

3. The Banking Activity in Portugal in the context of EU

3.1. The Economic and Financial Adjustment Program in the Banking Sector

EFAP

- **Period: 2011-2014**

- **2 major quantitative goals:**
 - (i) stronger capital requirements for Portuguese banks: CT1 ratio $\geq 10\%$ (from end of 2012; 9% end of 2011), including a bank solvency support facility amounting to 12 B€;

 - (ii) deleveraging process: credit/deposits ratio $\leq 120\%$ by 2014.

EFAP

- In order to ensure the asset and capital quality, several inspection programs were launched, focusing mostly on the assessment of impairments' calculations, but also on risk-weighted assets:
 - (i) Special Inspections Programme (SIP) - 2011
 - (ii) On-site Inspections Programme (OIP) – 2Q2012
 - (iii) 2nd OIP (ETRICC) – July 2013
 - (iv) 3rd OIP (ETRICC2) – March 2014

SIP

- **3 workstreams (WS):**

- **WS1 – Valuation of the credit portfolio**, as of 30 June 2011, based on the analysis of the impairment for a sample a credits, as well as on the **review of the adequacy of the collective impairment models and related credit risk management policies and processes;**
- **WS2 – RWA**
- **WS3 – Stress tests**

- Performed by auditing companies hired by the Bank of Portugal, different from each bank's external auditor.

SIP

- Risk management policies, procedures and controls were also assessed and considered globally adequate, despite some improvements advised.
- Conclusion: robustness and resilience of the Portuguese banking system, implying a minor reduction in the aggregate Tier 1 ratio of the 8 banking groups, from 9.1% to 8.8% (above the minimum of 8% then required).

SIP

■ WS1:

- total need of impairment increase was 838 M€ (9.1% of the total impairment recognized for the credits in the scope of the SIP and 0.3% of their total amount).
- these needs were partly offset (in 242 M€) by the allocation of existent impairment buffers, already registered in the accounts on 30 Jun.11.
- additionally, in the 3Q 2011, the 8 banking groups had recognized additional impairment of 208 M€ for some of these credits.

■ WS2:

- The need to introduce some corrections was identified, with a total impact of around 0.6% of total capital requirements at end-Jun.11.

SIP

- **WS3 (announced in Feb.12)** - the 8 banking groups were classified into 4 categories:
 - Institutions that have used clearly appropriate parameters and methodologies: 2
 - Institutions that have used appropriate parameters and methodologies: 1
 - Institutions that have used appropriate parameters and methodologies regarding most aspects, although requiring some improvement in particular areas: 4
 - Institutions that require some improvement in a range of specific areas, for the parameters and methodologies to be deemed appropriate: 1

OIP

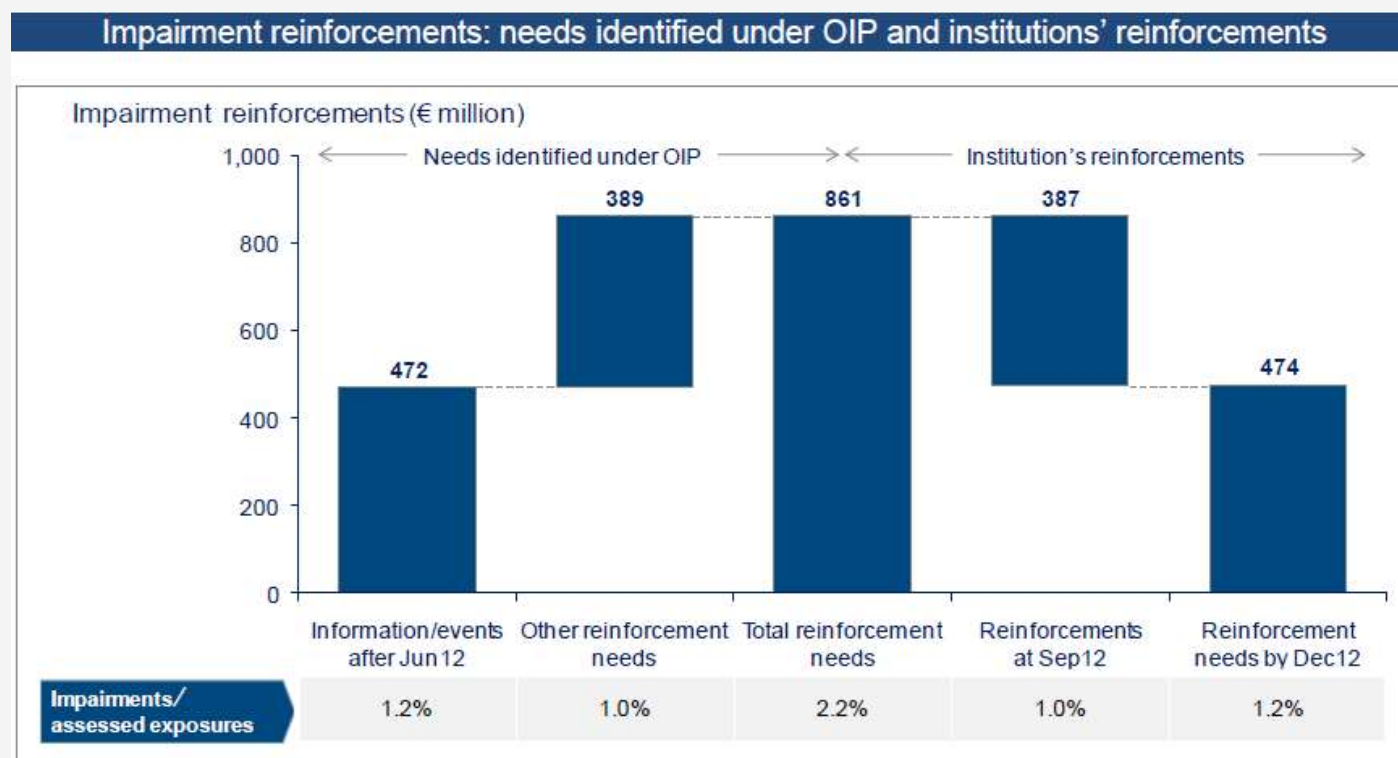
- Focused on the impairment adequacy on exposures of banks to the construction and real estate sectors in Portugal and Spain, with reference to 30 Jun.12, including:
 - (i) holdings of those entities
 - (ii) tourism sector entities
 - (iii) entities with close links to the construction sector (e.g. suppliers) and
 - (iv) entities belonging to the same economic groups as the above, whenever the above exposure represented more than 25% of the economic group's exposure.

OIP

- **Conclusion - need to reinforce impairments by 861 M€ (around 2.2% of the overall amount of exposures assessed).**
- On 30 Jun.12 **the impact of OIP results on the aggregate CT1 ratio of the 8 banks as a whole translated into a slight revision of its value, from 11.2% to 11.1%,** which was still much higher than the 9% minimum required at that date.

OIP

- Impairment reinforcements undertaken by banking groups with reference to 30 Sep.12 covered part of the needs identified for impairment reinforcement, reducing the respective amount from 861 M€ to 474M € (to be reflected by 31 Dec.2012).



Source: Banco de Portugal (2012), “On-site Inspections Programme on exposure to the construction and real estate sectors”, press release, 3 Dec.

2nd OIP (ETRICC)

- At the end of Jul.13, the Banco de Portugal released the result of a **2nd special credit portfolio inspection exercise** (as at 30 Apr.13), on the impairments in the credit portfolios of the 8 largest national banking groups.
- The credit sample for the individual assessment determined by Banco de Portugal covered those with the highest likelihood of impairment deviation in all segments, excluding mortgage and consumer loans, reaching a coverage level of approximately 50% of the eligible credit on balance sheet.
- Total credit covered amounted to 92.6 B€, including in addition the off-balance sheet exposures (e.g. bank guarantees and irrevocable credit lines), having been assessed loans in the amount of 53 B€.

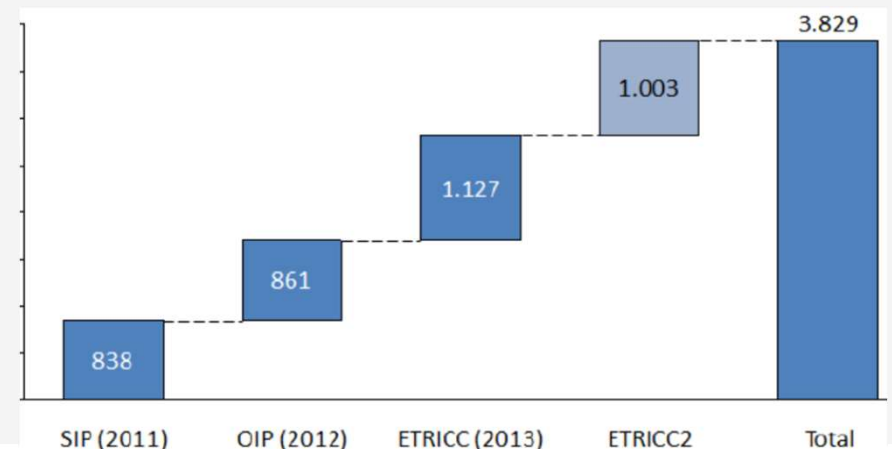
2nd OIP (ETRICC)

- This time, the impairment assessment was conducted by the external auditor of each participant bank, based on a set of guidelines and instructions adopted by BdP for this purpose.
- Additionally, an independent external auditor was appointed to ensure, along with BdP, the overall consistency of the exercise.
- The results led to a decrease in the average CT1 ratio of 42 bp (larger than in the 1st OIP), but confirmed the resilience and robustness of the national banking system regarding regulatory own funds (average CT1 ratio at 11.2%).
- A reinforcement of around 1.1 B€ of the value of impairment recorded in the exposures assessed was considered necessary (approximately 2.1% of the overall amount of exposures assessed).

