property (residential or commercial) and the situations whereby the loan repayment materially depends on the cash flows generated by the property (i.e. income-producing real estate exposures). Other significant changes relate to (i) different loan-to-value (LTV) thresholds, in cases where the current loan-splitting approach can be maintained, and (ii) a conservative treatment of the new sub-exposure classes related to

<sup>149</sup> See the EBA's response to the European Commission's call for advice at: <https://eba.europa.eu/eba-advises-the-european-commission-on-the-implementation-of-the-final-basel-iii-framework>.

“income-producing real estate” and “land acquisition, development and construction” exposures;

- exposures to corporates: more granular treatment and preferential risk weights for exposures to small and medium-sized enterprises (SMEs), with a specific lower risk weight for exposures to unrated SMEs;
- retail exposures: more granular treatment, including a sub-exposure class which allows the assignment of a preferential risk weight subject to compliance with specific criteria as to the type of exposure;
- credit conversion factors (CCFs) for off-balance sheet items: revision of the percentages applicable to certain exposures and mark-up of the minimum CCF from 0% to 10%. This change also affects the calculation of own funds requirements for credit risk under the internal ratings-based approach.

The Basel III reform package has left the prudential treatment of sovereigns exposures unchanged.

- Credit risk – internal ratings-based approach (IRB)

With the purpose of mitigating the limitations identified when applying the internal ratings-based approach, more specifically (i) the excessive complexity of this approach, (ii) the lack of comparability of capital requirements due to its application, and (iii) the lack of soundness in the modelling of certain asset classes, the Basel III reforms have introduced a number of changes in this respect, most notably as follows:

- removing the advanced internal ratings-based approach (A-IRB) for asset classes that do not seem to be modellable in a sound and prudent manner and are characterised by a limited availability of historical data on default events (low default portfolios – LDPs). In particular, it is no longer possible to apply the A-IRB to exposures to large corporates, banks and other financial institutions, which must now be treated under the SA or Foundation internal ratings-based approach – F-IRB;
- removing the IRB (i.e. A-IRB and F-IRB) for equity exposures, which must be treated exclusively under the SA;
- introducing minimum input floors for the estimates of probability of default (PD), loss given default (LGD) and the exposure at default (EAD);
- revising the regulatory LGD values (applicable under the F-IRB) from 45% to 40% for unsecured exposures to non-financial corporates.

- Market risk

The FRTB makes profound changes to the architecture and calibration of the internal and standardised approaches for market risk, namely:

- a prescriptive boundary between the trading and the banking books, with new requirements and restrictions on the reclassification of portfolios;
- in the standardised approach, introduction of a more risk-sensitive method, resting on three pillars, more specifically: (i) a sensitivities-based method, to calculate changes in the value of financial instruments driven by certain underlying risk factors; (ii) a default risk capital (DRC) requirement, with the purpose of capturing credit risk in instruments in the trading book; and (iii) a requirement to capture the residual risk of instruments in the trading book;

- in the internal models approach, greater focus on the so-called tail risk, introducing a single Expected Shortfall model and a DRC requirement. The following changes are also foreseen:
  - a) strengthening and improvement of requirements for the approval of the use of internal models, by supervisors, which is now granted on trading desk level, namely with the introduction of a profit and loss attribution test;
  - b) introduction of a risk factor eligibility test to be included in the bank's Expected Shortfall model;
  - c) implementation of more comprehensive risk measurement methods, including the introduction of different capital requirements for non-modellable risk factors;
  - d) introduction of specific liquidity horizons for each type of instrument in the trading book, instead of a single ten-day period.
- the FRTB also provides for a simplified standardised approach for institutions with smaller and less complex trading books.

- Credit valuation adjustment (CVA)<sup>150</sup>

The amendments introduced in December 2017 by the BCBS aim at strengthening the CVA regulatory framework, to align the calculation of the regulatory CVA with the accounting CVA, and to align the CVA regulatory requirements with the FRTB.

The use of internal models is blocked, and the current standardised approach is replaced with a new methodology, the basic approach. The current advanced approach is replaced with the new standardised approach, based on a variance-covariance model, whose parameters follow stringent requirements, subject to prior authorisation by the competent authority.

A measure of proportionality is also introduced, whereby institutions with an aggregate notional value of non-centrally cleared derivatives equal to or below specific thresholds can apply a simplified approach, with requirements similar to those applicable to counterparty credit risk.

It should be noted that, when implementing the abovementioned reforms in the European Union, any elimination of the existing EU CVA exemptions will warrant assessment, which may substantially change the scope of the CVA risk own funds requirements applicable to exposures to derivatives in the case of intra-group transactions, as well as in the case of transactions with qualified non-financial counterparties, pension funds and sovereigns.

- Operational risk

As regards the calculation of operational capital risk requirements, the use of advanced measurement approaches (AMA) will no longer be allowed, while the basic indicator approach and the standardised approach will be replaced with a new standard method, the simplified measurement approach (SMA).

With this new approach, capital requirements are calculated by multiplying a business indicator component (BIC) by an internal loss multiplier (ILM), to reflect the risk of operational losses for the institution. The ILM is a scaling factor which adjusts capital requirements based on the operational losses incurred by institutions over the past ten years.

<sup>150</sup> Adjustment to the mid-market valuation of the portfolio of transactions conducted with a given counterparty, which reflects the current market value of that counterparty's credit risk to the institution.

Under the SMA, internal data on operational losses for institutions with a BIC below EUR 1 billion are not likely to affect the calculation of own funds requirements, given that for these institutions the ILM is set equal to 1. However, the new standards provide for a number of discretions, whose exercise or implementation will have to be considered by the European legislator and whose aim is to allow for a calculation of requirements more adjusted to institutions' risk profile. The most relevant are as follows:

- setting the ILM component to 1 for all institutions regardless of their BIC component or, alternatively, authorisation to use the bank-specific ILM for banks with a BIC component below that threshold;
- using, under certain circumstances, a historical loss experience of less than 10 years to calculate the ILM.

#### • Output floor

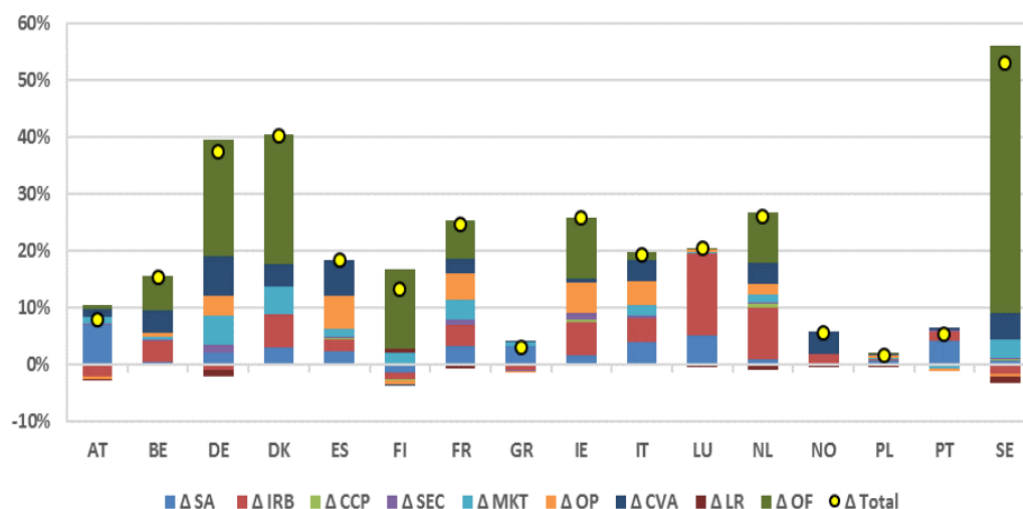
The Basel III reforms also provide for the implementation of an output floor, to ensure that, when setting capital requirements, risk-weighted assets are calculated as the maximum of the total RWAs by means of internal models, and 72.5% of the total RWAs are calculated using only the standardised approaches.

#### • Cumulative impact

The quantitative impact study conducted and published by the EBA in August 2019 is based on conservative assumptions, such as the use of static balance sheets and the extrapolation for 2027 of the Pillar 2 requirements and buffer requirements as of the 30 June 2018 baseline. Furthermore, institutions participating in impact studies on regulatory changes tend to take a conservative stance in their estimates, which means that the exercise naturally gives rise to some uncertainty about its quantification.

It is estimated that this series of reforms could increase the Tier 1 minimum required capital amount by around 24.4% for the European sample, compared with an estimated increase of approximately 5.5% for the Portuguese sample.

**Chart C5.1 • Impacts of the Basel III changes on the Tier 1 minimum required capital, by Member State**



Source: *Basel III reforms: Impact study and key recommendations*, EBA.



In the European sample, the output floor (+9.1%) is the main driver of the impact, followed by the new CVA rules (+3.9%) and operational risk (+3.3%).

The impact of the reform differs among countries, business models and bank size.

Larger institutions (particularly G-SIIs) are affected by the implementation of the output floor, the new operational risk methodology and the estimated increases in the IRB for credit risk. The latter reflects the limited scope of modelling in exposures to banks and financial institutions treated as corporates, as well as the introduction of minimum input floors for specialised lending exposures.

Credit risk under the SA is higher, on average, for smaller institutions, with greater impacts on exposures deemed riskier, namely as regards collective investment undertakings, equity and subordinated debt.

The magnitude of the overall impact estimated by the EBA for the European sample is also due to the removal of EU-specific factors outside the Basel regulatory framework, more specifically the supporting factor applicable to SME exposures to credit risk and CVA exemptions to a number of exposures.

Overall, the estimated impact for the Portuguese sample is below the European average. Credit risk, under the SA and the IRB, predominantly contributes to this impact, followed by the CVA, with a positive effect stemming from operational risk in cases where the bank-specific ILM can be used. The output floor is not an active constraint, unlike the average European sample, given the high average risk weight of the Portuguese banking system (Section 4 , Chart I.4.18).

### When will it change?

The Basel III reforms, finalised in December 2017 and focusing mainly on the Pillar 1 requirements, were accompanied by the update in the Pillar 3 disclosure requirements released in December 2018. Moreover, in January 2019, the BCBS concluded the revision of the standards on market risk.

BCBS members agreed to full, timely and consistent implementation of all these elements by 1 January 2022, with the exception of a number of transitional arrangements until 1 January 2027, such as the gradual phase-in of the output floor.

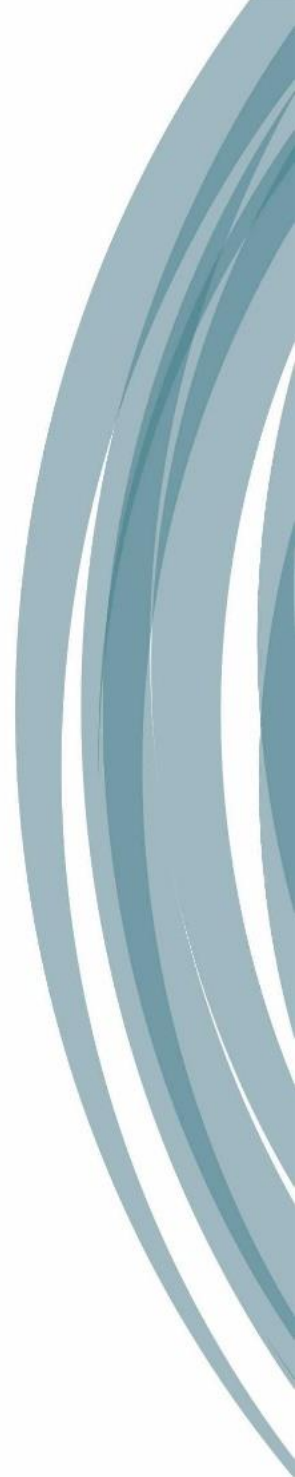
BCBS standards are not directly applicable in the European Union and must be implemented in the European Union law, of which the CRR<sup>151</sup> and the CRD<sup>152</sup> are two examples. They incorporate the post-crisis Basel III regulatory package, except for the last reforms, undertaken in December 2017 and January 2019.

