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Financial stability: vulnerabilities, risks and macroprudential policy

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Summary

Despite progress over the past few years, more specifically regarding the reduction in private sector indebtedness and the stabilisation of the banking sector, the Portuguese economy and, in particular, the financial system continue to show vulnerabilities that may contribute to the materialisation of risks to financial stability.

Indeed, indebtedness levels among households, non-financial corporations (NFCs) and, particularly, general government remain high compared with other European countries. This, together with low potential growth, continues to be one of the main vulnerabilities of the Portuguese economy. Therefore, it is crucial that the current macroeconomic and financial environment is seen as an opportunity to proceed with the economy deleveraging process and to reinforce the structural adjustment in public finances. This is particularly relevant given the future normalisation of monetary policy, announced at the end of October, which will lead to the gradual phasing out of monetary stimuli by the European Central Bank (ECB).

In 2017 a series of positive developments contributed to the stabilisation of the banking sector, namely the extension of the maturity of loans granted to the Resolution Fund, the reduction in exposure to Angola, capital increases by some of the major banks operating in Portugal, and the conclusion of the sale of Novo Banco. The strengthening of solvency and shareholder base in some of the major banks contributed to increasing their ability to reduce the stock of non-performing loans (NPLs) and to improving international investors' perception about Portuguese banks and the sovereign. Indeed, substantial progress was made to reduce the stock of NPL and to increase their impairment coverage, in line with that seen since mid-2016, especially in the credit to NFC segment. However, the stock of NPL remains high among euro area countries. There are other vulnerabilities associated with the sector's operational structure, which should proceed with the undergoing adjustment, and the concentration of exposures to the domestic sovereign, the real estate sector and a number of emerging market economies performing poorly over the past few years. Finally, the environment where banks carry out their activity, characterised by low interest rates, rapid technological developments, and competition from new market participants (Fintech), as well as stricter regulatory requirements (including the adoption of IFRS 9 as of January 2018), is particularly challenging for the performance of their financial intermediation functions. Although posing challenges to traditional financial intermediation, emerging competition from new firms specialising in the provision of digital financial services also fosters the implementation of new information technologies in banking activity.

As regards the more relevant risks to financial stability in the short to medium term, the possibility of a reassessment of global risk premia, triggered, more specifically, by geopolitical factors, continues to stand out. An increase in risk premia will tend to result in a deterioration in the funding conditions of more indebted economic agents (in Portugal, this is particularly relevant to the general government) and a reduction in the value of assets more exposed to interest rate risk. However, the probability that this risk will materialise on the funding conditions of domestic issuers will tend to be mitigated, on the one hand, by the ECB's willingness to adjust the volume and duration of the asset purchase programme should financing conditions in the euro area cease to be consistent with a sustained adjustment in the path of inflation. On the other hand, the recent improvement in market perception about the Portuguese economy and the rating upgrade for the Portuguese Republic resulted in a very marked drop in the risk premia of the sovereign and the banks.

In the case of the banking sector, market sentiment developments will be particularly relevant in the event of issuance of instruments eligible to meet the minimum requirement for own funds and eligible liabilities (MREL). Given the challenges posed by the issuance of such instruments, consideration should be given to whether, and under what conditions, retail investors should be allowed to invest in these instruments, so as to prevent any misselling practices that may result in reputational risks and, consequently, affect customers' confidence in banks.

Another risk factor with relevance for financial activities, in general, and banking activities, in particular, is the maintenance of the low shortterm interest rate environment as the central scenario for the next years. This will continue to hamper the financial system's profitability. However, as regards the banking sector, the negative impact of low interest rates on net interest income will continue to be mitigated by their contribution to the decrease in borrowers' default.

The very low level of short-term interest rates will continue to contribute to the easing of credit standards, creating incentives for a slower deleveraging of the economy. Price developments in the residential real estate market may also impact on risks to financial stability, should they reinforce such easing in the specific case of housing loans. However, there is some evidence that house prices in Portugal are close to the levels supported by economic fundamentals, although we cannot rule out the possibility that prices are overvalued in certain geographical areas, particularly major urban centres. Furthermore, house price growth is not synchronised with the credit cycle, which is significant from a financial stability perspective. However, accumulated flows of new housing loans remained strongly buoyant in the first half of 2017, with a growing share in the value of transactions of housing units. Therefore, it is important to ensure that the current dynamics in housing loans and the economy, particularly the real estate market, do not jeopardise the reduction in the still high household indebtedness ratio and do not foster the accumulation of excessive risk in banks' balance sheets and the excessive allocation of economy's resources to the real estate sector. For that purpose, Banco

de Portugal is considering the adoption of additional measures to strengthen the assessment of borrowers' creditworthiness by institutions.

The regulatory and institutional challenges at European level have not lost their relevance since the last issue of the *Financial Stability Report.* The most substantial in this context are the risks underlying a still incomplete Banking Union, where decision-making is centralised, but risks to financial stability must be mitigated at national level. This is worsened by the fact that authorities in each Member State currently have a rather more limited set of instruments to address such risks.

The establishment of the European Stability Mechanism, the Single Rulebook, the Single Supervisory Mechanism and the Single Resolution Mechanism was undoubtedly crucial towards the completion of the Banking Union. However, until its third pillar – the European Deposit Insurance Scheme – has been finalised, risks to financial stability in each Member State will remain very substantial.

Given the aforementioned challenges to the banking sector, Banco de Portugal has very recently decided to extend the gradual phasingin period of the buffer for systemically important institutions, from two to four years. However, the requirements applied to each institution have remained unchanged.

1.1. Vulnerabilities

The high indebtedness of the public and private sectors, amid low potential growth, is a major vulnerability for the Portuguese economy

Despite the adjustment seen over the past few years, the Portuguese economy is still characterised by high indebtedness levels across institutional sectors at international level (Chart 1.1), most notably the general government (Chapter 2).

In June 2017 total consolidated debt of nonfinancial corporations (NFCs) as a percentage of GDP stood at 104%, down by 23 p.p. from the peak at the end of 2012. In turn, household indebtedness was 74% of GDP in June 2017 (103% of disposable income), down by approximately 20 p.p. from the peak in 2009. These reductions reflect the decrease in total debt levels in these sectors and, as of mid-2013, deleveraging has also benefited from the recovery in economic activity, which has made the largest contribution to debt reduction since 2015.

Over the most recent period, NFC indebtedness has been declining at a slower pace. In June 2017, the year-on-year rate of change in NFC debt stood at around -1%. Loans granted by the resident financial sector declined in parallel with an increase in funding from non-residents (loans and securities). The increase in the NFC savings rate as of 2008 has resulted in a substantial increase in financial autonomy, which, however, is still low compared with other European countries. The greater recourse to self-financing may partly explain how, amid a recovery in corporate investment, NFC debt continued to fall, namely vis-à-vis the resident financial sector (Box 1). However, a positive change persists in domestic bank credit to enterprises with a better risk profile, more productive and operating in more profitable sectors of activity, particularly trade and manufacturing. Furthermore, the contribution of loans granted to enterprises that entered the credit market, which are typically younger, has increased, particularly in the

accommodation sector. In turn, non-performing enterprises, largely in the construction and real estate activities sectors, have contributed the most to the reduction in the stock of loans to NFCs.¹

In this context, developments in NFC debt 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, but distressed, NFCs.² In June 2017 non-performing loans and securities (NPEs) accounted for approximately 15% of total consolidated debt of NFCs,³ which are reflected in the high NPE ratios in the Portuguese banking sector's balance sheet (Chapter 3).

Household deleveraging continues, although it is also slowing down. The year-on-year rate of change of -1.8% in June 2017 reflected the -2.2% change in housing loans and 5.0% in loans for consumption and other purposes (a segment which accounts for 20% of total credit granted to households by the resident financial sector). At the same time, new loans granted to both segments have increased markedly.

An additional source of vulnerability is related to the fact that a substantial share of loans to households is linked to a floating interest rate (sensitive to fluctuations in money market interest rates), in addition, in the case of housing loans, to long contractual maturities, where the loan repayment horizon may extend into the borrowers' retirement period, when a marked decrease in income is to be expected. High household indebtedness, together with low savings rates, make households particularly vulnerable to negative shocks on income and to an increase in short-term interest rates.

Economic recovery in a particularly favourable external macrofinancial environment should continue to have a positive impact on households' disposable income and NFC profits, thus mitigating the risks associated with high indebtedness. However, given the low potential growth of the Portuguese economy, continuing with the deleveraging process of the private







Chart 1.1 • Public and private nonfinancial sector indebtedness – international comparison | As a percentage of GDP

Source: Eurostat. Note: 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, except for countries marked with an asterisk (*), for which the position at the end of 2016 was estimated on the basis of debt for the fourth quarter.

(10)

sector is key to making the economy more resilient to the future normalisation of official interest rates (Boxes 2 and 4).

Turning to general government, despite the very substantial adjustment since 2011 in terms of the budget balance, it is expected that only in 2017 the path followed by public debt will be reversed (as indicated in the recent notification under the Excessive Deficit Procedure).⁴ This reflects the combination of a primary surplus, a reduction in the implicit cost of debt and higher nominal economic growth. Nevertheless, given that the current, particularly favourable, macroeconomic framework does not guarantee per se the additional adjustment in public finances required by the Stability and Growth Pact, it must be seen as an opportunity to strengthen the structural nature of fiscal consolidation. This process is particularly important given that the high indebtedness level of the public sector conditions the sovereign risk premium and may have a negative impact on access to financial markets by the other domestic economic agents, namely financial institutions. Therefore, in terms of ensuring financial stability, particularly as regards the resilience of the Portuguese economy against adverse shocks, it is important to make an adjustment in the structural balance in line with European rules that allows for a faster reduction of public debt.

More broadly, the reduction in indebtedness in the private and public sectors should contribute to improving financing conditions and increasing the Portuguese economy's investment and competiveness, which are key to guarantee higher potential economic growth.

The Portuguese financial system, more specifically the banking sector, continues to show some vulnerabilities

In 2017, a series of positive developments contributed to the stabilisation of the banking sector, namely the extension of the maturity of loans granted to the Resolution Fund, the reduction in exposure to Angola, capital increases by some of the major banks operating in Portugal, and the conclusion of the sale of Novo Banco in October. The strengthening of solvency and shareholder base in some of the major banks increased their ability to reduce the stock of non-performing loans (NPLs) and improved international investors' perception about Portuguese banks and the sovereign. Over the same period, there were some consolidation operations in the banking sector, with an impact on the sector's structure and supervision.

However, important vulnerabilities remain in the Portuguese banking sector, associated with the still high stock of NPL, the need to proceed with the adjustment in operational structures, and the concentration of exposures to certain asset classes, despite some heterogeneity among institutions. The environment where banks carry out their activity, marked by low interest rates, technological changes and competition from new market participants (Fintech), as well as stricter regulatory requirements, is particularly challenging to their financial intermediation functions.

Over the past few years, the combination of low nominal economic growth, after a recession period, and a protracted low interest rate environment has conditioned profits of financial institutions. In the case of the banking sector, the importance of housing loans, with Euribor-indexed rates, long maturities and relatively low fixed spreads, granted prior to the crisis, has negatively affected net interest income. Although spreads applied to new lending to customers are currently higher, the impact on the average portfolio interest rate is gradual, given the small volumes of new lending compared to the stock of loans. Turning to the insurance and pension funds sector, the persistence of very low interest rates, over a protracted period and across a broad maturity spectrum, has limited the investment options that make it possible to meet long-term liabilities, in addition to increasing their present value. However, as economic recovery in the euro area consolidates and leads to a sustained adjustment in the inflation path consistent with the European Central Bank (ECB) primordial objective, a gradual phasing out of monetary stimuli is to be expected. At the end of October 2017, the ECB Governing Council confirmed that the process will be implemented gradually, which will tend to benefit the profitability and solvency of financial institutions in the medium term.

High NPL levels in banks' balance sheets and uncertainty about the adequacy of coverage levels limit their ability to generate profits and provide an adequate return for investors, which may affect institutions' access to international financial markets. This tends to take on greater importance in a context where the potential need to issue instruments eligible to meet minimum requirements of debt and own funds available to absorb losses in case of resolution (MREL) is expected to arise in the short to medium term.

Since mid-2016, substantial progress was made to reduce the stock of NPL and increase the impairment coverage ratio. In fact, in June 2017, the NPL ratio narrowed to 15.5%, compared with 17.9% in June 2016, and the impairment coverage ratio increased from 43% to 46% over the same period, chiefly reflecting progress in the credit to NFCs segment. Underlying these developments is a decrease of around €8 billion in NPLs, of which approximately €6 billion in NFCs (Chapter 3). Recent developments in the solvency of major Portuguese banks, the outlook for the Portuguese economy and developments in real estate prices have created a favourable environment to carry on with the reduction in non-performing assets.

However, a more substantial reduction in the high stock of NPL will only be possible following the implementation of the comprehensive strategy described in the Special Issue "Strategy to address the stock of non-performing loans (NPLs)", which is primarily based on three interlocking and complementary pillars: (i) revision of the legal, judicial and tax framework; (ii) microprudential supervisory actions, under the Single Supervisory Mechanism (SSM); and (iii) management of NPL portfolios, including possible systemic measures. As part of its prudential supervisory functions, Banco de Portugal has prioritised the monitoring of banks' asset quality. For that purpose, compliance with the plans to reduce NPLs submitted by banking institutions on request by Banco de Portugal or Joint Supervisory Teams in the case of significant institutions under the SSM is being monitored.

In the case of Portuguese banks, the adjustment in cost structures is, in some cases, still insufficient in view of their lower sources of income. Despite the progress made (albeit considerably diverse across banks), efforts towards improving operational efficiency must proceed, in order to meet the challenges posed to their activity. In spite of the expected gains associated with improved operational efficiency, this process entails additional costs in the short to medium term, associated with investment on technological transition and the adjustment in staff, in terms of both the number of employees and their qualifications.⁵ In the first half of 2017 operational efficiency levels in the Portuguese banking sector improved somewhat year on year, which resulted in a 1.4 p.p. decrease in the cost-to-income ratio, to 60.5%, despite the extraordinary costs borne during this period, edging closer to the euro area median. Excluding the impact of these one-off costs, the cost-to-income ratio is estimated to have stood at 57.1% (Chapter 3). In addition to the aforementioned vulnerabilities, the Portuguese banks' business model has been challenged by technological innovation and legal framework changes, which was reflected inter alia in the emerging competition from new firms specialising in the provision of digital financial services (Fintech). In this context, the entry into force in January 2018 of the new Directive on payment services in the internal market of the European Union⁶ will allow service providers that do not hold a banking licence to provide specific payment services, through dedicated software applications. Although this poses some challenges to traditional financial intermediation activity, it also provides incentives for the implementation of new information technologies within banking activity.

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A further driver of vulnerability in the Portuguese financial system is associated with the concentration of exposures. This includes high exposure to public debt (securities and loans), which accounts for 15% of total assets of resident banks. In particular, this exposure is concentrated in the domestic sovereign (10% of total assets). Over the past few years, exposure to debt securities issued by other euro area countries, most notably Spain and Italy, has risen. However, to the extent that yield changes in these securities are positively correlated, diversification gains may be limited. In turn, the average maturity of the government debt securities portfolio has increased, which may increment banks' exposure to interest rate risk, although this reversed somewhat in the first half of 2017 (Chart 1.2).

Exposure to domestic government debt securities increased markedly during the sovereign debt crisis, while the role of Portuguese banks in the market helped to mitigate the very substantial increase in yields on these securities. Currently, the regulatory treatment of domestic government debt securities in terms of solvency and liquidity ratios favours the holding of such assets. Amid low sector's profitability, the higher yields on Portuguese securities make them relatively more attractive compared with other euro area sovereign issuers. Up to the end of 2017, the gradual phasing-out of the prudential filter that made it possible for banks to make own funds ratios immune to changes in the value of government debt securities classified as 'available-for-sale assets' will be concluded.⁷ As such, future changes in the value of these assets will be fully reflected in banks' capital ratios.

Since the end of the first quarter of 2017, the reduction in Portuguese government debt securities yields, along with the upgrade of the credit rating of the Portuguese Republic to investment grade by Standard & Poor's in September led to the reduction in accumulated net losses, with a positive effect on banks' regulatory capital ratios.

In the first half of 2017 the concentration of investments in public debt remained high in the insurance and pension funds sector, unchanged from the end of 2016. That year, the domestic sovereign's securities portfolio was substantially reinforced and, conversely, exposure to the national banking sector decreased. Similarly to the banking sector, these developments reflect an asset management strategy to maximise the portfolio's returns and minimise capital requirements, against a regulatory framework very favourable to holding euro area government debt securities.

Another type of concentration is associated with direct and indirect exposure to the



real estate market, which accounts for approximately 40% of the banking sector's total assets (Chart 1.3). This exposure is mostly indirect, chiefly related to housing loans, which are typically guaranteed by a mortgage on the property (in June 2017 housing loans accounted for nearly 28% of total assets). In this context, in 2016 a substantial share of housing loans had a loan-to-value ratio below 90%, which means that there is still some room for devaluations in collateral in the case of default. Another component of banks' indirect exposure to the real estate sector is associated with loans to firms in the construction and real estate activities sectors, accounting for around 5% of total assets. Although they represent approximately 25% of loans to NFCs, 40% of firms' NPLs is concentrated in these sectors.

Direct exposure to real estate assets, in turn, arises mainly from foreclosed property. The enforcement of claims collateralised by real estate property that defaulted during the economic and financial crisis has contributed to an increase in this exposure. Conversely, the dynamics in the real estate market over the past few years has built a better ground for the sale of this property (Box 3).

Exposure to a number of emerging market economies dependent on commodities exports continues to be substantial for a number of Portuguese banks. This exposure is mostly indirect, comprising loans and credit lines to NFCs that carry out a considerable share of their activity in these economies or with whom they have established significant trade relations. Overdue loans ratios in these NFCs are lower than for the aggregate credit to NFCs, although they have increased significantly over the past few years. Therefore, developments in these exposures and the performance of these economies must continue to be monitored. Particularly in the case of Angola, the negative impact on economic activity of continued low oil prices, the increase in the public sector's indebtedness, and vulnerabilities in the financial system have led to the downward revision in Angola's credit rating by two major credit rating agencies. The economic and financial environment of Angola's economy may hamper the performance of Portuguese firms most exposed to this country, as well as banks financing these firms. Direct exposure, on the other hand, has been decreasing substantially due to the deconsolidation of subsidiaries in Angola by BCP and, mostly, BPI.



Chart 1.3 • Banking sector's exposure to the real estate sector | As a percentage of total assets

Source: Banco de Portugal. Note: (a) Includes loans and shares; (b) gross figures; (c) excludes loans to NFCs in the construction and real estate activities sectors.

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1.2. Risks to financial stability

The global reassessment of risk premia, and the ensuing increase in long-term interest rates, may be triggered by geopolitical events, with an impact on international financial market sentiment

During the recent financial crisis, global real and nominal interest rates dropped to historical lows, reflecting reduced economic growth and extremely accommodative monetary conditions provided by the central banks in major economies. High liquidity available led to a widespread valuation of stock price indices, particularly in the United States, and the compression of risk premia in fixed income markets. In this context of stretched financial asset prices and compressed risk premia, volatility dropped to historical lows, similar to those seen in 2007 (Chart 1.4), only partly reflecting fundamentals associated with economic recovery and lower uncertainty about economic policies. This may reflect similar investment strategies, potentially amplifying the size of a reversal in the current market sentiment.

The strenthening of recovery in global economy and higher confidence levels, amid still very low interest rates, may favour the persistence of search-for-yield behaviours and greater risk-taking. Financial markets expect the gradual normalisation of monetary policy in the largest economic areas, although these expectations may change following economic or political shocks, with a subsequent increase in risk aversion worldwide. An increase in the risk premium will tend to deteriorate financing conditions of more leveraged economic agents, particularly in the event of a substantial and sudden revaluation.

In Portugal, a possible increase in risk premia, if persistent, will tend to rise financing costs

for the sovereign, with an impact on fiscal performance. Therefore, to ensure the resilience of public finances and the economy as a whole against adverse external shocks, it is crucial to implement policies that promote the sustainability of public finances and potential growth.

A revaluation of global risk premia would also affect market access by firms and financial institutions. In the case of the banking sector, market sentiment developments will be particularly important in the event of issuance of MREL instruments. In turn, the financial system's high exposure to Portuguese government debt securities renders their balance sheets particularly vulnerable to an increase in the Portuguese Republic's financing costs, given that this would lead to a reduction in these securities' market value, with an impact on institutions' solvency. Considering the balance sheet data of the seven largest Portuguese banks, as of June 2017, and without regard to any hedging strategies, a 100 b.p. increase in the domestic benchmark government yield would imply a reduction of approximately 0.5 p.p. in the CET 1 capital ratio for this group of institutions.

However, the impact on the domestic sovereign's risk premium will tend to be mitigated, on the one hand, by the intervention of the ECB which, even following the announced gradual phasing out of the volume of the asset purchase programme, is prepared to extend the programme in terms of volume and/or duration should financial conditions in the euro area cease to be consistent with a sustained adjustment in the path of inflation. Furthermore, the ECB has signalled that key interest rates will remain at present levels for an extended period of time, and well past the horizon of the net asset purchases. On the other hand, the recent improvement in market perception about the Portuguese economy and the Portuguese Republic's credit rating upgrade led to a very marked fall in risk premia for the sovereign and banks (Chapter 2).

The low short-term interest rate environment will remain the central scenario for the next few years, conditioning the financial system's profitability and creating incentives for a slower deleveraging in the economy

Compared with June 2017, market expectations about short-term interest rate developments in the euro area were broadly stable, continuing to point to a very gradual and limited increase, with the 3-month EURIBOR being expected not to reach positive values before the end of 2019 (Chart 1.5). Nevertheless, there was an upward revision from market expectations in June 2016, possibly due to the incorporation of more favourable projections for economic growth and inflation and possible changes to the ECB's monetary policy. Amid very low interest rates, the generation of net interest income by banks has, over the past few years, been supported by the adjustment in funding costs through the decrease in the cost of deposits and the increase in this source of funding in the liabilities structure. However, given that the remuneration of deposits has edged closer to the zero lower bound, the possibility of further decreases is increasingly lower (Chapter 3).

In any case, the maintenance of low interest rates and the recovery in economic activity have a positive impact on credit default levels, thus reducing impairment flows, with positive effects on the banking sector's profitability.

The current low interest rate environment, along with other factors, contributes to an easing in credit standards, making it more probable for borrowers with lower payment capacity to get funding, particularly for projects whose viability may be jeopardised in a scenario of interest rate normalisation. This may hamper the adequate credit allocation, based on efficiency, productivity and sustainability criteria. Indeed, spreads applied to new loans to NFCs have been decreasing, putting additional pressure on banks' profitability. However, there is some evidence pointing to the continuance of differentiation in spreads applied to new loans to NFCs according to their risk profile (Special Issue "The risk segmentation on the interest rate spreads of new bank loans to non-financial corporations").8

Over the past few years, particularly since 2015, spreads applied to new housing loans have compressed somewhat, largely reflecting bank competition in this segment. Although spreads are currently well above the levels seen before the crisis, they are already relatively low compared with other euro area countries.

Chart 1.4 • Implied volatility in equity markets | Per cent

Source: Thomson Reuters. Note: Implied volatility in prices of call and put options on the Euro Stoxx 50 (VStoxx) and S&P 500 (VIX) indices. Latest update: 13 November 2017.



In addition to spreads applied to new housing loans, other credit standards have eased somewhat. In particular, the average maturity of credits extended to 33 years at the end of 2016, the highest value at European level. Additionally, the average LTV and loan-toincome (LTI) ratios at origination, i.e. when credit is granted, have followed an upward path since 2014. With regard to the debt-service-toincome (DSTI) ratio at origination, its relative stabilisation since 2012 reflects interest rate developments and their very low levels. In this context, Banco de Portugal is considering the adoption of additional measures to strengthen the assessment of borrowers' creditworthiness by institutions.

Furthermore, the low interest rate environment, by creating more favourable conditions for credit demand, may act as a disincentive to the continuation of the necessary deleveraging process of the non-financial private sector, thus increasing vulnerability to a future increase in interest rates, which may result in credit risk materialisation. As regards NFCs, improvements in the financing structure over the past few years have made this sector less vulnerable to an increase in shortterm interest rates. Given that NFCs are vulnerable if they present a ratio of EBITDA to interest expenses below 2, the share of NFCs vulnerable to shocks on financing costs has decreased markedly from 2010 (Box 2). However, approximately one-third of the resident financial system's exposure to NFCs, at the end of 2016, corresponded to firms with an interest coverage ratio below 2. This fact cannot be dissociated from the high level of NPLs in the NFCs segment. This amounts to 43% when taking into account a 2 p.p. rise in short-term interest rates. In the case of households, Box 4 presents a characterisation of Portuguese households based on the Household Finance and Consumption Survey, which shows a considerable share of households with very high indebtedness levels relative to their income, across income brackets. Households in the lowest income quartile are particularly vulnerable to any factor likely to reduce income or increase short-term interest rates. Furthermore, intermediate income households are particularly sensitive to increases in interest rates on housing loans. It should be noted, however, that the rise in short-term interest rates will tend to materialise gradually and should be linked to improved economic conditions.



Chart 1.5 • Interest rate implicit in the three-month EURIBOR futures contracts | Per cent

Source: Thomson Reuters. Note: 30-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: 13 November 2017.

Price developments in the real estate market may pose risks to financial stability to the extent that they may lead to the easing in credit standards on housing loans, amid high household indebtedness

After falling by 16% in real terms between 2010 and 2013, residential property prices in Portugal recorded robust and increasing annual growth rates in recent years. Between the end of 2013 and the first half of 2017 prices grew by around 20% in real terms (Chart 1.6). An analysis made on the basis of standard assessment measures of house price dynamics shows that, in the first guarter of 2017, house prices at country level were close to the levels justified by fundamentals. However, the possibility of overpricing in some geographical areas cannot be ruled out, particularly in major urban centres. House price growth seems not to be synchronised with the credit cycle (Box 5). However, cumulative flows of new housing loans continued to grow strongly in the first half of 2017 (by approximately 40% year-onyear). Additionally, the share of transactions of housing units funded by credit increased to 45%, compared with the 20% minimum in 2013 (65% in 2009).

Therefore, it is crucial to ensure that the current dynamics of loans for house purchase and the economy, particularly the real estate market, do not jeopardise, on the one hand, the reduction of the still high household indebtedness ratio and, on the other hand, do not foster the accumulation of excessive risk in banks' balance sheets and the excessive allocation of economy's resources to the real estate sector.

In this respect, financial institutions must base their lending decisions on adequate analysis of customers' debt servicing capacity, particularly under more adverse macroeconomic and financial conditions. Indeed, for households, housing loans typically represent the largest financial commitment, given the borrowed amounts, the typical maturity of such credit agreements and the consequences of foreclosure. As such, mortgage credit has been addressed by various legislative initiatives at European level, which aim to protect the interest of these bank customers. Decree-Law No. 71-A/2017 was published in June 2017, partially transposing into Portuguese law Directive No. 2014/17/EU on these credit agreements. Decree-Law No. 71-A/2017 defines inter alia remuneration policies in credit

Chart 1.6 • Real estate price indices in real terms | Index (2015=100)

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



institutions (which shall not allow to make compensation of their employees conditional, directly or indirectly, on the number of credit approvals and credit agreements contracted), the know-how and skills of their staff. It also establishes the information that must be present in the European Standardised Information Sheet (ESIS), which must be provided to the customer at two different moments: when the loan is simulated, on the basis of the information the customer has provided to the institution and, subsequently, when the client is notified of the credit agreement approval, reflecting the features of the loan approved by the institution.9 The EU Directive and its transposition into Portuguese law also establish that the consumer's capacity and propensity to comply with the credit agreement must be assessed ex ante and that financial institutions must only enter into an agreement if the assessment indicates that it is likely that obligations will be met.

With regard to the assessment of consumers' solvency and financial resilience, Notice of Banco de Portugal No. 4/2017 lays down the details on these consumers' income and expenses that must be taken into account for the solvency assessment, while Instruction of Banco de Portugal No. 15/2017 establishes the criteria according to which the impact from increases in the reference rate of credit agreements must be gauged.

The need for prudent analysis on lending must be naturally extended to credit operations associated with commercial real estate financing. This segment of the real estate market has also been recording upward price developments based, however, in a lower number of transactions and where the influence of non-residents on transactions tends (in the post-crisis period) to be very substantial. Current price levels and their recent developments tend to reflect a shortterm rigidity in supply, also given the greater importance of location for buyers. Without prejudice to the positive contribution to financial stability in the medium-term, some challenges persist for the financial system stemming from the regulatory and institutional framework at European level

The regulatory and institutional challenges at European level have not lost any of their importance since the last issue of the Financial Stability Report. Indeed, the recent cases of Banco Popular Español, Banca Populare di Vicenza and Veneto Banca have highlighted the risks underlying a still incomplete Banking Union, where decisionmaking is centralised, but risks to financial stability must be mitigated at national level. This is worsened by the fact that authorities in each Member State currently have a rather more limited set of instruments to address such risks. In this respect, State intervention has become increasingly difficult, under the current State aid rules and the Bank Recovery and Resolution Directive (BRRD).

The creation of the European Stability Mechanism, the Single Rulebook, the SSM and the Single Resolution Mechanism are undoubtedly crucial steps towards the establishment of a Banking Union. However, until its third pillar – the European Deposit Insurance Scheme (EDIS) – is finalised, risks to financial stability within each Member State will remain very substantial.

In this respect, the European Commission issued a Communication on 11 October 2017 on the completion of the Banking Union, which takes stock of what has been achieved and what measures are still needed to complete it, both in terms of risk reduction and risk sharing in the banking sector. Although the Communication addresses a number of relevant issues, such as the need for a swift deployment of a backstop for the Single Resolution Fund, it falls short of expectations

about the creation of the EDIS, entailing a backward step from the primordial objective of the third pillar of a genuine Banking Union. Indeed, the Commission's proposal would materialise in a more gradual implementation of the EDIS, extending the transitional period before moving to the co-insurance phase. The Commission's Communication also raises questions about the objective of achieving total loss sharing: a merely partial co-insurance system, although enhancing the functioning of national deposit guarantee schemes, may prove to be insufficient to grant credibility and effective powers to EDIS, to break the bank-sovereign link, and to ensure both a harmonised coverage of depositors across the European Union and that any deposit enjoys the same level of protection regardless of the geographical location of the credit institution - goals that were behind the establishment of the Banking Union. Finally, the Commission suggests that the next steps into the completion of the Banking Union (namely, EDIS) may be made conditional on the reduction, possibly substantial, of the NPL stock and level 3 fair value assets.¹⁰ This means that this option may make the adoption of a co-insurance mechanism (which is clearly insufficient to achieve a genuine Banking Union) conditional on the elimination of the high NPL stock problem, which, to prevent fire-sale solutions that could disrupt financial stability, cannot be implemented in the short term and in parallel.

Increased regulatory pressure to restructure the banking sector may lead to non-market driven consolidation movements. In this context, it is key to ensure full alignment between decisionmakers and those responsible for ensuring financial stability. Only this alignment ensures balanced decisions and makes room for the discussion of proposals, such as that recently made by the European Commission – in the context of the negotiations on the revision of the Capital Requirements Regulation (CRR) and the Directive on access to the activity of credit institutions and prudential supervision (CRD IV), recently reiterated in the aforementioned Communication – to exempt prudential requirements on an individual and crossborder basis, e.g. regarding capital ratios.

At regulatory level, in addition to capital and liquidity requirements implemented in line with a transitional period (the capital conservation buffer and the systemically important institutions capital buffer),¹¹ in the short to medium term new rules will enter into force which will also impact on the activity of Portuguese banks.

Among the challenges faced by Portuguese banks is the possible issuance of lossabsorbing debt and own funds instruments, to meet the MREL requirement. These instruments will tend to entail higher financing costs, given the level of subordination of such instruments and the credit rating of Portuguese banks. The ensuing pressure on profitability and, in particular, net interest income will depend on banks' capacity to pass through increases in funding costs to the price of lending and services provided. To reduce issuance volumes and the impact on their profit and loss account, institutions may also adopt balance sheet optimisation strategies, more specifically the reduction in risk-weighted assets. These strategies, as well as their repercussion on the supply of credit to the non-financial private sector, will be conditional on the requirements to be defined for each institution.

Challenges to the placement of debt in the market may create incentives to sell these instruments in the retail market. Indeed, as regards the investor base, it is worth considering whether and how retail investors should be able to invest in these instruments, to prevent mis-selling practices that may lead to reputational risks and thus affect customers' confidence in banks. Furthermore, the placement of such instruments must seek geographical diversification of investors and prevent reciprocal cross holding of these assets by financial institutions, thus mitigating contagion effects.

In this context, it is particularly relevant that the phased-in introduction of this requirement extends over a sufficient period of time, so as to minimise the impact on institutions' funding costs, at a time when banks are still adjusting their balance sheets. In any case, in the course of 2017, the improvement in market sentiment about the Portuguese economy and, in particular, Portuguese banks resulted in a decrease in risk premia demanded by investors.

Also the implementation of IFRS 9 in January 2018, which establishes the transition from an incurred loss model to an expected loss model, will affect recognised impairments and banks' own funds, particularly those that use the standard method to calculate own funds requirements.¹² The introduction of this rule will result in a swifter recognition of impairment losses and in an appropriate amount to financial assets' credit risk levels, thus setting more favourable conditions for preserving financial stability. However, institutions, auditors, supervisors and regulators must pay special attention to some elements associated with the new standard, particularly as regards pro-cyclicality, volatility in results and increasing subjectivity. A first line of defence for the banking system to mitigate the impact of a number of the standard's pro-cyclical elements on the volatility of results and solvency may involve building up a capital buffer during an upturn in the business cycle, so that institutions may accommodate the early recognition of impairment losses determined by the model when a recession period starts.

With regard to increased discretion following the introduction of IFRS 9, Banco de Portugal has the power to issue guidelines on certain elements of the new standard and will do so if necessary. On the one hand, this decision will take into account potential costs associated with subjectivity and discretion, such as the lack of comparability of institutions' financial position. On the other hand, institutions should be given similar conditions as their European counterparties, in order to ensure a level playing field. In this respect, Banco de Portugal's monitoring of the implementation of the new standard also involves the ECB in the case of institutions directly supervised under the SSM.

Changes to the global financial system, stemming from the increasingly widespread use of new technologies in banking, must be monitored by regulatory and supervisory authorities for the purpose of financial stability maintenance. In fact, growing digitalisation of financial services may give a systemic dimension to some Fintech enterprises, which, overall, are not subject to the same prudential and regulatory requirements applied to entities supervised under the SSM. Therefore, competent authorities must monitor technological innovation in the financial system to ensure: (i) a levelplaying-field among competing institutions; (ii) the identification of risks stemming from the provision of technology-based financial services; and (iii) the adoption of adequate regulatory and supervisory initiatives at national and European level.

1.3. Macroprudential policy

Given the aforementioned risks to financial stability, as well as their developments, macroprudential policy has not changed markedly. In this context, the main macroprudential policy objectives in the current environment and within the European framework are: (i) to prevent the accumulation of further imbalances in economic agents' balance sheets in the current economic upturn, which is set against a very protracted low interest rate period, coupled with increasing house prices, easier credit standards and increased competition among institutions; and (ii) to contribute to the maintenance of a downward trend in vulnerabilities, particularly via the deleveraging of the non-financial private sector.

Banco de Portugal maintained the countercyclical buffer rates and systemically important institutions buffer rates, changing the latter's phasing-in period To increase the financial system's shockabsorbing capacity for unexpected losses, thus preserving the adequate flow of funds to the economy, as regards the capital conservation buffer rate, the phasing-in determined by the European regulatory framework was maintained. In 2017 this rate rose to 1.25 per cent of total risk exposures. In 2019 this requirement will reach 2.5 per cent of the risk exposure amount.

