Financial Stability Report

June 2018

BANCO DE PORTUGAL
EUROSYSTEM

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Content

Overview

The Portuguese economy's resilience to the potential materialisation of risks to financial stability has been increasing and this continued in 2017. This is due to two key factors: firstly, the sharp reduction in indebtedness ratios of enterprises and households, and secondly, the banking sector's greater robustness.

When it comes to the first factor, the clear improvement in enterprises' capital ratio, especially that of SMEs, should be emphasised. This improvement has coincided with a recovery in business investment, led by enterprises with lower financial debt ratios. The financial effort associated with new investments has resulted in an increase in the debt of investing enterprises, although their indebtedness ratios remain below the respective activity sector's median.

In the case of households, despite the very sharp fall in the indebtedness ratio over the last few years, there has been strong growth recently in consumer credit and new loans for house purchase, in a context of somewhat lower restrictiveness of credit standards. Thus, as the macroprudential authority, Banco de Portugal issued a Recommendation designed to mitigate excessive risk-taking by the banking sector and other financial corporations in granting new credit to households, contributing to the resilience of the banking sector and promoting households' access to sustainable financing, reducing default risk.

It should also be mentioned that the process of reducing general government debt also began, although this debt level is still high. For this process to continue, the fiscal adjustment of the last few years needs to become structural in nature, in order to not be compromised by a slowdown in economic activity, allowing the Portuguese Republic's financing conditions to be less sensitive to disruptions in the international financial markets.

When it comes to the banking sector, various positive developments have helped stabilise it: the recapitalisation of CGD; the capital increase by BCP and Caixa Económica Montepio Geral; in the case of BPI, the reduction of the exposure to Banco de Fomento de Angola and the purchase of a controlling stake in CaixaBank; the completion of the Novo Banco sale process; and the extension of the maturity of the loans to the Resolution Fund. These developments (i) have allowed for the stabilisation of the shareholder base in some of the main Portuguese banks; (ii) have led to the strengthening of the banking sector's capital ratios; and (iii) have increased the institutions' capacity to sharply reduce their NPL level amidst an economic recovery and rising real estate prices. More specifically, the NPL stock has fallen almost €13.5 billion (approximately 27%) since June 2016, when the maximum value was recorded, a 4.6 p.p. reduction in the corresponding ratio, matched by an increase in the impairment coverage ratio. In this regard, a strategy was introduced to reduce Portuguese non-performing assets, based on (i) review of the legal, judicial and fiscal framework; (ii) microprudential supervisory activity, within the SSM, in particular NPL reduction plans submitted by the institutions to Banco de Portugal and the SSM, and (iii) management of the NPL portfolios, which includes the *Plataforma de Gestão de Créditos Bancários* (a platform for the integrated management of non-performing bank loans) currently in operation.

Various supervisory initiatives took place in 2017 to strengthen control and internal governance mechanisms and stabilise several institutions' management teams, based on particularly demanding evaluation processes.

Overall, these developments have helped improve international investors' perception of the banks and the sovereign, reflected in the upgrading of the respective ratings.

However, it is important to continue and, in some areas, deepen the progress achieved to-date, as the NPL stock remains high, and to implement the NPL reduction plans submitted to the supervisory authorities. Furthermore, although recovering, profitability remains at relatively low levels.

In this regard, despite the progress seen in the banking sector more recently, particularly in operating income, the effort to reduce the cost structure and the efficiency levels, profitability is still under pressure and, in the case of return on equity, far from the cost of capital. This issue becomes more acute in a context of a possible continuation of the low interest rate environment and potential intensified competition in certain less regulated and more profitable segments of banks' activity, with increasing market participation by new companies specialised in providing financial services digitally (FinTechs). In this regard, financial institutions must adapt to the new operating environment, and the challenges it poses, taking advantage of the opportunities it creates.

Furthermore, the concentration of the financial system's exposures to certain asset classes, namely public debt and the real estate market, remains high, making the sector's financial position particularly sensitive to unfavourable developments in these assets' prices.

The need to continue the banking sector's adjustment effort, despite the good results achieved to-date, is also urgent, given the importance of safeguarding access to the international financial markets under favourable conditions, which could become even more critical as the need arises to issue financial instruments eligible for fulfilling Minimum Requirement for Own Funds and Eligible Liabilities (MREL) requirements.

The adjustment of the resident sectors has taken place in a particularly favourable macroeconomic and financial context. In addition to this environment, developments in the real estate market, including those associated with the demand from non-residents and the growth of tourism, have had an impact on the price dynamics in this market. Price growth in the residential segment has been particularly strong. In the second half of 2017 some signs, while very limited, began to emerge of overpricing in this segment.

After falling sharply in the period between 2007 and 2013, commercial real estate prices show some signs of recovery, but in a more contained way than in the residential segment. In 2017, 80% of investment in the Portuguese commercial real estate market was from non-residents, mainly funds. Even though the Portuguese banks are not the main drivers of this market, a possible sharp fall in real estate prices would have negative effects on the banking sector, impacting the sales of properties owned by credit institutions, and slowing NPL reduction associated with credit collateralised by real estate.

The financing conditions in the global capital markets have remained particularly benign for a prolonged period, with Portuguese issuers benefiting from favourable conditions, in part reflecting the progress made so far in their financial position.

Also, since the Portuguese economy's potential growth remains limited, this extremely favourable environment must be seen as temporary and an opportunity to sharply reduce the prevailing vulnerabilities, and not as a driver of further risk-taking.

Reducing vulnerabilities is important because of the plausibility of various global events capable of jeopardising this favourable environment. The adoption of protectionist measures worldwide

and their potential impact on economic activity and the asset markets is just one, very striking, example of these types of events. Changes in international investors' risk appetite, with an impact on the perception of the Portuguese market's risk, may result in corrections to assets' valuations, which will be more significant in markets where these investors' participation is greater, such as the real estate market.

Lastly, following the initial momentum to reduce financial fragmentation when the response to the financial crisis was at its height, through reform of the euro area's institutional architecture, towards making risk-sharing among Member States more joined-up and better equipped to provide a firm response to future crises, the process is clearly incomplete, thereby creating risks to financial stability.

The risks considered in this edition of the *Financial Stability Report* are:

- The significant and abrupt reassessment of global risk premia
- The potential continuation of the very low interest rate environment
- Easing of credit standards for loans to households
- Price sensitivity to non-residents' behaviour in the real estate market
- Increasing role of technology in financial activity: cyber-risk and market openness to new companies specialising in providing financial services digitally (FinTech)
- The banking sector's transition to the new European regulatory and institutional framework

I Financial stability outlook

1 Vulnerabilities, risks and macroprudential policy

1.1 Vulnerabilities

The Portuguese economy is characterised by high indebtedness levels coupled with low potential growth

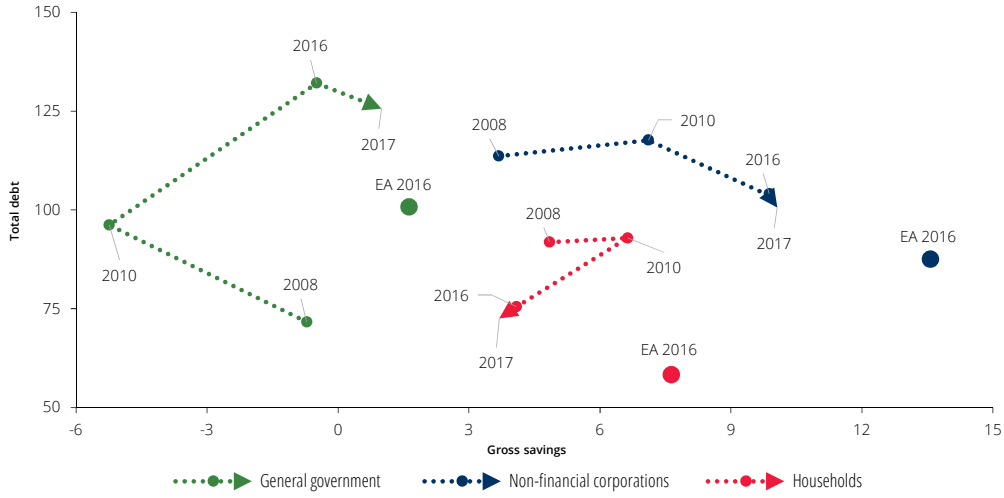
Despite the positive current and capital account balances in the past few years, Portugal's net external debt is still among the highest in the euro area (around 93% of GDP at the end of 2017). This reflects an accumulation of external imbalances in the pre-financial crisis period, in spite of a reduction of about 14 p.p. since the peak recorded in the first quarter of 2015. Total debt of non-financial corporations (NFCs) and households as a percentage of GDP declined substantially since the peaks recorded in the recent past (Chart I.1.1). These reductions reflect a decline in these sectors' total debt, and from the mid-2013 onwards deleveraging also benefited from a recovery in economic activity in nominal terms, and this accounted for the main contribution since 2015.

At the end of 2017 total nominal debt of NFCs increased slightly year-on-year. This is consistent with the slowdown in deleveraging observed in recent years. In any case, loans granted by the resident financial sector decreased further, in parallel with an increase in financing by non-residents, largely associated with the intra-group financing operations of an enterprise from the electricity, gas and water sector (3.2 Private non-financial sector). However, there was a considerable increase in firms' financial autonomy, especially SMEs, although it remains low by European standards. In addition, there is still a positive change in domestic bank credit granted to more productive firms with a better risk profile and to younger enterprises. In turn, non-performing enterprises have contributed the most to the reduction of the stock of loans to NFCs.[1]

In this context, developments in the NFC debt stock must be seen in light of banks' strategies to reduce non-performing assets, to the extent that they include the liquidation of insolvent companies or the restructuring of credit to viable NFCs in financial distress. In December 2017 non-performing exposures (NPEs) accounted for around 13% of NFCs' total consolidated debt (3 p.p. less than in December 2016).

1. See Section 3 and Box 4 "Developments in loans granted to non-financial corporations by resident credit institutions: extensive margin vs. intensive margin", *Economic Bulletin*, October 2017, and Box 2 "Recent developments in the exposure of resident credit institutions to non-financial corporations", Banco de Portugal, *Financial Stability Report*, June 2017.

Chart I.1.1 • Total debt and savings (general government, non-financial corporations and households) | Percentage of GDP



Source: Eurostat and Banco de Portugal. | Notes: EA 2016 refers to euro area averages in 2016. 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 of 25 May 2009), i.e. gross general government consolidated debt at nominal or face value, the so-called Maastricht debt. The peaks were reached in 2012, 2009 and 2014 for non-financial corporations, households and general government, respectively. End-of-period positions.

In recent years the reduction of NFCs' debt and its recomposition to the detriment of more sensitive instruments to short-term interest rate changes accounted for positive developments, insofar as they made it possible to mitigate the sector's vulnerability to interest rate rises.[2]

Household total nominal debt increased slightly at the end of 2017. This notwithstanding, reflecting an even higher flow of repayments than that of new business, the annual rate of change in housing loans granted by the resident financial sector remained slightly negative (-1.7% in December 2017). In turn, loans for consumption and other purposes continued to increase at a fast pace (5.7% in December 2017). This rebound in household credit occurs amid still high indebtedness at European level. Hence, household debt servicing capacity remains particularly sensitive to adverse shocks on income and changes in market interest rates.[3]

In this vein, the reduction in private sector debt is key to making the economy more resilient to a future normalisation of interest rates, although this will occur at a gradual pace and in a context of economic recovery.

The general government fiscal deficit amounted to 3.0% of GDP in 2017, quite influenced by a capital injection into Caixa Geral de Depósitos early in the year. Excluding the effect of this and other temporary measures, the deficit stood at 1.0% of GDP (3.1 General government).

The fiscal balance excluding temporary measures improved on the back of a more dynamic economic activity and the maintenance of favourable financing conditions, with an impact on interest expense and the improvement of the structural primary balance. These positive developments were also reflected in a reduction of public debt to 125.7% of GDP at the end of 2017, 4.2 p.p. below the figure recorded in 2016. However, Portuguese public debt as a percentage of GDP is still among the highest in the European Union. Therefore, in terms of ensuring financial stability, particularly as regards the resilience of the Portuguese economy against adverse shocks,

2. See Box 2 "Vulnerability of Portuguese firms to short-term interest rates rises", Banco de Portugal, *Financial Stability Report*, December 2017.
3. See Box 4 "The financial vulnerability of Portuguese households", Banco de Portugal, *Financial Stability Report*, December 2017.

it is important to make an adjustment in the structural balance in line with the European rules, taking advantage of the current particularly favourable macroeconomic environment.

This process is especially important because high general government indebtedness conditions the sovereign risk premium and may exert a negative externality on the conditions of access to financial markets by the other economic agents (Chart I.1.2).

Chart I.1.2 • Sovereign and private sector risk premia | Percentage points

Source: Thomson Reuters and Banco de Portugal calculations. | Note: The sovereign risk premium is represented by the spread between yields on Portugal and Germany 10-year Treasury Bonds. The private sector risk premium is represented by the spread between the average yields implicit in the iBoxx indices of covered bonds issued by Portuguese and German firms. Latest update: 18 May 2018.

From a broader point of view, the reduction of private and public sector indebtedness should contribute to the improvement of financing conditions, to the reduction of constraints on investment and to increase Portuguese economy's competitiveness, which are key factors for ensuring higher potential economic growth. In fact, in the past few years NFCs with lower indebtedness ratios have been the main contributors to the rebound in corporate investment in Portugal (3.2 Private non-financial sector).

Banking sector profitability improved in 2017, with operating income increasing in particular, but further progress is needed

The banking sector experienced positive developments in capitalisation, in the reduction of non-performing assets, particularly non-performing loans (NPLs), and in operational efficiency. Additionally, several supervisory actions have been carried out with the aim of reinforcing the control mechanisms and internal governance of several institutions, as well as the stabilisation of their management board, based on particularly demanding assessment processes.

However, with a view to further reducing the sector's vulnerabilities, it is instrumental that banks continue to follow the plans to reduce non-performing assets submitted to supervisors, especially given the need in the short to medium term to issue in international financial markets eligible instruments for compliance with the minimum requirement for own funds and eligible liabilities (MREL). In addition, it is also important to continue the adjustment of the cost structures.

Recent developments in the solvency of the main Portuguese banks, the improvement in economic activity and the recovery of the real estate market have been paving the way for a reduction in

non-performing assets. In fact, since the mid-2016 quite significant progress has been made to reduce NPLs and increase these assets' coverage by impairments. In December 2017 the gross carrying amount of non-performing loans on the banking sector's balance sheet was €13.5 billion lower than the peak recorded in June 2016, translating into a 4.6 p.p. reduction in the NPL ratio to 13.3%. The coverage ratio rose by 6.1 p.p. to 49.3% in the same period. These developments mainly reflect the evolution of the NFC segment, whose NPL ratio stood at 25.2%, i.e. 5.2 p.p. below the peak recorded in June 2016, corresponding to a reduction of around €9 billion in the gross carrying amount of non-performing loans. In the same period the NPL coverage ratio in the NFC segment rose by 7.4 p.p. to 53.8%.

In a context of low interest rates, challenges to generating earnings require ongoing improvement of operational efficiency. Despite the expected gains, this process implies additional costs in the short to medium term, associated with the adjustment of staff and the branch network and the investment implied by technological transition. In this vein, the adoption of new technologies in financial intermediation activities poses challenges at the level of cybersecurity and the potential higher competition of FinTechs.

In 2017 the Portuguese banking sector's operational efficiency level improved from the previous year. The cost-to-income ratio stood at 53% at the end of 2017, declining by around 6.5 p.p. from the value observed in 2016. Excluding the effects of triggering the contingent capital mechanism provided for in the contracts concluded within the scope of the sale of Novo Banco and the costs incurred under the restructuring plans implemented by several banks, the cost-to-income is estimated at 54.5% in 2017 (57% when adjusted only for the first effect). This level is close to this indicator's median for euro area banks in the third quarter of 2017. Notwithstanding the progress observed, with significant differences across banks, efforts to improve operational efficiency should continue.

Other financial system vulnerabilities include the concentration of exposures in some asset classes, notably public debt and the real estate market.

The Portuguese banking system is highly exposed to public debt (around 15% of total assets at the end of 2017), especially in the form of securities issued by the domestic sovereign (8% of total assets). The current regulatory treatment of public debt securities at the level of solvency and liquidity ratios favours the banks' ownership of these assets. In addition, the context of low profitability in the sector and higher yields on Portuguese securities make them relatively more attractive than other euro area sovereign issuers.

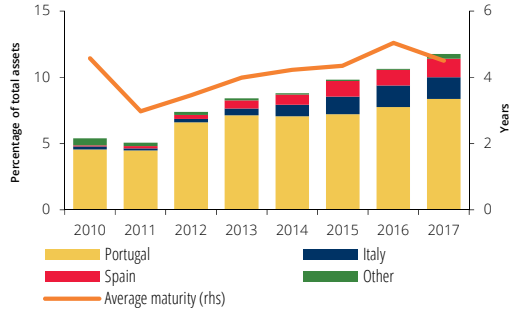
However, the concentration of exposures in this asset class makes banks operating in Portugal especially sensitive to changes in financial market yields, since a significant share of these securities are marked to market on the balance sheet (Chart I.1.3). According to an analysis of the sensitivity of the Common Equity Tier 1 (CET 1) ratio to a 100 basis point rise in domestic public debt yields, the direct negative impact on the regulatory capital ratio is estimated at around 0.58 p.p., with reference to December 2017 (Special issue "Direct and indirect interlinkages in the Portuguese financial system"). In 2017 the removal of a prudential filter allowing banks to make capital ratios immune to changes in the value of public debt securities classified under available for sale assets was concluded. Hence, changes in the value of these securities are presently fully reflected in banks' capital ratios.

Since the end of the first quarter of 2017 the reduction on yields on Portuguese public debt securities, reinforced by an improvement of the Portuguese Republic's credit rating to investment grade by various rating agencies[4] had a beneficial effect on banks' regulatory capital ratios.

4. In the second half of 2017 ratings assigned to the Portuguese Republic's long-term debt were revised upwards to investment grade by Fitch and Standard & Poor's (S&P). In September 2017 S&P raised its rating by one level, from BB+ to BBB-, assigning it a stable outlook. In December 2017 Fitch revised its rating by two levels, from BB+ to BBB, also with a stable outlook. In April 2018 DBRS also raised the rating by one level, from BBB- to BBB, with a stable outlook. Only Moody's continues to assess the Portuguese sovereign as non-investment grade, although revising the outlook to positive.

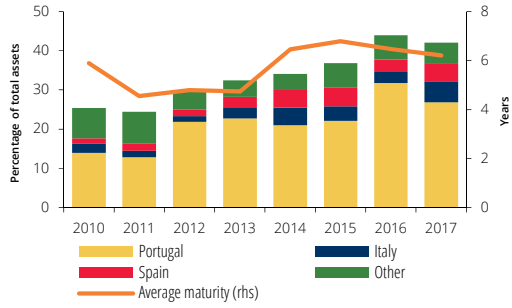
The high concentration of investment in the insurance sector's public debt continued in 2017, stabilising after a considerable increase in 2016 (Chart I.1.4). Similarly to the banking sector, this reflects an asset management strategy that seeks to maximise portfolio returns while minimising capital requirements.

Chart I.1.3 • Resident banking sector's exposure to government debt securities and average portfolio maturity



Source: Thomson Reuters and Banco de Portugal. | Note: End of period values.

Chart I.1.4 • Resident insurance sector's exposure to government debt securities and average portfolio maturity



Source: Thomson Reuters and Banco de Portugal. | Note: End of period values.

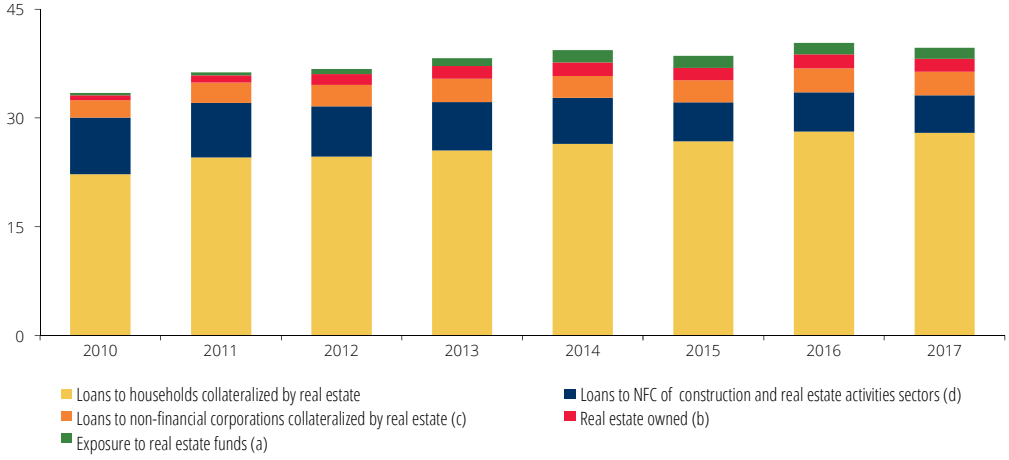
Exposure to real estate assets also accounts for an important share of banking sector's assets (38% of total assets at the end of 2017, i.e. 2 p.p. below the 2016 value). Most of this exposure is indirect, particularly through property collateral associated with housing credit, accounting for approximately 28% of total assets (Chart I.1.5). In this context, at the end of 2017 a considerable share of housing credit had a loan-to-value (LTV) ratio of less than 90%. Therefore, Portuguese banks will likely have some margin to withstand possible collateral devaluations without this having an impact on the expected loss of the housing credit portfolio that implies a significant increase in impairments.

Another component of banks' indirect exposure to the real estate sector refers to credit granted to enterprises in the construction and real estate activities sector, accounting for around 5% of total assets. Although accounting for approximately 26% of loans to NFCs, 40% of corporate NPLs was concentrated in these sectors.

Property received in lieu of payment and real estate investment fund units (some of which resulting from the transfer of said property)[5] is a source of more direct exposure of the banking sector to the real estate market. However, the weight of these assets in the Portuguese banks' balance sheet is negligible. In addition, the real estate market dynamics in the past few years has been creating better conditions for the reduction of these assets, leading to a slight decline in both types of exposure in 2017 (Charts I.1.6 and I.1.7).

5. Loans and closed-ended investment fund units devoted to corporate restructuring in the construction and real estate activities sector should be added to this exposure, although their weight in the banking sector's balance sheet is low (less than 1% of total assets).

Chart I.1.5 • Banking sector's exposure to the real estate sector | Percentage of total assets



Source: Banco de Portugal. | Notes: (a) Includes loans and shares; (b) gross figures; (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. End of period values.

In particular, as regards property received in lieu of payment, the considerable increase seen from 2010 to 2013 cannot be decoupled from the economic and financial crisis recorded in that period, which was reflected in high default rates and consequently in the foreclosure of immovable collateral associated with these credits. At the end of 2017 the gross value of real estate held by banks accounted for less than 2% of the sector's total assets.

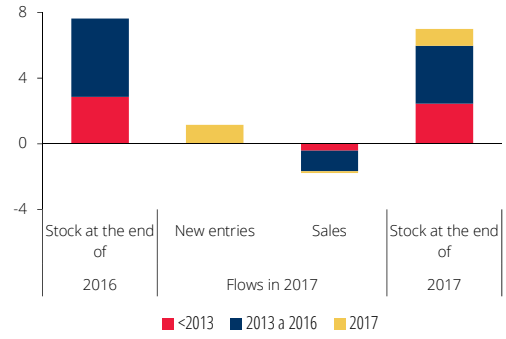
Exposure to real estate investment funds, due to the holding of units and loans granted, corresponds to 1.5% of the banking sector's total assets. In addition, the associated liquidity risk is minor, for chiefly concerning closed-end funds whose units are mostly held by banks.

The reduction of banking sector's structural vulnerabilities is of paramount importance, given the need to access international financial markets for meeting MREL-related needs, the growing competition from FinTech companies, and the prolongation of the low interest rate environment. These factors are likely to compromise the profitability of financial institutions, posing challenges to the sector's future business model. This is particularly important for banks operating in Portugal, where loans to households for house purchase with Euribor-indexed rates, long maturities and fixed spreads are an important part of the credit portfolio. Although current spreads applied in new lending to customers are higher than before the financial crisis, the impact on the portfolio's average interest rate is gradual, given that the new credit volumes are small compared to the stock. With regard to the insurance and pension fund sector, the persistence of very low interest rates for a protracted period and across a broad maturity spectrum has been limiting the investment options that make it possible to ensure the long-term responsibilities taken on, in addition to increasing their present value.

However, as the economic recovery in the euro area is consolidated and passes through to a sustained adjustment of the inflation path compatible with the objective of the European Central Bank (ECB), a gradual withdrawal of monetary stimulus is expected. Although the Governing Council of the ECB expects key interest rates to remain at their present levels for an extended period of time, and well past the horizon of net asset purchases under the asset purchase programme (APP), the medium-term normalisation of market interest rates is expected to improve the profitability of financial institutions.[6]

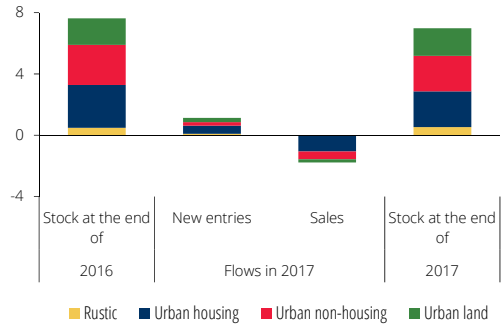
6. Although the upward cycle of short-term interest rates is expected to start in the near future, it will tend to be quite gradual, according to market expectations. Traditionally, net interest income of Portuguese banks tends to increase (decrease) with the rise (decline) in short-term interest rates. This largely results from the fact that interest rates on demand deposits are close to zero, irrespective of the level of short-term interest rates. Hence, the transmission of bank lending and deposit rates is asymmetric.

Chart I.1.6 • Real estate assets owned by banks, by year of receipt | EUR billion



Source: Banco de Portugal. | Note: immovable property assessed at acquisition prices.

Chart I.1.7 • Real estate assets owned by banks, by type | EUR billion



Source: Banco de Portugal. | Note: immovable property assessed at acquisition prices.

1.2 Risks to financial stability

The Portuguese economy's financial conditions are largely determined by the euro area's macrofinancial environment. In turn, the high degree of economic and financial integration between the euro area and the main economic blocks accounts for the global nature of the risks identified in this report in the short to medium term (Table I.1.1). The risks listed may interact and may be mutually reinforcing should they materialise.

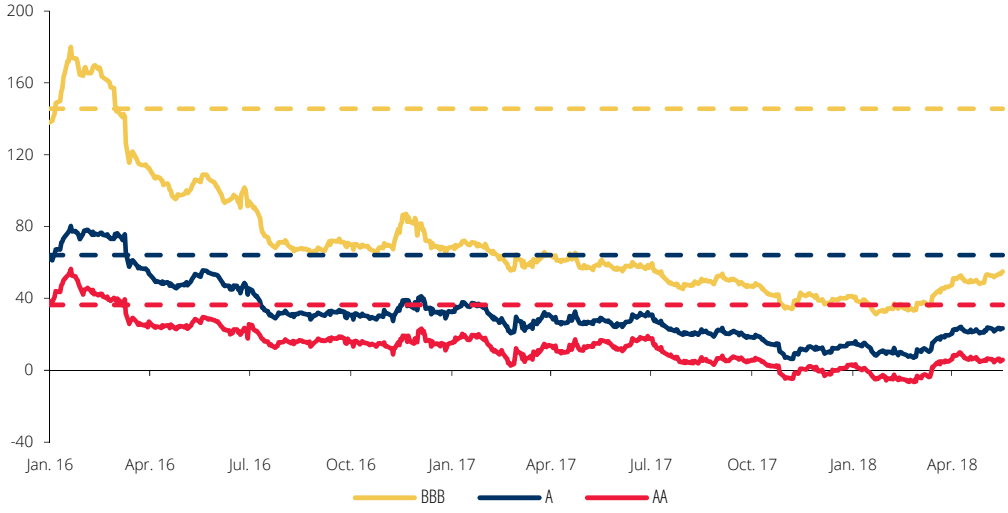
Table I.1.1 • Risks to financial stability

Abrupt and significant reassessment of global risk premia
Possible prolongation of low interest rates environment
Easing of credit standards in household lending
Sensitivity of real estate prices to non-residents behaviour
Widespread use of technology in financial activities: cyber risk and entrance of new firms specialized in providing financial services through digital channels (Fintech)
Transition of the banking sector to a new regulatory and institutional framework at European level

Investors continue to show high tolerance to risk in international financial markets, in an environment of recovery of the world economy

Despite the robust and broadly based – although decelerating – recovery in euro area economic activity, there is still no sustained convergence of inflation towards the ECB's price stability objective. Hence, the monetary policy stance remains accommodative, reflecting in still very low levels of market interest rates. This context is conducive to compressed risk premia in riskier asset classes, reflecting the investors' search for yield (Chart I.1.8).

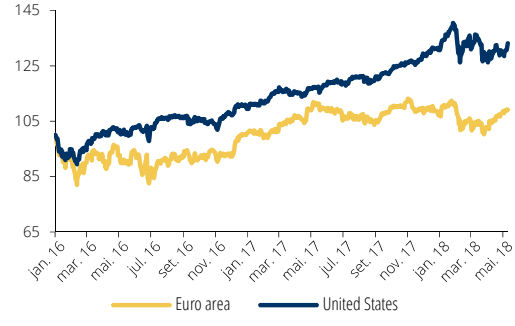
Chart I.1.8 • Private sector risk premia | Basis points



Source: Thomson Reuters and Banco de Portugal calculations. | Note: Spread between the average yield of iBoxx indices of private non-financial corporations and the average mid-swap interest rate for the maturities of 1 to 10 years, by credit risk notation. The dashed lines represent the 2000-18 averages. Latest update: 18 May 2018.

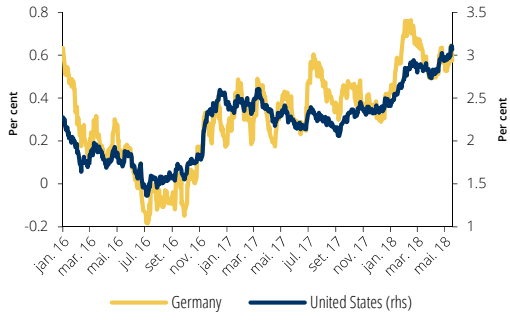
In the US, with the economy close to full employment and the normalisation of monetary policy continuing at a gradual pace, financial markets appear to anticipate the current expansion of economic activity continuing for an extended period. In fact, yields on long-term public debt securities increased and stock market indices appreciated further in 2017, on the back of favourable economic data and an improved outlook for short-term economic growth (Charts I.1.9 and I.1.10). High risk tolerance over the course of 2017 reflected in very low implied volatility levels (Chart I.1.11), which may subsist if investors perceive them as permanent and respond by reinforcing their positions in assets with historically high valuations.

Chart I.1.9 • Stock indices | January 2016 = 100



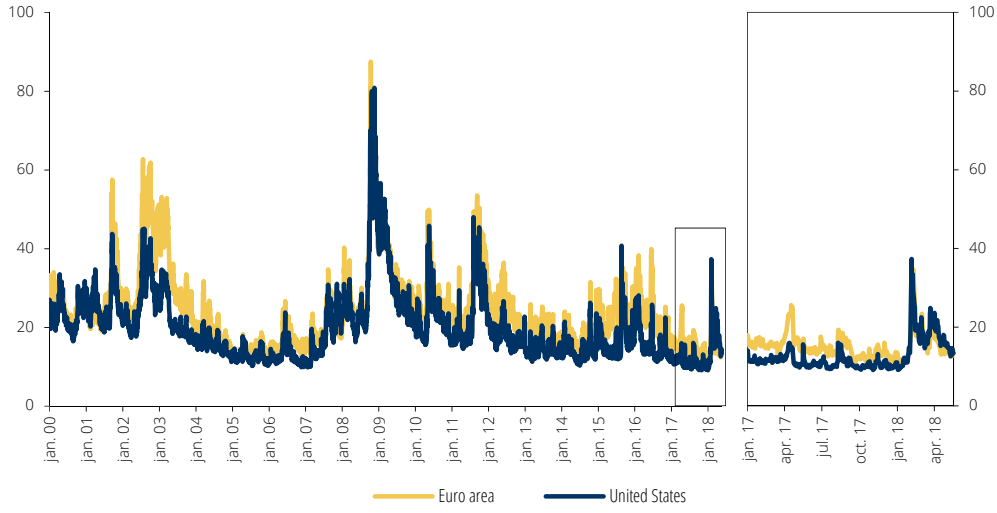
Source: Thomson Reuters and Banco de Portugal calculations. | Notes: Represented stock indices: EuroStoxx 50 (euro area) and Standard & Poor's 500 (USA). Latest update: 18 May 2018.

Chart I.1.10 • Yields on 10-year public debt securities



Source: Thomson Reuters and Banco de Portugal calculations. | Note: Latest update: 18 May 2018.

Chart I.1.11 • Implied volatility in equity markets | Per cent



Source: Thomson Reuters. | Note: Implied volatility in prices of options on the Euro Stoxx 50 and S&P 500 equity indices, represented by the indices VIX (USA) and VSTOXX (Euro Area), respectively. Latest update: 18 May 2018.

In early February data on the US labour market showed a stronger than anticipated acceleration in wages, raising concerns over a rise in inflationary pressures conducive to a faster than anticipated normalisation of the level of interest rates by the Federal Reserve. The investors' reaction translated into sharp declines in the main stock index prices in the US and other economies (Chart I.1.9). Although these movements were partially reversed in the following weeks, this episode showed the sensitivity of investors' expectations in the current environment of high financial asset valuations. Hence, the risk of an upward reassessment of risk premia at the global level remains high, particularly in a framework of geopolitical and economic risks, such as the adoption of protectionist measures. The materialisation of this scenario will tend to have negative consequences for the world economy and trade.

Episodes of higher volatility in financial markets may have an impact on the cost of short-term debt refinancing, especially by some economic agents with lower liquidity buffers. In addition, if the rise in risk premia is found to be persistent, funding costs will tend to worsen even for domestic economic agents with longer-term debt, more diversified funding sources and greater availability of liquidity, such as the Portuguese Republic or financial institutions. Hence, it is essential to pursue policies that promote the sustainability of public finances and the Portuguese economy's potential growth. These factors influence investors' risk perception.

A considerable increase in risk premia would have an impact on the Portuguese financial system through different channels. On the one hand, external demand for Portuguese goods and services would tend to decline, thus affecting economic activity, notably exports, with possible consequences for the real estate market and credit default. On the other hand, financial institutions' capital ratios would be affected by the devaluation of high exposures to public debt securities. In addition, the increase in market financing costs would compromise any possible issuance of MREL-eligible instruments. However, in the recent period the improvement of investors' risk perception about public finances and the Portuguese economy and the stabilisation of the banking sector should have contributed to mitigate the impact of a possible abrupt rise in risk premia internationally. Furthermore, the Governing Council of the ECB is still willing to extend the APP in the euro area until

there is a sustained adjustment of the inflation path consistent with the ECB's objective. The ECB also signalled that the key interest rates will remain at their present levels for an extended period of time, and well past the horizon of net asset purchases.

A possible extension of the current environment of very low interest rates would condition financial system profitability and might generate incentives to excessive risk-taking and a slower reduction of non-financial sector debt

Compared to December 2017, interest rates implied by three-month EURIBOR futures increased in the 2019-22 horizon, in parallel with a robust and broadly based economic recovery in the euro area, which shows that this interest rate is likely to achieve positive values in the second half of 2019 (Chart I.1.12).

Amid higher market interest rates, the debt servicing capacity of more indebted borrowers with higher debt burden rates would be negatively affected. However, expectations about developments in money market interest rates continue to point to a gradual and limited increase in the medium term, which is likely to occur in a context of economic recovery in the euro area and Portugal. Hence, the debt servicing capacity of economic agents should benefit from an expectable increase in household disposable income and corporate profit.

Notwithstanding the current stage of recovery of the world economy and trade, there are downside risks related in particular with a possible adoption of protectionist measures. In addition, the euro area inflation rate remained below the ECB's medium-term objective. Therefore, in the event of a more significant slowdown in economic activity, the rise in interest rates may prove to be slower than implied in current market expectations.

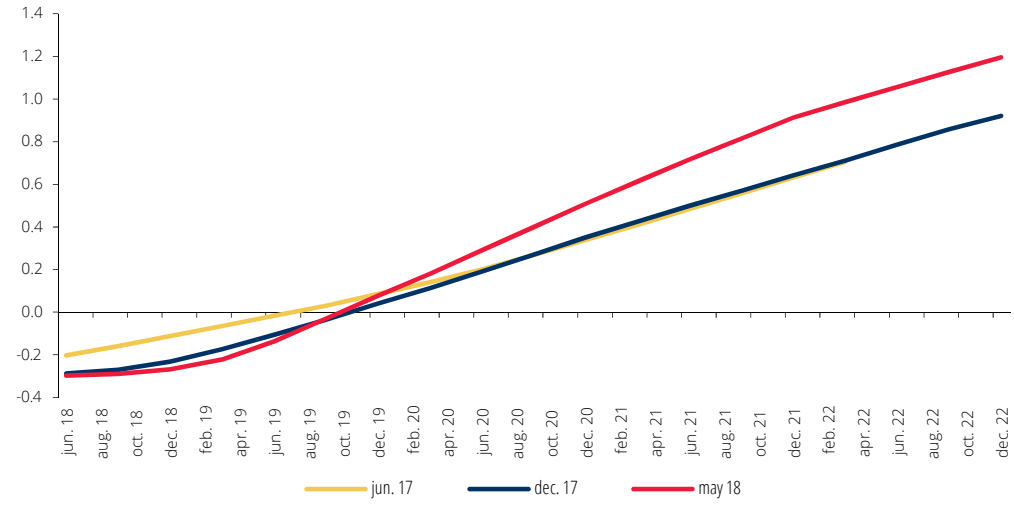
The protracted low interest rate environment, even in the context of a smaller recovery in economic activity, might encourage higher credit demand and act as a disincentive to the reduction of private non-financial sector debt, which is still at high levels. Hence, in the NFC sector, in spite of the aggregate improvement in the financing structure, indebtedness levels continue to be highly heterogeneous. Middle-income households, where most household debt is concentrated, show close to critical debt service-to-income (DSTI) ratios.[7] Thus, there is a considerable number of economic agents vulnerable to a future rise in interest rates. It is therefore important that indebtedness levels continue to follow a downward trend, particularly for the economic agents most vulnerable to income shocks and/or increases in financial costs.

In this vein, under the recent Recommendation it adopted as the national macroprudential authority, Banco de Portugal has determined that, for household credit agreements at variable or mixed interest rate, institutions should assess the impact of a rise in the reference rate

7. DSTI ratios above 30% or 40% are commonly considered to be at critical levels. See Box 4 "The financial vulnerability of Portuguese households", Banco de Portugal, *Financial Stability Report*, December 2017.

applicable in borrowers' solvency (1.3 Macroprudential policy).[8] Therefore, credit standards in new business with households are expected to reflect the borrowers' debt servicing capacity in the event of a rise in market interest rates.

Chart I.1.12 • Interest rate implicit in the three-month EURIBOR futures contracts | Per cent



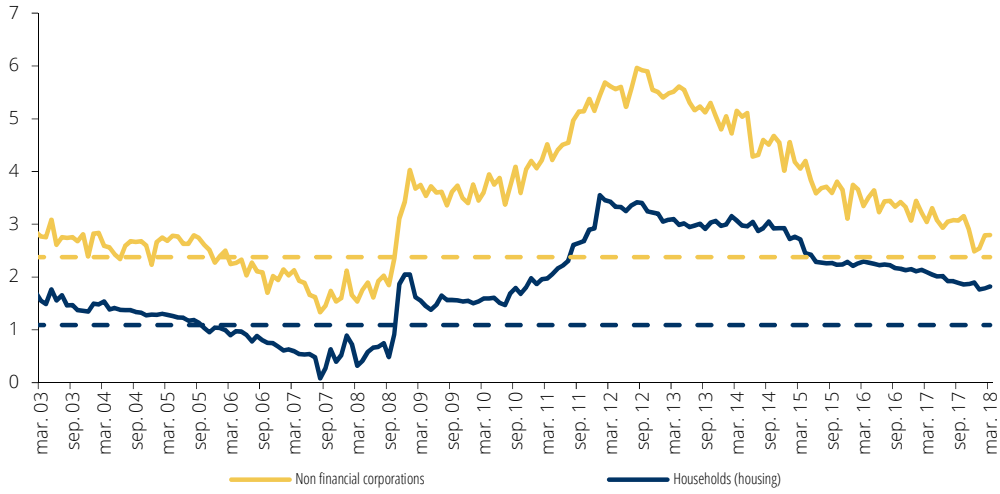
Source: Thomson Reuters and Banco de Portugal calculations. | Notes: 90-day average value of the interest rate implicit in the three-month EURIBOR futures contracts traded in the London International Financial Futures and Options Exchange (LIFFE). Latest update: 18 May 2018.

The low interest rate environment has been conditioning the recovery of financial institutions' profitability in the past few years via net interest income, particularly in countries with prevailing credit at interest rates index-linked to money market interest rates, such as Portugal. On the one hand, short-term interest rates are passed through asymmetrically to bank lending and deposit rates (footnote 6). On the other hand, there is a 0% floor in the deposit interest rate, which is not the case for lending interest rates. These facts condition net interest income in the event of an extension of the current monetary conditions (4. Banking sector). However, it will tend to have a positive effect on default in the short term. In turn, low interest rates at the long end of the yield curve, made possible by the ECB's non-standard monetary policy measures, have been limiting income generated by debt securities held by financial institutions.

This situation may be worsened given that challenges to the generation of earnings imposed by the current accommodative monetary conditions create incentives to an easing of credit standards, in a context of greater competition among credit institutions. In fact, in recent years there has been a narrowing of spreads on new credit to the private non-financial sector. In the case of new housing loans, spreads have been declining in the past few years, although still remaining above the pre-financial crisis average. Spreads in the NFC segment are already close to the pre-crisis average (Chart I.1.13), although there is evidence of differentiation in spreads on new loans according to the firms' risk profile.[9]

8. Instruction of Banco de Portugal No. 3/2018 setting forth, with a view to contributing to financial system resilience, the criteria for weighing the impact on consumer solvency of rises in the reference rate applicable to credit agreements at variable or mixed interest rate (https://www.bportugal.pt/instrucao/32018).
9. Special issue "Risk segmentation on the interest rate spreads of new bank loans to non-financial corporations", Banco de Portugal, *Financial Stability Report*, December 2017.

Chart I.1.13 • Spreads on new credit business with the private non-financial sector | Percentage points



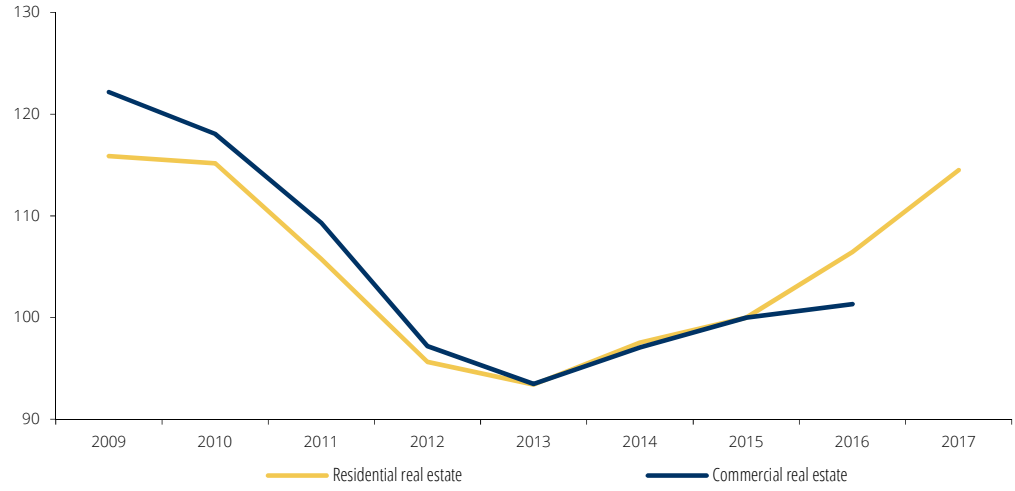
Source: Banco de Portugal. | Notes: Spread between the average interest rate of new business and the 3-month EURIBOR in the case of non-financial corporations and the 6-month EURIBOR in case of housing loans. The dashed lines represent the 2003-07 averages.

Developments in interest rate spreads on credit operations should be considered within the framework of the current stage of the business cycle, insofar as the credit risk price typically tends to be pro-cyclical in nature. To avoid the excessive materialisation of credit risk in the future, as was the case during the sovereign and financial crisis, and increase the resilience of credit institutions, the pricing of transactions should occur within an extended time horizon and beyond the short term, so as to take into account the borrowers' debt servicing capacity in less benign economic scenarios.

An easing of housing credit standards, in a context of still high household indebtedness and a low savings rate, would tend to be reinforced by the recent dynamics of the economy and residential property market prices

After a 16% cumulative reduction in real terms between 2010 and 2013, residential property prices in Portugal recorded robust and increasing growth rates in the past few years. From the end of 2013 to the end of 2017 prices grew by about 24% in real terms (Chart I.1.14). The strong growth of local accommodation activities associated with the expansion of tourism and demand by non-residents, also in the context of the granting of residence permits, appear to be significantly contributing to the current dynamics of the real estate market (2.3 Real estate markets).

Chart I.1.14 • Real estate price indices in real terms | Index (2015=100)



Source: Statistics Portugal (INE) and Banco de Portugal calculations. | Notes: The commercial property price index is available only on an annual basis. Nominal indices deflated by the Harmonised Index of Consumer Prices, 2015 basis.

Evidence suggests that credit developments will not be the main factor for the recent dynamics of residential property prices (2.3 Real estate markets). In fact, the housing credit stock has continued to decline, albeit at a slower pace than observed in recent years, reflecting in an annual rate of change of -1.6% in February 2018.

Despite a reduction in the housing credit stock, the amount of new business has been growing since 2013, accelerating from 2015 onwards, although still remaining at a lower level than before the financial crisis. In addition, the share of housing unit transactions financed by new housing credit has been increasing since 2015, after reaching a minimum value of around 20% at the end of 2013. In 2017 the average value of this ratio stood at 43%, although still falling short of the 2009 values (around 65%).

It is therefore important to gauge how developments in the housing credit stock are accompanied by a recomposition by groups of borrowers with different characteristics. A study by Banco de Portugal based on data by borrower from the Central Credit Register has concluded that in 2017 total early repayments corresponded to 50% of total repayments.[10] Also, most borrowers making total early repayments did not enter into new housing credit in the six subsequent months. It is thus assumed that these repayments were not motivated by house change. Hence, the increased flow of new credit, jointly with the importance of early repayments, which translates into a slight decrease in the balance, may show that the group of borrowers entering into new credit is significantly raising the respective indebtedness. Thus, although banks' exposure to housing credit is somewhat declining, debtors whose loans would show relatively low LTV ratios, for being closer to maturity, are apparently being replaced by new debtors with higher LTVs and prices at greater risk of overvaluation.

10. Box 2 "New loans and repayments in housing credit: an analysis using microeconomic data", Banco de Portugal, *Economic Bulletin*, May 2018.

The recovery of the economy and the real estate market, joined with still very low short-term interest rates, creates incentives to greater competition among banks and the easing of credit standards. The current economic and financial conditions favour the demand for credit, as shown by the results of the April 2018 bank lending survey (4. Banking sector). This context may foster credit granting to borrowers with a higher risk profile, i.e. with a higher probability of default in a scenario of interest rate rise or deterioration of economic conditions.

In addition to the narrowing of spreads applicable in new housing credit, as already mentioned, there is evidence of other less tight practices when granting credit to households, which may increase in the current environment. In particular, there has been a widening of the original maturity of new credit agreements in the most recent period. Following a decrease and stabilisation between 2011 and 2014, the average maturity of new housing credit agreements rose once again from 2015 onwards, reaching 33 years in 2016.[11] This might be worrisome if the maturity of agreements extends into the borrower's retirement period, where a substantial reduction in disposable income is expected, thus jeopardising debt servicing capacity.

Other indicators that show an easing of credit standards on housing credit are the already mentioned LTV and DSTI ratios, but also the loan-to-income (LTI) ratio. Recent data point to a considerable share of agreements with a high LTV ratio applied on the date when credit was granted, only partially associated with the financing of real estate in the banks' portfolio. In the absence of other factors that may mitigate credit risk in these agreements, a study by Banco de Portugal has concluded that credit operations with tighter standards (i.e. high values of LTV, LTI and DSTI) tend to be associated with a higher default rate.[12]

The segment of credit for consumption and other purposes, although having a considerable weight in household debt (around 24% in 2017), also experiences some easing in credit standards, especially higher average maturities for new business. However, interest rates, although having declined somewhat, remain at high levels. In addition, consumer credit stocks have been recording very high growth rates since 2016.

It is thus important to ensure that the current dynamics of credit to households does not compromise, on the one hand, the reduction of the still high household indebtedness ratio and, on the other hand, does not promote the accumulation of excessive risk in the banks' balance sheet, as well as too high an allocation of the economy's resources to the real estate sector. In this vein, given the recent significant upward trend of new housing credit, as well as the decline in the respective spreads, along with strong growth of consumer credit stocks, Banco de Portugal has issued a Recommendation on new credit agreements for households. This Recommendation aims, on the one hand, to encourage adoption by the Portuguese financial system of prudent credit standards to reinforce its ability to absorb potential adverse shocks. On the other, to promote sustainable financing for households, minimising default risk. In addition, with this macroprudential measure, Banco de Portugal intends to prevent the financial sector from taking excessive risks in new loans to households, in the context of an easing of credit standards and an anticipated possible sharpening of this trend (1.3 Macroprudential policy).

11. Banco de Portugal, *Retail Banking Markets Monitoring Report* (Executive Summary available in English), August 2017.

12. See Special issue "Banking sector's exposure to mortgage loans: analysis of LTV and LTI/DSTI and implications for financial stability", Banco de Portugal, *Financial Stability Report*, June 2017, and Banco de Portugal, "Macroprudential measure within the legal framework of credit for consumers", February 2018.

Strong growth in residential and, in a lower degree, in commercial real estate prices has been boosted by tourism and direct investment by non-residents, and the inversion of these trends may reverse price developments

There has been a persistent rise in real estate prices, although at different speeds, in the residential and the commercial segments. After a period of decline in the residential segment's prices, some signs of overvaluation of these prices, in aggregate terms, emerged in the second half of 2017 (Chart I.1.14). After a sharp price fall in the period 2007-13, prices in the commercial segment show some signs of recovery, albeit more limited than in the residential segment.

Although the signs of overvaluation in the residential property market, in aggregate terms, are quite limited, the duration and speed of price growth may imply risks to financial stability, should this dynamics persist or be reinforced. These risks tend to be amplified if the price dynamics is financed through credit, since these trends can be mutually reinforcing due to the valuation of the property pledged as collateral. However, at present, there is no evidence that domestic credit developments are the main factor underlying the real estate price dynamics in Portugal (2.3 Real estate market).

While Portuguese banks are not the main drivers of this market, a sharp price decrease in the residential property market would have negative effects on the banking sector. On the one hand, it would reduce the value of property pledged as collateral for loans, which would typically be more relevant regarding loans granted more recently. On the other hand, a decline in prices could reverse the current conditions that have favoured the reduction of property in banks' balance sheets, which was received in lieu of payment, and of NPLs, both of which have benefited from this market's dynamics in the past years. In addition, even if real estate cycles are financed with equity, price correction leads to reductions in the wealth of households and other investors.

The demand for real estate by foreign investors has advantages for domestic credit institutions in the current environment. On the one hand, it facilitates the sale of real estate assets held by credit institutions and, on the other, contributes to a decline in NPLs associated with credit secured by immovable property. However, the importance of non-resident investors in this market increases its vulnerability to abrupt and significant rises in risk premia at international level, given the faster adjustment that tends to characterise these investors. In particular, an abrupt sharp reversal of demand by international investors, and consequently of prices, would hinder the reduction of immovable property and non-performing loans in domestic credit institutions' balance sheets.

As regards investors in the commercial real estate market, it is important to distinguish between long-term investors, such as pension funds, and investors that are more sensitive to the global economic and financial conditions, such as Real Estate Investment Trusts (REITs), essentially non-resident. In fact, the presence of the former may contribute to mitigate the market effects of a potential more volatile behaviour of the other investors. However, considerable changes in the regulatory framework affecting the expectations of future profitability of investors may have an amplifying price effect, given the characteristics of the Portuguese market in terms of size and liquidity.

The emergence of geopolitical and economic events, such as a possible imposition of protectionist measures, may lead to an abrupt reassessment of risk premia at global level. This process could result in a sharp slowdown in global economic activity and trade, with negative effects

on the external demand for Portuguese goods and services. Those developments would affect consumption, investment and especially exports, notably tourism exports and, consequently, the Portuguese GDP. Consequently, the slowdown in national economic activity, particularly the reduction in income driven by a fall in tourism-related revenue and the dynamics of local accommodation, may initially lead to borrowers' difficulties in complying with the debt service and, afterwards, to sales of real estate assets and the consequent effect on the downward correction of prices.

In turn, the future rise in interest rates in the context of a normalisation of monetary policy in the euro area will tend to have much more limited effects, given that it is expected to be gradual and in the context of a recovery of economic activity. Hence, given that part of the increase in real estate market prices is associated with a prolonged period of very low interest rates, prices in this market are expected to stabilise.

The increasingly broad use of new technologies in the provision of financial services should be monitored by regulators and supervisors, for the purpose of preserving financial stability

Digitalisation is a driver of changes in economic agents' behaviour and expectations at various levels. The widespread use of new technologies has changed how consumers relate to financial service providers. Particularly for the banking sector, this dynamics simultaneously creates challenges and opportunities over the course of the technological transition process.

New technologies allow financial institutions to be more efficient when processing information. On the one hand, they lead to potential gains in customer relations, by making the supply of products and services meet the identifiable customer needs, increasingly more accessible via digital channels. On the other hand, managing and processing large volumes of basic information, both for commercial purposes and financial risk assessment, requires adequate information systems and specialised human resources. Hence, the banking system's successful adaptation to this new paradigm requires high initial investment in technological infrastructures, but also represents an opportunity for banks to increase their operational efficiency. Finally, the evolution of financial institutions' information management systems should take into account an adequate mitigation of cyber-risk, i.e. safeguard the protection of bank customers' personal data and the safety of financial transactions. This is particularly important, since the population's confidence in the financial system is one of the pillars of its stability.

However, there are still challenges related to the recent regulatory changes that have opened some market segments to new firms specialised in the provision of digital financial services (FinTechs). In this respect, in January 2018 the new directive on payment services in the EU internal market (PSD2) entered into force. Once it has been transposed into Member States' law, it will allow service providers that do not hold a banking licence to provide specific payment services via dedicated IT applications.

The widespread use of technology is challenging market power and the business model of the regulated financial sector, particularly of the banking sector, in specific areas of its activity. The increase in competition, introduced by FinTechs in these segments, which are relatively profitable and less subject to regulatory requirements, adds to the pressure on the financial system's profitability in the current environment of very low interest rates.

Hence, the competent authorities should monitor technological innovation in the financial system, to ensure (i) a level-playing field across competitor institutions, (ii) the identification of the risks posed by the availability of technology-based financial services and (iii) the adoption of adequate regulatory and supervisory initiatives both nationally and internationally.

Without prejudice to a positive contribution to financial stability in the medium term, the financial system still faces challenges stemming from the regulatory and institutional framework at European level

Recognising the key role played by the financial system in financing the economy of Member States sharing the single currency, response to the crisis required the promotion of a truly integrated and resilient financial system, equipped with a more consistent and unified architecture to address shocks. This vector is instrumental to ensure the correct transmission of the single monetary policy and guarantee the sustained financing of the euro area economy.

The wide range of measures implemented since 2012 (such as the imposition of additional capital and liquidity requirements to banks) aimed, on the one hand, to reduce risks in the financial system, making it more resilient to face future challenges and, on the other, to make the euro area's institutional architecture more supportive in risk sharing among Member States, with a view to a firm response to future crises. However, the absence of a European Deposit Insurance Scheme (EDIS) continues to weaken the European response to the crisis and to promote distortions in competition among European banks due to the crystallisation of the reciprocal influence between banks and the sovereign.

Although the first two pillars of the Banking Union are already fully operational – the Single Supervisory Mechanism (SSM) since November 2014 and the Single Resolution Mechanism (SRM) since January 2016 – approximately six years since the commitment made by European leaders as to the urgency of creating the three main pillars for a true Banking Union, it has not yet been possible to reach an understanding regarding key aspects of EDIS. This concerns in particular the essence of the mechanism relying on the full mutualisation of losses in the long term, but also the order of priorities between higher risk-sharing (via EDIS) and the introduction of additional measures to reduce risk in the banking sector.