3rd OIP (ETRICC2)

- Focused on the business plans of the banking system's main clients (including the non-financial companies of Espírito Santo Group)
- Conclusion (released in March 2014): “The exercise confirmed the solidity of the national banking system relating to 30 September 2013”, reinforcing the impairments by 1B€.
- On aggregate, the inspection programs carried-out implied the increase of impairments by almost 4B€ and supposedly ensured the soundness of Portuguese banks.
- **However, less than 5 months after the release of the ETRICC2 results, the 1st bank resolution in Portugal occurred and the 2nd was observed 1 year later.**

Source: Banco de Portugal (2014). Note: Figures in M€



3.2. Main Risks

Risk management

- Risk management has historically been focused on known unknowns.
- The problem is the unknown unknowns.
- While capital is allocated to allow banks to tackle unexpected losses from the most traditional risks (credit, market and operational risks), the unknown unknowns are starting to be assessed through stress testing exercises.
- **Some of these risks are exogenous to the banking system**, i.e. they are created outside the system (e.g. political and natural events, terrorism), but due to the relevance of trust and stability in the banking system these events may have severe impacts.
- **Nonetheless, the most relevant risks have been endogenous**, i.e. created by FIs and the interaction among them (e.g. the subprime crisis).

Risk management

- The ESRB risk assessment as at 25 June 2020 identifies 7 identified key systemic risks, being one severe and four elevated:

Table 1











ESRB risk assessment as at 25 June 2020

	Risk	Systemic risk originating from
Systemic risks directly related to the COVID-19 pandemic	1	Widespread defaults in the private sector due to deep global recession
	2	Difficult macroeconomic environment for banks, insurers and pension schemes
	3	Re-emergence of sovereign financing risk and debt sustainability concerns
	4	Instability and pockets of illiquidity in financial markets
Other systemic risks	5	System-wide cyber incidents
	6	Finance-driven disruptions in critical financial infrastructure
	7	Materialisation of large environmental shocks

Source: ESRB (2020), “ESRB Annual Report”

Risk management

- EBA also identifies asset quality and profitability as sources of increasing risk.

Risk measure	Risk level		Short-term outlook
	Last risk dashboard	Current	
Asset quality			↑
Market risk			→
Liquidity and funding			→
Profitability			↑
Operational resilience			→

Source: EBA (2020), “Risk Dashboard – as of 2Q 2020”.

Main Risks

- Credit Risk
- Liquidity Risk
- Interest Rate Risk
- Market Risk
- Currency Risk
- Operational Risk
- Legal Risk

Credit Risk

- Definition: the risk of promised future cash-flows not being paid in full due to the default of debtors.
- This risk may be assessed on an individual or a portfolio basis, using internal models or information provided by the markets, e.g. stock prices, bond prices and external ratings.
- Credit risk assessment is relevant at the origination but also for monitoring purposes, focusing on debtors and collaterals, in order to quantify PD and LGD.
- Quantification of risk is key to decide loans, including pricing decisions, as well as to calculate impairments and capital allocation.
- Several decision variables impact on credit risk, e.g. LTV, DSTI and Maturity.

Credit Risk

- Credit risk materializes in impairments, NPLs and write-offs (usually after the loans are fully provisioned).

- **Stages in credit risk materialization:**
 - (i) first signs of difficulties => impairments, early recognizing partial losses.
 - (ii) NPL => higher impairments.
 - (iii) Unable to return to performing => recovery process
 - (iv) Non-recovered amount => full impairment and write-off

Credit Risk

- Before the subprime crisis: aggressive commercial strategies, namely in the housing segment => **high volumes and low margins** =>
 - Low spreads and high maturities, LTVs and DTIs
 - High rates of households' homeownership and indebtedness
 - High banks' exposure to real estate => crowding-out of other economic sectors
 - High dependence from banks of non-financial companies
 - Low NPL ratios

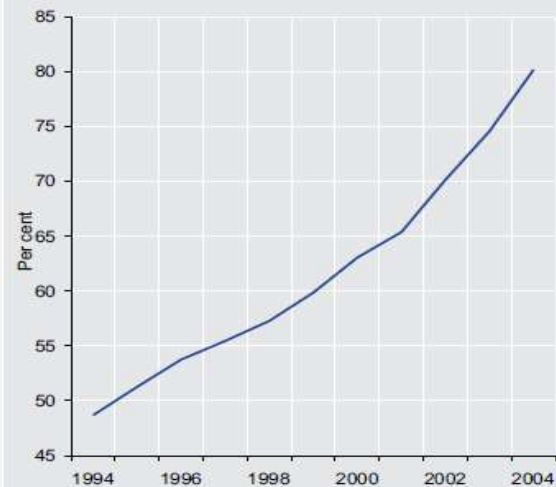
Credit Risk

- Subprime crisis: higher credit risk and lower available liquidity =>
 - Significant deterioration and decrease of loan portfolios
 - More conservative credit policies, e.g. lower LTVs, maturities and DTIs
 - Higher spreads for new contracts
 - Falling real estate prices
- Aftermath of the subprime crisis:
 - Deleveraging;
 - Very high NPL ratios

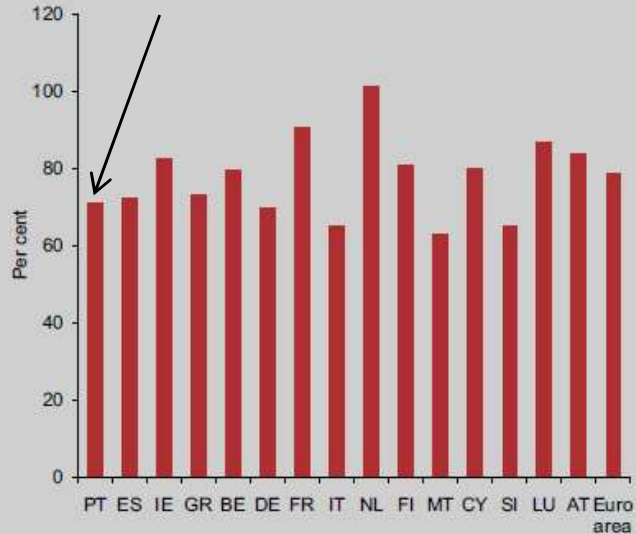
Credit Risk

- Before the subprime crisis - aggressive strategies in housing loans, reducing spreads and increasing LTVs => one of the highest homeownership rates worldwide.

CHART 5.2.7
AVERAGE LOAN-TO-VALUE IN HOUSING LOAN

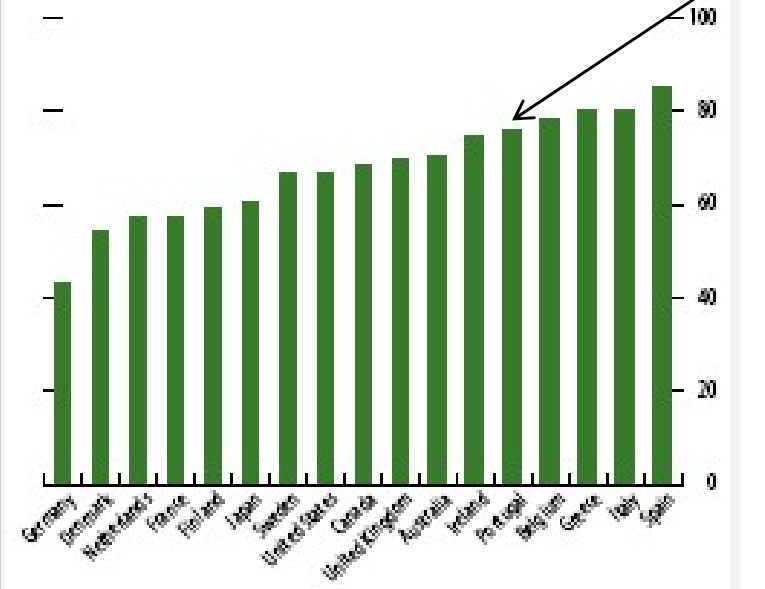


LOAN-TO-VALUE RATIO FOR A TYPICAL LOAN FOR HOUSE PURCHASE IN 2007



Source: Banco de Portugal (2013 and 2009), "Financial Stability Review".

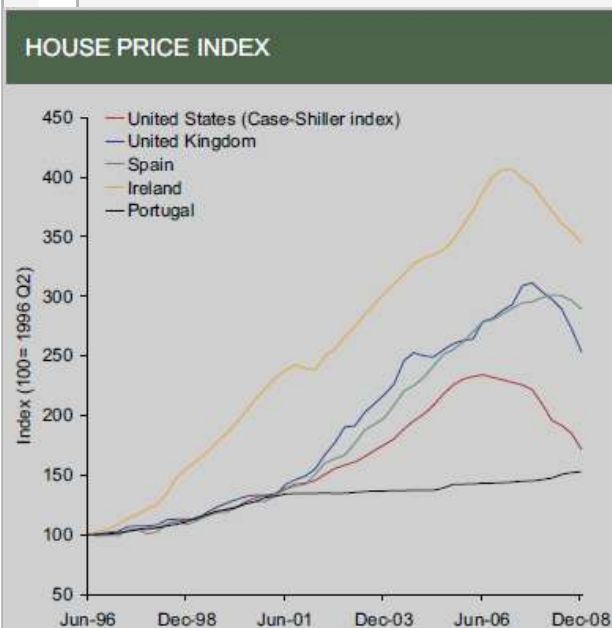
Figure 3.5. Homeownership Rate
(In percent of total number of dwellings; latest available year)



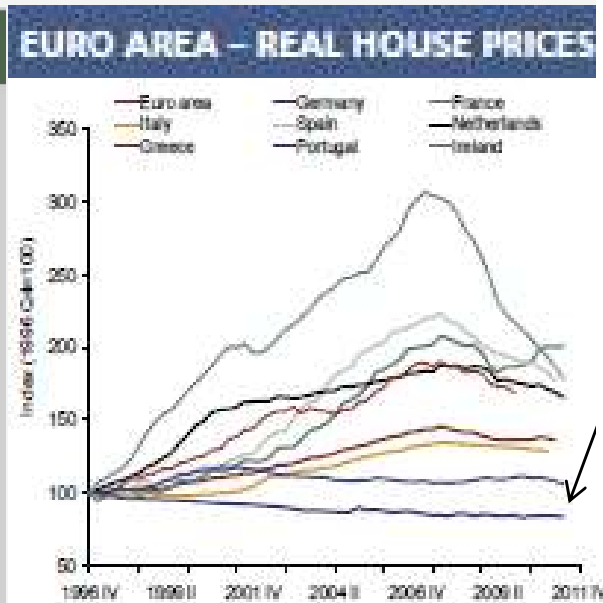
Source: IMF (2011), "Global Financial Stability Report", Apr.