With regard to the measures discussed in this box, the European Commission launched a public consultation ending on 3 January 2020 on the document *Implementing the final Basel III reforms in the EU*<sup>153</sup> to gather input for the implementation of these reforms in the European Union, with a proposed revision to the CRR and the CRD expected to be published in 2020. These reforms are fairly extensive and challenging to institutions, which must start internal preparations for their implementation, continue to monitor and assess potential impacts and plan ahead for the necessary action to address them.

<sup>151</sup> Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms.

<sup>152</sup> 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

<sup>153</sup> See the consultation paper at: [https://ec.europa.eu/info/law/better-regulation/initiatives/finance-2019-basel-3/public-consultation\\_en](https://ec.europa.eu/info/law/better-regulation/initiatives/finance-2019-basel-3/public-consultation_en).





## II Special issues

A review of the literature  
on the impact of the increase  
in financial institutions' capital ratios

Housing price assessment  
methodologies applied to Portugal



# A review of the literature on the impact of the increase in financial institutions' capital ratios

## 1 Introduction

Over the years, the Basel Committee on Banking Supervision (BCBS) has established the rules regarding international banking regulation, with the goal of ensuring both adequacy and consistency among its members' jurisdictions, giving rise to the Basel Accords I, II and III. Basel I was established in 1988 and introduced minimum capital requirements<sup>1</sup> for banking institutions' credit risk for the first time. Capital requirements are designed to minimise the possibility of institutional failure in the banking system, as they make the institutions more resilient and better equipped to absorb adverse shocks originating either in the financial sector or in other parts of the economy. Furthermore, those requirements could disincentivise the institutions from taking on risk, through competitive pressure. Basel II was established in 2006 and implemented thereafter in the EU through proprietary legislation.<sup>2</sup> It structured banking regulation into three pillars – minimum capital requirements, supervisory review and risk management and market discipline – making the prudential system more sensitive to the risks arising from banking activity, by changing the rules for calculating minimum capital requirements. In addition to calculating credit and market risk requirements, operational risk requirements are also considered. Furthermore, in regard to credit risk, changes were introduced to the Standardised approach, including more granular risk weights and the introduction of risk classes. In certain situations institutions also became able to use their own risk management and assessment methodologies to determine capital requirements (the Internal Ratings-Based approach – IRB). The subprime crisis that started in 2007 in the United States (US) had a global impact on financial stability and substantial economic costs, and led to revisions in banking regulation that gave rise to Basel III. This accord essentially intended to improve the banking sector's capacity to absorb economic and financial shocks, aiming for quantitative and qualitative increases in capital requirements. For this purpose, it introduced a more demanding definition of regulatory capital, defined internationally harmonised liquidity requirements for the first time, added leverage ratio requirements and introduced the concept of structural and countercyclical capital buffers. These rules were adopted in the EU through a Regulation and a Directive, known respectively as CRR and CRD IV.<sup>3,4</sup>

<sup>1</sup> Capital requirements are expressed as a percentage of risk weighted assets, and the concept of regulatory capital differs from the concept of equity.

<sup>2</sup> Basel II was implemented in the EU between 2006 and 2007 through Directive 2006/48/EC of the European Parliament and of the Council of 14 June 2006 and Directive 2006/49/EC of the European Parliament and of the Council of 14 June 2006.

<sup>3</sup> Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 (known as the Capital Requirements Regulation or CRR) and Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 (known as the Capital Requirements Directive or CRD IV).

<sup>4</sup> For more details on the history of prudential regulation, see Part II, Chapter 2 of the White Paper on the Regulation and Supervision of the Financial Sector, Banco de Portugal (2016).

Generally, the three Basel Accords set increases in the capital requirements for institutions and relaunched, at different points in time, the debate on the costs and benefits of having a banking system operating with higher capital requirements.<sup>5</sup> On the one hand, higher capital requirements increase institutions' resilience and mitigate the procyclicality of leverage, thereby reducing the economic costs of financial crises (Admati and Hellwig, 2014). On the other hand, if most institutions choose to comply with higher capital requirements chiefly by reducing the credit supply, instead of effective increases in capital, then the more stringent capital requirements could negatively affect economic activity (Kashyap et al., 2010 and Hanson et al., 2011). The literature is not consensual over the impact of an increase in capital requirements on financial intermediation and economic activity, due to uncertainty over the strategy used by institutions to comply with the regulatory changes and the degree to which costs pass through to customers. However it is widely held that up to certain levels, the long-term benefits of these increments to requirements exceed their costs, with a higher marginal benefit from increasing capital requirements when the capital ratios are lower (Miles et al., 2013, Dagher et al., 2016 and Cline, 2016).<sup>6</sup>

The costs and benefits in economic terms of an increase in capital requirements are generally measured through the impact of this increase on lending, on economic activity and on the probability of financial crises occurring. Regarding the costs, these pass through the institutions' lending channel to customers by reducing the volume of financing available and/or increasing the interest rates applied. In turn, this situation may lead to a slowdown in investment and consumption of economic agents, with negative consequences for economic growth. Benefits are often measured by the reduction in the probability of a financial crisis occurring, or by comparing the economic slowdown in a crisis scenario with capital requirements with that of a scenario without capital requirements. The net benefit is then the difference between the benefits and the costs. However, while the costs are usually calculated for the short and long terms, the benefits are essentially determined only in the long term as in the short term they are generally quite low. This is relevant as while in the short term the costs may exceed the respective benefits, in the long term, the literature is unanimous that the net benefit is positive, as shown in the next section. The unanimity over the long-term net benefits varies according to the starting point of the capital ratios. Above a relatively high level of the regulatory capital ratio, opinions diverge, but are nevertheless consensual regarding more extreme levels, at which the costs exceed the benefits as a result of the capital's lower efficiency in reducing the probability of crises occurring. According to Dagher et al. (2016), the marginal benefit of institutions' greater capitalisation is initially high but falls off rapidly when capital requirements of 15% and 23% of risk weighted assets are reached (the interval seen as optimal by the above authors for capital requirements after considering the benefits and costs of an increase).

Understanding the transmission mechanisms to the economy and the potential impact of increasing capital requirements is key to implementing macroprudential and microprudential policies, as these policy areas are responsible for setting adequate levels for the capital instruments introduced by the Basel Accords. Therefore this special issue primarily analyses the banking institutions' possible adjustment strategies under more demanding capital requirements, reflecting on the potential impact that the financial institutions' decisions may have on the economy. Secondly, it presents a literature review, which includes, among others, contributions from academia, the private sector and policymakers, dating to 2000-2019, on the impact of changes to capital requirements on a set of financial variables and on economic activity.

<sup>5</sup> For more details on this discussion, see Aiyar et al. 2015 and Dagher et al. 2016.

<sup>6</sup> The capital requirement is the ratio of regulatory capital required by the microprudential supervisor and macroprudential authority, while the capital ratio is the ratio of regulatory capital held by the institution that comprises the capital requirement and the voluntary capital buffer.

## 2 Transmission mechanisms of an increase in capital requirements

With higher regulatory capital requirements involving adjustments to the institutions' capital ratios, the institutions must essentially choose between two adjustment strategies: (i) increase the regulatory capital (the capital ratio numerator); or (ii) reduce risk weighted assets (the capital ratio denominator).<sup>7</sup> To increase regulatory capital, i.e. the capital ratio numerator, the institutions can issue equity, increase net income from their financial intermediation activity or increase the retention rate of net income, reducing the dividend distribution.<sup>8</sup> To increase net income, institutions may for example reduce operating costs through efficiency gains, take on more risk by increasing lending, namely to riskier borrowers at higher interest rates which will also have consequences for the risk weighted assets, or increase credit risk premia across all risk classes. However the last two options will be affected by the competition level in the credit market, among other things. To reduce risk weighted assets, i.e. the capital ratio denominator, the institutions may reduce total assets, for example by reducing credit supply or divesting part of their asset portfolio, or change the risk level implicit in their asset portfolio, choosing lower-risk assets in place of higher-risk assets.

Figure 1 shows some of the possible adjustment channels to an increase in capital requirements. The institutions' choice regarding the adjustment strategy may also depend on the existence of voluntary capital buffers<sup>9</sup>, as these vary according to the institution's risk profile and the macroeconomic and financial environment in which they operate. Assuming there is a sufficiently large voluntary capital buffer to accommodate higher prudential ratios, two situations may occur: (i) the institutions use the voluntary capital buffer to comply with the higher capital requirement; or (ii) the institutions decide to keep the voluntary capital buffer and the higher capital requirement must be complied with via one or more of the strategies outlined above. In the first situation, an increase in the capital requirement may not be reflected in a proportional increase in the institutions' capital ratios. Use of these voluntary capital buffers to bridge the gap between the institutions' requirements and their capital ratios does not create costs for their customers in theory. However, this approach does not actively contribute to an increase in the financial sector's resilience. This partial pass-through, based on the potential difference between the requirements and the observed ratios, is an important factor in measuring any impact from changes to the regulatory requirements on lending and, as a result, on economic activity.

An increase in capital requirements may also lead to a transfer of financial intermediation from the banking to the non-banking sector which is generally less regulated. If increases to capital requirements place significant constraints on non-financial private sector financing, this could open the way for entities subject to fewer regulatory requirements to finance this sector. As documented in Acharya et al. (2013), the increasing regulation in the banking sector has contributed to an increase in the non-banking sector's market share. This topic is also approached

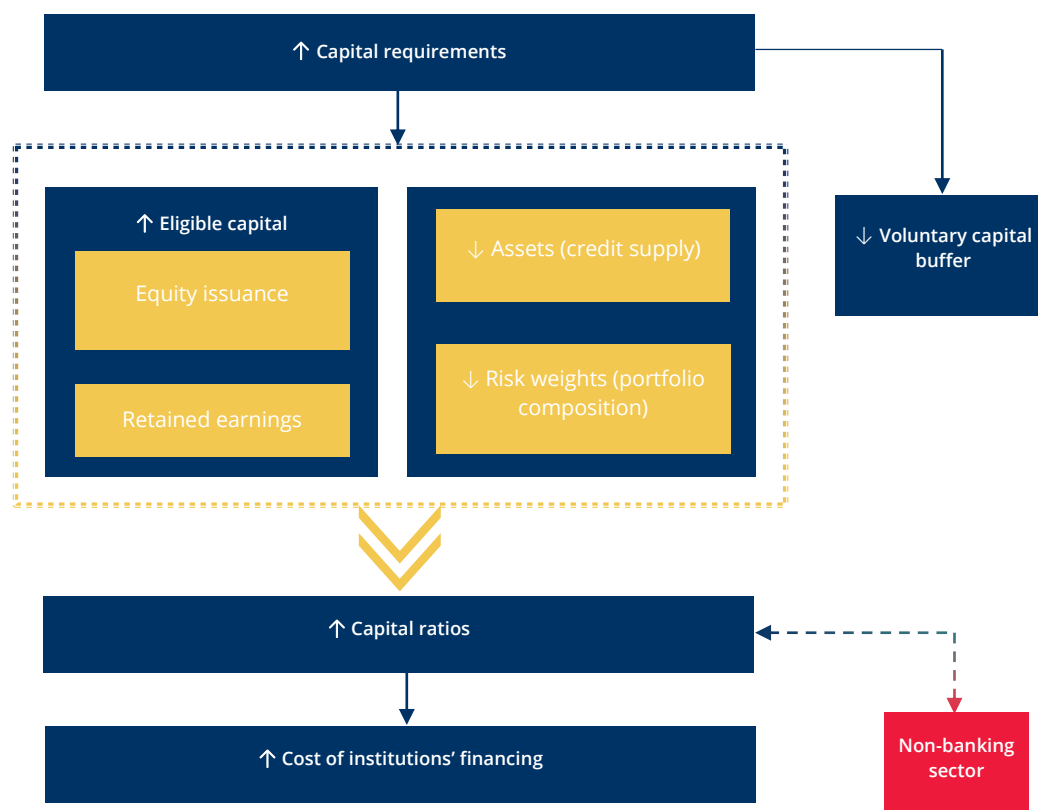
<sup>7</sup> The regulatory capital ratio is defined as the ratio between own funds (regulatory capital) and total risk-weighted assets. There are three levels of regulatory capital: common equity tier 1, additional tier 1 and tier 2.