The Communication from the European Commission of 11 October 2017 shows the complexity of negotiations and the difficulty for European leaders to reach an agreement for greater risk-sharing, reflecting some Member States' concerns that their banking systems will systematically subsidise the other systems. The ECB tried to completely dismiss this matter by publishing a quantitative study on risk-based contributions to EDIS in April 2018. Through this initiative, the Commission called upon European leaders to adopt measures swiftly, so that this decisive Banking Union pillar can make progress, although taking a step back in the level of ambition from the November 2015 legislative proposal for the creation of EDIS.

Firstly, implementation in the early years of a reinsurance scheme to repay depositors, involving only funding by EDIS to meet part of the liquidity needs, once the financial means available in national deposit guarantee schemes are exhausted, would not resolve the correlation between banking risk and sovereign risk. In fact, in this mechanism losses would continue to be fully supported by national deposit guarantee schemes and tend to influence national budgets

and the sovereign risk. Secondly, and more importantly, striving for a mechanism relying on coinsurance (i.e. with only partial loss sharing), deviates from the only model that would actually make it possible to achieve a true Banking Union and would definitively allay any depositor concerns as to the safety of their deposits, especially in crisis situations, regardless of the Member State where the bank is located. In addition, the Commission raised the possibility of interlinking the transition from the reinsurance stage to partial loss sharing at the coinsurance stage with compliance with a series of risk-reduction measures (potentially disruptive, such as the decrease in the NPL stock to certain pre-defined levels in a potentially short period of time). This possibility is liable to also contribute to worsening financial fragmentation among Member States and increasing risk perception with regard to sovereigns, a totally opposite effect to the Banking Union's objective and the desired deepening of Economic and Monetary Union (EMU).

The current situation therefore is set to continue, where responsibility for the supervision and resolution of institutions were elevated to the European level, but the costs stemming from these decisions continue to lie with the national "safety nets". Imbalances resulting from the European financial architecture itself and the inherent risks continue to pose additional challenges to the financial system, whose activity therefore continues to be directly exposed to market agents' perception as to each Member State's public finance situation and to abrupt changes in this risk perception, with a potential impact on financing costs and their competitiveness in the single market.

The need for reforms to continue in the euro area with a view to deepening crossborder integration through the banking sector and capital markets has even been highlighted in a few publications since the latest issue of the *Financial Stability Report*. As an example, an article published in January 2018 by seven German economists and seven French economists[13] addresses a series of proposals to reform the euro area architecture, covering both risk-reduction and risk-sharing measures in the banking sector, seeking to a certain extent to reconcile the German and French positions as regards the priorities for deepening the EMU, without neglecting the alignment of incentives to the promotion of prudent fiscal discipline policies in each Member State. This document motivated considerable response and criticism, such as the opinion articles published by Lorenzo Bini Smaghi[14] and Peter Bofinger.[15]

In addition to the vulnerabilities of the current European architecture, stemming to a certain extent but not exclusively from the absence of an EDIS, the resolution measures recently applied (notably to Banco Popular Español) highlighted the SRM's structural insufficiencies as regards liquidity provision for supporting institutions under resolution.

One of the SRM's key motivations is the reintroduction of market discipline (particularly by applying internal recapitalisation, aiming at risk sharing in the private sector and overall more efficient risk allocation in the financial sector), and the corresponding institutional architecture appears to be theoretically adequate to reach this purpose. However, it has become clear that, in practice, when a resolution measure is applied to a credit institution, its solvency is restored, but its liquidity needs may not be fully and/or immediately restored (e.g. continuing outflow of deposits or lack of access to the interbank market), thus jeopardising the efficiency of the measure itself.

13. "Reconciling risk sharing with market discipline: A constructive approach to euro area reform", CEPR Policy Insight No. 91, 2018: https://cepr.org/sites/default/files/policy_insights/PolicyInsight91.pdf.
14. "A stronger euro area through stronger institutions", VoxEU.org, 9 April: https://voxeu.org/article/stronger-euro-area-through-stronger-institutions.
15. "Euro area reform: No deal is better than a bad deal"; VoxEU.org, 15 May: https://voxeu.org/article/cepr-policy-insight-91-no-deal-better-bad-deal.

In fact, it cannot be excluded that, even with a fully mutualised and fully functioning (from 2014) Single Resolution Fund (SRF), the size of its available financial means proves insufficient to meet the liquidity needs of a large-sized bank under resolution, or if there is a systemic crisis. Furthermore, even considering the existence of a common fiscal backstop (i.e. a common last resort fiscal security mechanism for the Banking Union) by the European Stability Mechanism (ESM) to the SRF, the operationalisation and governance procedures may not be compatible with the need to rapidly provide liquidity to the institutions in question, and thus compromise their return to viability and the performance of the critical functions to the economy. Hence, the creation of liquidity backstops as a complement to the SRM is key to reinforcing confidence in the banking sector and promoting financial stability.

Thus, the effectiveness of the SRM's actions continues to depend on the creation of an interim financing mechanism for the Single Resolution Fund's transition period (i.e. up to 2024, during which the common fund's financial means should be progressively accumulated up to the target level and to the full mutualisation) and a common fiscal backstop for the long run and based on the ESM. These are key elements for endowing the SRM with the credibility and ability to effectively apply resolution measures without influencing national budgets.

Both elements – the interim financing mechanism and the common fiscal backstop – are equally essential for the creation of the third pillar of the Banking Union (EDIS) and the credibility of the common deposit guarantee fund to cope with systemic shocks and ensure a high and homogeneous level of protection for depositors.

Finally, a reference in the regulatory context to (i) the risks inherent to some uncertainty surrounding the rules and/or guidelines that may be defined as regards the provisioning for prudential purposes of new NPLs and about the NPL stock and (ii) the challenges posed by the issuance of eligible instruments for compliance with the MREL, whose costs will tend to be higher, notably due to the subordination level of the instruments at stake, and the consequent need for a transition period for their compliance.[16]

1.3 Macroprudential policy

Macroprudential instruments include not only the harmonised instruments set out in the European regulatory framework, but also those that may be implemented at national initiative. Each country's macroprudential authority is responsible for acting based on the latter and, at present, neither common definitions are provided for in European regulatory frameworks, nor is there harmonised implementation among countries.[17]

16. Box 2 "Minimum Requirement for Own Funds and Eligible Liabilities under the new resolution regime", Banco de Portugal, *Financial Stability Report*, November 2015.

17. The recommendation of the European Systemic Risk Board (ESRB) on closing real estate data gaps (ESRB/2016/14) is an important step towards establishing common definitions for the LTV, LTI and DSTI ratios.

Systemic crises associated with an excessive expansion of housing credit and residential property overpricing may result in particularly significant costs for the economy.[18] With the purpose of mitigating risks associated with excessive growth of credit granted to households, in particular loans secured by real estate, several countries have been implementing macroprudential instruments that limit the conditions for granting these loans.

The instruments that can be implemented at national initiative include LTV, LTI and DSTI ratio limits and restrictions to loan maturity. The measures adopted by the several countries are analysed in greater detail in Box 1 – Implementation, at European level, of macroprudential tools for credit standards for loans to households.

Banco de Portugal has issued a recommendation on new credit agreements for consumers, namely credit relating to residential immovable property, credit secured by a mortgage or equivalent guarantee and consumer credit

Portuguese households continue to record high indebtedness levels, despite the reduction from 2010 onwards, jointly with a low saving rate. This indebtedness is reflected in the high concentration of exposures of the financial system to housing credit. The flow of new housing credit has increased strongly in the recent period, while the stock of consumer credit has been raising sharply. In addition, in a context where interest rates remain at very low levels and real estate sector prices have increased significantly, the recent economic recovery has been accompanied by an easing of credit standards, amid increased competition among institutions. Taking into account that the above factors may negatively affect the resilience of the banking sector and cause risks to financial stability, Banco de Portugal has issued a recommendation on new credit agreements for consumers,[19] particularly credit relating to residential immovable property, credit secured by a mortgage or equivalent guarantee and consumer credit, introducing limits to some of the criteria that institutions should observe in borrowers' creditworthiness assessments (Table I.1.2).

18. For a more detailed analysis, see Box 5 "House price developments in Portugal and implications for financial stability", Banco de Portugal, *Financial Stability Report*, December 2017.

19. Consumer means a natural person acting with purposes other than those of his or her commercial or professional activity in the credit agreements covered by the provisions of Decree-Law No. 133/2009 and Decree-Law No. 74-A/2017.

Table I.1.2 • Summary of the recommendation on new credit agreements for consumers

A LTV limits	New credits relating to residential immovable property for the purchase or construction of own and permanent residence **LTV ≤ 90%**.
	New credits relating to residential immovable property or credit secured by a mortgage or equivalent guarantee for other purposes than own and permanent residence **LTV ≤ 80%**.
	New credit relating to residential immovable property and credit secured by a mortgage or equivalent guarantee for purchasing immovable property held by the institutions themselves and for property financial leasing agreements **LTV ≤ 100%**.
B DSTI limits	Credit contracts should have **DSTI ≤ 50%**, with the following exceptions on the total amount of credit granted by each institution in each year: - up to 20%: DSTI ≤ 60%; - up to 5%: no DSTI limit. For the calculation of the DSTI, monthly instalments of new loans are assumed constant over the entire period of the loan. For variable and mix interest rate contracts, the impact of an interest rate rise should be considered. The DSTI should also take into account the impact of a reduction in the borrower's income, if the borrower's age at the term of the loan contract is higher than 70 years old, except if the borrower is already retired at the time of the creditworthiness assessment.
C Limits to maturity	For credits relating to residential immovable property or credit secured by a mortgage or equivalent guarantee: - Maturity of new credit agreements ≤ 40 years; - Average maturity of new credit agreements should gradually converge to 30 years until the end of 2022.
	For consumer credit agreements: - Maturity of new loans ≤ 10 years.
D Requirement of regular payments	New loans should be granted with regular payments of interest and capital.

Banco de Portugal has sought to take action preventively, in order to ensure, on the one hand, that credit institutions and financial companies do not take excessive risk when granting new loans, contributing to the resilience of the financial sector, and, on the other hand, that borrowers have access to sustainable financing, minimising the risk of default. The Recommendation covers all institutions authorised to grant the categories of loans referred to therein.

There are various exceptions to the Recommendation, particularly low-amount agreements, agreements intended to prevent or address arrears situations and agreements with no predefined repayment schedule, including credit cards.[20]

The macroprudential measure was implemented as a Recommendation, in accordance with the 'comply or explain' principle. This type of legal instrument was chosen taking into account the innovative and somewhat complex macroprudential measure. It is therefore necessary to gather experience on how it will be implemented and its potential impacts. Banco de Portugal will assess the institutions' degree of compliance with the Recommendation at least annually, as well as their justifications in case of non-compliance. Banco de Portugal may take additional measures, if the referred justifications are not considered adequate.

Given the desired preventive nature of macroprudential action and the initial stage of risk build-up, Banco de Portugal considered that the introduction of limits to the LTV and DSTI ratios and to loan maturities is a more suitable instrument than capital add-ons, given that the maximum limits defined only bind new credit to borrowers with a higher risk profile. The combination of limits, in turn, is targeted at minimising the limitations of each instrument when applied individually and thus intensifying the measure's effectiveness. The measure also establishes that credit agreements should have regular principal and interest payments.

As regards the LTV,[21] Banco de Portugal has defined different limits according to the purpose of the loan, considering a less restrictive limit in the case of loans for the purchase or construction of permanent residence (90%) and a more restrictive limit in the case of immovable property for other purposes (80%). In addition, the 100% LTV limit applies only to loans for the purchase of immovable property on the banks' balance sheets[22] or to property whose purchase is financed through real estate leasing,[23] which represent a small share of the total loans covered by the LTV limit.

20. The scope exceptions considered are (i) credit agreements in the form of overrunning, (ii) credit agreements intended to prevent or address arrears situations, (iii) credit agreements for an amount equal to or lower than the equivalent to tenfold the guaranteed monthly minimum wage; (iv) credit agreements concluded under the housing credit regime for disabled persons; and (v) credit agreements in the form of an overdraft facility and other credit with no defined repayment schedule (including credit cards and credit lines).
21. When defining this macroprudential measure, Banco de Portugal adopted as reference value for the property the minimum between the assessment value and the purchase value, in accordance with the recommendation of the European Systemic Risk Board (ESRB) on closing real estate data gaps, available at https://www.esrb.europa.eu/pub/pdf/recommendations/2016/ESRB_2016_14.en.pdf.
22. According to the study in Box 3 "Real estate owned on the banking sector's balance sheet", published in the December 2017 issue of Banco de Portugal's *Financial Stability Report*, up to 2014, as a result of the financial crisis, there was a significant rise in balance sheet holdings of real estate owned, which was a consequence of borrowers' default.
23. When the purchase of property is financed through real estate leasing, the asset is owned by the institution that grants financing, and thus the costs associated with the borrower's default are lower than when credit is secured by the property.

DSTI limits consider the impact of an interest rate rise in the numerator, which varies according to the original maturity of the agreements, in the case of variable or mixed interest rate agreements, taking into account the historically very low levels of interest rates. The aim is thus to test whether borrowers are able to bear the effects of an expectable rise in interest rates on the debt service. The interest rate rise is expected to occur in accordance with Instruction No. 3/2018, which establishes increases in the reference rate (Table I.1.3).

Table I.1.3 • Increase in the index – Variable and mixed interest rate schemes

Maturity of the contract and increase in the index		
up to and including 5 years	more than 5 and up to and including 10 years	over 10 years
+1 p.p.	+2 p.p.	+3 p.p.

Note: In the case of credit agreements at a mixed interest rate, the institution should consider the heavier instalment for the customer between that resulting from applying the increase in the index, taking into account the maturity of the agreement in the variable interest rate period, and that resulting from the fixed rate period.

Also, considering the long maturities of credit agreements and given that institutions do not usually consider the reductions in income that tend to occur in the transition from active life into retirement in the borrowers' creditworthiness assessment, Banco de Portugal has incorporated an income cut in the DSTI calculation in the event the agreement extends beyond 70 years of age.

Banco de Portugal recommends a maximum DSTI of 50% of income net of taxes and social contributions. However, taking into account the wider group of indicators used by credit institutions when assessing specific risk situations, the Recommendation allows institutions to exceed the DSTI limit, in some cases. As such, these exceptions were introduced to prevent any disruptive effects on the credit granting activity.

In addition, the monthly instalment of the new credit agreement should be calculated assuming that it is constant throughout the agreement's lifetime. The requirement of calculating the DSTI assuming constant instalments was introduced to avoid creating the illusion of ability to service debt over the whole lifetime of the agreement, which may occur in other types of agreement, such as increasing instalment systems or deferred and grace periods for principal repayment, considering instalments of a lower value at the beginning of the agreement, which would result in a more favorable DSTI for the consumer in the short run. It should also be noted that agreements with increasing instalments tend to be associated with higher default ratios.

On the one hand, DSTI ratio limits, by restricting the monthly instalment associated with the credit amount for a given income level, contribute to a decrease in the borrower's probability of default. On the other hand, LTV ratio limits, by requiring at the start of the agreement sufficient collateral to service the outstanding debt, contribute to minimising financial system losses in the event of credit default. In addition, LTV ratio limits also contribute to reducing the borrower's probability of default by requiring the use of equity.

The adoption of limits to the original maturity of loans may be warranted to avoid DSTI ratio limits from being circumvented by the extension of the loan maturity, but are also justified due to their importance regarding the risk associated with credit agreements, particularly given that agreements with longer maturities entail more risk. Furthermore, in shorter-term loans it will be easier to extend the maturity in case of borrowers' difficulties, facilitating loan restructuring.

The limits set in the Recommendation correspond to caps and, as such, do not replace the institutions' appraisal of the adequateness of the different indicators' values and other criteria used in the assessment of each borrower's creditworthiness. Caps defined at the level of each instrument are only binding to borrowers with a higher risk profile, but do not affect credit supply in general.

This macroprudential measure applies to new credit granted as of 1 July 2018. Additional information on the measure's implementation, including answers to frequently asked questions, are available on Banco de Portugal's website.[24]

Finally, this macroprudential measure complements and liaises with the recent regulatory initiatives within the framework of credit secured by residential immovable property and bank customer protection, already mentioned in the previous issue of the *Financial Stability Report*.[25]

In the second quarter of 2018 Banco de Portugal maintained the countercyclical capital buffer rate unchanged at 0% of the total risk exposure amount

Banco de Portugal has decided to keep the countercyclical capital buffer rate at 0% of the total risk exposure amount in the second quarter of 2018. The reduction of the outstanding amount of credit to the non-financial private sector, in tandem with nominal GDP growth, has led the credit-to-GDP ratio to remain below its long-term trend.

Furthermore, the majority of indicators used in the assessment of the countercyclical capital buffer rate do not signal the build-up of cyclical systemic risk, with the exception of housing prices, which continued to grow sharply as in previous quarters.[26]

The capital conservation buffer and the other systemically important institutions capital buffer requirements continued to be phased in

The capital conservation buffer continued to be implemented in a phased manner, reaching 1.875% of the total risk exposure amount in January 2018. This buffer should be fully constituted by 1 January 2019, reaching 2.5% of the total risk exposure amount on that date.

24. https://www.bportugal.pt/en/page/ltv-dsti-and-maturity-limits.
25. In June 2017 Decree-Law No. 71-A/2017 was published, partially transposing to Portuguese law Directive No. 2014/17/EU on credit agreements for consumers relating to residential immovable property. Among other provisions, the European Directive and its national transposition set forth that the consumer's ability and propensity to repay the credit is assessed and verified before a credit agreement is concluded. Within the scope of the assessment of consumers' creditworthiness and resilience, Notice of Banco de Portugal No. 4/2017 lays down which elements on these consumers' income and expenses should be taken into consideration in the assessment of creditworthiness.
26. For a detailed analysis of price dynamics, see section 2.3 Real estate market.

Also, the other systemically important institutions capital buffer, which has been imposed to banking groups considered systemically important at national level started to be phased in as of January 2018. This buffer, included in the harmonised set of macroprudential instruments at European level, is specific to each institution, as released on the Banco de Portugal's website, and should be fully constituted as of January 2021.[27]

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

Following a recommendation from the ESRB issued in February 2018, Banco de Portugal has decided to reciprocate the macroprudential measure imposed by the Finnish authority (Finanssivalvonta) in 2017. The measure covers exposures secured by residential property located in Finland, imposing a minimum weight floor of 15% for the average risk weight to these exposures, by institution. This floor will be applied to credit institutions using the internal ratings based approach (IRB) for estimating the concerned risk weight, regarding either direct cross border exposures to Finland or exposures through Finnish located branches of Portuguese banks.

Banco de Portugal has assessed the materiality of the Portuguese financial sector's exposures to Finland and concluded that these exposures are not significant. Although there are currently no material exposures, Banco de Portugal has decided to reciprocate the measure as a matter of principle, as provided for in point 15 of Recommendation of the ESRB No. 2015/2.

27. https://www.bportugal.pt/en/page/o-sii-capital-buffer.

2 Macroeconomic and markets environment

2.1 Macroeconomic situation and short-term prospects

Economic activity in Portugal accelerated significantly in 2017 benefitting from a particularly favourable external environment

In 2017, the Portuguese economy grew 2.7% in real terms, slightly above euro area growth, and continued to post a current and capital account surplus, corresponding to 1.4% of GDP. These developments in economic activity represent a significant acceleration compared with 1.6% growth in 2016, and were underpinned by higher growth of exports, investment and, to a smaller extent, private consumption.[28] In turn, public consumption remained virtually unchanged. Annual developments in GDP reflect however a slight deceleration, in year-on-year terms, in the second half of the year, reflecting less buoyant exports.

Labour market conditions continued to improve. Employment went up by 3.3% in 2017 and the average unemployment rate dropped by 2.2 p.p. to 8.9% (7.9% in December), most notably with a sharp reduction in long-term unemployment. In turn, the inflation rate increased by 1 p.p. to 1.6%, reflecting in particular developments in the price of energy goods and tourism-related services.[29]

At the global level, economic growth was robust, having accelerated across most advanced and emerging market economies. World trade grew above economic activity, unlike in 2015 and 2016. Monetary and financial conditions remained favourable, amid low volatility in most financial markets and geographies, with an improvement in the countries most affected by the sovereign debt crisis. Despite the normalisation processes of the key interest rates and the reduction of stimulus through the non-standard measures being implemented in some of the major economies, the monetary policy stance remained broadly accommodative. Economic activity in the euro area accelerated significantly and recorded the strongest growth of the last ten years, reflecting more buoyant exports and robust domestic demand. This acceleration was widespread across most sectors.

28. Note that National Accounts data for 2017 are preliminary.
29. For a more detailed analysis of the Portuguese economy in 2017, see Banco de Portugal, *Economic Bulletin* – May 2018.

In Portugal, the acceleration of economic activity was broadly based across most sectors, with improvements mainly in the industry and construction sectors

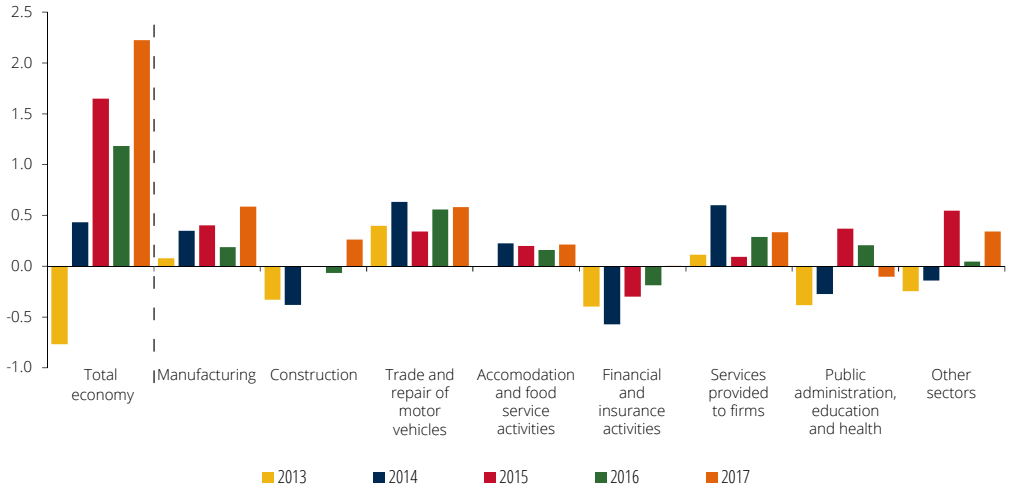
Developments in private consumption in Portugal in 2017 were underpinned by stronger growth of non-durables consumption and a deceleration in durable goods consumption, in particular of the motor vehicle component, which nonetheless, continued to grow above total consumption. In nominal terms, private consumption grew slightly above household disposable income, which translated into a slight reduction of the saving rate. The saving rate of Portuguese households stands at rather low levels in historical terms.

The acceleration of investment reflected, largely, developments in GFCF in construction, with 9.2% growth, after a virtual stabilisation in 2016. In particular, the housing component recorded 6.3% growth, compared with 1.7% in 2016. Against a background of general improvement in confidence levels and in prospects regarding future developments in real estate prices and more favourable financing conditions, the recovery of investment in construction seems to have benefitted from (i) rising housing demand by Portuguese households, amid an improvement in disposable income and falling unemployment, (ii) rising housing demand by non-residents, against a background of strong growth of residential tourism, including the demand for local accommodation, (iii) rising demand for residential real estate by resident and non-resident investors, as an alternative to financial assets offering lower expected returns, and (iv) to a smaller extent, increasing investment in commercial real estate, largely by non-residents.

Developments in economic activity by activity sector were relatively homogeneous, with most sectors making a positive contribution to the growth of the economy's GVA (Chart I.2.1). Manufacturing recorded significant growth, strongly accelerating from 2016, being the highest growth since 2010. Growth in the trade and motor vehicles repair sector stabilised, having slightly accelerated in the accommodation and food services sector. Aligned with significant growth of GFCF in construction, the GVA of the construction sector made a positive contribution to the change in total GVA, unseen since 2007. The recovery in the construction sector was observed in most euro area economies, despite being more recent in the case of Portugal, after a prolonged period of decline in this sector. In a similar vein, GVA of the financial activities and insurance sectors interrupted a prolonged period of fall – reflecting improvements in the banking sector – having recorded a virtual stabilisation.

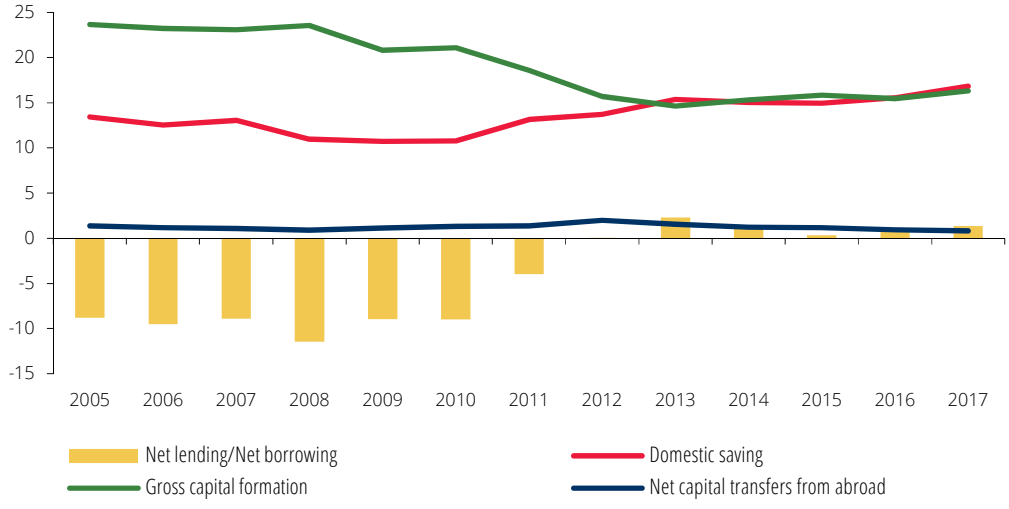
Net lending of the economy increased to 1.4% of GDP, reflecting a slightly higher increase in domestic savings than in investment (Chart I.2.2). Turning to external transactions, there was a deterioration of the goods balance and an increase in the surplus of the services balance related to travel and tourism, lower inflows of Community funds and a rise in emigrant remittances. Despite a positive current and capital account balance and strong nominal GDP growth, the international investment position (IIP) recorded only a slight improvement, to -105.7% of GDP, reflecting in particular the negative contribution of the valuation of residents' liabilities, most notably with the valuation of Portuguese Treasury bonds associated with declining yields in the secondary market. Still, it should be noted that the external debtor position of the Portuguese economy decreased significantly in the past few years, after reaching an all-time low of -122.4% of GDP, recorded in the IIP, in 2014.

Chart I.2.1 • Real GVA growth in Portugal and contributions by activity sector | Per cent



Source: Statistics Portugal.

Chart I.2.2 • Savings, investment and net lending/net borrowing of the Portuguese economy | Percentage of GDP



Source: Statistics Portugal.

Economic growth, despite decelerating, is expected to remain robust and above potential in Portugal and in the euro area

In the first quarter of 2018, the main economic activity and confidence indicators remained at elevated levels. However, the coincident indicator for economic activity continued the downward path started in September 2017. In turn, the unemployment rate continued to fall (7.4%, in March)[30], while the inflation rate was below the average figures for 2017.

30. Corresponds to the provisional estimate released by INE at the end of April.

The projections for the Portuguese economy point to robust growth, above potential, albeit decelerating over the projection horizon 2018-2020 (Table I.2.1), in line with the projections for the euro area. In particular, projections point to the maintenance of the strong momentum of investment and exports, in parallel with moderate private consumption growth. The slowdown in the Portuguese economy over the projection horizon reflects the deceleration of external demand and supply-side restrictions, associated with structural constraints on higher potential growth. The economy is expected to maintain its net lending capacity and the household saving rate to continue at historically low levels. The short-term risks surrounding the projections for economic activity are assessed as balanced. Downside risks are identified over the medium term, related to the building up of pressures in international financial markets, the aggravation of geopolitical tensions and the adoption of protectionist measures at the global level.

Economic indicators for the early months of 2018 point to a slowdown in economic activity in the main advanced economies, including the euro area. Still, the International Monetary Fund (IMF) anticipates a slight rise in world economic growth, in 2018, in particular in the United States, and the maintenance of robust growth rates in most advanced and emerging market economies. The forecasts released in the World Economic Outlook of April 2018 represent an upward revision of the October 2017 forecast, reflecting improving prospects for the euro area and the United States and, in the latter, also reflecting an expansionary fiscal policy. Prospects for economic activity are relatively consensual between institutions. Risk factors include higher-than-expected monetary policy tightening, in particular in the United States, the increase in restrictions to international trade and the proliferation of nationalist policies.

Table I.2.1 • Annual growth rate of GDP | Per cent

	2017	2018p	2019p	2020p
Portugal	2.7	2.3	1.9	1.7
World economy	3.8	3.9	3.9	-
Advanced economies	2.3	2.5	2.2	-
USA	2.3	2.9	2.7	-
Euro area	2.5	2.4	2.0	-
Germany	2.5	2.5	2.0	-
France	2.0	2.1	2.0	-
Italy	1.6	1.5	1.1	-
Spain	3.1	2.8	2.0	-
United Kingdom	1.8	1.6	1.5	-
Emerging market and developing economies	4.8	4.9	5.1	-
China	6.9	6.6	6.4	-
Brazil	1.0	2.3	2.5	-
Russia	1.5	1.7	1.5	-

Sources: Banco de Portugal and IMF. | Notes: p – projected. The projections for the Portuguese economy refer to the march 2018 update. For more detail, see Banco de Portugal, Projections for the Portuguese economy: 2018 – 2020, March 2018. The projections for the remainder geographies are those published by the IMF in the *World Economic Outlook*, April 2018.

2.2 Financial markets

Low volatility levels persisted in financial markets, despite the turbulence recorded in early February 2018

In 2017, activity in international financial markets was characterised by low volatility levels, in a favourable economic environment at the global level, and in a context of maintenance of a broadly accommodative monetary policy in the major economies. The importance of the search for yield behaviours remained high, reflected in a broad-based valuation in equity markets and compression of risk premia associated with the sovereign debt and the debt of companies with lower credit quality.

In early February 2018, there was a significant rise in volatility and a sharp devaluation in the main US stock exchanges, which spread worldwide. The improvement of some economic activity indicators, namely US labour market data, led to an upward revision of the outlook for inflation and fears of a faster normalisation of the US monetary policy. In an environment with high valuations in the US market, there was a strong rise in sell orders, fuelled by transactions relating to investment products that counted on the maintenance of low volatility levels. This type of products, typically characterised by passive management strategies, implemented through high frequency trading algorithms, is already assuming significant importance as an investment alternative, amplifying the fall in prices and the rise in volatility.[31]

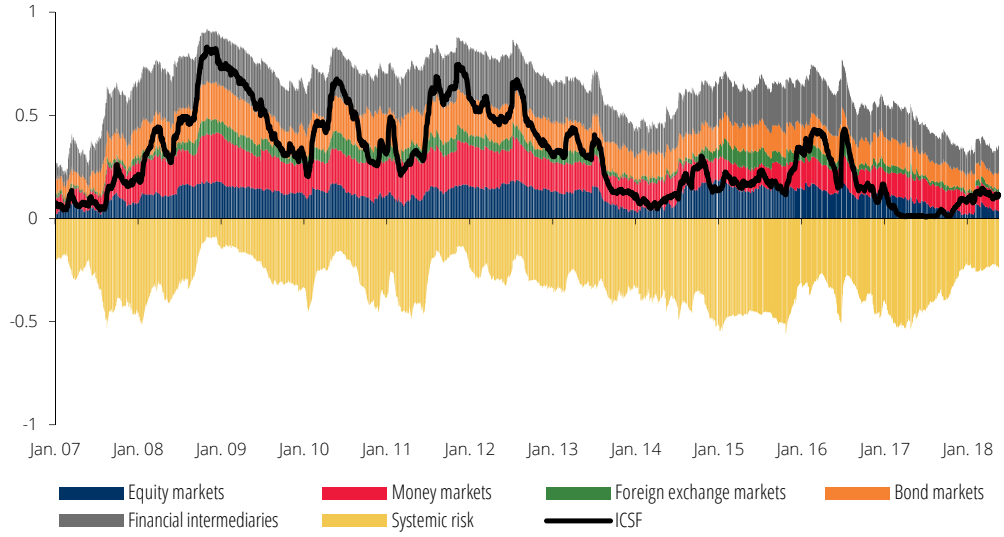
After one week with significant turbulence, volatility receded, hovering around an average level higher than that recorded in 2017. The episode observed in February interrupted a prolonged period of continued rise in stock prices and reduced volatility in historical terms. These developments may be considered positive from a financial stability perspective, to the extent that they contributed to a closer alignment between the valuation of some asset classes and the respective fundamentals, but they are also a warning sign of the risk of potential turbulence phenomena in the future. The impact on the sovereign debt markets and on corporate debt markets with higher credit quality was negligible.

In a broadly favourable international environment, the level of tension in Portuguese financial markets remained low. The composite indicator of financial stress for Portugal (ICSF) improved in early 2017. These developments reflected a decrease in systemic risk. In the remainder of the year this component rose again, being partially offset by a reduction of stress associated to the financial intermediaries and to the main markets (i.e. equity markets, money markets and bond markets). In the wake of the turbulence recorded in February, the ICSF rose slightly, albeit remaining close to the levels recorded before the 2007/2008 international financial crisis (Chart I.2.3).[32]

31. On 6 February, Credit Suisse and Nomura announced the suspension and closure of exchange-traded notes (ETN) that lost nearly 100% of their value following the decline in the stock exchange the day before.

32. For a more detailed explanation of this indicator, see "Composite Indicator of Financial Stress for Portugal", *Financial Stability Papers*, Banco de Portugal, 2014.

Chart I.2.3 • Composite indicator of financial stress for Portugal (ICSF) and contributions from market segments



Source: Banco de Portugal. | Notes: Data on a daily basis. Last observation: 18 May 2018. The systemic risk component is calculated based on the correlations between the different market segments.

Monetary policy remained broadly accommodative, despite the normalisation under way in some of the major economies

The US Federal Reserve (FED) continued the normalisation process of the monetary policy and rose the federal funds rate by 25 basis points on two occasions, at the end of 2017 and in March 2018. During this period, market participants made a gradual upward adjustment of their expectations regarding increases in the federal funds rate in 2018. In parallel, the FED pursued its balance sheet reduction programme, announced in September 2017, targeting a gradual reduction in total assets to below USD 3 trillion at end- 2020. However, this figure is far higher than the one recorded in 2007, before the international financial crisis. The pace of the monthly reduction is due to stabilise at around USD 50 billion from October 2018 onwards.

The Bank of England (BoE) kept its bank rate unchanged, at 0.50%, after an increase of 25 basis points in November 2017, the first since 2007. Also in November 2017, the BoE signalled that any future increases in the bank rate would be at a gradual pace and to a limited extent. In the course of 2018, market agents' expectations of a further increase in the bank rate rose, having been subsequently tempered after the release of the estimate for GDP growth in the first quarter of 2018 (1.2% in year-on-year terms), which showed strong deceleration, and more cautious communication by the BoE, regarding economic activity prospects in the United Kingdom.

In the euro area, the key ECB interest rates were kept unchanged. The ECB continues to signal that these rates are expected to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases. Regarding the Asset Purchase Programme (APP), the intended reduction of the volume of net asset purchases from €60 billion to €30 billion in January 2018, announced in October 2017, materialised. The ECB continued to signal that it intends to run at the current monthly pace the net asset purchases until the end of September 2018, or beyond, if necessary, but it did not mention the possibility of extending the duration and volume of these operations, if justified. Despite the strong momentum of economic activity in the euro area – albeit slowing down in the most recent period

– inflation has consistently converged to a value close to 2%. In April, the year-on-year rate of change in the HICP dropped to 1.2% (the change in the underlying HICP declined to 0.7%), compared with a rate of change in the private consumption deflator[33] in the United States of 2.0% in March. Projections for inflation in the euro area are broadly aligned between the different international institutions.[34] In particular, according to the March 2018 ECB staff macroeconomic projections, inflation as measured by the HICP, is foreseen to stand, on average, at 1.4% in 2018 and 2019 and to increase to 1.7% in 2020. In this context, implicit expectations in the market instruments[35] point to a slight increase in the deposit facility rate, currently with more than 50% probability of an increase until June 2019.

Risk perception of the countries most affected by the sovereign debt crisis continued to improve

In the last quarter of 2017 and over the course of 2018, euro money market interest rates remained negative and virtually unchanged at the different maturities, including the 12-month maturity, which had recorded a non-negligible reduction in the first three quarters of 2017. In turn, the euro area yield curve, estimated on the basis of AAA-rated Treasury bonds, shifted upwards more markedly in the intermediate maturities of the curve.

10-year government debt yields of the countries less affected by the sovereign debt crisis increased towards the end of 2017 and in early 2018, reflecting prospects of robust growth, having subsequently receded slightly in view of the deceleration recorded by some economic indicators in the first quarter of 2018. In turn, in the countries more affected by the crisis a reduction in 10-year yields continued, in some cases to figures below those recorded in early 2010. Perception of risk of these countries improved significantly, translating into the upgrading of the respective ratings. In this context, the spread between the countries less affected by the sovereign debt crisis continued to narrow, in particular vis-à-vis Germany, at the different maturities, amid the maintenance of the public sector purchase programme (PSPP) and search for yield behaviours by investors.

The financing cost of the Portuguese Republic has declined significantly since early 2017

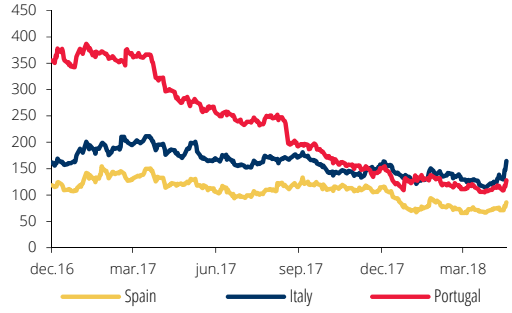
In Portugal, 10-year government debt yields have declined continuously and more markedly than in Spain and Italy (affected by political uncertainty) (Chart I.2.4). These developments are likely associated with the economic recovery, the improvement of public finances, as well as with measures conducive to the stabilisation of the banking sector. The yield on 10-year Treasury bonds was below 1.5% in the secondary market and the spread vis-à-vis Germany narrowed to nearly 100 basis points, unseen since March 2010. The spread between Portuguese and Italian 10-year bonds became positive. The Portuguese State has participated regularly in the primary market for medium and long-term sovereign debt, through syndicated issues or auctions of Treasury bonds. In January 2018 there was a syndicated issue of Treasury bonds maturing in October 2028, at a cost around 2%, approximately 2 p.p. below the issue with similar maturity made in January 2017. This series was subsequently admitted to auction and additional amounts were placed at lower cost, in line with developments in the secondary market. In the auctions of Treasury bills with a maturity of up to 1 year, negative rates continued, between

33. Personal Consumption Expenditure index, according to the official name.
34. ECB, OECD, European Commission, IMF, among others.
35. Taking as a basis the probability of increase implied by swap agreements involving the euro area overnight rate.

-0.5% and -0.3%, depending on the maturity. Moreover, there has been a considerable increase in the liquidity of Treasury bills in the secondary market since end-2017, in particular of Treasury bonds. These developments are likely associated with the increase in the institutional investors' base, following the upgrading of the Portuguese Republic's rating to investment grade, by S&P and Fitch, in September and December respectively.

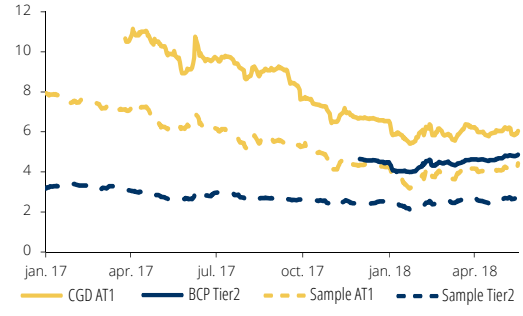
Notwithstanding a reduction of country risk and an improvement of market sentiment, the issuance of marketable private debt continued to be residual and limited to a set of large companies that managed to access cheap medium and long-term financing in international markets. In turn, Portuguese banks, after no issuance activity in 2016, resumed market issues of covered bonds and continued to issue occasionally senior or subordinated debt, most notably Additional Tier 1 (AT1) instruments worth €500 million by CGD in March 2017 (Chart I.2.5), whose yield on the secondary market declined significantly; and Tier 2 subordinated debt worth €300 million by BCP in November 2017. In the euro area, financing through debt securities is more buoyant than in Portugal, but remains at lower levels than before the financial crisis. The financing costs of European banks have fallen significantly, in particular regarding the subordinated debt, which has higher risk, and there was also a reduction of the dispersion across geographies. In the recent period a shift has been seen in issuance type, towards AT1 and Tier 2 instruments with loss-absorbing capacity. On top of the challenge of issuing eligible instruments to comply with the minimum requirements for own funds and eligible liabilities (MREL), market refinancing needs by the European banks will be significant in the coming years.

Chart I.2.4 • 10-year Treasury Bonds – Spreads *vis-à-vis* Germany | Basis points



Source: Thomson Reuters. | Notes: Data on a daily basis. Last observation: 18 May 2018.

Chart I.2.5 • Yields on AT1 and Tier 2 debt securities in the secondary market | Per cent



Sources: Bloomberg and calculations by Banco de Portugal. | Notes: Data on a daily basis. Last observation: 18 May 2018. The yield on the sample of AT1 (Tier 2) corresponds to a weighted average of secondary market yields, of 8 (21) AT1 (Tier 2) debt securities of European banks, issued in euro, with a remaining maturity up to the early redemption date close to that of CGD debt securities – March 2022 (BCP debt securities – December 2022).

The shares of Portuguese companies recorded significant gains in 2017 but there was no new financing via the capital market

In the last quarter of 2017, the stock indices of the major advanced economies continued on an upward trend, which became more marked in January 2018, reflecting a broad-based improvement in prospects regarding business outcomes. Geopolitical tensions and uncertainty around some electoral processes in Europe and the negotiations regarding the United Kingdom's exit from the European Union had limited impact on equity markets, with new historical highs being reached by the main US stock indices and some European indices (Germany and United Kingdom). The

turbulence recorded in early February 2018 materialised in accumulated devaluations of around 10% in a few days, with the main stock indices continuing subsequently to be traded below the early-2018 levels. Equity market valuations remained at rather high levels by historical standards, in particular, in the US market. The upsurge of geopolitical tensions and uncertainty around the adoption of protectionist measures by the United States and China added to the persistence of volatility levels above those recorded throughout 2017.

In the last quarter of 2017, the Portuguese equity market moved closely in line with the European market dynamics, showing a more favourable performance throughout 2018, in particular with the contribution of the financial sector.[36] However, the volume of transactions in the secondary market remains low and strongly concentrated on the shares of four large companies. In the past few years, recourse to the capital market by Portuguese companies has been quite reduced. This contrasts with the performance of other European countries also affected by the sovereign debt crisis, as Spain and Italy, where the primary market has gathered some momentum. In 2017 and in the course of 2018 there were no initial public offerings, nor any other type of admission to trading in the Portuguese stock exchange, with three Portuguese companies being de-listed. In this context, the weight of financing through listed shares on total financial liabilities of Portuguese companies remained relatively stable.[37]

2.3 Real estate market

The real estate market is an important link between the financial system and the private non-financial sector, affecting also the evolution of public finances, namely through the effect on tax revenue associated with the real estate market. The Portuguese banking system is exposed to developments in the real estate market through various channels, in particular, direct exposure to portfolio holdings of real estate, indirect exposure through real estate pledged as collateral, and holdings of participation units in real estate investment funds and corporate restructuring funds, largely associated with commercial real estate. Also, credit granted to companies in the construction[38] and real estate sectors constitutes an exposure to the real estate market cycle.

In Portugal, residential properties are households' main real asset, while their purchase is mainly financed through credit. In aggregate terms, this situation has been reflected in the high exposure of the resident banking sector to developments in the residential real estate market, which is clearly dominant regarding the real estate market, as discussed in Chapter 1.

In turn, and in the most recent period, in the commercial real estate market investment funds, mainly non-resident funds, account for nearly all the investment (around 80% in 2017).

Over the past five years there has been a sustained rise in the prices of the residential real estate market, in nominal and real terms, as well as in the ratios of prices to income and rents. In addition, the estimates of price deviation from economic fundamentals in the residential real estate market have recorded slightly positive values since the third quarter of 2017.

36. The sectoral index PSI Financials is currently comprised of securities of Banco Comercial Português, Banco BPI and SONAE Capital, therefore being less representative of the Portuguese financial sector than in the past. In addition, it should be noted that CaixaBank has proposed to start the de-listing process of Banco BPI, following the purchase from the Allianz group of shares representing 8.425% of Banco BPI's share capital. This process is due to end with the de-listing of this institution.
37. Around 11%, only considering non-financial corporations.
38. The construction sector includes exposures other than to commercial and/or residential real estate, such as construction of public works.

However, developments in housing loans remain subdued. The outstanding amounts of housing loans show a slight fall, although new loans continue to grow strongly. Therefore, there is a slowdown in the declining trend of household indebtedness levels.

Prices have also recovered in the commercial real estate market, albeit at a clearly slower pace than in the residential real estate market. This price increase has been accompanied by a reduction in the vacancy rate of commercial real estate and by a declining trend in the net initial yield, which reached a minimum in 2017. In addition, the average price growth of the Portuguese commercial real estate market has been lower than the average price growth in other euro area countries; therefore, the net initial yield, defined as the ratio of the value of received rents to the estimated transaction price, has shown a less marked downward trend. In 2017, Portugal was one of the countries with the highest net initial yield on the commercial real estate market among several euro area countries.[39]

The prolonged period of low interest rates and the strong expansion of the tourism sector seem to have contributed to the increasing demand in the two segments of the real estate market.

2.3.1 Residential real estate

The price dynamics of the residential real estate market in Portugal have been driven by the improving household income, the low level of interest rates and the easing of credit standards applied to housing loans. Demand by non-residents, partly associated with residence permits, has also boosted some segments of this market. In turn, the strong dynamics of the tourism sector, in particular local accommodation, has contributed to residential real estate price developments.

The time lag between the supply-side response to an increase in demand in the short run, the predominance of decentralised transactions in a market with imperfect information, and the magnitude of transaction costs tend to condition price dynamics.

In structural terms, the demographic conditions of a country, including migration flows, are also key variables to explain demand in the real estate market. Likewise, the characteristics of the rental market condition the preference of households for home ownership also affecting demand in this market.

In Portugal, after falling between 2010 and 2013, residential real estate prices picked up to levels close to those recorded in 2008

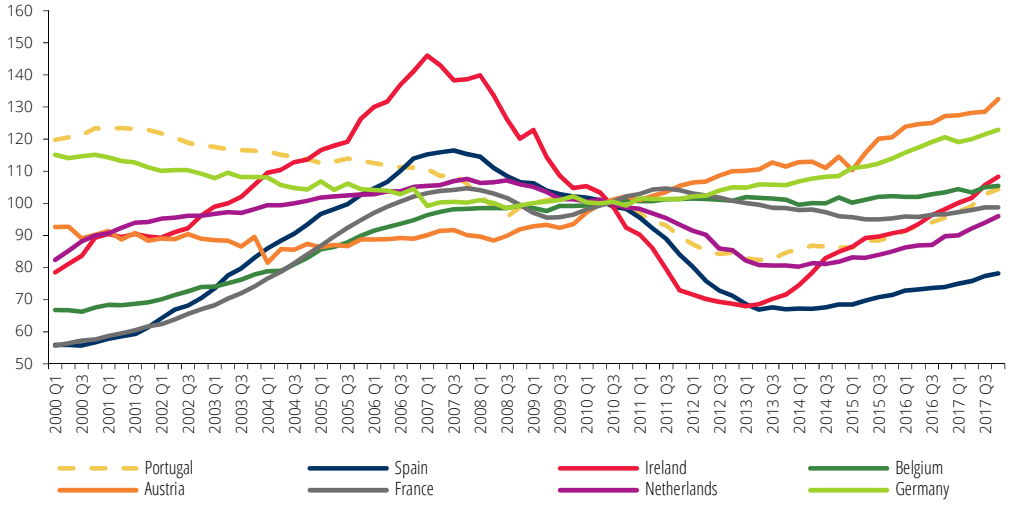
Over the past four and a half years, house prices have steadily increased in Portugal, especially in some specific locations, like Lisboa, Porto and the Algarve region. This rise came in the wake of a significant price reduction between 2010 and 2013, reflected in falls of 15% and 18%, in nominal and real terms respectively. In cumulative terms, between the second quarter of 2013 and the fourth quarter of 2017, house prices in Portugal grew by 32% (in nominal terms) and 27% (in real terms).

In the period preceding the recent economic and financial crisis, there was no evidence of house price overvaluation in Portugal, in contrast to some euro area countries, such as Spain and Ireland, where prices significantly shifted away from the respective economic fundamentals. As a result, in Portugal, the price decline observed between 2010 and 2013 was not as sharp, compared with that of those countries. However, between the second quarter of 2013 and

39. The euro area countries taken into consideration were Germany, Austria, Belgium, Spain, France, Ireland, Italy and the Netherlands.

the fourth quarter of 2017, prices increased in Portugal, in real terms, at a higher pace than in countries such as Germany, Austria, Belgium, Spain, France and the Netherlands (Chart I.2.6).

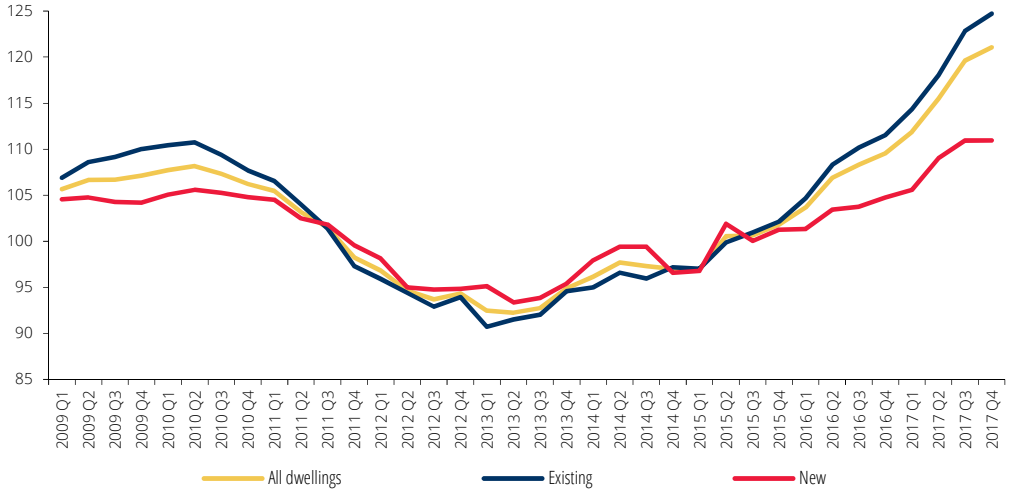
Chart I.2.6 • Real House Prices | Index 2010=100



Source: Organization for Economic Cooperation and Development.

The largest contribution to the house price increase in Portugal continues to be mainly associated with transactions of existing dwellings, which in 2017 accounted for 85% of the total number of transactions recorded. This share has been rising throughout the years (in 2009, the number of transactions of existing dwellings hovered around 63% of the total number of transactions). Analysing the house price index,[40] it can be observed that in 2017 the price rise in existing dwellings almost doubled (10.4% in annual average terms) the price rise in new dwellings (5.6%) (Chart I.2.7).

Chart I.2.7 • House prices in Portugal – Existing and new dwellings | Index 2015=100



Source: Statistics Portugal.

40. The house price index published by Statistics Portugal is a chain price index of the Laspeyres type.

Several factors fuelled the demand for residential real estate and the rebound in housing supply has not been sufficient to prevent an increase in prices

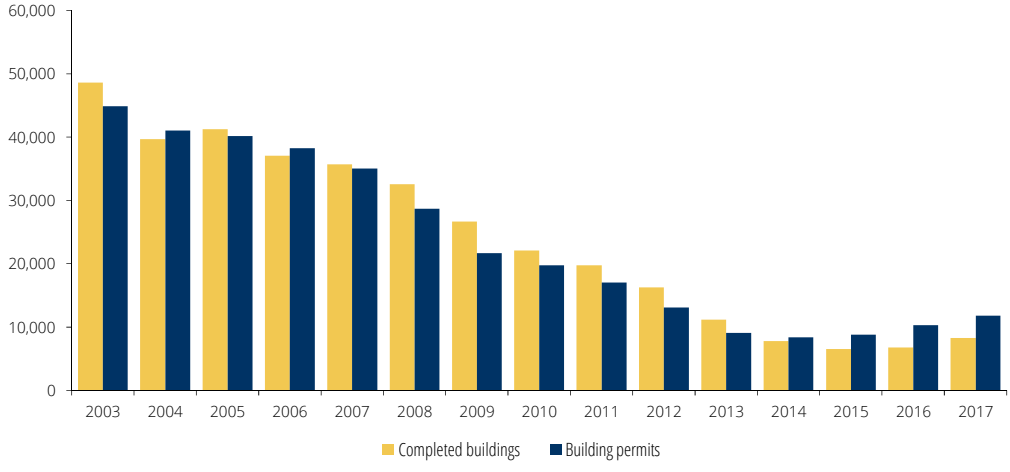
The recent price developments have been supported by factors such as the increase in household disposable income and declining unemployment, as well as the momentum of tourism, which has fuelled specific demand related to local accommodation. Alongside these factors, financing conditions continue to be favourable, in a context of interest rates that remain at historically low levels and less restrictive credit standards. The persistence of very low interest rates for a prolonged period has also added to an increase in demand for real estate by investors, as an alternative to time deposits or other financial assets.

After a sharp rise in local accommodation in the districts of Lisboa, Porto and Faro in 2014 and 2015, the number of registrations for this activity[41] continued to record a very strong growth in 2017, albeit at a slower pace (around 60% compared with the same period a year earlier). This rise is associated with the growth of tourism exports, whose weight on GDP increased steadily, reaching 7% in 2017 up from around 5% in 2013. The rise in investment by non-residents, partly associated with the granting of residence permits, is also one of the factors behind the maintenance of the upward trend of residential real estate prices in Portugal.

In regard to housing supply, the number of completed buildings for family housing has been gradually recovering since 2016, remaining, however, below the figures recorded before 2013. Concerning building permits, the recovery started in 2015 and as a result an increase in housing supply can be expected in the near future (Chart I.2.8).

In regional terms, in 2017, the buildings were mainly located in the north and centre regions (accounting for around 70% of the total), while the Lisboa Metropolitan Area (LMA) and Algarve represented 13% and 5% of the total, respectively. The LMA recorded the highest rate of change in 2017, namely 35% compared with the same period a year earlier.

Chart I.2.8 • New construction and rehabilitation of family housing, completed and licenced buildings | Number

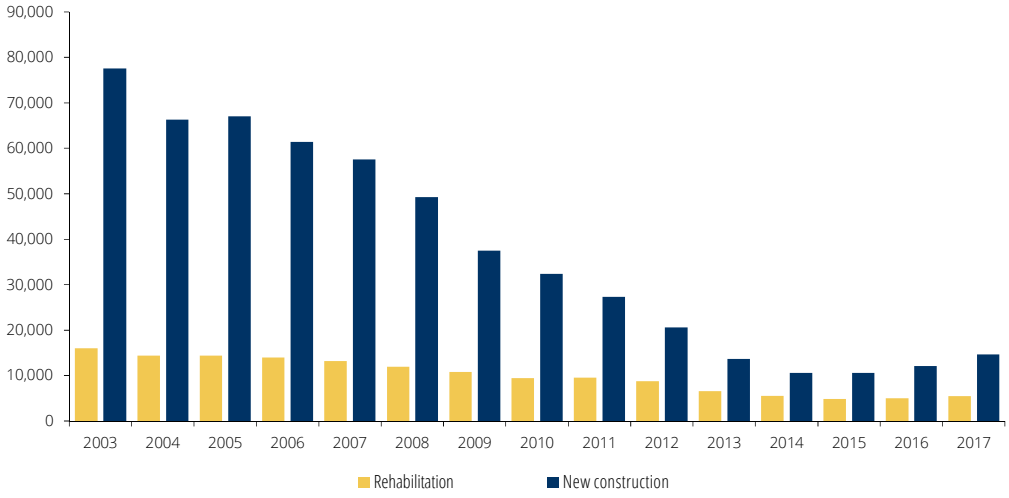


Source: Statistics Portugal and Banco de Portugal estimates.

41. According to data available on Registo Nacional de Alojamento Local website (national registry of local accommodation) (https://rnt.turismodeportugal.pt/RNAL/ConsultaRegisto.aspx?Origem=CP&FiltroVisivel=True).