Credit Risk

- House prices didn't increase neither as in other European countries ...

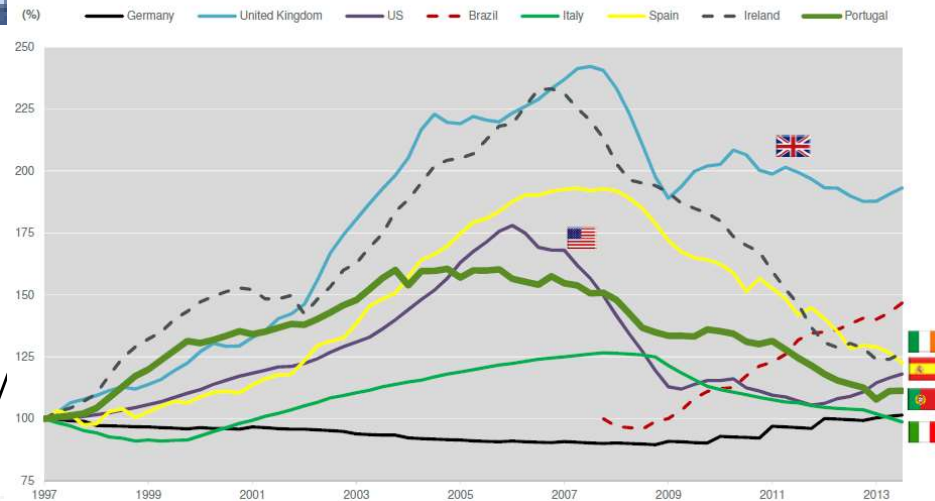


Source: Banco de Portugal (2009), "Financial Stability Review".



Source: Banco de Portugal (2011), "Economic Bulletin - Autumn".

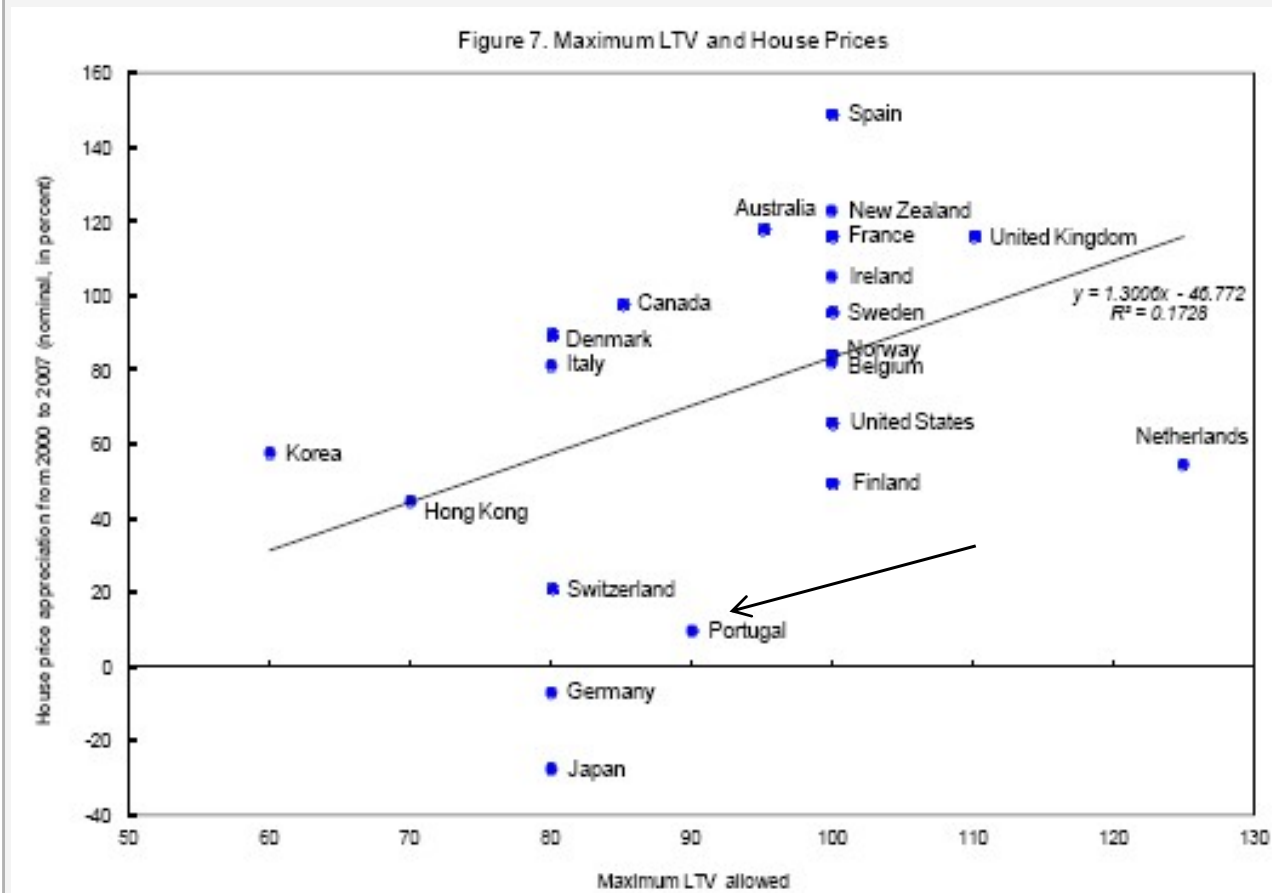
Index of Average House Price to Rental Values



Fitch (2014), "Residential Mortgages and Property Market Outlook", presentation at the Conference "Why is Funding Key to Recovery", 2014 Fitch Credit Conference, Lisbon, 6th Feb.

Credit Risk

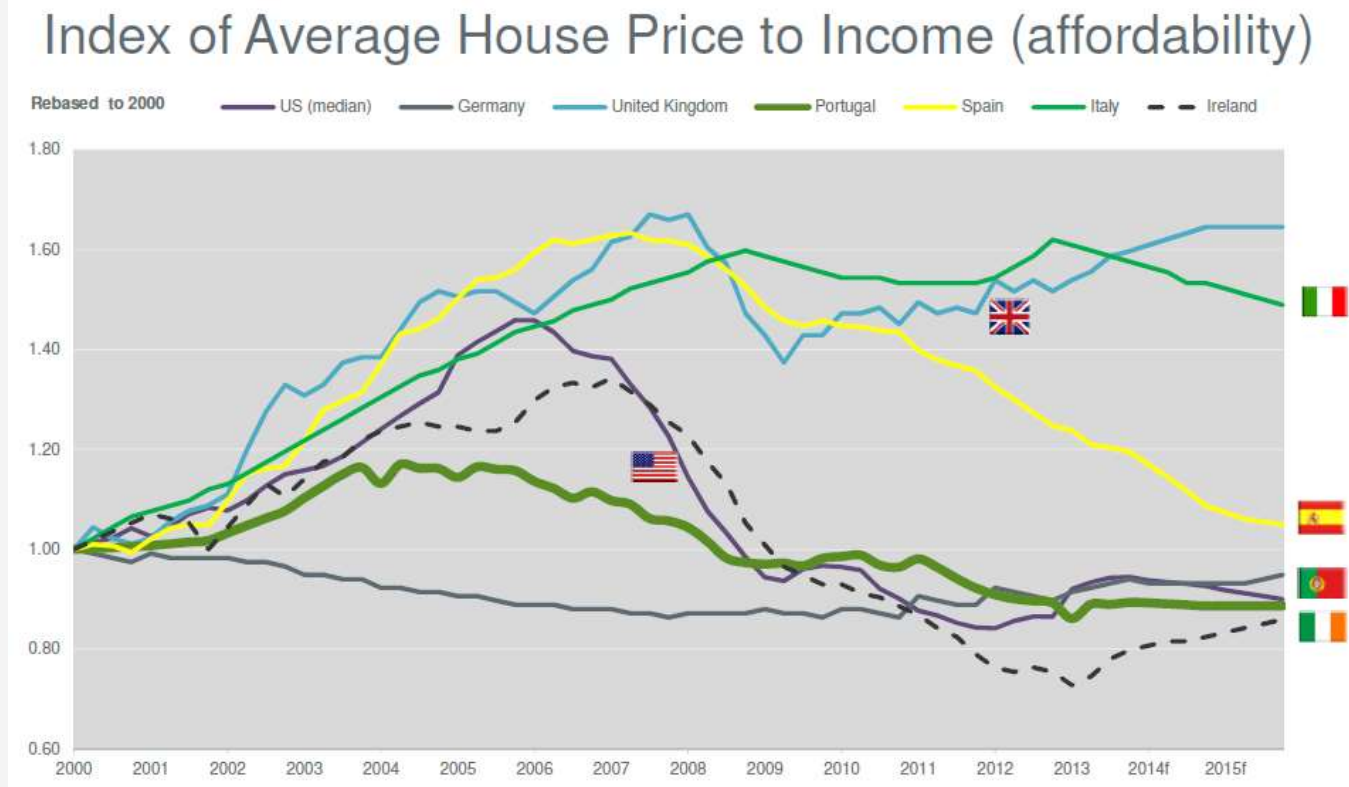
- ... nor in line with LTVs, ...



Source: Crowe et al. (2011), "How to Deal with Real Estate Booms: Lessons from Country Experiences", IMF WP/11/91.