<sup>8</sup> Issuing equity may be the least attractive option from the point of view of the institution's shareholders as it tends to reduce the existing shares' market value, as discussed in Myers and Majluf (1984).

<sup>9</sup> The voluntary capital buffer is defined as the difference between the institution's regulatory capital ratio and the capital requirement applied.

by Buchak et al. (2017), whose findings for the US indicate that the non-banking sector has doubled its market share between 2007 and 2015, following the introduction of new regulatory requirements.<sup>10</sup>

**Figure 1 • Adjustment channels under an increase in capital requirements**



Source: Adapted from BCBS (2016).

The different adjustment strategies affect the credit supply in different ways, as presented in Table 1. While equity issuance and the use of retained earnings essentially contribute to an increase in financial sector resilience via an effective increase in regulatory capital, the decline in credit provision and the change in the asset portfolio's risk composition may also contribute to a change in the financial institution's risk profile. The financial institution's equity issuance will tend not to have a direct and total impact on the lending channel if the additional cost for shareholders is not transmitted to customers. However, if the institution opts to minimise the impact of equity issuance on the shareholders' return via an increase in net income, it is likely to record, for example, an increase in interest rates. Regarding the change in the asset portfolio's risk level, the

<sup>10</sup> The case of Portugal is completely different from the international situation. Between 2010 and 2017, the investment funds' assets in the EU doubled, while in Portugal they fell around 27%. In the end of the period, in Portugal the non-banking sector represented 20% of the financial assets, while at UE level it accounted for 40%. For more details, see Special sissue "Investment funds as a source of systemic risk" in the December 2018 issue of the *Financial Stability Report*.



impact on the credit supply to the economy is ambiguous, depending largely on the choice between reducing assets and/or average risk weight. As a result, while the asset reduction helps increase the capital ratio, with an underlying reduction in credit to the economy, the replacement of higher risk-weighted assets with lower risk-weighted assets means that this increase in the capital ratio is not necessarily reflected in the credit volume. This may occur if the institutions choose to replace the non-financial private sector exposure with sovereign exposure. However, despite the possibility that the volume of lending to the economy is unaffected, this adjustment may be reflected in economic activity, given the potential reduction in private investment.<sup>11</sup>

**Table 1 • Adjustment strategies following an increase in capital requirements.**

Adjustment strategy	Option	Impact
Capital increase	Equity issuance	Potential reduction in the market value of shares and returns for shareholders. Nil or negative impact on the credit supply side.
	Retained earnings	
Reduction of assets	Credit supply	Reduction of credit supply via a reduction in credit volume or increase in the interest rate/risk premium.
Reduction of average risk weight	Portfolio risk composition	Reduction of investment in assets with greater risk weight. The impact on credit depends on how the institutions make this adjustment to the risk level.

Each of these adjustment strategies involves different costs and benefits for the institutions and the economy. In practice, the strategy adopted by the institutions depends on various factors, namely the time available to accommodate the regulatory changes and the prevailing financial and economic conditions. For example, the introduction of an increase in capital requirements after a financial crisis associated with excess credit growth is likely to lead institutions to choose a deleveraging process due to the low likelihood of creating positive net income or issuing equity at sustainable prices in such circumstances.

In terms of regulatory capital requirements, microprudential requirements should be distinguished from the macroprudential buffers. The former aim to ensure that the institutions are financially sound, so that they are able at all times to fulfil their obligations to depositors and other economic agents. The macroprudential buffers are intended to ensure the stability of the financial system as a whole, so that it contributes to economic growth on a sustainable basis. Furthermore, failure to comply with minimum microprudential capital requirements could result in revocation of the banking licence or the launching of a resolution process, which is why these requirements are called ‘hard’ capital requirements. In turn, the macroprudential buffers are termed ‘soft’ capital requirements, as non-compliance does not result in revocation of the banking licence. However, the institutions become subject to restrictions on dividend distribution, among other things, and the need to present a capital conservation plan.

<sup>11</sup> Note for example that the risk weight on households’ financing for house purchase, which tends to dominate household credit, is in general lower than the risk weight for financing non-financial corporations.

### 3 Estimates of the impact of a change on the capital ratio

This section presents the main conclusions of a set of studies analysing the impact of changes in the capital ratios on the banking sector's financial intermediation activity and economic activity.<sup>12</sup> We start by presenting some of the factors that distinguish the different studies and that should be taken into consideration when analysing the results.

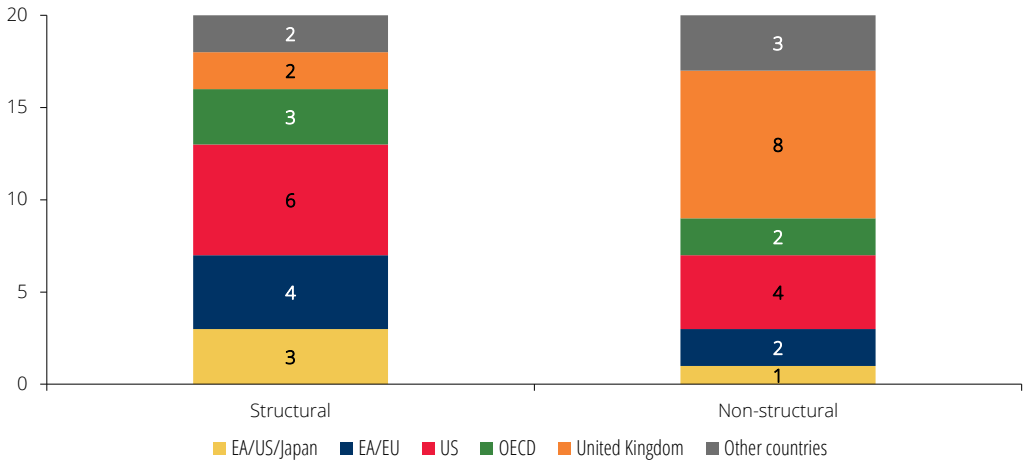
The models used in the studies analysed fall into two groups: structural models and non-structural models, as illustrated in Chart 1. The structural models, such as the dynamic stochastic general equilibrium models (DSGE), include the interconnections between the financial sector and the other economic sectors allowing to quantify the ex-ante impact of changes in the capital ratios on macroeconomic and financial variables, considering distinct scenarios for the institutions' adjustment. They also make it possible to analyse the transmission mechanisms and second-order effects. Meanwhile, the non-structural models are essentially empirical and allow validation of the results obtained through the structural models, generally more theoretical, using observations of the relevant variables. These models are relatively attractive as they offer an easy way to quantify the impact, although they omit the transmission mechanisms of that impact as they do not explicitly take into account how the institutions adapt to changes in the capital ratios. Moreover, many of the studies also grapple with the difficult task of isolating the impacts arising exclusively from increases in capital requirements. As mentioned above, an increase in the capital requirement does not necessarily lead to an increase in the institutions' regulatory capital ratio. Also, the institutions may decide to increase the regulatory capital ratio without the authorities issuing a new requirement. Therefore the estimates for the impact obtained from the observed capital ratios may be seen as less accurate as the ratios react to various factors. The structural models provide a way around this problem inherent to most of the more empirical studies. However, the specification of structural models requires a set of simplifying assumptions and hypothesis that allow for a stylised characterisation of the economy and financial system.

The 40 studies reviewed in this special issue are also distinct in terms of geographical coverage. Chart 1 shows that most studies use information from the United Kingdom and the US. This could be due to the availability of relatively disaggregated data with a sufficiently large time span that permits the use of econometric approaches. However, it is also important to note that there are studies that consider a broad set of countries, such as the euro area or a sample of countries from the Organisation for Economic Co-operation and Development (OECD)

Traditionally, the literature presents estimates of the short and long-term impacts. The short-term impacts should be interpreted as the transitional effect on credit supply and economic activity, taking place while the banking sector adjusts to a new state, characterised by higher capital requirements. This impact is essentially driven by the strategy chosen and speed with which the institutions decide to adjust to the new circumstances. The long-term impacts are linked to the permanent effects on credit supply and economic activity after total convergence of the banking system to the new state. Most studies provide estimates for the impact on the interest rate, the risk premium, the volume of credit and GDP. However, some studies also look at the impact on other macroeconomic variables, such as investment and consumption, or financial variables such as the institutions' financing cost.

<sup>12</sup> The Bank of International Settlements has an online repository of studies on the effects of financial regulation. It is called FRAME (Financial Regulation Assessment: Meta Exercise, <https://stats.bis.org/frame>) and it sets out to publish and track research into this topic. For more information, see Boissay, Cantu, Claessens and Villegas (2019).

**Chart 2 • Geographical coverage of the studies analysed and breakdown of non-structural and structural models | Number**



Notes: EA – euro area and OECD – Organisation for Economic Co-operation and Development. “Other countries” includes studies based on the Canadian, French, Swedish and Swiss economies.

Tables 2 and 3 present a summary of the characteristics of the studies analysed in this special issue, along with their respective estimates of the impact of a 1 p.p. increase in the capital ratio. The type of model used to study this topic is quite diverse, which has the advantage of reducing the modelling process’s inherent uncertainty up to a point. Also, most studies focus on the long-term impact on the variables of interest which allows sounder conclusions to be drawn over the magnitude of the impact in this time horizon regarding shorter time horizons. As a result, the short-term and particularly the medium-term effects should be seen as indicative due to lack of available evidence. In general, the estimates of the impact are strongly heterogeneous whatever the variable analysed. However, results must always be compared with caution because the studies differ, among other aspects, in terms of the assumptions used, the geographies considered and even the questions they aim to answer. Nevertheless, Table 4 presents some descriptive statistics for the long-term impact of an increase in the capital ratio on financial intermediation and economic activity with the goal of partially summarising the information presented in Tables 2 and 3. On average, the studies estimate a positive long-term effect on the interest rate and risk premium and a negative long-term effect on credit and GDP. However, there is clearly a lot of uncertainty over these results, particularly in regard to the impact on credit, as the distribution of estimates is somewhat broad.