In the last quarter of 2017, Banco de Portugal completed the annual identification of the group of systemically important institutions and setting of the corresponding capital buffer rate for systemically important institutions (O-SII buffer) that each must meet (Table 1). This macroprudential instrument is aimed at reducing incentives for excess risk-taking by institutions with relevance to the system, either because of their size or of their interlinkages with other institutions. Therefore, the rate varies according to each institution's systemic importance.

	Implementation date			
O-SII	January 2018	January 2019	January 2020	January 2021
Caixa Geral de Depósitos	0.250%	0.500%	0.750%	1.000%
Banco Comercial Português	0.188%	0.375%	0.563%	0.750%
Novo Banco	0.125%	0.250%	0.375%	0.500%
Santander Totta – SGPS	0.125%	0.250%	0.375%	0.500%
Banco BPI	0.125%	0.250%	0.375%	0.500%
Caixa Económica Montepio Geral	0.063%	0.125%	0.188%	0.250%

Table 1 • O-SII buffer rate

Source: Banco de Portugal.

In this exercise, Banco de Portugal maintained the methodology and the buffer rates applied to O-SIIs. However, it decided to extend the time frame for compliance with such rates, from a two-year to a four-year period, given the challenges still faced by the Portuguese banking system.

The national macroprudential authority also decided to maintain the countercyclical buffer

rate at zero per cent of total risk exposures in the fourth quarter of 2017, in line with the methodology developed at European level. Indeed, credit to the non-financial private sector has presented negative growth rates since the fourth quarter of 2010, although the decline has slowed down during 2017. Therefore, regarding this sector, the ratio of credit-to-GDP has been below its long-term trend, which is reflected in a negative credit-to-GDP Basel gap (Chart 1.7).

Banco de Portugal assessed the introduction of the leverage ratio in the subset of instruments selected for macroprudential policy implementation

Macroprudential policy implementation is fairly recent and, as such, has proceeded gradually, also benefiting from experience. Therefore, the ability to add new instruments to those already available is still open, in light of new developments in terms of risks to financial stability and the regulatory framework.

Given the expected introduction of a microprudential minimum requirement for the leverage ratio, its use as macroprudential policy instrument in Portugal has been under analysis. While the microprudential requirement applies to all institutions at all times, a macroprudential use would imply a differentiation by institution or according to the credit cycle. The Special Issue "Banks leverage ratio – the Portuguese case" addresses this new prudential requirement, which must be met alongside with the existing capital ratio. Taking into equal account all exposures, the

leverage ratio sets out a regulatory capital according to the size of the institution's balance sheet, mitigating the risk associated with the models used to calculate risk weights and the associated pro-cyclicality. On the basis of a sample of the seven largest banking groups operating in Portugal, the analysis concludes that the risk-based regulatory capital ratio will continue to be the strictest requirement, given the high average risk weight presented by the Portuguese institutions. As such, at the present time, it was not considered appropriate to introduce a macroprudential requirement for the leverage ratio.



Chart 1.7 • Basel Gap and additional measure of credit-to-GDP gap | Percentage points

Sources: Statistics Portugal (INE), Banco de Portugal and Banco de Portugal calculations. Note: Latest observation in March 2017.



Notes

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", *Financial Stability Report*, June 2017.

2. The reduction in total NFC debt in the first half of 2017 was chiefly due to a substantial volume of written-off bank loans. However, write-offs, although reducing the borrower's debt included in the creditor's balance sheet, do not result in an actual reduction in the debtor's liabilities (Chapter 2).

3. Non-performing exposures, according to the definition proposed by the European Banking Authority (EBA).

4. See Box 5 "Recent developments in public debt and financing strategy", Economic Bulletin, October 2017.

5. See the Special Issue "Efficiency of the Portuguese banking system", Financial Stability Report, November 2016.

6. https://ec.europa.eu/info/law/payment-services-psd-2-directive-eu-2015-2366_en

7. See Box 2 "Options and discretions in the context of the Single Supervisory Mechanism", Financial Stability Report, November 2016.

8. See also Economic Bulletin, October 2017.

9. As is currently case with the Standardised Information Sheet established in Notice of Banco de Portugal No. 2/2010.

10. IFRS 13 "establishes a fair value hierarchy that categorises into three levels the inputs to valuation techniques used to measure fair value. The fair value hierarchy gives the highest priority to quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1 inputs) and the lowest priority to unobservable inputs (Level 3 inputs)", paragraph 72.

11. See "I. Financial stability: Vulnerabilities and risks", Financial Stability Report, November 2016.

12. See Special Issue "2. IFRS 9 - Main changes and impacts anticipated for the banking system and financial stability", Financial Stability Report, June 2017.

Box 1 • Deleveraging and investment of NFCs in Portugal

Motivation

This box analyses how the deleveraging of non-financial corporations (NFCs) and the rise in corporate investment have co-existed in the recent period, considering the implications for financial stability. In particular, the intention is to assess the adjustment of the balance sheet of firms that reduced their financial debt ratio (measured by the weight of financing obtained in the respective assets), whether this has favoured the recovery of NFC investment, whether firms that reduced their financial debt ratio to a greater extent experienced a more marked recovery of investment than those that did not, and finally, whether firms investing more in the period following the economic and financial crisis consequently increased their financial debt ratio.

The reduction of NFC leverage observed since 2013 has favoured financial stability, given that firms relying to a larger extent on third-party financing are potentially more vulnerable to negative shocks, such as those observed between 2009 and 2013, both in terms of their activity and for compliance with their financial obligations.

In turn, corporate investment is crucial to raise and support economic growth, which fosters financial stability. Following a considerable reduction between 2009 and 2013, NFC investment has recovered gradually. However, total investment reached at the current stage of the business cycle remains lower than in similar stages of previous business cycles and also below that recorded in other euro area countries (such as Spain, Ireland or Italy).

Regarding NFCs, the reduction in the financial debt ratio and the gradual recovery of investment have taken place in the context of a higher saving rate, in contrast to the situation observed before the economic and financial crisis, when the decline in corporate saving was offset by successive debt increases to finance an increase in investment. In spite of these developments in the NFC aggregate,

behaviour seems to have been heterogeneous across firms, influenced by their own specific economic and financial situation.

The analysis shown corresponds to a preliminary approach for estimating the main aggregates of NFC national accounts based on the Simplified Corporate Information (IES in Portuguese). In addition, when this box was prepared, IES data for 2016 were not available, and may be incorporated into future analyses.

Deleveraging and saving of NFCs

The NFC financial-debt-to-GDP ratio has been narrowing since 2013,¹ moving gradually closer to the euro area average.² In June 2017 the ratio stood at 97%, approximately 23 percentage points below the peak observed at the end of 2012. However, the current financial debt ratio of NFCs³ is not significantly lower than before the start of the financial crisis, nor did the observed reduction make it possible to change, by the end of 2016, Portugal's relative position in the group of euro area countries vis-à-vis 2007.

In turn, saving of Portuguese NFCs has been increasing since 2009, reaching around 10%

of GDP as of 2013 (Chart C.1.1), although below, for example, Spain (where NFC saving reached around 17% of GDP in 2016). The rise in NFC saving reflected a recovery in operating profitability (from 2008 to 2016 the sector's gross operating surplus⁴ increased from 16% of GDP to 19% of GDP) and to a large extent a reduction in the weight of distributed earnings (as a percentage of the gross operating surplus and in net terms). The distributed income of corporations declined from around 37% in 2009 to approximately 26% in 2016.

The distinction between NFCs⁵ that reduced their financial debt ratio (assessed at microdata level by financing obtained as a percentage of assets)⁶ and NFCs that increased this ratio in the 2011-15 period shows that firms with a reduction (or nil change) in the financial debt ratio recorded the highest saving in the period under review (Chart C.1.2). The former also presented, on average, a lower financial debt ratio than the latter both in 2011 and 2015.

The highest saving (as a % of GVA) of the group of firms that reduced their financial debt ratio occurred simultaneously with an increase in



Source: Statistics Portugal and Banco de Portugal.

Notes: Consolidated figures. Biannual figures based on quarterly national accounts 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 discrepancy between net lending and financial saving (corresponding to the balance computed within the scope of financial national accounts).

equity and a reduction in financial assets. In turn, firms with a rise in their financial debt ratio continued to record deteriorating capitalisation levels and a reduction in financial assets, which translated into a decline in their assets, thus contributing to a rise in the ratio. For the group of firms present across the entire 2011-15 period, the conclusions would not change materially.

There is no considerable difference in the trend of investment between the two groups of NFCs, with the exception of 2014, when the group of firms that increased their financial debt ratio experienced a higher change in this aggregate. The difference seen that year may have been associated with a small group of firms that, with a greater financial balance, showed an ability to increase their financial debt ratio, which allowed them to finance investment.

In sum, firms that reduced their financial debt ratio showed higher saving, and there were no substantial differences in investment between the two groups of firms. Other studies of the kind show that the more indebted firms increased their saving rate significantly, in contrast to the least indebted ones.⁷

The decline in the financial debt ratio is heterogeneous across the different sectors of activity. Considering the ratio of financing obtained to total assets, the negative change recorded between 2012 and June 2017 was more marked in the construction sector (8 percentage points) and less significant in the electricity, gas and water sector (2 percentage points) (Chart C.1.3).

Developments in saving and debt were also heterogeneous across sectors of activity. The manufacturing, construction and wholesale and retail trade sectors experienced an increase in saving between 2012 and 2015, although saving in the construction sector was persistently lower than in the other two sectors (Chart C.1.4). In turn, the construction sector showed higher net redemption of debt than the other sectors. This sector had a relatively high debt ratio in 2012, requiring greater effort to reduce leverage.

Capitalisation of these three sectors also evolved differently: manufacturing showed considerable capital increases after 2012, whereas in wholesale and retail trade there seem to have been no positive changes of a similar magnitude, and construction recorded a decline in 2015.



Source: Banco de Portugal.

Notes: Estimates considering private NFCs based on IES data. Estimated data may differ from national accounts figures due to the use of different calculation methodologies. The not assigned item corresponds to the non-categorised difference between sources and uses of funds in a given year. For segmenting NFCs by changes in the financial debt ratio, the difference between the financial debt ratio in 2015 and 2011 was calculated. Should the 2015 value not be available, the closest year would be considered. Firms with no information or no financial debt in 2011, but with changes after that date, and firms with no financial debt for every year between 2011 and 2015 were aggregated into independent categories. For the group of 2015 firms, those with a negative or nil change in the financial debt ratio corresponded to 28% of total firms and 50% of GVA; firms with a positive change accounted for 18% of total firms and 30% of GVA, and firms with no information or no financial debt to 32% of total firms and 7% of GVA.



Investment

Although nominal investment by NFCs grew somewhat in the recent period (in June 2017 it was 32% higher than the minimum value recorded in 2013), it is still 11% lower than the average amount observed between 2005 and 2008. This recovery is lower than seen in other euro area countries, such as Spain or Italy (Chart C.1.5).

An analysis of sources and uses of funds by firms that increased their investment between 2013 and 2015 shows that these



Source: Banco de Portugal. Note: Figures for private firms.



Chart C.1.4 • Sources and uses of funds by NFCs, by sector of activity | As a percentage of GVA

firms increased saving and reduced financial debt (Chart C.1.6). In turn, firms with a negative change in investment recorded lower saving and higher net redemption of financial debt.

When considering the distribution of financial debt ratios in the two investment growth groups in the period under review, the group of firms with negative changes in investment shows median levels of financial debt ratios always higher than those of firms that increased investment (Chart C.1.7). The increase in investment was observed in firms that (in median) were less indebted, and this was maintained even after investment took place (and was financed).

This leads to the conclusion that in general the increase in investment was associated to firms with a lower financial debt ratio during the economic and financial crisis and thus, with higher initial ability to increase leverage. Conversely,



Source: Statistics Portugal and Eurostat.

Notes: Investment corresponds to nominal gross capital formation. *For Belgium, 2016 figures refer to the sum of quarterly flows.



Chart C.1.6 • Sources and uses of funds by NFCs, by change in NFCs investment | As a percentage of GVA

Source: Banco de Portugal.

Notes: Estimates considering private NFCs based on IES data. Estimated data may differ from national accounts figures due to the use of different calculation methodologies. The not assigned item corresponds to the non-categorised difference between sources and uses of funds in a given year. The group of firms with positive (or nil) average growth rate of investment was considered, as well as the group of firms with a negative average growth rate of investment in the 2013-15 period. The period under review corresponds to the available years of rebound in NFC investment, after the minimum value recorded in 2013. The number of firms in the first and second group respectively in 2015 corresponded to 36% and 64% of total firms and 59% and 41% of GVA.

firms that reduced investment showed higher financial debt ratios during the crisis period.

Heterogeneous developments in economic and financial performance across sectors of activity (as well as in intra-sectoral terms) have translated into different paces of recovery in investment by sector. In line with the trend of saving, investment in the manufacturing and wholesale and retail trade sectors was higher than in the construction sector (Chart C.1.8). The increase in NFC profitability (as measured by EBITDA on total assets) has allowed an accumulation of own resources in this institutional sector favouring corporate investment decisions. This increase is not uniform across sectors: manufacturing and wholesale and retail trade have similar profitability ratios to those observed in 2010, which is still not the case for the construction sector (Chart C.1.9). In fact, a comparison of the



Source: Banco de Portugal. | Notes: Estimates considering private NFCs based on IES data. The group of firms with positive (or nil) average growth rate of investment was considered between 2013 and 2015, as well as the group of firms with negative average growth rate of investment in that period. Of the group of firms with positive (or nil) average growth rate of investment, the group of firms in the fourth quartile of the distribution of growth rates (i.e. with higher investment growth) was identified. The calculation of the median was based on the distribution of the financial debt ratio winsorised at 1% and 99%, with the value of percentile 1 assigned when ratios were lower than that value, and the value of percentile 99 when the ratios were higher than that value. The number of firms in 2015 with higher positive average growth rate of investment in 2015 (first to third quartile), and firms with negative average growth rate of investment torresponded respectively to 6%, 18% and 34% of total firms, and 12%, 42% and 34% of total assets of NFCs in 2015. Investment by the group of firms with a higher average growth rate of investment corresponded to 46% of total investment for 2014 and 2015.



Chart C.1.8 • Investment in Portugal, by sector of activity | Index, base 2008 = 100

trend of investment activity with an increase in profitability in the different sectors of activity shows a positive correlation between a gradual recovery in a sector's financial performance and the recovery of investment.

By sector of activity, and considering the different investment profiles, developments in the financial debt ratio were heterogeneous (Chart C.1.10). Of the group of firms with higher investment growth, manufacturing firms not only increased their financial debt ratio, but its value also exceeded that of firms in that sector that reduced investment between 2013 and 2015. All firms in the construction sector experienced a decline in the median of the financial debt ratio, regardless of their growth rate of investment. Finally, firms with the highest increase in investment in the wholesale and retail trade sector recorded a higher financial debt ratio than those with a lower increase in investment, remaining nevertheless below the financial debt ratio of firms whose investment decreased. For all sectors of activity, firms with a greater increase in investment in the 2013-15 period started the period under review with a financial debt ratio below the other groups of firms.

Conclusion

The recovery of NFC financial performance indicators and the gradual reduction of financial debt point to a decrease in vulnerabilities associated with the financial leverage of NFCs. This improvement in the indebtedness level in Portugal occurred in parallel with a contraction in gross capital formation, which was broadly based across all sectors of activity. In spite of the progress in reducing NFC leverage observed since 2012, the current indebtedness ratio remains high, both in aggregate terms and for a considerable number of firms. For the group of private firms with financial debt, the higher growth of investment between 2013 and 2015 occurred in firms with a lower indebtedness level and there was an increase in their financial debt ratio in this period, albeit to values below those observed for the median firm of the total considered. In turn, reductions in investment are associated with firms with higher financial debt ratios.

Hence, it is desirable that the recovery in investment, when supported by thirdparty financing, in addition to considering the profitability of new projects, does not



jeopardise the ongoing reduction in the high leverage levels of NFCs. This is particularly relevant for firms that have not yet completed adjustment to indebtedness levels that guarantee their sustainability.



Chart C.1.10 • Median of the financial debt ratio, by sector of activity | As a percentage of assets

Notes, is stimates considering private WrCs based on the state. The group of hims with positive (of him) growth rate of investment in that period. Of the group of firms with positive (or nil) average growth rate of investment, the group of firms in the fourth quartile of the distribution of growth rates (i.e. with higher investment growth) was identified. The calculation of the median was based on the distribution of the financial debt ratio winsorised at 1% and 99%, with the value of percentile 1 assigned when ratios were lower than that value, and the value of percentile 99 when the ratios were higher than that value. The sectors of activity consider the allocation of each sector's firms in the distribution of the financial debt rate of investment corresponded to 46% of total investment for 2014 and 2015. For investment by the group of firms with a higher growth rate of investment, the manufacturing sector contributed 11%, the construction sector 5% and the wholesale and retail trade sector 10%.

Box 2 · Vulnerability of Portuguese firms to short-term interest rates rises

Overview

Since 2012, the indebtedness ratio⁸ of the Portuguese non-financial corporations (NFCs) has been on a downward trend. Reflecting a reduction in outstanding loans and the historically low level of interest rates, the cost of debt financing⁹ for NFCs has been continuously declining since 2012, reaching a minimum in 2016 (Chart C.2.1). This notwithstanding, the financial leverage levels of Portuguese firms continue to be higher than those of their European counterparts.¹⁰ This sector remained vulnerable to a potential rise in short-term interest rates. Despite the reduced weight that, on average, interest expenses have on the cost structure¹¹ of the Portuguese firms, a deterioration in the financing costs may have non-negligible effects on the capacity of some firms to service their debt, increasing the sector's default ratios and resulting in an increase in impairments recorded by creditor financial institutions.

This Box starts with the analysis of the impact of a rise in short-term interest rates on NFCs' capacity to service the interest component of the debt, assessed on the basis of the interest coverage ratio (ratio of EBITDA (earnings before interest, taxes, depreciation and amortisation) to financing expenses¹²). Firms with an interest coverage ratio below 2 are generally considered as having higher probability of default.¹³ Subsequently, taking into account that the firms' capacity to meet their financial commitments depends not only on the financing costs, but also on the income generated, there is a combination of the effect of a rise in short-term interest rates with a shock on EBITDA. This exercise was based on the financial situation of Portuguese firms at two different points in time: 2010, the year before the start of the sovereign debt crisis, and 2016, the most recent year for which Simplified Corporate Information is available.

Capital structure of Portuguese NFCs

In aggregate terms, the structure of Portuguese firms' debt is characterised by a relatively high share of bank loans¹⁴ and by a relatively small share of enterprises tapping organised debt markets. Nevertheless, analysing the total capital structure of Portuguese enterprises, it can be seen that, in 2016, 41% of the Portuguese enterprises did not resort to financing instruments with associated interest (virtually unchanged from 2010, 40%) and



therefore they are not directly affected by a potential rise in short-term interest rates. In addition, the analysis of developments in the aggregate capital structure of Portuguese NFCs indicates that, since 2010, a shift has been observed in the sources of financing with a decrease in the recourse to instruments with associated interest (chiefly borrowing from the resident financial sector) and an increase in financing without associated interest, with particular emphasis on an increase in the relative share of equity (Chart C.2.2). These developments seem to have largely reflected higher selectivity in the supply of bank credit, translated into stricter requirements imposed

by the banking system on the solvency levels of the enterprises to which they grant credit. Moreover, on the demand side, the need to increase the equity level prompted firms to adopt a capital structure relying more on shareholders and partners. During the Economic and Financial Assistance Programme (EFAP) to Portugal there was also a rise in intra-group lending, which partially offset the declining share of bank loans. It should be noted that the shift in the capital structure, in aggregate terms, of the non-financial corporate sector was relatively broad based across the different activity sectors and across the different firm sizes (Charts C.2.3 and C.2.4).







Chart C.2.3 • Structure of Portuguese firms' liabilities, by activity sector | As a percentage of total assets

Methodology

The exercise was conducted through sensitivity analyses of the coverage ratio of interest by EBITDA. Other things being equal, there was an initial simulation of the impact of rises in shortterm interest rates of 1 and 2 percentage points (p.p.) respectively. Subsequently, assuming a significantly adverse scenario, the effect of a rise in the interest rate was combined with a fall in EBITDA equal to that recorded between 2010 and 2011,¹⁵ in average terms, in each economic activity sector, specifically: Manufacturing (-8%), Wholesale and retail trade (-26%), Transportation and storage (-25%), Construction and real estate activities (-60%) and Other sectors (-46%). Therefore, the assumption was made of a fall in EBITDA proportionally equal in all enterprises belonging to same activity sector. The simulations made were based on the financial situation of Portuguese firms at two different points in time: at the end of 2010, before the deepening of the sovereign debt crisis, and at the end of 2016, the most recent year for which data reported through the Simplified Corporate Information are available.

Data used for this analysis correspond to the financial information reported by Portuguese firms under the Simplified Corporate Information, on a non-consolidated basis, supplemented by the outstanding amounts of loans registered in the Central Credit Register¹⁶ and by information on debt securities issued by NFCs contained in Banco de Portugal's Securities Statistics Integrated System.

The simulation of a rise in the interest rate was made taking into consideration the debt instruments more sensitive to changes in shortterm interest rates, namely, bank loans,¹⁷ shortterm debt securities and long-term debt securities with an initial rate fixation period of up to one year. The analysis excluded loans between firms belonging to the same economic group, as there is some evidence that the conditions associated to this type of loans are not in line with the market. In addition, the inclusion of this type of loans could also lead to a duplication of values impacting on the calculation of interest.¹⁸ The increase in debtrelated expenses was calculated by multiplying the amount of debt outstanding sensitive to shortterm interest rate changes respectively at the end of 2010 and 2016, by the above-mentioned simulated interest rate changes.¹⁹

Impact of the rise in short-term interest rates

Chart C.2.5 shows the share of firms with an interest coverage ratio below 2 in each of the four scenarios analysed. The results show that




the share of firms at risk of defaulting on their obligation to service their debt, according to this indicator, recorded a significant decrease, comparing 2016 with 2010, in any of the scenarios analysed. It should be noted that, even assuming a rise in the bank interest rate to levels similar to those observed in 2010 (a 2 p.p. increase in financing costs in 2016), a decline is observed in the share of enterprises at risk of defaulting (15%) compared with the baseline scenario of 2010 (21%). However, even assuming that the most extreme scenario analysed materialises (a 2 p.p. increase in financing costs in 2016 and a fall

in EBITDA), it can be seen that the share of enterprises at risk of defaulting in 2016 (19%) is below the baseline scenario in 2010 (21%). Analysing the results by firm size, the share of microenterprises in total enterprises with an interest coverage ratio below 2 increased from 85% in 2010 to 88% in 2016, although the average EBITDA of microenterprises more than doubled in this period.²⁰ Conversely, the share of small enterprises decreased from 13% in 2010 to 10% in 2016. By activity sector, there was a broad based decline in the share of enterprises at risk of defaulting compared to 2010 (Chart C.2.6).







Chart C.2.6 • Share of firms with an interest coverage ratio below 2 in different scenarios in each sector | As a percentage of the number of firms of each sector

Analysing the situation in 2016 of enterprises that recorded an interest coverage ratio below 2 in 2010 (Chart C.2.7), it can be seen that around 40% of these firms recorded no activity²¹ in 2016, approximately 17% continued to have an interest coverage ratio below 2 and the remaining 43% moved to an interest coverage ratio above 2. The change in the value of this ratio reflects the contribution of three components, specifically, better enterprise results (EBITDA), the effect of shifts in the capital structure composition (stock effect) and the decline in the interest rate (cost effect). Most enterprises whose interest coverage ratio rose above 2 in this period, benefitted from the combined effect of the three components. It is also worth noting that, for 13% of the enterprises, the rise in EBITDA was sufficient to have an interest coverage ratio above 2 in 2016.

The exposure of the resident financial sector to enterprises with an interest coverage ratio below 2 also recorded a significant reduction between the two years under review, falling from 46% of total credit granted to NFCs²² in 2010 to 34% in 2016 (43% of total credit granted to NFCs assuming a 2 p.p. rise in the short-term interest rates) (Chart C.2.8). The results also show that, for any of the simulated scenarios, there is a significant decrease in the exposure of the resident financial sector to firms with an interest coverage ratio below 2. Nevertheless, combining the effect of the 2 p.p. rise in short-term interest rates with the fall in EBITDA, it can be seen that the exposure of the resident financial sector to enterprises with an interest coverage ratio below 2 recorded an increase, rising from 46% of total credit granted to NFCs, baseline scenario in 2010, to 57% in 2016 (extreme scenario).

Conclusion

In conclusion, the reduction of the debt level of NFCs and shifts in the debt composition, to the detriment of instruments sensitive to short-term interest rate changes, made it possible to mitigate the sector's vulnerability to interest rate rises. These developments are particularly notable in the declining share of enterprises vulnerable to interest rate rises. Notwithstanding, around one third of the exposure of the resident financial system to NFCs, at the end of 2016, continued to be





Note: The sum of the blue bars corresponds to total enterprises with an interest coverage ratio (ICR) below 2 in 2010. The sum of the different effects (golden bars) is slightly higher than that of total enterprises with an ICR equal to or above 2, as some enterprises moved to an ICR above 2 due to the combination of more than one individual effect.

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associated to enterprises with an interest coverage ratio below 2. This situation cannot be dissociated from the high level of NPL of NFCs. This figure reached 43% with a 2 p.p. shock in short-term interest rates. However, it should be noted that the increase in these rates must be gradual and associated with an improvement in the economic conditions.

Therefore and despite these improvements, it is crucial that Portuguese enterprises continue to strengthen the weight of equity in their capital structure and that banks identify correctly the risk profile of firms, thereby contributing to the sustainability of the sector's debt.





Box 3 • Real estate owned on the banking sector's balance sheet

The exposure to the real estate market has been identified as one of the Portuguese banking sector's vulnerabilities (Chart 1.3). This exposure is mostly indirect, via the granting of loans guaranteed by real estate and of loans to enterprises in the construction and real estate activities sectors. However and as a consequence of the financial crisis, up to 2014 there was a significant rise in the direct exposure. This materialised in balance sheet holdings of real estate owned (REO) and of real estate investment fund share units (some of which resulting from the transfer of the aforementioned real estate²³) as well as of corporate restructuring fund share units.

The value of REOs increased considerably between 2010 and 2013, remaining relatively stable thereafter at around 2% of the banking sector's total assets (Chart C.3.1). As previously referred, these developments cannot be decoupled from the economic and financial crisis observed in this period, which was also reflected in the high default level and hence on the execution of the guarantees associated to these loans. Against this backdrop, the enforcement of claims guaranteed by real estate added to a rise in the banking sector's REOs. By contrast, the dynamics observed in the past few years in the real estate market, mirrored in real estate prices, has created more favourable selling conditions, thus enhancing a reduction in the banking sector portfolio.

This box aims to characterise the stock of REOs²⁴ on the banking sector's balance sheet and developments observed in the past year.

In December 2016, the REOs book value (gross of impairments) reached around 7.4 billion euros, with a geographical concentration in Lisboa district (approximately 28% of the stock) and, to a smaller extent, in Porto, Faro and Setúbal districts (approximately between 12% and 15% of the stock - Chart C.3.2). By type, REOs are mostly urban property (for housing and non-housing purposes and land). Considering the year in which the real estate was received in lieu of payment, the largest share, for all types, concerns REOs received between 2012 and 2015 (Chart C.3.3). REOs received more than five years ago (i.e. before 2012) account for 25% of the total value, among which the non-housing urban REOs stand out.



Chart C.3.1 • Direct and indirect real estate holdings, default and housing price index

It should also be noted that most balance sheet holdings of REOs are for sale.

Comparing the situation at end-2016 with end-2015, it can be concluded that the most significant reduction was in REOs received during 2015 and, in contrast, the proportionally smallest reduction was in REOs received before 2012 (Chart C.3.4). In 2016 significant sales²⁵ were recorded of around 30% of the book value (2.1 billion euros). Most of these sales related to REOs received between 2012 and 2015 (Chart C.3.5). However, sales were offset by REOs received in 2016 (which represented around 25% of the year-end stock). It should be noted that there is a time lag, which can extend over several years, between the default and receiving the real estate; therefore, most new entries in 2016 might be related to the increase in default that occurred in previous years.

In 2016 a slight change was recorded in the type of REOs. On the one hand, sales were more significant in urban REOs for housing purposes and, to a lesser extent, in urban REOs for non-housing purposes. On the other hand, new entries were more significant in urban REOs for non-housing purposes and land, which led to a rise in the relative share of the latter two (Chart C.3.6).







It should also be noted that the sale of REOs may not materialise in an extinction of the exposure to the real estate sector, but only in a shift from direct to indirect exposure. Specifically, by reference to 2016 sales: (i) around 36% of the sales volume was recorded in the context of operations in which the banking institution granted credit to the purchaser, keeping the real estate as a guarantee (Chart C.3.7) and (ii) the remaining sales include transfers to real estate investment funds, which might have been counterbalanced by the underwriting of share units of these funds by the banking institution.

Finally, approximately 35% of the sales volume recorded in 2016 was made at a price below

Chart C.3.5 • Developments in REO stock, per year of receipt | EUR billion 9 6 3 0 -3 Stock Sales New Stock at end entries at end 2015 2016 2016 flows 2016 ■ 2015 to 2012 ■ <2012

Source: Banco de Portugal.

Chart C.3.7 • Sales in 2016: granting of loans to the counterpart that purchased the real estate









Source: Banco de Portugal.

Chart C.3.8 • 2016 REO sales' value vis-à-vis banks' book value (net of impairment)





Note: "Below" when the sales price is lower than 95% of the book value (net of impairment); "Above" when the sales price is higher than 105% of the book value (net of impairment).

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Box 4 • The financial vulnerability of Portuguese households

The financial situation of households is important for financial stability and sustainable economic growth. Financial difficulties restrict the capacity to meet credit obligations, which may have a considerable impact on the asset quality, profitability and capital of financial institutions. In addition, the households' financial situation has implications for consumption and residential investment decisions, with an impact on economic activity.

Households with low income and high indebtedness levels are particularly vulnerable to possible shocks that may cause changes in income or interest rates, aggravating the risk of credit default, or of abrupt fluctuations in consumption.

Given that income and indebtedness levels are not uniformly distributed across the population and that situations leading to higher vulnerabilities are at one tail of the distribution, an aggregate analysis of the households' financial situation does not make it possible to accurately assess the implied risk for financial stability. Therefore, the analysis of households' financial vulnerability benefits considerably from recourse to microdata, including information on an individual basis on income levels, debt and the value and type of assets held by households. The Household Finance and Consumption Survey²⁷ gathers data with the required breakdown level, and is therefore an appropriate database for the characterisation of households' financial vulnerability.

The results of this survey, the most recent version of which was conducted in 2013, were the object of a detailed study on the financial situation of households in Portugal (Costa, 2016). This study concluded that the indebtedness level, assessed by the ratio of debt (or debt service) to income or assets, remained very high for a significant share of households.

Although the indicators used in the abovementioned study are appropriate to analyse the households' financial capacity, in particular the DSTI (debt service-to-income) ratio, the same value for that indicator may have different underlying realities in terms of credit risk. In particular, households with higher income, accumulated savings or lower levels of other regular expenses may have a high DSTI, without compromising their capacity to meet debt. Therefore, this analysis may be complemented with qualitative information, more directly related to households' financial difficulties and the means to which they resort in order to meet such difficulties. In addition, the impact of the households' financial vulnerability on the balance sheet of credit institutions also depends on the type of credit granted, in particular whether or not it is guaranteed by means of mortgage or collateral, and on the sensitivity of the debt burden to possible interest rate changes.

In 2013, indebted households in Portugal represented 45.9% of the total, which compares with 42.4% in the euro area. This percentage is distributed amongst 21.9% of the households with only housing loans, 11.2% with only consumer credit and 12.8% with both types of credit. In terms of amounts, 93% of households' debt is related to mortgage credit.

As observed in an analysis by income quartile, the percentage of indebted households increases in tandem with the income level, which may also reflect more access to credit by economic agents with higher income²⁸ (Chart 1). Notwithstanding the reduced percentage of indebted households in the lowest income bracket (first quartile of the distribution), the debt service represents, on average, more than half their income and the debt-to-income ratio exceeds 6. In the highest quartile, the DSTI of indebted households is 13%, on average, and the DTI is around 2. In all income brackets, the debt payment burden is higher in the case of households with housing loans (Chart 2).

The percentage of households with DSTI levels in excess of 30% or 40%, which are usually considered critical thresholds, is also higher for the lowest income households (Chart 3) – 13% of households in the first quartile have a DSTI higher than 30, which corresponds to 63% of indebted households belonging to that quartile. In order to assess the sensitivity of household indebtedness to a possible change in interest rates, DSTIs were also calculated assuming 1 to 3 p.p. increases

in interest rates on loans for house purchase. Given that most loans for house purchase are contracted at a (floating) indexed rate, this shock is particularly relevant for this type of credit (as opposed to consumer credit, in which the fixed rate is predominant). As shown, an interest rate increase would place a considerable number of households in a critical situation. Households with an intermediate income level (2nd and 3rd quartiles) are particularly sensitive to this type of shock, given that, compared with households in the 1st quartile, they have a higher percentage of housing loans, which are subject to this type of shock.

The capacity of income earned to cover regular expenses is also an important indicator for

an analysis of vulnerability of the households' financial situation (Chart 4). This indicator²⁹ also allows for an assessment of households' savings capacity. Approximately 35% of indebted households with the lowest income levels reported situations where income was insufficient to cover regular expenses (this percentage stands at 19% in the case of non-indebted households). Although the incidence of this type of situation is inversely related to the income level, it can also be observed in the highest income brackets. Although indebted households are more prone to this type of vulnerability, it is also observed in nonindebted households. Savings capacity ranges between around 15% and 57% for different income brackets and indebtedness situations.

Chart C.4.1 • Share of indebted households and indebtedness level, per income quartile | Percent





Chart C.4.2 • DSTI consumption and housing, per income quartile | Percent







Source: HFCS 2013.

Notes: DSTI (+ipp) corresponds to the DSTI calculated assuming an increase of i p.p. in the interest rate. The shock covers only housing loans, mostly at a floating rate.



In the situations in which income is not sufficient to cover regular expenses, recourse to accumulated savings is the most common way to overcome that difference, especially in the highest income brackets (Chart 5). In turn, households in the lowest income quartile resort mostly to assistance from friends or relatives. A significant share of households, mainly in higher income brackets, resorts to credit in order to meet expenses (28%, compared with 8% of households with lower income levels). Due to insufficient income, a significant share of households leaves some bills unpaid (between around 14% in the 4th income quartile and 24% in the 2nd quartile).

On average, indebted households hold sufficient assets to cover their debt (Chart 6). However, it must be noted that the values shown refer to quartile averages and that wealth distribution per household varies considerably within each quartile. In addition, the percentage of financial assets held is relatively small (Chart 7). In case of debt payment-related difficulties, this type of asset is usually easier to sell than real estate assets, which are predominant among households' wealth.

In short, there is a significant share of households with very high indebtedness levels, when compared with their income, in several income brackets. Although the lowest quartile has a smaller percentage of indebted households,



Source: HFCS 2013.



Chart C.4.5 • Additional income sources to cover expenses, per income quartile | Percent

these are in a particularly vulnerable situation to any factor liable to change income levels and debt service conditions. The fact that, in order to meet unexpected expenses, these households must resort to assistance from friends or relatives may also indicate insufficient savings and no access to credit. Also, a considerable share of households cease to pay some bills in case of financial difficulties, which is reflected in a risk for the counterparty. In addition, households with an intermediate income level are particularly sensitive to interest rate hikes in housing loans, due to the high share of households with this type of loans and DSTI close to critical levels.