Credit Risk

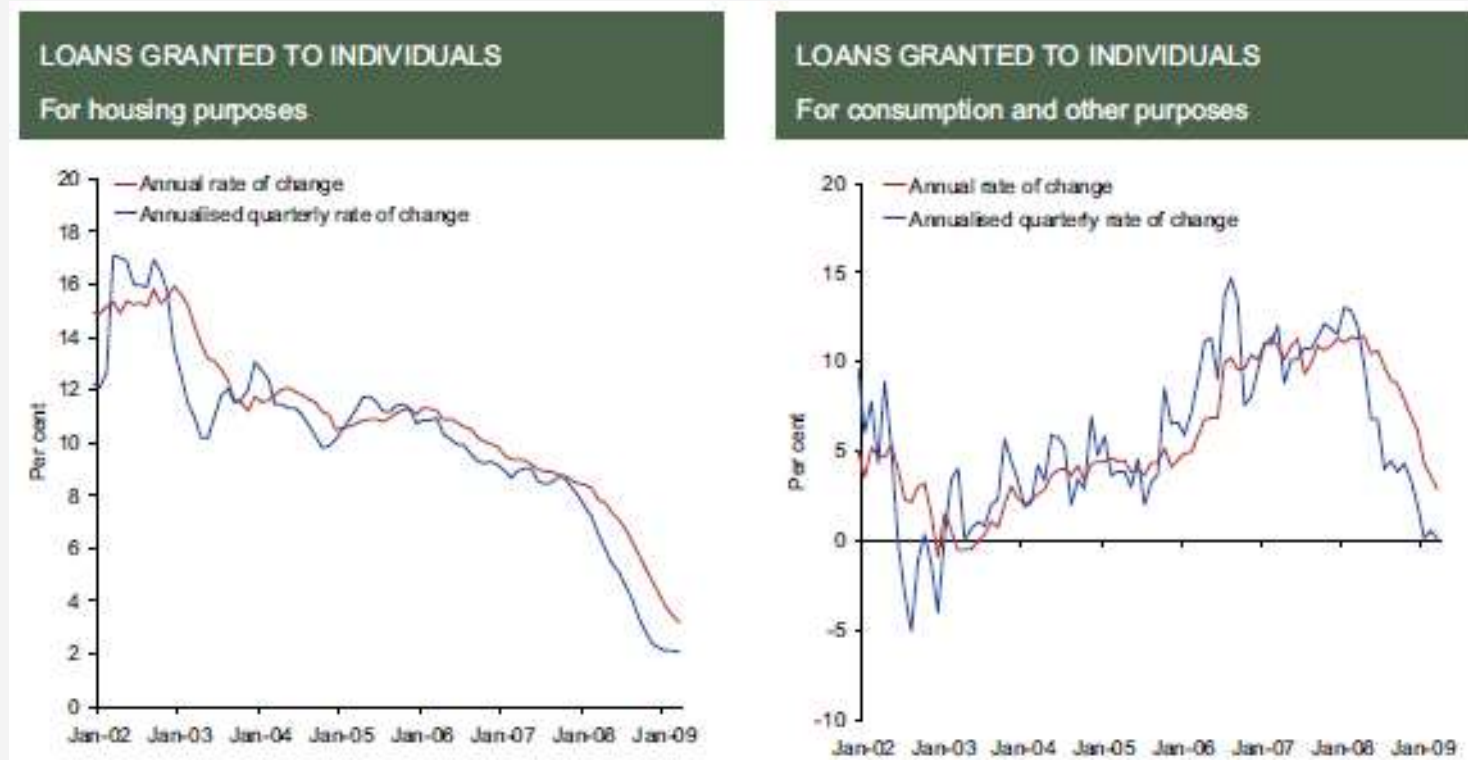
- ... nor even in line with income.



Fitch (2014), “Residential Mortgages and Property Market Outlook”, presentation at the Conference “Why is Funding Key to Recovery”, 2014 Fitch Credit Conference, Lisbon, 6th Feb.

Credit Risk

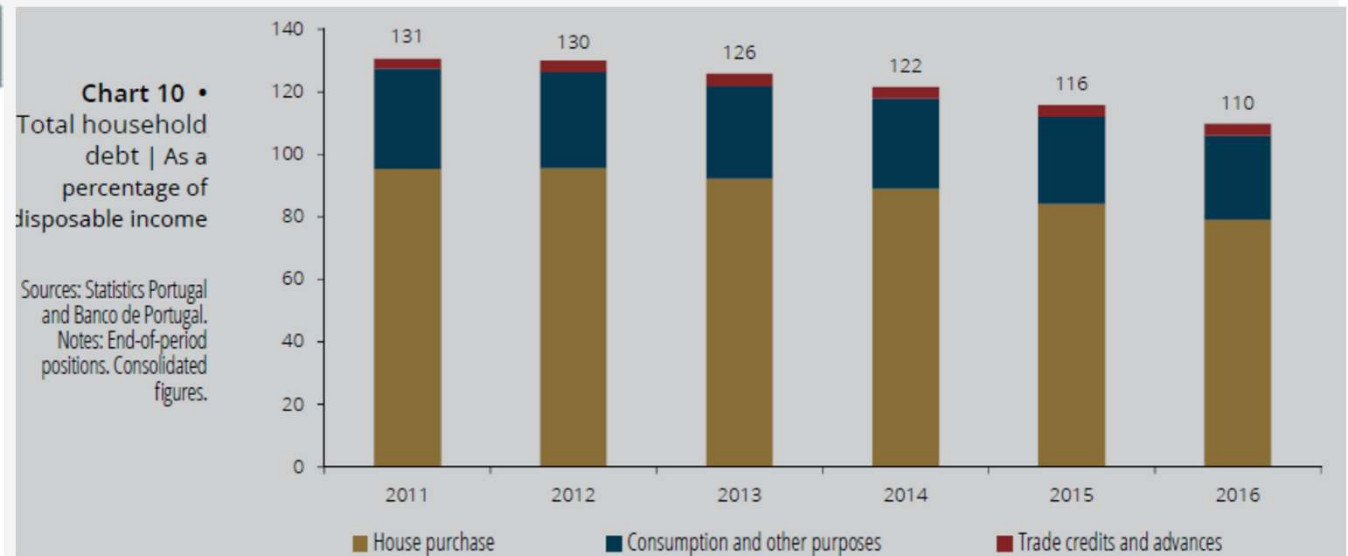
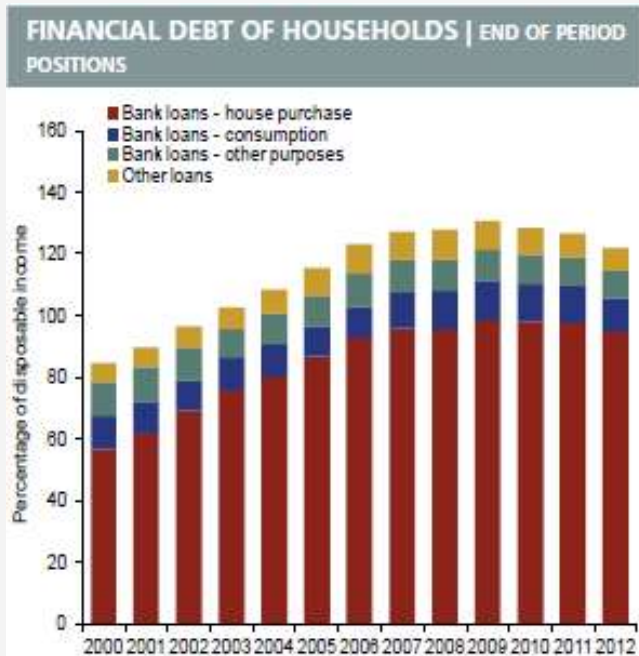
- Credit growth reached very high levels during the first decade of the century.



Source: Banco de Portugal (2009), "Financial Stability Review - 2008".

Credit Risk

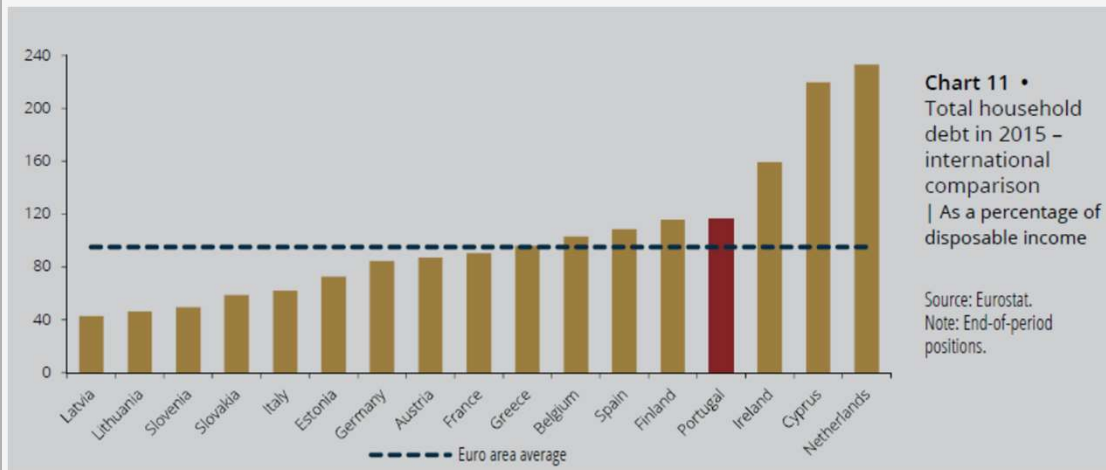
- Therefore, the indebtedness level of households increased until 2009, mostly due to house purchase ...



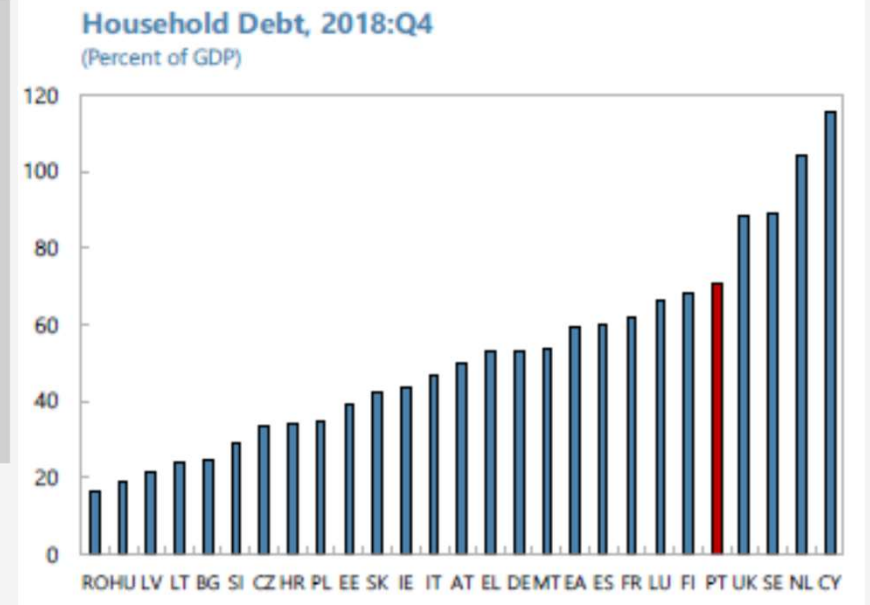
Sources: Banco de Portugal (2017), “Financial Stability Review”, June and Banco de Portugal (2013), “Financial Stability Review”, May;

Credit Risk

- ... reaching figures above those observed in Euro Area.