Table 2 • Impact of a 1-p.p. increase in the capital ratio (structural models)

Study	MM	Period	Effect	Countries	Model	Interest rate (b.p.)	Risk premium (b.p.)	Volume of credit (%)	Rate of change of credit (%)	GDP (%)
Furfine (2000)	-	1989-1997	ST	US	DGE				-5.46	
BCBS (2010)	No	1980-2008	LT	13 OECD	Several, including DSGE <sup>(a)</sup>	13				-0.09
De Resende et al. (2010)	No	-	ST e LT	Canada	DSGE	ST: 31***, 61.3* LT: 1.7	ST: -0.26***, -0.29* LT: -0.06	ST: -0.06***, -0.1* LT: -0.02		
IIF (2010) <sup>(c)</sup>	No	2005-2009	ST e MP	EA, US and Japan	VAR	2011-2015 <sup>(b)</sup> : 38 (Japan); 67 (EA); 84.5 (US) 2011-2020 <sup>(b)</sup> : 30 (Japan); 48.5 (EA); 68 (US)		2011-2015 <sup>(b)</sup> : -2.15 (EA); -1.3 (US); -0.95 (Japan) 2011-2020 <sup>(b)</sup> : -2.2 (EA); -1.35 (US); -0.75 (Japan)		
MAG (2010)	No	-	ST	17 OCDE	Several, including DSGE <sup>(a)</sup>	Mean: 18.6 Median: 15.5		Mean: -0.16 Median: -0.1		
Roger e Višek (2011)	No	-	ST e LT	EA and US	DSGE	ST, ↑ income: 60 (EA); 65 (US)*  ST, ↓ assets: 12.5 (EA); 15 (US)* ST, ↑ income: 40 (EA); 45 (US)** ST, ↓ assets: 7.5 (EA, US)**	ST, ↑ income: -0.30 (EA); -0.25 (US)*  ST, ↓ assets: -0.45 (EA, US)* ST, ↑ income: -0.20 (EA, US)** ST, ↓ assets: -0.25 (EA); -0.3 (US)**			
Slovik e Cournéde (2011) <sup>(d)</sup>	No	-	MP	EA, US and Japan	Accounting; VAR	Japan: 8.4 EA: 14.3 US: 20.5	LT, ↑ income: 7.5 (EA); 10 (US) LT, ↓ assets: 2.5 (EA, US)	LT, ↑ income: -0.05 (EA); -0.1 (US) LT, ↓ assets: -0.05 (EA, US)		Japan: -0.06 EA: -0.04 US: -0.02
Angelini and Gerali (2012)	-	-	LT	EA	DSGE	0.31		↑ income: -1.96 ↑ retained earnings: 0.08		↑ income: -0.36 ↑ retained earnings: -0.05
Roger e Vítek (2012)	-	-	ST	15 OCDE	Unobserved components model			Eligible capital issuance: 0		Without monetary policy: -0.49 With monetary policy: -0.12

Study	MM	Period	Effect	Countries	Model	Interest rate (b.p.)	Risk premium (b.p.)	Volume of credit (%)	Rate of change of credit (%)	GDP (%)
Oxford Economics (2013) <sup>(d)</sup>	No	-	LT	US	Accounting; VAR; DSGE	RROE (10%); ↓ expenses by 10%: 0.61 RROE (12%): 12.12 RROE (15%); liquidity requirements: 32				↑ eligible capital; monetary policy: -0.03 ↑ eligible capital; RROE(12%): -0.14 ↑ eligible capital; ↑ interest rate (32 bp): -0.29 ↓ assets: -0.8
Corbae and D'Erasmio (2014)	No	1996-2010	-	US	DGE	25				
Covas and Driscoll (2014)	No	1997-2012	LT	US	DSGE	0.67	-0.13			-0.02 Imposition of liquidity requirements: -0.05
Meeks (2014)	-	1989-2008	LT	United Kingdom	SVAR		Households: -0.4 Firms: -1			
Noss and Toffano (2014)	-	1986-2010	LT	United Kingdom	SVAR		-4.5b)		-0.85	
Mendicino et al. (2015)	No	2001-2013	LT	EA	DSGE		Households: 2.8 Firms: 4.9	-0.15 Firms: -0.43		-0.04
Behn et al. (2016)	-	1995-2014	LT	European Union	GVAR					Mean <sup>(e)</sup> : -3.58 (C1); -2.29(C3); 0.42 (C2) Median <sup>(e)</sup> : -3.8 (C1); -2.2 (C3); 0.4 (C2)
Gross et al. (2016)	-	1999-2014	LT	European Union	GVAR					Mean <sup>(e)</sup> : -1.9 (C1); -1.15 (C3); 0.41 (C2) Median <sup>(e)</sup> : -1.2 (C1); -0.8 (C3); 0.3 (C2)
FRB of Minneapolis (2016)	Yes	2010-2015	LT	US	SVAR	5.7				-0.06
Almenberg et al. (2017)	-	1997-2016	LT	Sweden	DSGE		16			-0.11
Firestone et al. (2017)	Yes	1988-2014	LT	US	SVAR	6.9				-0.07

Source: Banco de Portugal. | Notes: For comparability of results, the impact of the regulatory capital ratio increase is assumed to be linear in certain situations. EA - euro area, IIF - Institute of International Finance, MAG - Macroeconomic Assessment Group, BCBS - Basel Committee on Banking Supervision, RROE - required return on equity. a) The models used to measure the impact also include non-structural models. b) The result presented is the estimated cumulative impact. c) Results relating to differences in the rate of change, taking into account the changes from the regulatory reforms introduced after the crisis and converted into a 1-p.p. increase in the capital requirements. d) The model used to determine the effects on the interest rates/risk premium is not structural. e) Result in percentage points of difference in expected growth. S1 - scenario 1, S2 - scenario 2, S3 - scenario 3, ST - short term, LT - long term, MT - medium term. \* Results from a two-year implementation period. \*\* Results from a four-year implementation period. MM signifies applicability of the Modigliani and Miller theorem.

A review of the literature on the impact of the increase in financial institutions' capital ratios

**Table 3 • Impact of a 1-p.p. increase in the capital ratio (non-structural models)**

Study	MM	Period	Effect	Countries	Model	Financing cost (b.p.)	Interest rate (b.p.)	Risk premium (b.p.)	Volume of credit (%)	Rate of change of credit (%)	GDP (%)
Elliott (2009)	Yes	-	-	US	Accounting	5	19.3				
Francis and Osborne (2009)	No	1996-2007	LT	United Kingdom	Panel regression				[-1.2; -0.8]		
Bank of England (2010)	-	-	-	United Kingdom	Accounting			7			-0.01
Kashyap et al. (2010)	Yes	1996-2009	LT	US	Accounting	13	[2.5; 4.5]				
King (2010)	No	1993-2007	LT	13 OECD	Accounting			15			
Cosimano and Hakura (2011)	No	2001-2009	LT	12 OECD	Simultaneous equations		100 largest institutions: 12.2 With banking crisis: 9 Without banking crisis: 13				
Schanz et al. (2011)	No	-	LT	United Kingdom	Accounting			7.4			-0.04
	No							↑ commissions: ↓ operational costs: 4.9			↑ commissions; ↓ operational costs: -0.03
	Yes							↓ financing costs: 1.6			↓ financing costs: -0.01
De-Ramon et al. (2012)	No	1992-2010	ST and LT	United Kingdom	Panel regression				-1.6		-0.15
								ST, households: 6.7 ST, firms: 19 LT: 9.4			
Elliott et al. (2012)	Yes	-	-	EA, US e Japan	Accounting		Japan: 6 EA: 10 US: 20				

Study	MM	Period	Effect	Countries	Model	Financing cost (b.p.)	Interest rate (b.p.)	Risk premium (b.p.)	Volume of credit (%)	Rate of change of credit (%)	GDP (%)
Maurin and Toivanen (2012)	-	2005-2011	LT	EA	Panel regression					[-2.3; -2]	
Brooke et al. (2015)	Yes	1993-2014	-	United Kingdom	Accounting		10 <sup>(a)</sup>				-0.05
Fraisse et al. (2015)	No	2008-2011	CT	France	Panel regression				Intensive margin: -1 Extensive margin: -8		
Mésonnier and Monks (2015)	-	2011-2012	CT	France	Panel regression					-1.2	
Aiyar et al. (2016)	-	1998-2007	CT	United Kingdom	Panel regression					-4.6	
Dagher et al. (2016)	-	1996-2011	LT	US	Panel regression		18.6				

Source: Banco de Portugal. | Notes: For comparability of results, the impact of the regulatory capital ratio increase is assumed to be linear in certain situations. EA - euro area. a) The results presented are estimates of the impact of a 1-p.p. increase in the leverage ratio. ST - short term, LT - long term, MT - medium term. MM signifies applicability of the Modigliani and Miller theorem.

**Table 4 • Long-term impact of a 1 p.p. increase in the capital ratio**

	Interest rate (b.p.)	Risk premium (b.p.)	Volume of credit (%)	GDP (%)
<b>Minimum</b>	0.31	1.2	-4.5	-0.32
<b>Mean</b>	8.68	7.94	-1.1	-0.11
<b>Maximum</b>	18.8	16	-0.06	-0.02
<b>Number of studies</b>	10	9	9	14

Notes: Only the impact of studies explicitly mentioning that they estimated long-term effects were considered. In studies presenting multiple estimates, the simple mean of the impact was considered.

In what follows, the focus is on some of the studies analysed in this special issue, highlighting factors that may explain the diversity of estimates obtained, and analysing the complexity involved in obtaining estimates for the impact of changes to the regulatory capital ratio. In the first part, the issue of increasing financing costs of the institutions is discussed and how this cost is transmitted to economic agents. The discussion of the transmission channels begins by analysing the details of the structural models considered, paying particular attention to the DSGE models that measure the impact of different implementation periods and make a distinction between short and long-term effects. The second part discusses some of the strategies used to reduce the uncertainty associated with impact estimates and the potential impact of economic and financial conditions. Lastly, we look at the importance of voluntary capital buffers in the transmission of costs, despite the low number of studies on this topic.

The effective increase in the capital ratio may be linked to a higher financing cost for the institutions. This cost is related to possible assumptions about the degree to which the Modigliani and Miller theorem (1958) applies. According to this theorem, under certain assumptions, the average financing cost is independent of the institution's capital structure. Despite the fact that most studies consider that the theorem does not fully apply, due to the strong assumptions, in particular regarding the absence of taxes and transaction costs, some place assumptions on the level of the theorem's applicability, called "offset".<sup>13</sup> Under the assumption of an increase in the financing costs following an increase in the capital ratio, these can pass through, in full or in part, to the institutions' customers through the increase in the interest rate or risk premium. In this scenario, the financial institutions aim to increase their revenues to offset the costs of increasing the capital ratio. Aside from the price effect, there may also be a contraction of lending to the economy through a reduction in demand for credit.

Regarding the increased financing cost for institutions, Kashyap et al. (2010), Miles et al. (2013), Junge and Kugler (2013) and Baker and Wurgler (2015) analyse this in different financial systems: the US, Switzerland and the United Kingdom respectively. The estimates for the increase in institutions' financing cost are considerably lower in the studies of European banking systems compared to those of the US banking system. This impact is directly related to investors' required return on capital, as is shown in Junge and Kugler (2013) where the sample and the time period considered strongly influence the estimate for the financing costs. Based on these estimates for the increase in the financing cost for institutions, these studies approach its pass-through to customers through the interest rates or risk premia, ignoring the possibility of the institutions reducing or simultaneously restructuring their asset portfolio. Kashyap et al. (2010), Miles et al. (2013) and Baker and Wurgler (2015) assume a total pass-through of costs to

<sup>13</sup> A 100% offset suggests that there are no costs to changing the composition of capital and, as such, the theorem applies in full. A 0% offset suggests that the theorem has no validity.

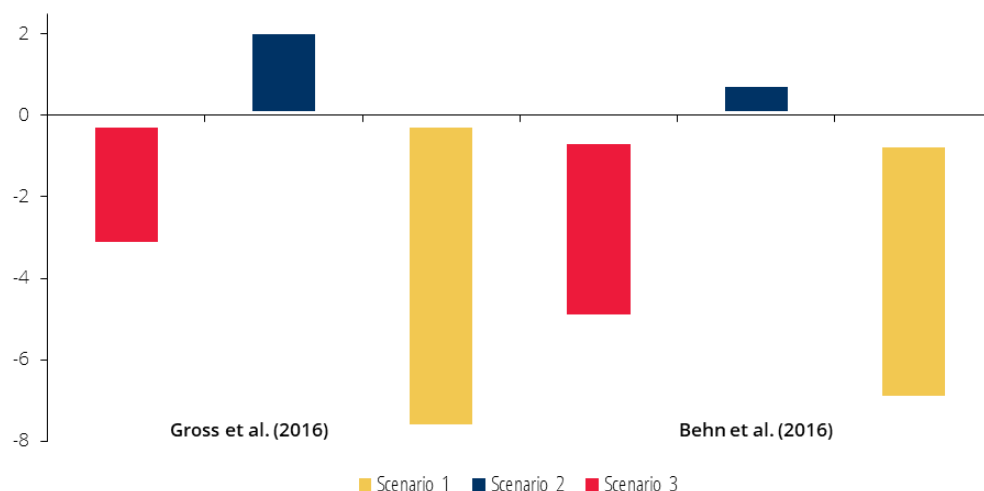


customers, while they may consider different levels of applicability of the Modigliani and Miller theorem (1958). Junge and Kugler (2013) look at the possible effects of the theorem by applying different levels of costs passing through to customers. In terms of interest rate and risk premium, the results indicate a greater increase in the United Kingdom than in the US, despite having a lower estimated financing cost. The results also indicate a sharper increase in the risk premium applied to firms compared to households. The higher the percentage of financing costs transmitted to the customers is and the less valid the Modigliani and Miller theorem (1958) is, the more negative are the estimates for the long-term impact on GDP.