The construction of new buildings for family housing (licensed and completed) declined continuously until 2015, having recovered slightly in the past two years. In turn, building rehabilitation has remained broadly stable since 2014 and its share in total supply of family housing has been declining in the most recent period (Chart I.2.9).

Chart I.2.9 • Completed and licenced buildings, new construction and rehabilitation of family housing | Number



Source: Statistics Portugal and Banco de Portugal estimates.

In the second half of 2017, signs of some price overvaluation in the residential real estate market in Portugal have emerged

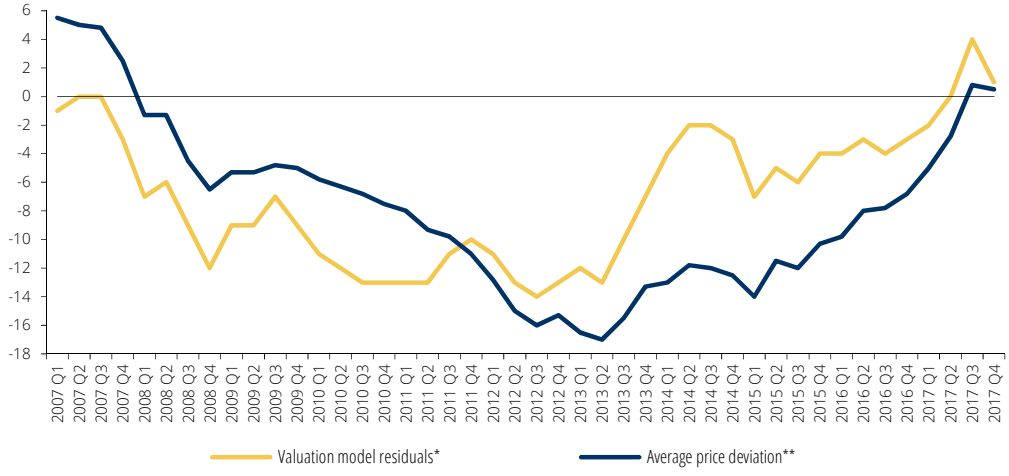
To evaluate the existence of price over/undervaluation in the residential real estate market, it is necessary to assess whether prices are in line with the economic fundamentals that explain the supply and demand on this market. These include developments in income, interest rates and housing supply. Several methods have been used to estimate the existence of price over/undervaluation in the residential real estate market, as this is not directly observable.

The European Central Bank compiles and discloses two measures of price deviation from the economic fundamentals in the residential real estate market in Portugal, namely the residuals of a valuation model estimated on the basis of the above-mentioned economic fundamentals and the average deviation of four price valuation methods.[42]

With regard to Portugal, these two measures point to the existence of a slight price overvaluation, in aggregate terms, compared to their fundamentals, since the third quarter of 2017 (Chart I.2.10).

42. Estimates based in four different valuation methods, namely, the ratio of house prices to disposable income per capita; the ratio of house prices to rents, an asset pricing model return based model and an inverted demand model, estimated with Bayesian techniques. For further details please see the June 2011 and November 2015 editions of the European Central Bank *Financial Stability Bulletin*.

Chart I.2.10 • Estimates of price over/undervaluation in the Portuguese residential real estate market | Per cent

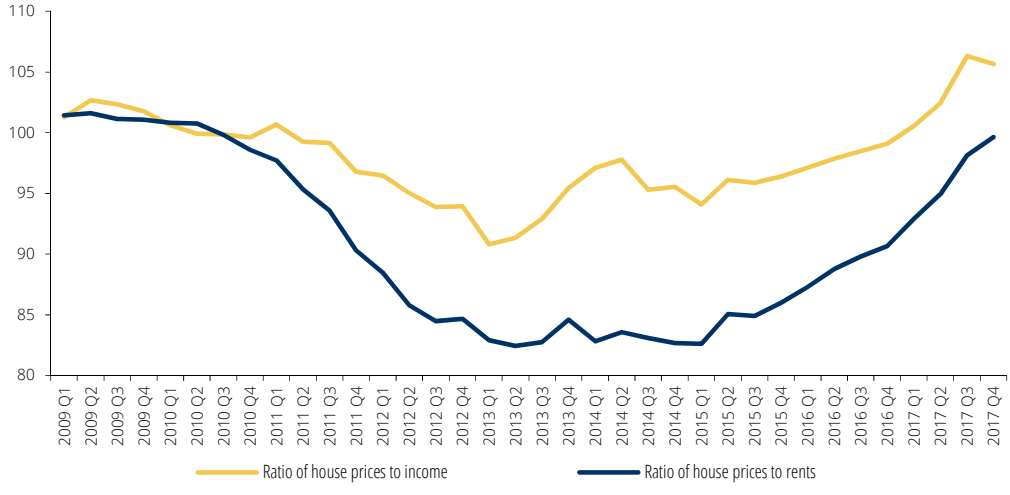


Source: European Central Bank – Statistical Data Warehouse. | Note: (*) Residuals of a valuation model estimated on the basis of economic fundamentals, positive values signal overvaluation. (**) The average price deviation is a synthetic measure based on four valuation methods, it puts together housing demand and supply indicators and asset pricing models, positive values signal overvaluation.

Although the evidence of price overvaluation in the residential real estate market in aggregate terms is very limited, the duration and the growth pace of prices (increases of 32% and 27% in nominal and real terms, respectively, since the second quarter of 2013) may imply risks to financial stability, should these dynamics persist.

In the recent period, the continued rise in residential real estate prices was only partly accompanied by rises in household disposable income. Thus, the index of the ratio of house prices to per capita disposable income has been increasing, standing above the figure for 2009. In turn, despite the strong upward trend observed in the last quarters, the index of the ratio of house prices to rents is still below the figure for 2009 (Chart I.2.11).

Chart I.2.11 • House prices to income ratio and house prices to rents | Index 2010=100



Source: Organization for Economic Cooperation and Development. | Note: The index of the ratio of house prices to per capita disposable income is a synthetic measure of housing affordability. The index of the ratio of house prices to rents assesses the relative cost of buying a house versus the cost of renting it.

Transaction prices per square meter have strongly recovered across the main districts from early 2013 onwards, particularly in the Lisboa district, where prices started to rise first, leading to an increase in the national average value. In the fourth quarter of 2017, Lisboa and Porto (18%) and, to a smaller extent, the Algarve region (9%) recorded annual rates of change in the median value of residential real estate transactions, per square meter,[43] above the national value (8%).

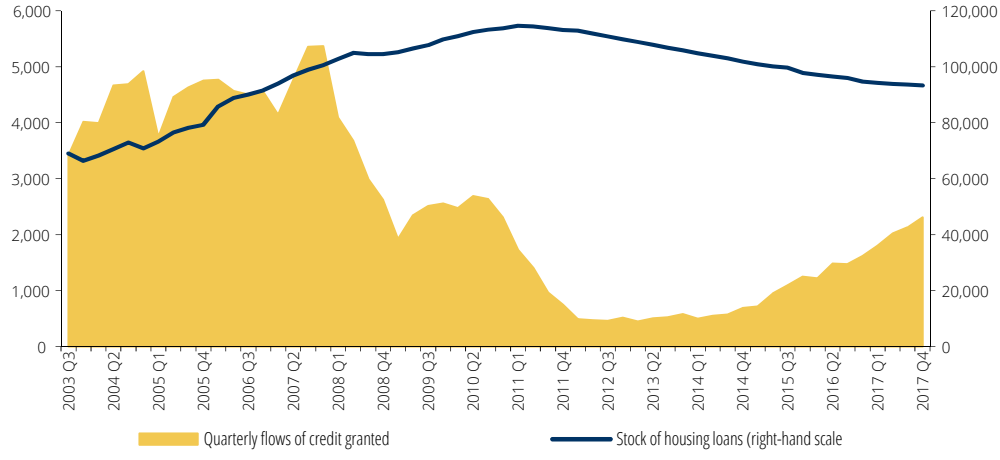
In 2017, new rental agreements were concentrated in LMA and Porto Metropolitan Area (PMA), accounting for more than 50% of total agreements signed in the country in that year. In terms of prices charged, the median values of house rentals in LMA, PMA, Algarve and in the Autonomous Region of Madeira were higher than the national median values.[44]

There is no evidence that bank credit is the main driver of the price rises in the residential real estate market in Portugal

Despite the fact that Portuguese households have considerably reduced their indebtedness levels, they continue to be one of the highest among European Union countries.

Lending for house purchase, the main share of household debt, has recorded negative annual rates of change since end-2011, but this trend has been slowing down in more recent periods (Chart I.2.12). In parallel, there has been a marked increase in new housing loans – albeit at far lower levels than before the economic and financial crisis – combined with an increase in early repayments of the total outstanding amount of loans[45] (for further details, see Chapter 3).

Chart I.2.12 • Flows and stocks of housing loans | EUR millions



Source: Banco de Portugal.

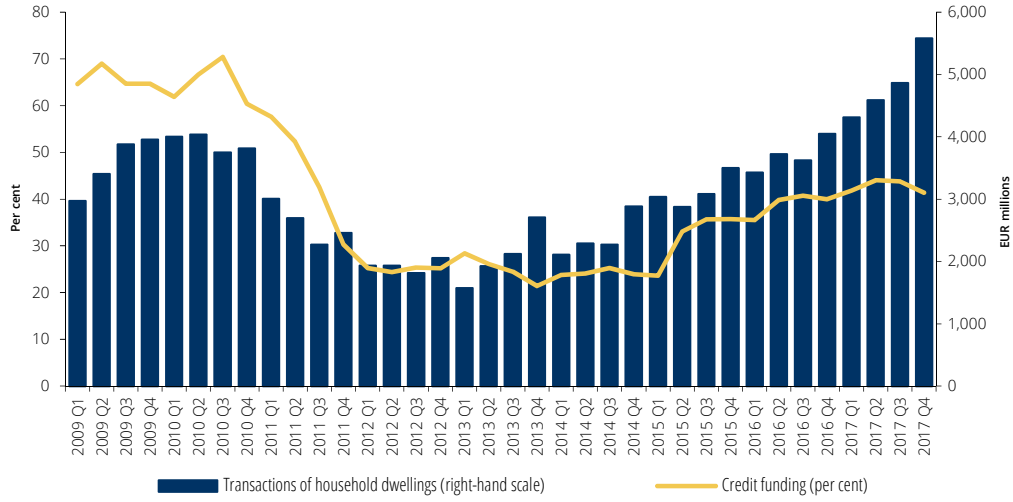
43. Data available from the first quarter of 2016 onwards, on Statistics Portugal website: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0009490&contexto=bd&selTab=tab2. Data do not fit into the probabilistic models of hedonic prices, i.e. differences in the quality of the houses are not accounted for.

44. Data on the rental market available on Statistics Portugal website: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0009631&contexto=bd&selTab=tab2 only refer to 2017.

45. The May 2018 issue of the *Economic Bulletin* of Banco de Portugal includes a box on new loans and repayments of housing credit, based on microeconomic data (Box 2).

Since 2015, the share of household dwellings transactions funded by credit has been increasing, after reaching a minimum of around 20% in 2013. In the last quarter of 2017, this share stood at 41%, albeit still below the figures recorded in 2009 (approximately 65%). At the same time, there is a very strong increase in household dwellings transactions, which recorded far higher figures than in 2009 (Chart I.2.13).

Chart I.2.13 • Transactions of household dwellings and credit funding



Source: Statistics Portugal and Banco de Portugal.

In what concerns lending for construction and for the promotion of real estate activities, there was an increase in bank loans, offset by a reduction in portfolio holdings of debt securities. However, there is evidence of different dynamics in these two activity sectors. Regarding credit for construction, the downward trend initiated in 2010 persisted in 2017, albeit at a slower pace. However, there was some recovery in credit granted for the promotion of real estate activities in the last quarter of 2017.

As to the banking sector's supply conditions regarding housing loans, in the most recent period, signs have emerged of an easing of credit standards, namely with the extension of maturities. There was also a continued fall in the spreads, as well as in the interest rates actually agreed upon. Taking into account that less tight credit standards may negatively affect the resilience of the banking sector and imply risks to financial stability, Banco de Portugal issued a Recommendation applicable from July 2018, introducing limits to a number of criteria that institutions should observe when assessing the creditworthiness of borrowers.[46]

46. Recommendation on new credit agreements concluded with consumers, namely credit agreements relating to residential immovable property, credit agreements secured by a mortgage or equivalent guarantee and consumer credit, available on Banco de Portugal's website, at: https://www.bportugal.pt/sites/default/files/recomendacao_contratoscredito.pdf.

2.3.2 Commercial real estate

The commercial real estate market[47] has a set of characteristics that differentiates it from other asset markets, in particular as regards the multiplicity of real estate assets traded. This heterogeneity contributes to a market segmentation not only in terms of purpose, but also of location and quality of the real estate. The market is organised in five segments: Office, Retail,[48] Industrial, Residential[49] and Other, the latter being a residual category including real estate for other purposes, like Hotels and Health and Education. As to the geographical segment, real estate is divided into prime and non-prime locations. In terms of quality, high quality real estate, in general, is grouped by market participants in an independent category given that these assets are more liquid. As in the residential real estate market, the commercial real estate market is characterised by intensive capital utilisation, as real estate development projects require significant capital amounts. Moreover, real estate supply tends to react slowly to changes in demand in the short and medium term as a result of the long production cycle associated with the real estate market. Finally, in Portugal, as a result of the specific size of the commercial real estate market, the number of transactions per year is reduced, which is reflected in the respective liquidity.

Developments in the commercial real estate market are monitored using information mainly provided by private sources,[50] in contrast to the residential real estate market. In this context, a number of caveats apply to the use of this type of information. In fact, these data provide an incomplete picture of the market in Portugal, given that they take as a reference the portfolio holdings of commercial real estate of a number of private companies, which will tend not to cover the whole market. Besides, the composition of the real estate portfolio of these companies also varies over time. In general, information from these private sources chiefly covers Lisboa and Porto and high quality real estate in a prime location. Data frequency is mostly annual and no long time series are available. Finally, comparisons between countries shall be made with particular care, even using the same data source, as market coverage may be quite different.

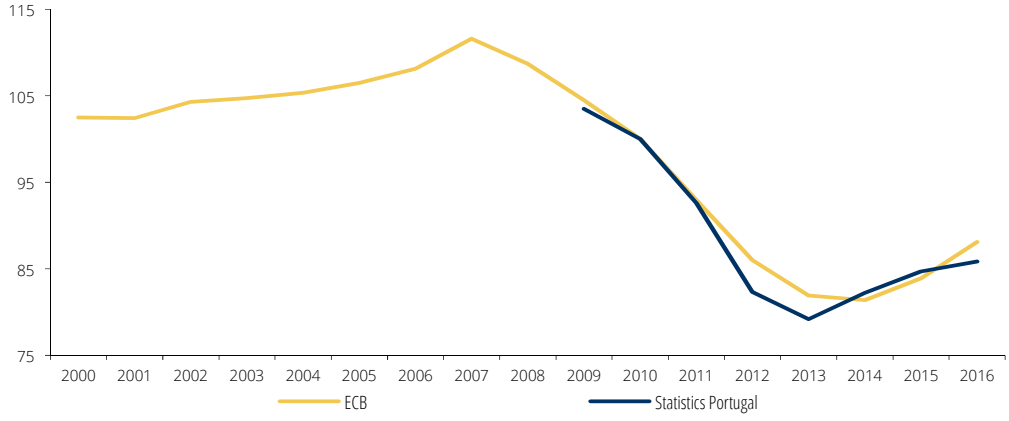
After a very sharp fall, commercial real estate prices have recovered since 2014, albeit at a clearly slower pace than residential real estate prices

Commercial real estate prices peaked in 2007 and recorded a trough in 2014, with prices falling 21% in real terms, over this period, according to ECB data based on appraisal values of commercial real estate (Chart I.2.14). It should be noted that this fall was steeper than that recorded in the residential real estate market over the same period. From 2014, demand for the Portuguese commercial real estate market started to recover as a result of global economic growth, greater

47. According to the Recommendation of the European Systemic Risk Board ESRB/2016/14 on closing real estate data gaps, real estate means any income-producing real estate, either existing or under development, and excludes social housing, property owned by end-users and buy-to-let housing. This definition includes, inter alia, multi-family dwellings, hotels, restaurants, shopping centres, high street retail, offices and property used for the purposes of production, distribution and logistics.
48. The retail segment includes high street retail and shopping centres.
49. According to the definition of the participants in the commercial real estate market, the residential segment includes real estate for rental purposes. This definition differs from that of Recommendation ESRB/2016/14.
50. Private sources include consultancy firms, services providers and real estate developers.

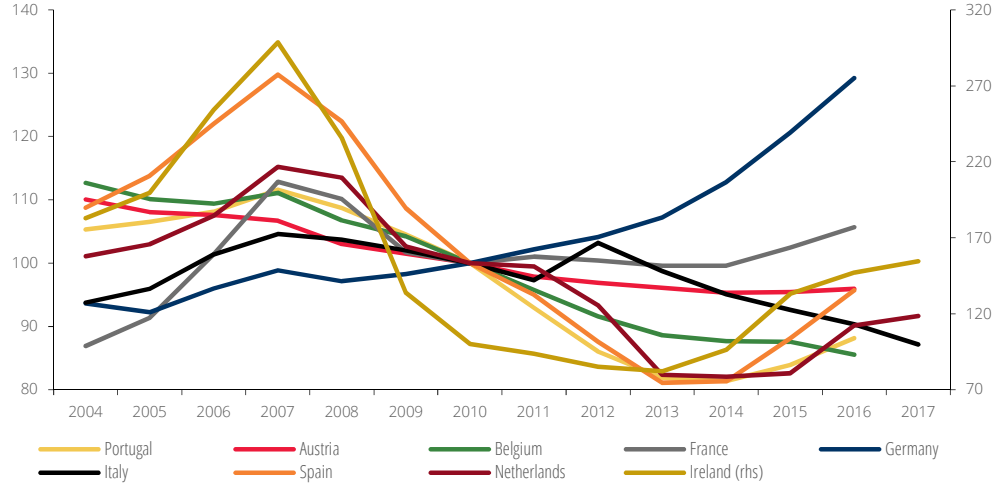
dynamics in the tourism sector, an increase in the confidence of Portuguese consumers and entrepreneurs and the low level of interest rates, which seems to have magnified investors' search for assets with higher yields. In this context, commercial real estate prices in Portugal grew by 8.3% according to ECB data and by 4.4% according to data from Statistics Portugal, in real terms, between 2014 and 2016. However, this rebound in prices occurs at a clearly slower pace than the pick-up in residential real estate prices. Importantly, the recovery pattern of prices in the Portuguese commercial real estate market, between 2007 and 2016, is also observed in other euro area countries (Chart I.2.15), in particular in Spain, Ireland and the Netherlands. However, the average price growth in the Portuguese commercial real estate market, in real terms, in the period between 2014 and 2016 is lower than the growth recorded in Germany, Spain, Ireland and the Netherlands.

Chart I.2.14 • Commercial real estate prices in Portugal, in real terms | Index 2010 = 100



Sources: European Central Bank and Statistics Portugal. | Notes: Nominal indexes deflated by the Harmonized Index of Consumer Prices. The ECB's price index disclosed by the ECB is based on the appraisal values of commercial real estate assets collected by Morgan Stanley Capital International, for further details see ECB Monthly Bulletin, February 2014, Box 7, "Experimental Indicators of Commercial Property Prices". The commercial real estate price index disclosed by Statistics Portugal is based on transaction values and is available on a yearly basis from 2009 onwards.

Chart I.2.15 • Commercial real estate prices, in real terms | Index 2010 = 100



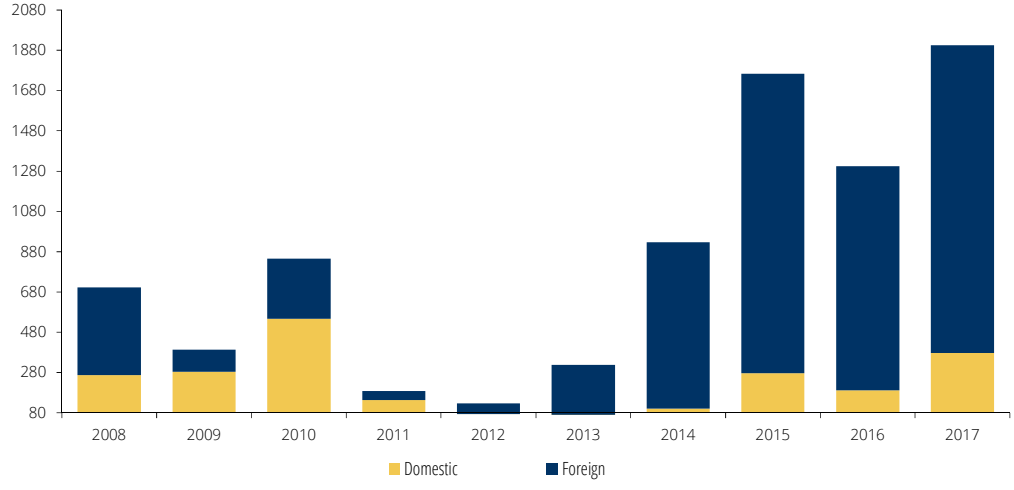
Source: European Central Bank. | Notes: Nominal indexes deflated by the Harmonized Index of Consumer Prices. The indexes for Italy, Ireland, the Netherlands and Germany are based on transaction values. There is no data for the remaining euro area countries.

In 2017, around 80% of the investment in the Portuguese commercial real estate market was made by non-residents

Since 2013, in addition to the growth of the investment volume and the corresponding rebound in prices, the origin of the capital invested in the Portuguese commercial real estate market has also changed (Chart I.2.16). In 2017, 80.2% of the total investment in this market was made by non-residents, standing at around 42 p.p. above the average value recorded in the period between 2008 and 2012. Although there is no information available on the financing sources of these investors, the dynamics in the investment volume by non-residents can be partly explained by different developments in the total cumulative return on the commercial real estate market at international level (Chart I.2.17). Between 2007 and 2013, the total cumulative return on the Portuguese commercial real estate market stabilised, contrasting with the evolution of the total cumulative return in other euro area economies. Germany, Austria, Belgium and France recorded a clear growth trend, while countries such as Spain and Ireland recorded a rather negative total cumulative return. In this context, Portugal recorded the third lowest total cumulative return on the commercial real estate market between 2007 and 2013, of around 10%. However, it should be noted that in this period the return came mainly from the rent component (income return), given that there was a decline in prices in the Portuguese commercial real estate market between 2007 and 2013 (Chart I.2.18). The contribution of the rent component to total return on commercial real estate investments in Portugal is positive and remained broadly stable, at around 6%, throughout the whole period under review (2007-2017).

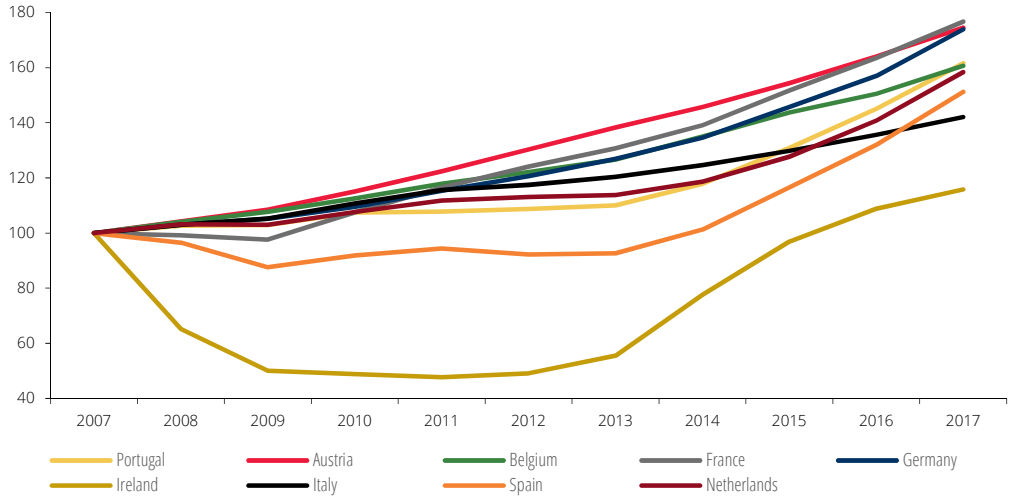
The low total cumulative return on the Portuguese commercial real estate market observed until 2013 and, thereafter, the improving investor confidence in the Portuguese economy explain the increasing participation of foreign investors in Portugal. This growth in foreign investment has driven the increase in commercial real estate prices. Thus, as of 2014 the contribution of the price component (capital growth) to total return turned positive, representing approximately half of total return from 2015 onwards. In 2017, total return on the Portuguese commercial real estate market stood at around 11%, with price changes contributing 5.4 p.p. and rents 5.7 p.p. In terms of international comparison, Portugal showed, as of 2014, a growth pace of total cumulative return on the commercial real estate market similar to that of Austria, France, Germany, the Netherlands, Spain and Ireland, even though the starting point was very different from that of most countries analysed.

Chart I.2.16 • Investment in the Portuguese commercial real estate market by origin of investment | EUR millions



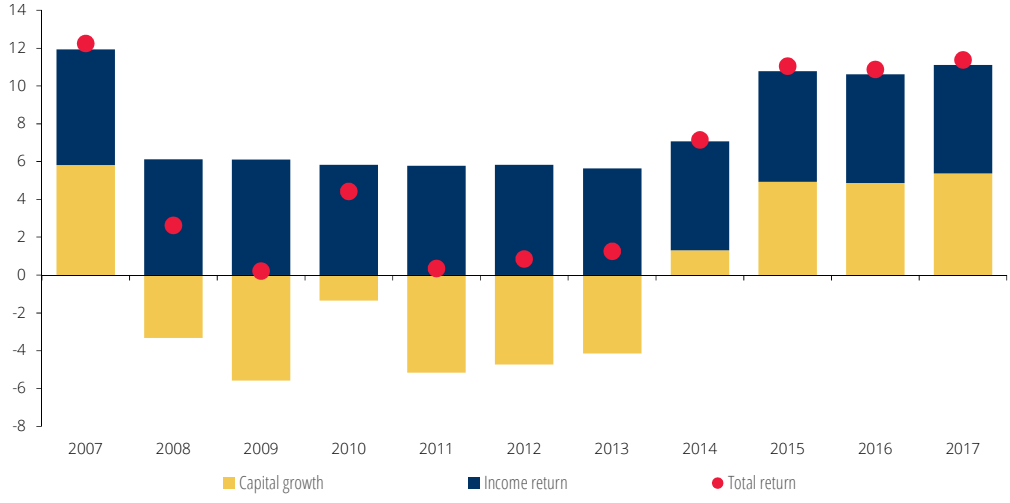
Source: Jones Lang LaSalle. | Note: The investment value corresponds to the total value of the transactions that occurred in the year.

Chart I.2.17 • Total cumulative return on commercial real estate market | Euros



Source: Morgan Stanley Capital International and Banco de Portugal's calculations. | Notes: Total return is the sum of the price component (Capital Growth) and the rent component (Income Return). The chart simulates the total cumulative return on an investment of 100Eur on the 31th of December of 2017.

Chart I.2.18 • Breakdown of the total return on the Portuguese commercial real estate market | Per cent



Source: Morgan Stanley Capital International. | Notes: Total return is the sum of the price component (Capital Growth) and the rent component (Income Return). Return on the standing investment portfolio, which is based solely on directly owned standing investments in completed and lettable properties and excludes any (part) transaction activity.

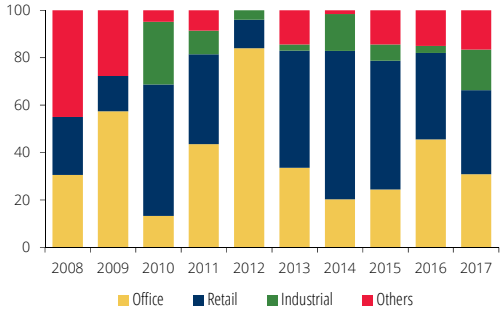
In 2017, investment in the office and retail segments was bolstered by global economic growth and stronger tourism momentum. The main investors in the commercial real estate market are investment and pension funds and Real Estate Investment Trusts

Despite a still incipient upward trend in commercial real estate prices, they seem to be in line with the developments in the vacancy rate, rent value and financing costs. The price of commercial properties depends positively on economic growth and rent value and negatively on financing costs.

The recovery process of the Portuguese economy, initiated in 2013, has been mainly driven by the performance of exports and investment. As to exports, tourism has given an increasing contribution, in real terms, to economic growth. This recovery translates in the increasing demand for leisure and business spaces, leading the retail segment to record the highest investment volume in 2017, approximately 35% of the total value of transactions occurred in the year (Chart I.2.19). According to some market participants, the demand for offices by domestic and foreign corporates is associated with the global economic recovery. The improvement in labour force skills and the greater flexibility of the Portuguese labour market explain the increasing ability of Portugal, in particular Lisboa, to attract new corporates of the services sector. As a result, the office segment recorded the second largest investment volume in 2017, accounting for 30% of the total value of transactions of the year.

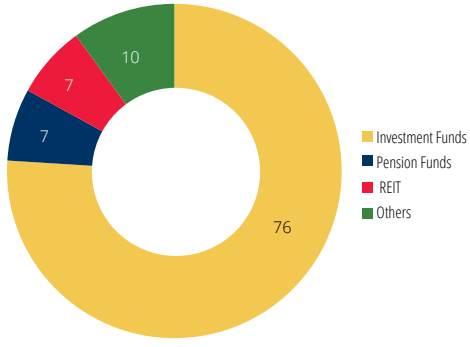
As referred to above, in 2017 the investment in the Portuguese commercial real estate market was mainly made by non-residents. By type of investor, the participation of investment funds should be highlighted, as they represented 76% of the total transactions volume. Pension funds and non-resident investment vehicles designated by Real Estate Investment Trusts[51] also had an important participation (Chart I.2.20).

Chart I.2.19 • Investment on the Portuguese commercial real estate market by segment | Per cent



Source: Jones Lang LaSalle. | Notes: The investment value corresponds to the total value of the transactions occurred in the year. The segment Others includes the Residential, Hotels and Mix Use or Alternatives segments, such as hospitals, students residences and senior residences.

Chart I.2.20 • Investment on the Portuguese commercial real estate market by investor in 2017 | Per cent



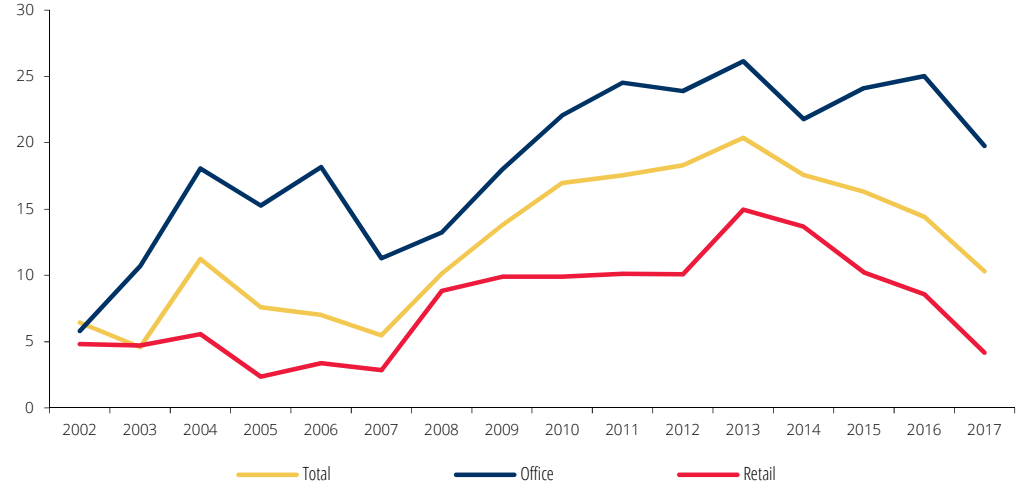
Source: Jones Lang LaSalle. | Notes: The category Others consists of Governments, Corporate, Private ownership, Family Offices, Real estate companies e other unknown. The investment volume by investor aggregates national and foreign investment. REIT designates Real Estate Investment Trust.

51. Portuguese law does not envisage the concept of Real Estate Investment Trust, a company holding and managing real estate assets to generate income, whose shares are usually traded on the stock exchange.

Reduction of the vacancy rate is associated with economic recovery

From 2013 onwards, the vacancy rate of the segments with the highest investment volumes in 2017 (office and retail) initiated a decreasing trend (Chart I.2.21). In the office segment, this trend is observed across all Lisboa offices zones[52], albeit at a different pace. In 2017, the vacancy rate of offices stood at 19.8%, which is higher than the total vacancy rate of the commercial real estate market (10.3%). This can be explained by the fact that the existing supply of offices does not match demand in terms of quality and location. Therefore, in the past few years, a share of the existing supply in the office segment has been requalified for other purposes, in particular, for hotels or multi-family dwellings. The retail segment benefitted not only from the economic recovery, namely from the increase in consumers disposable income, but also from the momentum observed in the tourism sector. Consequently, the decrease of the vacancy rate in the retail segment was observed not only in high street retail, but also in shopping centres, standing at 4.2% in 2017.

Chart I.2.21 • Vacancy rate in the Portuguese commercial real estate market | Per cent



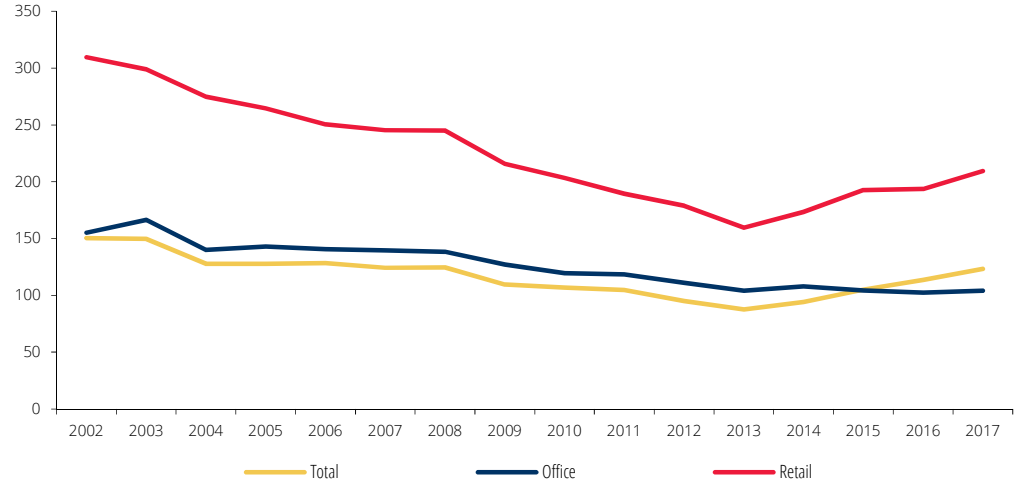
Source: Morgan Stanley Capital International. | Notes: The vacancy rate is defined as total owned area minus owned let area divided by the total owned area on the standing investments portfolio which is based solely on directly owned standing investments in completed and lettable properties and excludes any (part) transaction activity. Only office and retail segments where considered, as these are the segments with the largest coverage in Morgan Stanley Capital International database.

Since 2013, commercial real estate rents have been increasing, mainly due to the retail segment

52. The Lisboa area in the office segment is divided into six zones: Prime Central Business District, Central Business District, *Nova Zona de Escritórios*, *Parque das Nações*, *Zona Histórica Ribeirinha* and *Corredor Oeste*.

The decrease in the number of commercial real estate properties available in the market, resulting from the increasing demand, and the supply-side constraints seem to have put some pressure on the rent value. As of 2013, the rent receivable value has been on a rising trend, in particular in the retail segment (Chart I.2.22).[53] In this segment, the average rent value increased by 31.4% in cumulative terms between 2013 and 2017. At the end of 2012, changes in the urban rental law (*lei do arrendamento urbano*) made it possible to update rents, mainly in the historic areas, where the rental agreements of the traditional retail were older, and led to the increasing presence of international brands, chiefly in the areas most exposed to tourism. The existence of a higher vacancy rate in the office segment explains the containment in the rent receivable value, which varies widely across Lisboa's offices areas.

Chart I.2.22 • Rent receivable value in the Portuguese commercial real estate market
| Euros per square meter



Source: Morgan Stanley Capital International. | Notes: The value of rent receivable per square meter is defined as the ratio between the rent, as invoiced for the period, including turnover rents and the owned floor space considered in the same store portfolio which includes assets present in the portfolio both at the beginning and at the end of the measurement period and did not undergo any (re-)development or had any part transactions. Only office and retail segments where considered as these are the segments with the largest coverage in Morgan Stanley Capital International database.

Given the less marked growth momentum of rents compared to prices, the net initial yield[54] on commercial real estate has been on a downward trend since 2014, reaching a minimum of 5.8% in 2017 (Chart I.2.23). A significant adjustment of supply to the increase in demand might lead to a drop in the average rent value and, consequently, of market prices. However, the new construction in the commercial real estate market is still limited. According to some

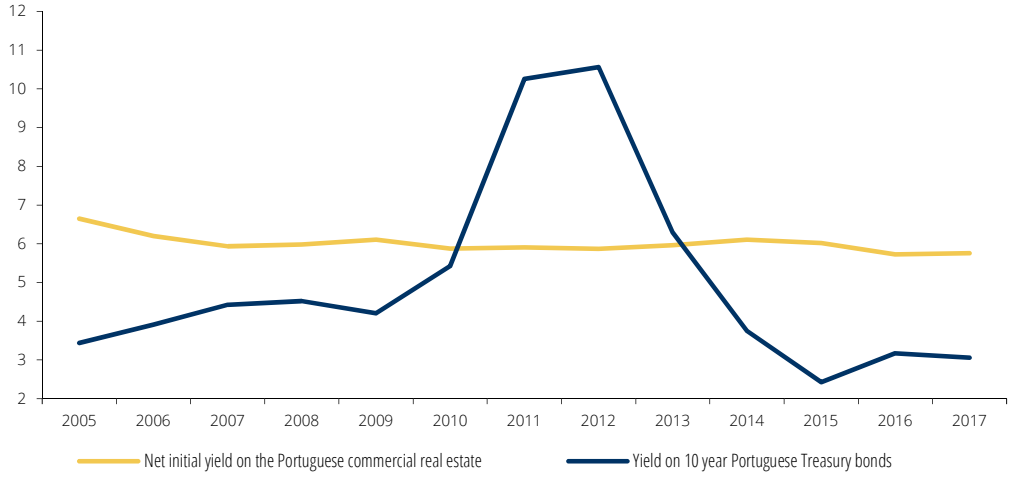
53. In Portugal, the lease of commercial real estate properties defines rental duration – in general, for long periods – and the determinants of rent increases, which are usually indexed to the inflation rate. In this context, it is likely that the value of received rents takes some time to reflect the rent value in new commercial real estate leases.

54. The net initial yield on the commercial real estate market is defined as the ratio between the annual rent passing plus turnover rents and other income, less non-recoverable operating costs at the end of the period and the net market capital value at the same date.

market participants, there are mainly two factors that explain this situation. On the one hand, the increase in the rents has not yet reached a value in relation to which development projects are considered sufficiently profitable and, on the other, the construction of residential dwellings is still more profitable than the construction of commercial real estate.

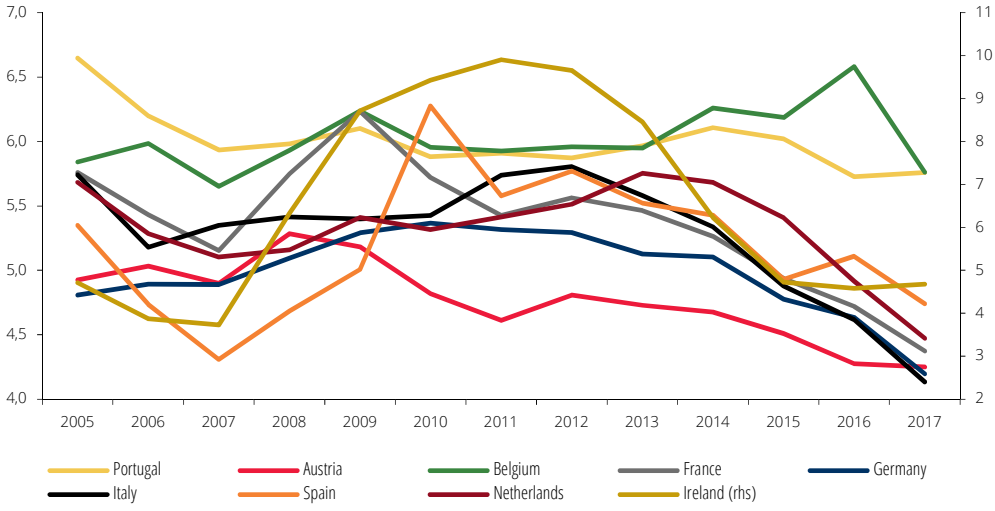
Although the net initial yield on the Portuguese commercial real estate market shows a downward trend, this market offers a significant yield differential compared to 10-year Portuguese Treasury bonds. In 2017, the spread between the net initial yield on commercial real estate and the yield on 10-year Portuguese Treasury bonds was 270 basis points, which compares to an average of 134 b.p. for the period between 2002 and 2017. In 2017, Portugal and Belgium were the countries with the highest net initial yield on the commercial real estate market among several euro area countries (Chart I.2.24). Between 2014 and 2016, there was an increase in rents in these two countries, however, prices grew in the Portuguese commercial real estate market and declined in the Belgian commercial real estate market. These price developments explain the different trends between the net initial yield in the Portuguese commercial market and the Belgian market between 2014 and 2016. In this period, rent changes in the other countries were negligible. Thus, the downward trend of the net initial yield observed in some countries is driven by the growth pace of commercial real estate prices (Chart I.2.15). The Portuguese commercial real estate market shows, however, an important difference in the net initial yield compared to the Spanish and Irish commercial real estate markets, which recorded lower total cumulative returns in the period after the international financial crisis. In 2017, the difference between the net initial yield on the Portuguese commercial real estate market and the net initial yield of these two markets stood at around 1 p.p. This differential between initial yields is justified by quite different price developments in Portugal, Spain and Ireland. In the period between 2014 and 2016, the average price growth in the Portuguese commercial real estate market, in nominal terms, was 2.8%. In comparison, over the same period, the Irish and Spanish commercial real estate markets recorded an average growth in nominal prices of 22% and 5.3%, respectively.

Chart I.2.23 • Yield rates | Per cent



Source: Morgan Stanley Capital International and Thomson Reuters. | Notes: The net initial yield on the commercial real estate market is defined as the ratio between the annual rent passing plus turnover rents and other income, less non-recoverable operating costs at the end of the period and the net market capital value at the same date. The net initial yield on the standing investment portfolio is based solely on directly owned standing investments in completed and lettable properties and excludes any (part) transaction activity.

Chart I.2.24 • Net initial yield on commercial real estate market by country | Per cent



Source: Morgan Stanley Capital International. | Notes: The net initial yield on the commercial real estate market is defined as the ratio between the annual rent passing plus turnover rents and other income, less non-recoverable operating costs at the end of the period and the net market capital value at the same date. The net initial yield on the standing investment portfolio is based solely on directly owned standing investments in completed and lettable properties and excludes any (part) transaction activity.

3 Financial position of the General Government and of the Non-financial Private Sector

3.1 General government

In 2017 and in the first quarter of 2018, general government financing benefited from a favourable economic environment, in Portugal and the euro area, and an improved market sentiment. These developments occurred amid a search-for-yield environment and the extension of the ECB's public sector purchase programme (PSPP) despite a reduction in monthly net purchases, in particular of Portuguese government debt securities.[55] The situation in euro area sovereign debt markets adjusted to levels similar to those observed before the international financial crisis.[56] These developments were broadly-based across most Member States, which benefited overall from a decline in financing costs. Most euro area countries saw their budget balance improve and their public debt-to-GDP ratio decline. The budget balance of the euro area as a whole stood at -0.9% of GDP in 2017, a 0.6 p.p. improvement compared with 2016. In turn, the public debt ratio declined by 2.3 p.p., to 88.8%[57] of GDP at the end of the year.

The budget deficit increased as a result of the capital injection in CGD

In Portugal, the general government deficit in national accounts reached 3.0% of GDP in 2017, reflecting, to a large extent, the impact of the capital injection in CGD (2.0 p.p. of GDP). Excluding this effect and that of other temporary measures, the deficit reached 1.0% of GDP, benefiting from positive developments in economic activity, an improved cyclically-adjusted primary balance (surplus) and a decrease in interest expenditure.[58] Total general government revenue increased by 3.9% in 2017, reflecting, in particular, an increase in revenue from social contributions and VAT. General government expenditure was strongly influenced by the capital injection in CGD. Excluding this effect, primary expenditure increased by 2%. In turn, interest expenditure decreased by 3.7%. The decline in interest expenditure continued to reflect the issuance of new market debt with more favourable price conditions than repaid debt, as is the case of the IMF loan, for which partial early repayments have been made since 2015.

The European Commission's spring forecast points to the budget deficit standing at 0.9% of GDP in 2018. This estimate includes the impact of the capital injection in Novo Banco by the Resolution Fund, under the Contingent Capital Mechanism set out in the agreements concluded under the sale of Novo Banco to Lonestar. As a whole, temporary measures considered by the European

55. For more details on developments in the sovereign debt market, see Section 2.2 of this Report.
56. Assessed on the basis of a synthetic indicator aggregating data on risk premia, volatility and liquidity conditions in the secondary market. For more details, see European Central Bank, *Financial Stability Review*, May 2018.
57. Aggregate euro area ratio on a non-consolidated basis, i.e. including loans between Member States under financial assistance programmes.
58. For more details on general government financing in 2017, see Banco de Portugal, *Economic Bulletin*, May 2018.

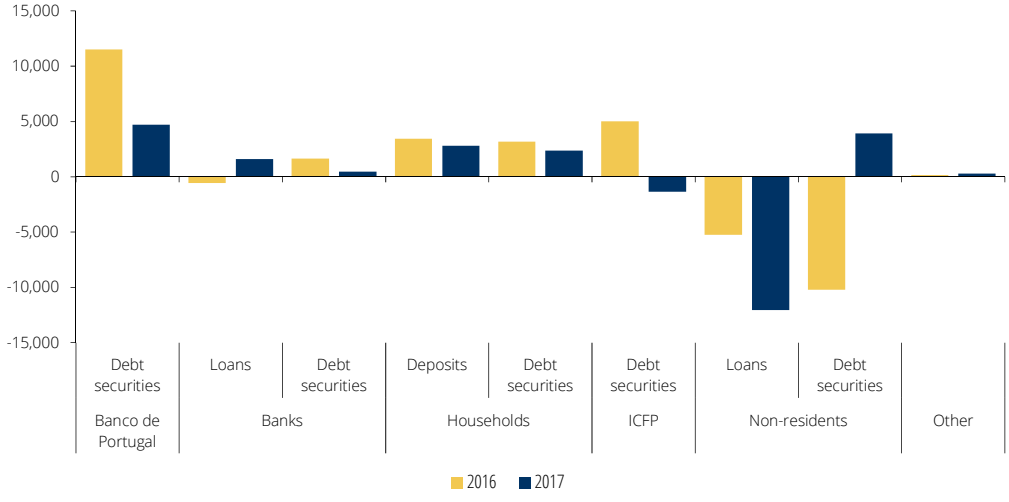
Commission have an impact of 0.3 p.p. of GDP towards a deterioration in the deficit. In 2019 the European Commission foresees a reduction in the deficit to 0.6% of GDP, corresponding to a slightly less marked downward path than in the Government's Stability Programme for the period 2018-20 (SP/2018). In most euro area countries, the budget balance is expected to continue to improve, albeit moderately, with the favourable effect of the economic cycle as its main determinant.

Financing through retail instruments increased and financing from banks and insurance corporations and pension funds remained relatively stable

In 2017 net general government financing through retail instruments, mostly placed with households,[59] continued to increase (Chart I.3.1). New issues of floating rate bonds reached €3.5 billion, similarly to developments in 2016. In addition, net subscriptions of Treasury certificates increased slightly, reaching €3.8 billion. In turn, net redemptions of savings certificates stood at approximately €1 billion. As a whole, financing from households obtained through these instruments increased by 2.7% of GDP. At the end of 2017, households held around 13%[60] of total government debt, approximately 9% of this sector's financial assets. This share is not particularly high in historical terms, returning to figures recorded at the start of the 2000s, but now with fairly higher total indebtedness and a record low household savings rate.

Financing from resident banks did not change significantly compared with the recent past. In turn, financing from insurance corporations and pension funds decreased slightly, in contrast to the considerable increase observed in 2016. In the context of a reduction in the volume of monthly net purchases under the ECB's PSPP, the increase in Portuguese government debt in Banco de Portugal's portfolio was smaller than in 2016.

Chart I.3.1 • General government financing by counterparty and instrument | Eur millions



Source: Banco de Portugal. | Notes: Households' deposits in the general government comprise savings certificates and Treasury certificates. The acronym ICFP refers to Insurance corporations and pension funds.

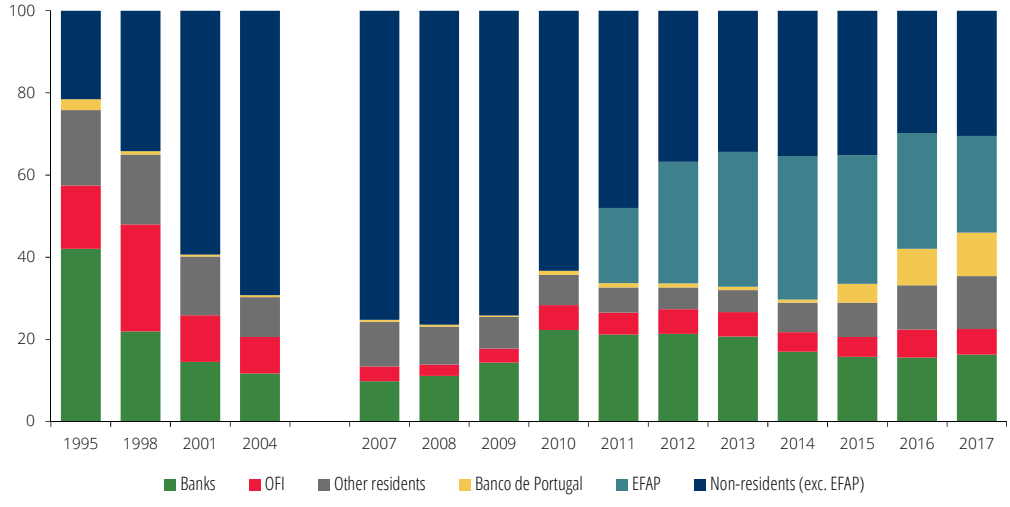
59. Floating rate bonds placed with a more diversified set of investors, i.e. not exclusively targeted at household savings.
60. On the basis of national accounts concepts (ESA 2010).

Market funding from non-residents increased, but its share remains well below the levels observed before the crisis

As regards net financing from non-residents, the IMF loan was repaid early, to an amount of around €10 billion over the course of the year, and financing via debt securities (€3.9 billion) – mostly long-term securities – increased, in contrast to the considerable decline observed in 2016.

General government financing from non-residents, excluding loans under the EFAP, has decreased considerably since 2009 (Chart I.3.2). Non-residents had a share of around 30% at the end of 2017, close to that observed before the start of the euro area. Historically and compared with other euro area countries, this level is quite low. These developments are the result of the euro area sovereign debt crisis and lower risk appetite for Portugal and were offset by increases in government debt in the ECB's portfolio and, in the most recent period, in Banco de Portugal's portfolio. On the one hand, the decline in the share of non-residents makes the Sate's financing conditions less vulnerable to changes in market conditions and to the degree of risk aversion in the markets. On the other, together with the ongoing fiscal consolidation process, maintaining a diversified investor base is important in order to ensure regular debt refinancing under favourable price conditions, in particular against a background of reduction in the pace of asset purchases under the PSPP, and the possible end of this programme by the end of 2018.

Chart I.3.2 • Structure of Portuguese public debt holders | Per cent, end-of-period figures



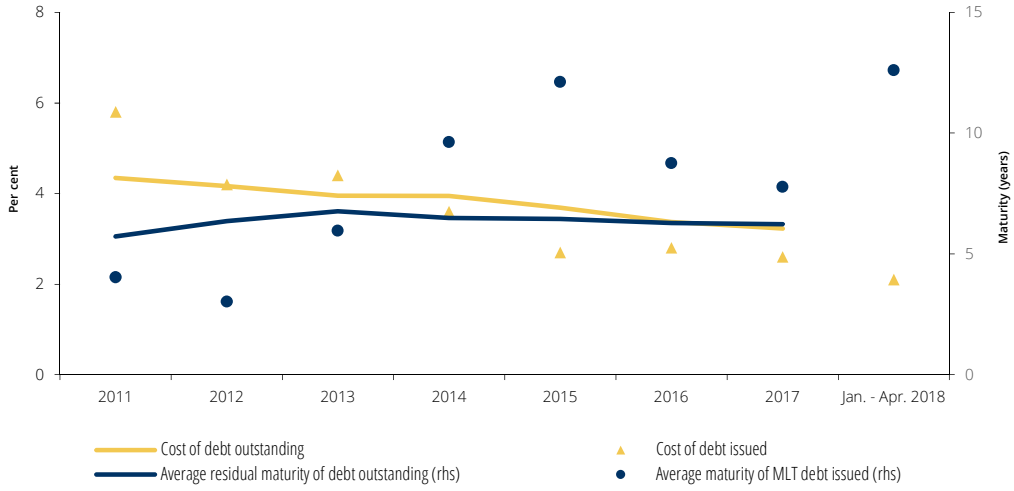
Sources: Banco de Portugal and IGCP. | Notes: Public debt from Maastricht. The acronym OFI refers to other (non-monetary) financial institutions. The acronym EFAP refers to Economic and Financial Assistance Programme.

Financing conditions in sovereign debt markets were relatively favourable in 2017

In 2017 the average cost of issued debt remained below the average cost of the stock (Chart I.3.3), following a downward path over the course of the year. The average allotment rate

in tenders of Treasury bonds with an approximate maturity of 10 years reached 2.8%, 0.3 p.p. less than in 2016.[61] The downward path continued during the first months of 2018, with the average allotment rate of comparable Treasury bonds declining to 1.8%, in tenders conducted until May. In the financing programme for the Republic of Portugal for 2018, the Portuguese Treasury and Debt Management Agency (IGCP) plans a gross Treasury bond issuance of €15 billion, with around 70% of this amount guaranteed until May. In turn, the average allotment rate in Treasury bill tenders stood at -0.25% in 2017, after 0.02% in 2016, declining to -0.38% in the tenders conducted in 2018 as a whole, during the same period. In line with these developments, the State continued to adjust the remuneration on new subscriptions of retail instruments, in particular floating rate bonds and Treasury certificates.[62]

Chart I.3.3 • Cost and maturity of public debt



Sources: Banco de Portugal, ECB, IGCP and Statistics Portugal. | Notes: The cost of debt issued is weighted by issuance amount and maturity and comprises Tbills, PGB, FRN and MTN issued in the corresponding year. The average maturity of medium- and long-term debt issued considers PGB and MTN issued in the corresponding year.

In 2017 the average maturity of issued medium and long-term debt decreased compared with 2016, which, in turn, had been considerably lower than in 2015. This pattern contributed to a slight decline in the residual maturity of debt securities and total general government debt, in contrast to developments in most euro area countries. In 2018 the average maturity in Treasury bond issues conducted until May increased considerably, to a level close to that observed in 2015 and more in line with most euro area countries. However, this increase is reflected only marginally in the average residual maturity of the stock.

The medium and long-term debt redemption needs are relatively contained until 2020, compared with the following years. At the end of 2017, the redemption profile of general government debt securities did not differ considerably from the profile of most euro area countries. The lower average residual maturity of Portuguese securities was mostly the result of a higher concentration of maturities between 5 and 10 years.

61. Comprising Treasury bond tenders with a residual maturity between 9 and 11 years. Excluding amounts placed during the non-competitive phase of tenders and amounts associated with syndicated issuances.

62. In October 2017, the subscription of *Certificados do Tesouro Poupança Mais* was suspended and the instrument *Certificados do Tesouro Poupança Crescimento* was created, with lower yields and premia according to GDP growth.

The public debt ratio decreased in 2017

Despite the upward profile recorded in the first half of the year, the public debt ratio declined by 4.2 p.p. in 2017, to 125.7% of GDP, partly reflecting a significant deposit decumulation in the last quarter of the year. In the year as a whole, nominal GDP growth was higher than cost implied in debt, resulting in a contribution of 1.2 p.p. to the reduction in the ratio (resulting in a favourable dynamic effect). The improvement observed in the public debt ratio also reflected the primary surplus.[63] In nominal terms, public debt increased by around €1,800 million.