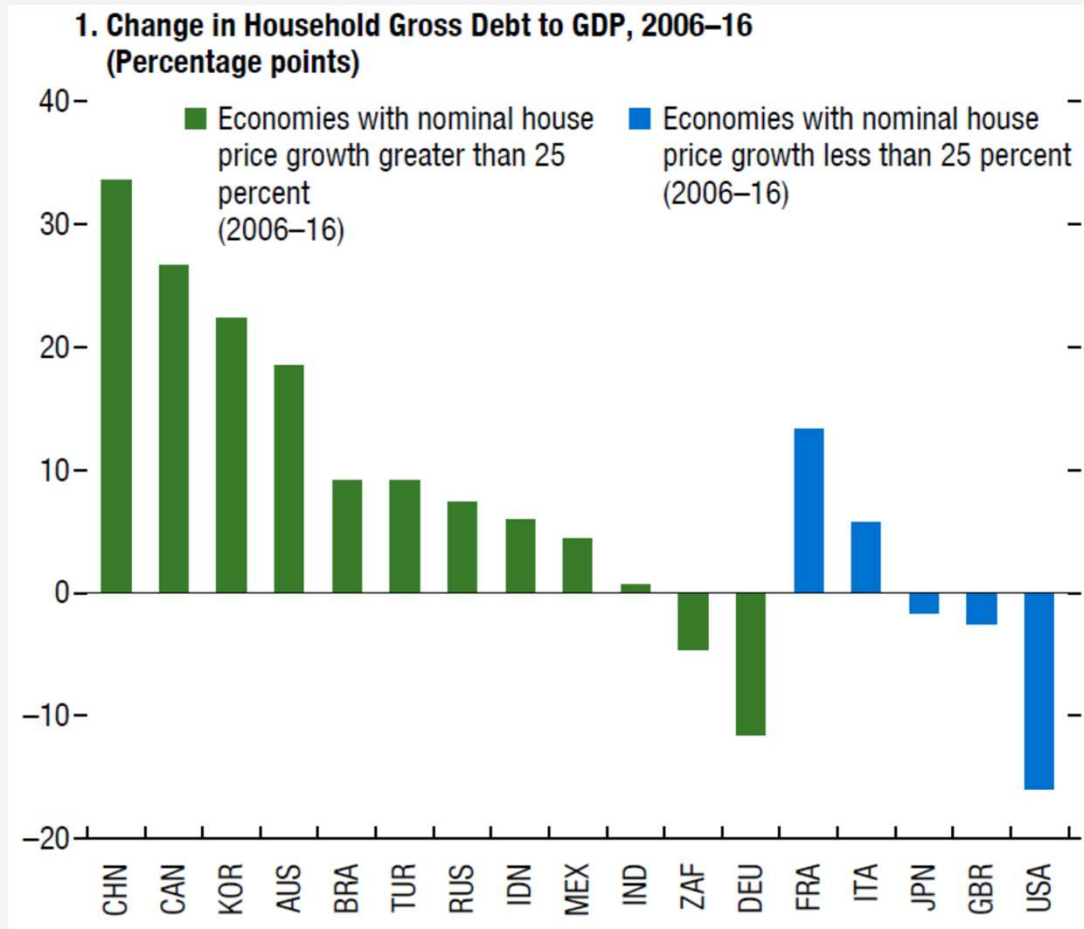
Sources: Banco de Portugal (2017), “Financial Stability Review”, June



IMF (2019), “2019 Article IV Consultation”, IMF Country Report No. 19/221.

Credit Risk

- Among the G20, Household Debt increased in line with house prices:



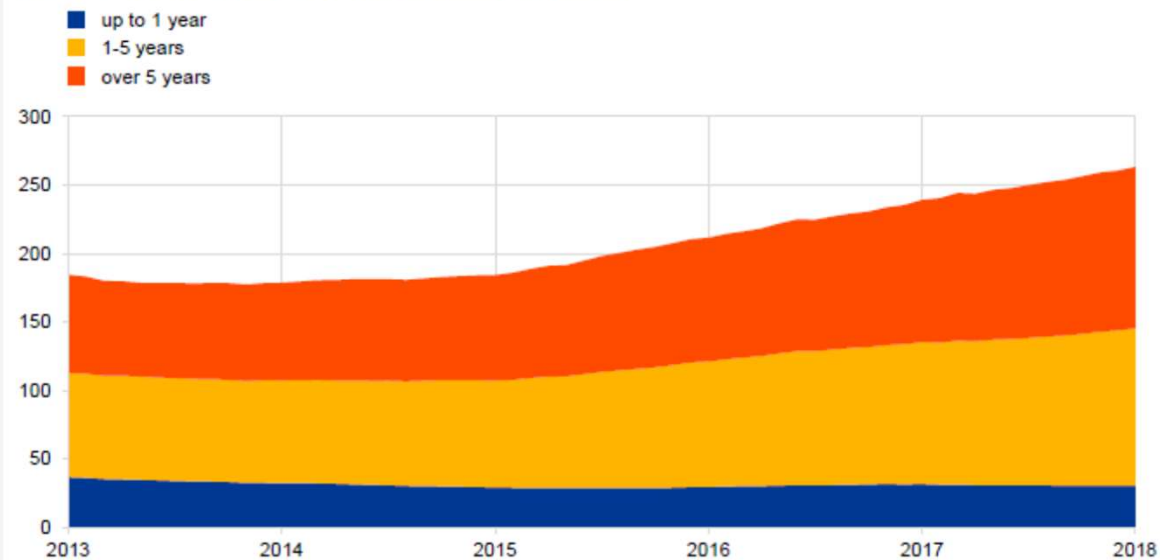
Sources: International Monetary Fund (2017), “Global Financial Stability Report”, October.

Credit Risk

- Additionally, households indebtedness in Euro Area has also been motivated by increasing consumer loans, as in Portugal.

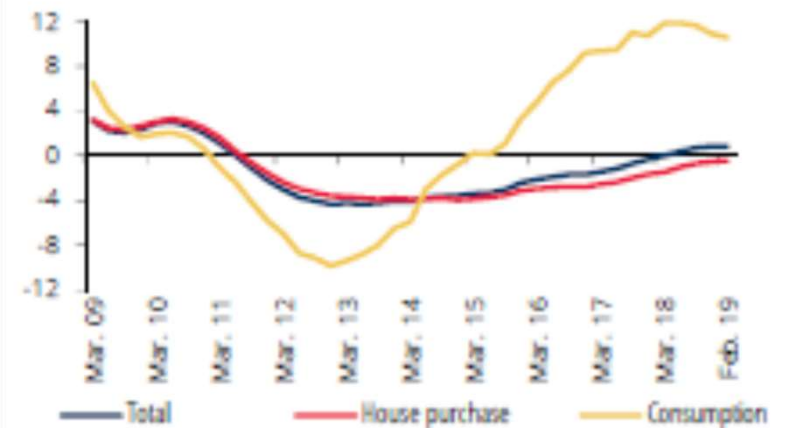
New business volumes for consumer lending by interest rate fixation period

(Jan. 2013 – Jan. 2018, € billions, 12-month cumulated new business)



Source: European Central Bank (2018), “Financial Stability Review”, May.

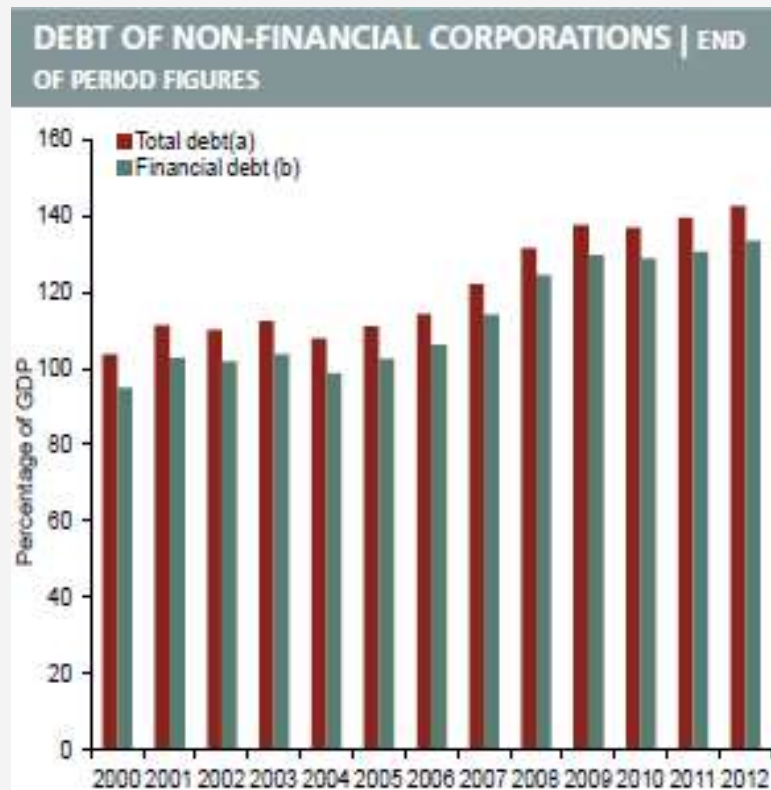
Chart I.4.32 • Bank credit granted to households – Annual rate of change | Per cent



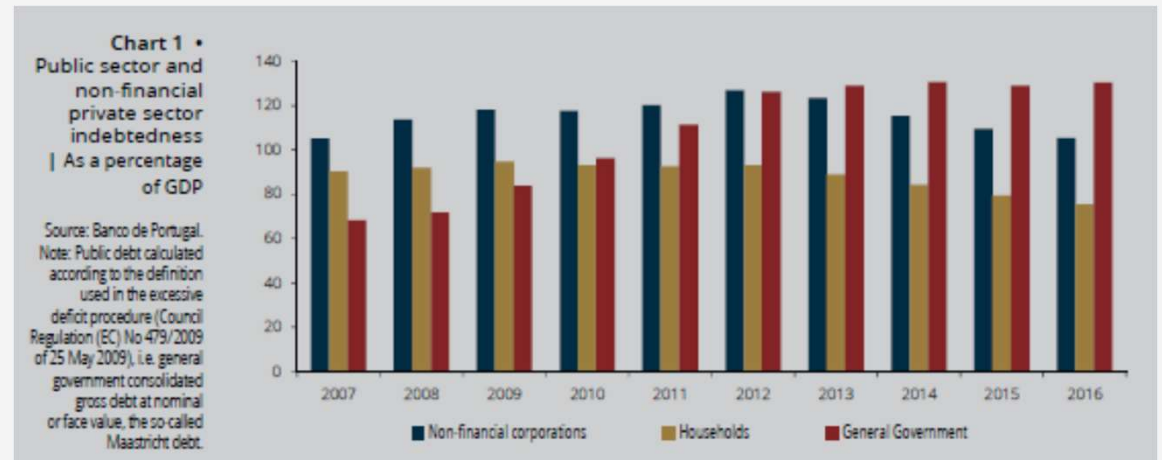
Source: Banco de Portugal (2019), “Financial Stability Review”, June.