The impact of different transmission channels is assessed in a small number of studies based essentially on structural models, in particular DSGE models. Considering the financial sector's growing level of regulation, in particular the increase in capital requirements, Cohen (2013) investigates the way in which 82 financial institutions from advanced economies and emerging markets made the adjustment to the new state. That study describes the approaches used, but the explanations of the institutions' different decisions are not discussed. The results indicate that the increases have been achieved primarily via an increase in retained earnings, with the choice of changing the asset portfolio composition coming in second place. Equity issuance is given as the least probable mechanism, given its negative effect on the institution's market value. These results are in line with the mechanisms most used in the DSGE models for measuring the impact of an increase in the capital ratio, in which the costs are transmitted to the non-financial private sector via an increase in interest rates/risk premium.

Angelini and Gerali (2012) is one of the few studies that quantifies the long-term impact of institutions' different adjustment strategies on economic activity. This study gives the following estimates for the long-term impact on GDP: (i) nil where the adjustment involves equity issuance and (ii) negative where the adjustment involves increased use of retained earnings or the growth in income by raising the interest rate. However, the reduction in GDP is more significant in the latter case. Behn et al. (2016) and Gross et al. (2016) also explicitly consider the impact of the institutions' different adjustment mechanisms. The impact of these mechanisms is simulated in three scenarios. In scenario 1, the adjustment is exclusively made by changing the asset portfolio composition and respective risk weights, while in scenario 2 the adjustment exclusively involves raising equity or increasing the retained earnings. However, an increase in the capital ratios totally based on the increase in equity is not expectable because the institutions may not manage to raise all the capital they need at a reasonable cost or because competitive pressure does not allow the financing cost to be passed through to customers. Thus scenario 3 relates to the possibility of the institutions simultaneously using the two mechanisms referred to in scenarios 1 and 2. Both studies were based on a Mixed-Cross-Section Global Vector Autoregression (MCS-GVAR) model, differing only in the number of equation blocks introduced, to estimate the impact on the GDP's rate of change for a total of 13 EU countries. Thus, the magnitude of the impact obtained from these studies is not directly comparable with that obtained from the others, as the impact on GDP's rate of change is considered instead of the level. The results presented in Chart 5 show that when the institutions choose to issue equity and/or retain a greater proportion of income following the increase in the capital requirements, the long-term effect on GDP's rate of change is positive for all the countries considered. However, the impact is quite negative when the risk profile is changed or when the institutions deleverage (scenario 1). The mechanism associated with scenario 3 also indicates a negative but more moderate impact than scenario 1.

**Chart 3 • Impact on real GDP's rate of change under different types of adjustment by the institutions to an increase in capital requirements | Per cent**



Source: Behn et al (2016) and Gross et al. (2016). | Notes: In scenario 1 the adjustment is made via the asset portfolio and respective risk weights, while in scenario 2 the adjustment is via the effective increase in the institutions' regulatory capital. Scenario 3 relates to the possibility of the institutions simultaneously using the two mechanisms referred to in scenarios 1 and 2.

Oxford Economics (2013) presents a simulation exercise in which the capital ratio increases exclusively through a reduction in the risk-weighted assets, and estimates that the cost to the economy, measured by the impact on GDP, would be substantially higher than the cost of an increase in the institutions' income from increasing interest rates or the risk premium. Despite the adverse consequences for the economy, a possible justification for institutions using this channel is the inability of these institutions to raise all the capital needed at a reasonable cost or the fact that competitive pressure prevented the increase in the financing costs from passing through to customers. Roger and Vlček (2011) also analyse the differences between a deleveraging scenario and a scenario of increasing income to comply with the capital requirement. These authors conclude that in the long term, the impact on economic activity is similar and significantly lower than the estimates obtained by Oxford Economics (2013). However, the impact on the risk premium is greater in the scenario of increasing income.

In general, the studies comparing the institutions' different adjustment mechanisms conclude that the long-term impact on economic activity could be lower if the institutions choose to adjust via the numerator, i.e. by increasing eligible capital. However, it should be noted that in reality, institutions tend to combine the options available and therefore the impact should be more moderate than that presented in the literature, which should be interpreted as the results under a worst-world scenario.

Despite certain structural models, such as the DSGE models, considering the effects of various transmission channels, often their isolated effects are difficult to quantify due to the presence of complex interconnections and second-order effects. Assumptions are used in these kinds of models that, while limiting the analysis, are essential for solving and applying them. One of the assumptions often used is that the institutions operate in monopolistic competition. This allows the institutions to have some control over the interest rates on the borrowing and lending operations, which is the most used mechanism in the DSGE models to analyse the effects of an increase in capital requirements. It is assumed through this mechanism that the increase in the financing cost that results from the increase in the capital requirement is passed to the economic agents through the increase in interest rates, which in turn could influence demand for credit. Thus, the institutions' strategy for accommodating increases in the capital requirements consists

in increasing the interest rates, differentiating between segments in certain models, with the objective of increasing their income and consequently increasing their capital ratios while also changing their risk profile, making them less risky.

Most of the studies analysed that used DSGE models, such as Covas and Driscoll (2014), Mendicino et al. (2015) and Almenberg et al. (2017), conclude that an increase in capital requirements has a negative long-term impact on economic activity. The same conclusion is reached by FRB of Minneapolis (2016) and Firestone et al. (2017) based on another type of structural model. However, other factors may influence the magnitude of this impact. For example, Covas and Driscoll (2014) show that when the increase in capital requirements is combined with the implementation of liquidity requirements, in a similar way to the implementation of Basel III, the impact on GDP increases. This is due to changes in the composition of the asset portfolio – the institutions restrict the supply of credit to the non-financial private sector and increase their sovereign debt security portfolio to fulfil the capital requirement. There is also evidence of a recomposition of the credit portfolio motivated by the existence of distinct risk weights between economic agents. Mendicino et al. (2015) show that in the new equilibrium, with higher capital requirements, the institutions require a higher risk premium. However, this increase is greater in the corporate segment, due to the greater risk weight for these credit operations. As a result, there is not only a reduction in the institutions' asset portfolio (a reduction in lending) but also a recomposition of the portfolio that changes the institution's risk profile. Under this change, the rate of return on deposits asked by households' falls, reducing the costs associated with the deposit guarantee. Thus households have more disposable income to consume, reducing the impact on economic activity made by the decline in investment arising from the reduction in lending to firms.

The other important aspect when analysing the results is the difference between the estimates for the short-term impact and those for the long-term impact. The study by Roger and Vlček (2011) differs from the above studies as it also presents short-term effects, defined as the maximum impact recorded during the transition to a new equilibrium. In terms of the risk premium, the impacts presented for the euro area and the US are very similar, however there is a significant difference between the short and long-term effects. The institutions choose a greater risk premium increase in the short term with the goal of increasing income, as it is assumed that they operate in monopolistic competition and that competitive pressure is limited as a result. This could be interpreted as a limitation of the model if the banking system does not operate like a market with monopolistic competition. In terms of impact on economic activity, the authors conclude that there is no substantial difference between economies but that the difference between the short and long-term impact persists. The short-term impact is approximately five times greater than the long-term impact. This evidence of a more adverse impact in the short term could justify the gradual implementation of macroprudential and microprudential policies in place of immediate implementation.

Roger and Vlček (2011) also approach this topic considering the short-term impact in two implementation periods, of two and four years. Extending the implementation period from two to four years contributes to a reduction in the risk premium required in the short term. The same effect is observed for GDP, with the extension of the implementation period helping reduce the short-term impact.

The difference in impact according to the implementation period is also discussed by De Resende et al. (2010), based on Canada's banking system<sup>14</sup>. The main conclusion of this study, again, is that an increase in capital requirements has a different effect on the risk premium

<sup>14</sup> The impact is determined from capital requirement increases of 2 p.p., 4 p.p. and 6 p.p.

according to the implementation period, with the impact falling to approximately half when the implementation period increases from two to four years. In regard to the long term, the estimated impact on risk premia is much lower, irrespective of the implementation period chosen. This study also presents the short and long-term impact on the volume of credit, concluding that the implementation period has little influence on the results and that therefore there is some exploitation of the intensive margin. In contrast with the above study, the short-term impact on GDP is rather smaller and closer to the long-term effect, although longer implementation periods continue to mitigate GDP's adverse effects. The two studies reach similar conclusions for the long term. Lastly, another important conclusion from De Resende et al. (2010) arose from analysis of income after different increases in capital requirements: the costs, measured in terms of the reduction of economic activity, are not linear and depend on the magnitude of the increase in the capital requirement. This research shows clearly some of the challenges facing the macroprudential and microprudential authorities in the process of calibrating the policy instruments in regard to the combination of implementation period and magnitude of the additional requirement, to optimise the net benefit.

Studies such as those of BCBS (2010), King (2010) and MAG (2010) take a different perspective, aiming to reduce uncertainty surrounding the results linked to the economies' specific nature as well as to the models used. To this end, they consider a broad set of countries and/or various models to determine the impact of a change in capital requirements. Based on information from 17 OECD countries and using a variety of models, including DSGE models, MAG (2010) presents an analysis of the short-term impact on the risk premium and economic activity of the reforms proposed in Basel III, based on an eight-year transition period. The median of this study's results indicates a moderate increase in the risk premia and a small decrease in GDP, in line with the idea that longer implementation periods largely help mitigate the short-term adverse effects. King (2010) uses a representative institution's balance sheet and income statement, based on information from institutions from 13 OECD countries, to determine the long-term impact of an increase in capital requirements. With this information and the assumption that the institution passes all its financing costs through to customers by increasing the cost of credit, the study finds the level of increase in the risk premium compatible with holding the return on equity the same as before. The results suggest an increase in the risk premium slightly below that obtained in MAG (2010). BCBS (2010) uses a similar approach to that of King (2010) to determine the long-term impact of the reforms proposed in Basel III. The median of the results indicates an increase in the risk premium below King (2010), assuming that all the institutions' financing costs are passed through in full to customers. If the return on equity falls to 10%, then the impact on the risk premium is reduced by roughly half. Analysis of these three studies offers a conclusion that the short-term impact tends to converge towards the long-term impact, which in general is more contained the longer the implementation period of the changes to capital requirements. BCBS (2010) and MAG (2010) also present the impact on GDP, with the reduction in MAG (2010), in terms of the median based on estimates from 97 models after 48 quarters, approaching the median of the long-term impact estimated in BCBS (2010).

The study by Cosimano and Hakura (2011) provides an insight into ways in which economic and financial conditions influence the expected impact of an increase in capital requirements. This study looks into information from advanced economies belonging to the OECD and uses the same model for all the countries. Results are provided for three groups of institutions: (i) the 100 largest institutions in the sample; (ii) institutions from those countries that had a banking crisis between 2007 and 2009 and (iii) institutions from those countries that did not. The institutions from countries that had a banking crisis increase the interest rate less than the institutions from countries that did not. The explanation for this greater impact on countries that did not go through a crisis is not given by the authors, however it may relate to the more intense deleveraging behaviour in the systems that had a banking crisis. The impact on the largest 100 institutions is quite close to that of the institutions from countries that had a banking crisis.