The targets to reduce the public debt ratio established in the SP/2018 are ambitious[64] and are based to a large extent on a favourable macroeconomic scenario. In particular, the projection assumes primary surpluses will be maintained over the horizon, together with a significant reduction in the primary expenditure-to-GDP ratio. Assumptions also point to a negative differential remaining between the interest rate implied in the debt stock and the growth rate of nominal GDP, in the context of a very gradual increase in the interest rate level and continuing robust economic growth.

The Portuguese Public Finance Council and international institutions[65] continue to signal upward risks to developments in public debt ratios, related to an increase in the overall interest rate level, the upsurge in tensions in sovereign debt markets, the slowdown in economic activity and a trend of population ageing. Considering these risks, Portugal must maintain structural fiscal adjustment efforts and promote growth-inducing policies, in order to ensure a reduction in the level of general government indebtedness and promote sustainable public finances.

3.2 Non-financial private sector

In 2017 net lending of the non-financial private sector stood at 0.3% of GDP, declining from the previous year (1.1% of GDP), mostly reflecting an increase in investment by non-financial corporations (NFCs) and a slight decline in household savings.

Amid a recovery in corporate investment and an increase in private consumption, the path of financial debt[66] repayment by enterprises and households was interrupted in 2017. In the NFC sector, these developments mostly reflected a significant increase in funding from non-residents, while growth in household debt was associated with an acceleration in consumer credit, largely determined by new borrowers entering the credit market. Nevertheless, the indebtedness ratios of enterprises and households, measured as a percentage of GDP and disposable income, respectively, continued to decline. In addition, the equity increase in the financing structure of Portuguese enterprises continued in 2017, mainly through the retention of earnings, particularly in small and medium sized enterprises (SMEs).

The recovery in corporate investment has been observed in enterprises with lower financial debt ratios. The financial effort associated with new investments has resulted in an increase in the debt of investing enterprises, although their indebtedness ratios remain below the sector's median. Given that the indebtedness ratio of Portuguese enterprises and households is still one of the highest in the euro area, a worsening of financing costs – even if gradual and associated

63. The contribution of the primary surplus was lower than in 2016, owing to the impact of the capital injection in CGD on the deficit in national accounts, an operation which seems to have been financed at the end of 2016.
64. In total, a 23.7 p.p. reduction to 102% of GDP at the end of 2022.
65. IMF, European Central Bank and European Commission.
66. Financial debt comprises debt securities and loans.

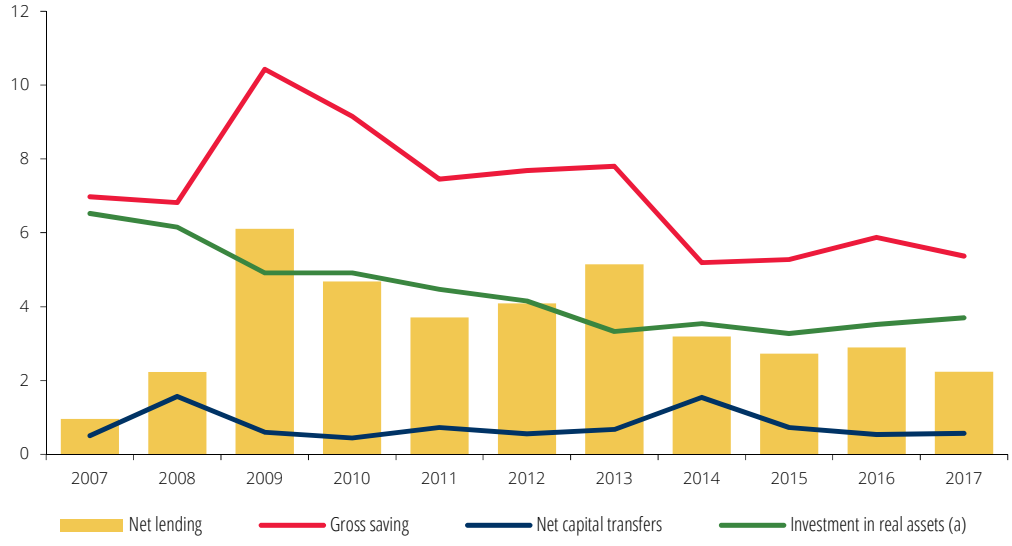
with a recovery in income – may have an impact on the debt servicing capacity of more vulnerable enterprises and households. It is therefore crucial that the deleveraging path is not jeopardised, in order to ensure greater resilience against potential adverse shocks in the future.

3.2.1 Households

In 2017 the households' savings rate was slightly below the level observed in the previous year and close to its historical low

Households' net lending stood at 2.2% of disposable income in 2017, around 0.7 p.p. below the level observed in 2016 and close to the figures recorded in the years leading up to the financial crisis of 2008. These developments were the result of a decline in the savings rate and an increase in investment in real assets. The households' savings rate has not fluctuated significantly since 2014, when it reached a historical low (5.2% of disposable income), reflecting growth in private consumption, on average, above that of disposable income (Chart I.3.4).[67] The savings rate of Portuguese households is both below the euro area average and the household savings rate of many Member States, such as Spain, Ireland and the Netherlands. In Portugal, the low savings rate is an important weakness for financial stability against the backdrop of an ageing population, a public social security system which is expected to entail a substantial reduction in income on retirement, and still high household indebtedness, largely associated with long maturities which exceed the borrowers' working life. The low savings rate in aggregate terms indicates the existence of a significant number of households with very low or even negative savings, making them particularly vulnerable to shocks impacting on their income (such as retirement, unemployment or an interest rate rise).[68]

Chart I.3.4 • Savings, investment and net lending of private individuals | Percentage of disposable income



Source: Statistics Portugal | Note: (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.

67. The savings rate corresponds to the ratio of gross savings to gross disposable income adjusted for the participation of households in pension funds.
68. The financial vulnerability of Portuguese households was analysed in Box 4 of the December 2017 issue of the *Financial Stability Report*.

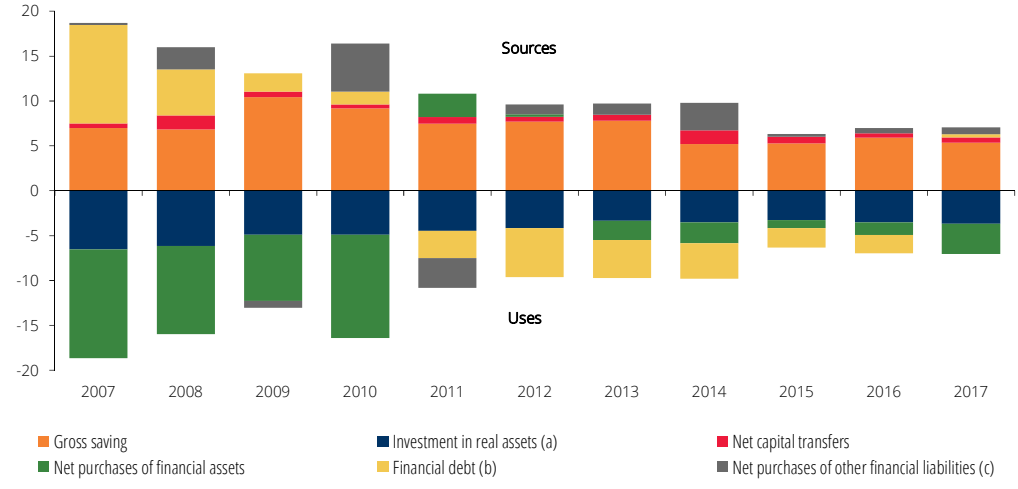
In 2017 households' financial savings[69] were partly reflected in an increase in investments in financial assets with higher relative yields and the near stabilisation of net flows of financial liabilities

In 2017 households' net investments[70] in financial assets increased considerably compared with what had been observed since 2011, with transactions reaching 3.4% of disposable income. Furthermore, there were net flows of loans of around 0.3% of disposable income, mostly to finance consumption expenditure, interrupting this sector's net repayment of financial debt, which had been observed since 2011 (Chart I.3.5).

As regards investments in financial assets, net investments in Portuguese government debt (mostly Treasury certificates and floating rate bonds) continued to stand out, adding up to 3.9% of disposable income. In addition, there was an increase in net investments in non-resident investment funds and, to a lesser extent, in resident investment funds and pension funds, with net transactions reaching 1.0%, 0.6% and 0.3% of disposable income respectively. This pattern reflected a greater preference for investments with higher relative yields – within the range of financial assets which are nevertheless perceived as having a limited risk –, against a background where the high level of consumer confidence may have resulted in lower risk aversion. Reflecting the historically low level of interest rates on bank deposits, net investments in this financial instrument declined considerably in 2017, accounting for only 0.4% of disposable income (Chart I.3.6).

Among households' investments, net purchases of real assets, in particular real estate assets, also stood out, similarly to previous years. The attractiveness of investing in these assets may have been influenced by a considerable increase in residential real estate prices, helped by buoyant tourism, and low interest rates (see Section 2.3).

Chart I.3.5 • Sources and uses of funds by private individuals | Percentage of disposable income

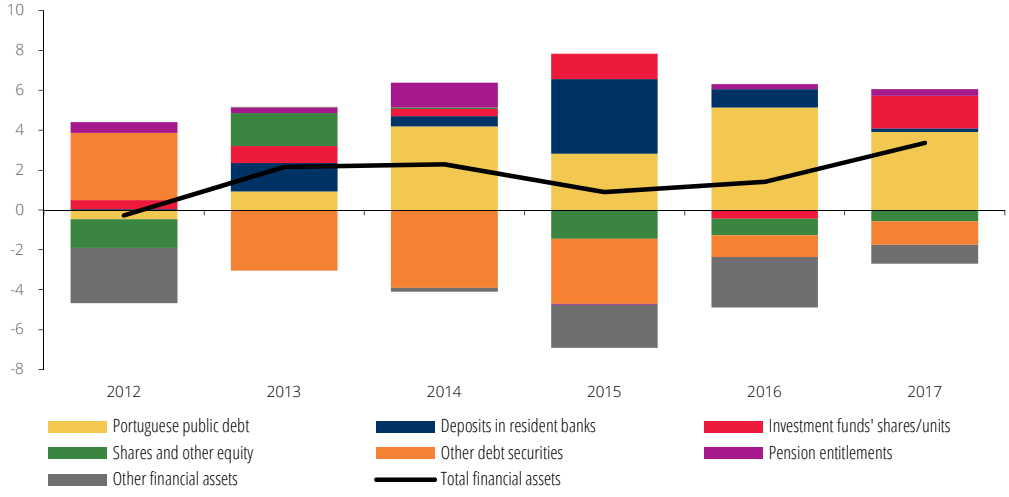


Sources: Banco de Portugal and Statistics Portugal. | Notes: (a) Corresponds to the sum of gross fixed capital formation, changes in inventories, acquisitions less disposals of valuables and acquisitions less disposals of non-produced non-financial assets. (b) Corresponds to the sum of loans and debt securities. (c) Includes other debits and credits.

69. Financial savings correspond to the financial account balance and are the difference between net transactions in financial assets and net transactions in financial liabilities. These may differ from the balance of net lending/borrowing, calculated in economic accounts, due to the statistical discrepancies.

70. Investments net of sales, redemptions and other transactions contributing to a reduction in assets.

Chart I.3.6 • Transactions in financial assets of private individuals | Percentage of disposable income



Sources: Banco de Portugal and Statistics Portugal.

A positive net flow of household loans was observed in 2017, interrupting the process of the sector's net repayment of financial debt that had begun in 2011

Households' total debt[71] recorded an annual rate of change of 0.4% at the end of 2017, interrupting the cycle of contraction observed since mid-2011 (a cumulative fall of around 14%). The slight growth observed in 2017 reflected the continuing momentum in credit for consumption, against a background where loans for house purchase still recorded a negative annual rate of change. Nevertheless, loans for house purchase have recovered somewhat since 2013, with gradually less negative annual rates of change (a -1.7% change at the end of 2017, compared with -2.7% at the end of 2016). Gross flows of new bank loans for house purchase have also increased, considerably exceeding in 2017 the levels observed in 2016, although they remained at levels clearly below those recorded before the financial crisis. Also significant was the increasing amount of early repayments of loans for house purchase and related credit, mainly total repayments, which are expected to be related to new lending.[72]

Household debt growth in 2017 was mostly due to an accelerating credit for consumption, continuing a trend observed since the end of 2012. This contrasts with the situation observed prior to the financial crisis, when the sector's total debt dynamics was mainly determined by developments in loans for house purchase (Chart I.3.7).

At the end of 2017, total credit for consumption posted an annual rate of change of 12%, 3 p.p. above that observed at the end of 2016, which corresponds to high growth. This development occurred amid an improving labour market situation, an increase in consumer confidence to historically

71. Total debt includes loans and trade credits granted by the resident financial sector, other resident sectors (excluding households) and non-residents. 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.

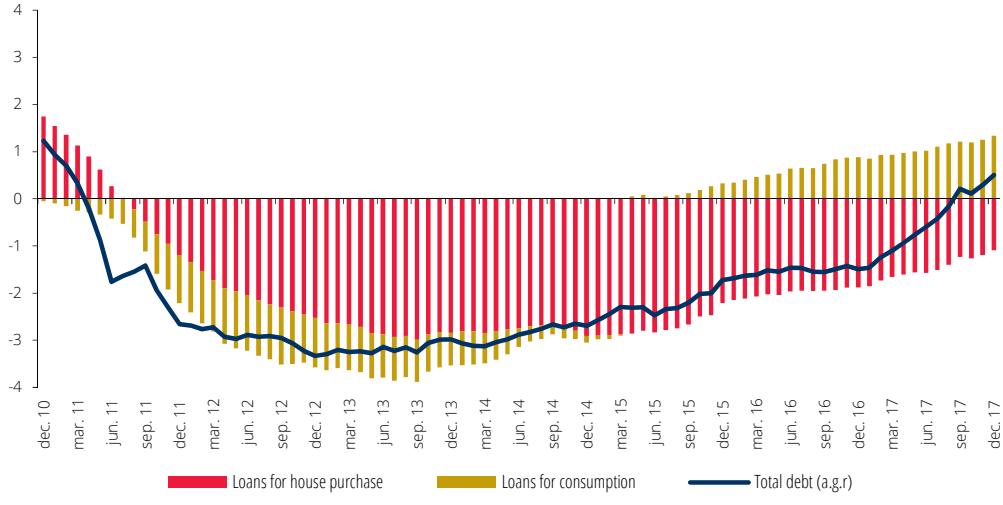
72. For more information on this subject, see Box 2 'New loans and repayments in housing credit: an analysis using microeconomic data', *Economic Bulletin*, May 2018, and *Retail Banking Markets Monitoring Reports*, Banco de Portugal.

high levels and continued growth in private consumption, which is expected to have contributed to greater demand for this type of loan. In line with the upward phase of the economic cycle, the ratio of new loans for consumption to non-food consumption of resident households continued to increase, standing at around 6% in the past two years, which is double the minimum value observed in 2012 and practically at the level observed at the start of the international financial crisis.[73] In this segment, loans for the purchase of second-hand cars posted a growth rate above that of total loans (accounting for around 30% of the total amount of new consumer credit agreements[74] in 2017). The decline in interest rates, the easing of credit standards for consumer credit and an increased activity of credit institutions specialised in this market segment seem to have boosted this acceleration.

Growth in credit for consumption may partly reflect increased competition in the household loan market segment where interest rates are higher. These developments have been determined, to a large extent, by new borrowers entering the credit market, i.e. households that in the previous year did not have any loans vis-à-vis the resident financial system. The entry in the credit for consumption market of households that, in the previous year, only had loans for house purchase also made a positive contribution, although to a lesser extent, to growth in this type of loan. By contrast, most households that already participated in this segment of the credit market are expected to have continued to pay their loans in net terms (Chart I.3.8). Credit for consumption has mostly been granted by banks and by financial corporations specialised in this type of loan that belong to international groups.

Despite the developments observed in credit for consumption since 2012, the share of loans for house purchase in total household debt continues to be very high (around 72% in 2017).

Chart I.3.7 • Contributions to the annual rate of change of private individuals' total debt
| Percentage points

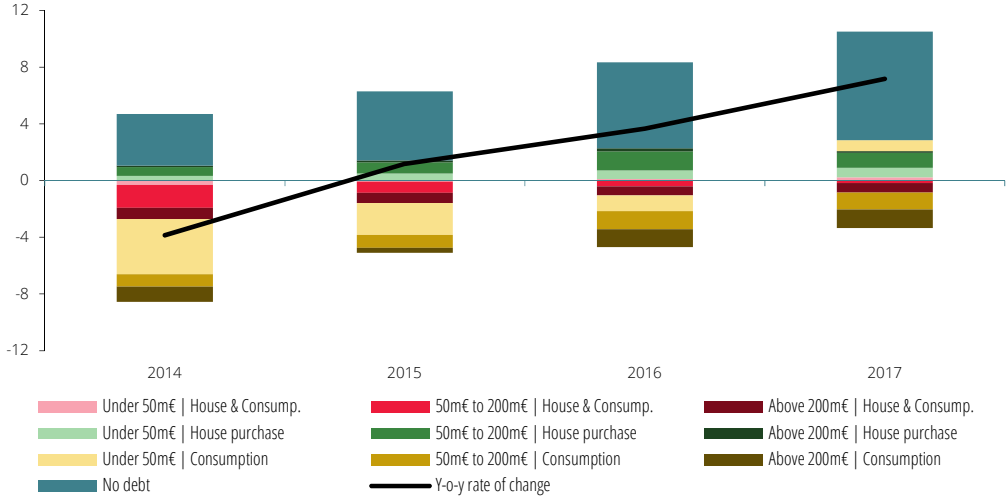


Source: Banco de Portugal. | Notes: Total debt includes loans and trade credits granted by the resident financial sector, other resident sectors (excluding private individuals) and non-residents. Annual rates of change (a.g.r.) are calculated on the basis of an index computed from adjusted transactions, i.e., changes in end-of-period outstanding amounts adjusted for reclassifications, write-offs, exchange rate and price revaluations and, where relevant, for sales and securitisation. The a.g.r. is calculated on the basis of adjusted transactions in loans for house purchase and consumption (as presented in the chart) and loans for purposes other than house purchase and consumption, and trade credits.

73. This ratio was calculated on the basis of the amount of new consumer credit (available in portuguese at https://clientebancario.bportugal.pt/pt-pt/evolucao-dos-novos-creditos), excluding amounts for credit cards, credit lines, current accounts and overdraft facilities, and the value, at current prices, of final consumption expenditure of resident households except food. To estimate a proxy for developments in this ratio in the period before 2012, the amount of new consumer bank loans was used for this period (accounting for 89% and 75% of this amount of new consumer credit in 2012 and 2017 respectively) as numerator.

74. Excluding credit cards, credit lines, current accounts and overdraft facilities, where loan amounts granted refer to the maximum credit limit for a given customer and not the credit amount actually used.

Chart I.3.8 • Contributions to the year-on-year rate of change of the stock of loans for consumption | Per cent



Source: Banco de Portugal. | Note: Each class is broken down according to the outstanding amount and type of loan in the year previous to the reference year. 'No debt' includes those borrowers that, at the end of the year preceding the reference year, had no loans vis-à-vis the resident financial system. Exits, i.e., those borrowers that fully repaid their loans for consumption vis-à-vis the resident financial system during the reference year, are included in the remaining classes.

Despite the interruption observed in net repayments of household debt, the households' indebtedness ratio continued to decline in 2017, reflecting growth in nominal disposable income

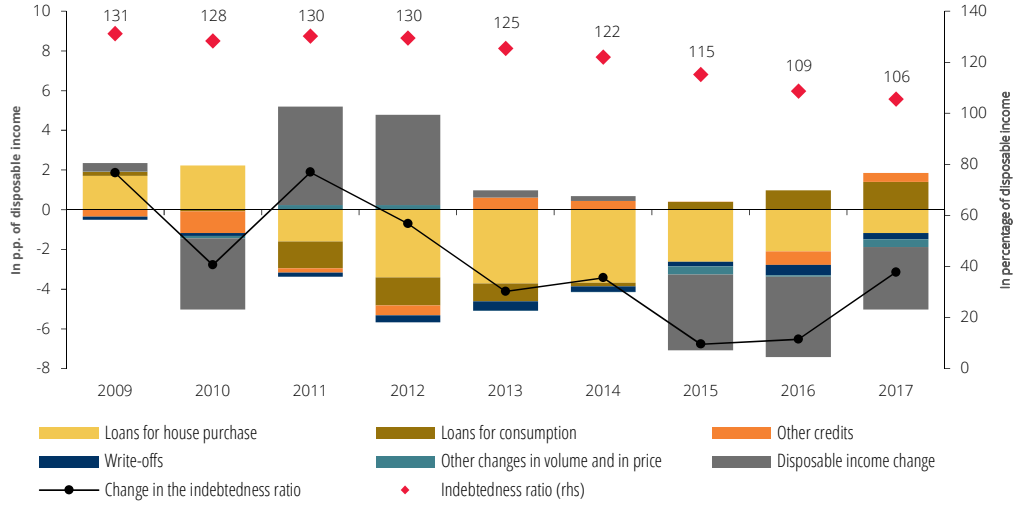
At the end of 2017, total household debt stood at 106% of disposable income, compared with 109% at the end of the previous year. The decline in this ratio mainly reflected an increase in nominal disposable income, given that, as previously mentioned, there was a net positive flow of loans to households. In 2017 the share of outstanding debt allocated to credit for consumption and other purposes (other than for house purchase) increased, reflecting the momentum that continued to be observed in this segment (Chart I.3.9). The households' indebtedness ratio in Portugal remains above the euro area average (assessed both in terms of the sector's disposable income and GDP). However, the share of credit for consumption and other purposes (other than for house purchase) is lower than in a number of euro area countries which also have high indebtedness ratios, such as Ireland and the Netherlands. Other countries, such as Spain and France, are in a similar situation to Portugal both in terms of indebtedness and the relative importance of these loans (Chart I.3.10).

The fact that loans for house purchase have both a very high relative importance in total household debt and a considerable agreed maturity slows down the pace of reduction of the sector's indebtedness.[75] The high level of household debt thus continues to be an important weakness of the Portuguese economy both in macroeconomic and financial stability terms, particularly in a low inflation environment.

75. Understood here as the ratio of total debt to disposable income.

The fact that most outstanding loans of Portuguese households have interest rates indexed to money market rates is a relevant vulnerability, given the high sensitivity of households' disposable income to changes in short-term interest rates. However, this has led to a reduction in the debt service burden, which currently stands at historically low levels. The trend of debt service reduction observed in Portugal was more pronounced than in other euro area countries such as Spain, France and Italy (Chart I.3.11). In this respect, instalments in household loans (for house purchase and consumption) granted by the resident financial sector are estimated to account for around 7.5% of disposable income of the household sector. This share is expected to be considerably higher for households that are more indebted and/or have a lower income.[76] Broken down by type of loan, the total amount of instalments of credit for consumption accounted for half of the total estimated amount of regular interest and principal repayments, at the end of 2017, although the average instalment for this type of loan was lower than for loans for house purchase.[77] Only in interest payable, a 200 b.p. increase in the indexes associated with loans for house purchase will result, for the stock of loans for house purchase outstanding as of December 2017, in a decline in households' disposable income above 1%, *ceteris paribus*.[78] However, the relative importance of new loans for house purchase with a fixed rate or an initial rate fixation period equal to or over one year is growing (although remaining well below the agreed loan maturity), which will help mitigate the vulnerability of indebted Portuguese households against interest rate rises in the short term.

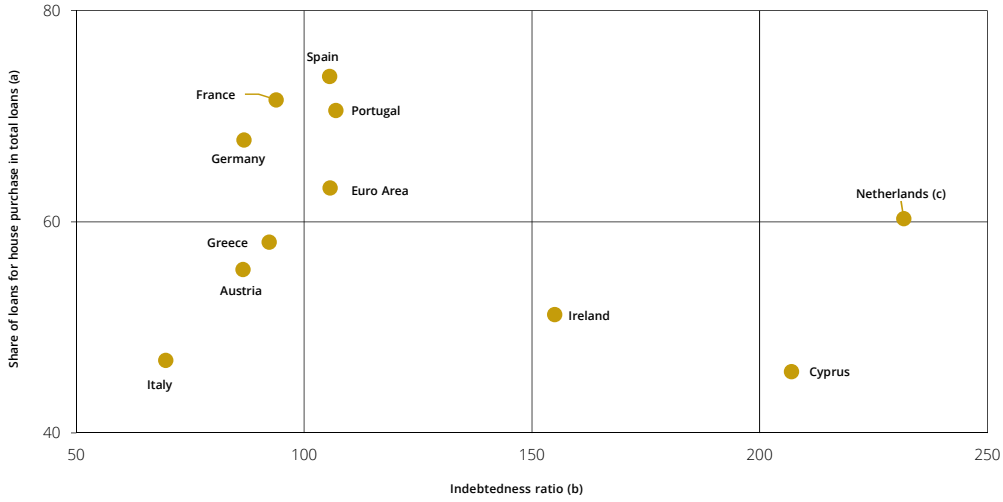
Chart I.3.9 • Private individuals' indebtedness ratio and contributions to its change



Sources: Banco de Portugal and Statistics Portugal. | Note: The contribution of each credit segment was calculated on the basis of corresponding net flows. 'Other credits' include loans for other purposes (other than house purchase and consumption) and trade credits.

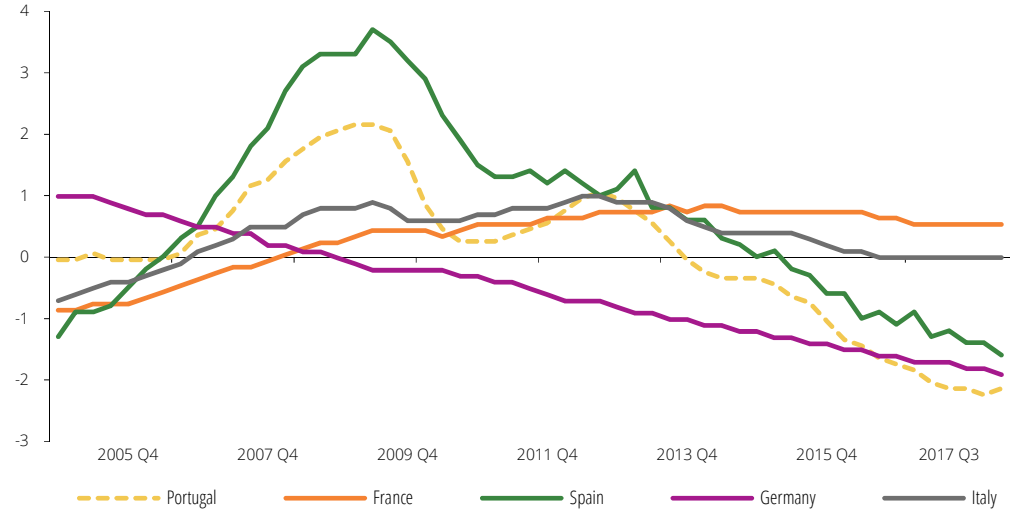
76. See Box 4 "The financial vulnerability of Portuguese households", *Financial Stability Report*, December 2017.
77. The average monthly instalment in consumer loan contracts was nearly €182 at the end of 2017, and close to €237 in housing loans. In the former, which primordially has fixed-rate contracts, the share of interest corresponded to ¼ of the average instalment, while for housing loans this share was below ⅕ of the average instalment, against a background where most benchmarks used remained at negative levels.
78. See Box 4 "The financial vulnerability of Portuguese households", *Financial Stability Report*, December 2017.

Chart I.3.10 • Indebtedness ratio and share of loans to private individuals for house purchase | Per cent



Sources: Eurostat and ECB/SDW. | Notes: Figures at the end of 2016. (a) Loans for house purchase granted by monetary financial institutions (MFIs) over private individuals' total debt. In some countries, private individuals receive significant amounts of loans for house purchase from financial institutions other than MFIs. (b) Ratio of total debt to disposable income. Total debt includes loans and trade credits. (c) Although the indebtedness of private individuals is very high in the Netherlands, this sector's savings rate is above the euro area average, at around 13% of disposable income, which is likely to be associated with the significant weight that social insurance schemes with provisions have in this country.[79]

Chart I.3.11 • Private individuals' debt service ratio | Deviation from each country's mean, in percentage points



Source: BIS. | Note: The debt service ratio is defined as the ratio of the sum of interest payments and capital repayment to income. The income of private individuals is estimated as the sum of the sector's gross disposable income and interest paid. The mean of the debt service ratio is calculated for each country, for the period 1999 Q1 – 2017 Q3.

79 In accordance with the European system of national accounts, in this case, the entitlements of households should be recorded as they build up. An increase in entitlements caused by an excess of contributions over benefits is shown as paid by the social insurance scheme to households. The rationale for this is that, since this increase in entitlements directly affects the net worth of households, it should be included in the saving of the households sector (see Regulation (EU) No. 549/2013 of the European Parliament and of the Council of 21 May 2013 on the European system of national and regional accounts in the European Union, §17.29 to §17.39).

3.2.2 Non-financial corporations

Net borrowing of NFCs worsened slightly in 2017, reflecting an increase in the sector's investment rate and a stabilisation in its savings rate

In 2017 net borrowing of NFCs stood at 1.2% of GDP, increasing slightly from the previous year (0.9% of GDP). This development mostly reflected an increase in investment, to 11.9% of GDP (11.4% of GDP in 2016), against a background where the savings rate remained broadly stable at around 10% of GDP and net capital transfers remained unchanged from the previous year (standing at around 0.6% of GDP) (Chart I.3.12).

The NFC savings rate stabilised after a significant increase observed from 2008 to 2014 (Chart I.3.13), reflecting growth in gross operating surplus and, to a lesser extent, a decline in the distributed income and interest expenses balances. These developments occurred at European level and may have been associated with a trend towards greater profit retention by enterprises, during the period of the financial and sovereign debt crisis, characterised by considerable uncertainty overall and a tightening of lending conditions by the financial sector. During this period, the savings of Portuguese NFCs as a percentage of entrepreneurial income net of taxes[80] posted the largest increase among euro area countries (from 29% in 2008 to 61% in 2014). For Portuguese enterprises, the largest profit retention since 2014 has been, to a large extent, associated with SMEs. Finally, in 2016 NFC savings as a percentage of entrepreneurial income net of taxes stood at 57% in Portugal, slightly below the euro area average (61%).[81]

Since 2014, gross operating surplus and net distributed income have practically stabilised, while the decline in net interest expenses has been offset by a decrease in net reinvested earnings of foreign direct investment,[82] resulting, as a whole, in a relative stabilisation of the sector's gross savings as a percentage of GDP (Chart I.3.14). Although the savings rate of Portuguese NFCs has reached a historically high level, it still remains well below the euro area average (Chart I.3.15).

The recovery in NFC investment has been driven by enterprises with the lowest financial debt ratios

The path of recovery in corporate investment, observed since 2013, continued in 2017, mostly associated with the purchase of machinery and transport equipment. The recovery in investment by Portuguese enterprises as a percentage of GDP brought Portugal closer to the euro area average, although it still remains below countries such as Spain and France (Chart I.3.16). The increase in corporate investment until 2016 (the last year for which there is available information) was observed in enterprises with lower financial debt ratios, compared with the sector's median

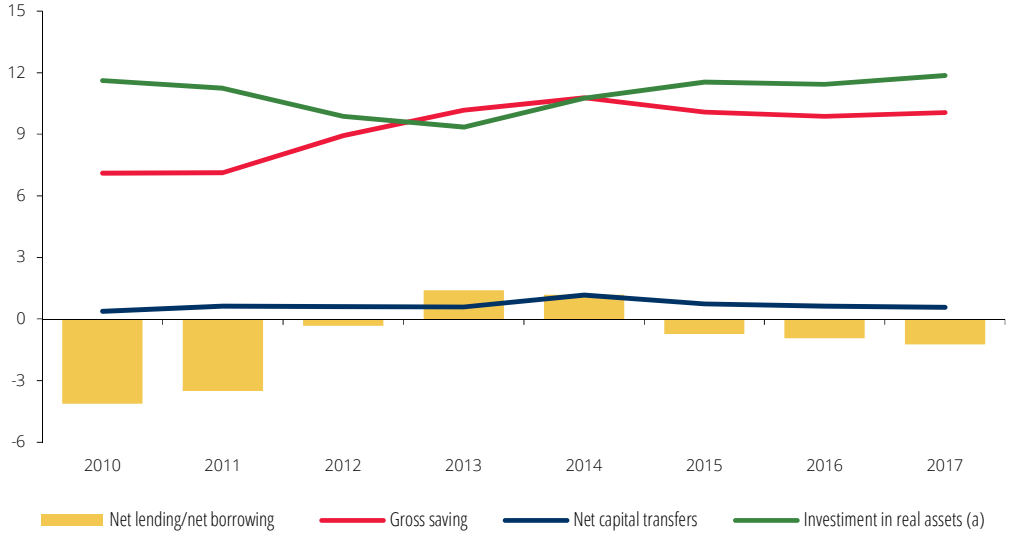
80. Entrepreneurial income net of taxes corresponds to the balance of primary income less uses for distributed income of corporations and reinvested earnings of foreign direct investment (entrepreneurial income) net of taxes on income and wealth.

81. In 2016, in the euro area countries, NFC savings as a percentage of entrepreneurial income net of taxes ranged from 42% in Lithuania to 83% in Slovenia.

82. According to the national accounts methodology, retained earnings from foreign direct investment are considered as fully distributed and transferred to foreign direct investors in proportion to their share in the company's equity, which they subsequently reinvest through equity increases in the financial account.

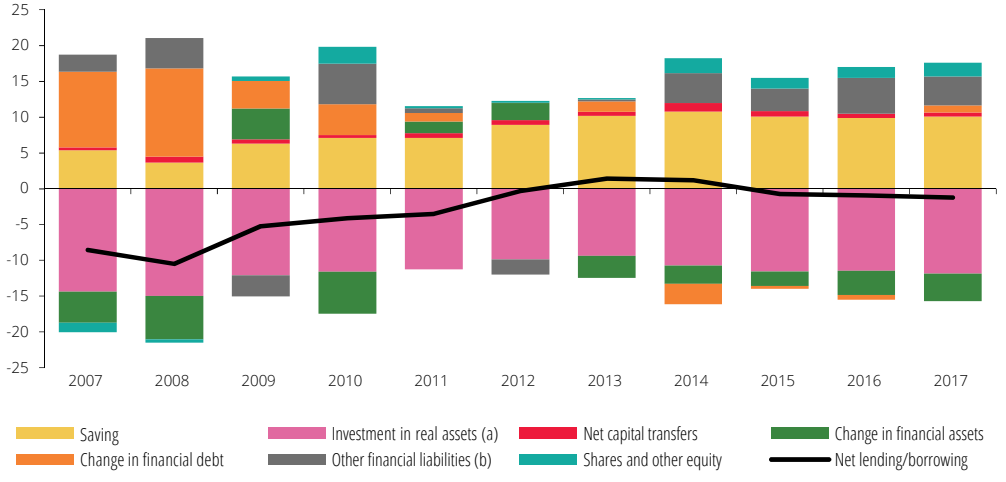
(Chart I.3.17).[83] In turn, the financial effort involved in new investments has resulted in an increase in the total amount of financial debt associated with these enterprises, although their indebtedness ratios remain below the median. This pattern can be observed in manufacturing and trade. In construction, the increase in investment has also been associated with less indebted enterprises, although higher recourse to financial debt by investing enterprises was less evident in this sector, which may be associated with the lower level of investment by this sector.

Chart I.3.12 • Saving, investment and net lending / net borrowing of NFCs | Percentage of GDP



Source: Statistics Portugal. | Note: (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.

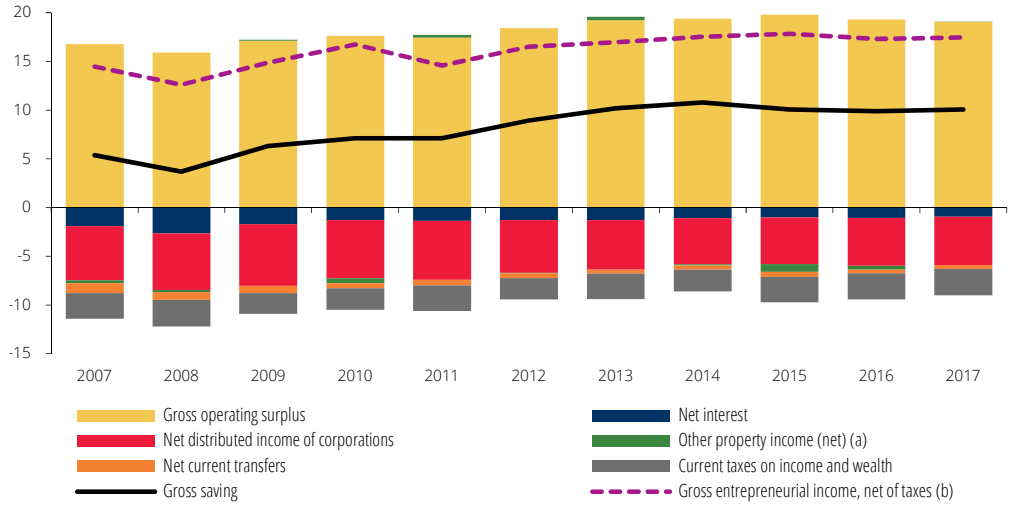
Chart I.3.13 • Sources and uses of funds by NFCs I Percentage of GDP



Sources: Banco de Portugal and Statistics Portugal. | Notes: Consolidated figures. (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) Includes the statistical discrepancy between net lending /net borrowing computed within the scope of the capital and financial account.

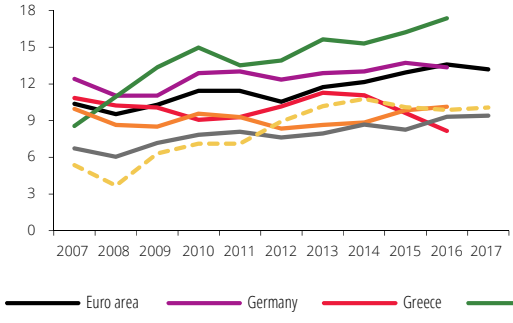
83. For more details on the relationship between NFC deleveraging and investment, see Box 1 'Deleveraging and investment of NFCs in Portugal', *Financial Stability Report*, December 2017.

Chart I.3.14 • Uses of NFCs' gross operating surplus | Percentage of GDP



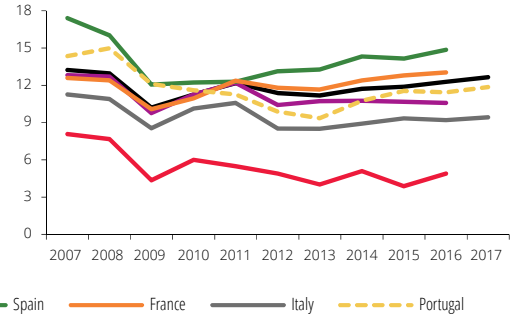
Source: Statistics Portugal. | Notes: 'Net' stands for the difference between sources and uses. (a) Includes reinvested earnings of foreign direct investment and rents. (b) Corresponds to the balance of primary income less uses for distributed income of corporations and reinvested earnings of foreign direct investment (entrepreneurial income) net of taxes on income and wealth.

Chart I.3.15 • NFCs' savings – International comparison | Percentage of GDP



Source: Eurostat.

Chart I.3.16 • NFCs' investment in real assets – International comparison | Percentage of GDP



Source: Eurostat. | Note: Investment in real assets corresponds to the sum of gross capital formation and acquisitions less disposals of non-produced non-financial assets.

Chart I.3.17 • Median of the financial debt ratio | Percentage of total assets

Source: Banco de Portugal. | Notes: Investment was estimated based on a proxy of the gross fixed capital formation (GFCF) of each firm. (a) Those firms with a positive GFCF in year *t* are assumed to invest in year *t*. (b) Those firms with a negative GFCF in year *t* are assumed to disinvest in year *t*.

The path of net repayment of NFC financial debt observed since 2014 was interrupted in 2017

Net flows of NFC financial debt[84] were positive in 2017 (1% of GDP), interrupting a path of net repayment observed since 2014. These developments mostly reflected a significant increase in funding from non-residents (2.6% of GDP), associated, to a large extent, with intra-group financing of one enterprise belonging to the electricity, gas and water sector. Excluding these operations, a net repayment of NFC financial debt, although small, would have been observed.

The net repayment of loans granted by the resident financial sector to NFCs (accounting for 1.2% of GDP), although smaller than in 2016 (2.1% of GDP), partly offset the increase in funding from non-residents. These developments were differentiated according to enterprise size, with microenterprises posting a positive annual rate of change, while all other enterprise sizes had more negative annual rates of change than in the previous year. By economic activity sector, positive annual rates of change were observed in loans granted by the resident financial sector to trade, real estate activities and accommodation and food services, supported by the buoyancy seen in tourism activities and the real estate market in Portugal. By contrast, loans granted by the resident financial sector to construction and electricity, gas and water declined more markedly than in 2016. The annual rate of change of loans granted to manufacturing and mining and quarrying was near zero in 2017.

The decline in recourse by enterprises to domestic bank loans is also evident in the decrease in gross flows of new bank loans to NFCs, which in 2017 reached a minimum not seen since 2003. However, these developments may be partly associated with an increase in the maturity of new

84. Financial debt corresponds to the sum of loans and debt securities.

loans.[85] According to Portuguese banks responding to the Bank Lending Survey,[86] demand for bank loans to finance investments continued to increase in 2017, which in principle involves longer maturities.

Lower recourse to bank loans in the more recent period occurred amid an increase in the share of corporate savings as a source of funding for the sector. Nevertheless, a gradual process of financial disintermediation seems to be ongoing at national level, i.e. Portuguese enterprises have been reducing their recourse to loans from resident banks, although these continue to be their main source of funding (See Special Issue: "Financing decisions of Portuguese companies: stylized facts and recent developments") in the May 2018 issue of the *Economic Bulletin*.

The increased issuance of NFC debt securities in 2017 continued to benefit from favourable monetary and financial conditions

In 2017 the net issuance of debt securities by NFCs reached 1.1% of GDP (net repayments in 2016 accounted for 0.4% of GDP), which were mostly purchased by non-residents (1.3% of GDP). The issuance of debt securities in 2017 increased both for large and small and medium-sized enterprises (mostly commercial paper for the latter).

The process of financial disintermediation at national level has also been visible in the gradual decline in the share of the resident financial sector as an investor in NFC debt securities, against an increase in the share of non-residents. Nevertheless, the resident financial sector remains the main holder of debt securities issued by Portuguese SMEs. Securities issued by smaller enterprises were mostly commercial paper, mainly held by banks, and are a close substitute to bank loans.

Together with greater recourse by NFCs to the issuance of debt securities, commercial paper has gradually been replaced by bonds,[87] which have benefited from the particularly favourable monetary and financial conditions brought about by the Eurosystem's Corporate Sector Purchase Programme (CSPP), especially in the more recent period. These developments suggest that Portuguese enterprises with access to international debt markets have taken advantage of favourable conditions to prolong their debt maturities and consequently guard against more adverse financing conditions in the future. Despite the small number of Portuguese NFCs with eligible securities under the Eurosystem's CSPP, at the end of 2016 the market debt of these enterprises accounted for around 42% of total debt securities issued by resident NFCs and around 10% of the sector's total debt.[88] In addition, this programme has contributed to a generalised decline in yields on euro area corporate debt securities, which is expected to have benefited both eligible and non-eligible enterprises.

85. Owing to the accounting of annual flows of new loans, the increase in agreed loan maturities results in a decline in the annual amount of loans granted: if a bank lends a €100 loan renewed every 6 months, the annual amount of new loans granted by this bank totals €200; if the same bank grants a single loan to the same amount but with a loan maturity of one year, the annual amount of new loans granted by the bank totals €100, with funding available to the enterprise throughout the year standing at €100 for both cases.
86. For more details on the Bank Lending Survey, see https://www.bportugal.pt/en/publications/banco-de-portugal/all/114.
87. The share of bonds in the stock of debt securities issued by NFCs increased from around one-third at the end of 2011 to around two-thirds at the end of 2017.
88. Non-consolidated financial debt of Portuguese enterprises eligible for the Eurosystem's CSPP obtained from IES data.

Since 2012, the decline in the NFC indebtedness ratio occurred in tandem with an increase in liquidity

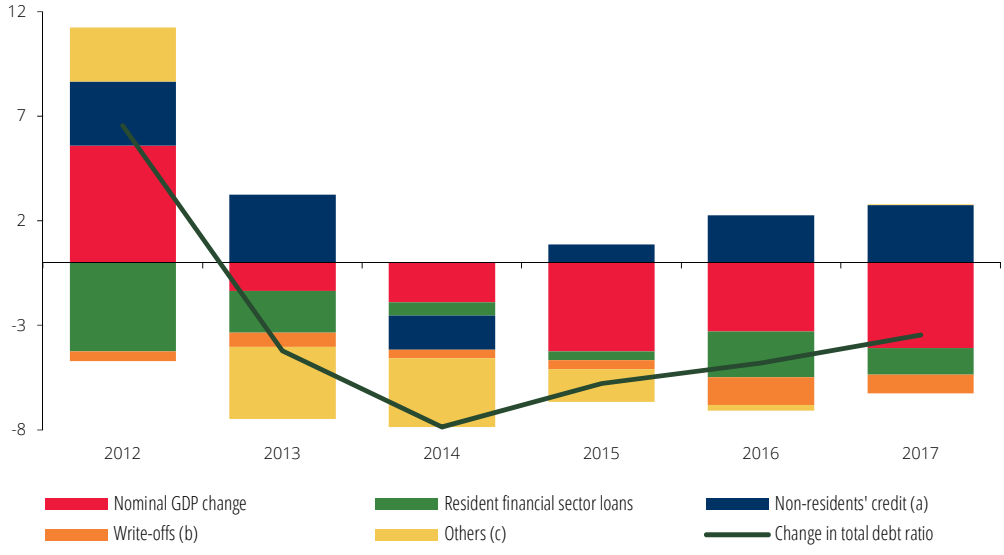
Total NFC debt declined by around 3 p.p. of GDP in 2017, standing at 101% of GDP at the end of the year, remaining one of the highest in the euro area. The decline in the sector's indebtedness ratio, against a background of an increase in the respective net flow of debt, was due to nominal GDP growth, and, although to a lesser extent, bank loan write-offs (Chart I.3.18). In parallel to the decline in the NFC indebtedness ratio observed since 2012, this sector's liquidity (assessed by the balance of currency and deposits) increased in aggregate terms (4 p.p. of GDP), reaching a historical high of 22% of GDP at the end of 2017 (Chart I.3.19). A possible lack of investment opportunities with an adequate return, low opportunity costs currently associated with net asset holdings or even demand for precautionary liquidity[89] may be contributing to a build-up of liquidity on the part of NFCs. These developments have also been apparent in several other euro area countries, specifically France and Italy. Where, on the one hand, these developments suggest that Portuguese enterprises will have capacity, in aggregate terms, to use internal resources to fund new investments or repay debt, on the other, the absence of a faster pace of deleveraging, together with high outstanding liquidity, may reflect the significant heterogeneity in the distribution of financial debt and considerable outstanding amounts of net assets among Portuguese enterprises. Indeed, the evidence analysed suggests that less indebted enterprises will tend to have more liquidity than the sector's average, which increased considerably from 2013 to 2016 (Chart I.3.20). With the exception of electricity, gas and water, the increase in liquidity was also broadly-based across the economic sectors with a higher exposure to the resident financial sector,[90] and was more pronounced in real estate activities, manufacturing and accommodation and food services.

The capitalisation of NFCs exceeded the value of their financial debt for the first time since 2000

The increase in the capitalisation of Portuguese NFCs continued in 2017, as a result of the net issuance of shares and other equity (1.9% of GDP), mostly purchased by non-residents, and the valuation of existing shares and other equity (4.3% of GDP).[91] The capitalisation increase, together with the decline in financial debt, has led to a gradual decrease in the debt-to-equity ratio of Portuguese NFCs since 2011. In 2017, for the first time since 2000, the market value of the equity of Portuguese NFCs exceeded the value of their financial debt. Nevertheless, the leverage of Portuguese NFCs, measured by the ratio of debt to equity, remains considerably above the euro area as a whole (Chart I.3.21).

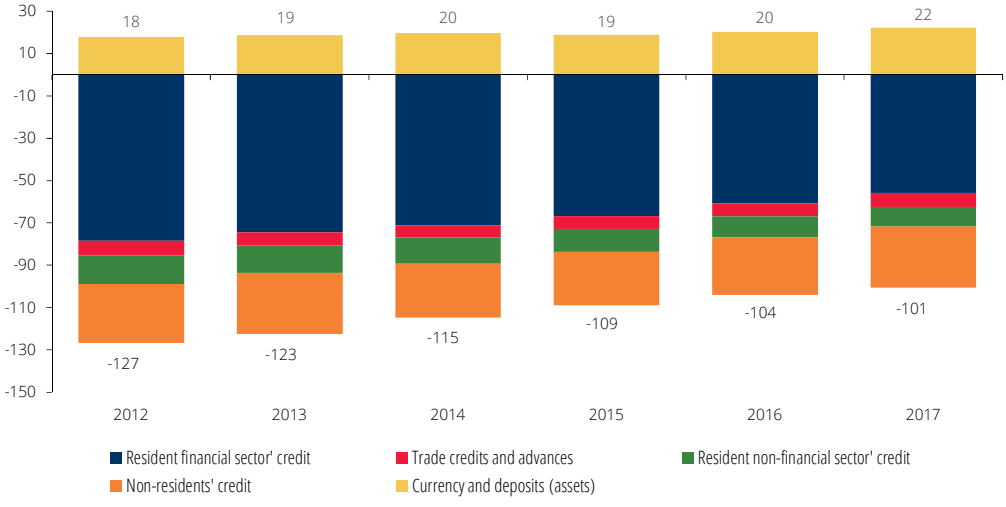
89. In a recent article, Armenter and Hnatkovska (2017) argued that enterprises that are more indebted, and consequently more dependent on third-party financing, may prefer to increase their liquidity levels by greater profit retention in order to mitigate risks associated with limited access to third-party financing in a more adverse environment.
90. Liquidity developments were analysed (assessed by the balance of currency and deposits) in trade, manufacturing, construction, real estate activities, electricity, gas and water and accommodation and food services.
91. Changes in the value of existing shares and other equity correspond to stock market valuation of quoted enterprises and the retention of earnings for unquoted enterprises.

Chart I.3.18 • Contributions to changes in the debt-to-GDP ratio of NFCs | Percentage points of GDP



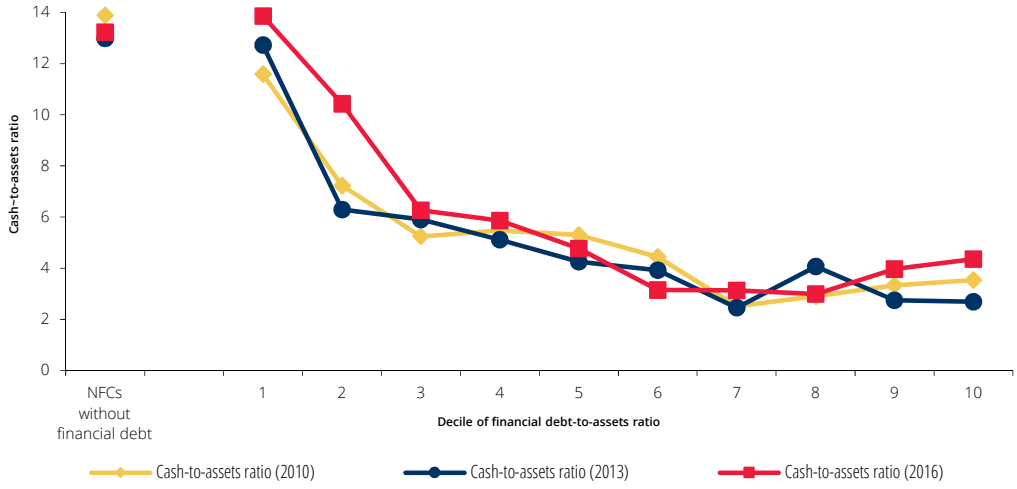
Sources: Banco de Portugal and Statistics Portugal. | Notes: (a) Non-residents' credit includes liabilities on account of loans and debt securities held by non-residents. (b) Corresponds to credit written off against assets in the balance sheets of resident monetary financial institutions. (c) Includes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

Chart I.3.19 • Total debt and assets in currency and deposits of NFCs | Percentage of GDP



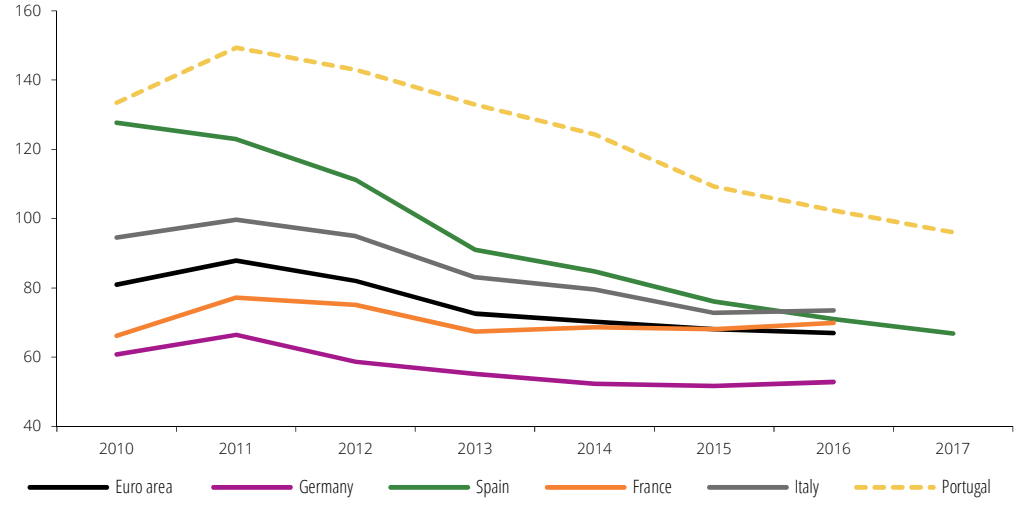
Sources: Banco de Portugal and Statistics Portugal.

Chart I.3.20 • NFCs' available cash, by decile of the financial debt ratio | Percentage of total assets



Source: Banco de Portugal. | Note: The cash-to-assets ratio is defined as the ratio of the firm's liquid financial assets (currency and deposits) to total assets. The ratio of financial debt to assets is defined as the ratio of the firm's financial debt to total assets. Decile 1 includes the less indebted firms (with the lowest ratio of financial debt to assets), while decile 10 includes the most indebted firms.

Chart I.3.21 • NFCs' ratio of financial debt to equity | Per cent



Source: Eurostat. | Note: Equity corresponds to the stock of shares and other equity (liabilities) of NFCs on the basis of national financial accounts.

Despite the deleveraging of NFCs and an improvement in financing conditions, overall, the sector remains vulnerable to a worsening of financing costs

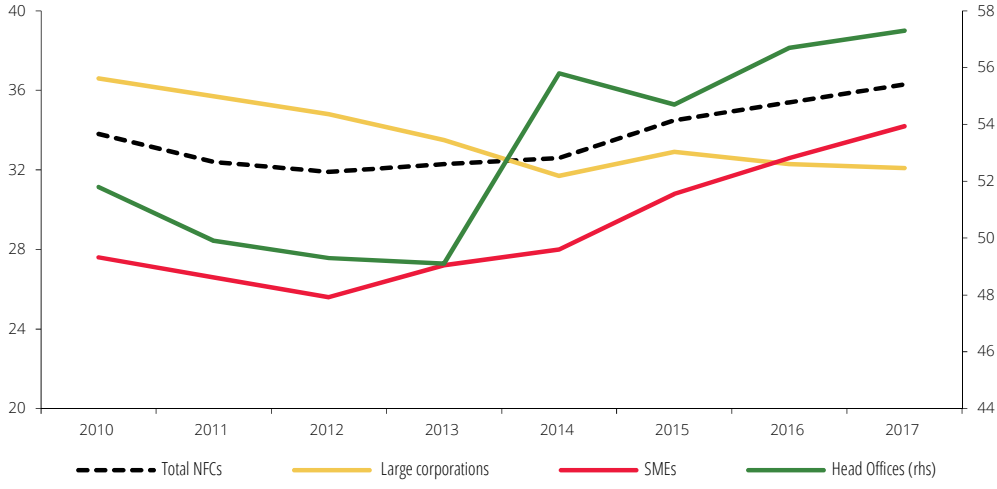
Continued improvements in the financial situation of NFCs in 2017, against a background of significant economic growth, were evident in an increase in the profitability ratio[92] (from 9.6% in 2016 to 10.1% in 2017) and the interest coverage ratio[93] (from 5.6 in 2016 to 6.7 in 2017). These favourable developments were observed in most economic sectors and particularly in the SME segment.

The recomposition of the financing structure of Portuguese enterprises, observed since 2012, has favoured equity to the detriment of debt. This trend continued in 2017, with the equity ratio, defined as the ratio of equity to assets, reaching the highest level recorded in the history of the series (36.3%). This equity increase occurred mainly through the retention of earnings, and was mostly associated with SMEs (Chart I.3.22).