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Box 5 • House price developments in Portugal and implications for financial stability

The real estate market, in particular the residential segment, has been associated with major international financial crises, most notably the crisis triggered by the sub-prime market in the United States in 2007. Empirical evidence shows that financial crises stemming from house price overvaluation, particularly when preceded by an expansion in credit, are characterised by longer recession periods and greater losses³⁰ for the economy.³¹ When prices grow beyond their fundamentals, a sudden adjustment may ensue. When house prices fall markedly, households and the financial system may be particularly affected. Households may be impacted given that a very substantial share of their wealth is concentrated in housing, whereas the financial system may be affected due to its exposure to the residential property market, particularly via housing lending, which generally accounts for a large share in the portfolio of credit institutions.

House price growth may have pro-cyclical effects, taking into account the role that residential property plays in housing lending, considering that one of the criteria used by banking institutions when granting housing loans is based on the value of the property whose purchase will be funded by such loans and that typically acts as collateral for that transaction. An adequate threshold for the loanto-value ratio may help prevent or mitigate any losses for the bank should the debtor default. The higher this ratio, the greater the borrowers' ability to obtain financing, ceteris paribus. Therefore, an increase in house prices unlocks greater credit availability, which boosts the demand for housing and, consequently, prices.

When house prices rise out of synch with economic fundamentals, a future adjustment becomes more likely, which may lead to an unexpected and substantial reduction. Consequently, financial institutions' solvency may be affected in many ways, most notably, in the event of default, by the loss of value in pledged property. As such, fluctuations in residential property prices misaligned with their economic fundamentals may have adverse consequences for financial stability.

Unlike other euro area countries, in Portugal there was no overvaluation in house prices in the period prior to the 2008 financial crisis.³² However, following the financial crisis, house prices in Portugal dropped markedly, in both nominal and real terms, between 2010 and 2013, reflecting developments in fundamentals. Furthermore, default on housing loans, albeit on the rise, remained low in the post-crisis period, given that, on the one hand, this type of credit was mostly granted to households with less probability of default³³ and, on the other hand, due to the fact that the interest rate regime is mostly based on floating rates. The latter factor made it possible for households to benefit from direct debt servicing relief stemming from the reduction in the reference interest rate by the European Central Bank. Despite the low default levels, banks' portfolios began including a substantial volume of real estate repossessed due to non-performing mortgages.

The trend of house prices changed as of the end of 2013 and, in the most recent period, prices have grown substantially in annual average terms. As such, from a macroprudential policy perspective, recent developments in the Portuguese residential property market must be analysed together with their possible impact on financial stability, to look for signs of price overvaluation in this market.

Characterisation of recent developments in the residential real estate market

After a period of gradual decline, the house price index has progressively increased, returning to its 2009 levels, in real terms (Chart C.5.1). Between the time when house prices reached a historical low (second quarter of 2013) and the second quarter of 2017, they grew, in cumulative terms, by 25% and 20% respectively, in nominal and real terms, thereby offsetting the fall observed between 2010 and 2013. Over the same period, average house prices 45

in the euro area grew by approximately 9% (nominal) and around 7% (real), in cumulative terms (Chart C.5.2). In 2016 the average annual rate of change in house prices was 6.1% in real terms. This trend continued in the first half of 2017, when house prices rose by 7% (real) year-on-year.

This growth in house prices is mainly due to the effect of existing dwellings transactions, which, in 2015, already accounted for 80% of total transactions. Looking at the house price index broken down into new and existing dwellings, the house price index for existing dwellings has exceeded that for new dwellings since the second half of 2015, following an upward trend and moving increasingly further from the latter index (Chart C.5.3). Turning to transactions underlying the house price index, the number of sales of existing dwellings reached 31,000 in the second quarter of 2017 (corresponding to €3.7 billion, totalling an average value per transaction of €116,000), from total sales of approximately 37,000 dwellings over the same period (corresponding to €4.6 billion), which, in both cases, accounted for historical peaks of the series.

The number of new dwellings sales stabilised between 5,000 and 6,000 in each quarter of 2017, with an average value per transaction of around €162,000 (while, in the period prior to the fall in house prices, they exceeded

10,000 dwellings traded per quarter, with an average value per transaction of approximately €153,000). Although the average value per transaction of new dwellings is, as expected, higher than the average value per transaction of existing residential property, as of 2014 the quarterly average amount of transactions of the latter has grown markedly (around 5% per year, on average), by contrast with a decrease of approximately 2.5% per year in the average value of sales of new residential property.

The share of transactions in household dwellings that have been funded by credit has increased since 2015, after dropping to a low at the end of 2013 (around 20%), standing at 45% in the second quarter of 2017, still below that seen in 2009 (around 65%). New lending for house purchase has grown since 2013 (Chart C.6.4), accelerating as of 2015, although still remaining below the figures seen before the crisis. However, the stock of housing loans continues to decrease, albeit at a slower pace than over the past few years, as they continue to reflect early repayments and loans maturing, which exceed new transactions. The increase in early repayments is related to positive developments in the real estate market, given that the purchase of a new dwelling entails signing a new housing loan agreement, which often results in the full repayment of the loan associated with the existing contract.³⁴



Current buoyancy in the residential property market may be due to recent developments in the Portuguese economy, which put pressure on housing demand, against a background where demand does not react at the same pace. This includes the recent economic recovery and the increase in consumer confidence, whose developments, based on the economic sentiment index, have improved as of 2012. This confidence has also been reflected in the positive performance of investment in housing, which, after a period of gradual decreases, started to grow in 2014, accelerating in the first half of 2017, when the increase exceeded the GDP growth rate.³⁵

Furthermore, the return rates on traditional savings assets are at reduced levels, which provides incentives to households to channel financial savings towards real assets, such as housing, including for rental purposes. With regard to recent developments in this market, the dynamics in major urban and tourist centres were particularly remarkable, due to the Local Accommodation activity. As a profitable alternative investment, it may be contributing to a rise in house prices, particularly in major tourist centres. As of 2013,³⁶ and looking at the number of Local Accommodation registrations in the Lisbon and Porto districts, this type of accommodation has grown strongly in both cases, albeit to a lesser extent in the Porto district.

In turn, the growth dynamics of house prices may be related to other factors, which may boost demand. The programme of residence permits for investment activity (which started in 2012 and is also known as Golden Visa), requiring, inter alia, the purchase of real estate property, together with the establishment in 2009 of a tax regime for non-regular residents, which, over a ten-year period provides a reduction or total income tax exemption, have contributed to growth in investment in residential property by non-residents. In the first case, and according to statistics released by the Immigration and Borders Service,³⁷ between October 2012 and July 2017, 4,945 residence permits following the purchase of real estate property had been authorised, mostly to Chinese citizens, to a total investment in residential property of €2.9 billion. This program continues to be highly sought after, with an increase in permits of approximately 25% and investment in residential property of 26%, between the end of 2016 and July 2017.

After a protracted period of negative growth, housing supply has gradually recovered, taking into account the number of building permits. Between 2010 and 2015 the number of building permits decreased steadily,³⁸ particularly for new construction of household dwellings.³⁹ The number of building renovation permits also decreased, but less markedly (31% between 2010 and 2015). In fact, building



renovation permits now outnumber those for new construction. As of 2016, the number of both renovation and construction-related licenses has increased, which may signal an upturn in housing supply.

Furthermore, as regards lending for construction and real estate activities, following a prolonged period of high growth in this type of funding, it has systematically decreased since early 2010 (Chart C.5.5), at an average annual rate of around 9%, to currently stand at levels similar to those seen in the beginning of the 2000s. Its downward trend indicates that real estate and construction activities are not being promoted via domestic credit.

Measure of the deviation of house prices from economic fundamentals

House price growth, *per se*, does not signal a possible overvaluation in the residential property market, given that, as mentioned above, it may stem *inter alia* from a gradual upturn in economic activity. A number of summary measures are often used to assess whether house prices are in line with economic fundamentals or whether there is evidence of overvaluation in this market, thus signalling, in advance, potential financial crises arising in the residential real estate market.

The European Central Bank has developed a measure to gauge the average valuation of

residential property (Chart C.5.6), in a group of euro area countries, combining two price valuation indicators with two methods of asset price valuation.⁴⁰ This summary measure is an average of the following indicators:

- the deviation from the long-term trend in the house price-to-rent ratio, which corresponds to the cost of purchasing visà-vis the cost of renting a house;⁴¹
- the deviation from the long-term trend in the house price-to-income ratio, which indicates the potential buyers' capacity to purchase a house;
- a method to calculate the deviation in residential property valuation using an error correction methodology, based on the regression of real house prices as a function of real GDP per capita, population and real interest rate;
- a model that explains developments in the house price-to-rent ratio based on returns on residential property investment, which should be equal to the returns on alternative investment opportunities with a similar associated risk.

For Portugal, this summary measure shows that the deviation of the average valuation of residential property from economic fundamentals turned negative in 2008, decreasing further up to the third quarter



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of 2012, to -14%. From that period onwards, and in line with growth in house price index, this indicator has followed an upward path, standing very close to its equilibrium level⁴² – in the first quarter of 2017, the deviation from equilibrium stood at -2%. As such, recent developments in this summary measure point to the absence of signs of overvaluation on the residential real estate market, although they indicate that house prices in Portugal are getting closer to their economic fundamentals.

Moreover, the recent performance of house prices seems to be out of synch with the credit cycle in Portugal, when measured by the deviation of the credit-to-GDP ratio from its trend.⁴³ In Portugal, this measure remains in negative territory, decreasing further in the first quarter of 2017. However, although still below the levels seen before the crisis, flows of housing loans have grown and have started to account for a larger share in household dwelling transactions compared with previous years.

Outlook for future developments in house prices and implications for financial stability

According to a study released by Banco de Portugal,⁴⁴ it is very likely that house prices will continue to increase in the future, given the most recent projections for the Portuguese economy. The low interest rates on housing loans, which stand at historical low levels of the series,⁴⁵ may boost demand for this type of credit, which would have a positive impact on demand for housing and on prices. In turn, the gradual upturn in housing supply, if the trend continues, may contribute to mitigating the growth dynamics of house prices seen over the past few years.

It can be inferred from this analysis that there is no overvaluation in house prices in Portugal. Also, the recent increase in such prices is out of synch with the credit cycle. However, the maintenance of a low interest rate environment, an upturn in economic activity and improved consumer confidence may continue to foster an easing in credit standards for housing loans. In this context, greater pressure from demand for housing may contribute to the maintenance of an upward trend in prices. Furthermore, this analysis, by looking at developments in house prices at national level, does not exclude the possibility that there may be overvaluation in specific geographical areas, most notably in major urban centres.





Source: Banco de Portugal.

Note: The dashed line indicates the beginning of the crisis period as identified for the purposes of the ESCB Heads of Research Group's banking crises database.





Source: European Central Bank - Statistical Data Warehouse. Note: The dashed line indicates the beginning of the crisis period as identified for the purposes of the ESCB Heads of Research Group's banking crises database. 49

Notes

1. Financial debt includes debt securities and loans.

2. The conclusions would be the same if total debt was considered (which also includes trade credit and advances) as a percentage of GDP.

3. From 2015 to 2016 the decline in the financial debt ratio was almost exclusively due to a positive change in nominal GDP, with the contribution from the net redemption of debt declining progressively in this period.

4. This analysis is supported by other profitability measures. In June 2017 profitability measured as the ratio of EBITDA to equity and obtained funding was 10%, i.e. higher than 6%, as recorded in 2012, and still below 13%, as observed in 2007.

5. The aggregates considered from IES information refer only to private NFCs.

6. With regard to the aggregates calculated from IES information, the following definitions apply: Financial debt as *financing obtained*; saving as the sum of *sales, operating subsidies, capitalised production, interest received* and *other income*, less *casts of goods sold and material consumed, supplies and external services, interest paid, taxes* and *other expenses*; investment as the sum of the annual change in balance-sheet values corresponding to *tangible and intangible fixed assets, investment property* and *biological assets*, with the *depreciation amount*. Financial aggregates were considered as the annual change in balance-sheet values corresponding to financial assets and equity. Financial assets are considered as the sum of short-term investments (*cash, financial assets held for trading* and *other financial assets*, current), financial investments (*financial holdings* and *financial investments*, non-current), *customers* (net of current liabilities, *customer advances*) and other financial assets (*State*, current assets, *shareholders*, current assets, *deferrals*, current *assets*, *other financial assets* and *other accounts receivable and payable*). Equity is defined as the sum of *paid-up capital, own shares, other capital instruments*, *share premium account, financial asset adjustment, revaluation surpluses, legal reserves, net profits and losses, interim dividends, provisions* and *profits and losses brought forward* less *post-employment benefits*.

7. On this subject, please refer to the Special issue entitled 'Saving and investment dynamics of Portuguese firms', *Economic Bulletin*, June 2017.

8. Indebtedness ratio calculated as the sum of loans, debt securities, trade credits and advances in relation to GDP.

9. For the purposes of this box, the calculation of the financing cost concerns only the instruments whose remuneration takes the form of interest.

10. See Central Balance Sheet Studies No. 29, "Profitability of Portuguese and European enterprises 2006-2015", September 2017.

11. In 2016 the share of interest and similar expenses in total net expenses of Portuguese NFCs stood at 2.3% (2.0% in 2010). The Electricity, gas, steam and air conditioning supply (13.4%) and the Real estate (8.7%) activity sectors were those in which this share was more significant in 2016. Data available in the Sector Tables of the Multidimensional analysis component, of BPstat – Statistics Online.

12. In addition to interest expenses, financing expenses also include fees and other costs associated with borrowing.

13. This reference value is normally used within the scope of the analyses conducted by the ECB.

14. See Chapter II. Financing of the economy.

15. Between 2010 and 2011 NFCs' EBITDA recorded the strongest annual fall (-39%). See Table G.4 – Profit and loss account – Main components, *Statistical Bulletin*, Banco de Portugal.

16. It should be noted that the Central Credit Register contains credit granted by resident credit institutions, i.e. in addition to banks, savings banks and mutual agricultural credit banks, it also contains credit granted by non-monetary financial institutions, namely credit financial institutions, credit-purchase financing companies, financial leasing and factoring companies and mutual guarantee companies.

17. More than 90% of the amount of new bank loans to NFCs have an initial rate fixation period of up to one year (see Table B.7.1.2 – New loans, *Statistical Bulletin*, Banco de Portugal).

18. Where loans obtained from the resident financial sector by an enterprise are lent to another enterprise of the resident group, a duplication would be recorded of the amounts of loans obtained by the non-financial corporate sector.

19. This approach has the advantage of being independent from the interest rate level and from the weight of interest expenses in the cost structure of each enterprise.

20. The share of microenterprises in total Portuguese NFCs remained around 88% of the total between 2010 and 2016.

21. Inactive enterprise means any enterprise that in a given year does not record activity in any of the statistical domains produced by Banco de Portugal.

22. Credit granted includes loans and debt securities held in portfolio by the resident financial sector.

23. Some real estate investment funds were specifically set up to manage the banks' REOs. For banks, the transfer of real estate to these investment funds was usually offset by the holding of these funds' share units.

24. In this context, it excludes: (i) real estate for own use; (ii) real estate held by branches abroad (accounting for around 3% of the stock of foreclosed real estate); (iii) real estate held by real estate investment funds outside the bank's consolidation perimeter; and (iv) real estate held by corporate restructuring funds. Except where specifically indicated, the amounts refer to the book value gross of impairments.

25. Figures refer to the consolidated activity in Portugal. Against this background, sales include property transfers to economic agents outside the banking group consolidation perimeter, including transfers to real estate investment funds that for prudential purposes do not consolidate with the bank.

26. The reference value is net of impairments.

27. This survey, carried out for the second time in Portugal in 2013, corresponds to the Portuguese contribution to the Household Finance and Consumption Survey (HFCS) promoted by the Eurosystem with a view to collecting comparable microeconomic data on the financial situation of households in the different euro area countries.

28. See Costa and Farinha (2012) for a more detailed analysis on loan determinants.

29. Its calculation was based on a question of the Survey asking whether over the last 12 months the household's regular expenses were higher than, equal to, or lower than the household's income.

30. According to Claessens, S., Kose, M. A., and Terrones, M. (2008), "What happens during recessions, crunches and busts?", International Monetary Fund, WP/08/274, economic losses are calculated via two methods, using the peaks and troughs in the business cycle: the first calculates the average reduction in output while the second calculates the cumulative reduction from the peak to the trough.

31. Claessens, S., Kose, M. A., and Terrones, M. (2008), "What happens during recessions, crunches and busts?", International Monetary Fund, WP/08/274, and Jordà, O., Schularick, M. and Taylor, A. (2015). "Leveraged Bubbles", Federal Reserve Bank of San Francisco Working Paper.

32. Lourenço, R. and Rodrigues, P. (2015), "House prices: bubbles, exuberance or something else? Evidence from euro area countries", Working Paper No. 201517, Banco de Portugal.

33. Costa, S. (2012). "Households' default probability: an analysis based on the results of the HFCS", *Financial Stability Report*, Banco de Portugal, November.

34. Retail Banking Markets Monitoring Report (Portuguese only), Banco de Portugal, 2016.

35. *Economic Bulletin*, Banco de Portugal, October 2017.

36. In 2013 the number of registrations in the Lisbon and Porto districts stood at around 250 and 150 respectively, according to the data available on the Registo Nacional de Alojamento Local website (https://rnt.turismodeportugal.pt/RNAL/ConsultaRegisto.aspx?Origem=CP&FiltroVisivel=True).

37. Statistical information available on the Immigration and Borders Service website (http://www.sef.pt/documentos/56/Mapa_ARI_EN_november17.pdf).

38. This analysis is based on statistics on the number of building permits released by Statistics Portugal.

39. The data show that, between 2010 and 2014, the number of new construction-related licenses fell by approximately 65%, only to slowly start recovering in 2015.

40. For more details, see Box 3 in the Financial Stability Review, European Central Bank, June 2011.

41. In Portugal, despite the gradual liberalisation of the rental market that started in 2012, this market is still conditioned by government rental pricing in a number of segments. Therefore, this constraint must be taken into account when interpreting the rental index for Portugal.

42. In the case of this indicator, the equilibrium value corresponds to zero.

43. Tissot, B. (2014). Monitoring house prices from a financial stability perspective – the BIS experience, Bank for International Settlements, November.

44. Lourenço, R. and Rodrigues, P. (2017), "House prices in Portugal – what happened since the crisis?", *Banco de Portugal Economic Studies*, Vol. 3, No. 4, October.

45. According to the Statistical Press Release No. 96/2017 of Banco de Portugal for August 2017, released on 10 October 2017.



2. Financing of the economy

- 2.1. Financial markets
- 2.2. The Portuguese Economy
 - 2.2.1. Households
 - 2.2.2. Non-financial corporations
 - 2.2.3. General government
 - 2.2.4. Financial corporations

Summary

In the first half of 2017, year on year, the Portuguese economy recorded a slight increase in both domestic savings and investment, as a percentage of GDP, which gave rise to net borrowing amounting to that observed in the same half of 2016. This net borrowing is predominantly seasonal, being consistent with the occurrence of net lending in the year as a whole, estimated at a value close to that in 2016.¹ Net external financial transactions were translated into net inflows of funds from abroad, among which the financing to non-financial corporations by non-residents, especially via financial debt and capital.

The non-financial private sector deleverage with the resident financial sector continued in the half-year under review. The net repayment of loans (chiefly to resident credit institutions) by households and non-financial corporations, albeit at a decelerating pace, was reflected into a decline in the total debt ratio of the non-financial private sector, from 181% of GDP at the end of 2016, to 178% in June 2017. In spite of household and corporate balance sheet adjustments seen since 2012, this ratio continues to be among the highest in the euro area.

The decline in the households' savings rate and the slight increase in investment in real assets from the first half of 2016 resulted in a reduction in household net lending to close to zero, in the first six months of 2017. In this period, new loan flows to households for house purchase and for consumption and other purposes continued to grow, exceeding, as a percentage of disposable income, those registered at the start of the Economic and Financial Assistance Programme (EFAP). There was also a change in the profile of households' financial investment, in favour of instruments with higher potential return and higher risk. However, net investment in Treasury debt, mainly via Treasury certificates and floating rate bonds (OTRV), continued to be significant.

The assets that were the object of higher demand by Portuguese households for

investment purposes also include real estate assets. This behaviour reflects the low return of traditional savings instruments, the recent upward trend of housing property prices and opportunities related to the increase in tourism by non-residents.

The pick-up in non-financial corporations' savings observed since 2008, although remaining below the average value in the euro area and in other member states with vulnerabilities in this sector, enabled corporate investment to recover in the most recent period but did not imply recourse to debt, as before the financial crisis. Nevertheless, net flows of financial debt to the sector were positive, chiefly reflecting lending by non-residents. Loans granted by domestic credit institutions continued to be assigned to corporations with better risk profile, more productive and operating in relatively more profitable activity sectors.

Bank interest rates applied to new loans to non-financial corporations have kept the downward path observed since 2012, simultaneously with a segmentation according to the debtor's risk profile. The decrease observed made it possible to reduce the differential vis-à-vis the euro area average rate to close to the minimum recorded in 2007.

In the first half of the year, the domestic activity of resident banks increased, interrupting the downward path seen from 2010 to 2016. This reflected an increase in investment in debt securities, in particular Portuguese sovereign debt, and the slowing deleveraging of the non-financial private sector. In the period under review, direct interlinkages among the financial subsectors declined slightly, maintaining the trend observed since late 2013. In turn, the exposure of the financial sector to the Portuguese sovereign increased significantly, thus strengthening an indirect interlinkage channel.

In June 2017, the excessive deficit procedure to which Portugal was subject since 2009 was closed, given that the fiscal deficit in 2016 was 55

below the 3% threshold defined in the Treaty on European Union.

In the first half of 2017, the general government's net borrowing decreased from the same period in 2016, largely reflecting the decline in the primary expenditure-to-GDP ratio. This improvement makes it possible to anticipate that the 1.4% of GDP deficit targeted for the year as a whole is achievable, but the underlying structural fiscal adjustment is expected to be small and falling short of that required by the current European rules.

The public debt-to-GDP ratio continued to increase in the first half of the year. This notwithstanding, the decline in the public debt implied in the Stability Programme for 2017 is not expected to be threatened. The composition of the general government's external debt changed, reflecting both the partial early repayment of the loan received from the IMF within the EFAP and net acquisitions by non-residents of public-debt securities.

The Portuguese international investment position continues to be among the most negative in the euro area, well beyond the risk threshold established by the European Commission in the framework of its assessment on excessive macroeconomic imbalances. In spite of the very significant adjustment already undergone by the Portuguese economy, shared, albeit to different degrees, by all institutional sectors, Portugal must continue to carry on the structural adjustment started with the EFAP. Currently, this process takes advantage of the favourable environment, characterised by the recovery of economic activity and disposable income and by the accommodative monetary policy.

2.1. Financial markets

In the course of 2017, stock market indices increased and historically low levels of volatility were observed in most geographical locations in a context of accommodative monetary policy and consolidating economic growth.

In the first half of 2017, the world economy presented higher-than-estimated solid growth, supported by the recovery of international trade and investment, against the background of maintenance of the accommodative monetary policy and easing of some political factors. The USA continued to record solid growth, the main contribution being given by private consumption, but there was an increase in uncertainty surrounding the North-American policy conduct. In Europe, there are signs of deceleration in the United Kingdom, as Brexit negotiations occur. Uncertainty regarding the increase in barriers to international trade, migrations and cross-border financial activity has penalised the pound sterling and, as a result, private consumption. In the euro area, economic activity accelerated, reflecting the dynamism of domestic demand.

In Portugal, underlying the acceleration of economic activity in 2017 was an increase in exports, in a context of market share gains and diversification of components and geographical destinations, and an increase in investment. The improvement in economic growth prospects, the adjustments in the banking sector and the fiscal balance developments, in a context of maintenance of the accommodative monetary policy, translated into an improvement of the assessment of risk in Portugal by international investors/rating agencies with an impact on market interest rates.

In the course of 2017, there was a broadly based increase in stock market indices (Chart 2.1), albeit with some occasional corrections, reflecting investors' concerns regarding both tension between North Korea and the USA and the impact of the Irma hurricane. These concerns were visible in a rise in stock market volatility indices for Europe and the USA (VIX and VSTOXX respectively), which nonetheless remained at historically low levels. The dynamism of the stock market has materialised in historical highs in the North-American and some European stock exchanges.



Chart 2.1 • Stock market indices | Index December 2016 = 100



Chart 2.2 • Euro area interest rates | Per cent



Notes: Data on a daily basis. Last observation: 31 October 2017. (a) Corresponds to the Eurosystem official interest rate on the deposit facility. (b) Corresponds to the Eurosystem official interest rate on the main refinancing operations. (c) Corresponds to the Eurosystem official interest rate on the marginal lending facility.

In the same period, the Portuguese stock market followed the upward trend observed in the European market. The PSI-20 index is, however, still 60% below the peak observed in July 2007, before the outbreak of the international financial crisis. Particularly noteworthy was the increase of the PSI-20 Financials index by 34% until the end of October 2017, exceeding those recorded by PSI-20 (17%) and the Euro Stoxx Banks² index (15.3%). These developments may have reflected the adjustment process of the banking sector, in particular the capitalisation of Caixa Geral de Depósitos and Banco Comercial Português, the sale of Novo Banco and the clarification of the respective impact on the other institutions in the system, the decline in the stock of NPLs and the improvement in the sector profitability and solvency.

Monetary policy remained accommodative, overall, notwithstanding the ongoing normalisation process in the USA and the decline in the magnitude of the monetary stimulus in the euro area

In the course of 2017, monetary policy maintained its accommodative stance in main world economies, in spite of the interest rate changes observed in the USA and the United Kingdom. The US Federal Reserve raised its key policy rates by 25 basis points in March and June 2017, continuing the normalisation process of monetary policy in the USA.³ Similarly, the Bank of England decided to raise its reference rate for the first time since 2007 by 25 basis points to 0.50% in early November, thus resuming the level recorded at the end of July 2016.

Key interest rates in the euro area remained unchanged, with the rates on the main refinancing operations, the marginal lending facility and the deposit facility standing at

0.00%, 0.25% and -0.40% respectively, since March 2016 (Chart 2.2). The ECB expects that these rates remain at the current levels for an extended period and beyond the horizon of the net asset purchases, no longer making reference to the possibility of lower interest rates in this horizon. As regards targeted longer-term refinancing operations (TLTRO), the last of four operations of the second series (TLTRO II) was carried out in March, which resulted in an increase in the allotted amount, when compared with the previous operation.⁴ As regards the asset purchase programme (APP), the volume of net purchases declined from €80 billion to €60 billion in April this year, a measure that was announced in December 2016. An additional decline to €30 billion was announced in October, to be implemented in January 2018. Also, the ECB continued to signal the possibility to increase the duration and volume of these operations, where deemed justified by the economic and financial outlook, in particular if a sustained adjustment of the inflation path to a rate below, but close to, 2% is not observed. In September, the year-on-year rate of change in the HICP in the euro area stood at 1.5% (1.1% excluding energy and food), and medium-term expectations continued to be anchored at around 1.7%.5

In this context, euro money market interest rates remained negative, with slightly different developments across maturities. While in shorter maturities, Eonia and three-month Euribor there was a relative stabilisation since the beginning of the year, six-month and 12-month Euribor rates maintained a downward trend (-6 and -10 basis points between 31 December and 31 October 2017 respectively). Developments in the 12-month Euribor are relevant, considering the leading role of this benchmark rate in new loans for house purchase, even if the total portfolio is mainly indexed to the three-month or six-month Euribor.⁶ Market prospects for money market interest rates point to the maintenance of negative values in the near future. As at 31 October 2017, three-month



EURIBOR futures had implied a return to positive rates as of early 2020 (Chapter 1). In turn, the euro area yield curve, estimated from AAA-rated Treasury bonds, shifted slightly upwards in 2017, although reaching positive values only for maturities exceeding seven years (Chart 2.3).

The evolution of government debt yields in euro area countries mainly reflected domestic political and economic developments, with a notable narrowing of the spread between Portugal and most member states

After the upward trend observed in late 2016, developments in 10-year government bond yields in major world economies in the course of 2017 were characterised by low volatility. In the euro area, the low volatility and the non-existence of events with a significant broadly based impact were reflected in a lower synchronisation of yields, with differentiated intra-annual profiles across countries, depending on the respective political and economic developments. In Portugal, the 10-year government bond yield declined significantly, reflecting a sequence of positive data related to budget execution and economic activity, together with the perception of higher resilience of the banking sector by investors. This decline was more marked after DBRS's decision to maintain its rating with stable prospects in April, and the S&P's improvement of its rating level to investment grade in September. As a result, the spread of Portuguese 10-year government bond yields narrowed vis-à-vis Germany (Chart 2.4) and most other member states, in particular Spain and Italy. Together with the narrowing of Portuguese sovereign debt yields in the secondary market, there was a decline in risk premia associated with subordinated and non-subordinated debt issued by Portuguese banks, which however maintain low liquidity. In the primary market, reference should be made to stronger momentum in the covered bond segment, whereas the issuance of subordinated and senior bonds continued to be residual.



Chart 2.3 • Euro area yield curve | Per cent

Source: European Central Bank. Notes: Yield curve estimated from AAA-rated euro area central government bonds, fixed and zero coupon, with finite maturity.

Chart 2.4 • 10-year sovereign bond yields | Spreads vis-à-vis Germany





2.2. The Portuguese Economy

The Portuguese economy has recorded a net lending since 2012, which has been reflected in the improvement in its international investment position

The Portuguese economy has recorded a net lending since 2012, which has contributed to the improvement in its international investment position since 2014 (Charts 2.5 and 2.6). This net lending has resulted from the necessary adjustment process carried on by the Portuguese economy, given the high level attained by its external debt (Chart 2.7).

In the first half of 2017, the Portuguese economy's net borrowing stood at 0.9% of GDP (similarly to that in the same period of 2016). In spite of recording net lending in recent years, in annual terms, economic transactions between Portugal and the external sector usually show a net borrowing in the first half of the year, as a result of the seasonality of some transactions with non-residents.7 Therefore, when considering the seasonally adjusted current and capital account balance (which should correspond to the net lending/







Chart 2.7 • Portuguese external debt | As a percentage of GDP



Source: Banco de Portugal.

Notes: (a) Corresponds to the symmetrical of the net external debt defined as recommended by international organisations. It is calculated from the international investment position excluding companies' equity capital and reinvested earnings from direct investment, portfolio holdings in shares and other equity, financial derivatives (other than reserves) and stock options granted to employees. Gross debt considers only the corresponding liabilities of the international investment position.

61

borrowing of the economy),⁸ its value for the first six months of 2017 is positive and only slightly below that for 2016 as a whole (Chart 2.8).⁹

In the first half of 2017, the financial transactions with the external sector resulted in net inflows from abroad that was largely due to the external financing to resident non-financial corporations

External financial transactions in the first half of the year resulted in net inflows of 0.7% of GDP, slightly above those registered in the first half of 2016 (by around 0.4 p.p. of GDP).¹⁰ These net inflows reflected transactions in financial assets that reached 10.3% of GDP (corresponding to outflows) and in financial liabilities representing 11.0% of GDP (resulting in inflows).

Financial asset transactions include, in particular, net acquisitions of debt securities by Banco de Portugal, within the scope of Eurosystem's monetary policy operations. In turn, the increase in financial liabilities was largely due to net acquisitions by nonresidents of government and non-financial corporations' debt securities (3.4% and 1.5% of GDP respectively), investments in shares and other equity of Portuguese corporations (either financial or non-financial, amounting to 3.9% of GDP) and loans granted to non-financial corporations (0.8% of GDP). Worthy of note among outflows is the net repayment of loans by general government (4.0% of GDP), namely two partial early repayments of IMF lending granted under the EFAP.

In June 2017 the international investment position of Portugal was a debtor position and represented 105% of GDP. In spite of the improvement seen since 2014, after reaching a debtor position exceeding 116% of GDP, this indicator continues to be among the most negative in the euro area (Chart 2.9). It is also well beyond the risk threshold established by the European Commission in the framework of the assessment of excessive macroeconomic imbalances of member states (-35% of GDP). This fact indicates that Portugal needs to carry on the economic and structural adjustment, which is made easier in an environment characterised by economic recovery and accommodative monetary policy.



2.2.1. Households

100

50

0

-50

2

0

In the first half of 2017, household net lending was close to zero, with a decline in the savings rate and a slight increase in the investment rate from the same period of 2016

According to currently available national accounts data published by Statistics Portugal, household net lending was 0.4% of disposable income in the first half of 2017, approximately 1.6 p.p. below that in the same period of the previous year.¹¹ This development reflected a decline in the savings rate (from 5.3% in the

first half of 2016 to 4.1% in the period under review)12 and an increase in investment in real assets (from 3.6% to 4.1% of disposable income respectively)¹³ (Chart 2.10). Net capital transfers remained virtually unchanged from the first half of 2016 (around 0.4% of disposable income).

In terms of financial transactions,¹⁴ inter alia, this net lending reflected the continuation of net repayment of loans for house purchase,¹⁵ simultaneously with a net inflow of new loans for consumption and other purposes.¹⁶ In total, net repayment of household financial debt was 0.6% of disposable income, well below the amount recorded in the same period of 2016 (2.7%) or in 2016 as a whole (2.2%).

25

6

-8 -14 -23

70 64

57 51

Chart 2.9 • International investment position -Comparison with euro area member states | As a percentage of GDP

Source: Eurostat.



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



-34 -33





In the first half of 2017 there was also an increase in household financial assets, as net transactions represented 5.5% of disposable income, corresponding to a significant rise from the net flows shown in 2015 and 2016.¹⁷

The adjustment of the Portuguese households' balance sheet following the economic and financial crisis differs markedly from that observed in the euro area as a whole. In Portugal, there has been a significant net repayment of loans since 2011. These developments, also seen in some other countries where the household sector has vulnerabilities as those in Portugal (such as Spain and Ireland), have not been observed in the euro area as a whole, where investment in real assets continues to be high, when measured as a percentage of disposable income (Chart 2.11). This disparity seems to be related to the greater use of bank credit to finance consumption and investment expenditure by Portuguese households (when compared with the euro area as a whole) in the pre-crisis period. In the euro area, investment funding, both in real and financial assets, may have benefited from households' savings rate significantly higher than in the Portuguese case, allowing for the accumulation of assets without recourse to excessive indebtedness.

Chart 2.11 • Sources and uses of funds and financial debt ratio of private individuals – Comparison with the euro area | As a percentage of disposable income



Source: Eurostat, Statistics Portugal and Banco de Portugal.

Notes: Consolidated data regarding financial accounts. The euro area aggregate includes Portugal. (a) It includes the discrepancy between the balances of capital account and of financial account (net lending / net borrowing), if existing.

As regards the financial asset portfolio, there was a change in the behaviour of households in the first half of 2017, towards an increase in investments in higher risk/higher profitability instruments

In the first half of 2017, net investment by households in Treasury debt continued, chiefly via Treasury certificates and floating rate bonds (OTRV), with the amount invested in these instruments reaching 3.5% of disposable income. Contrary to developments since 2015, however, investments in deposits declined (by 0.3% of disposable income). In turn, reflecting the increase in return of real estate investment funds and mutual funds, there were significant net acquisitions of investment fund units, including non-resident investment fund units (2% of disposable income in the half-year) (Chart 2.12). In a context where deposit yields stand at historical minimum and consumer confidence is at its peak, those developments may reflect a reduction in risk aversion by savers and a search for higher potential yield/riskier assets.

Real estate assets are among the assets that were more demanded for investment purposes by Portuguese households. This preference reflects the recent growth of

Chart 2.12 • Transactions in financial assets of private individuals | As a percentage of disposable income

> Source: Statistics Portugal and Banco de Portugal. Note: Consolidated data.

Chart 2.13 • Total debt of private individuals | As a percentage of disposable income

Source: Statistics Portugal and Banco de Portugal. Notes: Consolidated data regarding financial accounts. Total debt includes debt securities, loans and trade credits and advances. The share of loans for house purchase corresponds to the outstanding amount of loans granted by the resident financial sector for this purpose (data from the Central Credit Register), while the share of loans for consumption and other purposes is the difference for the total financial debt.





house prices, further rise prospects and the opportunities associated with the growth of tourism, chiefly in the main urban and tourist areas (Box 5).