Comparison of the estimated impact on interest rates and risk premia between the economies of the US, Japan and Europe is discussed in the studies of IIF (2010) and Slovik and Cournède (2011). The first looks at two implementation periods. Considering an implementation period between 2011 and 2015, the estimated cumulative effect is of a differentiated increase in interest rates across the various economies, with the largest appearing in the US. According to the authors, the largest observed in the US is due to the greater historical return on equity in the US compared to the euro area and Japan. Taking a longer implementation period, between 2011 and 2020, the estimated cumulative impact on interest rates is lower, given that the banking sector has more time to absorb the inherent costs. In terms of economic activity, in contrast to other studies, a longer implementation period does not significantly change the impact on GDP, except for Japan. In the Slovik and Cournède study (2011), a model is used that combine Keynesian short-term dynamics with a neoclassical long-term demand side. The results suggest a differentiated increase in the risk premium for Japan, the euro area and the US. Despite the lower estimated impact for the euro area in terms of the increase in the risk premium vis-à-vis the US the estimated impact is greater in terms of GDP. This greater impact on economic activity for the euro area is justified by the greater credit intermediation ratio achieved by the financial institutions regarding the other economies under analysis.

Despite not directly taking into account the pass-through of the impact and interaction between the different variables, the research that uses non-structural models present estimates for the impact on the variables of interest that is aligned with the estimates presented by the structural models discussed previously. In particular, this set of studies suggests higher estimates for the short and medium-term effects than the long-term effects. An exception to this finding is the work of Mésonnier and Monks (2015), based on the European Banking Authority's recapitalisation exercise of 2011-2012. The authors estimate a short-term impact on the rate of change of credit that is close to the values obtained for the long term. Fraisse et al. (2015) differ in that they present results for the short-term impact on the volume of lending to firms in terms of extensive and intensive margin.<sup>15</sup> Using a database on the relationships between institutions and firms, these authors estimate a reduction in the volume of lending to firms that is eight times higher if there is no prior relationship between the institution and firm compared to cases where a prior relationship exists.

The set of studies based on non-structural models also provides evidence of a higher increase in the cost of bank financing for firms than for households following an increase in the capital ratios. Evidence of this kind is presented by De-Ramon et al. (2012) and Junge and Kugler (2013).

In regard to the influence that voluntary capital buffers could have on the impact of an increase in capital requirements, the research is still sparse. However, through an empirical, partial-adjustment model, Maurin and Toivanen (2012) conclude that the institutions with lower voluntary capital buffers tend to restrict lending to the economy more actively than the other institutions after an increase in capital requirements. Berrospide and Edge (2009) present similar results.

<sup>15</sup> Intensive margin only considers changes in lending through changes in loans to firms that already had a prior relationship with a given institution while extensive margin considers changes in lending through the creation or destruction of a relationship between firm and institution.

## 4 Conclusions

An understanding of the possible impact of an increase in capital requirements on the banking system and the economy forms the basis for defining prudential policies capable of strengthening the banking system's resilience, minimising the potential costs to economic activity. From a theoretical perspective, this impact depends on the way in which the institutions choose to accommodate the higher capital requirements and the way in which the responsible authorities calibrate the increase in capital requirements and set the implementation period for this increase. The institutions' choice of adjustment process is affected by various internal and external factors, such as the level of competition in the credit market across the different segments, the financial and economic conditions in place or the existence of voluntary capital buffers. However, the authorities may also influence the institutions' choice of adjustment process by, for example, defining longer implementation periods to avoid deleveraging behaviours and promoting the use of retained earnings. Each institution's start point, in terms of the capital ratio, and the nature of the risks are among the key factors from the authority's point of view when setting adequate and effective prudential policies.

The literature indicates that the costs associated with an increase in institutions' capital requirements are passed through to customers via an increase in the interest rate/risk premium and/or a reduction in the credit supply. Despite the limitations outlined in this special issue, the results indicate certain key considerations when conducting macroprudential and microprudential policies. The significantly higher impact in the short term compared to the long term shows the importance of a gradual implementation of additional capital requirements, in order to mitigate their effect and not contribute to the emergence of periods of instability in the financial sector, with a potentially adverse effect on the economy. As shown in several studies, this allows the short-term effects to converge towards the long-term effects, even assuming identical adjustment mechanisms. Gradual introduction allows for a planned adjustment to the new capital ratios, through the combination of the different strategies outlined above, permitting a reduction of its impact on economic activity, enabling the magnitudes of the short and long-term effects to converge and decline.

The economic and financial environment prevailing at the time of the implementation of prudential policies associated with capital instruments often determines these instruments' implementation period, restricting their impact on interest rates/risk premia, as well as the recomposition of the asset portfolio. According to the literature analysed in this special issue, there are advantages in implementing these measures during upswings in the financial and economic cycles, as when they are implemented in times of decelerating activity, they may amplify the contraction in economic activity. As well as this, a longer implementation period may give the institutions more time to plan their financial intermediation activity, minimising the transmission of the associated costs to the economy.

The literature analysed shows that there are several factors affecting the quantification of the costs and benefits arising from an increase in capital requirements. In general, the net benefit of an increase in the capital requirements is positive, as the banking sector becomes more robust, resilient and better prepared for loss absorption linked to financial intermediation activity. However, the positivity or negativity of the net benefit also depends on the start point of the capital ratio, as the efficiency of capital increases in reducing the probability of institutions' failure or the occurrence of crises is limited and, therefore, it is the consensus view that the costs will exceed the benefits in the case of high levels of capital requirements.

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# Housing price assessment methodologies applied to Portugal

## 1 Introduction

The international financial crisis of 2007-2008 was strongly correlated with developments in the real estate market in many countries, both at its inception and subsequent impact. Adverse developments in this market resulted in significant losses for various economic agents, severely affecting the real economy in several countries. In the case of households, their wealth being largely tied up in housing, any change in house prices will affect their consumption and investment decisions.<sup>1</sup> On the other hand, housing price developments also affect households' creditworthiness for mortgages, given its impact on the value of the associated collateral. In the case of the banking system, there are several effects associated with adverse developments in the real estate market, such as increased impairments on loans secured on dwellings and a reduction in the value of real estate owned by banks. This impact can be amplified by debtors' greater difficulty in servicing their debt, when falling house prices are accompanied by negative shocks on household income. Moreover, the deterioration in the financial position of firms in sectors such as construction and real estate activities, may result in higher defaults and losses in loans granted to those sectors.

The concept of house price overvaluation or undervaluation refers to the notion of imbalance in the price setting mechanism, showing a deviation from what is deemed to be an equilibrium value. This imbalance may be due to market imperfections and frictions that hinder the adjustment between housing supply and demand (Mayer, 2011), such as constraints on households' access to funding or new building permits for construction companies. Another example relates to the rigidity of supply. In particular, the housing market supply takes longer to adjust than demand, given, for example, the lapse of time between the granting of a permit for construction and its completion, which may lead to periods of price imbalance in this market. This idea is supported by DiPasquale and Wheaton (1994), who conclude that the housing market adjusts gradually in the short run.

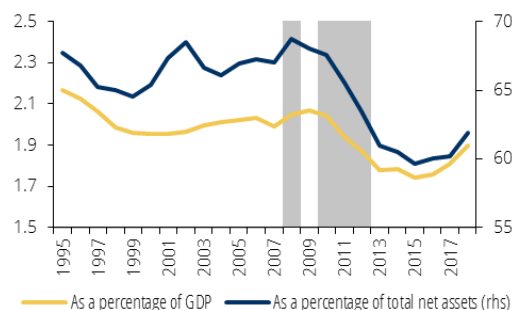
In Portugal, the high percentage of population owning a dwelling<sup>2</sup> translates into a high weight of housing assets in household wealth (Chart 1), which may amplify the impact of house price changes on households' financial situation and their decisions. As regards the Portuguese banking system, its relatively high exposure to the real estate market<sup>3</sup> fuels the transmission mechanism between developments in this market and the financial position of Portuguese banks, as witnessed during both the financial and the sovereign turmoil. This was the case for mortgage lending to households (Chart 2) and, more significantly, for loans to firms engaged in construction and real estate activities (Chart 3), where the non-performing loans ratio increased.

<sup>1</sup> Catte et al. (2004) and Guerrieri and Mendicino (2018) document the effect of an increase in housing wealth on consumption patterns in OECD and euro area countries, respectively.

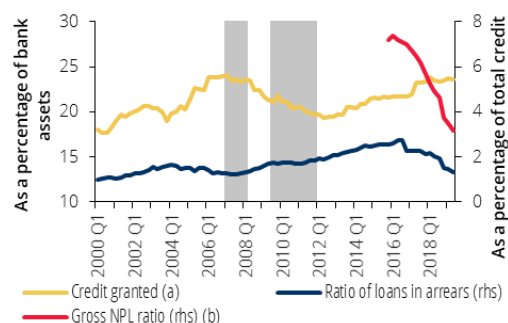
<sup>2</sup> In 2018, the homeownership rate in Portugal was 74.5%, 8.3 percentage points higher than the euro area average, according to information from the Income and Living Conditions Survey (EU-SILC) published by Eurostat.

<sup>3</sup> According to Section 4 on the Banking System, the Portuguese banking system's exposure to the real estate market accounted for about 37% of its total assets in June 2019. The exposure can be direct through bank-owned real estate, and indirect through loans to households and firms secured by property, loans to NFCs in the construction and real estate sectors and the exposure to real estate investment funds.

**Chart 1 • Household wealth in housing**



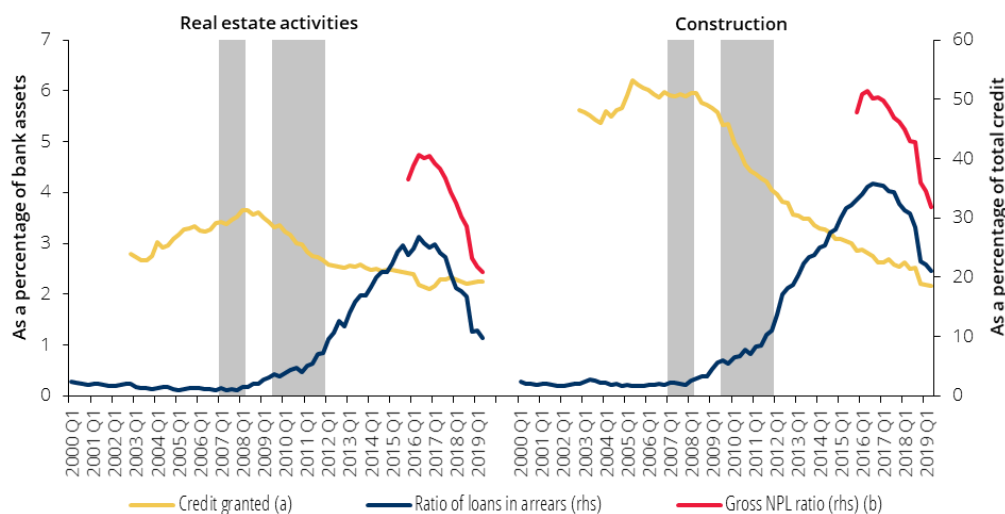
**Chart 2 • Credit granted, overdue credit and gross NPL ratio in housing loans to households**



Sources: Banco de Portugal and OECD. | Note: The shaded area corresponds to economic contraction periods according to Rua (2017). Given that the chart presents annual data and the author uses quarterly data to identify 2008Q1: 2009Q1 and 2010Q3: 2012Q4 as contraction periods, the years with at least two contraction quarters are shaded.

Source: Banco de Portugal. | Note: The shaded area corresponds to economic contraction periods, according to Rua (2017). (a) The series of credit granted as a percentage of bank assets refers to the individual reporting of other monetary financial institutions resident in Portugal. (b) NPL as per the EBA definition.

**Chart 3 • Credit granted, overdue credit and gross NPL ratio for NFCs associated with the real estate market**



Source: Banco de Portugal. | Note: The shaded area corresponds to economic contraction periods, according to Rua (2017). (a) The series of credit granted as a percentage of bank assets refers to the individual reporting of other monetary financial institutions resident in Portugal. (b) NPL as defined by EBA.