Credit Risk

- Concerning non-financial companies, indebtedness also increased significantly, to above 120% of the GDP ...



Source: Banco de Portugal (2012), “Financial Stability Review”, May.



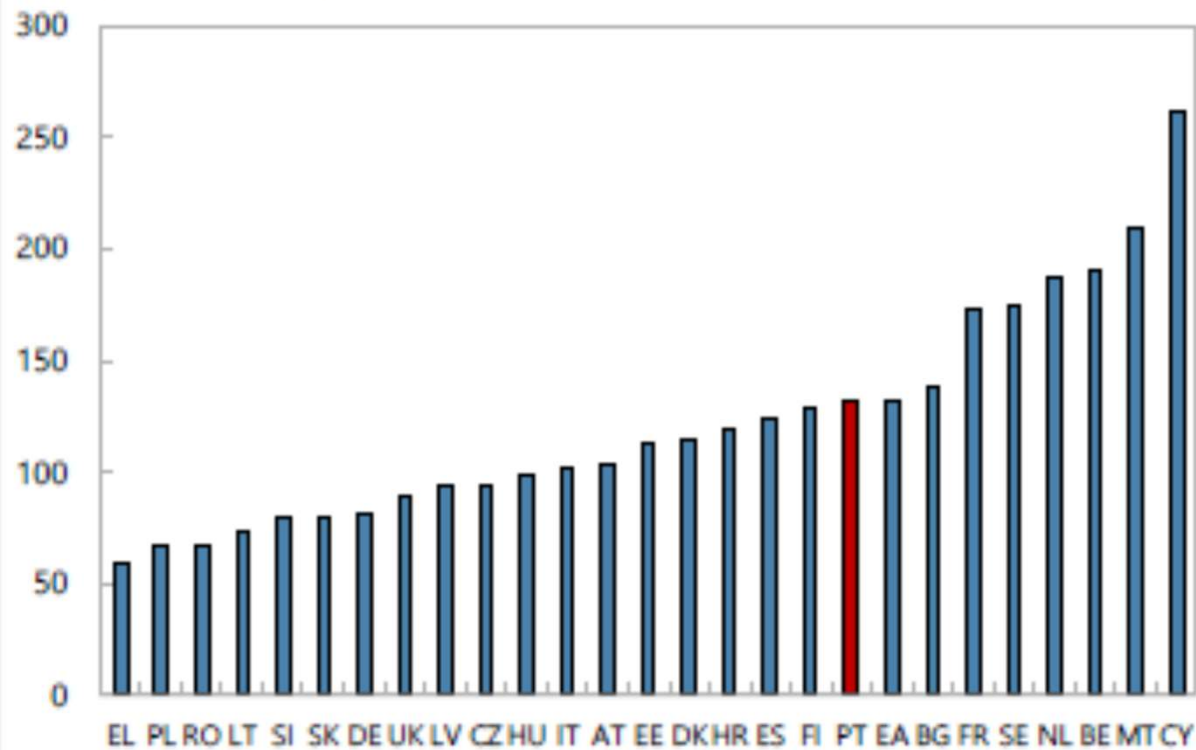
Source: Banco de Portugal (2017), “Financial Stability Review”, June.

Credit Risk

- ... above EU average and most EU countries, ...

Non-Financial Corporate Debt, 2018:Q4

(Percent of GDP)

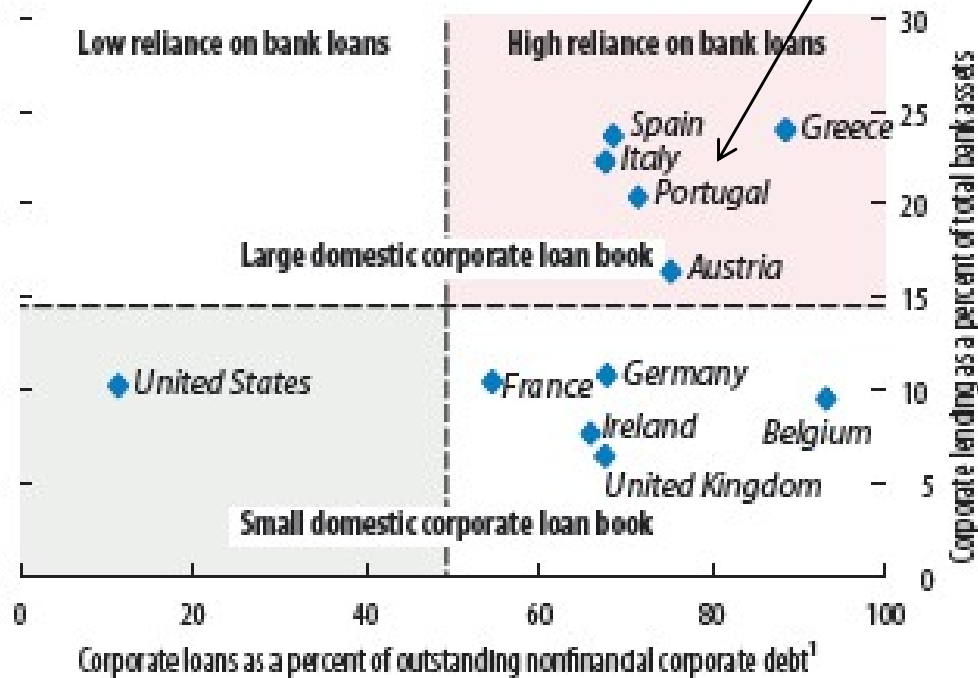


IMF (2019), "2019 Article IV Consultation", IMF Country Report No. 19/221.

Credit Risk

- ... and mostly relying on banks.

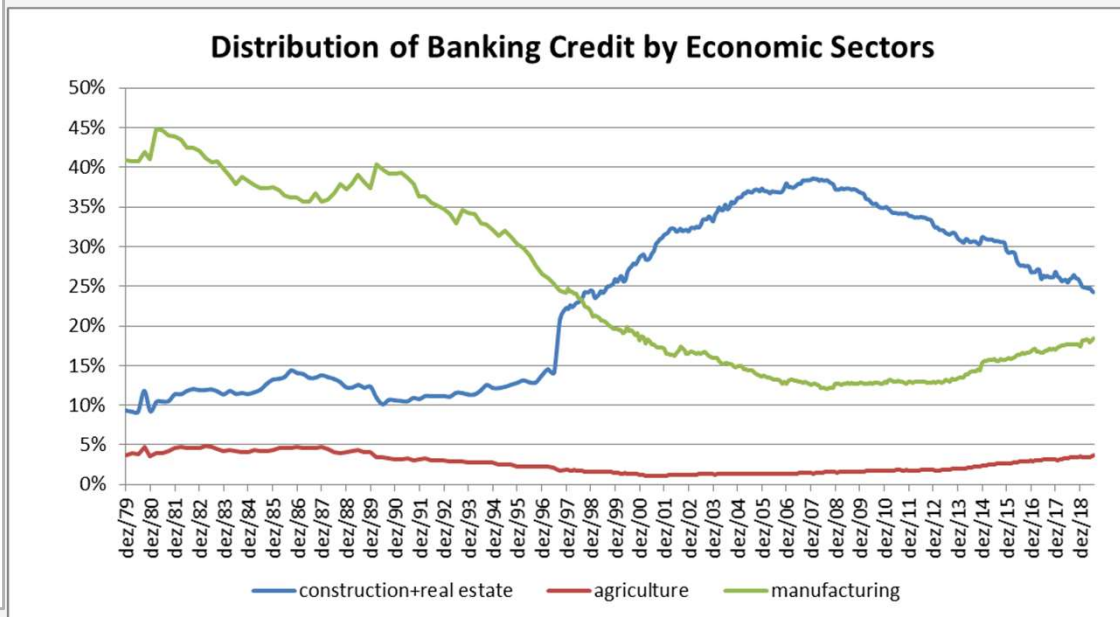
Figure 2.35. Reliance on Bank Financing by Nonfinancial Corporations
(In percent)



Source: IMF (2013), "Global Financial Stability Report", Apr.

Credit Risk

- Increase in the credit exposure to the real estate sectors crowded-out credit to other economic sectors.
- Since the 80's and until 2007, the weight of credit to construction and real estate in the corporate segment increased roughly from 10% to 40% (from 40% to 60% in advanced economies, according to Jordà, Schularick and Taylor (2014)).