At the end of the first half of 2017, total household debt represented around 107 per cent of disposable income, its nominal value remaining virtually unchanged from the end of 2016

In June 2017 the ratio of total debt to household disposable income stood slightly below the figure in December 2016 (107%, which compares with 109% at the end of 2016)¹⁸ (Chart 2.13). This improvement in the debt ratio was almost exclusively due to an increase in nominal disposable income, as the nominal value of household debt was virtually unchanged (at around €139 billion).

Since nominal convergence towards core European Union countries started, at the dawn of the euro area, household financial debt developments in Portugal have been especially affected by the financing of the residential wealth of Portuguese households. As a result, the share of loans for house purchase in households' total debt reaches nearly 70% at present. Against the background of an inefficient house rental market and of increasing prospects of permanent income in the context of participation in the euro area, there was a gradual elimination of borrowing restrictions for a rising number of households. Therefore, the financial debt ratio in this sector rose well above the euro area average, to stand among the highest in this area in mid-2007, at the outbreak of the financial crisis (Chart 2.14).

The households' debt ratio reached its peak in 2009, starting afterwards a downward trend (only interrupted in 2011, as a result of a significant fall in disposable income) that continued until the end of the first half of 2017. In the most recent period, the fall in the households' debt ratio has been favoured by growth of nominal disposable income (which, in average terms, grew by 3.3% per year since 2015) and net repayments of the debt, which have been gradually declining.

Flows of new loans to households grew significantly in the first half of 2017 and, as a percentage of disposable income, exceeded the amount at the start of the EFAP

In June 2017 the annual rate of change of loans to households stood at around -1.0% 19



Chart 2.14 • Household financial debt ratio | As a percentage of disposable income

Source: Eurostat. Notes: Consolidated data regarding financial accounts. Financial debt corresponds to the sum of debt securities (which is nil or almost nil for households) and loans, whatever the counterpart sector. (a) Latest available figure for Ireland: 2015.



(-2.1% at the end of 2016), well above the trough recorded at the end of 2012 (-4.1%) (Chart 2.15). These developments have largely reflected the growth of new bank loans to this sector, in a context of an also upward trend of early repayments of mortgage and related credit²⁰ (which are the most significant share of household debt). In effect, the amount of the

early repayments of loans for house purchase and related credit has changed significantly over the last two years, representing more than 3.5% of the average outstanding amount in 2016 (Table 1).²¹ Most of these early repayments correspond to the total repayment of the outstanding liability and tend to be associated with new lending.

	2012	2013	2014	2015	2016
Total amount	2 088	1 873	1 908	2 597	3 633
Weight on average debt	2.1	1.8	1.8	2.5	3.6
Rate of change		-10.3	1.9	36.1	39.9
Of which:					
Total repayments	1 574	1 428	1 525	2 232	3 251
Weight on average debt	1.6	1.4	1.4	2.1	3.2
Rate of change		-9.3	6.8	46.4	45.7
Partial repayments	514	445	383	365	382
Weight on average debt	0.5	0.4	0.4	0.4	0.4
Rate of change		-13.4	-13.9	-4.7	4.7

Table 2.1 • Early repayments of mortgage and related credit | € millions (amounts) and percentage (weights and rates of change).

Note: Banco de Portugal.

Therefore, the annual gross flow of new bank loans for house purchase increased by 37% in June 2017 from the same period of 2016, already exceeding the amount recorded in 2011, when the EFAP began but still well short of the amounts granted in the pre-financial crisis period (Chart 2.16). The share of loans with an initial rate fixation period of over one

year,²² both in 2016 (34% of total flows) and in the first half of 2017 (39% of total flows), contrasts with the very small relevance of this type of loan in the outstanding amount of mortgage. This lengthening of the initial rate fixation period of new loans for house purchase is a trend that has been seen in other countries where the outstanding mortgage





Lending to private

the quarterly transactions of the financial account for the instrument 'Liabilities - Loans', consolidated data.

was predominantly agreed at a variable rate, as in Spain.

According to banks participating in the Bank Lending Survey (BLS), developments in new bank lending have mainly reflected greater demand in this market segment, supported by an improvement in housing market prospects, higher consumer confidence and the very low level of interest rates.23 On the supply side, they point to a continued relative tightening of credit standards in this type of loans. Yet some banks indicate that the high competition among banking institutions and the optimism regarding housing market developments have contributed to some easing of the terms and conditions applied to the approval of loans.

Also in the consumption and other purposes segment of credit market, activity has recovered clearly. In June 2017 the annual flow of new bank loans to households for consumption and other purposes grew by 7%, after positive annual rates of change since 2014, reaching values close to those registered in 2012. This growth was chiefly due to financing for car purchase, in a context of labour market improvement, significant growth of real disposable income and favourable expectations regarding the overall economic situation. According to the BLS, in this market segment, where the surveyed banks have a less relevant participation, demand for loans has continued to increase. Also spreads in average-risk loans, for which









Euro area



50

40 30

20

10

Source: European Central Bank, Banco de España, Central Bank of Ireland and Banco de Portugal. Note: (a) Annual flow ended in June 2017.

competitive pressure from other financial institutions is more relevant, have narrowed.

The current recovery of the gross amount of new loans to households is also seen in the euro area as a whole, much more markedly in the mortgage segment. This contrasts with the pre-financial crisis period, when gross flows of new loans for house purchase (as a percentage of disposable income) were observed in Portugal exceeding those registered in the euro area. Developments in Portugal are close to those seen in Spain and Ireland, where household debt also reached high levels in the period immediately prior to the outbreak of the financial crisis.

The need for further efforts to reduce household leverage in Portugal, similarly to Spain and Ireland, is contributing to the difference in behaviour at present. In general, Portuguese households are much more vulnerable to short-term interest-rate changes than its equals in the euro area as a whole, as a significant share of loans agreed in the past were at a variable rate (i.e. indexed to Euribor). In the current context of very low money market interest rates, this has contributed to a significant reduction in debt service, which has been partially converted into consumption. However, the capacity of indebted households to adjust to unanticipated shocks may be substantially compromised in the context of a return, even if gradual, to regular monetary policy. This is especially relevant given that there is still a significant percentage of Portuguese households with a very high debt ratio to income, at different income brackets. In spite of the very small share of indebted households in the lowest income bracket (first distribution quartile), the debt service represents, on average, more than half of their income. This bracket also displays a higher share of households where the debt service to income ratio (DSTI) exceeds 30% or 40%. In the bracket of intermediate income there is also a higher share of households with a DSTI ratio close to 30% or 40% and the share of loans for house purchase in total debt is higher than in the case of high-income households. These households are especially vulnerable to any factor liable to change their income and debt service conditions, which is an important risk for financial stability (Box 4).

2.2.2. Non-financial corporations

In the first half of 2017, the net borrowing of non-financial corporations was higher than in the same period of 2016, mostly reflecting a decline in the savings rate and an increase in the investment rate

In the first six months of 2017, and according to available data on National Accounts released by Statistics Portugal, the net borrowing of non-financial corporations (NFCs) reached 2.1% of GDP, 1.1 p.p. above the same period a year earlier.²⁴ These developments mostly resulted from a decline in the savings rate (from 11.1% of GDP, in the first half of 2016, to 10.5% of GDP in the six months under review)²⁵ and an increase in the investment rate (from 12.5% of GDP to 13.0% of GDP respectively),²⁶ while net capital transfers did not change significantly from the same period of 2016 (standing at around 0.5% of GDP) (Chart 2.17).

In addition to the sector's savings, net inflows of financial debt and net issuance of capital financed NFC fixed capital, while financial assets continued to record positive net flows. The accumulation of deposits was particularly relevant in the six months under review, both with resident and non-resident banks (accounting in total for 2.6% of GDP).

(68)

The increase in domestic and external demand has helped a gradual recovery in NFC investment. It is crucial that the use of debt for financing new investments does not lead to excessively leveraged capital structures

In the first half of 2017, nominal gross fixed capital formation (GFCF) of NFCs (which reached a minimum in 2013) grew by almost 9% year on year, reaching the level observed in 2010. The recovery in investment in Portugal, measured as a percentage of the sector's operating surplus, was still below the levels seen in other euro area countries (such as Spain, France, Belgium and Austria), although practically the same as the average for the euro area as a whole (Chart 2.18).

As mentioned, in this period, the sector's savings considerably helped finance nominal investment. In effect, the gradual increase in firms' gross margin has allowed them to accumulate own funds. A comparison of developments in investment and profitability in the various economic activity sectors shows a positive correlation between the gradual recovery in the financial performance of a sector and an upturn in its investment. Indeed, manufacturing and trade, which showed a more significant improvement in







the return-on-asset ratio, also recorded a more marked recovery in GFCF (at least in 2015) (Box 1). Despite these developments, the savings rate of NFCs, both as a percentage of GDP and of gross operating surplus, is one of the lowest in the euro area, in spite of the strong improvement observed since 2008, as in the euro area as a whole (Chart 2.18). These developments in NFC savings have occurred in parallel with a slight adjustment in the high level of debt accumulated by NFCs since the start of the euro area. Consolidating this adjustment is crucial for the economy to restore investment levels compatible with greater potential growth and lower vulnerability to adverse shocks. However, in 2015, corporations which had so far shown a greater recovery in investment had already shown signs of a slower reduction in financial debt, although exhibiting lower indebtedness levels than other firms.

Consequently, and considering that until 2016 the recovery in investment, in aggregate terms, had not led to a reversal in the process of reducing the debt of NFCs, the use of new debt to finance new investments should not lead to excessively leveraged capital structures. This may require a more intensive use of profits to self-finance investment projects than in the period prior to the EFAP. Choosing projects efficiently and carefully will allow shareholders to be rewarded through an increase in the value of firms, compensating them for lower dividends paid. In 2016, net distributed income of Portuguese NFCs totalled around 26% of their gross operating surplus. This share, although close to the euro area average, was higher than in Spain (12%) and France (14%) (Chart 2.19).27

In the first half of 2017, net use of financial debt by NFCs mostly came from loans granted by non-residents

In the first half of the year, the net inflow of financial debt to NFCs interrupted the reduction trend in this sector's debt (assessed by flows) followed since 2014. Nevertheless, net repayment of domestic loans continued, although to a much smaller degree than in the same six-month period of 2016 (Chart 2.20). It should be noted that the reduction



Source: Statistics Portugal.

Notes: Half-year figures are calculated on the basis of quarterly national accounts. 'Net' stands for the difference between sources and uses. (a) Corresponds to all categories of property income (i.e., interest, distributed income of corporations, reinvested earnings of foreign direct investment, other investment income and rents), in the absence of detailed quarterly data. (b) Including reinvested earnings of foreign direct investment, other investment income and rents. (c) 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. Quarterly data on this aggregate is not published by Statistics Portugal, so it cannot be calculated for half-year periods.
observed in loans granted by resident financial institutions to NFCs since 2010 was mainly owing to firms that remained in the credit market (intensive margin),²⁸ in particular non-performing corporations. In 2015 and 2016, the contribution to the increase in loans made by firms with new lending relationships with resident financial institutions grew considerably, more than offsetting the negative contribution of firms exiting the market (i.e., the extensive margin made a positive contribution to the change in outstanding amounts of loans granted by resident financial institutions). These developments suggest that the deleveraging process of NFCs is contributing to the steady reduction in outstanding loans with resident institutions and that there is greater renewal of the set of corporations that borrowed from the resident financial sector recently than during the economic and financial crisis.²⁹

The reduction in NFC financing by residents was partially offset by positive net flows of loans by non-residents (0.8% of GDP, compared with 3.1% in the same six-month period of 2016). In contrast to 2016, when intra-group lending (related to foreign direct investment) accounted for more than half of net inflows of lending to NFCs from abroad, the weight of these loans declined significantly over the half year under analysis, being almost negligible.

The decline in domestic bank financing to NFCs was also seen in gross flows of new loans to



Chart 2.20 • Contributions to the change in NFC financial debt | As a percentage of GDP

Source: Statistics Portugal and Banco de Portugal. Notes: Liabilities for loans and debt securities are considered in the credit aggregate. (a) Change from the end of the previous year.

Chart 2.21 • Amounts and interest rates on new bank loans to NFCs

Source: European Central Bank. Note: (a) Year ending in June 2017.

this sector, which fell to a level not observed since 2003, for the year ending in June 2017 and as a percentage of the sector's gross value added (GVA) (Chart 2.21). At the same time, the share of new loans with amounts over €1 million in total flows continued to decline, in contrast to the euro area as a whole, where they account for the majority of the total amount. The greater relative importance of small-sized firms (micro and small enterprises) in the Portuguese NFC sector, compared with other euro area Member States (in particular the largest countries) may explain this difference. According to banks reporting to the BLS, demand for bank loans by Portuguese firms in 2017 has been affected by financial needs related to inventories and working capital, as is the case since the start of the financial crisis, but also by fixed investment financing, which, as a rule, involves larger amounts. Nevertheless, as mentioned before, NFC savings have allowed Portuguese firms to recover investment without having to use debt as intensively as prior to the financial crisis. This fact, together with the considerable increase in non-resident lending, is likely resulting in lower recourse to loans from resident credit institutions.

As highlighted in previous issues of this Report, bank loans are being shifted towards NFCs with a better risk profile and operating in relatively more profitable economic activity sectors, such as manufacturing and trade.³⁰ It is also possible to conclude that firms which are relatively more productive benefited from loans by the resident financial sector after the EFAP. Indeed, the average productivity of NFCs with an increase in exposure from the resident financial sector is higher than that of corporations with a decrease in exposure (Chart 2.22). However, loans to corporations in the quartile with the highest productivity (quartile 1) have declined, which may reflect a greater ability on the part of these firms to self-finance.

Gross annual flows of new loans decreased despite a significant reduction in interest rates

on these operations, with the differential vis-àvis the euro area average narrowing markedly. In the twelve-month period ending in June 2017, this differential stood at 130 basis points (b.p.), unchanged from 2013, and 30 b.p. above the minimum observed in 2007. The current low interest rate environment, against a background of increased competition among banks and better financing conditions for firms with access to international financial markets, may lead to an excessive reduction in interest rates on new loans, squeezing the differentiation between risk premia to levels that might not allow for an adequate risk reward. However, there is evidence that supports the existence of risk differentiation in bank lending to NFCs. Despite the decline in interest rates on new loans, there is still a differentiation which is consistent with the debtor's risk (see Special Issue 'The risk segmentation on the interest rate spreads of new loans to non-financial corporations).

In the six months under review, net issuance of debt securities by NFCs increased considerably, reaching 2.1% of GDP (compared with almost nil in the first half of 2016). In terms of maturity, net issuance of long-term securities corresponded to around one-third of the total amount issued during this sixmonth period. In addition, net purchases of NFC debt securities by non-residents were considerable, standing at around 1.5% of GDP. Consequently, the share of non-residents in total credit (loans and debt securities) granted to NFCs in the first half of 2017 reached almost 2.4% of GDP (from 3.4% in the same six-month period of 2016).

In the first half of 2017, NFC equity continued to increase considerably, with the amount of net issuances of shares and other equity in this sector reaching 1.7% of GDP. This increase was particularly influenced by net purchases by non-residents, which accounted for 2.2% of GDP. Since 2014, equity has increased significantly in net terms, which, together with the decline in debt, has contributed to a decrease in the sector's debt-to-equity ratio

2013

2014

Quartile 2

No quartile

(Chart 2.23). Nevertheless, progress made in Portugal, in terms of NFC capitalisation, is less considerable than in other euro area countries which had also shown vulnerabilities in this sector at the start of the financial crisis, such as Spain.

The ratio of total NFC debt declined slightly in June 2017, from December of the previous year, mainly as a result of a considerable volume of written-off loans and a positive contribution from GDP growth

In June 2017, total NFC debt reached 104% of GDP, remaining one of the highest in the euro area (Chart 2.24). During the first half of the year, as previously mentioned, there was a net inflow of credit to NFCs, the decline in the debt-to-GDP ratio was influenced by a nominal change in GDP and reflected a considerable amount of bank loans to NFCs which were written off.³¹ In June 2017, the annual flow of bank loans to NFCs which were written off reached 1.5% of GDP (after 1.3% of GDP in 2016).

The unfavourable relative position of Portugal in terms of the NFC debt-to-GDP ratio is also evident when other metrics are used, such as the ratio of net debt to entrepreneurial income³² (Chart 2.25).

Chart 2.22 • Changes in the exposure of the resident financial sector according to the productivity of NFCs with loans



Source: Banco de Portugal.

Notes: Estimates for total factor productivity (TFP) calculated by Banco de Portugal. Corporations for which it is possible to calculate TFP account for approximately 60% of loans to NFCs, reported in the Central Credit Register (CCR). The 'no quartile' group, on the right-hand chart, corresponds to firms with loans reported in the CCR for which TFP may not be calculated (due to lack of available data).



Chart 2.23 • Debt and equity of NFCs | As a percentage of GDP and ratio

2015

2016

Quartile 3

Sources: Eurostat, Statistics Portugal and Banco de Portugal. Notes: End-of-period figures. (a) The debt-to-equity ratio corresponds to the ratio of financial debt to the amount of shares and other equity at market value. The dashed line shows the ratio of financial debt to the value of shares and other equity less holding gains and losses.³³

Despite the decline in the indebtedness ratio of Portuguese NFCs observed since 2012, when a peak was reached, further progress has to be achieved, in order to ensure the sustainability of the sector's debt and its resilience to adverse shocks.

Within a context of a decrease in interest rates to historically low levels, funding costs for NFCs have continuously declined since 2012, reaching a minimum in 2016. In spite of the drop already observed in the sector's debt, Portuguese indebted firms remain vulnerable to an increase in funding costs. Against a background of normalisation in euro area monetary conditions, short-term interest rates will gradually increase, with an impact on the funding costs for Portuguese NFCs. A reassessment of risk premia on Portuguese debt may also affect NFC funding costs in debt markets. Despite the small share interest expenses have, on average, in the cost structure of Portuguese NFCs, an increase in funding costs may have non-negligible effects on the capacity of some firms to service debt, increasing the sector's non-performing ratios and resulting in a rise in impairments of financial institutions (Box 2).

2.2.3. General government

In June 2017, the excessive deficit procedure concerning Portugal opened in 2009 was closed, while the improvement in the deficit in the first half of 2017 indicates the target for the year as a whole is within reach

In June 2017, upon a recommendation from the European Commission, the Council of the European Union decided to close the excessive deficit procedure concerning Portugal, opened in 2009. This occurred after Portugal posted a general government deficit in 2016 below the 3% threshold established by the Treaty on European Union.

In the first half of 2017, the fiscal deficit was 1.9% of GDP, compared with 3.1% in the same period a year earlier (Chart 2.26).³⁴ These developments were the result of a reduction in the primary expenditure-to-GDP ratio and occurred in spite of a decline in total revenue as a percentage of GDP. Given that interest expenses declined slightly as a percentage of GDP, the primary balance improved less markedly than the overall balance, standing at 1.9% of GDP in the first half of this year. The budget outturn for the year as a whole is expected to be consistent with the current target for the deficit in 2017 (1.4% of GDP) in the State Budget Report for 2018, even taking into



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account the various factors which distorted the seasonal pattern of developments in the public deficit in the first half of this year, which usually improves considerably in the second half of the year. However, the adjustment is expected to be negligible in structural terms (around 0.1 p.p. of GDP, according to the European Commission's Autumn forecasts) and below the level required by the European rules currently in force (around 0.6 p.p. of GDP).

In the first half of 2017, net transactions in financial assets and financial liabilities increased year on year As regards general government financial liabilities, net transactions in debt instruments, amounting to 11.2% of GDP, were particularly important. These were mostly net purchases by resident banks (4.2% of GDP) and nonresidents (3.4% of GDP), or resulted from the implementation by Banco de Portugal of the public sector purchase programme (PSPP) in secondary markets (2.7% of GDP). Also important during the same period were net purchases by households of debt instruments issued by the public sector, specifically Treasury certificates (2.2% of GDP) and OTRV (1.1% of GDP). This period also saw a significant net repayment of loans, specifically the early repayment of IMF loans (2.8% of GDP). After a debt repayment of





Source: Eurostat. | Notes: (a) Ratio of NFC net financial debt to entrepreneurial income, net of taxes. Calculated as the ratio of the algebraic sum {(Debt securities + Loans) |Liabilities} --{(Currency and deposits + Debt securities + Loans) |Assets]} to gross entrepreneurial income, net of taxes on income and wealth. Entrepreneurial income is calculated by deducting interest payable, investment income payable and rents payable from NFC operating surplus and adding all property income receivable by this institutional sector. Net of consumption of fixed capital. (b) Figure for 2015. (c) Figure for 2014.



Chart 2.26 • Savings, investment and net borrowing of general government | As a percentage of GDP

Source: Statistics Portugal. Notes: Half-year figures are calculated from the quarterly national accounts. (a) Corresponds to the sum of gross fixed capital formation, changes in inventories, acquisitions net of disposals of valuables and acquisitions net of disposals of non-produced non-financial assets. €1 billion in October 2017, total accumulated repayments of IMF loans amounted to 66% of the initial amount granted by the IMF. The government expects to repay an additional €3 billion by the end of the year (thereby increasing total accumulated repayments to 77% of the total amount initially borrowed).

The public debt-to-GDP ratio continued to increase in the first half of 2017, but the decline projected until the end of the year is feasible

At the end of the first half of 2017, the public debt-to-GDP ratio was 132.1%, above the 130.1% observed at the end of 2016. (Chart 2.27). An analysis of public debt net of general government deposits also shows an increase during this period, albeit more moderate. Indeed, the accumulation of central government deposits in 2016 to pre-finance the capitalisation of Caixa Geral de Depósitos was not reversed in the first half of 2017, when these deposits actually increased further. The accumulation of deposits is a buffer kept by Portuguese authorities to address potentially unfavourable developments in international financial markets, but it is also a way to pre-finance debt repayments. As such, repayments projected to occur in the second half of the year are expected to be financed through deposit depletion, resulting in a reduction in nominal debt. Projections included in the State Budget for 2018 point to a debt-to-GDP ratio of 126.2% of GDP at the end of 2017 and estimate a further reduction in 2018.

Underlying the decline in interest expenses paid by the general government in the first half of 2017 is a decrease in the average interest rate on public debt, arising from debt repayments with higher than average interest rates (as is the case with the debt to the IMF) and issuance of new debt at lower rates, in particular within a very favourable context observed in the sovereign debt market from April onwards. Nevertheless, taking into account prospects of an increase in interest rates, associated with a normalisation in monetary policy, and the reduction already seen in long-term interest rate spreads, there will be less room for additional declines in interest expenses through this means.



The improvement observed in the rating for Portuguese public debt has positive implications, facilitating the adoption of policies to ensure the sustainability of public finances and to reduce their vulnerability to adverse shocks

In September 2017, Standard & Poor's improved the rating for Portuguese sovereign debt, placing it at an investmentgrade level. These developments have positive implications for the appetite of international investors for Portuguese public debt. However, Portugal must not slow down its efforts to ensure public debt remains on a trajectory in line with the sustainability of public finances, specifically via a structural adjustment in the fiscal balance and the promotion of policies that foster potential growth. This is particularly important given that the ECB has already announced that the Eurosystem will reduce the amounts involved in the PSPP from the end of 2017 onwards. The importance of market perception in determining interest rates and differentials against other euro area countries will consequently increase.35

2.2.4. Financial corporations

In the first half of 2017, the net lending of the financial sector increased, reflecting in particular an increase in gross savings of the banking sector

In the first half of 2017, the net lending of financial corporations reached 2.8% of GDP (Chart 2.28), standing above the level observed in the same period of 2016 (1.7%). These developments reflected an increase in the sector's gross savings (1.1 p.p. to 2.9%), in particular in property income, with net investment in real assets and net capital transfers remaining at residual levels. The increase in property income mainly reflected an increase in dividends received and a decline in interest expenses that was higher than the decrease in interest received.

The GVA of financial corporations increased slightly year on year, albeit at a slightly slower pace than GDP growth, contributing to a relative stabilisation in the share of the financial sector in total GVA of the economy. These developments interrupted a period of marked reduction, which started at the end of 2008, characterised by declines in financial intermediation and non-financial



Chart 2.28 • Savings, investment and net lending of financial corporations | As a percentage of GDP

Source: Statistics Portugal. Notes: (a) Corresponds to the sum of gross fixed capital formation, changes in inventories, acquisitions less disposables of valuables and acquisitions less disposals of non-produced non-financial assets. sectors' indebtedness. At the end of 2008, the contribution of the financial sector to the GVA of the Portuguese economy was one of the highest in the euro area, despite not standing out in terms of size, measured by total assets as a percentage of GDP (Chart 2.29). Similarly to economies initially less affected by the international financial crisis, the assets of the Portuguese financial sector continued to grow above GDP in 2009 and 2010, although their contribution to GVA has declined. From 2012 onwards, both indicators have continuously declined, following an adjustment path similar to that of Spain and Austria.

In the six months under review, purchases of financial assets by the financial sector

exceeded the increase recorded in their financial liabilities, which resulted in net financial transactions of 2.9% of GDP. Positive financial savings were broadly-based across the subsectors of the financial system (Chart 2.30). In particular, the financial savings of the banking sector accounted for 1.5% of GDP (an increase of 0.9 p.p. compared with the same period in 2016), standing at figures close to those at the start of the financial crisis. In line with other European countries, the savings of the Portuguese financial sector benefited from a positive contribution from the other financial intermediaries during the financial crisis.

Chart 2.29 • Size and contribution of the financial sector to GDP

Source: Eurostat. Notes: Countries selected in order to include euro area countries without particularly favourable tax frameworks, with lower credit ratings (Spain and Italy) and small economies (Belgium and Austria).

Chart 2.30 • Financial savings of financial corporations and subsectors | As a percentage of GDP

Source: Banco de Portugal. Notes: Consolidated figures. Half-yearly figures based on quarterly financial accounts. Financial savings is the difference between net change in financial assets and net change in financial liabilities.





In the first half of 2017, the financial balance sheet of resident banks increased, reflecting, to a large extent, operations carried out by two major Portuguese banks to strengthen their own funds

In the first half of 2017, the financial flows of Banco de Portugal continued to be mainly determined by the Eurosystem's non-standard monetary policy measures, in particular the Expanded Asset Purchase Programme.³⁶ This programme continued to materialise in the purchase of Portuguese sovereign debt securities and debt securities issued by non-residents, standing slightly below the level observed in the same period of 2016. As regards liabilities, central government deposits increased, as this component typically has a high intra-annual variability, depending on the State's management of liquidity.

Regarding the domestic activity of the banking sector, the portfolio of debt securities increased, in particular of Portuguese sovereign debt (Chart 2.31). These developments more than offset the slight decline in loans to NFCs and households, against a background of a slowdown in the deleveraging of the non-financial private sector, which resulted in an expansion in the financial

assets of resident banks.³⁷ This expansion interrupted the period of contraction which resulted in a decrease in assets of 27% from 2010 to 2016 and was determined, to a large extent, by the reduction in the credit portfolio. In parallel, banks strengthened their own funds through recourse to general government and non-resident funds. NFC deposits increased considerably, in line with an increase in corporate savings and an improvement in the liquidity situation of enterprises.

The activity of insurance corporations declined year on year, albeit to a lesser extent than in 2015 and 2016, in particular due to a slowdown in the decline in the output of life insurance and a decrease in redemptions. These developments resulted in a reduction of 2% in insurance technical reserves, compared with June 2016. In terms of investment portfolios, there was an increase in the share of non-resident investment fund units, and a decline in debt securities (bank and sovereign debt) and, although to a lesser degree, in deposits. These developments contrast with those observed in 2016, when the insurance sector increased its exposure to Portuguese public debt by around 2% of GDP. In addition, bank debt securities also declined in the first half of 2017, partially offset by an increase in debt securities of non-residents.

In turn, there was an increase in assets under management by pension funds and a slight shift in investment portfolios, towards an increase in





Source: Banco de Portugal. | Notes: Financial net worth is a statistical concept from national accounts, corresponding to the balance between total financial assets and total financial liabilities. This measure differs from the concepts of accounting capital and of own funds for prudential purposes presented in other sections of this Report. The information in the chart also includes money market funds.

the share of non-resident investment fund units. Extraordinary contributions were also made to restore the funding of liabilities.

The remaining financial intermediaries³⁸ continued to reduce their activity, albeit at a slower pace than in the same six-month period of 2016, given that the redemption of securitisation transactions (including early amortisation) involved lower amounts. By contrast, the subset of other financial intermediaries specialised in granting credit continued to increase its activity,³⁹ reflecting, in particular, the dynamism of consumer loans.

In aggregate terms, direct linkages between the financial subsectors declined slightly in the first half of 2017 (Chart 2.32), continuing the trend observed since the end of 2013. In particular, banks reduced their exposure to their own sector (owing in part to a decline in intra-group lending), and to other financial intermediaries, reflecting the aforementioned repayment of securitisation transactions. By contrast, the financial sector's exposure to common risks, in particular to Portuguese sovereign debt, increased by 17% year on year (12%, compared with the end of 2016), thereby strengthening the channel of indirect linkages. These developments were mostly the result of an increase in the portfolios

of Banco de Portugal (within the context of Eurosystem monetary policy operations) and of the banking sector. This exposure reached 47% of GDP at the end of June 2017,⁴⁰ of which 14% pertain to Banco de Portugal.

Investment funds recorded positive returns in the first half of 2017

In the first half of 2017, net issuances of mutual fund units increased, in particular of bond and mixed funds, also partly explained by a change in the investment policy of a money market fund that was converted to a bond fund. These issuances were mostly purchased by enterprises and households (Chart 2.33).

Despite the recovery in activity, the share of mutual funds in the financial system remains well below the level observed in 2007, when amounts invested in this type of fund were around twice the current level. The increase in these funds' activity was mostly reflected in an increase in deposits and debt securities, mostly debt securities of firms and non-residents. There was an increase in profitability year on year, broadly-based across different types of mutual funds, and a slight deterioration in the liquidity position⁴¹ (Chart 2.34).



Chart 2.32 • Intensity of direct linkages in the financial system | Per cent

Source: Banco de Portugal. | Notes: For each sector, the ratio of the intensity of relationships corresponds to the sum of assets and liabilities vis-à-vis the financial subsectors over the sum of the sector's total assets and liabilities. For the financial sector, the ratio of the intensity of relationships corresponds to the average of ratios of the subsectors weighted by the share of each subsector in the financial sector (in the sum of assets and liabilities). The indicator includes exposures to its own sector, i.e. refers to non-consolidated data.

Financing of the economy



The value of real estate investment funds (in particular closed-ended funds) increased by around 1.3% in the first half of 2017, in line with developments in real estate prices (Box 5). These developments contrast with the negative

profitability observed since 2012, which led to redemptions of mutual fund units by households, and consequently to the acquisition of those units by banks, in order to preserve the reputational value of the financial group (Chart 2.35).





Considering that this type of fund is mostly made up of real estate assets, mention should also be made to the increase observed in the liquidity ratio from 2013 onwards.

Notes

1. See 'Projections for the Portuguese economy in 2017', Economic Bulletin, Banco de Portugal, October 2017.

2. Index aggregating the daily price of shares of large European banks. As at 31 October 2017, it was composed of 26 banks and did not include Portuguese banks.

3. For further details on recent monetary policy developments in the USA, see Box 1 'Normalisation of monetary policy in the USA', *Economic Bulletin*, Banco de Portugal, October 2017.

4. For an analysis of targeted longer-term refinancing operations, see Box 2 'Targeted longer-term refinancing operations: characteristics and impact on the bank lending market', *Economic Bulletin*, Banco de Portugal, October 2017.

5. For further details on inflation projections of a number of international organisations, see 'ECB staff macroeconomic projections for the euro area – September 2017', European Central Bank

6. Approximately 70% of the new loans for house purchase in 2016 are indexed to 12-month Euribor. For further details, see: Banco de Portugal, Retail Banking Markets Monitoring Report, 2016, available at https://www.bportugal.pt/en/publications/banco-de-portugal/all/392 (only the Executive summary) or at https://www.bportugal.pt/publications/banco-de-portugal/all/392 (the whole report, only in Portuguese).

7. Travel and tourism is an example of a relevant item in the services account with high seasonality effect, recording a substantially higher surplus in the second half than in the first half of the year.

8. Economy's net lending/net borrowing, as mentioned in Chapter II of this report, is the balance reported in the quarterly accounts by institutional sector disclosed by Statistics Portugal. It differs from the current and capital account balance of the Balance of Payments statistics, due to the different sources and methodologies used.

9. This information can be found in Table C.1.0.2. of the *Statistical Bulletin*, available at https://www.bportugal.pt/publications/banco-de-portugal/all/123. GDP, in the case of half-yearly values, corresponds to the sum of the quarterly GDP for the two relevant quarters of the period concerned.

10. The balance of external financial transactions differs from net lending/net borrowing of the economy due to methodological differences and statistical discrepancies.

11. In terms of annual flows, household net lending declined from 2.8% of disposable income in 2016 (1.9% of GDP) to 2.0% of disposable income in the 12-month up to June 2017 (1.4% of GDP).

12. In annual terms, from 5.8% in 2016 to 5.2% in the 12-month up to June 2017.

13. In annual terms, from 3.5% to 3.8% of disposable income in 2016 and in the 12-month up to June 2017 respectively.

14. Net financial transactions correspond to the difference between net transactions of financial assets and net transactions of financial liabilities. This may differ from the net lending/net borrowing, due to the statistical discrepancy between the capital and the financial accounts.

15. The annual rate of change of loans to households for house purchase was -2.1% in June 2017, after -2.5% in December 2016.

16. The annual rate of change of loans to households for consumption and other purposes increased from 1.5% at the end of 2016 to 3.8% in June 2017. The contribution of the consumption segment was very important for the acceleration observed. For updated information on this rate of change and that mentioned in the previous endnote, see Banco de Portugal, *Statistical Bulletin*, Main indicators, A.21 Total credit granted to the non-financial sector, excluding general government.

17. It should be noted that, given the still very provisional nature of the data under review, the net change in other financial assets – including statistical adjustments, both at the level of the financial account and due to the elimination of the statistical discrepancy between its balance and the balance of the sector's economic account –was also significant as a percentage of disposable income.



18. As regards GDP, household's total debt ratio declined from 75% in December 2016 to 74% in June 2017.

19. Annual average rate of change of loans to households. This rate was calculated from an index based on quarterly consolidated financial transactions of this instrument. It includes loans granted by the resident financial system, other resident institutional sectors (except households) and non-residents.

20. Related credit corresponds to credit agreements secured by mortgage either in full or in part on immovable property that simultaneously secures a home loan agreement with the same credit institution.

21. For further details, see Retail Banking Markets Monitoring Report, Banco de Portugal, available at https://www.bportugal.pt/publications/bancode-portugal/all/392.

22. Information relating to monetary and financial statistics (published in Table B.7.1.2. of the *Statistical Bulletin*). Loans with an interest rate fixation period over one year include fixed-rate agreements, mixed-rate agreements and also floating-rate agreements, when the indexing maturity agreed exceeds one year.

23. The BLS results are available at https://www.bportugal.pt/publications/banco-de-portugal/all/114.

24. In terms of annual flows, NFC net borrowing increased from 0.8% of GDP in 2016 to 1.3% of GDP in the year ending in June 2017.

25. In annual terms, from 5.8% in 2016 to 5.2% in the year ending in June 2017.

26. In annual terms, from 3.5% to 3.8% of disposable income in 2016 and in the year ending in June 2017 respectively.

27. In 2006, the share of net distributed income of NFCs in the corresponding gross operating surplus reached a peak in Portugal (around 38%, 5 p.p. above the euro area average), while standing at 14% and 18% in Spain and France respectively.