Against a backdrop of high exposure to the real estate market, should there be an overvaluation in house prices, i.e., an imbalance in the pricing mechanism whereby prices rise above their determinants, the potential risk of loss increases and may impact the solvency of the financial

system<sup>4</sup>, private non-financial sector financing and, therefore, economic growth and welfare. This was the case in the years that preceded the global financial crisis, when several euro area countries underwent house prices booms, contributing to an accumulation of imbalances, which was subsequently translated into losses for different institutional sectors. Recently, the significant and growing trend in house prices in Portugal since 2013 (Section 2.3, Chart I.2.14) has sparked the debate over a potential overvaluation in residential property prices, highlighting the need to monitor and assess price misalignments against their equilibrium.

This special issue reviews some housing price assessment methodologies that may signal the existence of a price imbalance in this market, applying them to Portugal for the 1988Q1:2019Q2 period, unless otherwise stated. In accordance with existing literature, three categories of different approaches are considered, notably (i) statistical indicators, (ii) models based on macroeconomic determinants and (iii) asset pricing models, their advantages and disadvantages being discussed. Analysing the various methodologies considered, it may be concluded that there is evidence of house price overvaluation in Portugal since early 2018, in aggregate terms, as previously identified.

## 2 Housing price assessment methodologies

### 2.1 Statistical indicators

The use of statistical indicators to assess a potential housing market overheating is a widespread practice in the academic and institutional literature<sup>5</sup>. Three indicators are considered in this analysis: (i) the deviation of the price-to-income ratio from its long-term average, (ii) the deviation of the price-to-rent ratio from its long-term average and (iii) the deviation of the house price index in real terms from its trend.

The price-to-income ratio represents a measure of affordability in house purchasing, which relates the cost of purchase to household disposable income. If, historically, there is a significant deviation from this ratio, it may denote the difficulty of households in buying a home or servicing the debt associated with their mortgages (ECB, 2015). To this end, the deviation of the price-to-income ratio from its long-term average, which is calculated as the arithmetic mean of the sample period 1988Q1:2019Q2, which is subsequently considered as the benchmark for standardisation purposes, is considered. The Organisation for Economic Co-operation and Development (OECD) publishes this measure on a quarterly basis for a wide range of countries, Portugal included.

The price-to-rent ratio measures the home-owning cost compared to that of renting. If house prices grow significantly above rents, households may postpone their decisions to buy a house and choose to rent until a market correction is set in<sup>6</sup>. Similar to the deviation of the price-to-income ratio from its long-term average, the deviation of the price-to-rent ratio from its long-term average is considered, which corresponds to the arithmetic mean of the 1988Q1:2019Q2 sample period. This ratio is also standardised, its benchmark being its long-term average. The OECD also publishes this indicator on a quarterly basis.

<sup>4</sup> In any case, the potential impact of a decline in house prices on the banking system is mitigated by the relatively low average loan-to-value of the mortgage loan portfolio.

<sup>5</sup> For example, see Box 3 in the *Financial Stability Review* of the European Central Bank, May 2015 or, more recently, Philipponnet and Turrini (2017).

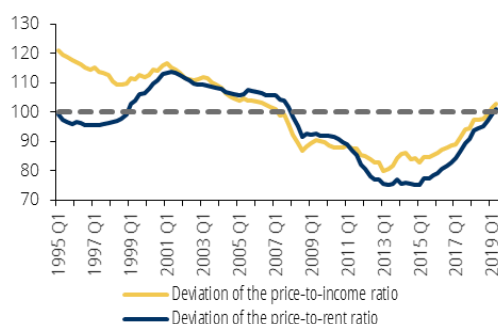
<sup>6</sup> The deviation of the price-to-rent ratio from its long-term average may also be deemed to be a simplified static dividend discount model (ECB, 2011), as it discounts the dividend associated with housing, notably the rent, for its price.

The price deviation from trend is a simple and agnostic overvaluation indicator, to the extent that it does not put house prices in line with any economic fundamental. Detken and Smets (2004) define an asset price boom as a period during which the real price index is persistently at least 10% above its trend. Later on, Adalid and Detken (2007) propose that a minimum period of four consecutive quarters be observed for this phenomenon to be identified. The trend is calculated using the Hodrick-Prescott (HP) univariate filter, which allows the house price series to be broken down into the trend component and the cyclical component. The adjustment parameter considered is 100,000, as proposed by Adalid and Detken (2007) for quarterly data.

## Results for Portugal

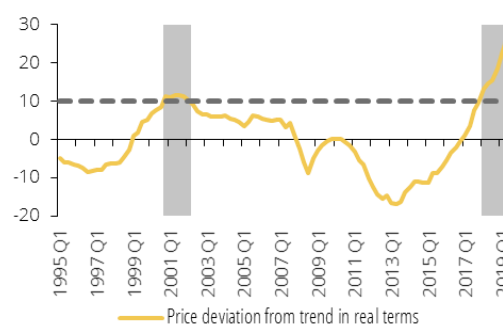
Considering the 1995-2019 period, the deviation of the price-to-income and price-to-rent ratios from their long-term averages shows a similar trajectory, except for the interval between 1995 and 2001 (Chart 4). After a long bust period between the onset of the international financial turmoil and the end of the sovereign debt crisis, it may be observed that both metrics began to recover in 2015, with the deviation of the price-to-income ratio indicating some overvaluation as of the first quarter of 2019, and the deviation of the price-to-rent ratio in the second quarter of 2019. In turn, the deviation of prices in real terms from trend behaves similarly to the deviation of the price-to-rent ratio from its long-term average until early 2009, signalling a lower undervaluation during the international financial crisis period. However, in the recent period, this indicator shows an overvaluation that is higher than suggested by the remaining metrics (Chart 5).

**Chart 4 • Deviation of price-to-income and price-rent ratios from their long-term averages | Index 1988Q1: 2019Q2 Average = 100**



Source: OECD. | Note: The dashed line consists of a reference axis where values above indicate overvaluation and values below undervaluation.

**Chart 5 • Price deviation from trend | Per cent**



Source: Banco de Portugal calculations. | Note: The dashed line corresponds to the 10% threshold defined in Detken and Smets (2004).

The three statistical indicators considered show consistent results for the recent period, signalling the existence of some overvaluation in aggregate terms, despite identifying different beginnings for the imbalance observed. However, these indicators have some constraints. The validity of using the deviation of the price-to-income and price-to-rent ratios from their long-term averages is based on the stationarity of the ratios used (Philipponnet and Turrini, 2017), i.e., that the indicator fluctuates around a constant long-term average and that the effect of any shocks dissipates over time. In the case of the deviation of the price-to-rent ratio from its long-term average, the reasonableness of this indicator depends on the dynamics of housing and rental markets. In

Portugal, given the existence of a long rent freeze period<sup>7</sup>, the denominator of the ratio shows some inertia due to the existence of many old rental contracts and may not reflect the expected arbitrage principle between purchasing and renting. Regarding the price deviation from trend, the use of a univariate formulation, such as the HP filter, raises uncertainty over choosing the adjustment parameter, which depends on the cyclicity of the series considered. Another limitation of this indicator is its potential bias at the end of the sample (Hamilton, 2017). Finally, some authors criticise the use of statistical indicators as they fail to consider a broad set of potentially explanatory economic factors (Himmelberg et al., 2005).

## 2.2 Models based on macroeconomic determinants

Another category of methodologies commonly explored in the literature is the use of models that capture the joint dynamics of house prices and macroeconomic variables to determine whether price developments are supported by a set of fundamentals. This section considers three econometric models: (i) an error correction model, as proposed in Banco de Portugal (2016)<sup>8</sup>, (ii) an inverted demand equation, as in European Central Bank (2015)<sup>9</sup>, and (iii) a quantile regression, as adapted in Lourenço and Rodrigues (2015), based on an approach proposed by Machado e Sousa (2006).

The error correction model makes it possible to distinguish between short- and long-term dynamics in the relationship between house prices and their macroeconomic determinants. Since for this analysis only the relationship between these variables over a longer horizon is of interest, only the long-term equation<sup>10</sup> using the ordinary least squares method is estimated to obtain the equilibrium house price series, i.e., should this be aligned with the fundamentals considered. The difference between the observed and the estimated series, which corresponds to the residual series ( $\varepsilon_t$ ), can be interpreted as a measure of house price imbalance. In Banco de Portugal (2016), the determinants of real house prices ( $hp_t$ ) considered are household disposable income in real terms ( $gfcfh_t$ ), the gross fixed capital formation in housing and the unemployment rate ( $ur_t$ ).<sup>11</sup> In particular, it is expected that (i) an increase in disposable income will have a positive impact on house prices as it represents greater financial availability for house purchasing and/or debt servicing, (ii) an increase in gross fixed capital formation in housing reflects an increase in new construction, puts downward pressure on prices, increasing available supply for a given level of demand, and (iii) an increase in the unemployment rate has a negative impact on prices, using the same mechanism underlying disposable income, also capturing confidence effects. In econometric terms, it should be noted that this analysis is only valid in the presence of cointegration between the variables, which may be interpreted as evidence of the existence of a long-term relationship.

The housing price assessment model proposed by the European Central Bank (2015) consists of an inverted demand equation<sup>12</sup> which assumes that housing supply is constant in the short run, with prices being determined by demand. Despite the distinct theoretical framework behind this

<sup>7</sup> At the beginning of 2006, NRAU – the New Urban Renting Regime came into force, under Law 6/2006 of 27 February, as amended in 2012, 2014 and 2017. The establishment of the regime in 2006 opened up the possibility of updating the rents of old tenancy contracts, and the amendment made in 2012 unfroze rental contracts prior to 1990, as defined by Law No. 31/2012 of August 14, 2012.

<sup>8</sup> Box 3.1 “Recent Developments in housing prices in Portugal in light of its macroeconomic fundamentals”, *Economic Bulletin* of Banco de Portugal, October 2016.

<sup>9</sup> Box 3 “A model-based valuation metric for residential property markets”, *Financial Stability Review* of the European Central Bank, November 2015.

<sup>10</sup> The specification of the estimated long term equation is  $hp_t = \alpha_0 + \alpha_1 y_t + \alpha_2 gfcfh_t + \alpha_3 ur_t + \varepsilon_t$ . All variables are in logarithm except the unemployment rate.

<sup>11</sup> The authors tested a broader set of variables, including real housing stock, total labour force and interest rates, the exclusion of which being due either to the absence of a cointegrating relationship between house prices and these variables or to the presence of coefficients with unexpected signs.

<sup>12</sup> The specification considered is  $hp_t = \frac{\alpha_0 + \alpha_1 y_t - \alpha_2 r_t - \alpha_3 ir_t}{\alpha_2} + \varepsilon_t$ . All variables are in logarithm except interest rate.

model, its estimation is also based on an error correction model similar to that proposed by Banco de Portugal (2016). Thus, the residuals of the equation ( $\epsilon_t$ ) can be interpreted as price deviations from their fundamentals. The determinants considered are the household disposable income in real terms ( $y_t$ ), the real housing stock per capita ( $hs_t$ ), and the average real interest rate on housing loans ( $ir_t$ ). The disposable income is the only determinant in common with Banco de Portugal (2016). An increase in housing stock, a housing supply measure, is expected to have a negative impact on prices, similarly to the described above for gross fixed capital formation in housing, and it is expected that an increase in the average real interest rate in real mortgage lending negatively impacts house prices, as it accounts for an increase in financing costs. The model is estimated using Bayesian techniques to alleviate potential problems resulting from the use of a short time series. The European Central Bank releases the results of this methodology on a quarterly basis.