The decrease in debt outstanding, from 2012 to 2016, and the decline in interest rates have contributed to reduce the debt service burden of Portuguese enterprises. Indeed, the debt service ratio, calculated as the ratio of interest and principal repayments to gross income,[94] was well below its historical average at the end of 2017 (Chart I.3.23).[95]

Lower recourse by enterprises to financing instruments that are sensitive to short-term interest rate fluctuations has reduced the share of enterprises vulnerable to an interest rate rise. However, at the end of 2016, around one-third of the exposure of the resident financial system to NFCs continued to be associated with enterprises with an interest coverage ratio below two, which may not be dissociated from still high levels of non-performing loans (NPLs) in the sector.[96]

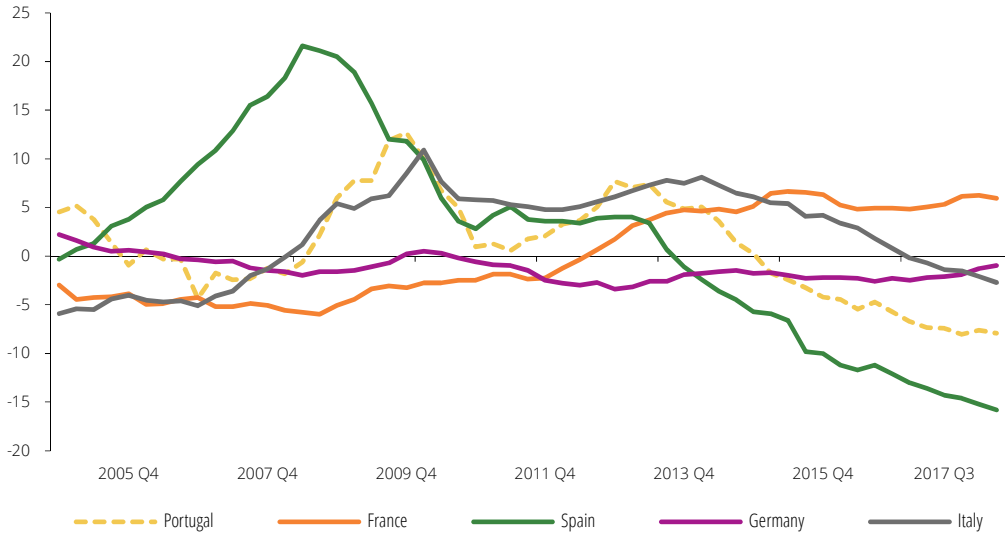
Chart I.3.22 • Equity-to-assets ratio, by firm size | Per cent



Source: Banco de Portugal.

92. The profitability ratio is calculated as the ratio of EBITDA (earnings before interest, taxes, depreciation and amortisation) to equity plus obtained funding.
93. The interest coverage ratio is calculated as the ratio of EBITDA (earnings before interest, taxes, depreciation and amortisation) to interest expenses.
94. Gross income was calculated as the sum of gross disposable income of NFCs and paid interest and dividends.
95. A swift increase in the debt service ratio is shown in the economic literature as an early warning indicator of banking crises with a systemic impact. On this subject, see Drehmann and Juselius (2014), 'Evaluating early warning indicators of banking crises: Satisfying policy requirements', International Journal of Forecasting, 30(3), 759-780.
96. In this respect, see Box 2 'Vulnerability of Portuguese firms to short-term interest rate rises', *Financial Stability Report*, December 2017.

Chart I.3.23 • NFCs' debt service ratio | Deviation from each country's mean, in percentage points



Source: BIS. | Notes: The debt service ratio is defined as the ratio of the sum of interest payments and capital repayment to income. The income of NFCs is estimated as the sector's gross disposable income plus interest paid and distributed dividends. The mean of the debt service ratio is calculated for each country, for the period 1999 Q1 – 2017 Q3.

The decline in the vulnerability of the Portuguese economy to adverse shocks requires the path of deleveraging in the corporate and household sectors to continue

The decrease in the indebtedness ratio of the non-financial private sector, observed since the start of the sovereign debt crisis, and the decline in interest rates to historically low levels have helped reduce the debt service burden of Portuguese enterprises and households. Nevertheless, given that the indebtedness ratio of these sectors remains high, a worsening of financing costs may have an impact on the debt servicing capacity of more vulnerable enterprises and households. In this respect, reducing the vulnerability of the Portuguese economy to adverse shocks requires continuing the path of deleveraging in the corporate and household sectors.

4 Banking sector

In 2017 the Portuguese banking system witnessed positive developments, which included an increase in profitability and operational efficiency, a very significant reduction of the high stock of non-performing loans[97] (NPLs), and a rise in capital ratios. These developments occurred in the context of the completion of the sale of Novo Banco (NB) to Lone Star, the strengthening of the capital base of the sector's main institutions, and the deconsolidation of Banco de Fomento Angola (BFA) by Banco BPI and the stabilisation of its corporate governance. However, the banking sector still exhibits some vulnerabilities, notably high exposure to the sovereign and the real estate sector, and the level of non-performing assets, notwithstanding the considerable improvements observed recently. The improved capitalisation of the largest institutions, combined with the Portuguese economy's recovery and the rise in real estate prices, paved the way for the ongoing reduction of the NPL level, with positive consequences for financing from international financial markets. However, the favourable macroeconomic and financial environment, combined with greater competitive pressure among banks, might contribute to an easing of credit standards, with a potential negative impact on future profitability. Hence, it is fundamental that institutions comply with Banco de Portugal's Recommendation on credit relating to residential immovable property, credit secured by a mortgage or equivalent guarantee and consumer credit, applicable as of 1 July 2018. Institutions should regard the current environment as an opportunity to carry on with structural adjustments, notably as regards their operational costs, thus contributing to enhance their resilience and making it possible to better respond to the challenges that lie ahead. These include the future normalisation of monetary policy, growing regulatory requirements and increased competition by new firms specialised in providing digital financial services (FinTechs).

4.1 Profitability

In 2017 profitability was once again positive, mainly reflecting a lower value of impairments

In 2017 the profitability of the Portuguese banking system resumed positive territory[98] (Table I.4.1). This resulted from a substantially lower value of new impairments than observed in 2016. Provisions and impairments were considerable in 2016, particularly by Caixa Geral de Depósitos (CGD). The reduction of the impairment flow was partially offset by an increase in provisions and impairments recorded by NB in 2017. The impact on profitability of this increase in NB was offset by the triggering of the contingent capital mechanism provided for in the agreements concluded under the sale of NB. Income stemming from the triggering of this mechanism is recorded under the other operating income item. Developments in the profitability of the main banking system institutions with important international activity[99] also reflected a greater contribution from this activity than in 2016.

97. Non-performing loans according to the definition of the European Banking Authority (EBA). However, this definition is not yet fully harmonised in the European Union. For further details, see "Concepts used in the analysis of credit quality", *Financial Stability Report*, November 2016, and "Strategy to address the stock of non-performing loans (NPLs)", *Financial Stability Report*, December 2017.
98. Profitability is calculated considering profit and loss before taxes.
99. Important is understood as a share of non-domestic exposure of more than 10% of total exposure.

Table I.4.1 • Banking system's statement of profit or loss

	EUR million			Percentage of average assets			Contributes to change in ROA (p.p.)	
	2015	2016	2017	2015	2016	2017	2015-16	2016-17
1. Net interest income	5,948	5,886	6,109	1.42	1.48	1.59	-0.01	0.06
2. Income from services and commissions (net)	3,038	2,714	2,854	0.73	0.68	0.74	-0.08	0.04
3. Income from financial operations	1,868	791	842	0.45	0.20	0.22	-0.26	0.01
4. Other operating income	-160	87	1,002	-0.04	0.02	0.26	0.06	0.23
5. Operational costs	6,517	5,628	5,712	-1.56	-1.41	-1.49	0.21	-0.02
6. Provisions and impairments	4,153	6,791	4,225	-0.99	-1.70	-1.10	-0.63	0.64
7. Other results	660	600	355	0.16	0.15	0.09	-0.01	-0.06
Profit or loss before tax	685	-2,340	1,225	0.16	-0.59	0.32	-0.72	0.89
Memorandum items:								
Recurring operating result [=1+2-5]	2,468	2,972	3,251	0.59	0.75	0.85	0.12	0.07
Total operating income [=1+2+3+4]	10,694	9,478	10,807	2.56	2.38	2.81	-0.29	0.33
Impairment on credit	3,265	4,700	2,436	0.78	1.18	0.63	-0.34	0.57
Average of total assets	418,050	398,469	384,561				-0.03	0.01

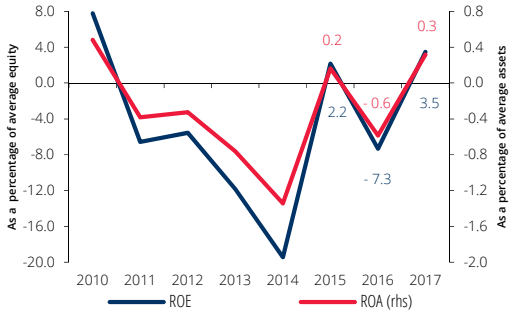
Source: Banco de Portugal. | Note: Return on assets (ROA) is computed using Profit or Losses before taxes, as percentage of average assets.

The 2016 and 2017 fiscal years were affected by a series of events unrelated to the institutions' core business[100] due to the adjustment and conclusion of the NB's sale process. These events are associated with a process of adjustment of the banking system with the purpose of increasing its future profitability and being in a better position to perform its main function of financial intermediation. These ongoing changes include the downsizing of institutions' cost structures, the increase in their capitalisation, in some cases with the entry of new shareholders, and plans to reduce NPLs. The main items affected by these adjustments were other operating income and operational costs. Institutions are at different stages of adjustment, and thus their profit and loss is somewhat heterogeneous. Excluding the effects of these events from the main institutions' profits and losses, the banking system would continue to show positive albeit lower profitability. The decline in the flow of provisions and impairments would continue to be the main determinant of the rise in profitability, despite the sizeable increase in provisions and impairments recorded by NB, while operational costs would make a favourable and quite important contribution to the increase in profitability.

In 2017 the banking system's return on assets (ROA) recorded similar values to those observed before the EFAP, contrary to the ROE (Chart I.4.1). This ROE level is due to lower leverage levels (as measured by the average asset-to-equity ratio), which should mean greater resilience of the banking system to adverse shocks.

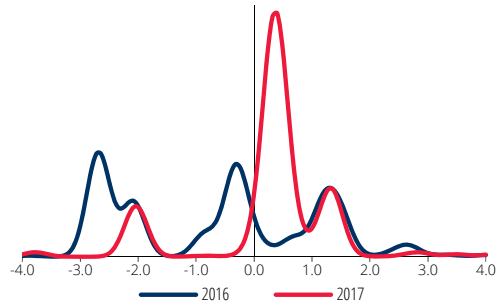
100.The events considered in the adjustments were: (i) revisions of collective wage bargaining agreements, which reduced operational costs (with an impact in 2016 and 2017); (ii) restructuring processes, which raised operational costs (2016 and 2017); (iii) the triggering of the contingent capital mechanism associated with the sale of NB, with a positive impact on the other operating income item (2017).

Chart I.4.1 • ROE and ROA | Per cent



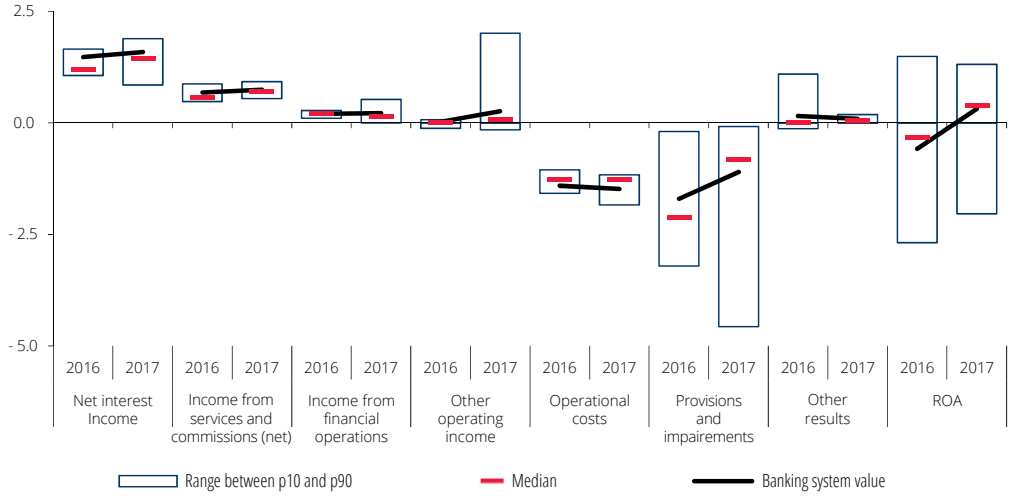
Source: Banco de Portugal. | Note: Return is measured by profit or loss before tax.

Chart I.4.2 • ROA – empirical distribution | Per cent



Source: Banco de Portugal. | Note: Empirical distribution obtained using a Gaussian kernel that weighs institutions according to their assets.

Chart I.4.3 • ROA – drivers' dispersion | Percentage of average assets



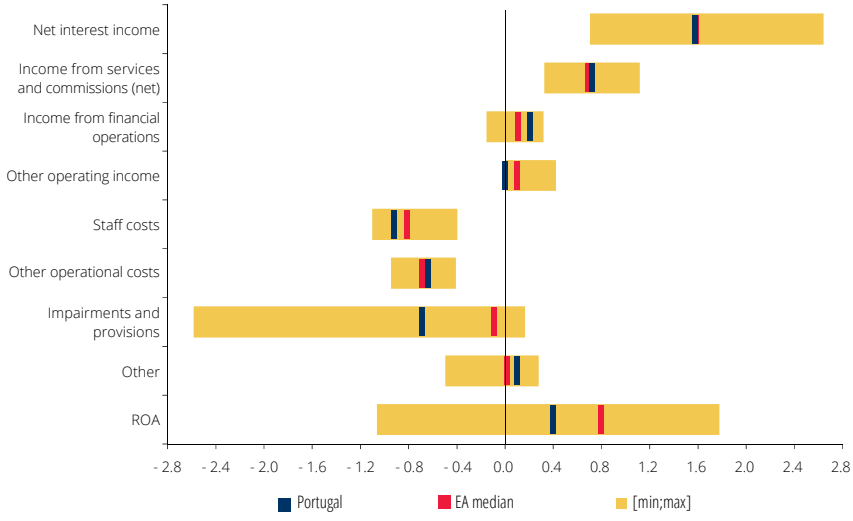
Source: Banco de Portugal. | Notes: p10 – percentile 10th; p90 – percentile 90th. These statistics were weighted by banking institutions' average assets. Banking system figures correspond to those displayed in Table I.4.1.

Not only was the banking system's profitability positive in 2017, but a greater number of institutions also had profits, i.e. the ROA distribution shifted right vis-à-vis 2016 (Chart I.4.2). Nevertheless, some institutions experienced losses. The median of the contribution made by net interest income to ROA increased considerably (0.3 p.p.), although the contribution from part of the banking system decreased to values below those recorded in 2016 (Chart I.4.3). The increase in the contribution from net commissions to ROA was widespread, and the level of dispersion observed in 2016 was maintained. As already mentioned, the triggering of the contingent capital mechanism provided for in the agreements concluded under the sale of NB had quite a significant impact on the increase in the contribution from other operating income and the increase in its dispersion. The ongoing adjustment processes and especially the fact that institutions are at different stages of adjustment, reflected in an increase in the dispersion of the contribution from operational costs to ROA, in the context of stabilisation of the respective median. The contribution from the flow of provisions and impairments evolved favourably at the level of the banking system and the median contribution.

The increase in this contribution's dispersion resulted from a significant rise in provisions and impairments recorded by NB. The heterogeneity observed at this level also results from the different business models and different risks assumed by institutions in the pre-crisis period.

Future developments in profitability depend on the ongoing adjustment processes, notably the recognition of impairment losses, the downsizing of cost structures, and the potential need for institutions to access the financial market to issue minimum requirements for own funds and eligible liabilities (MREL) with higher costs than the other financing sources. In addition, financial system profitability faces other challenges, such as an extension of the very low interest rate environment and possible adjustments to the banks' business model with the entry of new firms specialised in the provision of digital financial services (FinTechs) (1. Vulnerabilities, risks and macroprudential policy).

Chart I.4.4 • International comparison of ROA and contributions – 2017 Q1 to 2017 Q3 | Percentage points



Source: European Central Bank (Consolidated Banking Data). | Notes: Annualised figures. 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 but are not thought to affect the analysis substantially.

Considering profits and losses up to the third quarter of 2017, the profitability of the Portuguese banking system was lower than the euro area median (Chart I.4.4).[101] This position vis-à-vis the euro area banking systems was chiefly due to the high degree of impairments and provisions recorded by the Portuguese banking system compared to the other countries. The Portuguese banking system was in line with the euro area median as regards the other profitability components.

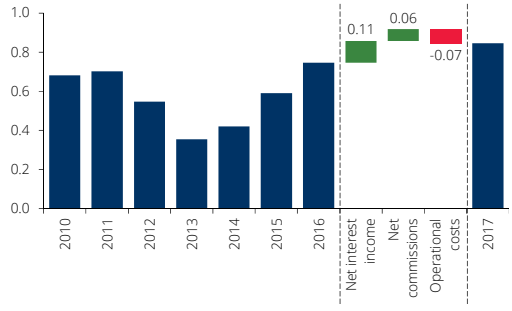
Recurring operating result improved in a context of increase in net interest income and to a lesser extent in net commissions

Recurring operating result as a percentage of average assets, as defined by aggregate net interest income and net commissions less operational costs, increased by 9.4%, which accounted for an

101. The dissemination of data for December 2017 to the Consolidated Banking Data is subsequent to the date of publication of this report.

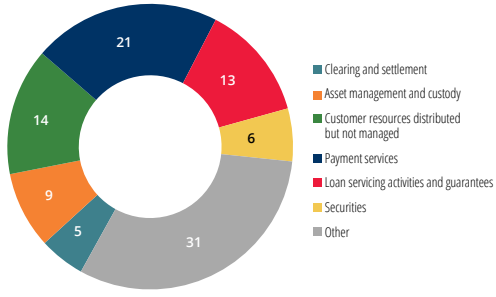
increase of 0.1 p.p. in the contribution to the ROA (Chart I.4.5). This results from a rise in net interest income and commissions above that in operational costs. Reflecting a decline in the ROA recorded between 2011 and 2013, recurring operating result decreased in that period, then recorded a consecutive increase, and in 2016 it surpassed the value seen in 2011. When considering operational costs adjusted for the previously mentioned special events, the contribution from recurring operating result to the ROA is higher (estimated at 0.2 p.p. more than in 2016), since adjusted operational costs make a positive contribution to changes in recurring operating result.

Chart I.4.5 • Recurring operating results | Percentage of average assets



Source: Banco de Portugal. | Notes: Recurring operating result as a percentage of average assets, as defined by aggregate net interest income and net commissions less operational costs. Other operating income is not included, in particular those related to the triggering of the contingent capitalization scheme upon the sale of NB. Blue bars correspond to recurring operating result as percentage of average assets, red bars correspond to negative contributions to the ratio, while green bars correspond to positive contributions to the ratio.

Chart I.4.6 • Income from fees and commissions – structure in 2017 | Per cent



Source: Banco de Portugal.

Net interest income rose by 3.8% and its contribution to the ROA went up by 0.11 p.p. Following the decrease observed up to 2013, net interest income recovered, and in 2017 its contribution to profitability stood at the same level as before the EFAP. The improvement in net interest income in 2017 reflects a widening of the spread between the implicit interest rate on assets and on liabilities, due to a decline in the implicit interest rate on liabilities higher than the reduction in the implicit interest rate on assets. In addition, there was also a slightly positive contribution from the asset financing structure, reflecting, inter alia, a higher share of customer deposits and a lower share of debt securities (see section Asset financing and liquidity), since the cost associated with customer deposits is lower than that of debt securities. These effects were partially offset by a decline in interest income's underlying assets, mainly by the decline in the portfolio of loans to non-financial corporations.

In 2017 (net) service and commission income increased by 5.2%. This increase was broadly based across all institutions and reflected a higher increase in commission income than in commission expenses. The increment in commission income chiefly reflected a rise in commissions on the customer resources distributed but not managed and payment services provided by institutions, which are the main components of commission income (Chart I.4.6).

As referred to in chapter '1. Vulnerabilities, risks and macroprudential policy', with the transposition of PSD2 (Revised Payment Services Directive) to the Portuguese legal system, competition in the payment services provision segment is expected to rise, conditioning this service's commissions. Given that payment service commissions are the main commissions' item, transposition of the PSD2 may limit overall commission growth going forward.

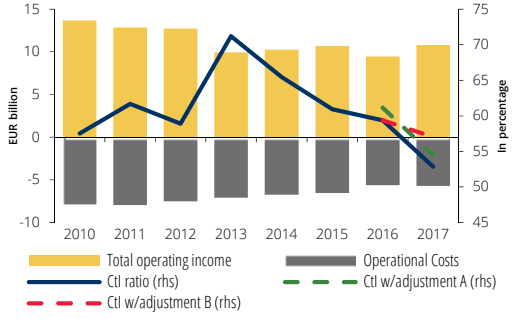
Banking system efficiency measured by the cost-to-income ratio improved in 2017

Operational costs went up by about 1.5% from 2016, and there was an increase in staff costs and a decrease in general administrative expenses. As mentioned earlier, these developments are conditioned by a series of events unrelated to the institutions' core business, notably the restructuring processes that occurred in 2017 and 2016, which raised operational costs. Excluding these effects in 2017 and 2016, operational costs declined vis-à-vis 2016 (estimated decline of 5.8%).

The reduction in the domestic activity of the number of staff and branches contributed to the evolution of operational costs. In 2017 the number of staff in domestic activity stood at approximately 50 thousand, which accounts for a 1.8% decline from the previous year, while the number of branches decreased by 7%. This dynamics of adjustment of the institutions' operating structures has progressed over the past few years. Since 2010 the number of staff has declined by 19% in cumulative terms and the number of branches has dropped by 33%. Among other factors, this has allowed operational costs to decrease by 27% in the same period.

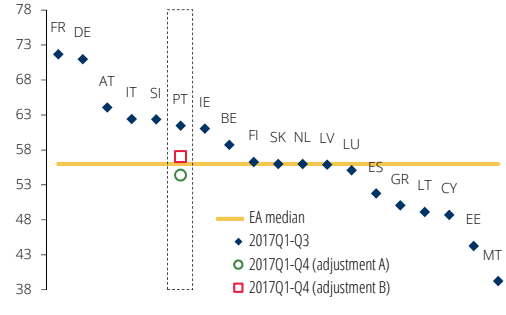
The efficiency of the banking system, as measured by the cost-to-income ratio, increased in 2017, reflecting a greater increase in total operating income than that in operational costs (Chart I.4.7) The cost-to-income ratio stood at 53%, i.e. it declined by 6.5 p.p. in 2017, with a positive impact from the above-mentioned special events. Excluding these effects, the cost-to-income ratio would stand at 54.5%, reflecting a decline in operational costs and an increase in total operating income. When only adjusting for the triggering of NB's contingent capital mechanism, there is also a reduction of 57% vis-à-vis 2016. These adjusted figures for 2017 for the Portuguese banking system are close to the median of the accumulated value up to the third quarter of 2017 of the euro area cost to income ratio. This shows a favourable outlook for the trend of this indicator for the Portuguese banking system (Chart I.4.8). As already mentioned, in the past few years institutions have been adjusting their cost structures, which reflects in an ongoing decrease in the cost-to-income ratio.

Chart I.4.7 • Cost-to-income (CtI), operational costs and total operating income



Source: Banco de Portugal and Banco de Portugal (own calculations). | Notes: The cost-to-income with adjustment A (dashed green line) was adjusted by the restructuring processes, CLA revision and the triggering of the contingent capitalization scheme upon the sale of NB. The cost-to-income with adjustment B (dashed red light) was only adjusted by the triggering of the contingent capitalization scheme upon the sale of NB.

Chart I.4.8 • Cost-to-income (CtI) – International comparison (2017 Q1 to Q3) | Per cent



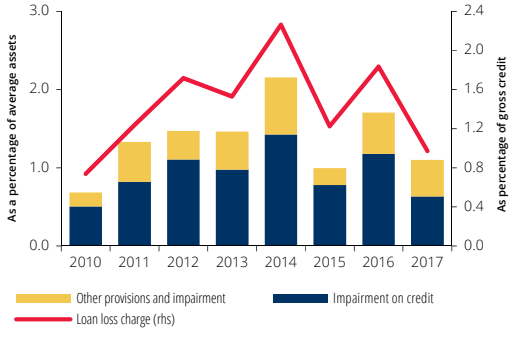
Source: European Central Bank (Consolidated Banking Data) and Banco de Portugal (own calculations). | Notes: The cost-to-income estimative of Portugal for 2017 with adjustment A (green marker) was adjusted by the restructuring processes, CLA revision and the triggering of the contingent capitalization scheme upon the sale of NB. The cost-to-income estimative of Portugal for 2017 with adjustment B (red marker) was only adjusted by the triggering of the contingent capitalization scheme upon the sale of NB.

The credit risk cost reached the lowest level since 2011, chiefly due to a decline in credit impairments

In 2017 the credit risk cost declined by 0.9 p.p. from 2016 and by 0.3 p.p. from 2015, to stand at 1%. This was mainly due to a reduction in the impairment amount in 2017 compared to the two previous years (Chart I.4.9). Notwithstanding a considerable increase in credit impairment by NB, the comparison with 2016 figures is affected by a base effect, due to a significant credit impairment amount recorded by CGD. In 2017 the level of the credit risk cost was still higher than observed in 2010, but lower than observed since then. In 2017 there was also a considerable increase in provisions, essentially associated with the restructuring processes of institutions, especially CGD and NB.

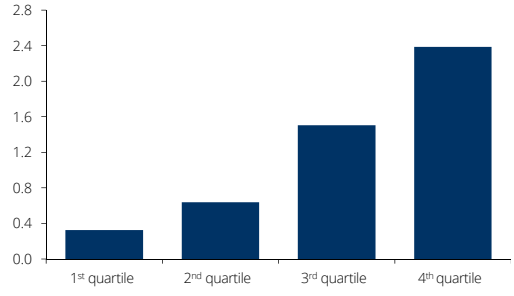
The recording of credit impairments is heterogeneous across institutions, since it is correlated with the quality of credit in portfolio (Chart I.4.10). In fact, the accumulated flow of credit impairment between 2016 and 2017 as a percentage of average assets was much higher for the institutions that had a higher NPL ratio net of impairments to average assets in December 2015.

Chart I.4.9 • Impairment, provisions and credit risk costs



Source: Banco de Portugal. | Note: The cost of credit risk corresponds to the flow of credit impairments and provisions as a percentage of total average gross credit granted to customers.

Chart I.4.10 • Credit impairments by NPL (net of impairments) quartile – accumulated flow of 2016 and 2017 | Percentage of average assets



Source: Banco de Portugal (own calculations). | Notes: Each quartiles aggregates the institutions of the banking system according to the level of NPL net of impairments as a percentage of average assets in 2015. The first quartile represents the institutions with the lowest NPL level of impairments. Each bar represents the sum of the credit impairment flows for 2016 and 2017, as a percentage of the average assets for each quartile.

4.2 Asset quality

In 2017 the quality of the banking system's assets recorded positive developments, mainly reflecting a reduction in the stock of NPLs

As in the past few years, resident banks sought to reduce risk in their loan portfolio. In fact, in 2017 the amount of new loans granted to NFCs in the highest credit risk quartile declined,[102] and preference was given to granting loans to firms in the lowest credit risk quartile.[103] In turn, the maintenance of the banking sector's high exposure to certain asset classes, notably to public

102. Credit risk assessment based on the Z-score, estimated in accordance with the methodology presented in the article by Antunes, Gonçalves and Prego (2016), "Firm default probabilities revisited", Banco de Portugal Economic Studies, vol. 2, No. 2, April 2016.

103. For more details, see *Economic Bulletin*, May 2018.

debt securities and real estate assets, continues to be a vulnerability of the banking system. For more details, see sub-section 1.1 'Vulnerabilities'.

The quality of the banking system's assets improved in 2017, with a strong decline in the NPL ratio and a simultaneous increase in the NPL impairment coverage ratio. This evolution continued to be strongly marked by developments in NFCs, which account for around 65% of the total amount of NPLs. The NPL reduction dynamics results from the strategies developed by banking entities, in a context where national and European authorities have been implementing especially targeted action plans. In addition, the reduction in NPLs cannot be decoupled from the stronger dynamics of economic activity, the maintenance of favourable financing conditions, and the recovery of real estate prices and activity.

Table I.4.2 • Synthesis of the loan portfolio quality

	Notes	Units	Dec. 15	Jun. 16	Dec. 16	Jun. 17	Dec. 17	Δ Jun. 16 Dec. 17	Δ Dec. 16 Dec. 17
Non-performing loans (NPL)									
All sectors									
NPL		10^6 €	49,818	50,459	46,361	42,276	37,005	-13,455	-9,356
o.w. Unlikely-to-pay		10^6 €	19,586	18,747	18,046	15,661	14,493	-4,254	-3,553
o.w. Overdue		10^6 €	30,232	31,713	28,315	26,615	22,541	-9,172	-5,774
NPL ratio	(a)	%	17.5	17.9	17.2	15.5	13.3	-4.6 p.p.	-3.9 p.p.
Non-financial corporations									
NPL		10^6 €	32,024	33,151	30,160	27,232	24,215	-8,936	-5,945
NPL ratio	(a)	%	28.3	30.3	29.5	27.5	25.2	-5.2 p.p.	-4.3 p.p.
Households									
NPL		10^6 €	12,914	12,865	12,030	11,154	9,825	-3,039	-2,205
NPL – Housing		10^6 €	8,111	8,297	7,929	7,232	6,297	-2,000	-1,633
NPL – Consumption and other purposes		10^6 €	4,803	4,568	4,101	3,922	3,529	-1,039	-573
NPL ratio	(a)	%	9.4	9.2	8.7	8.1	7.1	-2.1 p.p.	-1.5 p.p.
NPL ratio – Housing	(a)	%	7.2	7.2	7.0	6.5	5.7	-1.5 p.p.	-1.3 p.p.
NPL ratio – Consumption and other purposes	(a)	%	19.2	19.0	16.2	15.0	13.1	-5.9 p.p.	-3.1 p.p.
NPLs' coverage									
All sectors									
NPL impairment coverage ratio	(b)	%	40.8	43.2	45.3	45.9	49.3	6.1 p.p.	4.0 p.p.
NPL total coverage ratio	(c)	%	92.0	85.9	87.2	88.5	90.4	4.5 p.p.	3.2 p.p.
Non-financial corporations									
NPL impairment coverage ratio	(b)	%	44.4	46.4	48.9	49.1	53.8	7.4 p.p.	5.0 p.p.
NPL total coverage ratio	(c)	%	84.9	84.1	85.0	87.0	88.9	4.8 p.p.	3.9 p.p.
Households									
NPL impairment coverage ratio	(b)	%	36.2	36.7	35.4	36.5	37.1	0.3 p.p.	1.6 p.p.
NPL impairment coverage ratio – Housing	(b)	%	23.5	23.9	21.0	21.9	22.8	-1.1 p.p.	1.8 p.p.
NPL impairment coverage ratio – Consumption and other purposes	(b)	%	57.6	60.0	63.2	63.5	62.4	2.4 p.p.	-0.8 p.p.
NPL total coverage ratio	(c)	%	n.a.	97.9	96.3	96.3	95.8	-2.1 p.p.	-0.6 p.p.

Source: Banco de Portugal. | Notes: End-of-period figures. NPL according to the EBA definition, where the concept of loans also includes cash and cash balances at central banks and in other credit institutions, in contrast to the concept of loans to customers. "n.a." – data not available. (a) corresponds to the sum of NPLs in relation to total loans; (b) corresponds to the sum of accumulated impairments on NPLs in relation to total NPLs; (c) corresponds to the sum of accumulated impairments, collateral and guarantees associated with NPLs in relation to total NPLs.

In December 2017 the total NPL ratio stood at 13.3%, accounting for a 3.9 p.p. decline from the end of 2016. Therefore, the downward trend observed since the June 2016 peak became more marked (Table I.4.2). Compared to this latter date, the total NPL stock fell by approximately €13.5 billion (27%), while the total NPL ratio declined by 4.6 p.p. Some of the largest banking system institutions must comply with NPL reduction plans submitted to supervisors, and the reduction goals initially stipulated for 2017 were generally met and surpassed.

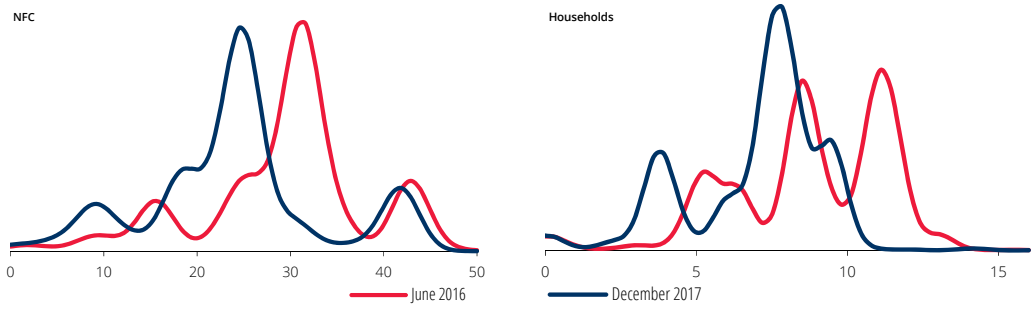
Changes in the total NPL ratio in 2017 were largely due to a reduction in the stock of NPLs, also benefiting from a rise in loans considered in the denominator.[104] In turn, the non-financial private sector's NPL ratio stood at 14.6% at the end of 2017, decreasing by 3.0 p.p. from the same period a year earlier. This chiefly reflected the reduction of the NPL stock in this sector.

In the same vein, the NPL ratios of NFCs and Households declined by 4.3 p.p. and 1.5 p.p. respectively from the end of 2016. In both cases the reduction was broadly based across most institutions and reflects the progress achieved by institutions with higher NPL ratios, especially the most significant ones (Chart I.4.11). In addition, heterogeneity decreased among institutions as regards the Household NPL ratio.

In 2017 the reduction in the NPL ratio in the NFC segment, combined with a reinforcement of the NPL impairment coverage ratio, was broadly based across small and medium-sized enterprises – SMEs (Chart I.4.12). This dynamics was more marked in SMEs, which recorded the greatest fall in the NPL ratio and the highest increase in the NPL impairment coverage ratio compared to the end of 2016.

In the same vein, there was a decline in the NPL ratio and a reinforcement of the impairment coverage ratio in all branches of economic activity vis-à-vis the end of 2016. The real estate and manufacturing activities showed the highest reduction in the NPL ratio and the greatest reinforcement of the NPL impairment coverage ratio respectively.

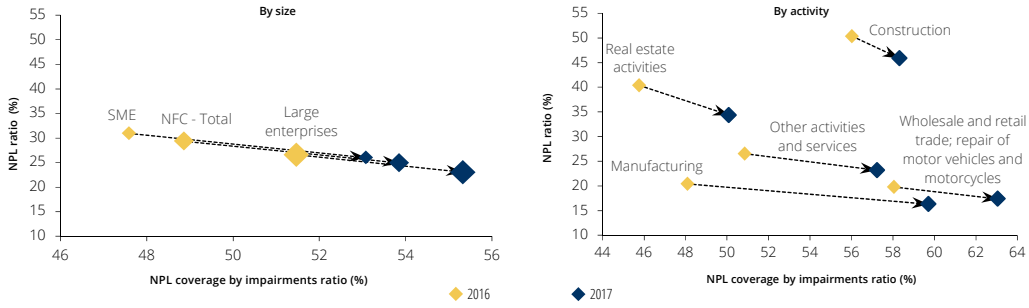
Chart I.4.11 • NFC and Household NPL ratios – distribution | Per cent



Source: Banco de Portugal. | Notes: Empirical distribution obtained using a Gaussian kernel that weights institutions by their assets. NPL according to the EBA definition.

104. According to EBA's definition and contrary to the rest of the analysis of the banking sector, the concept of loans considered in this sub-section includes assets and investments in central banks and other credit institutions. In addition, the gross impairment value is taken into consideration for loans. For more information, see Implementing Regulation (EU) No. 680/2014, Annex 5 and "Concepts used in the analysis of credit quality", *Financial Stability Report*, November 2016.

Chart I.4.12 • NPL and NPL coverage by impairments ratios of NFC – by size and activity

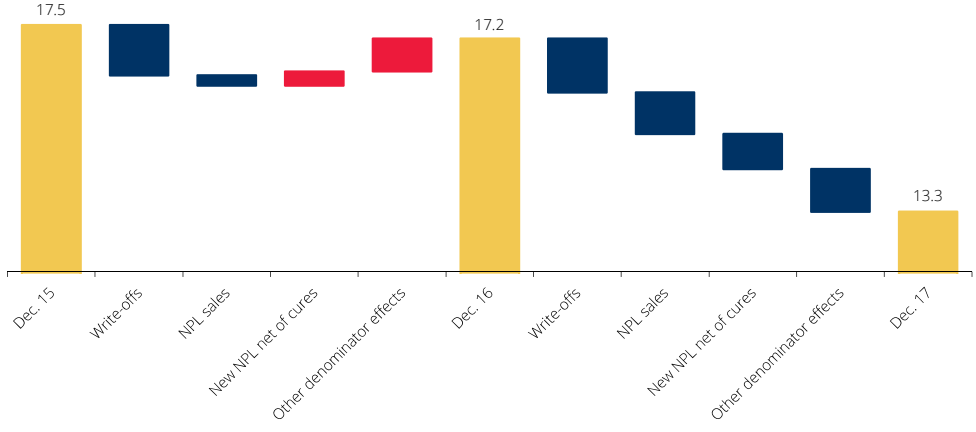


Source: Banco de Portugal. | Note: NPL according to the EBA definition.

The reduction of the NPL stock mainly reflected sales and write-offs, as well as debt recovery, especially for Households

Between December 2016 and December 2017 the total NPL stock declined by more than €9.3 billion (20%), largely reflecting the high volume of write-offs, NPL sales and the exit of loans from the NPL category. These three factors are estimated to have contributed around three quarters to the decline in the NPL ratio (Chart I.4.13).

Chart I.4.13 • NFC and Household NPL ratios – contributions to 2017 developments
| Per cent and percentage points

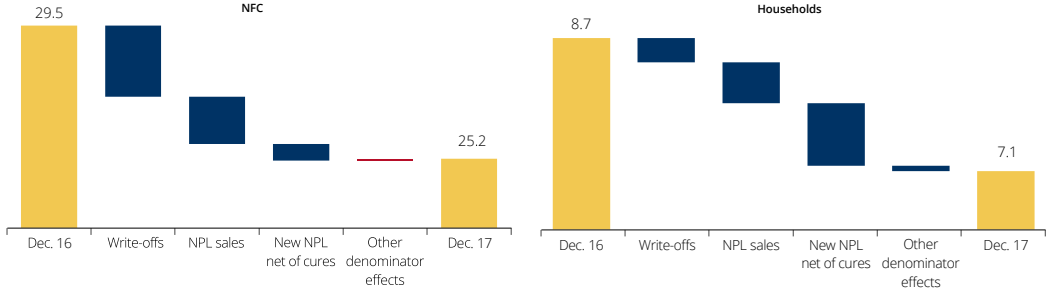


Source: Banco de Portugal. | NPL sales include securitisations. The "new NPLs, net of cures" item reflects all the NPL inflows and outflows for reasons other than write-offs, sales and securitisations, namely new NPLs net of cures, amortizations and foreclosures. Other denominator effects reflect changes in the stock of loans that are not related with the NPL stock (e.g. net flow of performing loans).

The NPL ratio in the NFC segment declined by 4.3 p.p. from December 2016, with approximately 90% of this reduction resulting from loan write-offs and NPL sales (Chart I.4.14 – NFCs). Since June 2016 the NPL stock of NFCs declined by approximately €9 billion (around 27%), this change having been chiefly accounted for by a fall in NPL related to loans collateralised by commercial immovable property. The recovery of these assets' prices due to an increase in demand, especially by non-resident investors, may have contributed to these developments.

In turn, the Household NPL ratio declined by 1.5 p.p. from the end of 2016, of which about 50% was due to loan write-offs and NPL sales, with cures and other NPL stock changes making a similar contribution (Chart I.4.14 - Households). Between June 2016 and December 2017 the Household NPL stock declined by over €3 billion (approximately 24%), around two thirds accounted for by a decline in NPLs on credit relating to residential immovable property. This segment has benefited from the economy's cyclical recovery and the rebound in residential property prices, typically used as collateral in loans relating to residential immovable property.

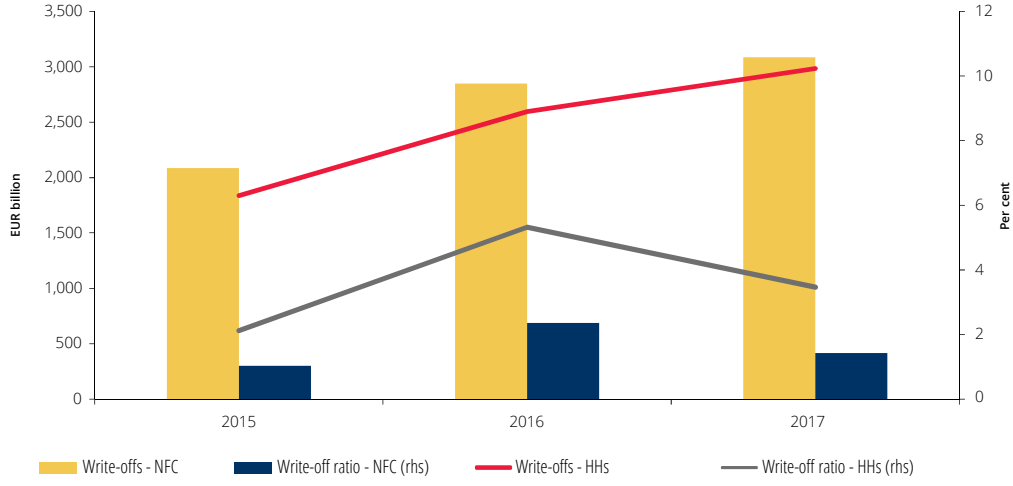
Chart I.4.14 • NFC and Household NPL ratios – contributions to 2017 developments
| Per cent and percentage points



Source: Banco de Portugal. | 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, amortizations 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).

In 2017, in consolidated terms, write-offs of loans to NFCs increased from the previous year, as well as the respective write-off ratio. 2016 saw a high flow of write-offs of loans to NFCs, recorded by CGD in December 2016 within the scope of its capitalisation process. In turn, write-offs of loans to Households and the respective write-off ratio declined in 2017 (Chart I.4.15).

Chart I.4.15 • Loan write-offs – global activity, consolidated basis



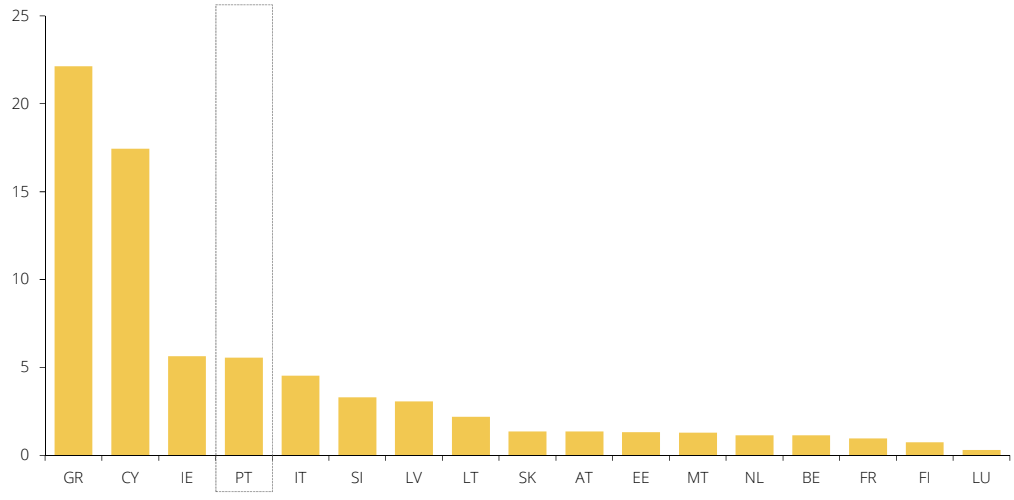
Source: Banco de Portugal. | Note: The write-off ratio is the flow of write-offs as a percentage of the total amount of loans past due at the end of the previous year.

In December 2017 the NPL impairment coverage ratio stood at 49.3%, accounting for a 4.0 p.p. increase from the same period a year earlier. In parallel, the NPL ratio net of impairments decreased by 3 p.p., to stand at 7.3% at the end of 2017.

This increment in the total coverage ratio mainly reflects the NPLs of NFCs that recorded a 5.0 p.p. increase in the NPL impairment coverage ratio. The favourable developments in the coverage ratio seem to have been conditioned by a considerable flow of loan write-offs in 2017, which had a downside effect on the ratio, given that write-offs tend to be associated with a higher coverage ratio. In this context, the higher NPL impairment coverage ratio of NFCs seems to be also related to the fact that in many cases real collateral associated with loans to NFCs is specific to the activity carried out. Thus, it cannot be easily reused without considerable conversion costs, which may penalise their valuation. Loans to Households for house purchase are to a large extent collateralised by more liquid assets, notably residential immovable property.

The weight of NPLs net of impairments in total assets in Portugal is more or less identical to that in Ireland and slightly higher than in Italy (Chart I.4.16).[105] Notwithstanding the NPL reduction and the effort to recognise impairments observed since June 2016, it is essential that Portuguese banks continue to comply with the plans to reduce NPLs submitted to supervisors. This will put them in a more favourable position to access international financial markets in the short to medium term, with a view to meeting MREL.

Chart I.4.16 • NPL ratio (net of impairments)/Assets – international comparison as at September 2017 | Per cent



Source: European Central Bank (Consolidated Banking Data). | Notes: NPL according to the EBA definition. Data for Germany and Spain were unavailable.

105. However, implementation of the NPL definition proposed by EBA is not yet fully harmonised across euro area countries, which may bias international comparisons. For more details, see special issues "Strategy to address the stock of non-performing loans (NPLs) ", *Financial Stability Report*, December 2017 and "Concepts used in the analysis of credit quality", *Financial Stability Report*, November 2016.

4.3 Credit standards

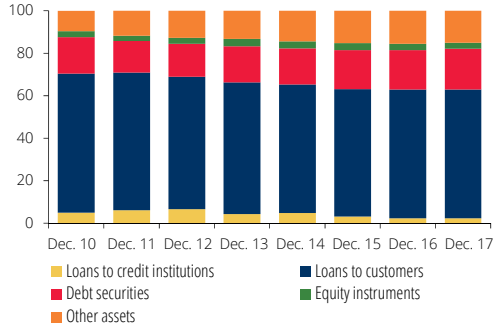
The stock of loans to customers decreased further in 2017, although evidence suggests some recovery in lending to the non-financial private sector

In 2017 loans to customers (net of impairments) accounted for approximately 60% of total assets of the banking system, which corresponds to a 10.4 p.p. decrease from March 2008. The reduction in the banking system's assets over the past few years was largely due to loans to customers (Chart I.4.17). Looking at the main institutions in the system, over the past two years, this item saw a cumulative decrease chiefly in the resident sector.

The stock of loans granted to the private non-financial sector declined further, although less than in 2016. Nevertheless, the new business volume remains insufficient to offset depreciation, securitisation and the sale of credit portfolios (excluding loans to households for consumption and other purposes).

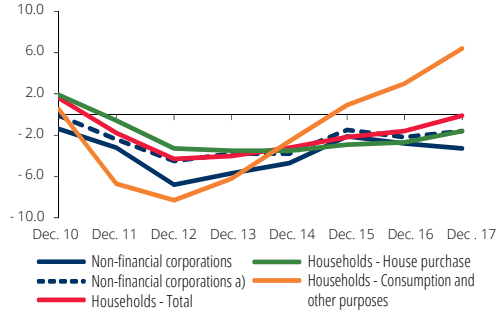
The annual rate of change in loans granted by the financial sector to non-financial corporations in December 2017 was -3.3%. Adjusted for the sale of credit portfolios, the annual rate of change stood at -1.6%. In turn, loans to households continued to recover, with the annual rate of change standing close to zero (-0.1%),[106] still reflecting a slight fall in loans for house purchase and stronger growth in loans to consumption and other purposes, which continued to accelerate in 2017 (Chart I.4.18). However, developments in consumer credit over the past few years have been closely associated with banks and foreign-owned companies specialised in this type of credit (Section 3.2. "Non-financial private sector").

Chart I.4.17 • Asset structure
| Percentage of total assets



Source: Banco de Portugal. | Note: 'Other assets' includes cash and cash balances at central banks, cash balances at other credit institutions, derivatives, tangible and intangible assets, and other assets.

Chart I.4.18 • Loans granted by the financial sector to the non-financial private sector
| Annual rate of change

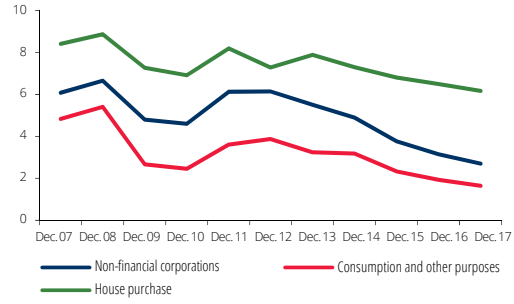


Source: Banco de Portugal. | Notes: Covers loans granted by financial sector entities resident in Portugal, besides banks, savings banks and mutual agricultural credit banks, non-monetary financial institutions that grant credit, namely credit financial institutions, factoring and financial leasing companies, credit-purchase financing companies and mutual guarantee companies. Annual rates of change adjusted for reclassifications and write-offs. (a) Annual rate of change adjusted also for the sale of credit portfolios.

106. Annual rate of change adjusted for reclassifications and write-offs. It differs from the annual rate of change (a.r.c.) identified in Section 3.2.1, "Households", due to methodological differences in the calculation of these rates. The a.r.c. used in that section is also adjusted for securitisation and sale of loans, inter alia.

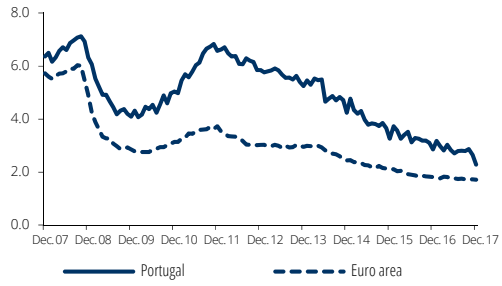
In 2017 interest rates on new loans to the non-financial private sector continued on their downward trend. This reduction was more marked in loans to non-financial corporations and households for house purchase (45 and 29 b.p. respectively). These developments have mirrored a narrowing of the differential between the cost of new loans to non-financial corporations in Portugal and the euro area (Charts I.4.19 and I.4.20).

Chart I.4.19 • Interest rates on new loans of the non-financial private sector | Per cent



Source: Banco de Portugal. | Note: Annual interest rates on new loans obtained from the weighted average of monthly rates.

Chart I.4.20 • Interest rates on new loans of non-financial corporations – international comparison | Per cent



Source: European Central Bank. | Note: The interest rate on new loans is calculated on the basis of interest rates on new loans weighted by the amounts of new loans (smoothed with a moving average of the previous 24 months).

Developments in loans to customers reflect credit supply and demand factors in the non-financial private sector (the main component of this aggregate, which also includes loans to the public sector). In fact, when replying to the bank lending survey,[107] a number of banks have signalled an increase in demand for credit by households and enterprises (due, inter alia, to improved economic conditions and the current level of interest rates) and evidence of looser credit standards. Credit standards for enterprises and households were relatively stable in 2017 and the first quarter of 2018.

Despite evidence suggesting greater competitive pressure, interest rates on loans to enterprises continued to be differentiated according to their credit risk

In the case of loans to enterprises, factors such as competitive pressure from other banks and the more favourable assessment of risks associated with the economic outlook and the respective sectors of activity are considered by banks as contributing to an easing in credit standards. Consistent with this assessment, available data indicates narrower spreads on average-risk loans. The outcomes of the most recent survey also point to a slight easing in other terms and conditions, such as fees, maturity and amounts.

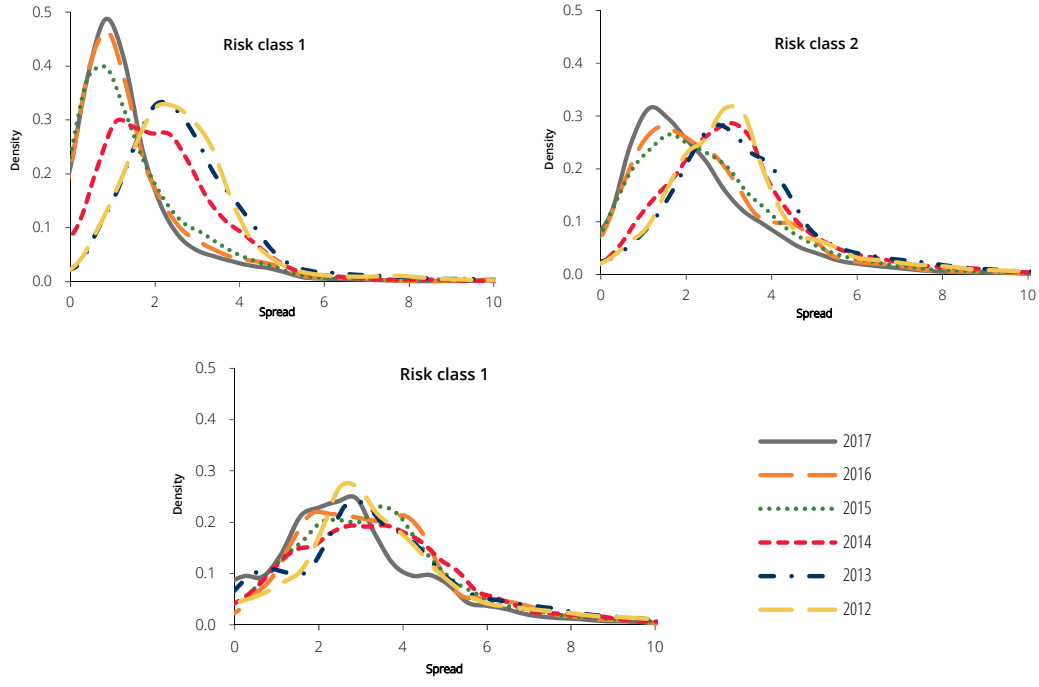
Small and medium-sized enterprises (SMEs) in Portugal have also signalled a substantial improvement in bank lending supply,[108] even when compared with other euro area countries. Furthermore, they indicate that the improvement in interest rates on loans was accompanied by an increase in other costs (e.g. fees) associated with loans.

107. Bank lending survey of April, June and October 2017 and January and April 2018, released by Banco de Portugal.

108. Survey on the access to finance of enterprises in the euro area (April to September 2017), published by the European Central Bank.

Despite the more competitive lending market for non-financial corporations and the reduction in interest rates on new loans in this sector (Chart I.4.20), the available evidence indicates that spreads in new bank loans to non-financial corporations will continue to be differentiated according to their credit risk (see the Special Issue in the December 2017 *Financial Stability Report*, entitled *Risk segmentation on the interest rate spreads of new bank loans to non-financial corporations*). In particular, the analysis shows that risk segmentation has remained consistent, with the narrowing of spreads for firms with lower risk of default exceeding that of firms with higher risk of default,[109] as was also the case in 2017 (Chart I.4.21). Nevertheless, note the shift to the left across risk classes, which may reflect, inter alia, an improvement in the macroeconomic environment taken into account when calculating the risk of default. Furthermore, the amounts of loans granted to lower-risk firms have also increased since 2012, while loans to firms with greater risk (class 3) have declined. The results also suggest that increased competition among banks has not resulted in a decrease in the differentiation of interest rate spreads for firms classified as at medium risk.

Chart I.4.21 • Spreads on new bank loans to private NFCs – empirical distribution
| Percentage points



Source: Banco de Portugal. | Notes: Kernel = Epanechnikov, bandwidth = 0.3. Truncated distribution below 0 and above 10%. Loans granted by the seven largest banking groups operating in Portugal. Spreads weighted by loan amounts. Low (high) risk firms are classified under risk class 1 (risk class 3).

109. The credit risk of non-financial corporations is measured by the Z-score estimated according to the methodology set out in Antunes et al. (2016). Firms were subsequently distributed by three credit risk classes, according to their risk of default, with class 1 corresponding to the lower credit risk class and class 3 to the higher credit risk class.