28. The intensive margin corresponds to changes in the stock of loans resulting from lending to firms which had already established lending relationships with a financial institution in the previous period. The extensive margin corresponds to changes in the stock of loans resulting from the creation or destruction of lending relationships between firms and financial institutions and is calculated as the difference between the outstanding amounts of loans of NFCs entering the credit market and the outstanding amounts of NFCs exiting this market.

29. For more details on this issue, see Box 4 'Developments in loans granted to non-financial corporations by resident credit institutions: extensive margin vs. intensive margin', *Economic Bulletin*, Banco de Portugal, October 2017.

30. For more details on this issue, see Box 2 'Recent developments in the exposure of resident credit institutions to non-financial corporations', *Financial Stability Report*, Banco de Portugal, June 2017.

31. Although debt liabilities of the non-financial private sector are estimated on the basis of several statistical sources, data from the balance sheet of financial corporations is predominant in the compilation of financial accounts. As a result, changes in the debt aggregates under review reflect changes in the recognition of those credit liabilities by the financial sector, and may not exactly correspond to effective changes in the position of the debtor sector. This is the case for loans written off, which reduce the borrower's debt in the creditor's balance sheet without this necessarily corresponding to an actual reduction in liabilities in the debtor's balance sheet.

32. Entrepreneurial income is a national accounting aggregate close to the concept of profit or loss in business accounting, in the absence of relevant inflation. Entrepreneurial income is only calculated for financial or non-financial corporations. It differs from the balance of primary income as it does not consider the uses concerning dividends, withdrawals from income of quasi-corporations and reinvested earnings on foreign direct investment.

33.In order to exclude the impact of value fluctuations on the value of the stock of shares and other equity of NFCs, the market value of the stock of shares and other equity at the end of 2007 was considered as the basis. Then, net transactions in this instrument were added for each subsequent year (or deducted for previous years).

34. Uncertainty remains about the statistical treatment of the recapitalisation of Caixa Geral de Depósitos in the first quarter of the year (accounting for around 2.1% of annual GDP).

35. For more details, see Special Issue 'An interpretation of the low sovereign yields in the euro area', *Economic Bulletin*, Banco de Portugal, December 2015, which estimates that, in October 2015, 2-year and 10-year Portuguese sovereign debt yields were 2.5 p.p. below the level consistent with the macroeconomic fundamentals characterising the Portuguese economy. This gap is attributed to the role of the ECB's unconventional monetary policy. This effect is one of the highest estimated for euro area countries.

36. For more details on the initial conditions of this programme, see Box 1 'Expanded Asset Purchase Programme', *Financial Stability Report*, Banco de Portugal, May 2015. However, important adjustments have taken place since the start of the programme.

37. Bank data considered in this section refer only to domestic activity, differing from the consolidated perspective mainly underlying the analysis of the bank sector in Chapter III of this Report. For more details, see Box 1.3.1. 'Portuguese financial system: from the statistical classification to the prudential approach', *Financial Stability Report*, Banco de Portugal, November 2013.

38. Remaining financial intermediaries include investment funds except money market funds, central counterparties, venture capital corporations, financial dealers, regional development corporations, business development corporations, credit securitisation corporations and funds, captive financial institutions and money lenders and other financial intermediaries.

39. Including credit card issuing and managing corporations, factoring corporations, credit-purchase financing corporations, investment corporations, financial leasing corporations, mutual guarantee corporations and financial credit institutions. A large percentage of these institutions belong to banking groups, and are therefore considered in the consolidated balance sheet of the banking sector analysed in Chapter III of this Report.

40. Sovereign exposure includes debt securities, shares and loans.

41. The liquidity ratio is measured by the ratio of net assets (deposits, short-term debt securities and quoted shares) to total assets.



3. Banking sector

- 3.1 Assets
- 3.2 Asset financing and liquidity
- 3.3 Asset quality
- 3.4 Profitability
- 3.5 Capital

Summary

In the first half of 2017, the Portuguese banking sector recorded positive developments in several key dimensions, strengthening its ability to carry out its financial intermediation function consistently. On the one hand, nonperforming loans (NPLs) continued to fall, both in nominal value and as a percentage of loans. On the other hand, profitability recovered, including its recurrent component, although staff costs are still affected in the short term by the operational adjustment processes in some institutions. Lastly, the trend of strengthening prudential capital ratios resumed.

This performance resulted from benign conditions, both in macroeconomic terms, particularly in Portugal, and in the international financial markets. However it also benefited from the adjustment processes that the institutions have put in place and a set of developments that favour the stabilisation of the banking sector. These include governance alterations at BCP and BPI, the recapitalisation operations of CGD, BCP and CEMG and the extension of maturities of the loans to the resolution fund. Another key event was the conclusion of the sale process of Novo Banco in the last guarter of the year. All these developments created conditions more conducive to reducing the stock of non-performing assets.

In the first half of 2017, the Portuguese banking sector continued the declining activity trend of the last few years. However, this decline was less intense, strongly affected by one of the main banks deconsolidating its international activity. There was a reduction in the portfolio of loans to customers and an increase in the debt securities portfolio. In asset financing, there was an increase in the importance of customer deposits and a decrease in the share of liabilities represented by debt securities. The banking system's liquidity position remained at comfortable levels, and were above regulatory minimums.

Asset quality developed positively in the first half of 2017, with NPLs falling sharply. The fall in the NPL ratio was driven mainly by the developments in non-financial corporations (NFCs), which increased their flow of write-offs and NPL sales. In turn, the NPL coverage by impairment increased.

The banking system's results returned to positive territory in the first half of 2017. This reflects sharply declining impairments costs and provisions, particularly from credit impairments, with net interest income virtually stabilising. Operating costs continued their downward trend, reflecting the fall in the general and administrative expenses item. Staff costs stabilised, due to the action of nonrecurrent items related to certain institutions' adjustment processes. Disregarding these adjustments, staff costs as percentage of assets fell, but to a level slightly above the median for the euro area countries.

Solvency levels continued their strengthening trend in the first half of 2017, recovering from the temporary fall of the end of 2016. The positive developments in the banking system's capital position were linked to capitalisation operations undertaken by some of the system's most important banking institutions.

Despite the progress made recently, the Portuguese banking system continues to face challenges. These challenges are linked not only to its intrinsic vulnerabilities, identified in this Report, but also to the need to adapt to expected developments both in terms of regulation and in terms of operations and competition. In regard to the latter, competition is expected to increase in some of the banks' activity segments due to the product offering incorporating technological innovation following the entry into force of the new Payment Services Directive 2 (PSD2). The positive developments observed recently must therefore be strengthened, sustaining a clear downward path for NPLs through strict compliance with their respective plans, profitability levels must be restored, allowing the shareholders to be remunerated, and better access to the financial markets must thereby be promoted.

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3.1. Assets

The banking system's assets continued to fall in the first half of 2017, although at a slower pace

The banking system's assets¹ fell 0.6% in the first half of 2017 (Chart 3.1), thereby continuing the process that began in 2010, albeit at a slower pace. These developments were heterogeneous across the main institutions, resulting from some of these institutions deconsolidating their international activity and issuing capital. Compared to the first half of 2010, when it reached a maximum, assets have fallen around 27.3%. Over this period, the ratio between the banking sector's assets and nominal GDP fell around 93 p.p. to 204%, which also illustrates the magnitude of the adjustment observed.

The reduction in the portfolio of loans to customers and the increase in the debt securities portfolio particularly influenced the developments of assets over the half-year (contributing -0.85 p.p. and 1.39 p.p. respectively). The Other assets item also fell significantly (contributing -1.62 p.p. to the change in assets), reflecting the deconsolidation of BPI's activity in Angola

(associated with the partial sale of BPI's holding in Banco de Fomento de Angola – BFA).²

The portfolio of loans to banking sector customers fell 1.4% in the first half of 2017. This decrease resulted from domestic activity, mainly reflecting a fall in loans to NFCs (Chart 3.2). This behaviour relating to NFCs was heterogeneous among the banks, with two of the main banks driving the reduction. Also in the first half of the year, loans to households fell, although at a slower pace, with housing loans falling and consumer loans increasing -2% and 7% respectively.

The developments in the debt securities portfolio – 7.5% growth, corresponding to about €5 billion – helped offset the reduction of total assets in the first half of 2017 and was essentially due to an increase in net acquisitions. This portfolio's share of assets increased 1.5 p.p., to 20%, a record high. The developments observed reflect the increase in the portfolio of securities issued by the general government, and the negative aggregate contribution of the other issuers.

Considering only domestic activity, the portfolio of debt securities issued by the general government increased about 14% in the first half of 2017 from the end of



Source: Banco de Portugal. Notes: hrc – half-yearly rate of change. The item Other assets includes cash and cash balances at central banks, cash balances at other credit institutions, derivatives, tangible and intangible assets and other assets.





2016 (Chart 3.3). In regard to portfolio composition, the share of securities issued by Portugal increased, offset by a reduction in the securities issued by Italy. Thus the concentration of the exposure to Portuguese public debt securities increased, with 73% of the public debt securities portfolio in domestic activity (the relevance of this exposure to financial stability is discussed in Section 1.1. of Chapter 1). The increase in the concentration in Portuguese public debt securities in the first half of 2017 only partly offsets the recent increasing trend of the share of the public debt securities portfolio from Spain and Italy.

Considering a broader time horizon, the debt securities portfolio grew sharply up to 2010 and thereafter fell 16% up to the end of the

first half of 2017. However, in domestic activity, the public debt securities portfolio has grown consistently over the years. At first, there was an increase in the concentration of the securities issued by Portugal, reaching around 90% of that portfolio in 2012. Later, there was an increase in the public debt securities issued by Spain and Italy, which reverted only in part in the first half of 2017.



Chart 3.2 • Loans to the non-financial private sector – domestic activity, contributions to half-yearly change | Percentage points and per cent

Source: Banco de Portugal. Notes: hrc – half-yearly rate of change. Information from Instruction of Banco de Portugal No. 25/2014.

Chart 3.3 • Debt securities portfolio

Source: Banco de Portugal. Notes: The detail of the public debt securities portfolio (righthand column) was obtained from Instruction of Banco de Portugal No. 25/2014. It was not possible to break down by institutional sector for the period before December of 2015.

3.2. Asset financing and liquidity

Customer deposits continued to increase in importance in the first half of 2017, while liabilities represented by debt securities continued to fall in importance

In the first half of 2017, the structure of asset financinglargelycontinueditspatternofthelast few years, with customer deposits increasing in importance at the expense of liabilities represented by debt securities (Chart 3.4). However, in the period under review, the partial sale of BPI's holding in the Angolan operation and the capitalisation of CGD, BCP and CEMG affected developments in asset financing. The deconsolidation of BPI's operation in Angola contributed mostly to the reduction of the Other liabilities item. In turn, the capitalisation processes involving some of the system's main institutions contributed to the increase in own funds' importance in the asset financing structure.

In the first half of 2017, consolidated customer deposits, which includes non-domestic activity, increased slightly (0.6%), pushing its share of total assets by 0.8 p.p. to about 64%. This was driven by the increase in general government

and household deposits. Looking only at domestic activity (Chart 3.5), deposits increased 1.8%, with positive contributions from NFCs (1 p.p.) and Non-monetary financial institutions (0.7 p.p.). Developments in household deposits should be seen in the context of low interest rates on new deposit operations, incentivising the channelling of resources to alternative, real and financial investments. The latter include saving products issued by the State, which have higher yields than deposits (Chapter 2).³ In the period under review, the structure of customer deposit types also continued to evolve, mainly in regard to households and NFCs, moving in favour of demand deposits, reflecting the low opportunity cost of holding these deposits.

The loan-to-deposit ratio, defined as the ratio of loans (net of impairments) to customer deposits, fell 1.9 p.p. in the first half of 2017 from the end of 2016, coming to 93.6%. Since June 2010, when the loan-to-deposit ratio hit a peak, it has fallen about 65 p.p. While initially the ratio fell chiefly due to a strong increase in customer deposits, in the most recent period the adjustment has essentially reflected the reduction of the loan portfolio. The commercial gap, which is the difference between loans to customers and customer deposits, fell

Chart 3.4 • Liabilities and Equity – contributions to half-yearly developments | Percentage points

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



€4.7 billion in the period under review, reaching €-15.9 billion.

Central bank funding grew 3% in the first half of 2017, boosting its share of total asset financing to 6.6% (adding 0.2 p.p.). From the peak of June 2012, this funding source has fallen in importance by 6 p.p. In terms of composition, it chiefly comprises longer-term refinancing operations (LTROs), with a minor contribution from main refinancing operations (MROs).

Interbank market financing (net of investments and claims in other credit institutions) fell 3.7% in the first half of 2017. Similarly, its share of total assets net of investments and claims in other credit institutions fell by 0.2 p.p., reaching 5.4%. This resulted from a higher increase in investments and claims in other credit institutions (\in 1.3 billion), than that of deposits in other credit institutions (\notin 0.6 billion).

Liabilities represented by debt securities continued their decline that began in March 2010. In the first half of 2017, this type of financing fell by 16% (a \in 3.8 billion decline in value terms), reaching the equivalent of 5.1% of total assets, down 1 p.p. vis-à-vis the end of 2016 and 20.3 p.p. vis-à-vis March 2010. While liabilities represented by debt securities fell, certain debt issues took place in the first half of 2017, mainly of covered bonds, at a similar amount to that observed in the second half of 2016.

The banking system's liquidity position remained at comfortable levels

At the end of the first half of 2017, the banking system's liquidity coverage ratio⁴ stood at 185%, a 31 p.p. increase from the end of 2016. This mainly reflects the increase in the liquidity buffer,⁵ while net cash outflows fell slightly. The liquidity buffer represented 14% of total assets and net liquidity outflows around 7% (11% and 7% at the end of 2016 respectively). The liquidity buffer is mainly made up of public debt securities, cash balances at central banks and cash. The banking system's ratio is above the minimum requirement of 100% applicable from 1 January 2018.⁶

The liquidity coverage ratio increased across the board, albeit with some heterogeneity between institutions (Chart 3.6). Looking only at other systemically important institutions (O-SIIs),⁷ the liquidity coverage ratio was between 104% and 222% in the first half of 2017.



Domestic institutions' liquidity gaps⁸ continued to be positive in the first half of 2017 and increased across all the maturities analysed (Chart 3.7). This was the result of a reduction in volatile liabilities and the increase in liquid assets.⁹ The capitalisation process carried out by certain institutions (CGD, BCP and CEMG) made a significant contribution to this.

3.3. Asset quality

In the first half of 2017, NPLs fell sharply while impairment coverage increased

In general terms, the first half of 2017 saw a sharp fall in NPLs¹⁰ and an increase in their impairment coverage, in a context of increasing flows of write-offs and NPL sales.

The overall NPL ratio fell 1.7 p.p. to 15.5%, continuing the behaviour that began in mid-2016 (Table 3.1). This fall was observed particularly among NFCs and households, mainly reflecting the fall in value of NPLs (the numerator effect), while also benefiting from the contribution from the denominator, through the increase in loans.¹¹ Contributing to these developments were increases in NPL sales and the flow of write-offs, with the latter recording a higher value in the first half of 2017 than those observed up to 2015

(Chart 3.8). These two factors are estimated to have accounted for about half the observed reduction in the ratio. The fall in NPLs, which has continued uninterrupted since June 2016, reached 16.2% from June 2016 (€-8.2 billion), having been dominated by the reduction in NFCs' NPLs, which came to 17.9% (€-5.9 billion).

Chart 3.6 • Distribution of the liquidity coverage ratio | Per cent







Source: Banco de Portugal. Note: Empirical distribution obtained using a Gaussian kernel that weights institutions by their assets.



	Notes	Units	Dec. 15 Jun. 16 Dec. 16 Jun. 17				∆Jun. 16 Jun. 17	∆ Dec. 16 Jun. 17
Non-performing loans (NPL)								
All sectors								
NPL		106€	49,818	50,459	46,361	42,262	-8,197	-4,099
o.w. Unlikely-to-pay		106€	19,586	18,747	18,046	15,644	-3,103	-2,402
o.w. Overdue		106€	30,232	31,713	28,315	26,618	-5,094	-1,697
NPL ratio	(1)	%	17.5	17.9	17.2	15.5	-2.4	-1.7
Non-financial corporations								
NPL		106€	32,024	33,151	30,160	27,225	-5,927	-2,935
NPL ratio	(1)	%	28.3	30.3	29.5	27.5	-2.8	-1.9
Households								
NPL		106€	12,914	12,865	12,030	11,153	-1,712	-878
NPL ratio	(1)	%	9.4	9.2	8.7	8.1	-1.2	-0.6
NPLs' coverage								
All sectors								
NPL impairment coverage ratio	(2)	%	40.8	43.2	45.3	45.9	2.7	0.6
NPL total coverage ratio	(3)	%	92.0	85.9	87.2	88.6	2.6	1.4
Non-financial corporations								
NPL impairment coverage ratio	(2)	%	44.4	46.4	48.9	49.2	2.8	0.3
NPL total coverage ratio	(3)	%	84.9	84.1	85.0	87.0	2.9	2.0
Households								
NPL impairment coverage ratio	(2)	%	36.2	36.7	35.4	36.5	-0.2	1.1
NPL total coverage ratio	(3)	%	n.d.	97.9	96.3	96.3	-1.6	0.0

Table 3.1 • Synthesis of the loan portfolio quality

Source: Banco de Portugal.

Notes: NPL according to the EBA definition. "n.a." – data not available; (1) corresponds to the sum of NPLs in relation to total loans; (2) corresponds to the sum of accumulated impairments on NPLs in relation to total NPLs; (3) corresponds to the sum of accumulated impairments, collateral and guarantees associated with NPLs in relation to total NPLs.



In June 2017, impairment coverage of NPLs was around 46%, representing growth of around 0.9 p.p. from December 2016. In turn, the net NPL ratio, i.e. the proportion of NPLs without impairment coverage, fell 1 p.p., reaching 8.4% in June 2017. The positive developments in the coverage ratio were affected by the increased flow of write-offs, due to their dual and symmetrical effect on the ratio. Ceteris paribus, writing off a loan creates an increase in the ratio by reducing the denominator (reduction of NPLs) and a decrease by reducing the numerator (impairments associated with the NPLs). Given that the loans written off have a high level of impairment coverage, the effect associated with the numerator generally prevails. Despite this effect, the coverage ratio increased in the first half of 2017.

The behaviour of NPLs was strongly influenced by the developments observed among NFCs in the period under review. NFCs' NPLs make up 64.4% of total NPLs, with this share declining in the last half-year from the end of 2016. NFCs' falling NPL level essentially resulted from write-offs and NPL sales.

In June 2017, there was a slight reduction in institutions' heterogeneity with regard to NFCs' impairment coverage ratio when compared to the end of 2016 (Chart 9). For the O-SIIs, the impairment coverage ratio fell between 41% and 57%. When the coverage by collateral and

guarantees is also included, the heterogeneity falls sharply. However, in many cases NPL collateral for NFCs involves a set of features that are specific to the corporation's business, possibly undermining its tradability and even its valuation. This situation contrasts with the greater liquidity of households' NPL collateral for housing.

In regard to households, the performance of NPLs in the first half of 2017 reflected a move from non-performing to performing loans, as well as NPL sales and write-offs, like the NFCs. Sales and write-offs are estimated to account for half the observed reduction in the ratio. The NPLs declined over consecutive periods from June 2016, with the cumulative reduction reaching 13.3% up to the end of the first half of 2017 (mainly due to the decrease in housing NPLs).

The impairment coverage level of households' NPLs is significantly below the total coverage level. This is due to the high level of housing loans in the households' loan portfolio. These loans are largely collateralised with assets that are more liquid than corporations' collateral in general terms. This is a structural feature of housing loans, and is shared by most institutions of the banking system (Chart 3.9). Importantly in this regard, the recent rise in property prices increases the value of the associated collateral, particularly for housing loans, and may affect the financial system through different channels (Chapter 1, Box 3 and Box 5).



Chart 3.9 • Distribution of NPL coverage ratios of NFCs and households – June 2017 | Per cent

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

Source: Banco de Portugal.

Despite the adjustment observed, the Portuguese banking system has a high NPL level compared to its euro area peers (Chart 3.10). This relative position is largely due to the NPL ratio of NFCs in Portugal, as, in terms of households, Portugal is closer to the median value for the euro area. In regard to the impairment coverage ratio, this shows some heterogeneity across countries, with Portugal slightly above the median for the euro area. However, it is important to note that the NPL definition proposed by the EBA has not been implemented uniformly in the European Union, precluding international comparisons (Special issue 'Strategy for tackling the stock of non-performing loans (NPLs)' in this Report and Special issue 'Concepts used in the analysis of credit quality', *Financial Stability Report*, November 2016).

3.4. Profitability

The banking system's results returned to positive territory in the first half of 2017

In the first half of 2017, the Portuguese banking system returned to positive profitability, contrasting with the near-zero performance observed in the same period of the year before. These positive developments mainly reflect sharply declining impairments costs and provisions, particularly from credit impairments, with net interest income increasingly contributing to the improvement in return on assets (ROA) (Chart 3.11). Similarly, the recurrent operating result, which only looks at net interest income plus (net) commissions less operating costs, also increased year-onyear, driven mainly by a greater contribution from net interest income.

It is estimated that if non-negligible, nonrecurrent costs related to BPI's sale operation in Angola and the restructuring processes under way in some of the larger institutions are disregarded, return on assets for the first half of 2017 would be 0.5 p.p. (which is 0.2 p.p. higher than the amount actually observed). Furthermore, the recurrent operating result, if operating costs arising from the aforementioned restructuring processes are disregarded, would be higher by 0.1 p.p. of assets than the observed amount (0.9 p.p. of assets), according to estimates.



Chart 3.10 • NPL ratio – international comparison at June 2017

Source: European Central Bank (Consolidated Banking Data). Notes: NPL according to the EBA definition. Data on the impairment coverage ratios for Germany (DE) and Spain (ES) were unavailable. The year-on-year improvement in results for the first half of the year, along with a reduction in assets, was seen across a set of important institutions in the Portuguese banking system, pushing the distribution of return on assets ratios to the right (Chart 3.12). Although profitability remained negative for some of the more significant institutions, this reflected the negative impact of the above-mentioned nonrecurrent costs in some of these cases.

Despite the positive developments observed in the first half of 2017, the Portuguese banking system's profitability level was lower than most of the euro area banking systems over the period, with Portugal's relative position remaining unchanged from the third quarter of 2016 (Chart 3.13). However, many of the countries that compare favourably with Portugal also show low profitability levels, which is a challenge affecting a broad set of euro area banking systems.

In a context of falling assets, total operating income remained virtually flat

In the first half of 2017, net interest income remained stable year-on-year, reflecting similar decreases in interest received and interest paid. This, together with the decline in assets, led to a new increase in net interest income's contribution to profitability. This was of 1.6 p.p. of assets, the highest half-yearly amount since 2010.

Interest income continued to fall, in line with the trend since 2012. In the first half of 2017, the fall mainly reflected the decrease in interest from operations with customers, and to a lesser extent, interest from the securities portfolio, particularly sovereign debt, whose implicit interest rate resumed its decline. The decline in interest from derivatives also contributed to the reduction in interest received, although far less significantly.

As was the case in previous periods, the decline in the credit portfolio, in line with the reduction of indebtedness in the non-financial private sector, again affected interest generation in operations with customers, as there was also a fall in the implicit interest rate on loans versus the first half of 2016.

The decline in interest paid mainly reflects the lower cost of customer deposits, particularly in the households segment, and also the reduced interest paid on securities issued by institutions. Indeed, despite the debt securities issued by some of the main institutions in the first half of 2017, the adjustment of the funding structure has contributed to increased importance of deposits in asset financing. This



Source: Banco de Portugal. Notes: The recurrent operating result corresponds to the aggregate of net interest income and (net) commissions less operating costs, as a percentage of average assets. Return on assets is computed considering income before taxes and minority interests. Intra-annual results are annualised.



fact, allied to the decline in the implicit interest rate on deposits, was key to the reduction in the sector's financing costs year-on-year, in line with that observed since 2012.

In domestic activity, the spread on operations with customers grew very slightly again in the first half of 2017, reflecting a greater contraction of the average cost of deposits than that of the interest rate implicit in the outstanding amount of loans to the resident non-financial private sector (Chart 3.14). The interest rates on stocks of deposits and loans fell 8 b.p. and 3 b.p. respectively from the end of 2016. However, this decline in the average cost of customer deposits has been progressively shrinking, due to the fact that the rates on new lending operations are on average lower than those of the operations currently on the balance sheet. The cost of new household and NFCs' deposits has fallen 6 b.p. and 4 b.p. respectively in the first half of 2017. This slowing down of the decline in the cost of financing from customer deposits, allied to the fact that lending interest rates are now very close to zero, signals the end of the potential to improve net interest income by this means, as mentioned in previous issues of the Financial Stability Report.

Importantly, however, differences remain between the rates on new operations (front

book) and back book rates, both in deposits and lending operations, leaving some potential to improve net interest income, to the extent that the institutions are able to make the rates on operations on the balance sheet converge with rates implemented in new operations. In domestic activity, as of June 2017, the rate on new lending operations was 41 b.p. higher than the rate on operations on the balance sheet, while the rate on new deposits was 19 b.p. below the back book rate.

Income from services and (net) commissions remained practically unchanged from the first half of 2016. This is the result of a marginal increase in the commissions received and the commissions paid. Given the fall in assets, its contribution to ROA increased by 0.04 p.p. to 0.72 p.p. of assets. Any regulatory developments that in some way restrict the charging of commissions, on the price and/or the calculation base will limit the future growth of this type of income relating to service provision, which is all the more important in a context of low interest rates and squeezed net interest income.

Income from financial operations grew around 27% from the first half of 2016, increasing its contribution to ROA by 0.05 p.p. to 0.21 p.p., an amount in line with the average of the last few years, although below that of 2015. This



Chart 3.12 • ROA distribution | Per cent

Notes: Empirical distribution obtained using a Gaussian kernel that weights institutions by their assets. Annualised figures.

Chart 3.13 • International comparison of ROA – first half of 2017 | Per cent



Source: European Central Bank (Consolidated Banking Data). Note: Return on assets is computed considering net income for the first half of the year (annualised), weighted by the average assets of that period.

Source: Banco de Portugal.

item's contribution to income generation is fairly volatile, and as such its recent behaviour should not be seen as recurrent.¹²

Other operating income fell sharply yearon-year, reflecting above all a considerable increase in Other income paid, largely arising from the deconsolidation process of BPI's operation in Angola.¹³

Operating costs continued the downward trend that accompanied the adjustment process in the banking sector

With staff costs and depreciation for the year stabilising, operating costs fell around 4% yearon-year in the first half of 2017, due exclusively to the general and administrative expenses item, which came to represent about 35% of operating costs. However, the (negative) contribution made by operating costs to profitability remained flat year-on-year, at around -1.5 p.p. of assets. The staff costs item, accounting for 58% of total operating costs, did not decrease in the half-year under review, bucking the trend observed over the last few years, which is likely to be the result of nonrecurrent costs incurred in the restructuring processes under way in some of the larger institutions.¹⁴ Staff costs as a percentage of total assets increased 0.04 p.p. year-on-year, to 0.9 p.p., with the impact of non-recurrent costs estimated at 0.1 p.p. of assets. Indeed, there was a year-on-year increase in the dispersion of staff costs as a percentage of assets, reflecting the extraordinary growth of costs of this type in some of the most important institutions (Chart 3.15). This increased dispersion results from the institutions being at different stages in their restructuring processes. Furthermore, some of the larger institutions will also incur additional staff costs in 2018, which may lead to a further increase in the dispersion. Despite the short-term negative impact of the restructuring processes that involve reducing headcount, the structural adjustment they bring, along with the rationalisation of costs under way in most of the institutions, should mean a sustained downward trend in staff costs in the future.

In the first half of 2017, operational efficiency in the Portuguese banking system improved slightly year-on-year, leading to a 1.4 p.p. decline in the cost-to-income ratio, to 60.5% (Chart 3.16). The marginal decline in total operating income from the first half of 2016 was more than offset by the contraction in operating costs, despite the aforementioned extraordinary costs incurred during the halfyear. Similarly, the recurrent cost-to-income ratio, which only looks at total operating

Chart 3.14 • Interest rates customer operations accounts – domestic activity | Per cent







Chart 3.15 • Staff costs distribution | Per cent

Source: Banco de Portugal. | Notes: Staff costs are measured as a percentage of assets. Empirical distribution obtained using a Gaussian kernel that weights institutions by their assets. Annualised figures.

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income items with a more recurrent nature (i.e. net interest income and net commissions), fell 3.0 p.p. to 65.5%. It is estimated that if the aforementioned non-recurrent costs are disregarded, the cost-to-income and recurrent cost-to-income ratios would be 57% and 62% respectively.

Furthermore, the Portuguese banking sector's cost-to-income ratio remained slightly above the median for the euro area countries in the first half of 2017, although its relative position has improved from the third quarter of 2016 (Chart 3.17).

Over the last few years, the Portuguese banking system has continuously reduced its number of branches and employees per inhabitant (Charts 3.18 and 3.19). In 2016, the number of employees per 1,000 inhabitants in Portugal was below the median for the euro area. However, in terms of the number of branches per 10,000 inhabitants, Portugal was above the median of the distribution. Given also the technological developments affecting the relationship between banks and customers, this fact suggests that there is room for further adjustments in the intensity of institutions' use of these resources, including a major rationalisation of the branch network. As mentioned above, some of the main banks are at the stage of implementing adjustment processes, which will have an impact in this regard.

The flow of credit impairments and provisions fell sharply over the six months under review, declining also as a percentage of total assets

Total impairment costs and provisions fell around 27% year-on-year, reaching 0.8% of assets, equating to a decline of 0.24 p.p. This performance, exclusively reflecting the decline in the flow of impairments and provisions associated with credit, made a positive contribution to the increase in profitability over the half-year under review, as well as to the sharp reduction in the cost of risk, as it more than offset the decline in the gross credit portfolio (Chart 3.20). The cost of risk and the flow of credit impairments as a percentage of total assets are now in line with the levels observed in the first half of 2010, before the start of the Economic and Financial Assistance Programme. However, the volume of NPLs remains high, despite the sharp reduction observed over the last 12 months. Thus impairment coverage ratios for NPLs should continue to be strengthened, with potential consequences for profitability in the banking sector and for the cost of risk.



Chart 3.16 • Cost-to-Income (Ctl)

Note: The recurrent cost-to-income ratio corresponds to operating costs as a percentage of the aggregate of net interest income and (net) commissions. Annualised half-yearly figures.

Chart 3.17 • International comparison of the costto-income ratio – first half of 2017 | Per cent



Source: European Central Bank (Consolidated Banking Data).

Source: Banco de Portugal.

Impairment costs are the key differentiator between the profitability of the Portuguese system and that of its European peers

In the first half of 2017, the Portuguese banking system was relatively aligned with its euro area peers in regard to the contribution to ROA made by the various operating account items, apart from impairments (Chart 3.21). Indeed, Portugal's considerably unfavourable position relative to the median of euro area countries in regard to impairments (as the country with the fourth-highest level of impairments as a percentage of assets), was the principal cause of the Portuguese system's lower profitability.

Despite the recovery in the first half of 2017, profitability remains low, and as observed over the most recent periods, its future developments will depend heavily on the behaviour of recognition of impairment losses, above all for credit impairments. Furthermore, various factors may have a significant impact on developments in profitability.

The institutions need to continue the rationalisation drive that has been in evidence over the last few years, promoting greater efficiency in the use of the resources at their disposal. In parallel, they have to continue to improve the risk measurement and control





Chart 3.18 • Number of banking employees – International comparison | Per 1,000 inhabitants

100)

Source: European Central Bank (Banking Structural Financial Indicators) and Eurostat. Notes: The international comparison figures relate to the end of 2016. Only banking employees within the domestic perimeter are included.

> Chart 3.19 • Number of branches – International comparison | Per 10,000 inhabitants

Source: European Central Bank (Banking Structural Financial Indicators) and Eurostat. Notes: The international comparison figures relate to the end of 2016. Only branches within the domestic perimeter are included.

Banking sector

models and policies, including risk-adjusted pricing (Special issue 'The risk segmentation on the interest rate spreads of new bank loans to non-financial corporations' in this Report).

Developments in the international macroeconomic and financial context, particularly in regard to the ECB's monetary policy decisions, could have a significant impact on the institutions' capacity to create higher profitability levels than those observed in the last few years.

In turn, the generalisation of new forms of financial service provision through digital platforms (FinTech), which currently still accounts for a small proportion of the banking services and payments markets in Portugal, may challenge the traditional financial institutions' capacity to generate income from these services. In parallel, increasing technological innovation may allow the broadening of the customer base and lead to the creation of new financial products and services, as well as offering efficiency gains in the management and analysis of information. Finally, in terms of regulation, any need for the institutions to access the financial markets to issue loss-absorbing instruments (in compliance with the minimum requirement for own funds and eligible liabilities - MREL), which would probably cost more than the other instruments, is also likely to have an impact on the sector's profitability.



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.

3.5. Capital

Solvency levels resumed their strengthening trend in the first half of 2017, recovering from the temporary reduction of the end of 2016

At the end of the first half of 2017, the Portuguese banking sector's Common Equity Tier 1 (CET 1) ratio, considering the transitional provisions laid down by Regulation No. 575/2013 of the European Union (the Capital Requirements Regulation – CRR), was at 13.2%, representing a 1.8 p.p. increase on the value observed at the end of 2016, and a 0.8 p.p. increase from the end of 2015 (Chart 3.22). The capital adequacy ratio for the last quarter of 2016 was negatively affected by the extraordinary impairment recognition preceding CGD's capitalisation process, as explained in the June 2017 issue of the *Financial Stability Report*.

The positive developments in the banking system's own funds position in the first half of 2017 was mainly due to the completion of the aforementioned capitalisation operation, but also to own funds strengthening operations undertaken by certain important institutions, namely BCP and CEMG. Contributions made by capital and earnings items to developments in the system's CET 1 ratio are affected by the reclassification of amounts between own funds items, arising from the terms of CGD's capitalisation operation,15 as a result of the institution's size and weight in the Portuguese banking system. It is estimated that if the effects of this reclassification are disregarded, the own funds strengthening operations that took place in the first half of 2017 would have made a positive 2.1 p.p. impact on the aggregate's CET 1 ratio.

Also contributing to the positive developments in the CET 1 ratio was the increase in the value of Portuguese sovereign debt securities classified as available for sale. This item increased across the seven largest banking institutions in the half-year under review. In contrast, as in previous periods, the gradual elimination of the transitional provisions established in the CRR and Directive 2013/36 of the European Union (Capital Requirements Directive – CRD IV), which allow a progressive adjustment to the new regulatory requirements, had an estimated negative 0.74 p.p. impact on the banking system's CET 1 ratio.

The decline in total assets of the banking system per se again made a positive contribution to the increase in the CET 1 ratio, in line with the trend observed in the last few periods, although significantly below the contribution made by the reduction in risk-weighted assets (RWA). Indeed, in the half-year under review, the exposures' average risk weight fell 2.8 p.p. of assets (to 56.1%), a much sharper fall than in the prior periods (Chart 3.23). This decline, shared by the system's major institutions, also largely reflects BPI's sale of BFA (in early 2017). It is estimated that if the effect of this non-recurrent event is disregarded, the banking system's average risk weight would have fallen 1.6 p.p. of assets between the end of 2016 and June 2017. Even so, this decline was greater than that of recent periods, which is likely to be the result of a more significant increase in the sovereign debt exposure (with a zero risk weight).

The banking system's Tier 1 and total solvency ratios increased 2.1 p.p. and 2.2 p.p. over the half-year, reaching 13.8% and 14.4% respectively. This essentially arose from the increase in the CET 1 component, and to a lesser extent, from the increase in the Additional Tier 1 (AT 1) component, resulting from the issue undertaken by CGD as part of its capitalisation plan.¹⁶ The own funds structure in most of the system's more representative institutions has near-zero AT 1 capital components, accounting for a very low proportion of the system's total own funds. Similarly, the Tier 2 capital components, which increased slightly over the half-year, have minimal importance.