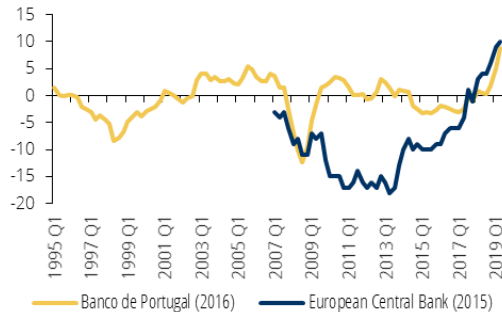
The quantile regression allows us to analyse the impact of a set of variables on the behaviour of the dependent variable throughout its distribution instead of solely analysing the impact of those variables on its average value, as is the case with other procedures such as the ordinary least squares method, underlying the error correction mechanism described above. This methodology makes it possible to estimate the value of house prices at a given quantile of the distribution ( $\tau$ ) according to a set of determinants, called the conditional quantile. In Lourenço and Rodrigues (2015), the explanatory variables considered are real disposable income ( $y_t$ ), the three-month money market interest rate ( $mmr_t$ ) and the labour force ( $lf_t$ ).<sup>13</sup> As in the previous models based on macroeconomic determinants, (i) an increase in income should have a positive impact on prices, as described in the first model in this section, (ii) an increase in the three-month money market interest rate a negative impact, similarly to the average real interest rate on housing loans in the previous model, and (iii) an increase in the labour force should have a positive impact on the same economic intuition associated with a decrease in the unemployment rate in the first model. Unlike the authors, we consider the employed population rather than the labour force, which better captures house prices developments. Since the variables are nonstationary, a cointegrating relationship is necessary to validate the long-term equation for each quantile considered, which can be tested according to the test proposed by Xiao (2009), as mentioned in Lourenço and Rodrigues (2015).

### Results for Portugal

Considering the residuals of the error correction model and the inverted demand equation, some divergence can be observed between the results of the two methodologies between 2010 and 2016 (Chart 6), which may be related to the use of different variables and sample horizons for estimation purposes. Nevertheless, both methodologies indicate some overvaluation in house prices as from the first quarter of 2018. Looking at the difference between house prices and the conditional quantiles 10, 50 and 90, there is an undervaluation period that coincides with the international financial crisis. From 2016 onwards, house prices embarked on a growth path steeper than that of the conditional quantiles (Chart 7). In particular, the price deviation from the quantile 90 has been positive since the second quarter of 2018, signalling some overvaluation in aggregate terms.

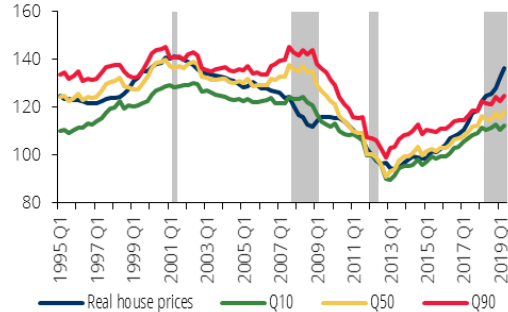
<sup>13</sup> The estimated quantile regression is  $Q_{hpt}(\tau|F_{t-1}) = \alpha_0 + \alpha_1(\tau)y_t + \alpha_2(\tau)mmr_t + \alpha_3(\tau)lf_t$ , where  $\tau \in (0,1)$  corresponds to a given quantile. All variables are in logarithm, except the interest rate.

**Chart 6 • Residuals of the models based on macroeconomic determinants | Index 2015 = 100**



Source: Banco de Portugal calculations and ECB.

**Chart 7 • House prices in real terms and conditional quantiles 10, 50 and 90 | Index 2015 = 100**



Source: OECD and Banco de Portugal calculations. | Note: The shaded area corresponds to periods in which house prices were below quantile 10, i.e., undervaluation periods, or above quantile 90, i.e., overvaluation periods.

Notwithstanding the advantages over the analysis of statistical indicators, models based on macroeconomic determinants also have some constraints. The choice of variables considered as determinants of house prices may be subject to some uncertainty as they may change over time. For example, Lourenço and Rodrigues (2017), using the Bai and Perron (1998, 2003a) procedure, test for structural breakdowns in the determinants of house price growth in Portugal and find evidence of three distinct regimes in which “the fundamentals and their importance differ in the two periods under consideration”. For example, more recently, the investment of non-residents in the housing market and buoyant tourism activity may represent a change in structure.

### 2.3 Asset pricing models

The last category addressed is based on the use of models with an investment perspective of housing as an asset, its valuation being likely to vary pursuant to associated return expectations. Thus, an asset pricing model is estimated, namely a methodology based on a general arbitrage-free model proposed by Phillips, Shi and Yu (2015)<sup>14</sup>.

The methodology proposed by the authors is based on a stylised asset pricing equation in which changes in asset prices can be explained by three components: expected dividends, a set of unobservable fundamentals, and the bubble component<sup>15</sup>. If the expected dividend and unobservable fundamentals components are explained by past values of the same variable, the bubble component can explain an explosive asset price behaviour. Starting from this theoretical framework, the methodology tests for the presence of a bubble using a right-tailed unit root test recursively across several subsamples of the house price series, and identifies periods of

<sup>14</sup> Other authors, such as Poterba (1981) and Himmelberg et al. (2005), propose methodologies based on a comparison between the imputed rent, that is, the value of living in a property for a year, and the opportunity cost of capital, taking into account factors such as differences in terms of risk, tax incentives and capital gain expectations. However, these methodologies will not be analysed in this special issue.

<sup>15</sup> The specification of the referred equation is  $P_t = \sum_{i=0}^{\infty} \left( \frac{1}{1+r_f} \right)^i E_t(D_{t+1} + U_{t+1}) + B_t$ , where  $P_t$  is the asset price,  $r_f$  is the risk-free interest rate,  $D_{t+1}$  is the dividend,  $U_{t+1}$  represents unobservable fundamentals and  $B_t$  is a bubble component.

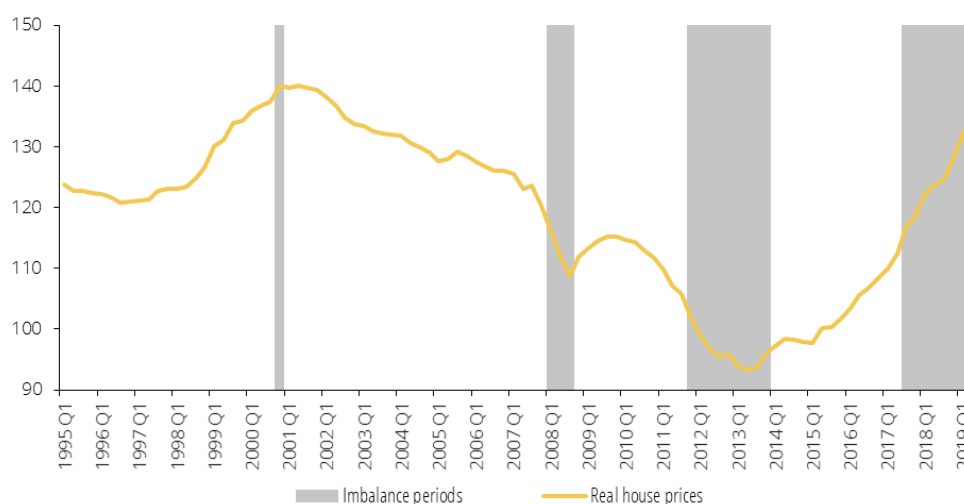


exuberance, defined as periods of excessive rise or fall in prices. If the resulting test statistic is higher than the critical values, the null hypothesis of no exuberance periods is rejected.

## Results for Portugal

Considering the critical value of 99%, the Phillips, Shi and Yu (2015) test identifies four periods of house price exuberance in real terms, in Portugal: (i) a brief overvaluation period in the fourth quarter of 2000, (ii) the period of falling house prices at the beginning of the international financial crisis, namely between the first and the third quarters of 2008, (iii) the period of excessive fall during the most acute phase of the sovereign debt crisis, between the fourth quarter of 2011 and the fourth quarter of 2013, and recently (iv) the period of significant increase in house prices, that began in the third quarter of 2017 (Chart 8).

**Chart 8 • Phillips, Shi and Yu (2015) test | Index 2015 = 100**



Source: Banco de Portugal calculations and OECD. | Note: The imbalance periods correspond to the periods in which the null hypothesis of non-existence of explosive behaviour periods is rejected against the alternative hypothesis of their existence for the critical value of 99%. The critical value underlying the identification of imbalance periods was obtained using the new bootstrap procedure proposed by Phillips and Shi (2018) with 5000 replicas.

## 3 Final considerations

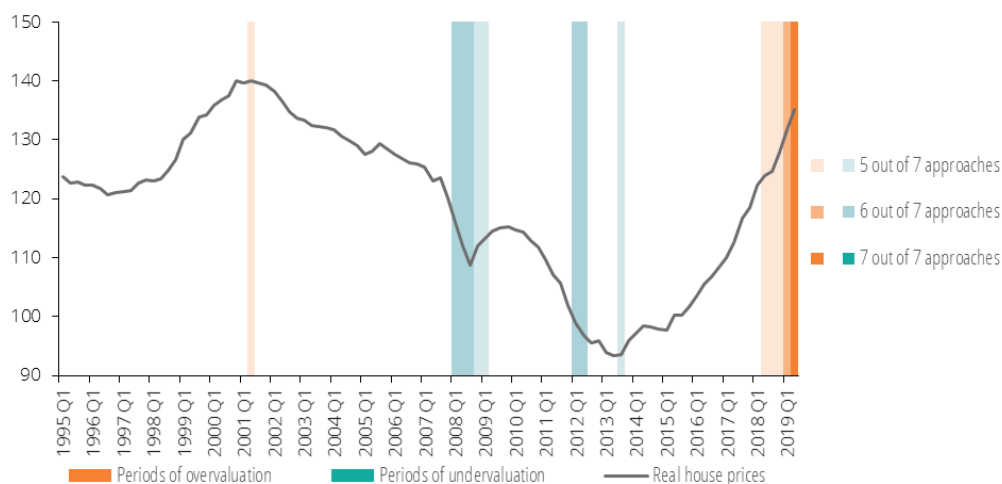
The analysis of the residential real estate market and, in particular, of the cyclical position of house prices is essential given its importance for financial stability. This special issue reviews a number of housing price assessment methodologies that enable imbalance periods in the pricing mechanism to be identified.

Considering three methodology categories, namely statistical indicators, models based on macroeconomic determinants and asset pricing methods, it can be concluded that, across the approaches considered, there is a set of imbalance periods in the time span under analysis: a brief overvaluation period after joining the euro area, the periods that followed the international financial crisis and the sovereign debt crisis, marked by an undervaluation following a sharp fall in house prices, and the recent period, characterised by an overvaluation following a sharp price

growth. Thus, it can be concluded that prices in the residential real estate market show signs of overvaluation since the beginning of 2018, in aggregate terms (Chart 9).

The importance of overvalued house prices for financial stability differs depending on the role of credit in their evolution. Several authors argue that there are two categories of bubbles: bubbles of irrational exuberance, with an evolution that is not accompanied by credit, and bubbles accompanied by an excessive expansion of credit (Mishkin, 2008). While the former is expected to have a lower impact on financial stability, the latter generates a transmission mechanism between credit, house prices and the real economy, which may lead to sharper and longer recessions (Jordà et al, 2015), in line with what was observed in the international financial crisis. Recent developments in house prices in Portugal have been accompanied by a recovery in new loans for house purchase while coexisting with a reduction in the housing loan stock (Section 2.3, Chart I.2.15).

**Chart 9 • Imbalance periods in house prices | Index 2015 = 100**



Source: Banco de Portugal calculations and OECD. | Note: Overvaluation and undervaluation periods correspond to periods in which, from the seven approaches considered, at least five identify an imbalance in house prices.

The discussion about house price overvaluation also requires some caution, given the uncertainty that characterises some concepts and, subsequently, some of the measures considered. It is important to emphasise that results obtained refer to prices in aggregate terms, and that there is no granular information at regional level, which is expected to present some heterogeneity, and the overvaluation should be more pronounced in the Lisbon and Porto Metropolitan Areas. Additionally, the difficulty in identifying whether changes in price determinants are cyclical or structural may lead to the omission of relevant variables. However, the use of various methodologies to pinpoint and measure potential imbalance periods allows for more robust conclusions and can contribute to more informed decisions by policymakers and economic actors.

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