However, positive developments in economic and financial indicators for firms, particularly in a more favourable macroeconomic environment, together with the maintenance of competitive pressure and a higher capital ratio in non-financial corporations (most notably SMEs), may result in an easing in credit standards applied to this sector. Still, it is important that, when establishing these standards, banks draw a distinction between cyclical improvements in firms' financial position and other improvements that mirror more structural patterns.

The Household segment in a more favourable economic environment, continued to show some signs of an easing in credit standards on loans for house purchase

In the Household segment, competitive pressure and a more favourable outlook for both price developments in residential immovable property and the economic environment were overall considered to be factors having an easing impact on credit standards.

With regard to credit standards for loans to households, particularly for house purchase (which accounts for approximately 78% of total bank loans to households in 2017), the average loan-to-value (LTV) ratio at origination for agreements signed in 2017[110] is above the average updated LTV[111] for outstanding loans in bank portfolios at that date. Developments in average LTV and loan-to-income (LTI) ratios at origination of outstanding loans as at December 2017 show that between 1997 and 2007 banks applied looser credit standards, with a substantial share of these agreements (percentile 90th) posting LTVs of more than 100% (Chart I.4.22). After this period, these indicators started to decrease gradually, with this trend being reversed in 2013. Similarly, following the downward momentum that started in 2010, the average original maturity of agreements increased as of 2014. Such developments indicate an easing in credit standards for housing loans and/or mortgage-backed loans.

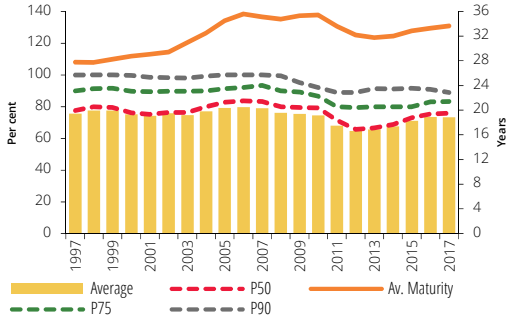
The average debt-service-to-income ratio (DSTI) at origination was high until the onset of the financial crisis (34.3% peak in 2008), following a downward path from that period onwards, to reach approximately 17% in 2017. However, this indicator at origination is calculated on the basis of the original terms of the agreements, including their interest rate. Particularly in housing loans, the resetting period for variable or combined interest rates is typically short and, therefore, this indicator is particularly sensitive to increases in short-term interest rates.

The cost of new loans for house purchase (Chart I.4.23) continued to trend downwards over the past few years, with this indicator falling below the euro area levels in 2017. In Portugal, most transactions have an interest rate resetting period of up to one year. In the case of loans to consumption and other purposes, a downward trend can also be observed in average interest rates on new credit agreements (albeit less marked than in housing loans), although its levels are much higher (Chart I.4.19).

110. This analysis refers to outstanding credit agreements as at December 2017 in the seven largest banks.

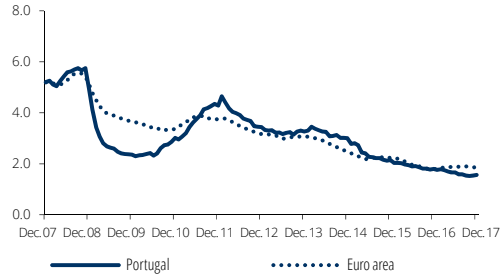
111. The updated LTV is calculated as the ratio between the amount of credit overdue on that date and the value of the latest bank valuation of the immovable property pledged as collateral.

Chart I.4.22 • Average LTV at origination and average original maturity of agreements for the main banks in the system | Per cent and years



Source: Banco de Portugal. | Notes: Loan-to-value (LTV) ratio at origination, calculated on the basis of the valuation price of housing. Average original maturity of credit agreements in years. Simple averages of the seven largest banks in the sector.

Chart I.4.23 • Interest rates on new loans to households for house purchase – international comparison | Per cent



Source: European Central Bank. | Note: Interest rates on new loans weighted by the amounts of new loans (smoothed with a moving average of the previous 24 months).

These developments, combined with factors such as recent developments in the real estate market, the favourable outlook for economic conditions and improvements in households' disposable income, may be contributing to an easing in credit standards and the assessment of borrowers by institutions, namely as regards their debt servicing capacity in a less favourable scenario (e.g. interest rate increase and/or shocks on households' disposable income).

In this regard, Banco de Portugal, as the national macroprudential authority, has issued a measure in the form of a recommendation that aims, inter alia, at fostering the adoption of prudent credit standards on new credit agreements for consumers,[112] namely through the introduction of limits to the LTV and DSTI ratios, the maturities of loans and regular principal and interest payment requirements on new loans. This measure is aimed at making these economic agents more resilient[113] to adverse shocks on their debt servicing capacity, thus contributing to default risk mitigation (Section 1.3. "Macroprudential policy").

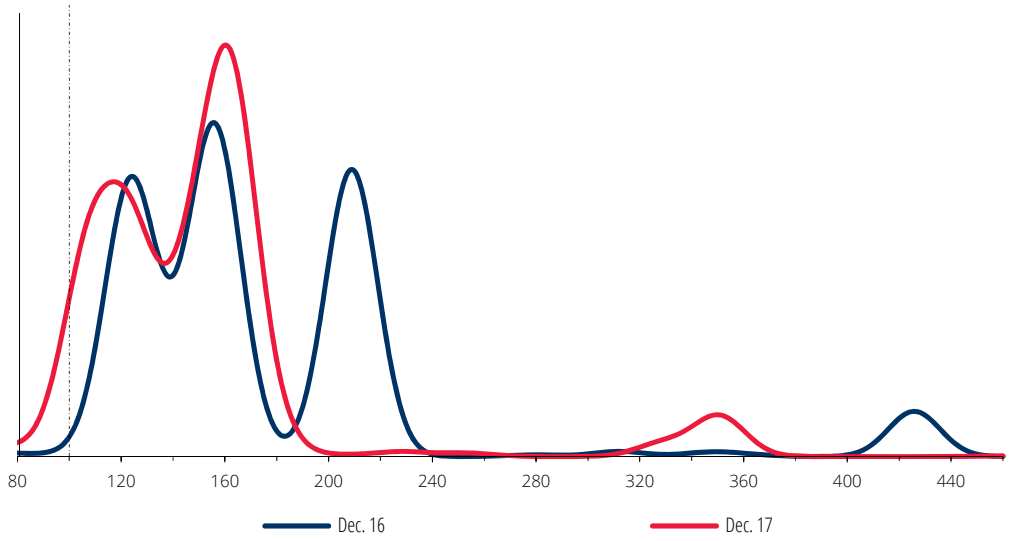
112. Consumer is any natural person who is acting for purposes which are outside his trade or profession, in credit agreements covered by Decree-Law No. 133/2009, of 2 June 2009, and Decree-Law No. 74-A/2017, of 23 June 2017.

113. This measure should also be seen against a background of still high household indebtedness, low savings and expectations of interest rate increases.

4.4 Liquidity and funding

The banking sector's liquidity position improved in 2017, reflecting a marked increase in the liquidity buffer

Chart I.4.24 • Liquidity coverage ratio – empirical distribution | Per cent



Source: Banco de Portugal. | Notes: Empirical distribution obtained using a Gaussian kernel that weighs institutions according to their assets. The dashed line shows the regulatory minimum of 100%, required as of January 2018.

The banking sector's liquidity remained at comfortable levels in December 2017. There was an improvement in the liquidity coverage ratio[114] across credit institutions, which was overall above the 100% regulatory minimum required as of January 2018 (Chart I.4.24).

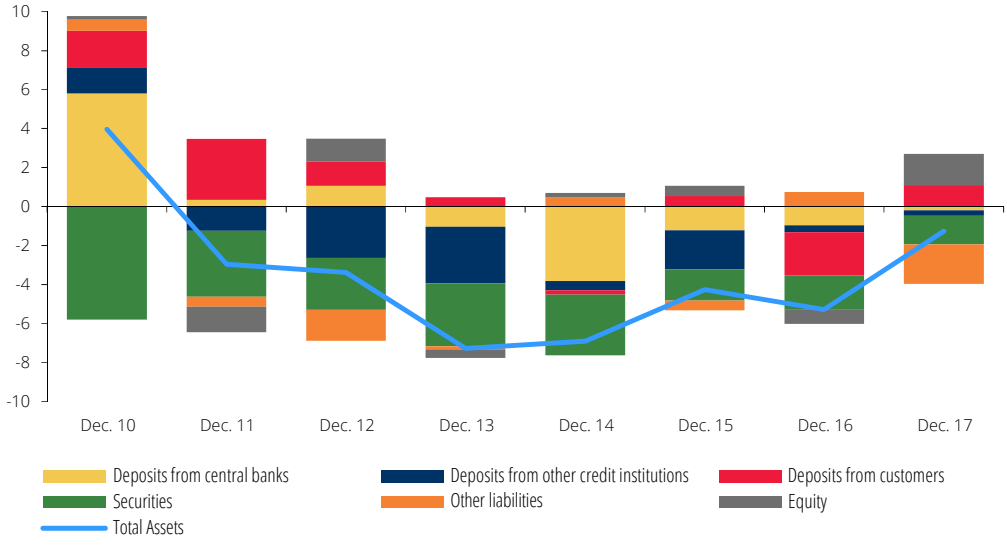
The increase in the liquidity coverage ratio in the banking sector (by 23 p.p. to 173% in 2017) largely reflected the substantial increase in the liquidity buffer (numerator) which more than offset the increase in total net cash outflows[115] (denominator) – with contributions of approximately 44 b.p. and -21 b.p. respectively.

Developments in the numerator of the liquidity coverage ratio benefited, year on year, from the increase in cash balances at central banks and government bonds in major banks, which are considered to be high-quality liquid assets for the purposes of this ratio. The banking sector's liquidity buffer is chiefly structured around such assets.

In 2017 there was a shift in liabilities' structure, which resulted in a greater share of deposits from customers and of equity, to the detriment of other components

114. The liquidity coverage ratio is obtained by dividing high-quality liquid unencumbered assets by total net cash outflows over a 30-day stress period.
115. Calculated as the difference between total cash outflows and total cash inflows.

Chart I.4.25 • Liabilities and equity – contributions to annual developments
| Percentage points



Source: Banco de Portugal. | Note: The item 'Other liabilities' includes derivatives, short positions and other liabilities.

Although the banking sector's balance sheet continued on a downward path in 2017 (around 1.2% compared to 2016), its financing structure overall reflected a decrease in liabilities (3.1%, with a 2.9 p.p. contribution to changes in total assets) and an increase in equity financing (20.8%, with a 1.2 p.p. contribution to changes in total assets), thus reflecting an improvement in the banking system's capital position (Chart I.4.25).

Developments in liabilities mirrored a substantial increase in deposits from customers, which was more than offset by a decrease in securities funding and interbank market-based and central bank financing. Developments in other liabilities during this period also reflected the base effect of BPI's deconsolidation of its Angolan exposure in 2016.[116]

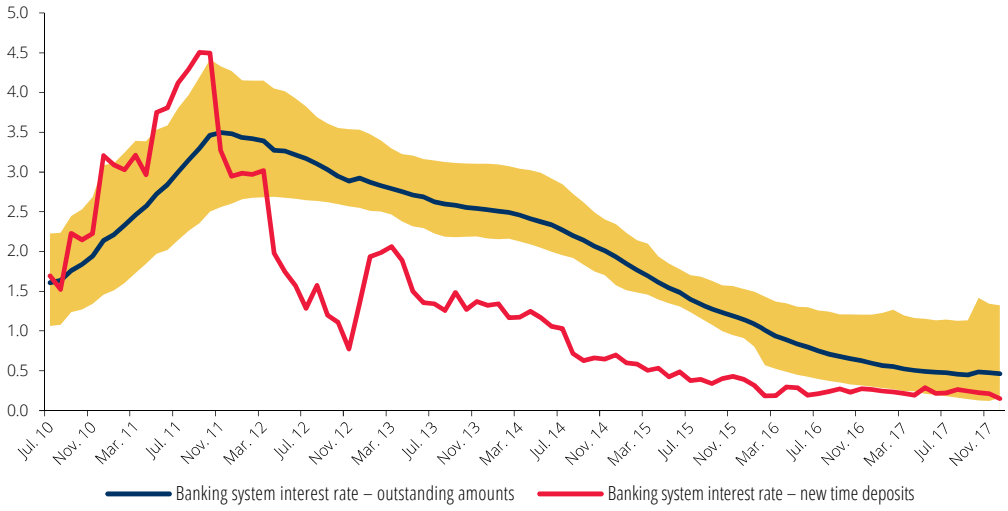
In 2017 deposits from customers rose markedly, chiefly reflecting higher deposits from non-financial corporations. Household deposits remained virtually unchanged, while general government deposits increased somewhat. Developments in household deposits were largely influenced by the Liability Management Exercise (LME) of NB in the last quarter of the year, in the course of which time deposits with specific conditions were made available to bondholders who have opted for the sale or early repayment of bonds covered by the programme.

The cost associated with new time deposits of the non-financial private sector (households and non-financial corporations) continued to decline, against a background of accommodative monetary policy reflected in historically very low (or even negative) market interest rates. Interest rates on new time deposits are well below those applied by the banking sector in 2011 and 2012

116. The partial sale of BPI's holdings in Angola led to the reclassification of associated assets (and liabilities) as 'Other assets' (and 'Other liabilities') at the end of 2016. In the first quarter of 2017, when the transaction was carried out, such assets (liabilities) were deconsolidated from the institution's balance sheet.

(when the banking system's funding conditions were particularly difficult).[117] In 2017 these interest rates were very close to zero (Chart I.4.26).

Chart I.4.26 • Interest rates on outstanding amounts and new time deposits – Non-financial private sector | Per cent



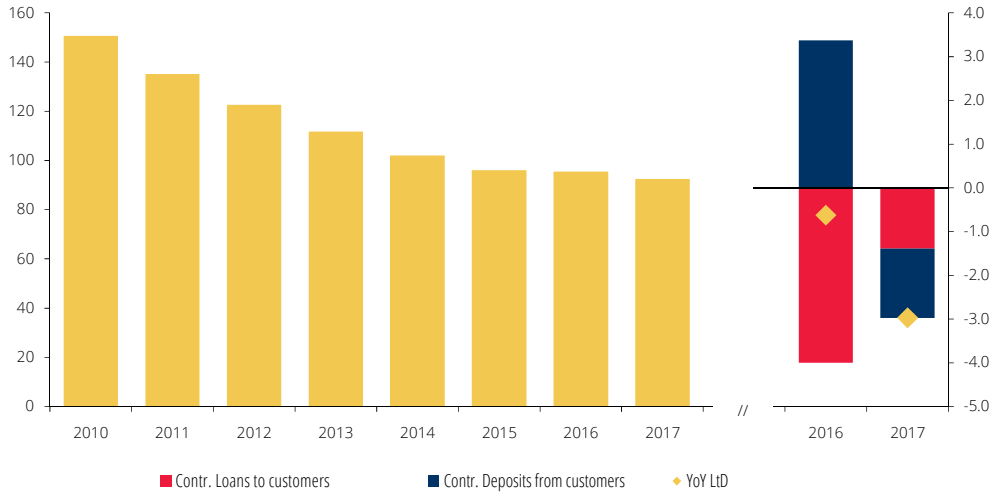
Source: Banco de Portugal. | Notes: Weighted interest rates on outstanding amounts and new time deposits by euro area non-financial corporations and households applied by banks resident in Portugal. Excludes overnight deposits, deposits redeemable at notice and repurchase agreements. The shaded area corresponds to the range between percentile 10th and percentile 90th of interest rates on outstanding amounts of deposits. Percentiles are weighted, in each period, by outstanding amounts of time deposits in banks.

The average interest rate on time deposits continued to follow a downward path in 2017, reflecting developments in interest rates on new deposits, as well as the maturing deposits entered into during the liquidity crisis, when interest rates were higher. Due to these effects, banks have been able to adjust the average cost of outstanding amounts of deposits, with a positive impact on net interest income. Furthermore, in the fourth quarter of 2017, developments in the distribution of interest rates on outstanding amounts (more specifically, in the percentile 90th) were substantially influenced by NB's LME.

With interest rates on outstanding amounts becoming more dispersed from 2015 onwards, there may still be some potential for the adjustment of costs in this funding component by a number of banks, considering the overall aim of an upturn in profitability.

117. The adjustment seen from 2011 onwards also reflected measures taken by Banco de Portugal, more specifically by introducing deductions of tier-one own funds from new loans with interest rates of more than 300 b.p. above the Euribor (Instruction of Banco de Portugal No. 28/2011, which entered into force in November 2011). This regime was subsequently reinforced by Instruction of Banco de Portugal No. 15/2012, which doubled the penalty in terms of own funds and increased the penalty on short-term and demand deposits (April 2012). Both measures had a sizeable impact on interest rates and amounts of new deposits.

Chart I.4.27 • Loan-to-deposit ratio of the banking sector and changes in 2016 and 2017
| Per cent and percentage points



Source: Banco de Portugal. | Notes: Loan-to-deposit ratio (LtD). Contributions (Contr.) to changes in the loan-to-deposit ratio of the numerator (loans) and denominator (deposits). A positive (negative) value of the numerator's contribution reflects an increase (decrease) in the ratio. By contrast, a positive (negative) contribution by the denominator reflects a decrease (increase) in the ratio.

The ratio of loans to deposits from customers decreased slightly in 2017 from the previous year (3 p.p., to 92.5%), reflecting an increase in deposits and the reduction in net loans to customers. Developments in deposits over this period contrast with those seen in 2016 (Chart I.4.27). The narrowing of this ratio (66.4 p.p. decrease from the peak in June 2010) points to a substantial adjustment towards greater funding to bank lending on the basis of liabilities less sensitive to changes in the risk perception of international investors.

In 2017 securities financing also fell markedly, and its contribution to total assets decreased by approximately 1.5 p.p. This was broadly based across several banks, with particular focus on NB's LME (with an impact on the institution's time deposits, as mentioned above) and the conversion of contingent capital instruments by CGD (which helped strengthen own funds within the framework of the recapitalisation scheme).

Furthermore, the capital and funding structure of a number of Portuguese banks has changed somewhat to adjust to the new regulatory requirements (e.g. MREL), namely via the issuance of additional Tier 1 (AT1) and Tier 2 securities eligible as capital, although such issues are still limited overall. The potentially higher cost associated with these issues compared with other sources of financing (e.g. deposits) and the current uncertainty, particularly about capital requirements and their target date, may be conditioning these developments. Nevertheless, recent developments in secondary market issuance, together with the current macroeconomic and financial environment (most notably, financial market developments) should be taken into account by banks when assessing/managing this process (Section 2.1. "Financial markets").[118]

118. In the context of the implementation of the CGD's restructuring plan, the issue of AT1 securities to the amount of €500 million in March 2017 will be supplemented with a new issue of Tier 2 securities to the amount of €500 million up to September 2018.

Central bank funding decreased in 2017 as a whole (by approximately 3.1%, reaching 6.3% of total assets), following the downward path that started after the peak in June 2012 (cumulative reduction of approximately 6 p.p.). In 2017 central bank funding chiefly comprised targeted longer-term refinancing operations (TLTROs), which made up nearly all Eurosystem funding as of January 2018. The main banks maintain a comfortable level of assets that can be used as collateral in Eurosystem credit operations.

Central bank liquidity, particularly with the Eurosystem, increased markedly in 2017, reflecting the increase in balances at central banks by a number of major banks.

Net interbank financing (of investment and deposits from other financial institutions) was virtually unchanged from 2016 (-0.8% decrease to around €20.5 billion). This component has been relatively stable since the third quarter of 2014.

4.5 Capital

The substantial improvement in solvency ratios in 2017 chiefly reflects an increase in own funds

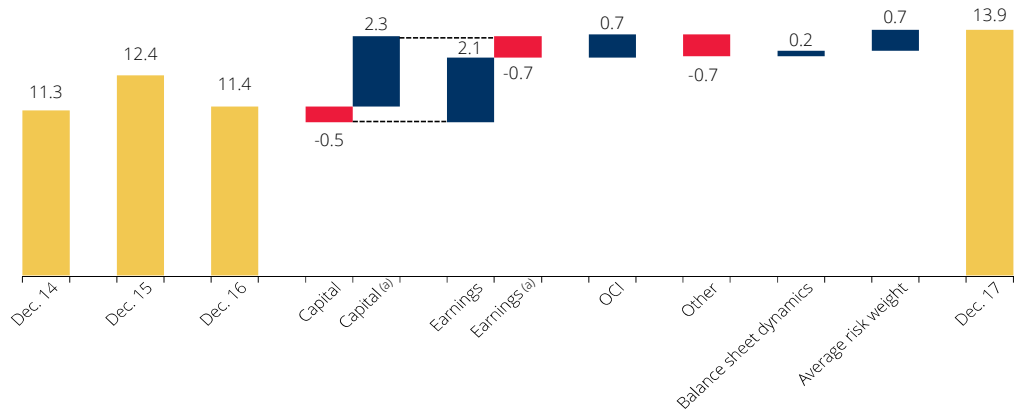
At the end of 2017 the solvency ratios of the Portuguese banking system improved markedly compared with the end of the previous year. More than two-thirds of these developments were due to an increase in own funds, while the remaining resulted from a decrease in risk-weighted assets. However, the magnitude of this improvement was largely related to the base effect associated with the temporary reduction in own funds that took place in the last quarter of 2016. This reduction followed the impairment recognition that preceded the recapitalisation of CGD, whose terms implied a reclassification between items (affecting the contributions from capital and income items to developments in capital ratios in 2017).[119]

The reinforcement of the banking system's capital position reflects the strengthening of own funds by a number of major institutions, most notably CGD, BCP, NB and Caixa Económica Montepio Geral.

The Core Tier 1 capital ratio (CET1) for the system as a whole stood at 13.9% in December 2017, increasing by 2.5 p.p. vis-à-vis the same period one year earlier, well above that seen at the end of 2014 and 2015 (Chart I.4.28). Excluding the effects of the aforementioned reclassification, the contribution of the strengthening of own funds to the increase in the CET1 ratio in 2017 is estimated to stand at 2.3 p.p.

119. For more details on the recapitalisation of CGD, see: Banco de Portugal, *Financial Stability Report*, December 2018, Chapter 3. "Banking sector".

Chart I.4.28 • CET1 ratio – contributions to developments in 2017 | Per cent and percentage points



Source: Banco de Portugal. | Notes: Other comprehensive income (OCI). 'Other' includes, inter alia, asset revaluation reserves at fair value, adjustments stemming from the application of the transitional provisions envisaged in the CRR, including those associated with options and national discretions. Red bars correspond to contributions to a decrease in the ratio, while blue bars correspond to contributions to an increase in the ratio. The contributions made by items marked with (a) do not take into account the reclassification effect among equity items in the context of the CGD's recapitalisation.

'Other comprehensive income' increased across the seven largest institutions, making a contribution of 0.7 p.p. to the increase in the aggregate's CET1 ratio. This chiefly reflects the rise in unrealised gains in sovereign debt securities classified under the portfolio of available-for-sale assets (mainly due to an increase in the value of Portuguese public debt, which intensified in the second half of the year). Furthermore, BPI's deconsolidation of BFA had a positive impact on this item due to the transfer of negative foreign exchange reserves to profit or loss for the year.

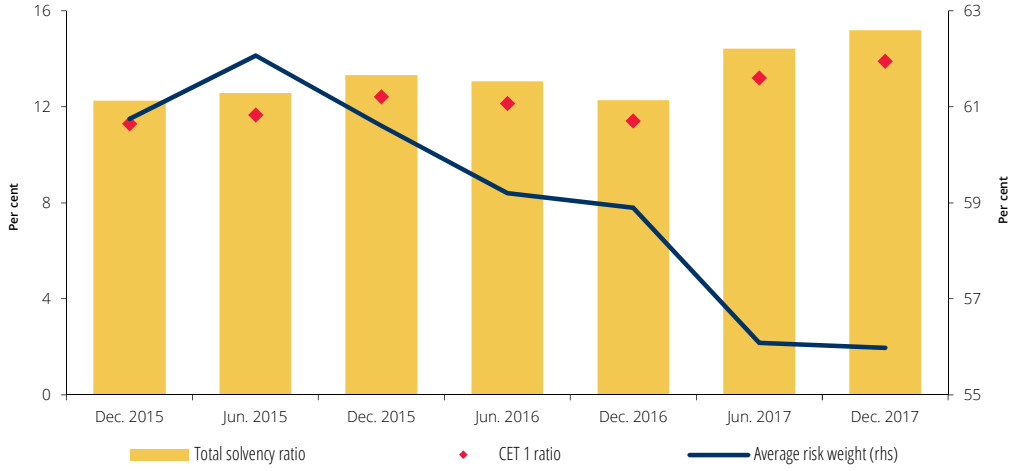
The phasing out of transitional provisions envisaged in the CRR and Directive 2013/36/EU (Capital Requirements Directive – CRD IV), which will end in 2018, had a negative impact of 0.95 p.p. on CET1 ratio developments in 2017. This effect, however, was partially offset by the reduction in the amount of deferred tax assets,[120] which is deducted from capital, whose impact on developments in that ratio stood at 0.37 p.p.

The decrease in the average risk weight of the banking system co-existed with the maintenance of leverage levels

Similarly to previous periods, developments in the CET1 ratio in 2017 once again benefited markedly from the decrease in risk-weighted assets (RWA). This downward momentum in balance sheet risk largely reflected the sale of part of BPI's holdings in Banco de Fomento de Angola and its deconsolidation from the group's scope for supervisory effects (implemented in early 2017), and resulted in a decline in the average risk weight by 2.9 p.p. of assets, to 56%, between December 2016 and December 2017 (Chart I.4.29). Excluding the effect of this operation, the banking system's average risk weight is estimated to have decreased by 1.7 p.p. of assets. In turn, the fall in total assets also contributed to an increase in the CET1 ratio, although less markedly.

120. Deferred tax assets that depend on future profitability and result from temporary differences.

Chart I.4.29 • CET1 ratio, total solvency ratio and average risk weight



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

The banking system's Tier 1 and total own funds ratios rose by 2.8 p.p. and 2.9 p.p. in 2017, to 14.5% and 15.2% respectively, which corresponds to a record high.

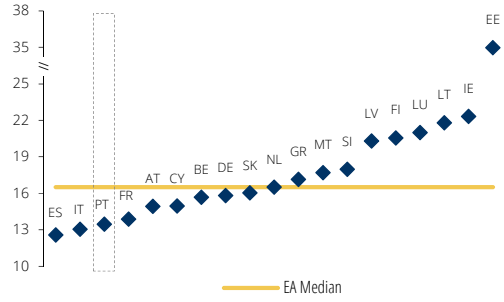
The higher solvency ratios were mostly due to an increase in the aggregate's capital position following the strengthening of own funds by major institutions, as mentioned above. In the scope of these operations, the CET1 component was reinforced by more than €6.4 billion, while AT1 and Tier 2 components were reinforced by €500 million and €600 million respectively. There was also a discounted buy-back (LME) by NB in the second half of the year, with a positive impact of €219 million on the CET1 component in 2017.[121]

In spite of this substantial reinforcement of own funds in 2017, by the end of the third quarter, the CET1 ratio for the Portuguese banking system continued to stand below the euro area median, but maintained its relative position with regard to the previous quarter (Chart I.4.30). However, the idiosyncratic factors of the various banking systems, most notably the varying importance of internal rating based approaches (IRB) for credit risk, affect international comparisons, as explained in the December 2017 issue of the *Financial Stability Report*. Indeed, the Portuguese banking system's RWA ratio by asset unit is among the highest in the monetary union, reflecting the lower recourse to IRB models by Portuguese banks when determining their capital requirements (Chart I.4.31). Still, given its high degree of flexibility and discretion, the use of an IRB approach to measure exposure risk and, consequently, to determine capital requirements, raises comparability and consistency issues among institutions.

The banking system's leverage ratio (which does not weigh assets according to risk) amounted to 7.8% at the end of December 2017, up by 1.2 p.p. from the end of December 2016. This reflects the downward trend in activity and, primarily, the higher capital position stemming from the aforementioned increases in own funds. The leverage ratio of major banking institutions is considerably above the 3% minimum requirement established in Basel III, even taking into account stricter Tier 1 requirements (fully phased-in).

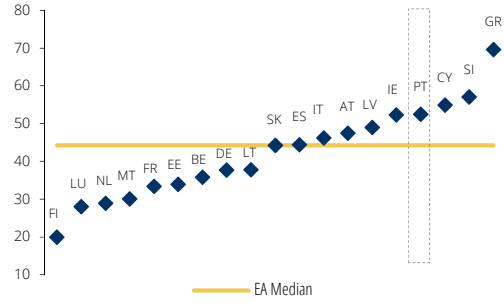
121. This figure corresponds only to realised gains in 2017. Total gains from this operation should amount to more than €500 million.

Chart I.4.30 • CET1 ratio – international comparison as at September 2017 | Per cent



Source: European Central Bank (Consolidated Banking Data).

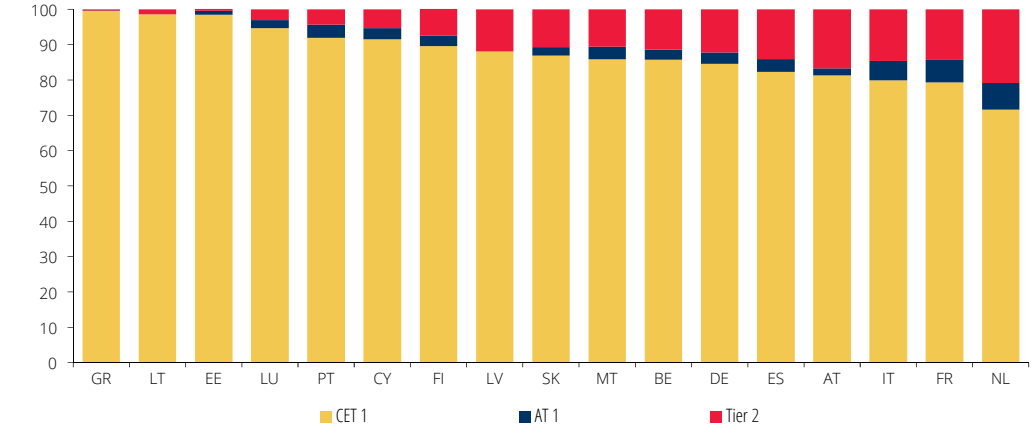
Chart I.4.31 • Average risk weight – international comparison as at September 2017 | Per cent



Source: European Central Bank (Consolidated Banking Data).

Despite the aforementioned issuances of AT1 and Tier 2 securities, the capital base of institutions (and the system) continues to comprise mostly CET1 capital items (92%), while the AT1 and Tier 2 components have a residual weight in the system's total own funds – of around 4% each. Indeed, the CET1 component in total own funds of the Portuguese banking system is higher than in most euro area countries (Chart I.4.32).

Chart I.4.32 • Capital base (CET1, AT1 and Tier 2) – international comparison as at September 2017 | Per cent of own funds



Source: European Central Bank (Consolidated Banking Data).

Given the need for future compliance with MREL requirements, and amid an increasingly favourable market environment, institutions should start to prepare to issue this type of instrument, thus reinforcing the weight of AT1 and Tier 2 components in total own funds.

Box 1 • Implementation, at European level, of macroprudential tools targeting credit standards for loans to households

Several countries have introduced macroprudential measures[122] in order to mitigate the risks of excessive growth in loans to households, in particular, associated with credit relating to residential immovable property and real estate developments. These measures do not always share the same objective. In most cases, they have been adopted following excessive growth in credit secured by immovable property, sometimes accompanied by a sharp increase in real estate prices. This situation was observed immediately before the adoption of this type of measure by countries such as Malta, the Netherlands, Romania, Slovakia or Sweden. In turn, Ireland cited as the main reason for introducing its measure the need to increase both bank and borrower resilience, but it also referred the aim of reducing bank credit risk and mitigating the risks of credit-house price spirals emerging.[123] In the case of the Recommendation of Banco de Portugal within the legal framework of new credit agreements for consumers,[124] the main objective is to ensure that credit institutions and financial corporations do not take excessive risks when granting new credit – in a particularly favourable context for this to occur – and to ensure sustainable financing for households.

In addition to distinct objectives, another aspect that differentiates this type of macroprudential measure is the option of either introducing a phasing-in period or immediately applying the measure. Examples of the first option are Slovakia, the Netherlands, Poland and the Czech Republic, which ensure a gradual adjustment of credit market conditions. A phase-in period was not established in Portugal,[125] although the measure was published approximately six months before its entry into force in order to give financial institutions sufficient time to adjust.

At European level, the most frequently used measure has been to set limits on the loan-to-value ratio (LTV), usually to contain excessive growth in credit and real estate prices. However, limits have also been applied to the loan-to-income ratio (LTI) and to the debt service-to-income ratio (DSTI), in some cases accompanied by a limit to the maximum maturity of the loans. These tools are frequently combined, increasing the policy's effectiveness, and may be applied to all or just a percentage of new credit.

As regards LTV-based limits, most authorities have opted for applying a limit of around 85-90%. However, this is an apparent convergence, given that, in most cases, authorities have opted for considering differentiated limits depending on the purpose of the credit; imposing quotas on the percentage of loans with higher ratios; establishing limits according to specific risks (such as foreign currency risks) or establishing specific limits for certain loans, notably those benefiting from public guarantees.

For differentiated LTV limits, depending on the purpose of the credit or the borrower's conditions (Chart C.1.1), several authorities have opted for applying a less stringent limit to first-time buyers (Finland, Ireland and Iceland) or to credit for the purchase or construction of a permanent residence (Cyprus and Portugal). Buy-to-let loans (Ireland), credit for the purchase of non-permanent housing (Cyprus and Portugal) and credit denominated in a foreign currency, with or without currency

122. A list of adopted measures, including a number of details, is regularly updated and is available on the site of the European Systemic Risk Board (ESRB), https://www.esrb.europa.eu/national_policy/html/index.en.html.

123. Although it is also very clear that the Central Bank of Ireland does not intend to regulate or directly control housing prices with these measures.

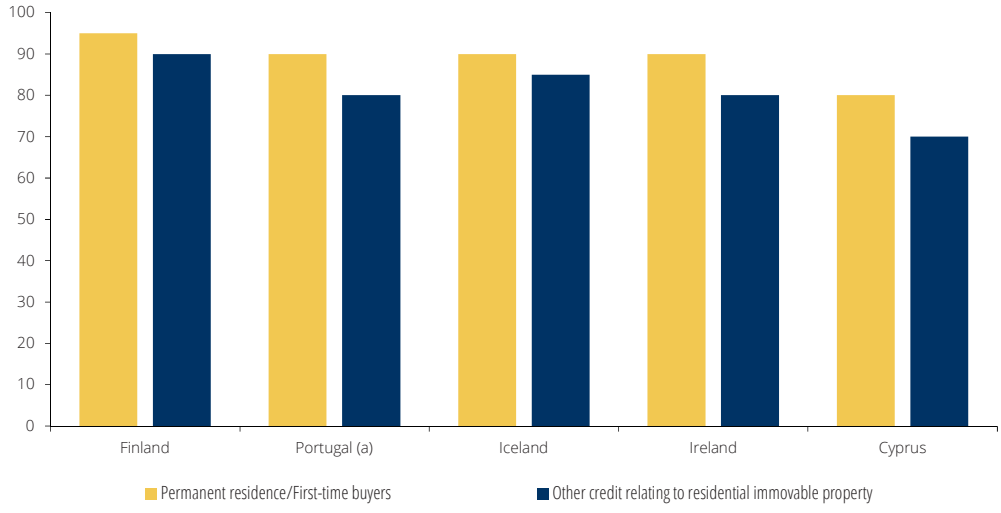
124. https://www.bportugal.pt/sites/default/files/recomendacao_contratocredito_en.pdf.

125. Although the macroprudential measure implemented in Portugal recommends a maximum maturity of 40 years, it also recommends that the average maturity of the group of new credit agreements should gradually converge toward 30 years until the end of 2022.

hedging (Romania), are generally subject to more stringent limits. In Portugal, a less stringent limit was set (100%) on the LTV of credit for the purchase of immovable property on banks' balance sheets[126] or the purchase of immovable property through real estate leasing.[127] Several countries have also allowed for a few exceptions, for the most part in cases where loans benefit from public guarantees (Estonia, Latvia and Romania). Poland was the only European country to establish a limit on the LTV of commercial real estate.

In terms of collateral valuation, macroprudential authorities may opt between several criteria, such as the transaction value, the appraisal value or the lower of the two. Indeed, in 2016, the ESRB[128] issued a Recommendation[129] establishing that the value considered as denominator of the LTV ratio should be the lower of the transaction value (as registered in a notarial deed) and the value assessed by an independent appraiser. This criterion was adopted by Slovakia, Slovenia, Estonia, Lithuania and Portugal. Other authorities continue to privilege the appraisal value, specifically Cyprus and Ireland.

Chart C1.1 • Limits on the LTV ratio, according to the purpose of the credit, by country | Per cent

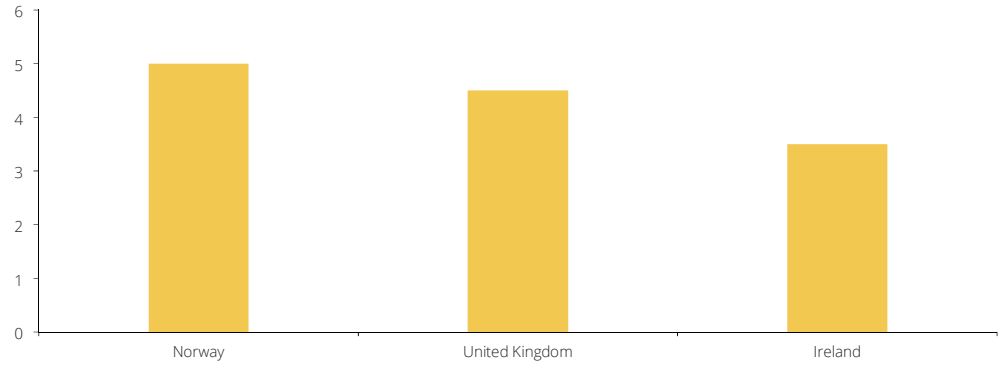


Sources: Banco de Portugal and European Systemic Risk Board. | Note: (a) The Recommendation enters into force on 1 July 2018.

As for the establishment of a LTI limit (Chart C.1.2), this was only used in Norway, the United Kingdom and Ireland. In all cases, this limit is assessed against the borrower's gross income. However, these limits may be exceeded by 20% of total credit in Ireland, 15% in the United Kingdom and 10% in Norway (8% for immovable property located in Oslo).

126. According to the study published in Box 3 'Real estate owned on the banking sector's balance sheet', in the December 2017 issue of Banco de Portugal's *Financial Stability Report*, as a consequence of the financial crisis, balance sheet holdings of immovable property, owned due to borrower default, increased considerably until 2014. Consequently, financing the purchase of this immovable property does not lead to additional risk-taking by institutions.
127. When the purchase of immovable property is financed through real estate leasing the asset is owned by the institution granting the credit. The costs associated with borrower default are thus smaller than when the credit is secured against the immovable property.
128. ESRB stands for European Systemic Risk Board.
129. ESRB/2016/14. Available at https://www.bportugal.pt/en/page/ltv-dsti-and-maturity-limits.

Chart C1.2 • Limits on the LTI ratio, by country



Source: European Systemic Risk Board.

In the case of countries that imposed limits on the DSTI, these range from 40% (Lithuania) to 80% (Cyprus and Slovakia). The use of highly differentiated measures for income contributes to this discrepancy. As such, for Cyprus and Slovakia a 'minimum subsistence amount' is deducted from net income. The other countries[130] established the use of a measure of income less taxes (Table C.1.1).

As for the DSTI numerator, several countries established a limit based on the total debt service (Cyprus, Slovakia, Slovenia, Hungary and Portugal), while others set out a limit based only on the instalment of housing credit (Estonia and Lithuania). Romania imposed a maximum DSTI exclusively for consumer credit, with a differentiated limit on the ratio according to the currency used.

Table C1.1 • Limits on the DSTI, by country | Per cent

Country	Range of change in the limit against net income	Limit against net income less a 'minimum subsistence amount'	Quota of loans with a DSTI limit above the limit	Quota of loans without a maximum limit on the DSTI	Breakdown according to foreign currency risk	Ratio calculated including a tightening of conditions
Cyprus		65-80			√	
Slovakia		80				
Slovenia	50-67					
Estonia (a)	50					
Hungary	50-60				√	
Lithuania (a)	60			5		√
Portugal (b)	50-60		20	5		√
Romania (c)	34-53				√	√

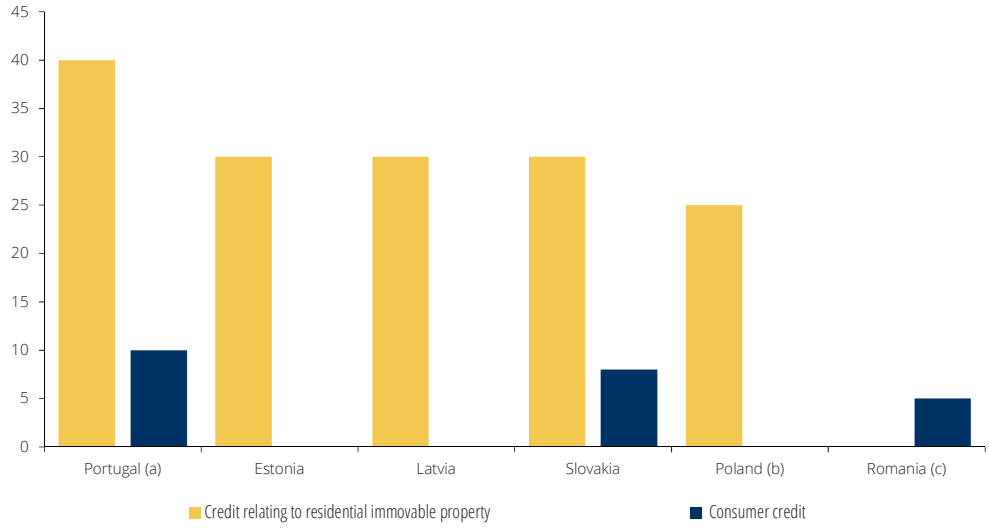
Sources: Banco de Portugal and European Systemic Risk Board. | Notes: (a) The debt service only includes credit relating to residential immovable property; (b) The Recommendation enters into force on 1 July 2018; (c) The debt service only includes consumer credit.

130. In the case of the Recommendation of Banco de Portugal, considering income less taxes and social contributions.

The debt service considered may be calculated at the moment when the credit agreement is entered into or may incorporate a number of elements that tighten its conditions. The factors considered by the authorities are an interest rate rise (Estonia, Lithuania and Portugal), a currency depreciation (Romania) or a reduction in income (Portugal and Romania).

Regarding the limits on the loan maturity at origination, a few countries have adopted restrictions concerning credit relating to residential immovable property (Estonia, Lithuania and Poland), while others, such as Portugal and Slovakia, have adopted limits on the agreed maturity of credit relating to residential immovable property and consumer credit. Romania has only imposed limits on consumer credit (Chart C.1.3).

Chart C1.3 • Limits on loan maturity, by country | In years



Sources: Banco de Portugal and European Systemic Risk Board. | Notes: (a) The Recommendation enters into force on 1 July 2018. Although the maximum recommended maturity is 40 years, Banco de Portugal establishes that the average maturity of new credit agreements shall gradually converge toward 30 years until the end of 2022; (b) The maximum recommended maturity is 25 years. However, institutions may grant credit with a maximum maturity of 35 years, provided that the creditworthiness assessment is carried out using 25 years as reference; (c) Romania has only imposed a maturity limit on consumer credit.

As regards the legal instruments used to introduce the macroprudential measure, a number of countries have opted for introducing it by means of a recommendation, while others have used a binding legal instrument.

The disparity between countries concerning the definition of the macroprudential tools analysed in this box and the differences in their calibration reflect specific national conditions, one of the features of macroprudential policy. In addition, given that this policy is still recent, its transmission channels and estimated impact are not yet known with certainty. This is one of the reasons why several countries have opted for introducing a measure by means of a recommendation.

Box 2 • Relevance of the legal framework in the recovery of NPL

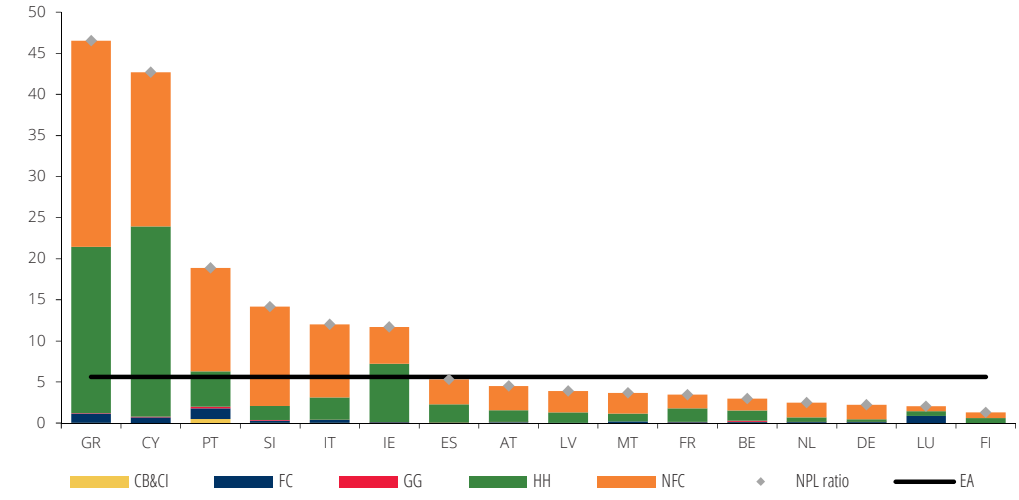
Introduction

Non-performing loan (NPL) ratios increased quite significantly in Europe after the outbreak of the international financial crisis. However, this increase did not affect all countries in the same way and a high degree of heterogeneity can be observed (Chart C2.1). Broadly speaking, one can identify three 'NPL groups' within Europe: a first group that includes two countries (Cyprus and Greece) with NPL ratios above 40%, a second group (Portugal included) where NPL ratios stand roughly between 20% and 10% and a third group for which such ratio is below 6%. Importantly, these data are based on the 2017 EU-wide Transparency Exercise (TE), an exercise that does not consider all banks of each banking system and whose results refer to June 2017.[131] Hence, the figures presented herein might deviate significantly from overall ones – in Portugal, for instance, the NPL ratio would decrease from 18.9% to 15.5% had the overall banking system been considered.[132] In addition, it is important to highlight the high subjectivity inherent to the application of the NPL definition and the current insufficient harmonisation across countries, and even across institutions of the same country.[133] About 60% of the total stock of NPLs in the Euro Area (EA) is related to non-financial corporations (NFC) lending and roughly one-third consists of loans to households (HH). As regards coverage ratios (CR), data are quite heterogeneous ranging from 15% to 60% and from 6% to 65%, in the case of households and non-financial corporates, respectively (Chart C2.2). The level of dispersion across countries decreases when using a broader definition of coverage (i.e. taking into account impairments, collateral and financial guarantees).

Against this background, NPLs rank high in the agenda of both policymakers and supervisors, and several initiatives have already been put in place to tackle this issue[134]. In Portugal, the comprehensive approach aimed at resolving the NPL problem was discussed at length in the last issue of the *Financial Stability Report*[135]. The revision of the legal, judicial and fiscal framework is one of the pillars underlying this strategy. There is also a number of initiatives in place at the European level targeted at enhancing the efficiency of insolvency and restructuring frameworks[136]. All these efforts reflect the need to speed up the cleaning up of banks' balance sheets, relieve banks' capital constraints and prevent the excessive build-up of non-productive assets in the future. The objective of this box is to address this topic and present a set of simulations that illustrate the importance of undertaking structural reforms with a view to improve banks' conditions associated with the recovery of collateral. Ultimately, doing so would decrease costs related to NPL resolution and, thus, support banks in recovering value from secured non-performing loans.

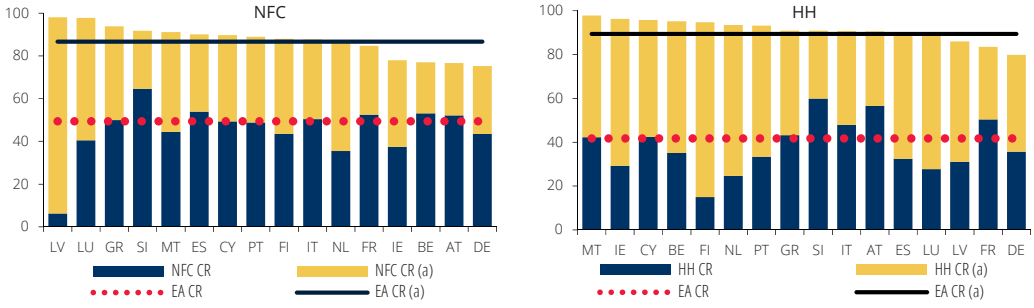
131. This exercise provides detailed bank-by-bank data, on a consolidated basis, for 132 banks across 25 countries of the European Union and the European Economic Area. Portuguese banks considered in this exercise account for roughly 65% of total assets of the Portuguese banking system.
132. In December 2017, the NPL ratio for the Portuguese banking system decreased to 13.3%.
133. See the special issue on: "Concepts used in the analysis of credit quality", *Financial Stability Report*, November 2016.
134. See, e.g., the initiatives carried out by EBA aimed at reducing information asymmetries between potential buyers and sellers of NPL portfolios and the addendum to ECB guidance which specifies the ECB's supervisory expectations for prudent levels of provisions for new NPLs.
135. See the special issue on: "Strategy to address the stock of non-performing loans (NPLs)", *Financial Stability Report*, December 2017.
136. In 2016, the European Commission adopted a proposal for a Directive on preventive restructuring procedures, second chance for entrepreneurs, and the efficiency of insolvency frameworks (COM/2016/0723-2016/0359 (COD)).

Chart C2.1 • NPL ratios – contributions | In percentage, June 2017



Source: EBA Transparency Exercise 2017. BdP calculations. | Notes: Central banks and credit institutions (CB&CI); Financial corporations other than credit institutions (FC); General government (GG).

Chart C2.2 • NPL coverage ratios | In percentage, June 2017



Source: EBA Transparency Exercise 2017. BdP calculations. | Notes: (a) denotes the increment in the coverage ratio taking into account collateral and financial guarantees.

Data

The data used in this analysis rely on three different sources. Firstly, a considerable amount of information comes from the 2017 EU-wide TE. In particular, credit risk templates are explored as data on exposures and provisions are available for defaulted loans across geographies and under both internal ratings-based (IRB) and standardized (STA) portfolios. Importantly, the results presented herein should be regarded with caution given that banking systems are only covered to a limited extent in this sample. Table C.2.1 summarizes the number of banks available for each jurisdiction.

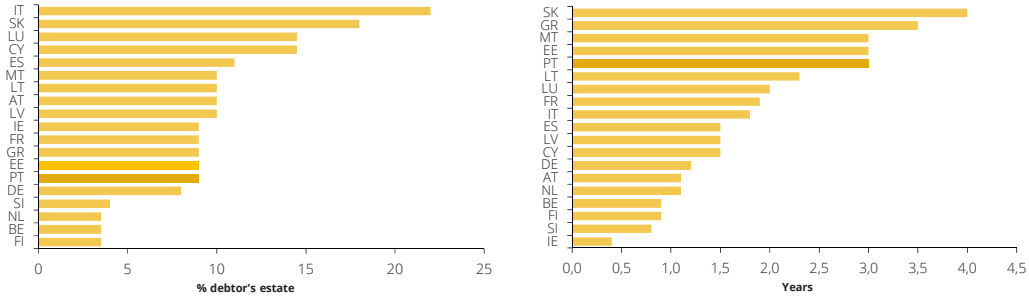
Table C2.1 • 2017 Transparency exercise – number of banks per country

AT	8	IE	5
BE	6	IT	11
CY	4	LU	5
DE	19	LV	1
EE	1	MT	3
ES	13	NL	6
FI	2	PT	5
FR	11	SI	3
GR	4		

Source: EBA Transparency Exercise 2017.

Secondly, resolving insolvency indicators from the World Bank Doing Business database are also used[137]. In particular, two variables are key in this analysis: (i) the duration of legal procedures needed to enforce a claim and (ii) the costs associated with this process. Chart C2.3 compares these among EA countries. Thirdly, data on ECB's Balance Sheet Items (BSI) and MFI Interest Rates (MIR) statistics are used. Altogether, this information allows one to assess the potential impacts of implementing structural reforms aimed at enhancing NPL resolution at the EA level. All calculations refer to June 2017.

Chart C2.3 • Cost (%) and time (years) associated to enforcing a claim | June 2017



Source: World Bank.

Structural reform simulations

The simulation exercise presented in this box relies on a set of simplifying assumptions due to data limitations[138]. Moreover, some of the data used have a qualitative nature, reason why the overall estimates should be regarded as indicative of the potential gains that banks could attain via structural reforms.

137. Doing Business studies the time, cost and outcome of insolvency proceedings involving domestic entities as well as the strength of the legal framework applicable to judicial liquidation and reorganization proceedings. The data for the resolving insolvency indicators are derived from questionnaire responses by local insolvency practitioners and verified through a study of laws and regulations as well as public information on insolvency systems.

138. In particular, the templates available in EBA's TE do not have any breakdown of defaulted exposures under STA portfolios, thus requiring some allocation procedure (based on IRB portfolios).

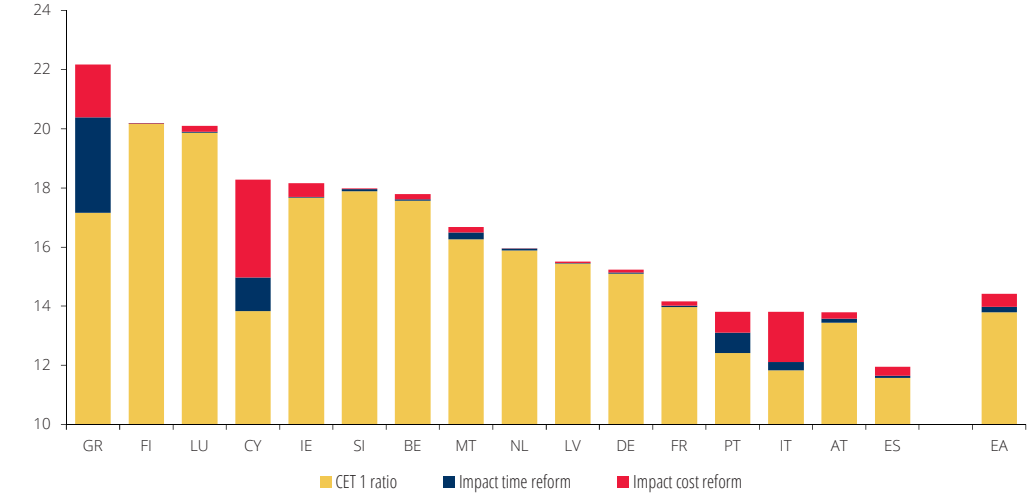
The exercise presented in this box assumes that the duration[139] (t) of legal procedures needed to enforce a claim and the costs[140] (c) associated with this process, in each country, would be brought in line with EA best practices.[141] Those best practices imply that a claim can be collected within five months (Ireland), at a cost of 3.5% of the claim (Belgium, Finland and the Netherlands). The net present value (NPV) of NPLs is then estimated by discounting future cash flows from the sale of collateral, less the cost of recovery, using the weighted average interest rate (i) on outstanding amounts (NFC and HH) at the country level, based on ECB'S BSI and MIR statistics:

$$NPV_{NPL} = \frac{100 - c}{(1 + i)^t}$$

Intuitively, a more efficient insolvency framework would support banks in recovering value from NPLs. Importantly, this effect is assumed to impact only secured (net of impairments) NPL exposures.

Results, expressed in terms of country aggregate CET 1 ratios, are depicted in Chart C2.4. The impacts of reforms that bring the aforementioned insolvency indicators (t and c, blue and red bars, respectively) in line with EA best practices, assuming these could be implemented instantaneously in each country, are non-negligible in some jurisdictions. Overall, countries that still face double-digit NPL ratios and poorer insolvency indicators are the ones that would benefit the most from the combined effects of such structural changes, ranging from 4.5 p.p. (Cyprus) to 5 p.p. (Greece) of aggregate CET 1 ratios. To a lesser extent, Italy (2 p.p.) and Portugal (1.4 p.p.) would also benefit from such developments. The individual contribution of these insolvency indicators also differs within countries and depends on the relative position of each legal framework dimension vis-à-vis the best practice. Nonetheless, results suggest that the most important contribution would come from a less costly legal procedure.

Chart C2.4 • Simulated impact of improving insolvency framework in CET 1 ratio
| Percentage and percentage points, June 2017



Source: BdP calculations.