Despite there being differences between the main institutions, the CET 1 ratio distribution for





June 2017 shows less heterogeneity than at the end of 2016 (Chart 3.24). The aforementioned own funds strengthening operations, particularly the CGD operation, were reflected in a greater concentration of institutions with capital ratios around the system average. However, as mentioned in the June 2017 *Financial Stability Report*, the heterogeneity arising from applying the institution-specific Pillar 2 requirements will be compounded from 2018 by heterogeneity from the O-SII buffer requirements, which are also particular to each institution (Chapter 1).

Despite the significant improvement in the Portuguese banking system's capital ratios in the first half of 2017, the system continues to have a CET 1 ratio below the median for the other euro area countries (Chart 3.25). Even

so, the Portuguese banking system's position is relatively less unfavourable compared to the third guarter of 2016. However, just as there are natural differences between the different institutions' capital ratios at domestic level, there are also differences when comparisons are made between countries. Indeed, the ratios of the different countries reflect standardised minimum requirements (largely Pillar 1), institutionspecific requirements (reflecting individual risk assessments - Pillar 2), and also macroprudential requirements. The latter will depend on risks identified at national level, reflecting different macroeconomic and financial circumstances, as well as other national idiosyncrasies, but may also be specific to certain institutions, namely the O-SII requirements.



Source: Banco de Portugal. | Notes: The Other component includes revaluation reserves for assets at fair value, adjustments arising from the application of transitional provisions laid down in the CRR, including those relating to options and national discretions. The red bars correspond to contributions to the reduction in the ratio, while the blue bars correspond to contributions to its increase. Contributions from starred items (*), in a blurred colour in the chart, do not include the effect of the reclassification between own funds items under CGD's capitalisation operation.





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

Chart 3.24 • CET 1 ratio distribution | Per cent



Source: Banco de Portugal. | Note: Empirical distribution obtained using a Gaussian kernel that weights institutions by their assets.

The banking system leverage ratio (which does not risk-weight assets) reached 7.5% at the end of June 2017, which is a 0.9 p.p. increase from the end of 2016, reflecting capital increases and the declining trend in activity. The anticipated entry into force next year of a minimum 3% requirement following Basel III should not entail any constraints on Portuguese institutions' activity, given that the leverage ratio is comfortably above this minimum in general, even after considering a fully phased-in, more demanding Tier 1 capital definition (this topic is covered in the Special issue 'Leverage Ratio – the Portuguese Case').

In international terms, the Portuguese banking system's RWA ratio by unit of assets is among the highest in the euro area, which contrasts with the international comparison of the prudential capital ratios. This change in the domestic banking system's relative position is partly due to Portuguese banks' less intensive use of internal ratings-based (IRB) models when defining their capital requirements compared to their euro area peers (Chart 3.26). Importantly in this regard, despite the merits of the institutions using the IRB approach in measuring exposures' risk, and thereafter determining their capital requirements, the high degree of flexibility in implementing IRB raises issues of comparability and consistency between the institutions, and, ultimately, transparency.¹⁷ In July 2016, the EBA published the final draft of the regulatory technical standards designed to promote standardisation in the national competent authorities' prudential assessment, which must be implemented by the end of 2020.¹⁸ In turn, the ECB launched a targeted review of internal models (TRIM) at the end of 2015, due to end in 2019, with a view to reducing variability in the assessment of RWAs and which may have the effect of reducing prudential capital ratios for some institutions.

Finally, the sale process of Novo Banco in the last quarter of the year¹⁹ both reduces uncertainty in the sector and will involve a capital increase of €1 billion by the end of 2017, strengthening even further the system's own funds position, helping reduce NPL levels and boosting the system's resilience to potential adverse shocks.

Chart 3.25 • International comparison of the CET 1 ratio – June 2017 | Per cent



Chart 3.26 • International comparison of the average risk weight – June 2017 | Per cent



Source: European Central Bank (Consolidated Banking Data). Note: Finland was excluded due to lack of data.

Notes

1. The analysis of the Portuguese banking system takes information reported under the EBA's Implementing Technical Standards on Supervisory Reporting (ITS), defined at European level. The adoption of the new reports led to the revision of the universe of institutions in review, ensuring consistency with the previous reports. Furthermore, the definition of some of the variables considered was revised. For more information, see Methodological Note, 'Portuguese Banking System: latest developments', Banco de Portugal, 4th quarter 2016. To complement the supervisory information, in particular for additional detail about developments in domestic activity, statistical information on the balance sheet and interest rates reported under Financial Monetary Statistics (Instruction of Banco de Portugal No. 25/2014) was used, for the universe of resident monetary financial institutions, on an individual basis.

2. The partial sale of BPI's holding in the operation in Angola resulted in the reclassification of assets (and liabilities) referring to this activity as Other assets (and Other liabilities) at the end of 2016. In the first quarter of 2017, these assets (liabilities) were deconsolidated from the institution's balance sheet upon completion of this operation.

3. At the end of October, a new saving product issued by the Public Sector was announced, Certificados do Tesouro Poupança Crescimento (CTPC), replacing Certificados do Tesouro Poupança Mais (CTPM). The yield on the new product will be more in line with current market interest rates, with a lower rate of remuneration than the product it replaces.

4. The liquidity coverage ratio results from dividing unencumbered, high-quality liquid assets by total net cash outflows during a stress period of 30 calendar days.

5. These assets can be converted quickly into cash in private markets, in a short time and without significant loss of value. For more details, see Article 3 of the Commission Delegated Regulation (EU) 2015/61, to supplement Regulation (EU) No. 575/2013 of the European Parliament and the Council.

6. The liquidity coverage requirement is being implemented in phases: 80% from 1 January 2017 and 100% from 1 January 2018.

7. For more information on the identification of Other systemically important institutions (O-SIIs) at Portuguese level, see https://www.bportugal.pt/sites/ default/files/anexos/doc_osii_en_0.pdf.

8. The liquidity gap is defined as the difference between liquid assets and volatile liabilities in proportion to the difference between total assets and liquid assets, for each maturity scale. Indicators were calculated on the basis of data and concepts set out in Instruction of Banco de Portugal No. 13/2009. This indicator allows for a comprehensive characterisation of banks' liquidity position, by looking at a wide set of assets and liabilities and their residual maturities.

9. At the beginning of 2017, there was a change in the composition of shareholders of Banco BPI, which involved classifying BPI as a non-domestic institution.

10. The definition of non-performing loans follows that of international standards. For more information, see Special issue 'Concepts used in the analysis of credit quality', *Financial Stability Report*, November 2016.

11. In contrast to the rest of the banking sector analysis, the concept of loans in this point also includes cash and cash balances at central banks and in other credit institutions. Furthermore, the value of loans considered is the gross value and excludes loans classified as 'held for trading'. For more information, see points 45, 109 and 145 to 162 of Implementing Regulation (EU) No. 680/2014, Part 2.

12. The behaviour of the income from financial operations item over the half-year was almost exclusively driven by one institution and reflects the sharp increase in income from financial assets held for trading and measured at fair value, in particular those in the derivatives portfolio used to hedge interest rate risk, which more than offset the substantial fall in income from financial assets and liabilities not measured at fair value.

13. Following the sale of BFA by BPI, the amount of negative foreign exchange reserves accumulated as a result of adverse exchange rate moves affecting the conversion of BFA's financial statements from kwanzas to euro (\leq 182.1 million), was derecognised from own funds, and accounted for in the Other income paid item.

14. It is estimated that if the costs relating to the restructuring processes by two large institutions in the first half of 2017 are disregarded, operating costs would have fallen roughly twice as fast as they did from the first half of 2016.

15. CGD's capitalisation operation was an 'accordion recapitalisation'. The first phase involved a capital reduction worth \notin 6 billion to address the negative results accumulated and to create a free reserve, indispensable to the success of the institution's (perpetual) subordinated debt issue (a sine qua non condition for the operation to be authorised by the European Commission under the EU's rules on state aid). The initial capital reduction was partly offset by a new capital injection, totalling \notin 2.5 billion, made in the second phase of the process. The income item's very large contribution to the increase in the CET 1 ratio in the first half of 2017 mainly reflects the \notin 6 billion increase in retained earnings that resulted from the reclassification described.

16. This issue, totalling \leq 500 million, took place in March 2017 and will be supplemented by a new issue of a similar nature, worth \leq 430 million, which should take place by September 2018.

17. Santos, J. and Plosser, M., 'Banks' Incentives and the Quality of Internal Risk Models', Federal Reserve Bank of New York, Staff Report No. 704, December 2014, reflecting on the use of internal risk models and incentives for institutions to apply bias when generating key parameters of these models.

18. See the EBA's discussion paper, 'Future of the IRB Approach' (http://www.eba.europa.eu/documents/10180/1003460/EBA-DP-2015-01+DP+on+the+future+of+IRB+approach.pdf) and the final draft of the regulatory technical standards (https://www.eba.europa.eu/documents/10180/1525916/Final+Draft+RTS+on+Assessment+Methodology+for+IRB.pdf/e8373cbc-cc4b-4dd9-83b5-93c9657a39f0).

19. For more information on this process, see https://www.bportugal.pt/en/comunicado/press-release-banco-de-portugal-conclusion-sale-novo-banco.


4. Special issues

Strategy to address the stock of non-performing loans (NPLs)

Risk segmentation on the interest rate spreads of new bank loans to non-financial corporations

Banks Leverage Ratio – the Portuguese case



Strategy to address the stock of non-performing loans (NPLs)

As mentioned in previous issues of the *Financial Stability Report*,¹ reducing the high stock of NPLs requires a comprehensive strategy, with initiatives in different areas and coordination between the various stakeholders. The strategy must take into account that the assets comprised in the NPL stock, namely that of the Portuguese banking sector, are fairly heterogeneous, especially those of the non-financial corporations (NFCs), which account for about 65% of the current NPL stock (27.2 billion euros as of June 2017). This heterogeneity is striking, e.g., in the sector of activity, size and economic and financial situation of the NFCs in question.

The purpose of this Special issue is to present the measures that are being adopted to address this issue, starting by framing them within the European context and highlighting the significant pressure on banks to reduce the NPL stock, and ending with the latest developments in the strategy to address the NPL stock in Portugal.

European context

The need to solve the problem of high NPL stock in the banking sector of certain European Union Member States has been addressed not only at the level of each of those Member States, but also at European level, giving rise to several initiatives.

In addition to all the direct work with credit institutions in fulfilment of its functions as a supervisor, the European Central Bank (ECB), under the Single Supervisory Mechanism (SSM), published the 'Guidance to banks on nonperforming loans' (Guidance) in March 2017.² As discussed in the previous *Financial Stability Report*, this Guidance focuses on the management of the stock of these assets, disclosing the 'qualitative' supervisory expectations in this field, with a view to developing a holistic approach to it, including areas such as governance and risk management. Following up on this work, at the beginning of October 2017, the SSM submitted for public consultation a draft 'quantitative' addendum to its guidance on NPLs.³ In this draft addendum the SSM specifies supervisory expectations for minimum levels of prudential provisions for new NPLs, classified as such as of 1 January 2018. Specifically, this draft addendum takes into account the length of time a loan has been non-performing and the existence of collateral, stating that "banks are expected to provide full coverage for the unsecured portion of new NPLs after 2 years at the latest and for the secured portion after 7 years at the latest". Any deviation from this guidance is expected to be explained to supervisors, with the need for additional supervisory measures assessed subsequently. No distinction is made in reference to the type of NPL in question (for example, a loan that is more than 90 days past-due will be treated in the same way as a loan classified as 'unlikely-to-pay').4 The consultation ended on 8 December 2017, following a public hearing that took place on 30 November 2017.

The SSM press release on this draft quantitative addendum also mentions that with regard to NPL stocks, and without prejudice to non-productive asset reduction plans that banks were required to draw up following discussions with the supervisor, the SSM will present by the end of the first quarter of 2018 "its consideration of further policies to address the existing stock of NPLs, including appropriate transitional arrangements".

This SSM initiative should be seen in the broader context of the 11 July 2017 Council conclusions on 'Action plan to tackle non-performing loans in Europe', agreed by the Economic and Financial Affairs Council (ECOFIN).⁵ These Conclusions outline a set of measures to be adopted by various European authorities and by the Member States with deadlines that vary from the summer of 2017 to end-2018, to "address the existing stocks of NPLs as well as the emergence and accumulation of new NPLs on bank balance sheets", based on the report on NPLs produced by the Subgroup of the Financial Services Committee.⁶

The plan laid out is far-reaching, addressing a relatively broad set of issues such as prudential supervision, macroprudential policy, the secondary market for NPLs and the applicable legal framework. Given the large number of measures, only a few are highlighted below, as they relate directly to the guidance recently disclosed by the SSM:

- As foreseen in the aforementioned Council conclusions, the European Commission issued its interpretation of existing supervisory powers laid down in EU legislation with a view to clarifying their usability as regards banks' provisioning policies for NPLs under Article 16 of Council Regulation (EU) No. 1024/2013, of 15 October 2013 (SSM Regulation)⁷ and under Article 104 of Directive 2013/36/EU of the European Parliament and of the Council, of 26 June 2013 (CRD IV).⁸ More specifically, in the report on the SSM published on 11 October 2017, the European Commission clarified that, pursuant to the abovementioned articles, the SSM may require credit institutions to apply specific adjustments (such as deductions to own funds) where the accounting treatment applied by those institutions is not considered prudent from a supervisory perspective.9 Following this interpretation, according to the Council conclusions, the Council will, if appropriate and following a pros and cons analysis, consider an amendment to Article 104 of the CRD IV in the context of the ongoing review of the CRR/CRD IV.
- The Conclusions also state that the European Commission will consider, within the framework of the ongoing review of the CRR/ CRD IV, "prudential backstops addressing potential under-provisioning which would apply to newly originated loans; these statutory backstops could take the shape of compulsory prudential deductions from

own funds of NPL, following an assessment of the most appropriate calibrations in line with international practice".

Indeed, following its Communication on completing the Banking Union, also published on 11 October 2017, the European Commission issued a consultation document on 10 November 2017, to gather stakeholders' views on the possible introduction of minimum levels of provisioning which banks must make for new loans that turn non-performing.^{10,11} This consultation from the Commission runs in parallel with the ECB's public consultation on the aforementioned draft 'quantitative' addendum which applies to new NPLs.

Thus there is some uncertainty surrounding the rules and/or guidelines that may be defined in regard to the provisioning for prudential purposes of new NPLs (whether these come from existing or new loans) and of the stock of NPLs. However there is no uncertainty over the significant pressure from the supervisor and the regulator that banks with high NPL stocks face in the current environment.

Strategy to address the NPL stock in Portugal

In Portugal, the strategy for reducing nonproductive assets is based primarily on three interdependent and complementary pillars: (i) revision of the legal, judicial and fiscal framework; (ii) microprudential supervisory actions, under the SSM; and (iii) management of the NPL portfolios, including possible systemic measures.

· Legal, judicial and fiscal framework

As mentioned above, reducing the NPL stock requires a comprehensive and coordinated strategy, for which it is crucial, among other measures, that legislative amendments are introduced with the aim of correcting some of the inadequacies that seem to result from the practical application of the framework currently in force.

Through the Resolution of the Council of Ministers No. 42/2016, of 18 August 2016, and

based on the work of Estrutura de Missão para a Capitalização de Empresas ("Mission Structure for the Capitalization of Companies"), the Government approved Programa Capitalizar ("Programme to Capitalize"), a strategic initiative to support the capitalisation of firms, the recovery of investment and the re-launch of the economy. Among the measures included in this Programme, the following stand out considering their potential impact on NPL reduction:

 Measures under preparation by the Government or under discussion in the Portuguese Parliament

a. Creation of an early warning mechanism by IAPMEI (a specialised public agency supporting Portuguese SMEs), which provides the NFCs' management bodies with information on the economic and financial situation of the companies in question, including suggestions for possible follow-up actions. The essential goal of this measure is to avoid situations in which the NFCs in financial distress postpone taking restructuring measures that may prevent additional difficulties cropping up in the future (and their insolvency in the worst case scenario).

b. Creation of a framework for converting loans to a commercial company into share capital, under the terms of which the creditors may propose to the company the conversion of their loans into share capital, upon verification of certain conditions (namely, the company's own funds are lower than the share capital, and the company's nonsubordinated credit past-due over 90 days accounts for more than 10% of the total nonsubordinated credit). Once the conversion proposal is received, the company's general meeting must be convened immediately, to approve or reject the deliberations mentioned in the proposal. If the proposal is refused, the general meeting does not take place or the deliberations therein are not approved or implemented within 90 days of the date of the proposal's receipt, the proposing creditors may request judicial consent for the share capital alteration deliberation from the court competent for the insolvency proceedings (Draft Law No. 85/XIII, under discussion by the Parliament). This measure takes on particular importance in a context where the viability of a significant number of NFCs in financial distress depends on the strengthening of their capital structure.

c. Creation of the Out-of-Court Regime for Corporate Recovery (Regime Extrajudicial de Recuperação de Empresas - RERE), which replaces the Out-of-Court Corporate Recovery System (Sistema de Recuperação de Empresas por via Extrajudicial - SIREVE), through which a debtor in financial distress or in an imminent insolvency situation may begin negotiations with all or some of its creditors with a view to reaching an agreement - voluntary and generally confidential – promoting its recovery (Draft Law No. 84/XIII, under discussion by the Parliament). The lessons learnt from the functioning of the SIREVE showed the importance of making the out-of-court corporate recovery process as streamlined as possible, preferably also giving it the tax and fees relief that the Special Revitalization Proceedings (Processo Especial de Revitalização - PER) already benefits from.

d. Approval of the Corporate Recovery Mediator's statute. The Corporate Recovery Mediator will be responsible for providing assistance to a debtor company in financial distress or in an insolvency situation, namely in negotiations with its creditors with a view to reaching an out-of-court restructuring agreement promoting its recovery (Draft Law No 83/XIII, under discussion by the Parliament). The essential goal of this measure is to increase the success rate of corporate recovery and restructuring processes, by providing support through the mediators in question to the debtor company when negotiating with the creditors.

e. Creation of a Single Window (*Balcão Único*) for the integrated management of Social Security and Portuguese Tax Authority credits to companies in the framework of insolvency proceedings (Article 5 of Law No. 100/2017 of 28 August 2017, refers to this initiative, but leaves the possibility of creating this Single Window to regulation by Decree-Law). This measure aims to streamline the interaction between the different public creditors involved in NFCs' restructuring and insolvency proceedings.

Approved measures

a. Introduction of changes into the PER, namely to prevent access by insolvent companies, by making the initiation of the PER conditional on the presentation of a declaration signed no more than 30 days prior by a certified accountant or statutory auditor, stating that the debtor is not currently insolvent.

b. Creation of a simplified mechanism for increasing share capital by converting shareholders loans, effective only if the other shareholders express non-opposition (Decree-Law No. 79/2017 of 30 June 2017). This measure is part of a set of measures designed to promote the level of capitalisation among NFCs in Portugal.

c. Creation of the framework for appropriating the pledged asset under commercial pledge, through which the parties may agree, if the collateral provider is a merchant, that the creditor, in case of default, appropriates the pledged good or right for the value that results from its appraisal (the so-called "Martian pact"). The valuation method and criteria must be laid down in the contract and the creditor is obliged to repay the debtor the difference between the value of the asset and the amount owed (Decree-Law No. 75/2017 of 26 June 2017). Similarly to a measure recently introduced into Italian jurisdiction, this measure is designed to expedite the processes for appropriating assets by creditors, and is only applicable to new credits.

d. In the fiscal framework, the State Budget for 2018 introduces two proposals that aim to promote the capitalisation of Portuguese companies: on the one hand it introduces tax deductions on conventional remuneration of share capital, calculated by applying a rate to the amount of paid-up inflows, within a set limit, no longer only through cash injections, but also through the conversion of credit, as part of setting the company up or through a capital increase. On the other hand, it lays down the possibility, under certain conditions, of the taxable natural person that makes cash injections into the capital of a company in which he/she has a holding, to deduct up to a certain percentage of those injections from the gross value of the profit made available by that company, or, in the case of disposal of that holding, to the balance of gains and losses achieved under the terms of the law.

Microprudential supervision under the SSM

In the context of the SSM, Banco de Portugal defined the reduction of the high NPL ratio in the Portuguese banking sector as one of the main supervisory priorities for 2016 and 2017. Thus, a set of initiatives/measures was defined to address this vulnerability in the sector, deepening some of the measures taken in previous years, and strengthening supervisory action in monitoring banks' asset quality. These initiatives, set out in detail in the June 2017 *Financial Stability Report*, have proceeded according to plan, and include the following key measures which were designed specifically for institutions with a higher NPL level:

- Dialogue with the banking institutions and the audit firms with a view to raising awareness over prudential concerns and the supervisory perspective, while also discussing solution strategies and monitoring the results achieved by the institutions. This dialogue focused initially on the size and severity of the non-productive assets in each banking institution and more recently on issues related to the adoption of IFRS 9.¹²
- Request of granular information on NPLs, by Banco de Portugal for less significant institutions and by the ECB for significant institutions, affording a deep diagnosis of the situation and more sustained monitoring of the results obtained.



- Monitoring of compliance with nonproductive asset reduction plans presented by the banking institutions. These plans were presented on request of Banco de Portugal or the Joint Supervisory Teams (JSTs) in the case of significant institutions under the SSM, and include specific operational goals by asset class and time frame, defined after an interactive process between the supervisors and banks' management, with the aim of setting sound, ambitious and credible plans.
- Monitoring of significant institutions' compliance with the aforementioned 'Guidance to banks on non-performing loans', published by the ECB in March 2017.
- Management of the NPL portfolios, including possible systemic measures

The first and second pillars of the strategy to address the NPL stock in Portugal are supported by measures adopted by the Government (legal, judicial and fiscal components) and by the supervisor (under the SSM). Regarding the third pillar, most activity is expected to arise from credit institutions' initiative, notwithstanding the necessary coordination with the other entities involved in the overall strategy.

The management of NPL portfolios is effectively the responsibility of the banks that hold them, within the framework previously detailed. The banks may choose between various alternatives to manage them, from those which include keeping the assets on the balance sheet, if accompanied by effective measures helping them to transform into performing assets, to selling them (including also the possible securitisation of this type of asset). These individual actions, in turn, should not obviate the assessment of a possible solution designed for the banking system in general. In the case of Portugal, this option is more relevant not only due to the still high NPL stock, namely of NFCs, but also due to the fact that many debtors have received credit from several banks. Given the important

developments in this work stream, the next section presents the last year's progress.

The possibility of a measure that reduces NPLs for the banking system in general was initially assessed on the basis of a wide-ranging and detailed quantitative analysis. This study proved critical for guiding the subsequent work: after confirming the existence of asset segments that might require differentiated solutions, the potential for a bulk transfer of almost all the NPLs in the banking system to an asset management company, as has happened in other European countries in recent years, was deemed low. Indeed, the homogeneity of the transferred assets seems to be one of the key success factors of an asset management company.¹³

As work progressed, it also became clear that the potential for this bulk transfer had to take into account the following closely inter-related restrictions:

- (i) The banks' capital Assuming an entirely private solution, it is necessary to take into account the price that the investors, which support the asset management company, are willing to pay for NPLs and the consequent impact that the transfer of a significant volume of assets might have on the banks' balance sheet;
- (ii) Funding Given the aforementioned constraints of a private solution, the State's involvement could be considered in order to reduce the balance sheet impact of such a transfer. This intent could take the form, among other possibilities, of the State taking a holding in the asset management company itself or a guarantee for its funding. However, in the absence of instruments at European scale applicable to this solution, it would have to be an intervention from the Portuguese state, with inevitable repercussions on the public accounts which must be considered;
- (iii)Regulatory framework of the European Union – Even though public financing is an option to consider, both at European and at Portuguese level, the European

rules underlying the creation of an asset management company with some type of State support would be extremely demanding. In particular, the application of the resolution framework¹⁴ and the State aid rules¹⁵ greatly restrict solutions like NAMA¹⁶ and SAREB¹⁷, given the level of loss absorption required and the total public financial envelope liable to be used.

Given the aforementioned constraints, the materialisation of a bulk transfer of assets from the balance sheet of almost all the NPLs in the banking system has proved difficult, although it should not be excluded entirely since it could make sense for some subsets of non-productive assets. In this regard, work is under way at European level on the creation of a "'blueprint' for the potential setup of national asset management companies (AMCs)".18,19 This analysis aims to establish and standardise the principles for the possible setup of these companies at national level, namely by clarifying the requirements regarding compatibility with the aforementioned EU's regulatory framework.

However, given the pressing need to tackle the NPL stock in the Portuguese banking system, it was deemed relevant to pursue the assessment of possible solutions of a systemic nature even though they do not involve ab initio the transfer of assets off the banks' balance sheet. As the quantitative analysis also revealed that most companies received credit from several banks, efforts were redirected to promoting a greater creditor coordination to accelerate credit restructuring and/or NPLs' sales.

The Platform for Integrated Management of Bank Loans came to light in this context, comprising a complementary grouping of companies resulting from a joint initiative between Caixa Geral de Depósitos, Millennium BCP and Novo Banco, which aims to provide integrated management of credit granted to NFCs in debt to various banks (cross-exposures) which will remain on the balance sheet of the banks in question. Although the Platform is not yet fully operational, the aim behind its creation, formalised in a memorandum of understanding, was announced to the market by the three aforementioned banks on 28 September.²⁰ That announcement lists the initiative's main features and mentions the possibility of including new members in the future.

The Platform will not lead to a sharp reduction in the NPL level of the banking system in the short term, as it does not involve a transfer of assets off the banks' balance sheet. However, it should contribute to the overall NPL reduction effort, insofar as it aims to "increase the effectiveness and speed of credit and companies' restructuring processes". In parallel, it may have a positive effect on economic activity, and in particular on the NFC deleveraging process, by stimulating the restructuring of economically viable companies. Indeed, the Platform's objectives include "supporting the recovery of several sectors of the Portuguese economy, through credit and debtors' restructuring, and increasing asset viability". By involving corporate restructuring processes, the initiative may benefit greatly from all the improvements that come to be introduced into the legal and judicial framework. This strengthens the importance of the Programa Capitalizar measures described above due to the key contribution that they may make to NPL reduction.

Aside from the benefits of greater creditor coordination and restructuring of viable companies, the Platform presents the additional advantage of being able to complement other initiatives under the overall NPL reduction strategy. In particular, as it addresses a specific set of assets – credit classified as NPLs that the involved credit institutions hold over common debtors – it does not obviate solutions that may be developed for other segments of nonproductive assets held by the credit institutions.

Finally, while it is true that the measures to be adopted by the banks in their NPL reduction strategies should avoid fire sales, with a potentially negative impact on the banking sector and on economic activity, it is also true that the solution for some assets must



involve their timely sale or their active and effective management. Against this backdrop, the distinction between different types of assets (and thus between different types of solution) is key, taking into consideration the significant heterogeneity of NPLs on banks' balance sheets. Indeed, with regard to NFCs in particular, it is essential to thoroughly assess their economic and financial viability, in order to better define the measures to be applied.

Notes

1. See, for example, the June 2017 Financial Stability Report.

2. https://www.bankingsupervision.europa.eu/press/pr/date/2017/html/sr170320.en.html.

3. https://www.bankingsupervision.europa.eu/press/pr/date/2017/html/ssm.pr171004.en.html.

4. For more information, see 'Concepts used in the analysis of credit quality', November 2016 *Financial Stability Report* https://www.bportugal.pt/sites/ default/files/anexos/pdf-boletim/ref_201611_en.pdf. The 'unlikely-to-pay' category includes situations where, with no credit past-due, the debtor is assessed as unlikely to pay its obligations in full without realisation of collateral.

5. http://www.consilium.europa.eu/en/press/press-releases/2017/07/11-conclusions-non-performing-loans/.

6. http://data.consilium.europa.eu/doc/document/ST-9854-2017-INIT/en/pdf.

7. Council Regulation (EU) No. 1024/2013, of 15 October 2013, conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions.

8. Directive 2013/36/EU of the European Parliament and of the Council, of 26 June 2013, on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC.

9. https://ec.europa.eu/info/sites/info/files/171011-ssm-review-report_en.pdf.

10. http://ec.europa.eu/finance/docs/law/171011-communication-banking-union_en.pdf.

11. https://ec.europa.eu/info/sites/info/files/2017-non-performing-loans-backstops-consultation-document_en.pdf. In parallel, the Commission published a Call for Advice to the EBA, asking for an impact assessment and sensitivity analysis (https://www.eba.europa.eu/documents/10180/2022642/ EBA+Call+for+advice_NPLs_prudential+backstops.pdf/8f41cc22-c096-4ab9-ae5c-2101de848a05).

12. Some of which are addressed in the June 2017 Financial Stability Report.

13. The NAMA and SAREB vehicles, established respectively in Ireland in 2009 and in Spain in 2012, focus on exposures linked to the real estate sector. The benefits arising from the homogeneity of assets for the success of an asset management company are also recognised in the report on NPLs drawn up by the Subgroup of the Financial Services Committee.

14. In the form of Directive 2014/59/EU (Bank Recovery and Resolution Directive).

15. Namely those comprised in the Communication from the Commission on the treatment of impaired assets in the Community banking sector (2009/C 72/01) and in the Communication from the Commission on the application, from 1 August 2013, of State aid rules to support measures in favour of banks in the context of the financial crisis ('Banking Communication') (2013/C 216/01).

16. Acronym for National Asset Management Agency, a vehicle established in Ireland in 2009.

17. Spanish acronym for Sociedad de Gestión de Activos procedentes de la Reestructuración Bancaria, a vehicle established in Spain in 2012.

18. As provided for in the aforementioned Council conclusions of July 2017.

19. Cf. "A Role for Systemic Asset Management Companies in Solving Europe's Non-Performing Loan Problems", European Economy, Issue 2017.1.

20. Announcements available online: CGD (https://www.cgd.pt/English/Investor-Relations/Announcements/Material-Information/Documents/IP-28SET2017_ENG.pdf); Millennium BCP (https://ind.millenniumbcp.pt/en/Institucional/investidores/Documents/Comunicados/2017/20170928_ACE_EN.pdf); and Novo Banco (https://www.novobanco.pt/site/cms.aspx?srv=222&stp=1&id=8b5cb8ae-eb1f-4fc3-8fc5-c4698c232fac&order=1&attach=No).

Risk segmentation on the interest rate spreads of new bank loans to non-financial corporations

Summary

The current low interest rate environment and the increased competition across credit institutions, coupled with the ongoing deleveraging of the non-financial corporate (NFCs) sector, may compress risk segmentation to levels that may put pressure on banks' future profitability and harm financial stability.

This Special issue analyses the developments of risk segmentation on the interest rate of new bank loans to Portuguese NFCs, according to their risk of default. This analysis covers the period July 2012 to December 2016. The results suggest that, over the period examined, spreads differentiated in a consistent way the credit risk arising from new bank loans to NFCs. Despite the decrease in interest rates on new loans, broadly based across all risk classes, risk segmentation remains consistent, as the decreases in spreads for firms with a lower risk of default exceed those of firms with a higher risk of default. The results also suggest that the increased competition across banks for average-risk loans does not seem to be leading to a decrease in credit risk differentiation in this risk class.

Although the risks to financial stability arising from a poor segmentation of the credit risk of firms do not appear to be significant at present, competitive pressure from financial institutions may lead to a further decline in interest rates, resulting in a squeeze of new loan spreads to levels that may not adequately remunerate the risk taken.

a. Interest rates and financial stability

Since 2012, the total debt of non-financial corporations (NFCs) has gradually decreased and new credit flows have been directed to sectors with better economic and financial performance and to firms with a lower probability of default, thereby helping reduce the credit risk level of this sector. In turn, the

current low interest rate environment and increased competition between banks can promote excessive risk-taking and compress risk segmentation. This effect may occur even when the short-term impact on the net interest income is positive: financial institutions may attain larger volumes of lending by shrinking margins and taking more risk. Such a pattern may hamper financial institutions ' profitability in the medium and long term and impact their future resilience, making the access to funding and capital more difficult and, in this way, harming future lending.

Against this background, this Special issue analyses whether the spreads on new loans to NFCs point to the consistent risk segmentation of the firms' risk of default. The purpose of this study is not to evaluate if the spreads on new loans fully reflect all the risks and costs entailed on credit contracts, but to assess financial institutions' ability to differentiate the risk profile of the firms to which their loans are granted. Thus, the focus will not be on the level of the spreads but on the difference between the spreads applied on different tiers of risk.

Interest rates on new loans to NFCs declined after the surge observed during the sovereign debt crisis, reflecting the decrease in the average cost of financing of Portuguese banks and increased competition. Interest rates on outstanding amounts and on new bank loans to NFCs are currently at their minimum levels since 2003. Spreads are also narrowing, reaching levels close to those observed before the sovereign debt crisis (Chart 1).

The financial and economic crisis, and the subsequent sluggish economic recovery, has limited financial institutions' profitability, in a context where competition for lower-risk market segments seems to have changed the risk profile of their credit portfolio. Bank Lending Survey results¹ have been signalling (since mid-2014) significant competition across banks and a decrease in



average risk loans spreads. Empirical results confirm that, since 2014, the spreads on new bank loans have decreased mostly for firms on the lower and intermediate-default risk classes (Chart 2).² Average spreads have declined markedly on those two risk classes, while their level on the higher default risk class has barely changed since 2012 (Chart 3). Chart 4 also shows that the amount of new bank loans granted to lower-default-risk firms has been increasing since 2012.

The current context may present a risk for financial stability, by endangering two intermediate objectives of macroprudential policy: (i) Mitigate and prevent excessive credit growth and leverage: the growth of credit, potentiated by slumping interest rates that barely remunerate the risks taken, may harm financial institutions' performance and financial stability over the medium and long term; (ii) Limit incentives for excessive risktaking: low profitability may lead to searchfor-yield behaviour that, in a context of a highly competitive environment, may bring risk premia to inappropriate levels, even for riskier firms.

Banco de Portugal has been monitoring the developments of banking system interest

rate risk segmentation.³ This Special issue extends the assessments made so far by introducing a more robust methodology to evaluate the existence and consistency of risk segmentation.

b. Data and variables

This study uses a database containing detailed information on interest rates underlying new loans granted by Monetary Financial Institutions (MFIs) to NFCs, covering eurodenominated loans to euro area resident firms.⁴ Monthly data is available from June 2012. Up to December 2014, only institutions whose monthly transactions were above €50 million were subject to this reporting requirement. From January 2015 onwards, all MFIs were required to report interest rates on new loans to NFCs, irrespective of the aggregated amount of those loans. This leads to some variation in the range of reporting institutions across the sample period. To mitigate the potential negative impact related with this variability, the analysis was restricted to the loans granted by the seven largest banking groups operating in Portugal.⁵

The information available in the database allows for each loan operation to be described according to certain key features, namely the

Chart 1 • Interest rate on new bank loans to NFCs | Per cent

Source: Banco de Portugal.

Note: The spread is calculated as the difference between the average interest rate on new loans granted and the banking system average funding cost. The banking system average funding cost entails the cost of: interbank liabilities, central bank funding, deposits, liabilities represented by securities and subordinated liabilities.





Chart 2 • Density distribution of spreads on new bank loans to private NFCs, by credit risk profile

Source: Banco de Portugal.

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Notes: Kernel: Epanechnikov; Bandwidth=0.3. The distribution was truncated at 0% and 10%. Loans granted by the seven largest banking groups operating in Portugal. Spreads weighted by Ioan amounts. Lower- (higher-) credit-risk firms lie in risk class 1 (risk class 3). Credit risk is measured by the Z-score estimated according to Antunes, Gonçalves and Prego (2016), "Firm default probabilities revisited", Banco de Portugal Banco de Portugal *Banco de Portugal Economic Studies*, Vol. 2, No. 2, April 2016.

Chart 3 • Average spread on new bank loans to private NFCs, by credit risk profile | Per cent

Chart 4 • Amount of new bank loans to private NFCs, by credit risk profile | EUR billions





Source: Banco de Portugal.