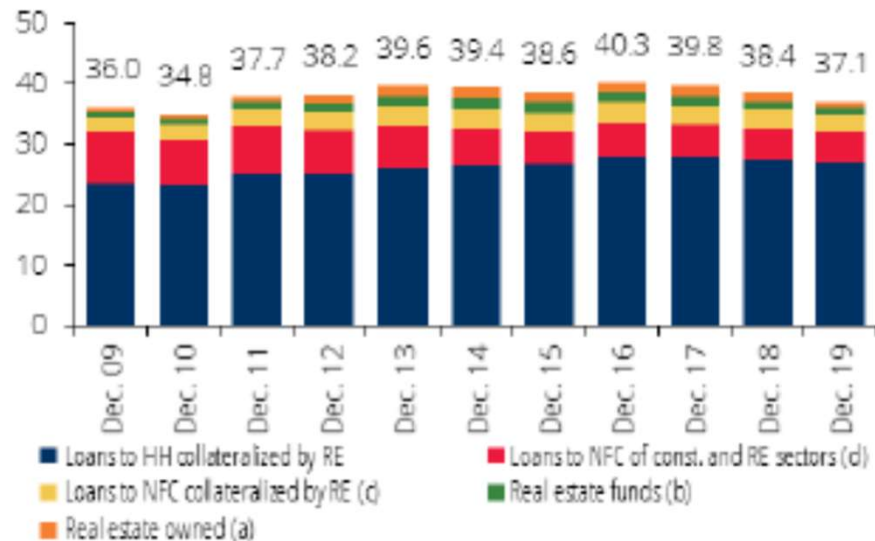


Source: Banco de Portugal and own calculations.

Credit Risk

- Considering all bank assets, including mortgage loans and exposures to real estate investment funds, the exposure to the real estate sector also reached close to 40%.

Chart I.2.20 • Exposure to real estate
| As a percentage of assets

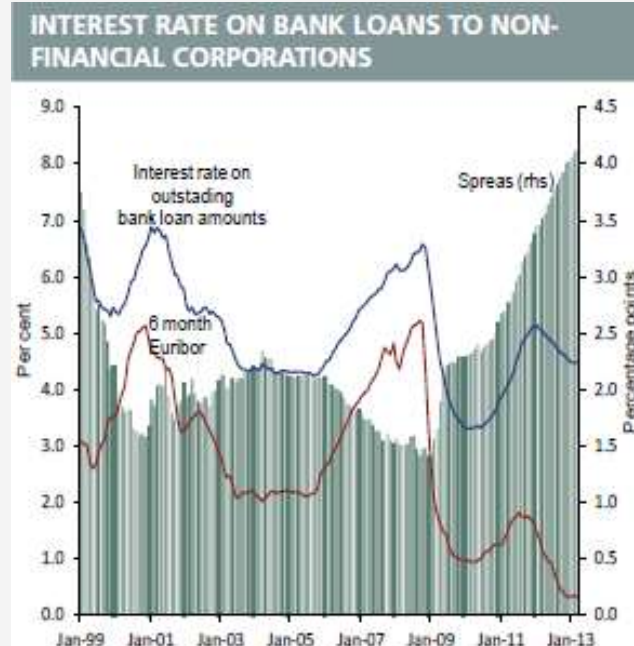
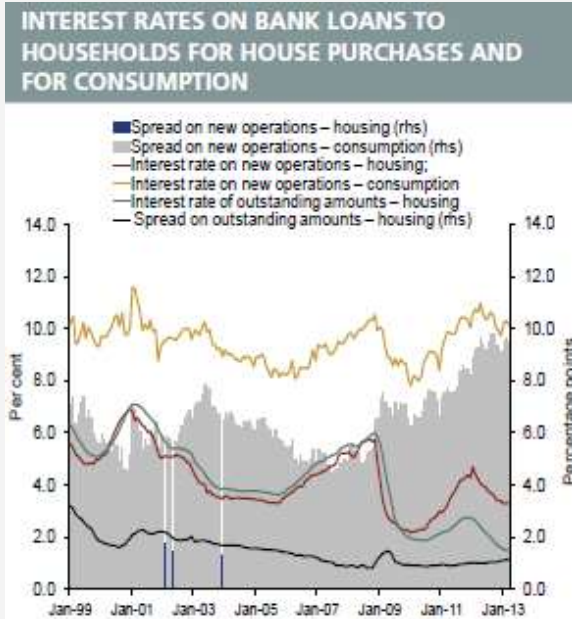


Source: Banco de Portugal (2020), “Financial Stability Review”, June.

Credit Risk

■ Subprime crisis =>

- **new contracts** – lower competition in mortgage spreads, less and more expensive liquidity and higher credit risk => higher spreads for new contracts;
- **already existing contracts** – lower short-term rates triggered substantial cuts in interest rates.

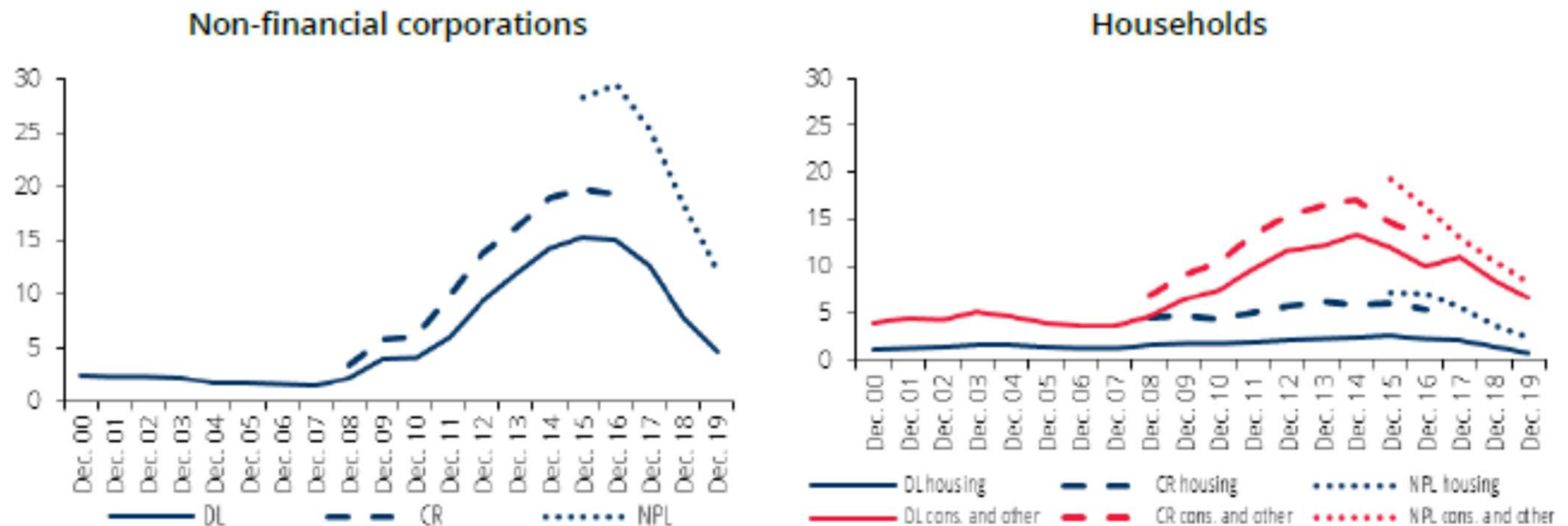


Source: Banco de Portugal (2013), “Financial Stability Review”, May.

Credit Risk

- Non-performing loans increased significantly after 2008,

Chart I.2.12 • Developments in doubtful loans, credit at risk and gross NPL ratios | Per cent



Source: Banco de Portugal (2020), “Financial Stability Review”, June.

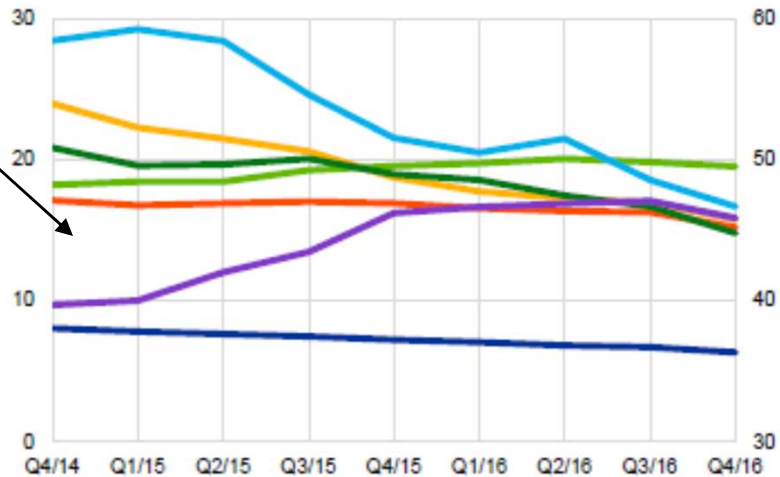
Credit Risk

- ... much above the Euro area average, ...

Non-performing loans still remain high in a number of countries despite slight decreases in recent quarters

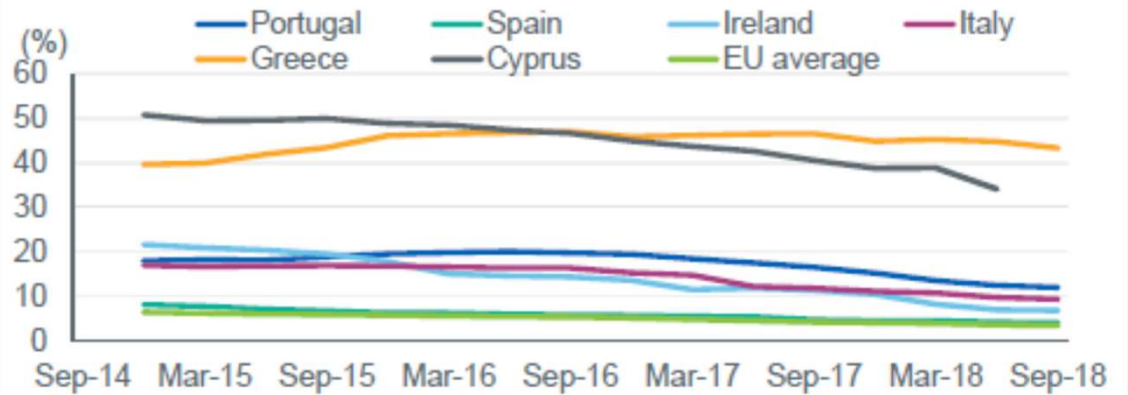
Non-performing exposure ratios across euro area countries

(Q4 2014 – Q4 2016; percentages, euro area aggregates)



Source: European Central Bank (2017), “Financial Stability Review”, May.