139. Time for creditors to recover their credit is recorded in calendar years. The period of time measured by Doing Business is from the company's default until the payment of some or all of the money owed to the bank. Potential delay tactics by the parties, such as the filing of dilatory appeals or requests for extension, are taken into consideration.

140. The cost of the proceedings is recorded as a percentage of the value of the debtor's real estate property. The cost includes: court fees and government levies; fees of insolvency administrators, auctioneers, assessors and lawyers; and all other fees and costs. However, possible devaluations of the collateral value throughout the recovery process are not considered.

141. For more details, see "Addressing market failures in the resolution of non-performing loans in the euro area", ECB *Financial Stability Review* (November 2016).

Conclusions

The vulnerabilities associated to banks' balance sheets have been brought to the fore by the international financial crisis. Against this background, reducing the still high stock of NPLs in some countries and preventing future episodes of excessive build-up is a priority for both regulators and supervisors.

All measures aimed at enhancing bank's ability to enforce collateral, used to secure credit, should be regarded as positive developments. In particular, reforms that reduce both costs and the time associated with judicial processes would certainly contribute positively towards resolving some of the problems related to NPLs and, therefore, increase their value. Importantly, the exercise presented in this box assumes that such structural changes could be implemented instantaneously, even though transition delays would likely occur and, hence, make the actual benefits of the reforms probably lower. Conversely, the gains associated with such improvements would expectedly spillover to other relevant dimensions such as increasing bid prices in NPL transactions, thus reducing the wedge between book and market values.

Box 3 • Action plan to tackle non-performing loans in Europe – main measures and state of play regarding its implementation

As highlighted in previous issues of the *Financial Stability Report*, the reduction of the still high stock of non-performing loans (NPLs), as a result of the recent economic and financial crisis, is deemed a priority at European level.

Thus and in addition to the various measures adopted at national level and by the Single Supervisory Mechanism (SSM) presented in a Special issue published in the *Financial Stability Report* of December 2017,[142] it is important to bear in mind the framework provided by the so-called "Action plan to tackle NPLs in Europe" (hereinafter the "Action plan"), adopted in July 2017 by the Economic and Financial Affairs Council (ECOFIN), under the form of Council Conclusions.[143] This box aims to summarise the main initiatives therein envisaged, as well as the state of play regarding the adoption of each of them.

As referred to in the above-mentioned Special issue, the Action plan defines a set of measures to be adopted by several European authorities and by the Member States, with different deadlines, between Summer 2017 and end-2018, to "address the existing stock of NPLs and to prevent the future emergence and accumulation of NPLs".

In order to implement part of the initiatives foreseen, the European Commission (EC) presented on 14 March 2018, the following set of proposals and guidelines, known as the "Spring Package":[144]

142. "Strategy to address the stock of non-performing loans (NPLs)", *Financial Stability Report*, December 2017.
143. http://www.consilium.europa.eu/en/press/press-releases/2017/07/11-conclusions-non-performing-loans/.
144. https://ec.europa.eu/info/publications/180314-proposal-non-performing-loans_en.

1. Prudential backstop

The EC proposes an amendment to the Capital Requirements Regulation (CRR),[145] in order to introduce, for prudential purposes, minimum coverage levels for newly originated loans that become non-performing. More specifically, it is a Pillar 1 measure envisaging the application of a prudential backstop mechanism with the following characteristics:

- Defines the minimum coverage levels[146] for non-performing exposures (NPEs);[147] where they are not complied with, institutions must deduct from own funds an amount resulting from the difference between these minimum coverage levels and, grosso modo, the impairment amounts recorded;
- The minimum coverage levels proposed are (i) progressive depending on the vintage of the NPE status, (ii) dependent on the existence of eligible collateral and (iii) different for exposures with payments more than 90 days past due and for loans unlikely to be repaid (known as UtP, or unlikely-to-pay);[148]
- This mechanism is applicable to exposures incurred after 14 March 2018 (proposal's publication date), at the moment they are classified as non-performing.

It should be noted that also on 14 March, in response to a call for advice of the EC, the European Banking Authority (EBA) published a study focusing, in particular, on the expected impact of the prudential backstop.[149] The study takes December 2017 as the reference date, extrapolating the NPL ratio and other conditions observed between 2014 and 2017. Considering a seven-year projection horizon and a set of simplifying assumptions, the EBA estimates that the prudential backstop will have a cumulative impact of reduction on CET1 capital ratio of 56 basis points, equivalent to 10% of estimated banks' retained earnings over that horizon. This impact tends to be differentiated across banks.

The EC proposal is currently being discussed at the level of the Council and of the European Parliament.

2. Directive on credit servicers, credit purchasers and the recovery of collateral

In this document, also under discussion at the level of the Council and of the European Parliament, the EC proposes the introduction of harmonised rules and standards for credit purchasers or credit servicers, as well as measures to accelerate extrajudicial collateral enforcement without requiring the involvement of courts or other legal authorities.

This proposal has the main purposes of promoting the development of the secondary market for NPLs, improving the access of credit purchasers and credit servicers to loans originated by credit institutions, and enhancing out-of-court procedures to recover collateral, supplementing already existing mechanisms at the domestic level.

145. 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).
146. In addition to the provisions for prudential purposes, other items are also accepted, provided that they are related to NPEs, e.g. additional value adjustments, as defined in Article 34 of CRR.
147. For a definition of NPE, see Special issue 3. "Concepts used in the analysis of credit quality", *Financial Stability Report*, November 2016.
148. UtP corresponds to loan repayments more than 90 days past due, unlikely to be paid in full (without realisation of collateral), as presented in Special issue 3. "Concepts used in the analysis of credit quality", *Financial Stability Report*, November 2016.
149. http://www.eba.europa.eu/documents/10180/2087449/EBA+Report+on+Statutory+Prudential+Backstops.pdf.

3. Blueprint for Asset Management Companies

The so-called Blueprint provides (non-binding) guidelines for the set-up, operation and governance of Asset Management Companies (AMCs), building upon best practices from past experiences.

It also explains in detail how an AMC can be set up under the existing European regulatory framework, as regards State aid rules and the BRRD.[150] In this context, the scenarios in which the State's involvement in AMCs can occur outside resolution or liquidation are presented for the first time in an explicit manner:

i) Case in which the State intervenes under normal market conditions, and thereby the involvement does not constitute State aid. This occurs, for example, when the State holds a stake in the AMC and the acquisition of assets from credit institutions is completed at market price, or when the State grants a guarantee to the AMC, in exchange for a fee deemed in line with market conditions. Under these circumstances, it is considered that the State intervention does not constitute State aid, whereby the measure is not subject to the regulatory framework referred to above;

ii) Case in which there is recourse to the precautionary recapitalisation instrument (pursuant to point (d) (iii) of paragraph 4 of Article 32 of BRRD). This situation occurs when the involvement of the State in the AMC allows for the sale of NPLs by credit institutions to occur at a higher price than their market price. Although public support is granted to the credit institution, the Blueprint clarifies that this circumstance is not an automatic condition to trigger resolution. Nevertheless, given that public support constitutes State aid, this measure must comply with the rules governing State aid and the provisions laid down in BRRD. The former require, inter alia, the credit institution to submit a restructuring plan and an adequate burden sharing. Among the relevant BRRD provisions, the following should be highlighted: the measure can only be applied to solvent institutions; the amount of public support provided is limited and shall not be used "to offset losses that the institution has incurred or is likely to incur in the near future", wherefore a stress test and/or asset quality review should be performed *ex ante*.

It should be noted that from the EC perspective, the three measures supporting the Spring Package are an important step forward in the completion of the Banking Union and a supplement to the work relating to the Capital Markets Union.

However, the initiatives covered by the Action plan go beyond these initiatives presented by the EC.

With a view to promoting the secondary market for NPLs, by increasing the information available in this market, the EBA prepared and circulated for public consultation, in April 2018, the draft Guidelines on disclosure of information to the market by credit institutions related to NPEs and forborne exposures (public consultation running until 27 July 2018).[151] In parallel, the EBA has developed a number of adjustments to the credit institutions' instruments to report NPE data to the supervisor, which are also due to be circulated for public consultation soon.

150. Directive 2014/59/EU of the European Parliament and of the Council which provides a framework for the recovery and resolution of credit institutions and investment firms (known as the BRRD – Bank Recovery and Resolution Directive).

151. http://www.eba.europa.eu/-/eba-consults-on-guidelines-on-disclosure-of-non-performing-and-forborne-exposures

Alongside these initiatives there are data templates published by the EBA, which can be used by credit institutions to organise the information to be supplied to potential investors in NPLs.[152] According to the EBA, these templates provide a data set for the screening, financial due diligence and valuation during NPL transactions; a positive impact is to be expected, namely on the investor base and quality and availability of information supplied by credit institutions.

The latter is closely related to another initiative, included in the Action plan, according to which the EBA, the ECB and the EC shall propose "initiatives to strengthen the data infrastructure with uniform and standardised data for NPLs and consider the setting-up of NPL transaction platforms in order to stimulate the development of this secondary market". In this regard, the ECB published in November 2017, a Special feature in the *Financial Stability Review*, pointing to the advantages that this type of NPL transaction platform may have for the NPL secondary market, without disregarding, however, some implementation difficulties.[153] A technical note on this subject is due to be published soon by the three institutions mentioned above.

As to the initiatives regarding NPE management and credit origination (the latter of a more preventive nature), the following should be highlighted:

- The development of guidelines by the EBA on how to effectively manage NPEs and forborne exposures.[154] More specifically, the EBA circulated for public consultation until 8 June 2018, draft guidelines that in a way extend to all European Union credit institutions the principles enshrined in the "Guidance to banks on non-performing loans" of the Single Supervisory Mechanism (SSM), published in March 2017 (and analysed in detail in the *Financial Stability Report* of June 2017).
- The EBA is also due to issue, in the second half of the current year, guidelines on banks' loan origination, monitoring and internal governance, that take into account a number of issues, such as transparency and analysis of the borrower affordability assessment;
- The European Systemic Risk Board (ESRB) is due to submit by the end of 2018, macro-prudential approaches to prevent the emergence of system-wide NPL problems; to this end, a working group has been set up.

It should be noted that the EC has published on its website progress reports with information on the implementation status of each initiative of the Action plan.[155]

All these initiatives, along with others adopted by the SSM, are extremely relevant. It is therefore key to guarantee the consistency between them and with the need to safeguard financial stability.

152. https://www.eba.europa.eu/-/eba-publishes-its-standardised-data-templates-as-a-step-to-reduce-npls
153. http://www.ecb.europa.eu/pub/pdf/other/ecb.sfafinancialstabilityreview201711.en.pdf?dc45e3fbcd9702405c91bf3e5f491787
154. http://www.eba.europa.eu/-/the-eba-launches-consultation-on-how-to-manage-non-performing-exposures
155. The most recent report is available at: https://ec.europa.eu/info/publications/180314-non-performing-loans-progress-report_en

II Special issues

Monitoring systemic liquidity risk in the Portuguese banking system – some indicators

Direct and indirect interlinkages in the Portuguese financial system

A safe asset for the euro area: the Sovereign Bond-Backed Securities initiative (SBBS)

Monitoring systemic liquidity risk in the Portuguese banking system – some indicators

1 The systemic dimension of liquidity risk

Systemic liquidity risk stems from the likelihood of multiple institutions facing simultaneous liquidity difficulties (IMF, 2010), with an impact on the regular funding of the real economy.

The systemic dimension of liquidity risk has multiple origins. Institutions tend to collectively underprice liquidity risk in good times (IMF, 2011). During these business cycle phases, market participants are under a liquidity illusion, which creates a sense of abundant liquidity, i.e. they tend to underestimate the likelihood that they will not be able to: (i) make expected payments by raising market funds on short notice (funding liquidity risk), or (ii) sell an asset quickly without materially affecting its price (market liquidity risk). Economic agents tend to engage in excessive risk-taking, which results in an increase in liquidity leverage (and liquidity transformation levels) to improve profitability, with a growing share of illiquid assets being funded by very liquid liabilities, i.e. payable in the short term (Rodríguez, 2016 and Houben, Schmitz and Wedow, 2015). This behaviour tends to be accompanied by the increasing leveraging of financial institutions, which further exacerbates the vulnerability of their balance sheets. The aforementioned incentives to collective risk-taking (moral hazard) tend to be supported by the expectation of central bank intervention to prevent the failure of financial institutions facing liquidity shocks and to mitigate contagion to other financial institutions and the real economy (Farhi and Tirole, 2012).

The systemic dimension of liquidity risk also stems from the fact that there is a link between funding liquidity risk and market liquidity risk, given that the ability of traders/market makers to provide liquidity to the market for a given asset hinges on access to funding. Limited access to market funding can trigger asset fire sales, which, in turn, affects their value and the liquidity position of other agents exposed to those assets, either due to portfolio devaluation or the availability of collateral used to obtain financing. As such, institutions may deal with refinancing difficulties and, simultaneously, asset price decreases, thus running into market and funding liquidity problems (Brunnermeier and Pedersen, 2009).

Interlinkages within the financial system and financial markets, which amplify the consequences of liquidity shortfalls, help push these situations into systemic phenomena (Houben et al., 2015).

Following the financial crisis, the Basel Committee on Banking Supervision (BCBS) announced, in December 2010, the introduction of two indicators associated with liquidity risk: the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR). In the European Union, the LCR became a binding requirement in October 2015, while no date has been set so far for the NSFR. These requirements are important stepping stones to improve banks' resilience to liquidity shocks. However, they were developed from an individual bank's perspective, without taking into account the systemic dimension of liquidity risk stemming from interlinkages between institutions and contagion effects.

Against this background, this Special Issue presents a non-exhaustive set of indicators for the monitoring and assessment of systemic liquidity risk in the Portuguese financial system. The

indicators presented here suggest that the exposure of the Portuguese banking system to systemic liquidity risk is low. This analysis takes into account aggregate values for the system. It may be carried out in greater depth by looking into the distribution of indicators by institution, to the extent that extreme values of the distribution may signal fragilities that may pass through to the system.

Most of the indicators presented here were developed and assessed in the scope of an ECB Task Force, whose work will be detailed in a publication to be released via the ECB's website.

Given the importance of the banking system in financial intermediation in Portugal, this analysis focuses on banks. Furthermore, it looks into domestic activity, excluding the indicators presented in sub-sections 2.2 and 2.3 which reflect the consolidated activity of the Portuguese banking system. This stems from the need to give priority to statistical information, which, compared to supervisory information, typically provides longer and more harmonised historical series at European level.

The new indicators presented here mostly capture vulnerabilities stemming from the banking system's balance sheet, particularly as regards the stability of sources of financing and the size of liquidity buffers given the liquidity needs, as well as vulnerabilities associated with interlinkages within the banking system.

2 Indicators for the assessment of systemic liquidity risk

2.1 Liquidity leverage

This indicator links short-term contractual obligations (with a maturity below one year) to liquid assets in the banking system's balance sheet. The purpose of this indicator is to capture the build-up of risk emanating from liquidity transformation levels, i.e. from a growing share of illiquid assets being funded by very liquid/short-term liabilities. As noted above, by impacting on the assessment of asset market liquidity as well as the risk of non-renewal of liabilities, liquidity illusion (which is typical of expansion stages) results in the underestimation of liquidity risk and an increase in this ratio.

Given that contractual, non-residual maturities are taken into account, this ratio mirrors a strategic choice on the liquidity risk profile reflected in the degree of liquidity transformation in the balance sheet, rather than the coverage of short-term liabilities by liquid assets.

According to this indicator, short-term liabilities correspond to all deposits (excluding deposits by domestic households and central bank deposits), short-term securities and loans and other accounts receivable/payable. Liquid assets are currency and deposits with central banks and other banks, all debt securities (excluding bank debt securities) and listed shares. The removal of debt securities issued by other banks from total liquid assets is intended to exclude the endogenous share of liquidity in the balance sheet, i.e. which has been created within the banking system.

The path followed by liquidity leverage in the Portuguese banking sector since the beginning of the 21st century reflects the build-up of risk in the period prior to the financial crisis, resulting from more marked growth in short-term financing obtained in international financial markets, compared with that in liquid assets (Chart 1). These developments took place against a background of abundant liquidity and lower funding costs due to the participation in the euro area. This ratio reached a peak in the last quarter of 2006. The reduction seen up to 2012 reflected the adjustment

made by the Portuguese banking system in the midst of the financial and sovereign debt crises, namely the very marked reduction in total assets accompanied by the substantial change in the financing structure, whereby market financing sources (debt issued in international markets and interbank financing, chiefly by non-residents) were replaced with a financing structure mostly based on household deposits. The weight of liquid assets in the balance sheet has also increased, particularly with respect to domestic sovereign debt securities, associated with the stabilising role played by the domestic banking system in the funding provided to the Portuguese Republic over this period.

A very substantial share of securities held by domestic banks in their portfolios corresponds to own debt issued and retained in their balance sheet, a large share of which associated with the issue of covered bonds to mobilise in the collateral pool for credit operations with the Eurosystem. As such, the endogenous liquidity that distinguishes the ratios presented in Chart 1 does, in fact, reflect the changes gradually introduced in the Eurosystem's collateral policy.

The changes made to the balance sheet structure contributed to a more stable funding base and a more comfortable liquidity position, less exposed to changes in the perception of risk in international funding markets. These developments were widely boosted by the European regulations implemented in the wake of the financial crisis. According to this indicator, current exposure to systemic liquidity risk is considerably lower than in 2007, and has remained stable since 2012, with a reduction similar to that in short-term liabilities and liquid assets. Also, there is no indication that the risk-taking behaviour of Portuguese banks has been reversed.

2.2 Liquidity gaps

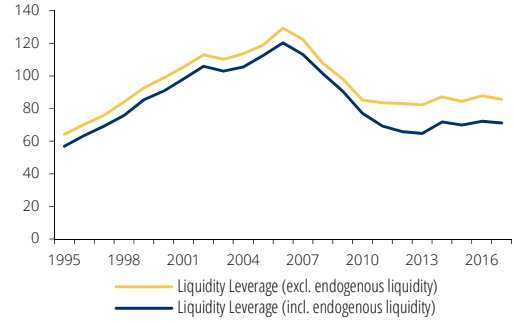
This indicator measures the coverage level by (available) liquid assets for market financing required for different time horizons up to one year,[1] standardised by illiquid assets. Behind this indicator was the effort to guarantee the financial intermediation function, namely, by disregarding the non-rollover of credit as a source of liquidity and, as regards the securities portfolio, only taking into account the liquidity that may be obtained from the use of securities as collateral in financing operations with central banks.

Unlike all other indicators discussed in this Special Issue, this indicator was not developed as part of the ECB Task Force, as at the time it had been regularly monitored by Banco de Portugal. The availability of a longer historical series illustrates the behaviour of this type of ratios in the periods prior and after the financial and sovereign debt crises. However, a non-harmonised information source at European level is used in its calculation, and will be discontinued as soon as new liquidity requirements under EU regulations enter into force.

The deterioration in liquidity gaps up to 2008-09 (Chart 2) mirrors the growing importance of market financing sources, which rendered the system very exposed to negative shocks in international financial markets. Risks associated with this vulnerability materialised with the closing of these markets in the context of the sovereign debt crisis. The positive contribution from the adjustment in the banking system as of 2010-11, due to the reduction in maturity gaps and the greater availability of liquid assets, led to a recovery in this ratio, which implies a comfortable and resilient liquidity position of the Portuguese banking system over the past few years.

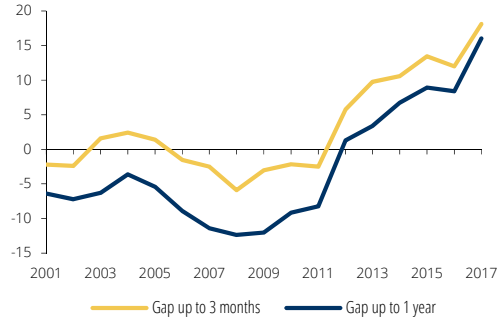
1. Includes liabilities to central banks, loans, liabilities represented by debt securities, liabilities to third parties, other net liabilities and derivatives. Under liquid assets, it includes cash (excluding minimum reserves), cash and claims on central banks, claims and investment in other credit institutions, and portfolio assets eligible as collateral in credit operations with central banks.

Chart 1 • Liquidity leverage | Per cent



Source: Banco de Portugal. | Note: In the indicator excluding endogenous liquidity, debt securities issued by other banks are excluded from total liquid assets.

Chart 2 • Liquidity gaps | Per cent



Source: Banco de Portugal. | Notes: Up to 2008, the calculation is based on Instruction of Banco de Portugal No. 1/2000. From that date onwards, the calculation looks into domestic financial institutions according to Instruction of Banco de Portugal No. 13/2009, which governs deposit-taking financial institutions.

2.3 Liquidity coverage ratio, broad liquidity coverage ratio and asset encumbrance ratio

This series of indicators is based on data that started to be compiled on a harmonised, systematic and periodical basis after the financial crisis. Hence, it has a very short historical dimension. These indicators help to characterise the system's exposure to liquidity risk based on their theoretical link to this risk, though it is impossible to verify their link to crisis episodes.

The liquidity coverage ratio (LCR) is one of the microprudential regulatory requirements included in the internationally agreed regulatory package on liquidity risk as a response to financial crisis, together with the net stable funding ratio (NSFR). It measures the resilience of the short-term liquidity position of institutions. More specifically, the LCR corresponds to the ratio of available liquid assets and net cash outflows calculated under a 30-day stress scenario.[2] The broad LCR takes into account the same denominator (net outflows calculated in accordance with the regulations), but includes a wider range of liquid assets, namely 'cash equivalent', which may be obtained by using eligible collateral, available to obtain funding from the Eurosystem.

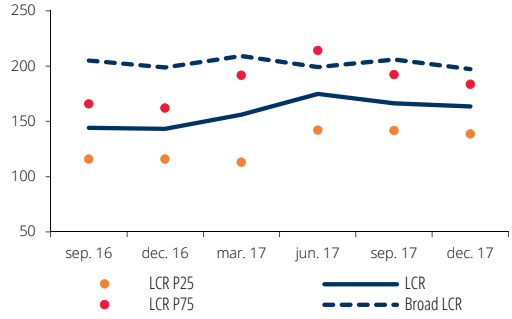
Although these indicators do not take into account the systemic dimension of liquidity risk stemming from interlinkages between institutions and contagion effects, high levels in these ratios signal resilient balance sheets and liquidity positions, thus lessening the likelihood of systemic liquidity shortages (Chart 3).

The asset encumbrance ratio measures the share of total assets (and collateral received) that is used as collateral to obtain liquidity, and helps assess the existing slack. This ratio has remained stable over the past few years, standing at around 20% in 2017 (Chart 4). Of all available assets, i.e. unencumbered, one-fifth is eligible for use in credit operations with the Eurosystem. As regards sources of asset encumbrance, the importance of central bank funding has remained around 45%, despite the decline in the significance of Eurosystem funding to the financing structure of Portuguese banks. In any event, recourse to central bank funding,[3] although historically high,

2. As established and calibrated in Regulation (UE) No. 575/2013 of the European Parliament and of the Council of 26 June 2013 (CRR).
3. Under normal circumstances, and not in a context of adjustment as currently experienced by the banking system, growing or high levels of central bank funding will tend to signal market access difficulties, i.e. the materialisation of liquidity risk.

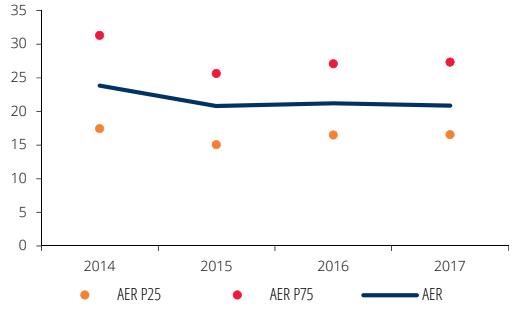
must be seen against a background of an extremely accommodative monetary policy and the incentives offered by targeted longer-term refinancing operations (TLTROs), overall, to non-financial private sector funding, as well as the pressure to generate profits.

Chart 3 • Liquidity coverage ratio (LCR) and broad liquidity coverage ratio | Per cent



Source: Banco de Portugal. | Notes: Includes the seven largest banks operating in Portugal: BPI, BST, BCP, CGD, CEMG, SICAM and NB. P25 (P75) corresponds to the 25 (75) percentile value of the indicator's distribution to the 7 banks.

Chart 4 • Asset encumbrance ratio (AER) | Per cent



Source: Banco de Portugal. | Notes: Includes the seven largest banks operating in Portugal: BPI, BST, BCP, CGD, CEMG, SICAM and NB. P25 (P75) corresponds to the 25 (75) percentile value of the indicator's distribution to the 7 banks.

2.4 Indicators on banking system interlinkages

The two following indicators seek to capture interlinkages in the financial system and the financial markets, which combine to amplify the consequences of liquidity shortages, thus contributing to turning these situations into systemic phenomena.

2.4.1 Self-funding indicator

The self-funding indicator gauges the importance of interbank financing, in the form of debt securities, in the domestic banking system. A high value for this indicator shows that a high share of debt issued by domestic banks is also held by domestic banks, which points to direct contagion risks, to the extent that difficulties in obtaining new funding during liquidity shortages in the banking system will be amplified.

In any event, in the context of a small, temporary shock, the fact that a substantial share of debt issued by domestic banks is held within the system, as opposed to being part of the portfolios of international banks, may have a stabilising role, given that it encourages banks to maintain their positions to prevent negative feedback effects. However, the likelihood of incentives in the domestic banking system being aligned on this matter will depend on the heterogeneity of negative feedback effects on banks.

To correctly assess the vulnerabilities signalled by this indicator, its calculation excludes the issuance of own debt held in the balance sheet. As already mentioned, the importance of these issues started to grow in 2010, following the closing of international financial markets to domestic banks and changes to the collateral policy introduced by the Eurosystem, with a very substantial share of these issues targeting instead the strengthening of the pool of assets eligible as collateral in monetary policy operations. The indicator adjusted for these issues shows that in the most taxing years of the crisis, the domestic banking system increased its interlinkages via the purchase of debt securities. In 2017 the levels in this indicator were historically low (Chart 5). In addition to very contained self-funding levels, debt issued by the domestic banking system had a

small weight in its financing structure, after the downward path followed since the financial and sovereign crisis, and accounted for only approximately 6% of total liabilities in 2017.

2.4.2 Indicator on the concentration of the investor base in portfolio holdings

To assess the banking system's exposure to systemic liquidity risk, it is necessary to consider not only the size of the banks' liquidity buffer but also to gauge their actual liquidity. In fact, the expected liquidity of assets that comprise the buffer may differ from that which actually materialises in case of need, and marked value losses may occur when securities are converted into cash should market liquidity deteriorate (Rodríguez, 2016).

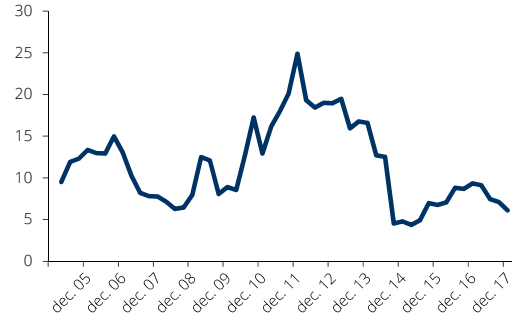
Specifically, this indicator consists in the sum of the percentage of the total outstanding amount held by the banking system, weighted by the share of these positions in the total debt securities portfolio of the banking system, i.e.:

$$\sum_{i=1}^{N} \frac{Position_{i,t}}{Portfolio_t} \times \frac{Position_{i,t}}{Total\ outstanding\ amount_{i,t}}$$

where t = quarter;
i = issuer;
N= total number of issuers in the banking system's portfolio, in t;
Position i,t = value of securities issued by issuer i and held by the banking system, in t;
Total outstanding amount i,t = total outstanding amount of the securities issued by issuer i held in the banking system's portfolio, in t;
Portfolio t = total debt securities portfolio held by the banking system, in t.

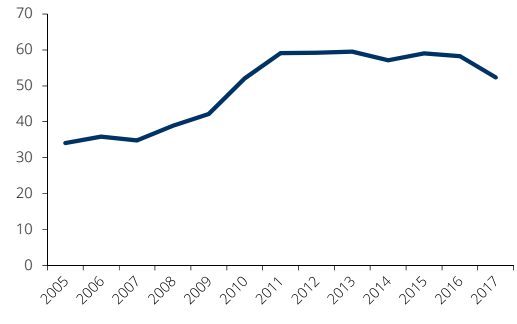
This indicator summarises features of the debt securities portfolio held by the domestic banking system that may affect its actual liquidity. In particular, this indicator captures indirect contagion channels between domestic banks stemming from: (i) the concentration of the securities portfolio held by the banking system in specific securities, rendering the system vulnerable to changes in the value of these securities, and/or (ii) the importance of securities held by the banking system to the total outstanding amount of these securities, which results in a strong link between the system's behaviour and market liquidity of such securities.

Chart 5 • Self-funding indicator | Per cent



Source: Banco de Portugal.

Chart 6 • Indicator on the concentration of the investor base in portfolio holdings | Per cent



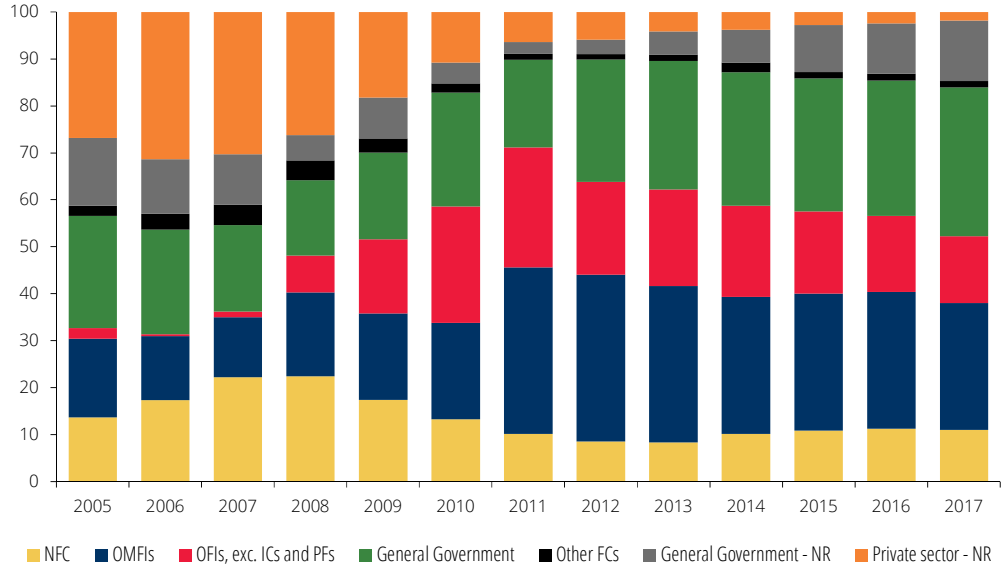
Source: Banco de Portugal.

Underlying developments in the ratio is a shift in the banking system's debt securities portfolio, largely implemented up to 2011 (Charts 6 and 7): a marked reduction in amounts invested in securities issued by non-residents (mostly the private financial sector) and resident non-financial corporations, offset by

an increase in investment in securities issued by residents, more specifically by general government, banks and other financial intermediaries, excluding pension funds and insurance companies.

The greater weight of securities issued by these counterparty sectors in the total portfolio of the domestic banking system explains the greater concentration of the investor base up to December 2011 and its maintenance since then. The size of the banking system holdings of securities issued by these sectors is, on average, larger and the domestic banking system is an important investor in these securities, even more so in the period under review.[4] Particularly notable is the relevance of own or intragroup securities, associated with the issuance of securitisations and, above all, covered bonds to be included in the collateral pool used in the Eurosystem's financing operations.

Chart 7 • Composition of the securities portfolio of the domestic banking system | Per cent



Source: Banco de Portugal. | Notes: NFC = non-financial corporations; OMFIs = other monetary financial institutions (banks and money market funds); OFIs, excl. ICs and PFs = other financial intermediaries excluding insurance companies and pension funds; other FCs = other financial corporations (financial auxiliaries, captive financial institutions and money lenders, and insurance companies); general government – NR = non-resident general government; and Private sector – NR = non-resident private sector (non-resident non-financial corporations and financial corporations).

The level of this ratio is explained by holdings of domestic sovereign debt and own/intragroup debt securities, more specifically securitisations and covered bonds. As such, the likelihood that systemic liquidity risk will materialise, associated with the loss of liquidity in these securities, is low given that this liquidity is guaranteed provided that its eligibility as collateral used in the Eurosystem's financing operations is maintained.

In any event, the concentration of domestic debt securities in the banking system's portfolio may have a dampening effect on adverse but small and short-term shocks, to the extent that domestic banks are encouraged to maintain securities in their portfolios during stress episodes, thereby providing liquidity to the market, in order to prevent feedback effects on their balance sheet.

4. The slight reduction in this indicator over the past year should be associated with an increase in the importance of holding securities issued by non-resident general governments. For these issuers, the weight of the Portuguese banking system in total outstanding amount is negligible.

3 Conclusion

Monitoring systemic liquidity risk is complex given the wide range of data that must be taken into account as well as the structural changes in regulations governing liquidity risk implemented over the past few years. To the extent that systemic risk has a strong time dependence, it would be vital to assess developments in these indicators over a sufficiently long period. This is not possible due to the unavailability of data for a large share of the indicators and, most importantly, given that a time analysis cannot be carried out correctly, as liquidity risk regulations were introduced only in the last few years.

This Special Issue contributes to the discussion on systemic liquidity risk in the Portuguese financial system, with a non-exhaustive set of indicators used to monitor and assess it. The indicators presented here suggest that the Portuguese banking system's exposure to systemic liquidity risk is low. However, an in-depth analysis would look into the distribution of such indicators. Indeed, the identification of extreme values of the distribution may signal fragilities, likely to pass through to the system due to the interlinkages between institutions.

Furthermore, as explained above, the origins of systemic liquidity risk lie within and outside the balance sheet of financial institutions. Therefore, other dimensions of analysis would be helpful for this discussion. On the one hand, it is important to monitor liquidity conditions in financing markets and in markets dealing in portfolio holdings that may be turned into liquidity through sale and use as collateral. However, it may be particularly difficult to assess market liquidity conditions in the current environment, due to the unforeseeable impact of non-standard monetary policy measures and their expected changes, of regulations on the market-making activity and the emergence of new trading techniques and platforms.[5] In particular, even if traditional indicators used to gauge market liquidity can point to relatively benign conditions, the factors mentioned here may be influencing, in a structural fashion, fixed income markets, with an impact on the likelihood of more frequent episodes of sudden illiquidity. On the other hand, it is also key to monitor vulnerabilities associated with interlinkages with other entities in the financial sector, as well as the channels of cross-border contagion.

4 References

Brunnermeier, M. and L. Pedersen (2009). "Market liquidity and funding liquidity", *Review of Financial Studies*, 22(6), 2201-2238.

Farhi, E., and J. Tirole (2012). "Collective Moral Hazard, Maturity Mismatch, and Systemic Bailouts", *American Economic Review*, 102(1), 60-93.

International Monetary Fund (2010). *Global Financial Stability Report*, October, Chapter 2 – "Systemic Liquidity Risk: Improving the Resilience of Financial Institutions and Markets".

International Monetary Fund (2011). *Global Financial Stability Report*, April, Chapter 2 – "How to Address the Systemic Part of Liquidity Risk".

Houben, A., S. W. Schmitz and M. Wedow (2015). "Systemic liquidity and macroprudential supervision", Oesterreichische Nationalbank, *Financial Stability Report*, No. 30, 85-92.

Rodríguez, M. L. (2016). "Riesgo de Liquidez Sistémica. Indicadores para el sistema bancário español", *Revista de Estabilidad Financiera*, No. 31, December.

5. More specifically, automatic trading techniques using sophisticated technological solutions and mathematical models to determine future market positions.

Direct and indirect interlinkages in the Portuguese financial system

1 Introduction

Interlinkages within the financial sector can play a significant role in the pass through of shocks between entities and sub-sectors, thereby producing contagion effects among them. Such interlinkages may emerge in the wake of regular financial intermediation activities, such as raising funds (in the form of securities, deposits or other) and the subsequent allocation of such resources to economic agents in need. However, the emergence or reinforcement of these interlinkages may also be due to fiscal or regulatory arbitrage reasons, *inter alia*.

Interlinkages can be classified as direct or indirect. Direct interlinkages emerge when institutions are direct counterparties, or when ownership relationships are established, as reflected in on-balance sheet (loans, deposits, debt and equity instruments, derivatives, etc.) or off-balance-sheet exposures (collateral, credit lines, etc.). Indirect interlinkages are exposures to common risks, for instance to specific sectors (e.g. general government), markets or financial instruments. These interlinkages may also be associated with the need to take on responsibility, with a view to safeguarding the financial group's reputational value, even where there is no contractual obligation. Indeed, economic agents' confidence in financial institutions is the cornerstone of financial stability, given that they are in charge of the custody and management/intermediation of the financial wealth of the remaining agents.

The concept of contagion is associated with the channels conveying risks and shocks via the aforementioned interlinkages. Also, indirect contagion channels may interact with direct contagion channels, thereby originating potentially more severe systemic risks.

Despite the potential associated risks, interlinkages have positive effects on the financial system. Indeed, interlinkages between financial institutions may contribute to a better performance of the financial sector, to the extent that they can: (i) contribute to the efficiency of financial intermediation activities, (ii) facilitate the channelling of funds from savers to productive investment, thus enhancing economic growth, and (iii) further the diversification of financial intermediation activities, and thus distribute associated risks among entities or sub-sectors.

However, the financial crisis showed that interlinkages between financial institutions enhance risk dissemination, as well as the emergence of new risks, across a rather wide group of markets and activities. Therefore, it is important to develop methodologies, such as the study of networks, which enable the identification and mitigation of the systemic risks that may arise from interlinkages in the financial system in a timely manner. At European level, some studies underline the importance of interlinkages to financial stability, and highlight the risks stemming from high/common exposures, as well as their relevance to the financial system's funding structure.[1] Given the globalisation of the financial system, analyses must be carried out in an international

1. See, for instance, the following reports: ESRB (2015), Report on systemic risks in the EU insurance sector, December 2015; ESRB (2016), *Assessing shadow banking – non-bank financial intermediation in Europe*, July 2016; ESRB (2017), *EU shadow banking monitor*, May 2017; ECB (2016), *Report on financial structures*, October 2016.

cooperation environment and extended across the different segments of the financial industry, taking into account the various regulatory frameworks, in terms of jurisdictions and financial sub-sectors. In practice, however, data constraints and the implementation of the analysis warrant simplification solutions.

EU regulations, some of which already developed in the wake of the financial crisis, are important to the mitigation of risks associated with interlinkages, even where their primordial objective is not the same. Emphasis has been placed on the need to revise the current regulatory framework and its scope (in order to reduce the number of entities and activities yet to be covered) as well as regulatory arbitrage opportunities. This should be a main concern when designing macroprudential regimes and the related instruments for the promotion of financial stability. In this respect, while the banking sector already has in place a relatively developed macroprudential regulatory framework, this is not the case for other financial sub-sectors, where macroprudential policy is still at an early stage.

This Special Issue is organised as follows: Section 2 looks into developments in interlinkages in the domestic financial sector, from an historical perspective and aggregated by sub-sector. Given the importance of these interlinkages and the degree of concentration of the domestic financial sector, Section 3 reviews in greater detail intra-group exposures (a different type of interlinkages). Section 4 looks into exposure to common risks (public debt) and presents a simulation exercise that gauges the impact of the materialisation of a scenario of rising yields on the value of financial assets across Portuguese economic sectors. Section 5 sets out the main findings.

2 Interlinkages in the domestic financial system

Banks play an essential role in the Portuguese financial system, given their financial intermediation activities and the existence of shareholding links across most of the financial sector. These links, where significant, allow banks to exercise substantial influence on the business models, commercial strategies and investment decisions of insurance companies, pension funds, investment funds and other financial intermediaries.

The banking sector's influence on strategic decisions made by other financial agents during the most severe stage of the sovereign debt crisis was multifold, with liquidity management being one of its most remarkable aspects. The adjustment in the banking system's balance sheet led to a channelling of customer resources (other than deposits) to bank deposits. This was counterbalanced by a reduction in life insurance products and the subscription of investment fund units,[2] against a background of loss of access to funding from international financial markets by banks and tight ECB funding restraints, particularly up to 2011, when the ECB implemented longer-term refinancing operations (LTROs).

Banks can implement the business strategy for the entire financial group by distributing the various financial products across their branch network, thereby contributing to lower risk differentiation among financial intermediaries that are part of the same group and increasing reputational risk. The banking sector's influence was also felt in the generation and distribution of profits. In a difficult operating environment, and given the increasingly tighter prudential requirements, the negative earnings posted by banks may have influenced a number of decisions that led to the

2. This channelling was facilitated by the greater volatility levels in financial markets and the increase in deposit interest rates in the wake of increased competition among banks.

recognition of non-recurrent income and dividend distribution in other sub-sectors. Indeed, according to the information released by the Portuguese Insurance and Pension Funds Supervisory Authority (Autoridade de Supervisão de Seguros e Fundos de Pensões – ASF), in 2014 alone, insurance companies distributed dividends to the amount of €846 million, which was mostly determined by insurance companies owned by credit institutions.

These examples suggest that intra-group links add greater flexibility to the group dynamics, and may be key to overcome specific difficulties in a given sub-sector. This was the case during the most acute phase of the financial crisis in the sense that such links lessened the impact of the exit of international investors, the lack of funding sources for the Portuguese economy and the banking sector's capital requirements. This was reflected in an increase in exposure among domestic financial stakeholders, as described in the November 2013 issue of the *Financial Stability Report*.

Despite the aforementioned positive aspects and the changes that took place in the resident financial sector over the most recent period (such as the sale of majority equity holdings of the banking sector in some of the major insurance companies), we should not overlook the potential risk to financial stability associated with the existence of (sectoral or intra-group) interlinkages.

2.1 Developments since the economic and financial crisis

This section looks into aggregate data for each sub-sector, on an individual basis, reflecting domestic activities (excluding activities carried out by group entities in another country) and taking into account almost all financial assets (debt securities, equity holdings, credit and deposits).

The banking sector corresponds to the largest component of the financial sector (in total assets).[3] Its exposure to the financial sector (including banks themselves), as a percentage of financial assets, went up from 14% in 2007 to 22% in 2017, peaking in 2012-13 (approximately 30%). This was largely due to the exposure to resident banks, most notably via an increase in debt securities, which was only partly offset by a reduction in interbank loans. The increase in investment in debt securities seems to have resulted from a rise in the issuance of mortgage debt, which, as discussed below, is largely held in banks' portfolios. The need for collateral to obtain Eurosystem funding not only contributed to the increase in securities held over the most severe phase of the financial crisis, but also to its decrease later on, given that as of 2011 the European Central Bank (ECB) started accepting lower-quality assets as collateral.

The banking sector also accounts for the largest component of other sub-sectors' exposure (insurance companies, pension funds and investment funds) when analysed as a percentage of financial assets, thus evidencing the importance of these sub-sectors to the banking system's funding. However, this concentration has declined markedly in the most recent periods, for different reasons, including the following:

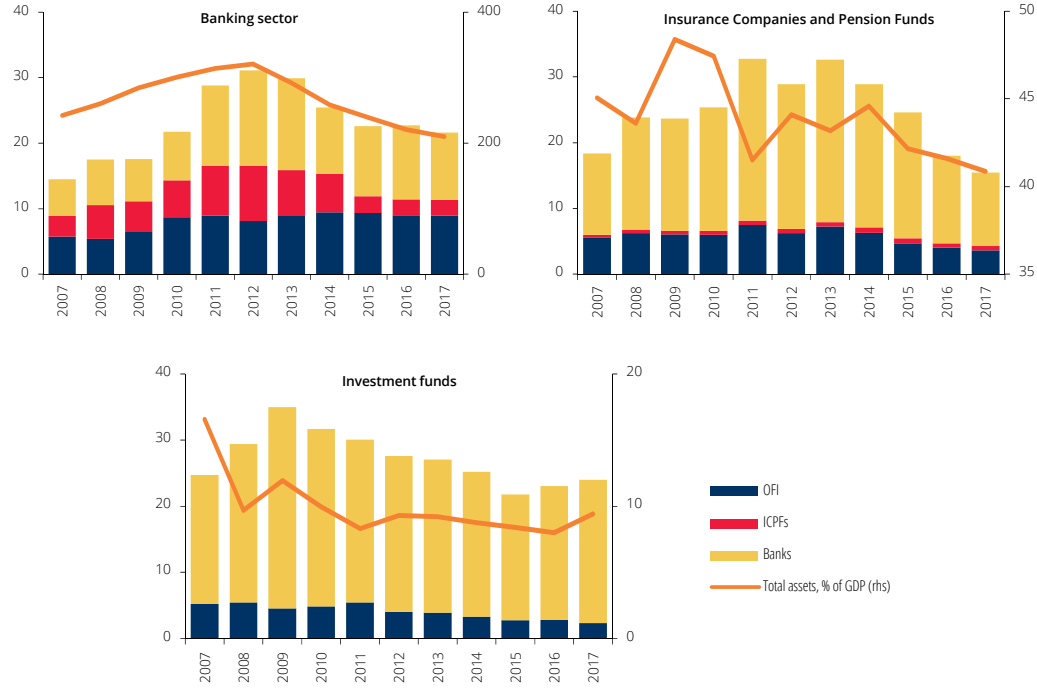
- changes to the ECB monetary policy, which facilitated access to an alternative source of funding, at a lower cost and with lower restrictions in eligibility criteria,

3. The financial sector comprises banks (OMFIs), insurance companies and pension funds (ICPFs), investment funds (IFs) and other intermediaries and financial auxiliaries (OFIs).

- sale of the banking sector's equity holdings in some of the major Portuguese insurance companies, reducing banks' influence on the latter's management,
- the introduction of regulatory changes, which provided incentives for greater diversification, in order to mitigate concentration and liquidity risks. These changes impacted more markedly on investment funds and insurance companies, as described below.

On the basis of data from 2007 onwards, this analysis shows the increase in exposure among agents in the Portuguese financial system across major sub-sectors (Chart 1). Although exhibiting mixed behaviour, the increase in intra-sectoral exposure was notable during the most acute phase of the economic and financial crisis, as well as its subsequent reduction in the most recent periods.

Chart 1 • Intra-sectoral exposure of the financial sector (as a percentage of total financial assets)



Source: Banco de Portugal | Notes: ICPFs – insurance companies and pension funds; OFIs – other financial intermediaries (includes investment funds, captive financial institutions and money lenders). For simplicity reasons, the OFI sub-sector also includes financial auxiliaries.

3 Analysis of intra-group exposures

Given the banking sector's influence on the other sub-sectors of the financial system and the risks and vulnerabilities stemming from it, intra-group links must be analysed in greater detail. To this end, interlinkages among financial sub-sectors are analysed, particularly among entities within the same financial group. This section focuses on the most relevant instruments and sub-sectors in this context.

3.1 Characterisation of the sample

The information available from Banco de Portugal's internal databases[4] was analysed in order to describe the securities portfolios held by the Portuguese financial sector as at December 2017.

With regard to intra-group exposures, securities issued and held by the resident financial sector were taken into account. More specifically, the sample looks into bonds, investment fund and securitisation fund units issued by the seven largest resident financial groups[5] (with all other institutions being classified under 'Other') and held by banks, insurance companies, pension funds and investment funds.

When classifying financial groups, the criteria taken into consideration was the holding of a majority of share capital, together with significant influence, in the case of entities with slightly less than 50% of their share capital held by the group. For pension and investment funds, the analysis looks into the shareholder structure of their management companies, in accordance with the above criteria. As regards bonds and securitisation fund units issued by securitisation funds and corporations, the issuer was classified under the bank that provided the collateral for such instruments (instead of on the basis of the issuing securitisation funds and corporations).

Furthermore, to complement the information available on the statistical database, the International Securities Identification Numbering (ISIN) was cross-checked with commercial databases.

The analysis of the findings should take into consideration some limitations. As described above, only part of the assets of the sectors under review was considered (bonds, investment and securitisation fund units issued and held by the resident financial sector). As such, a number of relevant instruments were excluded, e.g. deposits and credits, as well as issuers from the non-resident financial sector.

3.2 Main findings

The analysis of December 2017 data shows that, for a large share of financial groups, intra-group exposure is of approximately 90%, although there is some heterogeneity among financial groups (Chart 2). The calculation of the volume-weighted average results in a 90% concentration to securities issued by the own financial group, while the simple average stands at 79%.

It should be noted that the overall value of securities issued by securitisation funds and corporations corresponds to around 27% of total assets in the sample, which illustrates the influence of these securities on the findings. If these instruments had not been classified by financial group according to their associated collateral (credit), the intra-group exposure would decrease to around 65% (volume-weighted average) and the dispersion of the sample would increase.

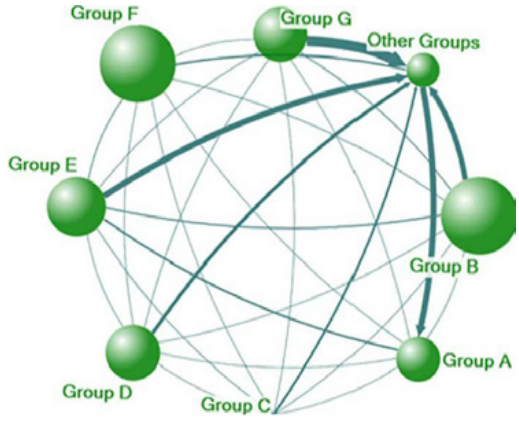
4. Banco de Portugal has a statistical database featuring data compiled on a security-by-security and investor-by-investor basis. This database includes information on issues by entities resident in Portugal, domestic and external securities portfolios held by residents, and domestic securities portfolios held by non-residents. For more details, see *Supplement to the Statistical Bulletin* No. 2/2008, June 2008.

5. Includes securities issued by the following sub-sectors: banks, insurance companies, investment funds, money market funds, and other financial intermediaries. Shares issued and held by the financial sector account for only 8% of the total portfolio under review (December 2017). The seven groups taken into account are: BCP, CGD, NB, MG, BST, BPI and SICAM.

Despite the banking sector's divestment in equity instruments issued by other sub-sectors, intra-group investment across sub-sectors continues to play a major role, which may be partly due to the low demand for securities issued by the resident financial sector. Indeed, approximately 64% of the total amount of debt securities issued by banks in the seven major financial groups are held by entities of the same financial group (particularly banks). Furthermore, in many cases, the group purchases the total amount issued (around 31% of the total number of outstanding issues by the seven major financial groups was fully purchased by the respective financial group).[6] Although there are rules governing assets' valuation, the lack of market transactions increases uncertainty about the price at which assets could be traded.

Mortgage bonds, which include bonds that may be accepted as collateral in monetary policy operations, account for a substantial share of banks' assets, and represent approximately half of their holdings of debt securities and equities issued by the resident financial sector. Given that there is no evidence of an active market, it seems that such bonds are linked to Eurosystem funding.

Chart 2 • Financial intra-sectoral links | Static network, December 2017



Source: Banco de Portugal. | Notes: Issues by securitisation funds and corporations, classified according to the associated collateral. The sphere size reflects intra-group exposure. The direction of the arrows indicates the holding of bonds, investment and securitisation fund units of a financial group by another group, while their width reflects the amount of securities held by the origin group and issued by the destination sector. In the case of 'Other groups', the sphere size does not correspond to intra-group exposure. Instead, it corresponds to exposure among banks included under this classification.

Unsecured bonds are the most significant asset class in the portfolios of insurance companies held by the seven major financial groups (accounting for roughly 40% of their portfolio of bonds and equity issued by the resident financial sector). Nevertheless, this segment saw a substantial reduction in intra-group investments over the past few years, associated with the sale of banks' equity holdings in some of the major Portuguese insurance companies and the entry into force of the Solvency II regime (January 2016), which introduced capital requirements for credit/concentration risks. In turn, exposure to government bonds has increased (although partly due to valuation effects), which may be associated with the prudential treatment stemming from the Solvency II regime, which is relatively more favourable to sovereign debt securities.

6. Taking into account the volume-weighted average, this figure climbs to 58%.

Pension and investment funds are the least relevant sub-sectors in terms of intra-group investment. This may have been influenced by the introduction of new legislation on concentration limits to investment fund portfolios in 2013.[7] However, even in such cases, intra-group investment accounts for more than half of the total sample (Table 1).

Table 1 • Intra-group investment of the seven major financial groups | As a percentage of the total value of portfolios, by sub-sector, December 2017

	Simple average	Volume-weighted average	Memo: Sector's weight in total sample
Banks	80	91	91
Insurance companies	54	76	5
Investment funds	62	70	1
Pension funds	65	77	3
Total	**79**	**90**	

Source: Banco de Portugal.

Despite the marked concentration of intra-group investment across segments, investment and pension funds account only for 1% and 3%, respectively, of the considered sample. This was to be expected, given that these sub-sectors have a smaller weight in total financial assets of the financial sector (4% at the end of 2017), while the banking sector corresponds to around 49%.

This analysis is based on information from the portfolio of bonds, investment and securitisation fund units, which amount to approximately 29% and 78% of total financial assets of banks and insurance companies, respectively. Furthermore, taking into account the topic under review, securities held and issued by the resident financial sector never take on a weight of over 20% in the aggregate value of assets held by the seven major financial groups in each sub-sector.

Considering the weight of the credit granted in the banking sector's total assets (around 63%), the analysis looked into credit granted to financial entities within the same group, which accounts, on average, for 60% of total credit granted to the resident financial sector (82%, considering only resident banks). However, total credit granted to the resident financial sector is low, representing only 9% of total assets.

It should also be noted that the relevance of the sample in the total assets of each sub-sector is widely dispersed, being more significant in the case of the banking sector. Furthermore, a significant share of intra-group investment by investment and pension funds corresponds to the acquisition of units from funds managed by the same group. As such, although the concentration of intra-group investment may signal that the group exerts some influence on management companies' investment decisions, this is not relevant in proportion of total assets.

7. Directives No. 2011/61/EU and No. 2013/14/EU, which revised the legal framework governing undertakings for collective investment.

4 Indirect interlinkages (sovereign debt) and contagion[8]

In support of the analysis presented in the previous section, exposure to common risks is another factor contributing to systemic risk, most notably exposure to government bonds. To this extent, and based on a number of simplifying assumptions, this section illustrates the potential impact of an increase in government bond yields (shock) on the various institutional sectors of the Portuguese economy. The impact of this shock is calculated on the basis of the immediate reduction in the market value of securities (devaluation) and, moreover, the possible repercussions of the materialisation of this risk in terms of the pass-through of losses, stemming from the existence of cross-sector equity investments (contagion).

Microdata provides us with the parameters to determine the impact on the price of government bonds from the aforementioned increase in yields (modified duration). On the basis of such parameters, aggregate data from the financial accounts with sectoral information is used, and enable the measurement of the losses underlying the shock, as well as their contagion via equity holdings across institutional sectors.

4.1 Sample description

As mentioned above, the base data used in this section stem from various sources. Aggregate data from financial accounts serve a dual purpose: (i) to quantify the various economic sectors' exposure to debt securities issued by the general government, and (ii) to characterise the network of equity holdings linking institutional sectors in the Portuguese economy. Financial accounts[9] correspond to a structured and coherent set of statistical information, which records financial transactions and positions among economic institutional sectors (including the rest of the world), in the form of various types of financial instruments. In this context, economies comprise ten major, separate sectors: households (HH), non-financial corporations (NFCs), other monetary financial institutions (OMFIs),[10] insurance companies (ICs), pension funds (PFs), other financial intermediaries and financial auxiliaries (OFIs), investment funds (IFs), general government (GG), central bank (CB) and rest of the world (RoW).

Using microdata, we obtain the amounts invested by each institutional sector in each government bond (by ISIN). Based on these ISINs, commercial databases provide the modified duration, on a security-by-security basis (in this case, Thomson Reuters Eikon). Using this data, the average duration was calculated, weighted by the amounts invested by each institutional sector.

To the extent that vulnerabilities are not self standing, and with a view to understanding how an increase in government bond yields would pass through to the Portuguese economic institutional sectors, the immediate impact of the devaluation in such bonds is gauged, and a dynamic network analysis is carried out, focusing on two points in time (December 2012 and December 2017).[11]

8. The analysis on contagion in this section follows a similar approach to Chapter 13 of the publication *STAMP€*: "Stress-Test Analytics for Macroprudential Purposes in the euro area". However, instead of assuming an exogenous reduction in capital, the adverse shock is calculated on the basis of vulnerabilities in the Portuguese economy due to high exposure to sovereign debt.
9. Typically, financial accounts contain a two-dimensional representation focusing on the institutional sector and the financial instrument, which means that each institutional sector is analysed from the perspective of total financial assets held and liabilities issued, while counterparties are not identified. However, given the high granularity of several sources of information, it is possible to go one step further and identify counterparties, thereby enriching the analysis and providing 'from whom-to-whom' information. These statistics provide relevant data for the various economic agents, which are grouped in accordance with the methodological framework of the European System of Accounts 2010 (ESA 2010).
10. This sector chiefly comprises banks, although it also includes money market funds. For simplification purposes, the text refers only to banks.
11. Due to data limitations, this analysis could not extend backwards in time beyond 2012.