Note: Loans granted by the seven largest banking groups operating in Portugal. Spreads weighted by loan amounts. Lower- (higher-) credit-risk firms lie in risk class 1 (risk class 3).

date of the loan operation, loan maturity, loan amount, initial interest rate fixation period, the existence of collateral, annualised interest rate, the nature of the loan (new loan, automatic renewal of an existing loan, renegotiation of contractual terms of an existing loan), the bank granting the credit (and therefore the number of banks lending to each firm in each year) and the country of residence of the NFCs (Portugal or another euro area country). Combining this database with other Banco de Portugal databases provides NFCs features, such as size, exporting activity, economic activity (NACE classification) and credit risk class. In this Special issue, NFC credit risk is measured by the Z-score estimated by Antunes et al. (2016).⁶ Based on this scoring system, firms were categorised into three different credit risk classes according to their risk of default. Risk class 1 is the lower-credit-risk class and includes those firms whose probability of default over a one-year horizon is below 1%; risk class 2 is the intermediate-credit-risk class and includes those firms whose probability of default over a one-year horizon is between 1% and 5%; finally, risk class 3 includes those firms with a higher risk of default (probability of default above 5% over a one-year horizon).

This Special issue focuses solely on new bank loans to private NFCs, as lending to state-owned NFCs may be determined by factors other than those taken into account in this study, particularly in regard to risk considerations. The variable of interest is the spread implicit in new loans, which corresponds to the interest rates on new loans to private NFCs, deducted from each bank's average funding cost at the end of each quarter. The average funding cost corresponds to the weighted average cost of the stock of each bank' liabilities including, namely the cost of interbank liabilities, central bank funding, deposits, liabilities represented by securities and subordinated liabilities. A lack of data prevents the cost of capital to be taken into account in the funding costs.

The concept of new operation considered in this Special issue follows Banco de Portugal's

statistical definition, which means that it includes new credit agreements with an active negotiation between the parties and credit contracts whose terms have been renegotiated.⁷ Bank overdrafts were not included. In order to mitigate spurious volatility associated with credit lines and short-term roll-overs, loans with a maturity below one month were excluded. Additionally, new loans considered outliers (with interest rates above 20%) were dropped from our sample. Based on these assumptions, a total of 1,699,982 contracts for 116,561 firm-financial institution relationships are identified for the July 2012 to December 2016 period.

The mean values associated with the variables considered in the analysis are reported in Table 1. The sample is mostly made up of micro, small and medium-sized enterprises that belong to wholesale and retail trade and manufacturing sectors. About one-third of new loans were granted to firms with exporting activity. The share of collateralised loans has been gradually increasing since 2012, reaching 45% of new loans granted during 2016. Since 2013, approximately 37% of new loans were granted to NFCs that have borrowed from a single bank in that year. Most of the new loans granted had an original maturity below one year. The bulk of new loan operations give rise to a new credit contract between the parties (and so are not a renegotiation of the terms of a prior contract). Finally, Table 1 shows an increase in the new loans granted to the lowerrisk class (credit-risk class 1) and a decline in new loans to the higher-risk class (credit-risk class 3) since 2012.

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Variable	2012 Jul. to Dec.	2013	2014	2015	2016
Spread	5.428	5.402	4.852	4.079	3.762
Log (amount, EUR millions)	-4.648	-4.530	-4.450	-4.453	-4.435
Dummy (exporting)	0.305	0.319	0.331	0.326	0.324
Dummy (collateral)	0.302	0.360	0.416	0.424	0.454
Dummy (renegotiation)	0.023	0.021	0.019	0.024	0.053
Dummy (single bank loan)	0.429	0.374	0.358	0.369	0.366
Dummy (maturity below 1 year)	0.919	0.896	0.877	0.861	0.857
Dummy (maturity between 1 and 5 years)	0.055	0.070	0.080	0.087	0.088
Dummy (maturity above 5 years)	0.026	0.034	0.043	0.053	0.056
Dummy (credit risk class 1)	0.191	0.206	0.262	0.287	0.285
Dummy (credit risk class 2)	0.423	0.453	0.456	0.426	0.429
Dummy (credit risk class 3)	0.386	0.341	0.282	0.286	0.285
Dummy (manufacturing)	0.353	0.357	0.357	0.352	0.355
Dummy (construction & real estate)	0.100	0.095	0.086	0.083	0.079
Dummy (wholesale and retail trade)	0.391	0.377	0.364	0.362	0.356
Dummy (transportation and storage)	0.029	0.032	0.039	0.047	0.049
Dummy (accommodation and food)	0.015	0.017	0.019	0.018	0.018
Dummy (consultancy, technical and administrative activities)	0.070	0.078	0.088	0.089	0.095
Dummy (other sectors)	0.041	0.043	0.048	0.049	0.049
Dummy (micro enterprise)	0.350	0.360	0.366	0.365	0.382
Dummy (small enterprise)	0.373	0.371	0.357	0.355	0.345
Dummy (medium enterprise)	0.216	0.214	0.216	0.214	0.207
Dummy (large enterprise)	0.059	0.054	0.060	0.065	0.065
Dummy (head offices)	0.002	0.001	0.001	0.001	0.001

Table 1 • Descriptive statistics | Mean

Source: Banco de Portugal. | Note: The number of observations available in each year is 205,111 (2012), 369,224 (2013), 365,285 (2014), 383,235 (2015) and 377,127 (2016) in all variables, except for the credit risk class. In the case of the latter variable the number of observations available is 164,235 (2012), 282,858 (2013), 271,691 (2014), 270,279 (2015) and 273,124 (2016). Unweighted means.

c. Econometric analysis

Based on pooled cross-sectional data, this analysis aims to evaluate the adequacy of the spread on NFCs' risk of default through a simple econometrical model that assesses the consistency of the risk segmentation across the time span analysed, based on the following premise: if financial institutions differentiate risk premia on new loans for different levels of firms risk then, on average, the risk premia of riskier firms should be higher and statistically significant. It should be noted that this premise is a necessary but not sufficient condition to ensure that banks perform a correct assessment of the credit risk of each firm. As mentioned before, the focus of this analysis is on the differential between spreads and not on the adequacy of the level of the spreads to the risk incurred. The approach adopted in this Special issue follows the specification adopted by Santos (2013).⁸ The dependent variable is the spread on each euro-denominated new loan operation granted to resident NFCs and the explanatory variables comprise characteristics of the loan and the firms as presented above. Additionally, two dummy variables controlling for the year and for the bank granting the loan, and interaction effects between all the explanatory variables were included as regressors. Thus, in the context of this Special issue, the following equation is estimated:

 $Spread_{ifbt} = \alpha + \log amount_{ifbt}$ + Dmaturity_{ifbt} + Dcollateral_{ifbt} +Drenegotiation_{ifbt} + Dexport_{ft} +Dsector_{ft} + Dsinglebankloans_{ft} +Dsize_{ft} + Driskclass_{ft} +Dbank_b + Dyear + X*Y+ \epsilon_{ifbt} where *Spread*_{*ifbt*} is the spread on loan i granted to firm f by bank b in year t, and X*Y represents the interaction effects between all the variables in the equation above. The simultaneous inclusion of a large number of interaction effects in the regression makes the interpretation of the results very challenging. In order to deal with this problem, an estimation was made of the average marginal effects⁹ of each variable, which summarise partial effects of each covariate in the regression. The results, presented in Table 2, suggest that:

- · Loans with larger amounts and longer maturities exhibit lower spreads. These results, which are in line with those obtained by Santos (2013), suggest that small and short-term loans are mainly associated with debtors dealing with shortterm liquidity needs (thus supporting a higher-risk premium), while large and long-term loans are typically associated with investment projects, which are more likely to create value for companies and thereby reduce their risk in the future. The creditworthiness of the borrowers is controlled by including in the regression the credit risk class. Nevertheless, daily settlement data enable banks to perform a more up-to-date risk assessment of the credit and liquidity risk of the borrower. These results may also partly reflect the effect of State-guaranteed loans¹⁰, typically long-term loans, which were impossible to control based on the data available in the database;
- The existence of collateral seems to be associated with a larger spread, signalling that borrowers with collateralised loans would not be able to access bank loans without collateral and/or that the collateral is not sufficient to fully mitigate the higher risk of the borrowers. Santos (2013) also found a positive relationship between the pledging of collateral and higher interest rates.

- The renegotiation of the terms of a contract, even after controlling for the creditworthiness of the borrower, seems to be related to an increase in the spread, suggesting that the renegotiation of the credit contract is associated with an increased perception by banks of borrowers' default risk;
- The NFCs size and exporting activity have a negative relationship with the spread, i.e. larger firms or firms with exporting activity tend to pay a lower-risk premium than smaller companies and non-exporting firms. Empirical evidence suggests that, on average, larger and exporting companies have better economic and financial indicators and a lower ratio of credit overdue, which is consistent with a lower spread. It should be noted that larger companies usually have greater bargaining power than smaller companies as they can more easily access alternative sources of funding;
- Firms borrowing from a single bank in a particular year (a proxy for a single-bank relationship) tend to pay larger spreads than those borrowing from more than one bank. The number of credit relationships is thought to be associated with the creditworthiness of the borrower; however, the creditworthiness of the borrower is controlled by including the credit risk class as explanatory variable in the regression. This result is suggested by the economic theory that advocates that banks tend to develop an information monopoly, and thereby extract rents, from firms with a single-bank relationship;¹¹
- The coefficients on the credit risk classes show that firms with a higher risk of default, on average, face larger spreads. The results suggest a noteworthy differentiation of the spreads on different levels of firms' risk, confirming the importance of the financial and economic performance of the NFCs in the determination of the spread by banks;





 Finally, wholesale and retail trade and manufacturing sectors, ceteris paribus, seem to have benefited from lower spreads relative to other sectors, which is consistent with the better performance and lower ratios of credit overdue of these two sectors.

It is also important to emphasise that, if the spread is calculated as the difference between the interest rate on new loans and the monthly average interest rates on new deposits supported by the bank (i.e. assuming that banks finance new loans exclusively through retail deposits) the results do not differ significantly from those presented above.

In order to analyse the consistency of the risk differentiation throughout the period examined, Chart 5 presents the difference between the spreads of risk classes 2 and 3 and the spreads of risk class 1 (omitted), estimated as the marginal effect of the risk classes in each year. Chart 5 confirms a consistent risk differentiation of the firms' credit risk and also shows an increase in the differential between the spreads of higher-risk firms (risk class 3) and lower-risk firms. The chart also shows a stabilisation of the spread for intermediate-risk firms (risk class 2) since 2014. This last result suggests that the increased competition across banks for

average-risk loans does not seem to be leading to a decrease in the credit risk differentiation. In this sense, the econometric results confirm the evidence presented in Chart 3, which suggests that average spreads of risk class 1 and 2 have largely gone hand-in-hand since 2014.

Finally, it should be mentioned that, even though the results suggest that, on average, there is a consistent risk differentiation of the firms' credit risk by banks, a considerable heterogeneity may exist inside each credit risk class, which means that the results obtained for the average may not hold in the tails of the risk distribution. In the context of forthcoming analyses on this subject, an additional breakdown will be carried out of the credit risk classes.



Table 2 • Average marginal effects

Variable / Specification	Beta	Robust st. Errors
Log (amount, EUR millions)	-0.293***	0.002
Dummy (maturity)		
Between 1 and 5 years	-1.400***	0.012
Above 5 years	-1.485***	0.024
Dummy (collateral)	0.300***	0.008
Dummy (renegotiation)	0.335***	0.050
Dummy (exporting)	-0.299***	0.006
Dummy (single bank loans)	0.278***	0.005
Dummy (enterprise size)		
Small	-0.607***	0.007
Medium	-1.453***	0.008
Large	-1.676***	0.012
Head offices	-1.044***	0.126
Dummy (credit risk class)		
Credit risk class 2	0.635***	0.006
Credit risk class 3	1.391***	0.007
Dummy (economic activity sector)		
Construction and real estate	0.589***	0.010
Wholesale and retail trade	-0.214***	0.005
Transportation and storage	0.320***	0.018
Accommodation and food	1.033***	0.040
Consultancy, technical and administrative activities	0.569***	0.012
Other sectors	0.217***	0.014
Constant	2.861***	0.050
Number of observation	1,2	62,187
R ²		48%

Source: Banco de Portugal.

Note: ***, **, * indicates statistical significance at 1%, 5% and 10%, respectively. Bank and year dummies were included, but are not reported. Credit risk class 1, micro enterprises, manufacturing sector, and loans with a maturity below 1 year were not included to avoid perfect collinearity. For dummy variables, the coefficient represents the discrete change from the base category.

Conclusion

This Special issue presents the results of the analysis on the existence of risk segmentation on the new loans granted to NFCs from 2012 to 2016. The results confirm a consistent risk differentiation over the period examined, as firms with a higher risk of default, on average, faced higher-risk premium throughout the period. The results also suggest that the increased competition between banks for average-risk loans, signalled in the Bank Lending Survey, does not seem to have jeopardised the risk differentiation so far.

Although the risks to financial stability arising from an inadequate/suboptimal risk

segmentation in the credit granted to firms do not appear to be significant, the persistence of perverse incentives may lead to deviant behaviour by banks. The low interest rates environment and the strong competition for a scarce number of projects and firms may lead financial institutions to reduce spreads to levels that do not remunerate the risk taken adequately. To the extent that this decrease penalises institutions' profitability in the medium and long run, it may increase their vulnerability and, in that regard, will continue to be monitored within the assessment of the risks to financial stability.

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Notes

1. For more details on the Bank Lending Survey results, see: https://www.bportugal.pt/en/publications/banco-de-portugal/all/114.

2. Credit risk is measured by the Z-score estimated according to Antunes, A., Gonçalves, H., & Prego, P. (2016). "Firm default probabilities revisited", Banco de Portugal Economic Studies, Vol. 2, No. 2, April 2016.

3. For more details, see Banco de Portugal, *Economic Bulletin*, October 2017.

4. This database was set up based on statistical requirements set by the Instruction No. 20/2012 of Banco de Portugal (amended by Instruction No. 25/2014).

5. These institutions' share of the total new loans granted by MFIs to NFCs was always above 80% during the period considered. Their share on the stock of loans granted by the Portuguese financial system to NFCs was always above 75%.

6. For more details on the Z-score methodology, see Antunes, A., Gonçalves, H., & Prego, P. (2016). "Firm default probabilities revisited", Banco de Portugal Economic Studies, Vol. 2, No. 2, April 2016.

7. Instruction No. 25/2014 of Banco de Portugal set the statistical framework underlying the new loans granted by monetary financial institutions to residents in the euro area. See Table B.7.1.2 of *Statistical Bulletin* for the aggraded figures. Despite the aggregated data being available from 2003, the micro data used in this study are only available from June 2012.

8. Santos, C. (2013). "Bank Interest Rates on New Loans to Non-Financial Corporations – One First Look at a New Set of Micro Data", Banco de Portugal, *Financial Stability Report*, May 2013.

9. The average marginal effect gives the average response of all individuals. First, for each individual, the partial effect of each explanatory variable is estimated, with all other variables fixed at their observed values, being the average marginal effect obtained as the average of the partial effects of all individuals. Average marginal effect differs from the marginal effect at the mean, which gives the marginal effect of the "average" person in the sample, estimated by setting the values of all covariates to their means within the sample. Average marginal effect has the advantage of using all the data on the estimates, not just the means. The average marginal effects were estimated using the "margins" command in Stata (StataCorp., 2015). For further details on margins command and on average marginal effects method see Williams, R. (2012). "Using the margins command to estimate and interpret adjusted predictions and marginal effects." Stata Journal, Vol. 12, No. 2.

10. These type of loans are usually granted through the National Mutual Guarantee System.

11. For more details, see Greenbaum, S. I., Kanatas, G., & Venezia, I. (1989). "Equilibrium loan pricing under the bank-client relationship", Journal of Banking and Finance, 13(2), 221-235.

Banks Leverage Ratio – the Portuguese case

Overview

This special feature presents the new regulatory Leverage Ratio, which has been introduced as a complementary requirement to the risk-based capital requirement. According to the recent literature, using a multi country sample, the Leverage Ratio appears to be more counter-cyclical than risk-based capital ratios. Hence, even a static leverage ratio goes some way towards addressing pro-cyclicality during an upturn by operating as an automatic stabilizer, which ensures that capital moves in proportion with total exposure.

If an institution is subject to both risk sensitive and risk insensitive capital requirements, then at a given moment, which one is more constraining will depend, among other things, on the requirements per se and on the balance sheet structure of the institution, in particular on the risk weights attributed to each asset. Moreover, there is a specific average risk weight at which both requirements impose the same minimum capital quantum, which has been defined as the Critical Average Risk Weight (CARW).

Banking groups operating in Portugal, more specifically the largest seven, present an average risk weight above the CARW and, as such, risk weighted ratios will most likely remain the binding capital requirement. In this vein, the results presented in this document show that, at the moment, the leverage ratio minimum requirement will suffice to address the risk of excessive leverage and that the introduction of the leverage ratio in the macroprudential toolkit is not necessary, either as countercyclical or as a structural instrument. In particular, empirical analysis shows that, in contrast to existing studies in a cross-country setting, the counter-cyclicality of the Leverage Ratio does not outperform the one evidenced by the Tier 1 capital ratio in the Portuguese case.

Notwithstanding, it must be noted that if banks operating in Portugal augment their holdings of assets with low risk weights or change the approach to compute risk weights, translating into a significant reduction of their average risk weight, the LR could be an effective constraint. The LR could also be binding if the calibration was done at a significantly higher level than what is currently envisaged in Basel III.

Leverage ratio as a new regulatory requirement

The inclusion of the Leverage Ratio in the regulatory framework was one of the responses to the problems that surfaced in the most recent financial crisis, when it became clear that the capital held by financial institutions was insufficient or of insufficient quality to absorb the unexpected losses that stroke the sector, despite the fulfilment of other regulatory capital requirements at the time. One of the causes for this inconsistency stems from the fact that risk weights ascribed to the various asset categories might not be able to capture the true risk of assets. Against this background, the Basel Committee on Banking Supervision (BCBS) introduced a new regulatory Leverage Ratio (herein after LR). This measure aims at mitigating risks of excessive leverage, complementing the existing risk-based capital adequacy requirements. It was also considered a simple and transparent measure.

Some credit institutions reached historically high leverage levels in the years preceding the financial crisis, causing a high level of financial fragility. Empirical evidence from ten European countries shows that capital to asset ratios has been on a long-term decline (Benink and Benston (2005)). Starting with a capital to asset ratio of around 30% in 1850-1880, the average ratio declined to about 15% in 1915-1933, 7.5% in 1945, 5-6% through 2001 and around 3% just before the start of the financial crisis. This structural decline has been attributed to factors such as looser regulation, the increase in implicit government guarantees, the role played by large banks, and increased diversification.



In January 2014, the BCBS published the current definition of the LR. According to this definition the leverage ratio is computed as the ratio of bank's Tier 1 over the exposure measure. Tier 1¹ encompasses the same components as used in the regulatory capital. The exposure measure comprises (i) on-balance sheet assets (excluding financial derivatives and securities financing transactions (SFT))²; (ii) off-balance sheet items (OBS) weighted according to the respective probability of being converted into on-balance sheet assets; (iii) financial derivatives, including the replacement cost and the potential future exposure and (iv) Securities Financial Transactions (SFT), comprising balance sheet exposure and the counterparty credit risk. Netting between assets and liabilities is not permitted and risk mitigants (like collateral) are disregarded.

As noted, the aforementioned ratio, which is referred to as "regulatory leverage ratio" is different from the ratio commonly named as "leverage ratio" in finance. Indeed, the LR is the inverse of the financial leverage ratio: when financial leverage increases, the LR decreases, and vice-versa.

On 11 January 2016, the BCBS issued a press release informing about the agreement reached by its oversight body, the Group of Governors and Heads of Supervision (GHOS), according to which a minimum level of 3% for the LR, based on Tier 1 capital, would be required. It is expected to be applied from 1 January 2018 onwards. Furthermore, the GHOS discussed additional requirements for institutions which are systemically important at the global level (G-SIBs) and the details of such additional requirements have been part of a public consultation by the BCBS, even though the Committee has not yet released guidelines on this regard.³ The level of 3% was determined after years of careful monitoring of the LR following its introduction as part of Basel III in 2010.

At European level, the Capital Requirements Regulation and Capital Requirements Directive (CRR/ CRDIV) framework introduced the LR as a new prudential tool, together with related reporting and public disclosure obligations for institutions. In October 2014 the European Commission (EC) Delegated Act⁴ legally implemented the main features of the January 2014 BCBS LR definition, while maintaining the link to other parts of the European regulatory framework and other specificities.

Furthermore, the EC was mandated to elaborate a legislative proposal in order to implement the LR as a regulatory requirement, if considered appropriate. In order to inform the EC regarding this legislative proposal, the EBA was also mandated⁵ to elaborate a report, which should assess, inter alia, the effectiveness of the LR to contain the buildup of leverage in the financial system, the possible differentiation according to business models, expected effects on credit provisioning to the economy, risk taking by institutions and the cyclicality of the ratio and of its components.

The report was published by EBA⁶ on 3 August 2016. Briefly, the EBA recommends the imposition of a flat 3% LR minimum requirement, independent of the banks' business model. Furthermore, only G-SIBs and very large banks show a higher risk of excessive leverage, which would justify an additional LR requirement to the aforementioned 3%, in line with the BCBS GHOS statement. In November 2016, the EC has published a legislative proposal to implement a minimum LR, alongside risk based capital requirements.⁷

The leverage ratio as a complementary capital requirement

While the risk-based capital ratios limit risktaking incentives, the LR is a complementary requirement that sets a minimum capital to total exposure. Hence, it limits the overall balance sheet size for a given capital endowment. In order to achieve this, calibration needs to be determined ensuring that both approaches to capital regulation remain relevant.

In fact, risk-weighted capital requirements⁸ oblige banks to assign risk weights to their assets at a granular level, with the capital requirements being commensurate to the measured riskiness of each asset. Therefore, the more risk a bank takes, the more capital it must have, with a view to ensuring that banks have adequate capital to absorb potential losses. A risk-weighted approach to setting



capital requirements can also help to mitigate risk shifting incentives, whereby banks take on riskier portfolios to boost return on equity. As such, when risks are adequately measurable, risk-weighted capital requirements are indeed the best way to achieve the aim of the capital framework⁹.

However, as risk weighting relies on risks' estimation, there is a possibility that the assumptions underlying banks' risk models or the standardised approach are not satisfied in the real world¹⁰. More generally, models are simplifications of the real world and the ways in which they are simplified may lead to miscalibration (Daníelsson (2002)). In this sense, the LR can help to protect against "unknown unknowns".

As such, complementing risk-weighted capital ratios with a LR requirement gives banks better protection against uncertainties and risks that are hard to model compared with a standalone risk-weighted requirement (Morris and Shin (2008)). Beyond model risk and uncertainty, the fact that leverage ratios also place an absolute restriction on the size to which individual bank balance sheets can grow, for a given level of equity, may mean they are better suited to containing aggregate risk in the financial system. This feature may give better protection against losses which are rare but highly correlated across the system given that risk weights do not take account of these correlations. In other words, it could be stated that the LR might be able to counterbalance the effects of the miscalibration of risk weights.

The literature also shows that in environments characterised by complexity, small samples and uncertainties, simple indicators or metrics, such as the LR, sometimes outperform more complex, risk-weighted ones in offering robust protection against default (Aikman et al. (2014)).

In this regard, Gambacorta and Karmakar (2017), consider the two regulatory requirements in the realm of a medium sized dynamic stochastic general equilibrium (DSGE) model and show that the introduction of the LR over and above the risk weighted

requirements leads to a small loss in steady state levels of real variables but the benefits in terms of volatility reduction are quite substantial.

Leverage in a system wide perspective

While the LR requirement regards individual institutions, limiting the size of the balance sheet for a given capital endowment, it can additionally be considered in a system-wide perspective, as it also automatically reduces the build-up of leverage in the financial system in the upturn, creating a countercyclical automatic stabilizer that will reduce the economic costs associated with aggressive deleveraging in the downturn.

According to the literature, bank financial leverage also appears to behave cyclically. According to Adrian and Shin (2008), procyclical financial leverage can be seen as a consequence of the active management of balance sheets by financial intermediaries who respond to changes in prices and measured risk. In essence, when market asset prices rise and aggregate perception of risk is low, financing conditions are favourable and banks may have strong incentives to expand their balance sheets, particularly with recourse to very short term debt. In some circumstances, the rate of growth of the aggregate financial sector balance sheets can be understood as the supply of aggregate liquidity to the economy¹¹. Hence, the individual balance sheet management of financial intermediaries translates into credit growth (as more borrowers get credit when the banks' balance sheets expand) and credit crunches (when financial intermediaries need do reduce their balance sheet size).¹² Since the supply of credit increases, riskier projects might get financing. This dynamic is further enhanced by the existence of moral hazard, which arises due to limited liability, since banks' shareholders get only the upside of increasing risk taking and thus have an incentive for this behavior¹³. However, Berrospide et al. (2010) found modest effects of bank capital ratio changes on lending, considering that this transmission mechanism is not as straightforward as found by Adrian and Shin (2008).



By the same token, if banks' assets and liabilities management decisions are constrained by risk-adjusted regulatory capital adequacy requirements, the average capital requirement per unit of asset determines the balance sheet size. Hence, in the expansionary phase of the financial cycle, when volatility and risk weights are low, banks are able to increase their balance sheet size¹⁴ and the reverse occurs in the downturn. As such, if institutions deleverage simultaneously, curtailing the provision of credit to the economy, this will probably magnify the downswing of the business cycle.¹⁵

Relationship between the risk based and leverage based capital requirement

With the introduction of the LR as a capital measure, banks will be subject to both risk-weighted capital requirements and a LR requirement. However, it should be noted that, at a given point in time, an institution's capital requirement will either be determined by the risk-weighted requirement or by the LR requirement, whichever is the most demanding.

In the risk-weighted framework, capital requirements are commensurate to the measured riskiness of each asset, so that banks are required to fund riskier assets with more capital than safer assets. However, when model uncertainty is high (as in the IRB approach to risk weights) and there is a possibility of structural breaks, simple indicators such as the LR might outperform risk-weighting and better guard against the build-up of excessive leverage. Furthermore, when banks try to maintain a constant volume of risk-weighted assets through the cycle, banks' leverage will vary with it. In this context, a regulatory LR requirement may limit the cyclicality of bank leverage.16

On the other hand, the LR is insensitive to the riskiness of different assets and, if used on its own, it can create incentives for banks to increase risk taking and induce a shift of activities to less regulated sectors. This suggests that risk-weighted capital requirements and the LR can be very useful complements, as shown by recent empirical evidence¹⁷.

- The Critical Average Risk Weight (CARW)

If an institution is subject to both risk sensitive and risk insensitive requirements, then at a given point, which one is the more constraining will depend, among other things, on the requirements per se and on the balance sheet structure of the institution, in particular the risk weights attributed to different assets.

The ESRB handbook¹⁸, in the chapter dedicated to the macroprudential use of the LR¹⁹, focuses on the notion of an "overall balance in the regulatory framework", in particular the relationship between the LR requirement (non-risk based) and the risk weighted capital requirement (risk based), which will naturally be altered if one of the requirements changes. To assess this relationship, the concept of Critical Average Risk Weight (CARW) is developed²⁰.

As both ratios may be expressed in terms of Tier 1 capital in the numerator, they only differ in the denominator between using riskweighted assets (RWAs) or the LR exposure (which relates to total assets).

This implies that there is a relationship between the ratios, which is based on the bank's average risk weight across the portfolio. In particular, in a framework with both a LR and risk-weighted requirements, banks with low average risk weights will be constrained by the LR, while banks with high average risk weights will be constrained by the riskweighted requirement. The critical average risk weight (CARW) depends on the calibration of both requirements and, being the average risk weight for which both requirements are the same, marks the point at which the LR stops being the most stringent factor.

The CARW can be derived as the average risk weight, which equals the RW and LR capital requirements (equation 1). It should however be noted that this specification overlooks the fact that the RW capital requirement is based on exposure at default values and not total assets and that the LR capital requirement is based on the LR exposure measure and not total assets. Nevertheless, both measures relate to total assets and the additional complexity would not render additional value.
$$\begin{split} K^{RW} &= K^{LR} \Leftrightarrow RW_{req} \times \overline{RW} \times TA = LR_{req} \times TA \Leftrightarrow \overline{RW} = \\ \frac{LR_{req}}{RW_{ren}} \Leftrightarrow CARW = \frac{LR_{req}}{RW_{req}} \quad \ [1] \end{split}$$

Where:

- *K*^{*RW*} = Minimum *RW* capital requirement, *quantum*
- *K*^{*LR*} = Minimum *LR* capital requirement, *quantum*
- *RW_{req}* = Minimum *RW* capital requirement, percentage
- *LR*_{req} = Minimum *LR* capital requirement, percentage

 \overline{RW} = Average RW

TA = Total Assets

Hence, given a Tier 1 based LR minimum requirement of 3% and a Tier 1 based RW capital requirement of 8.5%, the CARW would be 35%. This means that a bank with an average risk weight on total assets below 35% would be constrained by the LR requirement.²¹

The macroprudential use of the leverage ratio

Macroprudential policy involves the differentiation of capital buffers across institutions (to address differences in their systemic relevance) and time (to address fluctuations in aggregate risk over the financial cycle). Hence, both a structural and a cyclical (time varying) perspective might be considered regarding the implementation of macroprudential measures.

In this light, it is possible to motivate a higher LR calibration for systemically important institutions (SIIs) as well as a variable calibration over time depending on the stage of the credit cycle.

The structural perspective focuses on the role of the LR in tackling systemic risks arising from misaligned incentives and "too big to fail" issues surrounding SIIs. In that regard, the LR may increase the resilience of large, complex and interconnected institutions against risks arising from limitations to internal models

(sometimes referred to as "model risk") and related uncertainties. Given that large and complex institutions are more likely to rely on internal ratings-based approaches to set risk-weighted capital requirements as well as internal trading book models, they may be more exposed to model risk.

In addition, one may argue that SIIs should be more resilient to reduce systemic risks posed in the event of their failure. Consequently, consideration should be given to match increases in risk weighted capital buffers for these institutions with increases in their LR requirements, which is in line with the recent statement from the GHOS regarding G-SIBs.

The cyclical perspective in the ESRB's addendum on LR focuses on the role of the LR in tackling systemic risks arising from excessive credit growth financed through leverage. A higher level of capital may help to mitigate deleveraging in a downturn, thus stabilizing the flow of credit to the economy. As aggregate risk fluctuates over time, the ESRB considers that capital requirements could also be varied over the cycle to ensure that banks remain sufficiently capitalized.

Also regarding the cyclical perspective, a static LR goes some way towards addressing procyclicality during an upturn by operating as an automatic stabilizer which ensures that capital moves in proportion with total exposure. However, aggregate risk varies over time and a static LR could, in principle, be further supported by active countercyclical use, whereby a buffer that is built up in exuberant times could help both to build resilience and to mitigate exuberance, with subsequent release when risks recede, or to help prevent harmful deleveraging when banks incur losses.

In addition, from both the structural and cyclical perspectives, imposing macroprudential riskweighted buffers without corresponding leverage requirements has no impact on banks that remain constrained by the LR. In the case where only risk-weighted capital surcharges are introduced for systemically important institutions, they might not need to take any

action (if the LR remains their more stringent constraint), or they could be given incentives to rebalance their portfolios towards lower risk-weighted assets (meaning that little or no extra capital would be needed to comply with the higher requirements). In the same way, if only countercyclical risk requirements are introduced for the sector as a whole, banks for which the minimum (static) LR remains the more stringent constraint would not be required to build-up additional capital buffers. This may be particularly the case in periods of exuberance, when typically risk weights are decreasing, and risk-weighted requirements may be easier to comply with. Moreover, the imposition of a risk-weighted countercyclical capital buffer may not sufficiently prevent excessive credit growth and expansion of banks' balance sheets, as banks could continue to grow by investing in low (and, in some cases, zero) risk-weighted assets. In this light, there is a sound case for counter-cyclical time-varying LR requirements.

– Calibrating a macroprudential leverage ratio There are various approaches to the calibration of macroprudential LR buffers. Like with risk weighted buffers, any macroprudential use of the LR should reflect national specificities and circumstances, including national credit cycles and structural differences across financial systems and institutions.

From a technical design perspective, however, the relationship between risk-weighted capital requirements and the LR offers the possibility of deploying a guide rule linking the two. As discussed above there is a relationship between the levels of LR and risk-weighted capital requirements in a regulatory capital framework that includes both – this can be summarized by the CARW. If either the risk-weighted capital requirement or the LR requirement is changed, the implied CARW also changes and the relative stringency of the two requirements is altered. Thus, when varying the calibration of either the risk weighted or LR requirement, it would be necessary to vary the other requirement in proportion to the CARW in order to preserve the same relative stringency of the two requirements, if the supervision authority considers that this is warranted.

Put simply, the CARW implied by the calibration of the minimum risk-weighted and LR requirements could act as a 'conversion factor' for risk-weighted buffers to determine LR buffers - an institution's LR requirement would be a constant proportion (e.g. the CARW) of its risk-weighted requirement at all times. It would still be the case that the higher of the two requirements would apply for all institutions at any time, and institutions would face a higher LR requirement when they face higher risk-weighted requirements. When compared with a discretionary approach, this 'guide rule' approach may be simpler to convey, may provide more certainty and transparency (including to banks), and may enhance the coherence of the capital framework overall.

But there are more discretionary approaches to the calibration of macroprudential LR add-ons. This may be advantageous when a conversion factor may not imply the most appropriate calibration depending on the macro-financial circumstances. A case-bycase approach could be most useful in taking time-invariant (non-cyclical) decisions like the imposition of systemic buffers (either riskweighted or leverage-based). Further, changes in the risk weight regime or underlying risk weights may give rise to a change in the relationship between the risk-weighted and un-weighted minimum requirements, providing reason to retain discretion to change the CARW by setting macroprudential leverage ratios independently of risk-weighted buffers. By the same token, the maintenance of a constant CARW may not be the only factor to determine time-varying leverage requirements and there can be circumstances in which macroprudential authorities put more emphasis on risks that could be addressed by either the risk-weighted or the LR framework. These advantages should be weighed against a somewhat more complex decision-making process and less predictability for institutions.

The case of the Portuguese Banking System

 The calibration of the leverage ratio: how does Portugal compare with the other European countries

The LR is a prudential capital requirement that has been introduced as a backstop to the riskweighted requirements. As such, the respective calibration has been evaluated in order not to be the most demanding requirement for the majority of the institutions²². In fact, throughout the observation period (2013-2017) the institutions that did not comply with the 3% minimum requirement have been converging towards it and one of the conclusions of the EBA report on the LR calibration is that only a small proportion of banks still does not comply with the requirement (around 9%). As such, the impact on the supply of credit to the economy is expected not to be significant given a minimum LR of 3%²³. However, the EBA impact analysis also concludes that the shortfall is very sensitive to calibration and that a requirement above 4% would trigger strong adjustments, either through capital increases or deleveraging.

Whether risk based or non-risk based are the most constraining depends on capital requirements, inter alia, on the (i) relative calibration of the requirements, (ii) the specific balance sheet of the institution and (iii) the models used to determine the risk weighted assets, including exposure at default amounts and specific portfolio RW.

The third aspect will not be developed in this article, but simulations with a theoretical portfolio have shown that different institutions obtain results which differ materially²⁴. Further, this has been one of the arguments to introduce the LR as a binding prudential requirement.

Considering equation 1, it is evident that when one of the requirements changes the relative stringency also changes, which can easily be assessed by changes in the CARW. *Ceteris paribus*, if the risk weighted requirements are increased the CARW ($\frac{LR_{req}}{RW_{req}}$) will automatically decrease, hence the number of institutions that are constrained by the LR requirement will also decrease. Furthermore, if an institution has a RW below the original critical level (CARW) and is constrained by the LR, then the increase in risk weighted requirement will not be effective (for instance, if there is excessive credit growth and the countercyclical capital buffer (CCB) is set above zero it would have no effect on LR constrained institutions).