4.2 Analysis of exposure to Portuguese sovereign debt and impact of an increase in yields

Against a background of highly indebted general government, exposure to sovereign risk is a significant vulnerability for the Portuguese financial system, and may affect its funding and solvency conditions. Indeed, the resident financial system's exposure to debt securities issued by the Portuguese Republic is very substantial, particularly in the insurance, pension funds and banking sectors (Chart 3), although partially reflecting the increase in the value of these securities. There was a marked increment in the insurance sector's exposure (of approximately 7.4 p.p., but only 3.4 p.p. excluding the price effect), measured as a percentage of financial assets between 2012 and 2017. As mentioned above, this may be explained, at least to some extent, by the entry into force of the Solvency II regime.

Also, the central bank's exposure to these assets grew markedly, due to the monetary policy implemented by the ECB, more specifically its ongoing asset purchase programmes. In the scope of this programme, it is worth mentioning that the risks associated with such securities is not shared with the Eurosystem.

General government is also considerably exposed to debt securities issued by its own institutional sector (chiefly Treasury bonds). Albeit negligible, households' exposure to securities issued by general government (*Obrigações do Tesouro de Rendimento Variável* – OTRV) increased as well. Other government bonds held by households are redeemable at nominal value and, therefore, are not taken into account in this exercise. Furthermore, in statistical terms, they are classified as deposits.

Developments in the financial sector's exposure to sovereign risk enhances risks associated with a sudden increase in yields, given that their materialisation would have material effects on the devaluation of a substantial share of the assets held by the financial sector.

This analysis intends to quantify the losses associated with this shock in each of the sub-sectors under review. For that purpose, two impacts were taken into account: one stemming from the immediate devaluation of securities, and another from contagion.

After quantifying the exposure to sovereign debt and its average modified duration by institutional sector, the impact of a 100 basis point increase in the sovereign yield was simulated. The devaluation associated with this shock is calculated by sector (i) and period (t):

$$\delta_t^i = VM\ securities_t^i \times modified\ duration_t^i \times \Delta\ yield$$

Chart 4 illustrates the average duration and maturity, by institutional sector and at the two points in time under review. It shows that the average duration of portfolios increased markedly in most institutional sectors between 2012 and 2017. Indeed, during the most severe period of the economic and financial crisis, both the amount and maturity of sovereign debt issued declined considerably. This stemmed from a decrease in demand, particularly for medium and long-term maturities, and was due to the fact that both credit and interest rate risk increase in parallel with the maturity of the bonds.

Chart 3 • Portuguese sovereign debt | Exposure by institutional sector

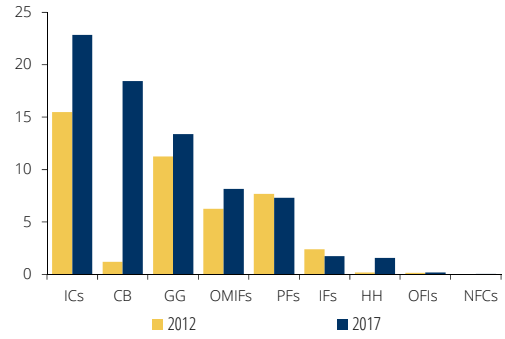
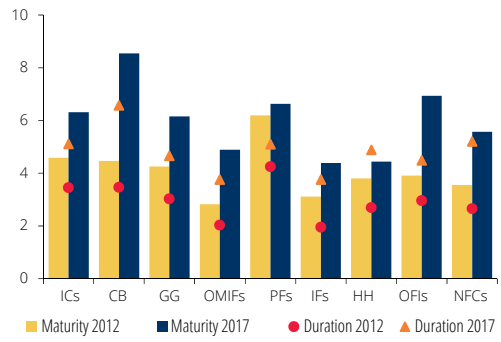


Chart 4 • Duration and maturity | Weighted average values, by institutional sector

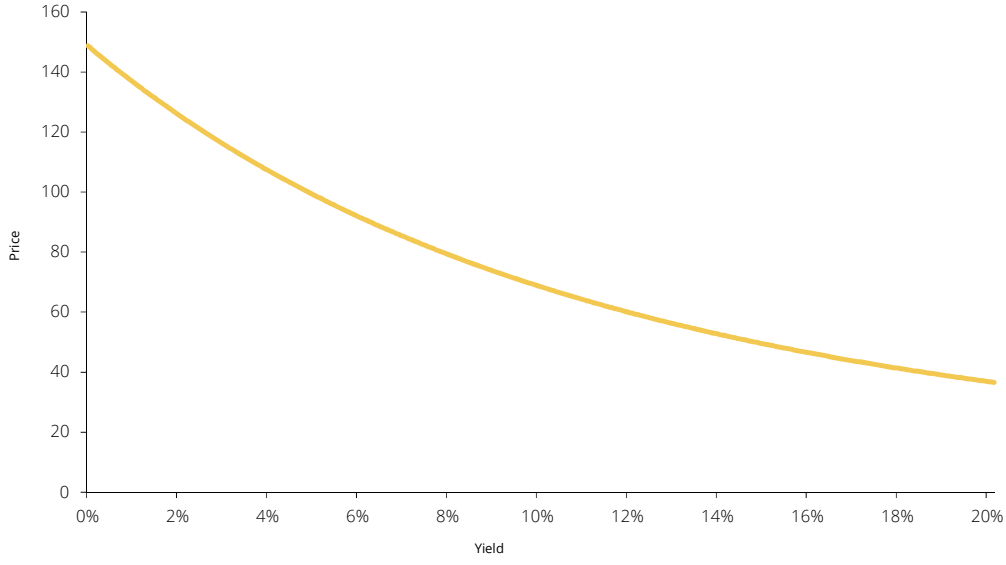


Source: Banco de Portugal.

Subsequently, the risk perception of investors decreased substantially, leading to a reduction in required yields and a greater willingness to take on credit risk associated with longer maturities. To the extent that the Portuguese Republic was able to obtain funding at lower costs, there was also an increase in the maturity of Portuguese government bonds offered in the primary market.

Furthermore, the sensitivity of the price of debt securities to the yield increases as the market value rises. Indeed, this is not a linear link. As the yield decreases, the price sensitivity increases (convexity effect; Chart 5). Taking the benchmark of the five-year Portuguese sovereign debt as an example, a reduction of 4.8 percentage points in the yield required by investors occurred between the end of 2012 and the end of 2017. This reduction in yields (and the corresponding price increase) seems to have also contributed to the increase in the average duration.

Chart 5 • Example of a link between a bond's price and yield



Note: Example of a bond with a nominal value of €100, a 5% annual coupon and a ten-year maturity.

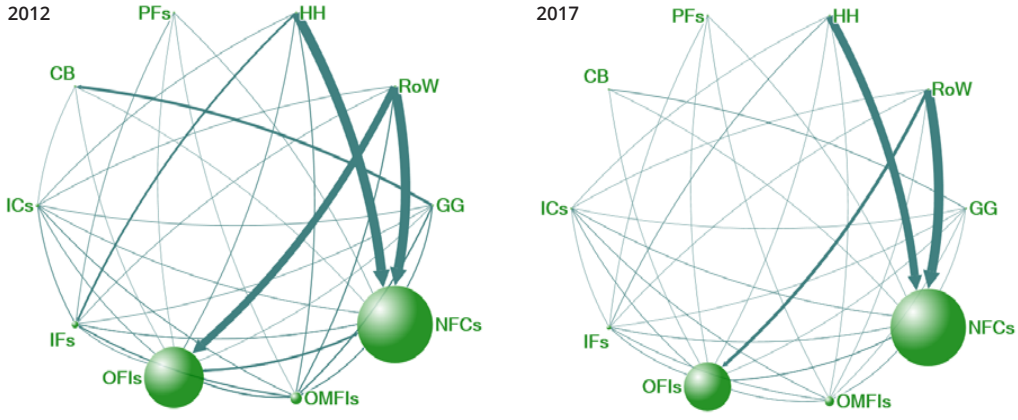
Against a background of tightening funding conditions for the Portuguese Republic, an increase in funding costs for other sectors would be expected. However, given that government bonds are a major source of exposure to common risks (due to their weight in the portfolios of the sectors under review), it was decided to overlook the effects associated with an increase in the risk premia of debt securities issued by other sectors at this stage.

4.3 Contagion mechanism and breakdown of results

With the purpose of understanding and quantifying the impact of the propagation of losses associated with the devaluation of the securities held in the balance sheet of the various sectors, the 'from whom-to-whom' information was used for equity holdings (including investment funds' units). This information provides valuable insight for the contagion analysis. To the extent that the various institutional sectors are interlinked via the cross-holding of equity instruments, they form a closed, cohesive network. On the basis of both the immediate impact of the reduction in the value of securities and the information presented in Section 4.2, the goal of this exercise is to explore the concept of sectoral contagion.

Chart 6 illustrates the networks obtained for 2012 and 2017, reflecting equity holdings across institutional sectors in the Portuguese economy and the rest of the world. We can conclude that there were no material changes between these two points in time and that non-financial corporations and other financial intermediaries have the largest intra-sectoral exposures.

Chart 6 • Network of equity holdings



Source: Banco de Portugal. | Notes: The direction of the arrows indicates the holding of an equity interest from one sector in another, while their width reflects the amount of securities held by the origin sector and issued by the destination sector. The size of the spheres reflects the holding of an intra-sectoral equity interest. Key: households (HH), non-financial corporations (NFCs), other monetary financial institutions (OMFIs), insurance companies (ICs), pension funds (PFs), other financial intermediaries and financial auxiliaries (OFIs), investment funds (IFs), general government (GG), central bank (CB) and rest of the world (RoW).

Underlying the contagion mechanism used in this simulation is the assumption that the sectors under review assess all of their investments in equity holdings and government bonds at their market value (mark-to-market). As such, it is assumed that losses associated with such assets, as a result of an increase in yields, are deducted from own funds in each sector and that capital

losses in a sector are swiftly passed through to other sectors via cross-holdings. [12] The iterative algorithm underlying this mechanism calculates the loss distribution in the economy over several rounds and this process continues until: (i) the shock impacts on a sector that does not issue capital,[13] or (ii) the affected sector's own funds are depleted. Assuming that the market is efficient, the materialisation of losses arising from sectoral contagion would be immediate. Furthermore, this excludes economic agents' response to adverse shocks and assumes that loss absorption is limited to equity holdings.

Chart 7 illustrates the breakdown of effects, by institutional sector, of the simulated shock. The first panel of charts shows the impact of the asset devaluation, resulting from direct exposure to sovereign debt, and the impact from sectoral contagion, both measured as a percentage of GDP in each of the periods under review. The magnitude of the total cumulative impact on all resident institutional sectors was 1.7% and 4.9%, in 2012 and 2017 respectively. Some sectors suffered a greater impact in both periods and made the largest contribution to this result, most notably banks, general government and other financial intermediaries. The material impact on the central bank in 2017 (the sector that was hit the hardest by the initial shock) due to the aforementioned increase in exposure to Portuguese sovereign debt was also notable. These results must be interpreted according to the magnitude of the initial shock. Indeed, the simulated shock may turn out to be low compared to past situations, particularly during the most severe phase of the financial crisis. Furthermore, as mentioned above, this simulation ignores potential contagion effects on private debt and on funding conditions, which, against a background of a highly indebted national economy, would have potentially more severe effects. Conversely, no mitigating factors, such as hedging derivatives, are considered.

A number of sectors, such as financial intermediaries and households, suffered a low impact (or even no impact at all) from the devaluation of Portuguese government bonds (panels 1 and 2). However, due to the existence of equity cross-holdings among these and other sectors, the impact from sectoral contagion was more substantial. In the case of general government, the high impact from contagion in 2017 was chiefly due to the devaluation of its equity interest in the central bank, which, as previously mentioned, had a substantial direct exposure to public debt in this period. At the other end are the insurance sector, banks and pension funds, which due to their high exposure to public debt, are relatively more affected by the first channel.

The magnitude of impacts increased between 2012 and 2017. Given that there were no substantial changes in the composition of networks between both periods, two factors can account for this result. On the one hand, relative exposure[14] to sovereign debt increased for most sectors between the two periods, which partly reflects the increase in value of these securities. On the other hand, as mentioned above, the duration also increased between the two periods, thereby contributing to an increase in the impact of losses incurred.

12. See Castrén, O. and Kavonius, I.K. (2009), "Balance sheet interlinkages and macrofinancial risk analysis in the euro area", *Working Paper Series*, No. 1124, ECB.

13. The households and general government sectors are an example of this. Furthermore, underlying this exercise is the assumption that the 'rest of the world' institutional sector does not propagate losses.

14. The banking sector's (OMFIs) exposure to sovereign debt decreased between 2012 and 2017. However, given that this reduction was accompanied by very marked deleveraging, this led to an increase in relative exposure.

To the extent that institutions' own funds[15] absorb losses, these results must also be reviewed on the basis of this indicator (panel 3). In this context, the impact on the insurance sector, the banking sector and the central bank is to be noted, largely due to the significance of their exposure to Portuguese government bonds. Turning to the impact on the banking sector, a 100 b.p. increase in government bond yields would have an impact of approximately 4.5% of its own funds (December 2017). Alternatively, as a proportion of risk-weighted assets, the same shock would have a total impact of approximately 0.68 percentage points (of which, 0.10 p.p. due to the contagion effect) on the regulatory capital ratio. It should be highlighted that a substantial share of government bonds are classified in the available-for-sale portfolio (which means that assets are valued at market price) and, in contrast to the past, no associated prudential filters apply in 2018, which means that devaluations are fully deducted from regulatory capital. In the case of the central bank, this shock would result in a negative impact of approximately 16% of own funds. These factors contribute to higher balance sheet volatility in reaction to changes in government bond yields, which warrants regular monitoring.

The results demonstrate the relevance of this type of simulations from a macroprudential perspective. Indeed, analysing the financial network architecture is key to understand the nature of systemic risk (which may be triggered by specific events) through the analysis of the different channels and the quantification of the propagation of shocks across the economy.

5 Conclusions

Against a background of high uncertainty during the economic and financial crisis, the greater fragmentation of international financial markets was reflected in an increase in direct interlinkages in the Portuguese financial sector, together with an increase in exposure to common risks, particularly sovereign risk (indirect interlinkages). Despite the efforts made in recent periods to reduce the link between sovereign and financial risk, the financial sector's exposure to sovereign risk remains high.

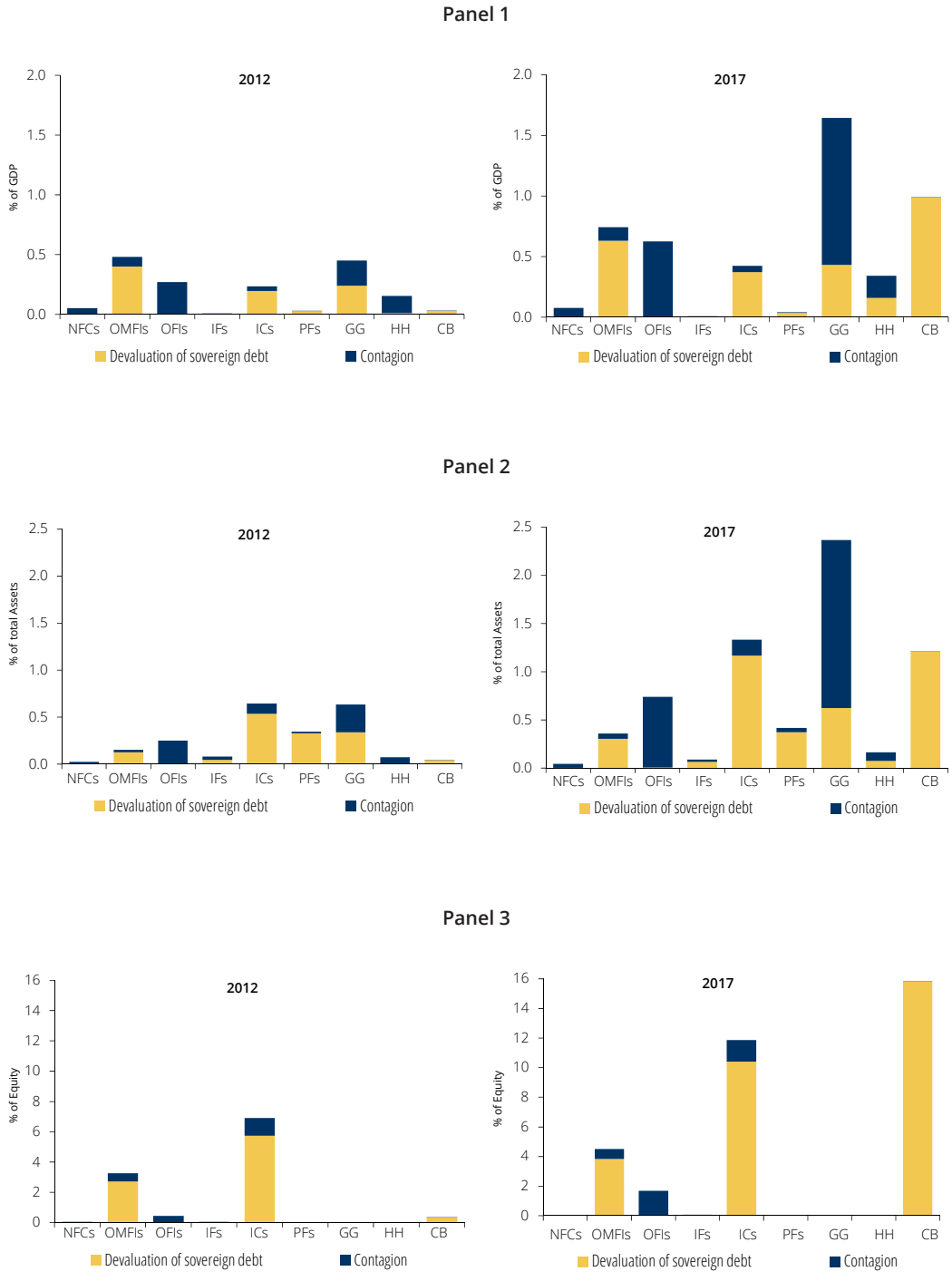
This study documents our national reality against the framework described above, assessed from a historical development perspective at aggregate level and, for a more recent period, illustrating the relevance of intra-group exposures. Its findings demonstrate the increase in interlinkages during the economic and financial crisis and, the significant influence that the banking sector exercised over the management of insurance companies, pension funds, investment funds and other financial intermediaries via intra-group exposures. Furthermore, the outcome of the analysis of the exposure to common risks suggests that the vulnerability of the Portuguese economy to the risk of an increase in yields intensified between 2012 and 2017. This is the result of an increase in both the relative exposure to sovereign debt and in its duration for most sectors.

The outcome of this analysis must be interpreted in accordance with the data analysed and underlying assumptions. More specifically, this exercise disregards: (i) agents' response to adverse shocks, (ii) loss absorption by asset classes other than equity holdings, and (iii) contagion effects on private debt. Finally, the size of the simulated shock may prove to be low compared with past bouts of instability.

In order to mitigate systemic risks, surveillance on interlinkages must proceed. Given their importance across the various sub-sectors and their different regulatory frameworks, institutional cooperation is particularly important among national and international authorities in charge of the regulation and supervision of the financial system.

15. According to ESA 2010, when market values for own funds are not available, a proxy is calculated using their book value.

Chart 7 • Impact of a 100 b.p. increase in yields | Breakdown of effects (% of GDP, % of financial assets and % of capital)



Source: Banco de Portugal. | Note: Financial assets include loans, cash and deposits, debt securities and equity holdings.

A safe asset for the euro area: the Sovereign Bond-Backed Securities initiative (SBBS)

One of the main lessons of the sovereign debt crisis in the euro area is the importance of breaking the link between banks and sovereigns. This became apparent even during the crisis, motivating the launch of the Banking Union. Efforts since then have helped improve economic and financial conditions, but the need to deepen integration in the euro area remains at the centre of the debate, stimulated by proposals presented by academics and politicians. Among them, the possible creation of a safe asset for the euro area has garnered increasing interest, particularly after sovereign bond-backed securities were introduced into the discussion. It is therefore opportune to analyse the topic of safe assets, describing the theoretical background, the political motivation in the European context and the main initiatives presented to date, focusing on the most recent.

1 *Safe assets: characteristics and purposes*

So-called 'safe assets' are financial assets perceived as involving minimal idiosyncratic risk and predictable income under any circumstances (in particular in crisis situations, for which reason demand for them tends to increase in periods of greater risk aversion). They are also perceived as safe because they are widely used and accepted by market participants, thereby forming global liquid markets, involving high trading volumes and, as a result, low price volatility.

Although intrinsically risk-free financial assets do not exist, global financial markets seem to operate on this assumption, given the global scale of the safe asset market.[1] To a certain extent – as suggested by Gorton, Lewellen and Metrick (2012) – their importance seems to relate to a demand or structural need by market participants for these assets, taking into account the satisfaction of a great breadth of essential functions[2] for the fluidity of the economy and the financial markets.

Despite the simplification implicit in the designation 'safe assets', this class comprises a differentiated set of assets, issued both by public (e.g. central government) and private entities (e.g. financial institutions).

However, safe assets typically refer to sovereign debt, which represents the lion's share (in 2011, bonds issued by OECD countries with AAA/AA ratings made up about 45% of the global safe asset market (IMF, 2012)), followed by, among others: senior tranches of securitisation operations (17%); gold (11%); mortgage bonds (4%); bonds issued by supranational entities (1%) and bonds issued by corporates with particular characteristics (e.g. in terms of rating and size) (11%).

It is also interesting that the range of financial assets perceived as (relatively) safe is fairly dynamic, evolving over time: in the US, up until 1970, market participants used highly-rated corporate bonds, such as General Motors and American Telephone & Telegraph bonds, (and not sovereign debt) as references for valuing other financial instruments (Fisher, 2013).

1. In 2011 this market totalled over $114 trillion worldwide, which is 11 times the GDP of the US (IMF, 2012).
2. According to Gorton (2016), "Safe assets, whether coins made of precious metals or some forms of public or privately-produced debt, are the life blood of an economy."

Safe assets are used by market participants for many purposes, including: (i) as a store of value and protection of capital in investment portfolios' composition (a central aspect for certain investors with a long-term investment profile, such as pension funds and insurers); (ii) as high-quality collateral – or guarantee – for trading in collateralised markets, like repurchase agreements and financial derivatives markets, forming an essential source of liquidity (functioning as a substitute for confidence in the counterparty); (iii) as a price reference for assets with (more) risk; (iv) as an instrument used as collateral in monetary policy operations; (v) for compliance with requirements established in legislation and prudential regulation; (vi) for benchmarking the performance of asset managers.

When various assets are perceived as satisfying the same purposes, market participants tend to use them as substitutes, typically during periods of low risk aversion. For example, the use of senior AAA rated tranches of securitisation operations to substitute sovereign debt proliferated before the financial crisis that began in 2007. Certain authors link the proliferation and extent of this substitutability to a scarcity in the structural supply of public safe assets (sovereign debt), which caused financial engineering and the production of private safe assets (securitisations) to intensify, thereby creating one of the original vulnerabilities that helped exacerbate the consequences of the crisis.

Market participants tend to use these assets extensively, by accepting that the risks associated with them are so low that there is no need to obtain information in advance on their attributes in order to complete the transaction.[3] The widespread and swift transmissibility of these assets is therefore a result of a collective belief, reflected in widely accepted and established behaviours and practices among the market participants:[4] they use the assets as if they were truly safe, or at least, safe enough to change hands instantly, 'no questions asked' (Holmström, 2015 and Gorton, 2016), thereby avoiding the need to determine the exact value of the instrument as a function of its fundamentals.

The generalised perception of safety associated with these assets may also be due to the current legal and institutional architecture, in particular the following components: (i) the design of contractual clauses that safeguard full and timely payment; (ii) the labelling of assets according to their safety (e.g. credit risk scores awarded by the rating agencies); and (iii) the provision of guarantees (e.g. from States, central banks). Gelpern and Gerding (2016) also suggest that the fragilities arising from the misalignment between these three components – 'making', 'labelling', 'guaranteeing' – lies at the heart of the financial crisis.

Moreover, the prudential regulation applicable to credit institutions alone plays an important role in supporting that perception of safety and in the credit institutions' systematic use of these assets, to the extent that it treats them as a risk-free asset for the purposes of determining capital requirements. In fact, for credit institutions using the Standardised Approach,[5] prudential regulation provides for a 0% risk weight on exposures to Member States' central governments (or central banks), denominated and funded in the domestic currency of that central government (or central bank).

3. Gorton (2016) describes this characteristic as 'information insensitive', using 'information sensitive' to describe an imminent perception of a high idiosyncratic risk of default by the issuer of that debt instrument, liable to trigger a crisis. The 'information sensitivity' characteristic was previously identified by Dang, Gorton and Holmström (2015).

4. Gelpern and Gerding (2016) describe this phenomenon of 'shared belief' or 'social commitment'.

5. Cf. Article 114 (4) 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 and amending Regulation (EU) No. 648/2012 (CRR).

Although the recent financial crisis has moved the issue of the regulatory treatment of sovereign exposures higher up the political agenda, due to the distortions that they may create in risk perception, the latest developments in the Basel Committee highlight the complexity of changing this framework instantly – as described later.

2 The role of safe assets: from academic interest to the recent euro area sovereign debt crisis

The safe asset concept is not new, appearing as a central element of Economic and Financial Theory, which – with the aim of streamlining and modelling complex reality – has relied on certain simplifications or assumptions; as is the case of the (hypothetical) 'risk-free rate' typically associated with the yield on highly-rated sovereign debt. It is indeed one of the central premises in the development of models like the CAPM (the Capital Asset Pricing Model, used to estimate the cost of capital of companies and in assessing portfolios based on Markowitz's efficient portfolio theory), which set out to model the relationship between risk and return in pricing assets. Market participants may also use these models to: establish benchmarks to price (riskier) financial assets, select assets and optimise portfolios and investment strategies, and assess the performance of the asset managers themselves. Reflecting Modern Portfolio Theory's influence, economic and financial theory advanced through development of alternatives to the CAPM, such as Arbitrage Pricing Theory (APT) and Multi-Factor Models.

The growing interest in the financial literature about awareness of these safe assets also prompted the identification of their supply and demand drivers and their influence (i) on the performance of international capital flows and long-term interest rates, as well as (ii) on developments in the production of assets, with special focus on the US economy in the period before the financial crisis. Thus, as observed by Gelpern and Gerding (2016), two research areas have emerged in the literature: on the one hand, linking the motivations behind the demand for safe assets with the demand for safe haven assets or a store of value, and on the other hand, linking them to the existence of 'transactions technology'.

Accordingly, some authors – such as Bernanke, Reinhart and Sack (2004) – suggest that the (very) low level of long-term interest rates on US Treasury bonds (as compared to what would be considered consistent with macroeconomic fundamentals) is justified by the high demand for these assets, among other factors. In turn this high demand results from the investment of the budget surpluses of emerging economies in Asia and oil-exporting countries from 2003 to 2007. The authors claim that the high savings level attained (compared to the investment level in these economies), combined with risk-averse behaviour, was channelled into financial assets perceived as safe in the advanced economies (in particular US Treasury bonds) in search of a store of value and protection against possible future crises. This behaviour is likely to have influenced the sharp fall in long-term interest rates.

Taking a different approach, Gorton, Lewellen and Metrick (2012) identified for the US economy that safe assets[6] as a share of total assets has been relatively constant since 1952, despite total assets as a percentage of GDP having increased 2.5 times between 1952 and 2010. They suggest that the evidence for the existence of a structural demand for these assets over time may be

6. The research classifies the following main components as safe assets: bank deposits, money market funds shares, commercial paper, repurchase agreements, short-term interbank loans, public debt securities, debt issued by governmental agencies, bonds issued by regional authorities, securitisations and debt issued by non-financial corporations, with high ratings.

associated with dynamics that they call 'transactions technology', in that the total output of assets seems to require safe assets as inputs. Supporters of this theory therefore advocate the existence of an organic demand for safe assets, which justifies the production of these assets by private entities (e.g. securitisations issued by banks) so as to meet demand not satisfied by public safe assets (resulting from the restriction on public debt issuance beyond the level considered sustainable for a given State). They also claim that imposing limits on the private issuance of safe assets would destroy a process that is natural to the economy and would interfere with the provision of critical functions to the economy.

The global financial crisis (2007-2008) and further concerns about the sustainability of the public debt of several euro area Member States motivated new perspectives in the discussions over these assets: the debate moved away from the financial models approach, from risk/return management strategies and from researching the circumstances related to supply and demand for these assets (as mentioned above), and began to focus on the role of the assets perceived as safe in the accumulation and exacerbation of risks and vulnerabilities affecting global financial stability, which would give rise to an unprecedented sovereign debt crisis.

Indeed, one of the key lessons reinforced by the recent banking and sovereign crisis was the lack of financial assets intrinsically and absolutely devoid of risk. The notion of 'safety' or 'lack of risk' is a relative concept, formed from the risk perception of economic agents in regard to a certain financial asset, in certain states of nature. Therefore, a financial asset will be more or less risky compared to others, depending on the individual risk perception of each economic agent.

As usage of safe assets is global, based on a widespread perception of safety, these assets become vulnerable to sudden and abrupt changes in economic agents' confidence, with consequences on a large scale.

In fact, fears about the sustainability of the sovereign debt of certain euro area Member States – in some cases motivated by the crisis in their banking systems – transformed these assets, previously perceived as practically safe ('no questions asked'), into high-risk assets, triggering a self-fulfilling risk aversion dynamic, resulting in fire sales, a very strong decline in financing flows between Member States ('sudden stop') and sharp falls in market prices on those assets. The accelerated sequence of events that followed caused significant financial fragmentation in the euro area to the point of raising doubts over whether Member States would remain in the euro area (i.e. redenomination risk).

2.1 A safe asset for the euro area – proposals prior to the SBBS

Table 1 • Main characteristics of the proposals for the euro area safe asset

	Blue and Red Bonds Delpha e von Weizsäcker (2010)	***Eurobills*** Hellwig and Philippon (2011)	***Redemption Fund Eurobonds*** German Council of Economic Experts (2011)	***Synthetic Eurobonds*** Beck, Wagner and Uhlig (2011)	***SBBS*** Brunnermeier et al (2011)
Collateral level at issue	Up to 60% of GDP	Up to 10% of GDP	Over 60% of GDP	Zero	Zero
Tranching	Yes	No	No	No	Yes
Main safety element	Mutualisation, tranching and pooling	Maturity and mutualisation	Mutualisation and pooling	*Pooling*	Tranching and pooling
Countries covered	All the euro area countries but may start with a subset and then expand		All countries with debt above 60%	Euro area countries	All euro area countries with market access

In the above context, several proposals were put forward from the start of the euro area sovereign debt crisis, with the aim of promoting the integration of those markets. The following sets out the more popular initiatives, including that of Delpha and von Weizsäcker (2010). The design presented by these authors was one of the first to appear in the public debate, coinciding with Greece's (first) request for financial assistance. It involves the creation of blue and red bonds: the former would be senior bonds, issued jointly by the euro area countries, thereby with a lower price, containing debt from each Member State up to 60% of its respective GDP; the latter would be subordinated debt for sums in excess of 60% of GDP, issued individually by each Member State, resulting in a higher cost, thereby incentivising fiscal discipline. The following year, Hellwig and Philippon (2011) proposed that euro area countries issue jointly and severally guaranteed short-term debt (with maturity up to one year) to a maximum level of 10% of GDP. In exchange, the countries would be forbidden from making their own short-term issues and participation in this mechanism would be predicated on fiscal discipline criteria and possibly fiscal targets. Another solution was proposed by the German Council of Economic Experts (2011), involving the transfer of each Member State's existing debt in excess of 60% of GDP to a fund that would issue Eurobonds, jointly guaranteed. In exchange, the countries would pay the sums due to this fund within 25 years and this obligation would be senior to the other national debts, with the possibility of tax revenues being used as collateral. While the proposals mentioned so far involved a degree of debt mutualisation, Beck, Wagner and Uhlig (2011) suggested the creation of an open investment fund, which would invest in euro area countries' debt, in proportion to their GDPs. The fund would issue shares whose value would be, by design, indexed to the market value of the securities held as assets, avoiding any kind of cross-subsidisation between the same securities or sharing of risks. The proposal of Brunnermeier et al (2011) builds on this, but differs essentially in that it uses tranching of assets resulting from the securitisation of euro area sovereign securities – this initiative lies at the heart of the current debate, as it forms the basis for the safe asset concept under analysis for the euro area, the so-called 'sovereign bond-backed securities' (SBBS).

2.2 A safe asset for the euro area – intensification of the debate in the context of deepening the Economic and Monetary Union

The range of proposals set out above shows that academic interest in the creation of a safe asset for the euro area coincided with the onset of the sovereign debt crisis. In 2010 and 2011, the region was marked by financial fragmentation in a context of economic recession, leading to the negotiation of three financial assistance programmes in the euro area: Greece, Ireland and Portugal.[7] Acknowledging the impact of the global financial crisis, which highlighted these economies' accumulated imbalances, the instability generated in this period in the euro area and the difficulty in containing the sharp risk differentiation between Member States revealed the deep flaws in the institutional architecture of the single currency.

The debate about the deepening of the Economic and Monetary Union (EMU) began in spring 2012, according to the then President Herman Van Rompuy (General Secretariat of the Council of the European Union, 2013). The deterioration of the situation in Greece and increasing concerns about the Spanish banking system led the European Council to define a vision for the future,

7. Spain and Cyprus followed in 2012 – the first countries to benefit from the new crisis management mechanism for the euro area, the European Stability Mechanism (ESM). In contrast with the other four countries, the programme for the Spanish economy focused on the financial sector.

without taking attention away from the problems of the present. The first version of the 'Four Presidents' Report' served as the basis for the European Council meeting of 28 and 29 June 2012, at which the euro area Member States agreed on the creation of the Single Supervisory Mechanism (SSM), thereby launching the Banking Union. In a statement, the European leaders claimed that it was imperative to break the vicious circle between banks and sovereigns, highlighting how important this factor was in the origins of the crisis – and identifying it as one of the main objectives to be reached with the reforms.

From that moment, the goal of harmonising supervision, resolution and deposit protection in the euro area took a central role on the EMU agenda. However, it was recognised from the outset that breaking this vicious circle would require additional efforts on several fronts. In autumn 2012, the European Commission published its contribution to the debate on deepening the EMU (European Commission, 2012). The document recognises the utility of a new sovereign instrument for the euro area to tackle financial fragmentation and is accompanied by a concrete proposal: jointly issued short-term sovereign debt, known as Eurobills. The Communication mentions that, besides promoting financial integration and stability, the instrument would help transmit the single monetary policy and would allow a pool of safe assets to be created – expressly laying out the merits of this asset type in the fight against one of the causes of the crisis. However, the proposal did not go ahead immediately, and was absent from the second version of the 'Four Presidents Report'[8] and the 'Five Presidents Report' of 2015. Indeed, given that most of the proposals for a safe asset involved some kind of debt mutualisation, the perception arose that the concepts were linked. Therefore, there was reluctance in the political debate over safe assets, resulting in the shelving of the possibility – associated also with the gradual improvement in Member States' financing conditions and in the performance of the euro area's economies.

The importance of establishing a Europe-wide safe asset returned to the debate over deepening the EMU only in the summer of 2016, when the General Board of the European Systemic Risk Board (ESRB) set up the High-Level Task Force on Safe Assets (HLTF).[9] Although the financial sector reforms had brought significant progress to the strengthening of banks' balance sheets and the overall reduction of risk, the bank/sovereign vicious circle continued to be relatively strong. In parallel, with a view to preventing the next crisis, it was thought that avoiding a new 'flight to safety' among Member States would be difficult, despite the risk premia currently narrowing. Van Riet (2017) states that most national sovereign debt markets, apart from German bonds, had remained vulnerable to adverse shocks until that date.

The HLTF's mandate was clear: "investigate the potential creation of sovereign bond-backed securities, which could comprise senior and junior claims on a diversified portfolio of sovereign bonds". This description, as well as an explicit reference in the HLTF report (2018), shows that the work used the proposal of Brunnermeier et al. (2011) as a start point.[10] In terms of acceptance in the political debate, the initiative has the main advantage of not involving any kind of debt mutualisation, allowing the fiscal framework in force in the EMU to remain, and avoiding any change to the EU treaties. In addition, the authors of the proposal argue that the securities' structure provides the necessary characteristics of a safe asset: on the one hand, the diversification of the exposure to various euro area sovereign debt securities (the underlying

8. The 'Four Presidents Report' of December 2012 includes a brief reference to the possibility of sovereign debt mutualisation, but directly linked to a fiscal stabilisation function and not as a way to break the bank/sovereign vicious circle.
9. https://www.esrb.europa.eu/news/pr/date/2016/html/pr160929.en.html.
10. Developed later, namely in Brunnermeier et al. (2016).

assets) is a benefit; on the other, the tranching of the newly issued security effectively creates a lower risk asset – with the senior tranche being the safe asset. Indeed, the report claims that the creation of a diversified portfolio of euro area sovereign debt securities (without tranching) would not be enough on its own to achieve the goals of a safe asset, as it involves the risk of contagion, which could reach systemic proportions. Regarding these two central elements to the design of SBBS – diversification and tranching – the HLTF emphasises that the composition of the pool of underlying assets and the calibration of the seniority structure are parameters that must be defined carefully by the legislators, given the fundamental purpose behind creating this instrument to safeguard financial stability.

The HLTF's work and the potential of this kind of asset have become important in the public debate on deepening the EMU.

At institutional level, the European Commission has shown a growing interest in the creation of a Europe-wide safe asset. In May 2017, it was put forward as a measure for consideration in the medium term, as a contribution to the establishment of a Financial Union[11] – along with the regulatory treatment of credit institutions' exposures to Member States' central governments (European Commission, 2017a). In October, in its Communication on Completing the Banking Union, the European Commission (2017b) mentioned explicitly that it was following and contributing to the work of the HLTF. The document recognises the potential contribution of SBBS to the deepening of the EMU, by fostering risk reduction, private sector risk-sharing, and, in general, a more efficient allocation of risks in the financial sector.

At the start of 2018, the SBBS proposal attracted attention not only due to the publication of the HLTF report, but also because it appeared in an article published by seven German and seven French economists, Brunnermeier among them (Bénassy-Quéré et al., 2018), which put forward a set of proposals to reform the euro area architecture in order to promote greater integration. Although the article is academic in nature, it has been widely referred to in the debate on the deepening of the EMU.

3 SBBS characteristics and feasibility study

Creating SBBS starts with the definition of the universe of securities to be included in the pool of underlying assets. In this regard, the HLTF claims that only securities issued by Member States' central governments and traded at market prices should be considered. In turn, the securities of other state, regional or local authorities should be excluded, as they have different characteristics, essentially in regard to credit risk and/or liquidity. Furthermore, the securities must be issued in euro, to avoid mismatches in the currency of denomination causing increases to the instruments' price, to cover exchange rate risk.

As is raised by the HLTF's report, there are two key questions over the design of SBBS which determine its risk profile: (i) what is the weight to be attributed to each sovereign in the portfolio underlying the instrument and (ii) what seniority structure or tranching should be applied (or, in other words, what protection level should be attributed to the senior tranche by the other tranches).

11. Which goes further than the Banking Union and includes, for example, the Capital Markets Union.

Regarding the first question, the HLTF recommends using the ECB capital key to determine the weights of each sovereign security in the SBBS's cover pool, as it is a measure based on GDP and the population that reflects the importance of each Member State and is only revised rarely (every five years). This metric contrasts with solutions based on the total amount of securities issued by each sovereign. The second question is empirical: using quantitative methods and simulations, the HLTF identifies 70% as an appropriate level for the size of the senior tranche, concluding that this would be more robust to extreme default scenarios than any sovereign individually. The remaining 30% would be split between a mezzanine tranche (20%) and a junior tranche (10%). This choice of two subordinated tranches was the result of consultations with market participants, who thought it held advantages for attracting investor interest.

After defining the composition of the pool of securities and the seniority structure, the entity or entities responsible for issuing the SBBS must be defined. According to the HLTF, these 'issuers' must have only one function, that of channelling financial flows – interest and capital net of administrative expenses – generated by the securities held as assets, to the liability components, in a neutral and predefined way. These entities would not have own funds or external credit support mechanisms (such as public guarantees, whether implicit or explicit), nor be subject to market risk and/or credit risk and would not have systemic importance.

The arrangers, in turn, would be responsible for obtaining binding orders from investors and for assembling the pool of debt securities issued by the central governments of the various Member States. These arrangers would deliver the pool to the entities issuing SBBS and would receive in exchange a portfolio of SBBS; this portfolio would be channelled to investors, whose orders they would have received. The arrangers must be duly dissociated, from a legal point of view, from the SBBS issuers, and may have a public or private nature. In the case of a public entity, it must be the only arranger, established as a monopoly in legal terms as a result. The legal framework must be clear and transparent, in regard to the potential losses for those investing in SBBS, in order to mitigate expectations of implicit guarantees and to prevent the retention of subordinated tranche units on the balance sheet. In contrast, in the case of private arrangers, it would be ideal to use a set of different entities, in order to ensure a minimum level of competition. This must be accompanied by regulatory and supervisory scrutiny mechanisms, to ensure compliance with the instrument's design principles, reduce operational risk and harmonise the different SBBS vintages.

According to the HLTF's report, the arrangers may purchase securities on the primary market – competing with other investors in auctions or through specific placements by public debt agencies, allocated for the purpose of SBBS, whether by reopening existing securities series or by issuing new securities – or on the secondary market, purchasing a pool on the open market or directly from an investor or group of investors that hold securities in their portfolio. Both taking part in primary market auctions and purchasing on the secondary market will result in a heterogeneous pool of securities, with different coupon payment structures and maturities. Thus these two alternatives require a cash flow management function, which not only increases the cost of the issue but also conflicts with the goal of making the process as neutral as possible. In contrast, specific placements for the SBBS arrangers, at the prices of the nearest secondary market benchmark security, would obviate these problems and would minimise the costs of warehousing the securities. However, this option is not without consequences for the national debt management offices and reveals that there is a trade-off between minimising the impact on their activity and the costs of issuing SBBS. Indeed, standardisation of the characteristics of the securities in the cover pool minimises the costs of SBBS issuance, but could also mean securities have to be issued to create the instrument. The national debt management offices expressed their concerns over that possibility, which could interfere with their issuance plans and debt management mandates.

Standardisation of the pool of securities is also mentioned as an important aspect for the smooth operation of the SBBS market and for preventing its fragmentation, by contributing to greater turnover and efficient price formation. To this end, the weights of the securities in the pool must be revised only in exceptional circumstances (changes to the ECB capital key or where access to the market is broken) and the seniority structure must be established *ex ante*.

In relation to enhancing SBBS's liquidity, the HLTF claims that reopening existing SBBS series could be considered, as is done in national sovereign debt markets, as well as developing secured loan markets (repurchase agreements) and financial derivatives associated with SBBS. Lastly, including the SBBS in benchmark indexes, given that passive investment strategies have gained in popularity, and the use of primary dealers, who ensure minimum purchase quantities in primary markets and quotes on the secondary market, are also identified in the HLTF report as desirable elements for the success of the SBBS market.

The HLTF report also mentions that a fundamental principle must guide this project: that of ensuring that the national sovereign debt markets are not negatively affected by the SBBS. The negative repercussions that absorption, by the issuers, of the securities underlying this instrument may have on liquidity and the smooth operation of the national sovereign debt markets is thus one of the chief concerns aired by market participants and by the national debt management offices. Furthermore, there is also uncertainty over the liquidity of the SBBS tranches, in particular the subordinated tranches, which may affect these instruments' prices.

With that principle in mind, the purchases of debt issued by the central governments of the various Member States could be limited to a fixed percentage of the total outstanding amount, as happens in the Eurosystem's Public Sector Purchase Programme (PSPP). Also in relation to this programme, the HLTF does not identify substantial effects resulting from its implementation on the national sovereign debt markets and concludes that the creation of an SBBS market should have an even smaller impact, since, unlike the PSPP, the national sovereign securities taken from the market will be offset by the placement of other securities.

Furthermore, the overall amount of SBBS to be issued must reflect the interest shown by potential investors – in particular for the less-in-demand junior tranche. The reports' authors believe the SBBS market will therefore be demand-driven. There are doubts over the acceptance of this new instrument by investors, in particular, in relation to potential demand for the junior tranche. However, scepticism is not restricted only to the lower quality tranche. In a preliminary analysis, S&P (2017) mentions that, despite the claim of the HLTF, the securities comprised in the SBBS are relatively unlikely to be diversified, and, particularly in adverse scenarios of high risk aversion, there is a positive correlation in the default risk of euro area sovereigns. This reason would justify a BBB- rating for the senior tranche, putting it at the lower limit of the investment grade category. Therefore, with a rating of that kind for the senior tranche, demand for this instrument might be subdued. This would make it harder to create enough of the asset to address the current shortage and as a result, the initiative would not be feasible. In an extreme scenario, the new asset could have the opposite effect, in that it would contribute to the reduction of the amount of AAA securities available in the market. It should, however, be stressed that S&P uses a different methodology in its analysis of SBBS from those traditionally applied to CDOs, as, among other characteristics, it assumes a perfect correlation between the defaults of Italy, Greece, Portugal and Cyprus.

Also with the goal of protecting the national sovereign debt markets, the HLTF recommends a gradual approach to creating the SBBS market, starting with maturities of two, five and ten years

of greater liquidity. Assuming an issuance level of 3% of total annual issuance by the public debt management agencies, after five years the SBBS market would be as big as the European Financial Stability Facility (EFSF) and the European Stability Mechanism (ESM) were five years after the start of their respective issues. Securities from these organisations trade at limited premia compared to debt from euro area countries with the best ratings and good liquidity conditions, despite the lower turnover.

Finally, the HLTF identifies a necessary condition for creating this instrument: the alteration of the current regulatory framework, which penalises securitised products versus sovereign debt securities. The HLTF believes that this alone explains why SBBS have not existed to date. To overcome this obstacle, the report argues for the creation of a specific regulatory framework for this type of instrument, reflecting its unique characteristics as a securitised product. The HLTF's analysis concludes that the senior tranche must not have more severe prudential treatment than that applied to sovereign debt securities and that the treatment of the subordinated tranches should reflect their higher risk profile.

3.1 Initiatives promoting the creation of SBBS

The European Commission's involvement in the development of a safe asset for the euro area evolved very recently with its public recognition of the utility of the HLTF's initiative to create SBBS. Taking their report into account, the EU's executive body declared its firm intent to present legislative proposals establishing a specific European regulatory framework for this asset class (European Commission, 2017b, 2017c). The proposal for a regulation[12] was published on 24 May (accompanied by an impact assessment) with a central feature of establishing equivalence between the regulatory treatment of SBBS (of all the tranches, including the subordinated tranche) and the treatment currently applied to credit institutions' exposures to Member States' central governments (denominated and funded in the respective domestic currency). The Commission does not propose any changes to this treatment, known as regulatory treatment of sovereign exposures (RTSE). In this regard, the Commission states that this specific SBBS framework "will remove unwarranted regulatory obstacles" to the desirable development of a broad market for this new financial instrument. The Commission also says that this proposal is a measure to reduce risk in the banking sector, contributing to the diversification of the banks' exposures to sovereigns and therefore to the mitigation of the correlation between banks and their respective sovereigns, which was at the centre of the euro area sovereign debt crisis.

Generally, the draft legislation seems aligned with the central concerns raised by the HLTF in this matter. In particular, it highlights that the risk of SBBS stands apart from most securitisations in the market as SBBS do not involve the typical risks relating to the asymmetry of information between the originator and the investors, and, as a result, from a financial stability point of view, additional capital requirements or lower liquidity penalties are not justified. This is because, according to the Commission, not only is the portfolio composition well known and pre-determined (the weights of each security in the SBBS's cover pool follow the ECB's capital key), but also the underlying assets are transparent, liquid and tradable, meaning that the investors can purchase the underlying assets without needing to purchase SBBS.

By providing for adjustments to the regulatory framework applying to securitisations to reflect the specifics of this securitisation category, this draft legislation for SBBS is similar to the legislative

12. https://ec.europa.eu/info/law/better-regulation/initiatives/com-2018-339_en.

package that aimed to create a specific framework for simple, transparent and standardised (STS) securitisations, establishing eligibility criteria which a transaction has to satisfy to be designated as such.[13] Furthermore, the Commission adds that the case for creating a specific framework for the SBBS is even stronger than that of the STS securitisations, not only because the underlying assets are even more simple, transparent and standardised, but also because those assets benefit from more favourable regulatory treatment, reflecting their characteristics and the functions that they carry out in the financial system.

Given the above and the motivations put forward by the Commission, the main regulatory alterations proposed to enable the creation of SBBS comprise (i) the application of capital requirements and limits on exposures to SBBS equal to those that apply currently to credit institutions' exposures to Member States' central governments (denominated and funded in their respective domestic currency), implying thereby a change to the CRR (through modifications introduced by Regulation (EU) 2017/2401); (ii) the specification in the European legislation of the SBBS concept and (iii) a list of characteristics required for qualification as an SBBS. The Commission adds that the standardisation resulting therefrom would enhance market liquidity of this instrument, making it more appealing to potential investors. However, the Commission differs from the HLTF's suggestions in various aspects, namely, (i) not differentiating the applicable prudential treatment according to the seniority of the tranches; (ii) restricting the issue of these instruments only to private entities (created exclusively to issue and manage these instruments); (iii) providing for, alongside the senior tranche of 70%, the possibility of segmenting the subordinated portion into multiple tranches, while the HLTF's proposal involves just two (mezzanine of 20% and junior of 10%). The number of these subordinated tranches and their respective nominal value will depend on the motivation of the private arranger, but subject to the restriction that the junior tranche – i.e. the tranche that suffers losses before any other – will have a minimum limit of 2% of the issue's nominal value.

Regarding SBBS's place in the political debate over creating a safe asset for the euro area, the Commission clearly sees distinct instruments: on the one hand, the SBBS are created by private issuers, based on debt issued by euro area sovereigns, not involving mutualisation of risks between Member States (which differs from the Eurobonds initiative); on the other hand, they are distinct from the European safe asset alluded to in the reflection document on deepening the EMU (European Commission, 2017a) since this assumes a new instrument for the joint issuance of debt, whose feasibility and potential characteristics are being analysed by the Commission.

Although this legislative proposal may contribute to the development of SBBS, it focuses however on the applicable prudential regulatory framework (capital and liquidity). Indeed, some of the considerations put forward in the HLTF report will be the exclusive responsibility of other European entities. The treatment of SBBS within the Eurosystem's collateral framework, for example, requires an independent analysis by the Governing Council of the ECB.

Furthermore, the interaction between the development of SBBS and the regulatory treatment of credit institutions' exposures to central governments must be monitored. Although the members of HLTF have held different positions over the possibility of reviewing the RTSE to create a broad SBBS market, it is possible that any change to this framework to penalise concentration or to

13. Regulation (EU) 2017/2402 of 12 December 2017 laying down a general framework for securitisation and creating a specific framework to introduce into EU legislation the concept of 'simple, transparent and standardised' securitisations, and criteria that a transaction must fulfil to be designated as such; and Regulation (EU) 2017/2401 of 12 December 2017 amending Regulation (EU) No. 575/2013 (CRR) on prudential requirements for credit institutions and investment firms, aiming to introduce a preferential capital framework for positions held in STS securitisations by credit institutions and investment firms.

lay down differentiated capital requirements according to the risk assigned to sovereign debt exposures would potentially influence demand for the senior tranche of SBBS.

In this regard, it must be recalled that the introduction of any change to the RTSE is a matter on which consensus has not been reached, due to its complexity. In January 2015, the Basel Committee on Banking Supervision (Basel Committee) began a review of the current regulatory treatment of sovereign exposures, establishing the high-level Task Force on Sovereign Exposures (TFSE) for the purpose. In September 2016, the TFSE presented a report analysing various critical aspects of the regulatory treatment of sovereigns and presented a set of options for reviewing that treatment. While recognising that the issues raised in this research are important and could benefit from a broader discussion, the Basel Committee did not reach consensus to make any changes to the regulatory treatment of sovereign exposures in this phase. In this regard, it published on 7 December 2017 the Discussion Paper 'The regulatory treatment of sovereign exposures', emphasising that the goal was not to consult about the specific ideas presented in the document, but to gather comments from interested stakeholders, with a view to informing the Committee's longer-term thinking on the issue.[14]

4 Conclusion

As the European leaders continue discussions on the deepening of the EMU and with expectation mounting about the results of the June meeting of the European Council, the topic of the creation of a safe asset for the euro area is likely to continue to stimulate academic interest and public debate. Although the report by the ESRB's HLTF, published at the start of this year, was technical in nature, it cannot be excluded that the model presented, of sovereign bond-backed securities, may be one of the proposals to be considered in this regard.

5 References

Beck, T., W. Wagner and H. Uhlig (2011). "Insulating the financial sector from the European debt crisis: Eurobonds without public guarantees". VoxEU.org, 17 September.

Bénassy-Quéré, A., M. Brunnermeier, H. Enderlein, E. Farhi, M. Fratzscher, C. Fuest, P.-O. Gourinchas, P. Martin, J. Pisani-Ferry, H. Rey, I. Schnabel, N. Véron, B. Weder di Mauro, and J. Zettelmeyer (2018). "Reconciling risk sharing with market discipline: A constructive approach to euro area reform". CEPS Policy Insight No. 91.

Bernanke, B., V. Reinhart and B. Sack (2004). "Monetary Policy Alternatives at the Zero Bound: An Empirical Assessment". Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board, Washington, D.C.

Brunnermeier, M.K., L. Garicano, P. Lane, M. Pagano, R. Reis, T. Santos, D. Thesmar, S. Van Nieuwerburgh and D. Vayanos (2011). "European Safe Bonds (ESBies)". The Euronomics Group.

Brunnermeier, M.K., S. Langfield, M. Pagano, R. Reis, S. Van Nieuwerburgh and D. Vayanos (2016). "ESBies: safety in the tranches". ESRB working paper No. 21.

14. The press release and discussion paper are available here https://www.bis.org/bcbs/publ/d425.htm.

European Commission (2012). "A blueprint for a deep and genuine economic and monetary union – Launching a European debate". Communication COM(2012) 777 final/2, 30 November.

European Commission (2017a). "Reflection paper on the deepening of the economic and monetary union". Reflection Paper COM(2017) 291, 31 May.

European Commission (2017b). "On completing the Banking Union". Communication COM(2017) 592 final, 11 October.

European Commission (2017c). "Further steps towards completing Europe's economic and monetary union: a roadmap". Communication COM(2017) 821 final, 6 December.

Dang T. V., G. Gorton and B. Holmström (2015), "The Information Sensitivity of a Security".

Delpha, J. and J. von Weizsäcker (2010). "The blue bond proposal". Bruegel Policy Brief 420.

ESRB High-Level task Force on Safe Assets (2018). "Sovereign bond-backed securities: a feasibility study – Volume I: main findings".

Fisher, P. (2013). "Reflections on the Meaning of "risk free"". BIS Paper No. 72.

International Monetary Fund (2012). "Safe Assets: Financial System Cornerstone?" in Global *Financial Stability Report*, April 2012 (Chapter 3).

Gelpern, A. and E. Gerding (2016). "Inside Safe Assets", Yale Journal on Regulation.

German Council of Economic Experts – Bofinger, P., L. P. Feld, W. Franz, C. M. Schmidt and B. Weder di Mauro (2011). "A European Redemption Pact". VoxEU.org, 9 November.

Gorton, G. (2016). "The history and economics of safe assets", NBER Working Paper No. 22210.

Gorton, G., Lewellen, S., and Metrick, A. (2012). "The Safe-Asset Share". American Economic Review: Papers & Proceedings 2012, 102(3): 101–106.

Hellwig, C. and T. Philippon (2011). "Eurobills, not Eurobonds". VoxEU.org, 2 December.

Holmström, B. (2015). "Understanding the Role of Debt in the Financial System," BIS Working Paper No. 479.

Juncker, J.-C. (in close cooperation with D. Tusk, J. Dijsselbloem, M. Draghi and M. Schulz) (2015). "The five presidents' report: completing Europe's economic and monetary union".

General Secretariat of the Council (2013). "The European Council in 2012".

S&P (2017). "How S&P Global Ratings would assess European "Safe" Bonds (ESBies)".

Van Riet, A. (2017). "Addressing the safety trilemma: a safe sovereign asset for the eurozone." ESRB working paper No. 35.

Van Rompuy, H., in close collaboration with J. M. Barroso, J.-C. Juncker and M. Draghi (2012). "Towards a genuine economic and monetary union". Versions published on 26 June and 5 December.