It is also clear that each bank will have a different CARW since i) some institutions are subject to additional risk weighted requirements (G-SIBs; O-SIIs), ii) CCB requirements are institution specific²⁵ and iii) pillar 2 requirements are material.

The specific balance sheet of the institution will impact the average risk weight across portfolios and determine whether an institution will be above or below the CARW, thus defining if it is constrained by risk weighted capital requirements or by the LR. For instance, if all the assets of a bank were sovereign debt issued and funded in euros by EU central governments (zero risk weight for credit risk) then the average risk would be very low and below the CARW and the LR would be the binding requirement. ²⁶

In the EBA transparency exercise published in November 2015, with December 2014 as reference date, the major Portuguese banking groups that participated in the exercise (CGD, BCP, BPI) presented a LR clearly above 3%, with a weighted average of 6.2%, which compares with a weighted average of 4.7% for all European banks in the sample. In terms of ranking, Portuguese banks present the 6th highest average LR in a sample of 21 countries (Chart 1). ²⁷

On the other hand, regarding risk weighted requirements, Portugal ranked only 17th out of 21 countries in the Tier 1 capital ratio (Chart 2).

A key issue to understand these findings is the average risk weight (ARW) of the banks in the sample, by country. As can be observed in Chart 3, Portuguese institutions have one of the highest average risk weights (56.6%), well above the cross-country average of 34.5%.

It should also be stressed that this result is not specific to the reference date or even to the institutions in the sample. For a longer time series (2000-2012) the average risk weight of Portuguese banks has been higher than the ones presented by the European banks (Chart 4).





Chart 1 • Leverage ratio, by country, December 2014

Source: 2015 EBA transparency exercise. Note: Leverage ratio computed as the quotient between Tier 1 capital and Total Exposure (as defined in the section "Leverage ratio as a new regulatory requirement").

Chart 2 • Tier I capital ratio, by country, December 2014

20 18

16

14

12

10

30

20

10

0

Source: 2015 EBA transparency exercise. Note: Tier 1 capital ratio computed as the quotient between Tier 1 capital and Risk Weighted Assets.

Chart 3 • Average risk weight, by country, December 2014

Source: 2015 EBA transparency exercise (RWA) and SNL (Assets). Note: Average Risk Weight computed as the quotient between Risk Weighted Assets and Total Assets.

Chart 4 • Average risk weight (2000-2012)

Source: Bankscope. Note: Average Risk Weight computed as the quotient between Risk Weighted Assets and Total Assets.









8 6 4 2 0 90

80 70 60 50 40



 The Critical Average Risk Weight for Portuguese banks

At present, risk-based requirements for Portuguese banking groups consist in the 6% minimum (article 92 CRR) plus 1.25%²⁸ from the phasing in of the Capital Conservation Buffer plus pillar 2 requirements, which are institution specific and confidential. The Countercyclical Capital Buffer (CCB) is zero and the O-SII buffer will only enter into force in 2018 and, as such, for the time being, is also zero.

In 2021, the Capital Conservation Buffer will be at its steady state level of 2.5% and the defined O-SII buffers will be phased in. For illustrative purposes, it is assumed that the CCB will remain at zero since the indicators that would support a change in that buffer do not signal excessive credit growth ²⁹ and that the O-SII buffer is at 1% of RWA.³⁰ The simulation does not account for pillar 2 requirements and pillar 2 guidance. As a consequence, capital requirements are underestimated and the CARW is overestimated, which reinforces our conclusions.

Table 1 The CARW under different scenarios

	Minimum risk	mum risk Macroprudential based – Illustrative c		Total risk	Leverage	
	requirements	Max of O-SII	CCB rate	requirements	Ratio	CARVV
2016	6%+1.25%=7.25%	0%	0%	7.25%	3%	41%
2021	6%+2.5%=8.5%	1%	0%	9.50%	3%	32%

It should be noted that: (i) as expected, changes in one of the requirements materially change the CARW; ii) the relative stringency of the LR would decline with the phasing in of the Capital Conservation Buffer and iii) in both situations the CARW is below the average risk weight of the sample of Portuguese banks considered, even at present.

Cyclical Perspective

Pro-cyclicality refers to the mutually reinforcing mechanisms between the financial and real sectors of the economy which tend to amplify business cycle fluctuations and cause or exacerbate financial instability.³¹ Hence, a capital ratio can be deemed countercyclical if it tends to move in the opposite direction of the economic cycle. Additionally, it is also possible to analyze the cyclical properties of the ratio components.

If the countercyclical properties of a given capital ratio are assessed vis-à-vis those of

other capital ratios, the one that displays the strongest countercyclical properties will in general be the first to signal the need for corrective action. In this sense, it will be a tighter constraint in booms and a looser constraint in recessions.

The assessment of pro-cyclicality can be performed vis-à-vis different cycle indicators, like banks' total assets, the economic cycle or the financial cycle (e.g. proxied by the creditto-GDP gap). Naturally all those aggregates are interdependent, since banks' balance sheets expand when economic activity augments and the credit gap also tends to widen, although not necessarily in a simultaneous manner.

Brei and Gambacorta (2016) were the first to study empirically how the new LR (computed according to Basel III definition) behaves over the cycle.³² Their paper establishes an empirical framework to compare the cyclical properties of different capital ratios. The authors



conclude that the Basel III LR is significantly more countercyclical than the RW capital ratio: it is a tighter constraint in booms and a looser constraint in recessions. By introducing in their empirical specification a binary variable that accounts for the financial crises and the subsequent regulatory reform³³, the authors conclude that results are different in "normal times" as compared with the crisis period; all capital ratios tend to be less countercyclical (more pro-cyclical) during the crisis period.

In stylized terms, a weaker counter-cyclicality of the RW capital ratio can be imputed to the behavior of risk weights over the cycle. Asset prices tend to behave pro-cyclically, which increases total assets in good times and thus makes both the LR and the RW capital ratios counter-cyclical. However, in the case of the RW ratio, this effect can be mitigated by the fact that in good times risk weights tend to decrease, therefore dampening the increase in the ratio's denominator.

This section proposes a model that attempts to answer the following research questions:

- How do leverage and risk weighted capital ratios react to the business cycle in Portugal?
- Do they behave pro-cyclically or countercyclically?
- If both ratios are counter-cyclical, which one displays a highest degree of counter-cyclicality?

Based on Brei and Gambacorta (2016) the following model is specified:

 $L_{it} = \alpha_i + \beta L_{it-1} + \gamma Y_t + \theta R_t + + \delta X_{it-1} + \varepsilon_{it}$

The dependent variable, L_{it} is the capital ratio in year t, of bank i. Three definitions of capital ratio are tested: the Basel III LR (computed as the quotient between Tier 1 capital and total exposure); the accounting leverage ratio (ALR calculated as the ratio of Tier 1 capital to total assets) and the capital-to-risk-weighted-assets ratio (defined as the ratio of Tier 1 capital to riskweighted assets). a_i is bank fixed effects; The inclusion of L_{it-1} acknowledges the persistence in capital ratios, that is to say, the existence of short term adjustment costs to raise capital; Y_t is the explanatory variable related to the business cycle (growth rate of real GDP);³⁴ R_t is a dummy variable that accounts for changes in banks' behaviour due to more stringent capital requirements, taking the value of one from 2009Q3 onwards.³⁵ Finally, X_{it-1} is a vector of bank-specific control variables, which are typically used in studies that explain banks' choice of target capital ratios: **Size**_{it} accounts for banks' size, measured by the log of total assets; **ROA**_{it} is the return on assets, which measures banks' profitability; and **Risk**_{it}, computed as the standard deviation of the last three periods of ROA, measures the relative riskiness of the bank³⁶.

The dataset comprises quarterly data from 2000Q4 to 2014Q1 for the 7 largest banking groups operating in Portugal. Considering that the System GMM estimator is better suited to panels with small T and large N³⁷ which is not the case of the panel used in this article, the estimation was based on the model with a fixed-effects and IV fixed-effects estimators.³⁸

Taking into account two studies that analyze the possible counter-cyclical nature of Basel III LR, developed by Brei and Gamabacorta (2016) and adapted in EBA (2016), it is expected that the LR shows, at least slightly, a higher counter-cyclical behavior, when compared with risk-based capital ratio (Tier 1 ratio).

The results depicted in Table 2 evidence that both Basel III LR and Tier I ratio are countercyclical. However, contrary to what was expected (compared with EBA and Brei and Gambacorta's results – see Table 3), the Tier 1 ratio shows a slightly higher countercyclical behavior than the LR. Economically speaking, the table shows that an increase of 1 percentage point in GDP growth decreases the LR by two basis points. In the other hand, the impact of the same change in GDP reduces the Tier 1 ratio in three basis points.

In order to enhance the comparison between our results and the ones set out in Brei and Gambacorta (2016) and EBA (2016) a model using the system GMM estimator was performed. The results outlined in Table 4 point to a slightly more counter-cyclicality of LR and ALR than the Tier 1 capital ratio, given





In sum, the results outline that, in Portugal, both Basel III LR and the Tier 1 ratio are counter-cyclical. Indeed the former ratio does not outperform the latter in a consistent and robust manner. Therefore, it can be concluded that the differences between them in the way they react to the cycle are only of secondorder importance. As referred in section "The calibration of the leverage ratio: how does Portugal compare with other European countries", Portuguese banks mainly use the standard approach instead of the internal rating based method, which limits the response of risk weights to the economic cycle. ⁴⁰

To understand the difference between the results obtained for Portugal and those from previous studies, it is useful to disentangle the effects of the business cycle on the numerators and denominators of the Tier 1 capital ratio and Basel III LR. In order to perform this exercise the dependent variable in model 1 is replaced with Tier 1 growth, Exposure growth⁴¹ and RWA growth using all the estimators mentioned before (System GMM, Fixed-Effects and IV Fixed-Effects). Growth rates were chosen to avoid the problem of spurious regressions, given that the log of those variables is non-stationary.

Table 6 sheds some light on the differences between our results and those obtained by the other studies. While in our sample the procyclicality of RWA growth and Exposure growth is quite similar (except for IV fixed-effects), in the study carried out by the EBA (and, to a smaller extent, in Brei and Gambacorta (2016)) the Exposure measure outperforms RWA in terms of pro-cyclicality (Table 7). As both ratios share Tier 1 as the numerator, the relative pro-cyclicality of the denominators will define the countercyclical properties of the ratios.

Additionally, in order to test if the variable chosen to represent the cycle (the growth rate of real GDP) is adequately capturing the time-varying effects which are common to all banks, the re-estimation of equation 2 has been done, replacing the cyclical variable with time-fixed effects. Both for the LR and the capital-to-risk-weighted-assets ratio as dependent variables, it turns out that the variable chosen to characterize the cycle is well correlated with the coefficients of time fixed effects, suggesting that the growth rate of real GDP is capturing in an adequate manner the evolution of the cycle.⁴²

To conclude this section, it is worth acknowledging that the empirical analysis performed above uses a much smaller sample of banks than the EBA and Brei and Gambacorta studies. Moreover, due to data limitations, this analysis also covers a shorter time period than Brei and Gambacorta (2016), which undermines the ability to capture the cyclical behavior of any indicator. Moreover, it was on the downturn phase of the cycle that banks were required to rise regulatory risk weighted capital ratios, which continued to be the binding requirement for Portuguese banks.

	Leverage Ratio		Tier	1 Ratio	Accounting Leverage Ratio		
	Fixed- Effects	Instrumental Variable Fixed-Effects	Fixed- Effects	Instrumental Variable Fixed-Effects	Fixed- Effects	Instrumental Variable Fixed-Effects	
Dependent Variable _{r 1}	0.835***	0.839***	0.888***	0.891***	0.820***	0.824***	
ei.	(0.03)	(0.029)	(0.030)	(0.027)	(0.022)	(0.019)	
Y _t	-0.022*	-0.012	-0.030*	-0.038	-0.023**	-0.004	
	(0.012)	(0.014)	(0.017212)	(0.026)	(0.010)	(0.018)	
R _t	0.001	0.001	0.003**	0.003**	0.001*	0.001*	
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	
Size _{t-1}	0.003**	0.003**	0.003	0.002	0.003**	0.004**	
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	
Roa _{t-1}	0.609**	0.624**	0.878**	0.924**	0.659***	0.665***	
	(0.260)	(0.267)	(0.372)	(0.428)	(0.243)	(0.252)	
Risk _{t-1}	2.085***	2.247***	3.447***	3.685***	2.187***	2.348***	
	(0.348)	(0.353)	(0.889)	(0.933)	(0.346)	(0.33)	
Observations	351	351	351	351	351	351	
R-squared (within)	0.875	0.874	0.919	0.919	0.867	0.865	
Number of banks	7	7	7	7	7	7	

Table 2 • Results from a set of dynamic panel data regressions (Fixed-Effects andInstrumental Variables Fixed-Effects

Notes: Bootstrap standard errors in parentheses. *** p<0.01. ** p<0.05. * p<0.1. LR stands for Basel III LR which is computed as the quotient between Tier 1 capital to total exposure (as defined in the section "Leverage ratio as a new regulatory requirement"); Tier 1 Ratio is calculated as Tier 1/Risk-weighted assets; ALR stands for accounting LR which is calculated as the ratio of Tier 1 capital to total assets; Dependent variable_{t-1} acknowledges the persistence in capital ratios, that is to say, the existence of short term adjustment costs to raise capital; Y₁ is the cycle explanatory variable (measured by the growth rate of real GDP); Rt is a dummy variable that accounts for changes in banks ' behaviour due to more stringent capital requirements; Size t-1 accounts for banks ' size, measured by the log of total assets; ROA_{t-1} is the return on assets, which measures banks profitability and Risk_{t-1} is computed as the standard deviation of the last three periods of ROA, measuring the relative riskiness of the bank. In IV Fixed-Effects estimator this variable is instrumented by European Union (28) real GDP ' s growth.

Table 3 • Comparison between the results obtained in this document and the ones outlinedby Brei and Gambacorta (B&G) and EBA

	Leverage Ratio			Tier 1	Ratio		Accounting Leverage Ratio		
	Banco de Portugal	EBA	B&G	Banco de Portugal	EBA	B&G	Banco de Portugal	EBA	B&G
Y _t	-0.022*	-0.101***	-0.052**	-0.030*	-0.05	-0.045	-0.023**	-0.067*	-0.039
	(0.012)	(0.030)	(0.026)	(0.017)	(0.034)	(0.037)	(0.010)	(0.040)	(0.032)





	Leverage Ratio	Tier 1 Ratio	Accounting Leverage Ratio
Dependent Variable _{t-1}	0.818***	0.865***	0.796***
	(0.030)	(0.027)	(0.027)
Y _t	-0.022*	-0.028	-0.023**
	(0.012)	(0.019)	(0.011)
R _t	0.001	0.003*	0.002*
	(0.001)	(0.002)	(0.001)
Size _{t-1}	0.003**	0.005***	0.003**
	(0.001)	(0.002)	(0.002)
Roa _{t-1}	0.618***	0.726*	0.650***
	(0.211)	(0.395)	(0.230)
Risk _{t-1}	2.136***	3.489***	2.298***
	(0.261)	(0.767)	(0.259)
AR (2) test (p-value)	0.416	0.331	0.497
Observations	351	351	351
Number of banks	7	7	7

 Table 4 • Results from a set of dynamic panel data regressions (System GMM)

Notes: Robust standard errors in parentheses. *** p<0.01. ** p<0.05. * p<0.1. LR stands for Basel III LR which is computed as the quotient between Tier 1 capital to total exposure (as defined in the section "Leverage ratio as a new regulatory requirement"); Tier 1 Ratio is calculated as Tier 1/Risk-weighted assets; ALR stands for accounting LR which is calculated as the ratio of Tier 1 capital to total assets; Dependent variable_{t-1} acknowledges the persistence in capital ratios, that is to say, the existence of short term adjustment costs to raise capital; Y₁ is the cycle explanatory variable (measured by the growth rate of real GDP); Size_{t-1} accounts for banks ' size, measured by the log of total assets; R₁ is a dummy variable that accounts for changes in banks ' behaviour due to more stringent capital requirements; ROA_{t-1} is the return on assets, which measures banks ' profitability and Risk_{t-1} is computed as the standard deviation of the last three periods of ROA, measuring the relative riskiness of the bank. The lagged dependent variables and Y₁ are instrumented by their lags using System GMM estimator.

Table 5 • Comparison between the results obtained in this document and the ones outlinedby Brei and Gambacorta (B&G) and EBA

	Leverage Ratio			Tier 1	Ratio		Accounting Leverage Ratio		
	Banco de Portugal	EBA	B&G	Banco de Portugal	EBA	B&G	Banco de Portugal	EBA	B&G
Y _t	-0.022*	-0.101***	-0.052**	-0.028	-0.05	-0.045	-0.023**	-0.067*	-0.039
	(0.012)	(0.030)	(0.026)	(0.019)	(0.034)	(0.037)	(0.011)	(0.040)	(0.032)

Table 6 • Results from a set of dynamic panel data regressions - Disentangle the effectsof the business cycle on the numerators and denominators of the Tier 1 capital ratio andBasel III LR

	Tier	1 Growth	R	WA Grow	th	Exposure Growth		
	Fixe- Effects	Instrumental Variable Fixed-Effects	Fixed-Effects	GMM	Instrumental Variable Fixed-Effects	Fixed- Effects	Instrumental Variable Fixed-Effects	
Dependent Variable	-	-	0.258***	0.220***	0.250***	-	-	
t-1	-	-	(0.056)	(0.055)	(0.046)	-	-	
Y _t	-0.130	-0.027**	0.207***	0.219***	0.456***	0.223***	0.09	
	(0.182)	(0.011)	(0.073)	(0.074)	(0.159)	(0.079)	-0.138	
R _t	-0.027**	0.054**	-0.015	-0.0126	-0.017**	-0.012*	-0.013*	
	(0.011)	(0.024)	(0.001)	(0.008)	(0.007)	(0.007)	-0.007	
Size _{t-1}	0.041**	8.632***	0.005	0.001	0.015*	-0.007	-0.009	
	(0.018)	-2.436	(0.009)	(0.011)	(0.008)	(0.011)	-0.011	
Roa _{t-1}	8.831***	35.813***	0.090	1.630	-0.175	0.049	-0.054	
	-2.473	-7582	-1.352	-1.910	-1.242	-1.115	-1.118	
Risk _{t-1}	32.453***	-0.027**	2.986*	5.423**	4.756**	1.426	0.373	
	-8435	-0.011	-1701	-2560	-1861	-2314	-2006	
AR (2) test (p-value)	-	-	-	0.459	-	-	-	
Observations	351	351	321	321	321	351	351	
R-squared (within)	0.113	0.115	0.20	-	0.21	0.07	0.09	
Number of banks	7	7	7	7	7	7	7	

Notes: Bootstrap standard errors in parentheses. *** p<0.01. ** p<0.05. * p<0.1 except for GMM which presents robust standard errors. Tier 1 growth is calculated as the difference between Tier 1 in period n and Tier 1 in period n-1, RWA growth is computed as the difference between RWA in period n and RWA in period n-1; Exposure growth is calculated as the difference between the exposure in period n and the exposure in period n-1; Dependent variable, acknowledges the persistence in RWA; Y₁ is the cycle explanatory variable (measured by the growth rate of real GDP); R₁ is a dummy variable that accounts for changes in banks r behaviour due to more stringent capital requirements; Size, accounts for banks r size, measured by the log of total assets; ROA₁ is the return on assets, which measures banks r profitability and Risk₁ is computed as the standard deviation of the last three periods of ROA, measuring the relative riskiness of the bank. The Lagged dependent variables and Y₁ are instrumented by their lags using the system GMM estimator whereas in IV Fixed-Effects model the latter variable is instrumented by European Union (28) real GDP r s growth. The table only presents GMM estimator in the case of RWA growth given that is the one whose dependent variable shows persistency.

Table 7	Differences between	the results	obtained	in this	document	and the	ones	outlined
by Brei ai	nd Gambacorta (B&G)	and EBA						

		Tier 1	Growth			RW	/A Growt	h		E	xposur	e Growt	:h
	Fixed-Effects	Instrumen- tal Variable Fixed-Effects	"EBA GMM"	"B&G GMM"	Fixed-Effects	GMM	Instrumen- tal Variable Fixed-Effects	"EBA GMM"	"B&G GMM"	Fixed-Effects	Instrumen- tal Variable Fixed-Effects	"EBA GMM"	"B&G GMM"
Y _t	-0.13	-0.027**	-0.008**	0.948	0.207***	0.219***	0.456***	0.005	1.375**	0.223***	0.09	0.008***	1.442***
	(0.182)	(0.011)	(0.004)	(0.597)	(0.073)	(0.074)	(0.159)	(0.004)	(0.545)	(0.079)	(0.138)	(0.003)	(0.514)

Structural Perspective

According to the structural perspective, the Basel III LR might be a useful tool to mitigate "moral hazard" issues linked to systemically important institutions. Therefore, by imposing a higher LR on the largest banks, the policy maker aims to reduce the probability of failure of those systemically important institutions, avoiding the huge economic costs of their distress. Moreover, it is often considered that larger banks are more willing to rely on internal models to compute risk weights (IRB approach), exposing these institutions to model risk, which can be mitigated by the use of the LR as a macroprudential tool.

This section attempts to answer the following questions:

- Do Portuguese banks' Basel III leverage and risk-based capital ratios vary with either bank size or the model used to compute risk weights?
- Does the risk-based capital ratio (Tier 1) of IRB banks present a less counter-cyclical behavior than that of the remaining banks?

In order to answer the first question, the sample is split into two types of banks, those

eligible for group one in QIS (G1 - banks whose Tier 1 capital stands above or equal 3 billion euros with international activity summing up 3 banks) and the remaining ones (G2 – 4 banks). Banks are also split between IRB banks and SA banks. Hypotheses tests are then performed for the mean (Tables 8 and 9).

Concerning whether Basel III leverage and risk-based capital ratios vary, either with bank size or with the model used to compute risk weights, Tables 8 and 9 show that G1 banks present a lower LR, when compared with smaller banks, but also a lower Tier 1 capital ratio. As a result, it cannot be concluded that larger banks actively target risk-based capital ratios. Therefore, the increase of the LR for systemically important institutions can be obtained, indirectly, through the imposition of risk-based capital buffers, as is the case, in Portugal, of O-SII capital buffers.

A similar conclusion holds for the comparison between banks using SA and banks using IRB to compute their minimum capital requirements. As shown in both tables, IRB banks have, both, lower LR and lower Tier 1 capital ratios vis-à-vis banks that use the SA.

	OBS	Mean		OBS	Mean
Size			Approach used to compute RWA		
G1	162	0.049	Padrão	366	0.053
G2	216	0.055	Notações Internas	12	0.049
Difference (p-value)		0	Difference (p-value)		0.0148

Table 8 • Hypothesis Tests – Leverage Ratio

Table 9 • Hypothesis Tests – Tier 1 Capital Ratio

	OBS	Mean		OBS	Mean
Size		Approach used to compute RWA			
G1	162	0.079	Padrão	366	0.089
G2	216	0.091	Notações Internas	12	0.074
Difference (p-value)		0	Difference (p-value)		0.0041

To address the second question, an econometric model similar to the one presented before was estimated, including an IRB dummy and the interaction of this dummy with the cyclical measure (real GDP growth) – Table 10.

Regarding question 2, Table 10 shows that the cyclicality of the Tier 1 capital ratio and RWA of banks using IRB are not statistically different from the SA banks.

Table 10 •	Assessment of the	pro-cyclicality of Tier 1	Capital ratio and RWA	growth for IRB banks
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	Tier 1 Capital Ratio			RWA Growth			
	Fixed- Effects	GMM	Instrumental Variable Fixed-Effects	Fixed- Effects	GMM	Instrumental Variable Fixed-Effects	
Dependent Variable _{t-1}	0.889***	0.860***	0.887***	0.254***	0.189***	0.243***	
	(0.030)	(0.033)	(0.029)	(0.050)	(0.049)	(0.047)	
Y _t	-0.031*	-0.030	-0.038	0.206***	0.224***	0.475***	
	(0.019)	(0.018)	(0.029)	(0.075)	(0.081)	(0.164)	
R _t	0.003*	0.003	0.003*	-0.013	-0.011	-0.015*	
	(0.002)	(0.003)	(0.002)	(0.008)	(0.009)	(0.008)	
Size _{t-1}	0.003	0.005**	0.002	0.001	-0.001	0.012	
	(0.002)	(0.002)	(0.003)	(0.010)	(0.013)	(0.009)	
Roa _{t-1}	0.877**	0.684*	0.908**	0.166	2049	-0.061	
	(0.423)	(0.413)	(0.400)	-1202	-1978	-1115	
Risk _{t-1}	3.438***	3.364***	3.410***	3.090*	5.644*	5.079***	
	(0.931)	(0.658)	(0.914)	-1661	-2927	-1764	
IRB	0.000	-0.000	-0.038	0.008*	0.007	0.017	
	(0.002)	(0.002)	(0.029)	(0.004)	(0.006)	(0.014)	
IRB*Y _t	0.096	0.117	0.531	0.186	0.029	0.832	
	(0.126)	(0.124)	(0.410)	(0.667)	(0.630)	-1639	
AR (2) test (p-value)	-	0.345	-	-	0.4476	-	
Observations	351	351	351	351	351	351	
R-squared (within)	0.920	-	0.920	0.206	-	0.214	
Number of banks	7	7	7	7	7	7	

Notes: Bootstrap standard errors in parentheses. *** p<0.01. ** p<0.05. * p<0.1 except for GMM which presents robust standard errors. Tier 1 is computed according to the regulatory framework; RWA growth is computed as the difference between RWA in period n and RWA in period n-1; Dependent variable, acknowledges the persistence in Tier 1 Capital Ratio and RWA Growth; Y, is the cycle explanatory variable (measured by the growth rate of real GDP); R, is a dummy variable that accounts for changes in banks' behaviour due to more stringent capital requirements; Size¹¹ accounts for banks' size, measured by the log of total assets; ROA, is the return on assets, which measures banks' profitability; Risk, is computed as the standard deviation of the last three periods of ROA, measuring the relative riskiness of the bank; and IRB is a dummy variable that assumes the value of 1 if the bank uses IRB to compute its risk weighted assets and 0 otherwise. In the GMM estimator the Lagged dependent variables and Y, are instrumented by their lags and in IV Fixed-Effects estimator this variable is instrumented by European Union (28) real GDP 's growth.

As referred above, the introduction of the LR in the macroprudential toolbox can be used either as a countercyclical or as a structural instrument if it proves to be useful to mitigate the risks stemming from banks´ excessive balance sheet´s growth in the upswing of the business cycle, as well as the risks that derive from the miscalibration and pro-cyclical nature of the models behind the computation of risk weights, in particular regarding the banks that use IRB models.

In this vein, according to the results presented in this paper, the introduction of the LR as a microprudential requirement, with no associated macroprudential use, is, for the time being, considered as sufficient to mitigate excessive leverage in the financial system.
Special issues

Conclusions

This special topic comprises an assessment of whether the Basel III LR would be binding for Portuguese banks by computing their Critical Average Risk Weight (CARW). Additionally, it presents a number of univariate and multivariate analyses to gauge to what extent the cyclical and structural perspectives of using the LR as a macroprudential instrument hold for Portugal.

The available evidence shows that the largest Portuguese banking groups have an average risk weight substantially above the CARW and, as such, risk weighted ratios will most likely remain the binding capital requirement.

Furthermore, empirical results give support to conclude that: i) contrary to the most recent studies based on a multi-country sample, in Portugal the counter-cyclicality of LR does not outperform the one of the Tier 1 capital ratio (risk-based capital ratio); and ii) larger and IRB banks present a lower LR, when compared with, respectively, smaller and SA banks, but also a lower Tier 1 capital ratio. As a result, no evidence could be found that those banks actively target risk-based capital ratios.

Therefore, the introduction of the LR as a microprudential requirement, with no associated macroprudential use, is, for the time being, considered as sufficient to mitigate excessive leverage in the financial system.

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Annex: Variables' descriptive statistics

	Obs	Mean	Std.Dev.	Min	Max
LR	378	0.0525	0.1093	0.0304	0.0824
Tier 1 Ratio	378	0.0855	0.21	0.0495	0.1623
ALR	377	0.0567	0.0112	0.0347	0.0862
Y _t	378	0.0019	0.0209	-0.0414	0.0441
Assets	378	47,133	31,316	6,694	120,389
ROA	372	0.0011	0.0017	-0.0097	0.0044
Risk	358	0.0006	0.0008	0.0002	0.0049

Notes: LR stands for Basel III Leverage ratio which is computed as the quotient between Tier 1 capital to total exposure; Tier 1 Ratio is calculated as Tier 1/Risk-weighted assets; ALR stands for accounting leverage ratio which is calculated as the ratio of Tier 1 capital to total assets; Y₁ is the cycle explanatory variable (the I growth rate of real GDP); Assets stands for banks [′] total liquid assets (in million euros); ROA is the return on assets, which measure the direct cost of remunerating capital and Risk is computed as the standard deviation of the last three periods of ROA, measuring the relative riskiness of the bank.

List of Abbreviations

ALR - Accounting Leverage Ratio

- CARW Critical Average Risk Weight
- CCB Counter-Cyclical Capital Buffer
- CRD Capital Requirements Directive
- CRR Capital Requirements Regulation
- ESRB European Systemic Risk Board
- GHOS Group of Governors and Heads of Supervision

G-SIBs - Global Systemically Important Banks

- IRB Internal Rating Based approach
- LR Basel III Leverage Ratio

RW - Risk Weights

- RWA Risk Weighted Assets
- SA Standard Approach
- SIIs Systemically Important Institutions

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Notes

1. Tier 1 consists of Common Equity Tier 1 (CET 1) plus other instruments eligible to be included in the Additional Tier 1 category.

2. Derivatives and SFT exposure are included in the exposure measure applying specific rules, in order to overcome differences in accounting systems and ensure a comparable LR across jurisdictions. In particular, as a first step, any netting due to the consideration of collateral and other risk mitigation techniques is reversed. In a second step, the specific rules regarding the computation of the LR exposure measure are applied.

3. http://www.bis.org/bcbs/publ/d365.htm.

4. Commission Delegated Regulation (EU) 2015/62 of 10 October 2014 amending Regulation (EU) No. 575/2013 of the European Parliament and of the Council with regard to the leverage ratio.

5. Article 511 CRR.

6. http://www.eba.europa.eu/-/eba-recommends-introducing-the-leverage-ratio-in-the-eu.

7. The legislative proposal regarding the introduction of a minimum leverage ratio requirement is encompassed in the overall package concerning the review process of CRR/CRD IV.

8. Risk weights are computed using either a standardised risk-weighting approach set by the regulator (the standardised approach) or through use of a bank's own internal risk-weighting models based on the bank's historical experience (the internal ratings based (IRB) approach).

9. Gordy (2003).

10. Uncertainty and the possibility of structural breaks mean that the distributions of PD and LGD might not be fully known for certain types of exposure.

11. Adrian and Shin (2008).

12. Adrian and Shin (2008).

13. Merton (1973) derives the same conclusion by using option pricing to the value of an enterprise with a strike price equal to its debt.

14. This argument is akin to Adrian and Shin (2013), which explores the link between the value-at-risk (VaR) per unit of capital disclosed by banks and their leverage fluctuations.

15. If risk weights are calculated using the 'through the cycle' approach (as in Basel III), they are expected to be less procyclical than the formerly used 'point in time' estimates.

16. Adrian and Shin, 2008; Baglioni et al., 2011 and Becalli et. al., 2014.

17. Grill, M., Lang, J.H., and Smith, J., "The impact of the Basel III leverage ratio on risk-taking and bank stability", ECB Financial Stability Review, Special Feature, November 2015.

18. ESRB Handbook on Operationalizing Macroprudential Policy in the Banking Sector. Handbook available at: https://www.esrb.europa.eu/pub/pdf/ other/140303_esrb_handbook_mp.en.pdf?4e2022c21a736ff4ca6a1eaf0085dd78.

19. Chapter available here: https://www.esrb.europa.eu/pub/pdf/other/150625_esrb_handbook_addendum.en.pdf.

20. This approach is akin to the Bank of England Financial Policy Committee's review of the leverage ratio: http://www.bankofengland.co.uk/financialstability/Pages/fpc/fscp.aspx.

21. The 8.5% risk based capital requirement corresponds to the minimum Tier 1 requirement plus the fully phased in Capital Conservation Buffer.

22. In this context, the leverage ratio is deemed constraining if it is the most demanding capital requirement. It is deemed binding if it will imply that the bank does not have enough capital to comply with the requirement.

23."The analysis suggests that the potential impact of introducing a LR requirement of 3% on the provision of financing by credit institutions would be relatively moderate, while, overall, it should lead to more stable credit institutions".

24. https://www.eba.europa.eu/risk-analysis-and-data/review-of-consistency-of-risk-weighted-assets.

25. For a description of the institution specific countercyclical capital buffer, please see the Banco de Portugal *Financial Stability Report* of November 2016, Box 1.

26. Indeed that is what happens, inter alia, with Public Development banks in France and Germany, which hold large portfolios of exposures that are guaranteed by the Government.

27. There was a more recent transparency exercise published in December 2016 but it did not include an analysis of LR.

28. http://www.bportugal.pt/pt-PT/EstabilidadeFinanceira/MedidasMacroprudenciais/ReservaConservacao/Paginas/default.aspx.

29. http://www.bportugal.pt/pt-PT/EstabilidadeFinanceira/MedidasMacroprudenciais/ReservaContraciclica/Paginas/inicio.aspx.

30. http://www.bportugal.pt/pt-PT/EstabilidadeFinanceira/MedidasMacroprudenciais/ReservaOSII/Paginas/inicio.aspx.

31. Financial Stability Forum, 2009

32. The authors use data from 14 countries for the period 1994-2012, including nine countries from the European Union, but do not include data for Portuguese banks. There was other study, published by EBA, which has used the same model and has obtained almost the same results as Brei and Gambacorta (2016) but was focused on European countries, including a Portuguese sample, and the period 2000-2014. This assessment is part of the EBA Report on the leverage ratio requirements under Article 511 of the CRR.

33. This variable takes the value 1 for the period 2008-2012 and zero in all the other years.

34. Other variables that could represent the cycle were tested, such as the annual growth rate of quarterly nominal GDP and the credit-to-GDP gap, which did not materially change the results obtained in this document.



35. The quarter when the recommendation by Banco de Portugal to increase capital ratios entered into force, opening a period of successive new recommendations and notices aiming at strengthening banks ´ resilience. Please note that this dummy largely coincides with a possible "crisis dummy" and also with the introduction of changes to the regulatory framework. As noted, the interaction between this dummy variable and the other explanatory variables as outlined by Brei and Gambacorta (2016) is not presented in this analysis. Nevertheless, the inclusion of these interactions have been test but they showed up as non-statistically significant.

36. The proxy for specific bank risk taking in Brei and Gambacorta (2016) is the standard deviation of the percentage change in market value of assets.

37. According to Roodman (2009) if T is large relatively to N the bias associated to the lag of dependent variable becomes insignificant and a more straightforward fixed-effects estimator works.

38. In the IV fixed-effects estimators the real GDP growth rate for Portugal is instrumented by European Union (EU28) real GDP growth rate.

39. Moreover the coefficients from the GMM model used suffer from over identification due to the high number of instruments (lags of the endogenous variables) when compared with the number of variables.

40. However, even in using the internal rating based method, if risk weights are calculated using the 'through the cycle' approach (as in Basel III), they are expected to be less pro-cyclical than the formerly used 'point in time' estimates.

41. Table 6 only presents GMM estimator in the case of RWA growth given that is the one whose dependent variable shows persistency.

42. For the sake of brevity, these results were not shown.