International NPL Ratio Comparison



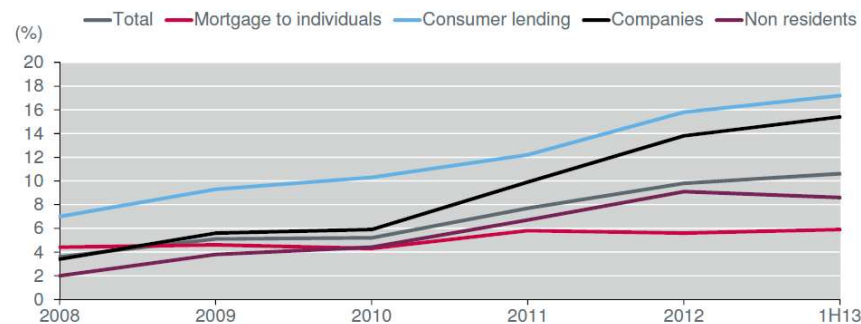
Source: Fitch Ratings (2019), “Credit Outlook 2019”, 24 Jan.

Credit Risk

- ... but less in mortgages than in non-financial companies, ...

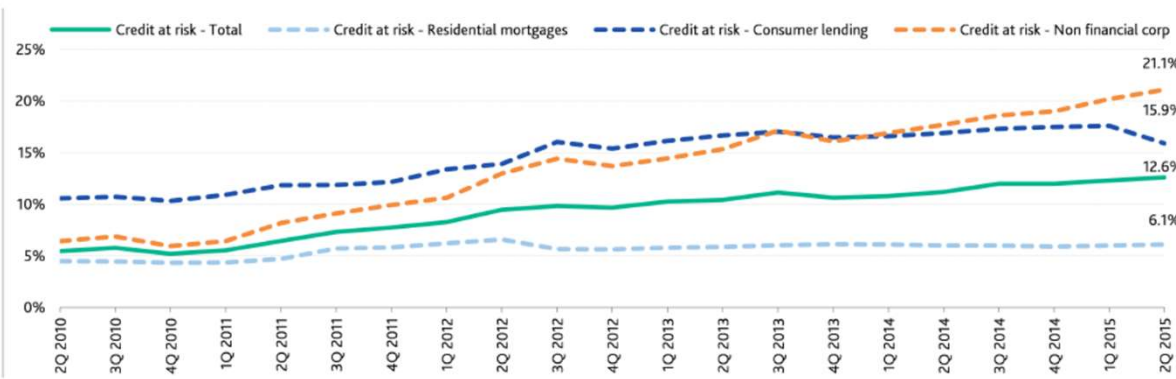
Credit at Risk

Loan Quality Main Segments



Fitch (2014), “Residential Mortgages and Property Market Outlook”, presentation at the Conference “Why is Funding Key to Recovery”, 2014 Fitch Credit Conference, Lisbon, 6th Feb.

Evolution of Portuguese banks' non-performing loans (NPLs) by asset class

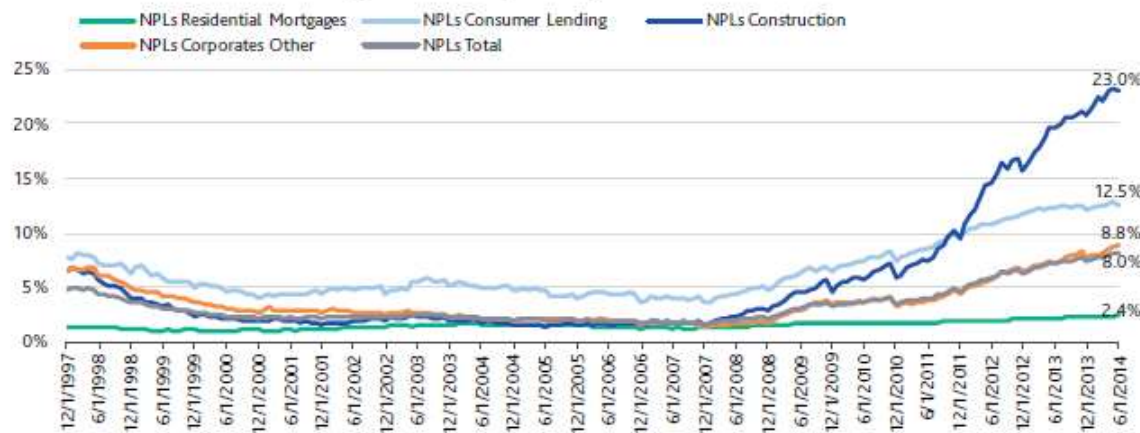


Source: Moody's (2015), “Banking System Outlook – Portugal”, 15 Oct.

Credit Risk

- ... , namely in construction (in line with the Euro Area), whose ratio reached almost 3x the aggregate NPL level.

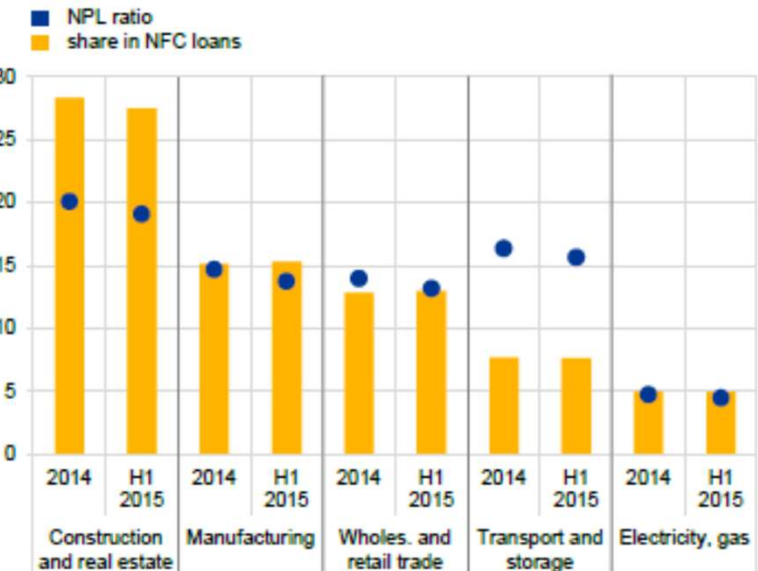
NPLs Have Risen In Almost Every Asset Class, Lead by Construction Loans



Source: Moody's (2014), "Banking System Outlook – Portugal", 7 Oct.

Non-performing loan ratios of significant banking groups in the euro area, by economic activity

(2014 – H1 2015; percentage of loans)



Source: European Central Bank (2015), "Financial Stability Review", Nov.

Credit Risk

- Consequently, impairments peaked in 2014:

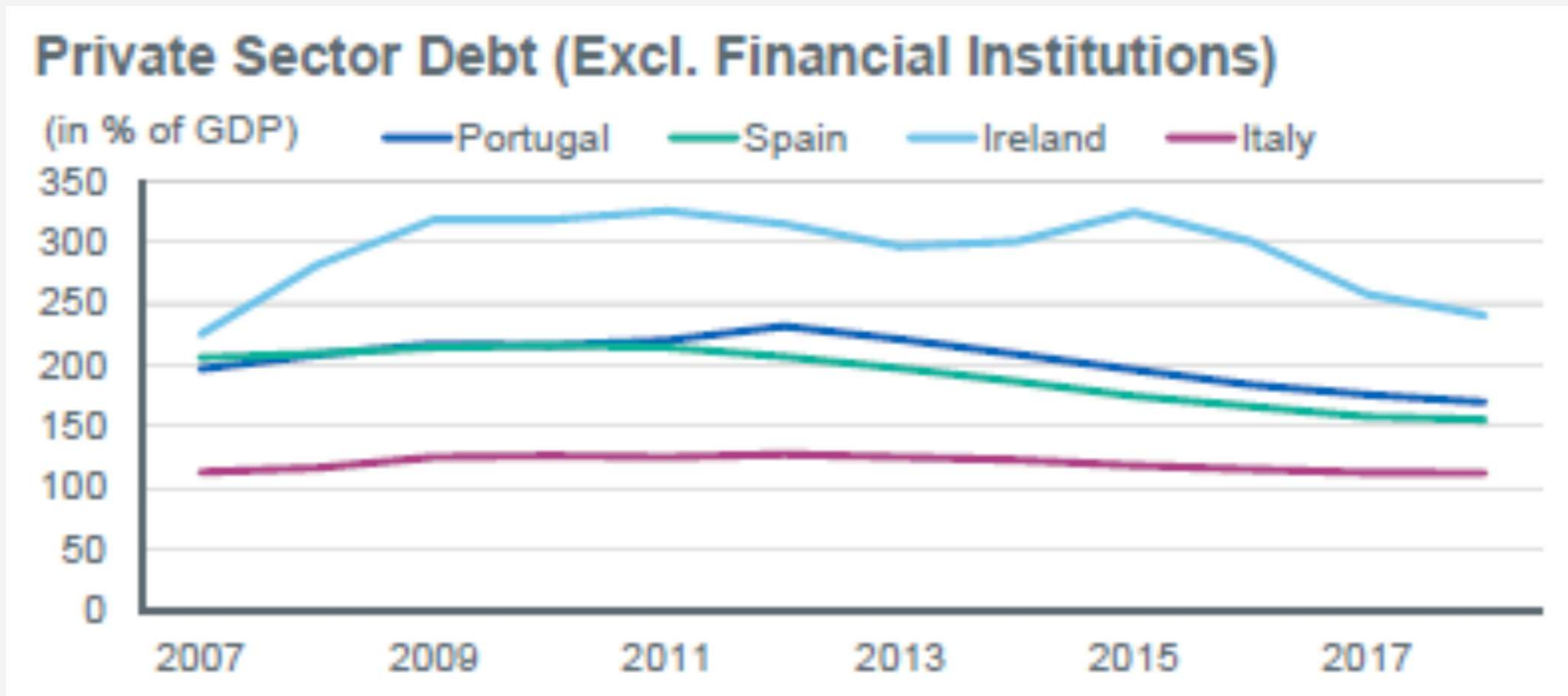
Chart I.2.7 • Provisions, impairments and loan loss charge ratio



Source: Banco de Portugal (2020), “Financial Stability Review”, June.

Credit Risk

- **Aftermath of the crisis** - Deleveraging in the private sector has started in 2012 ...

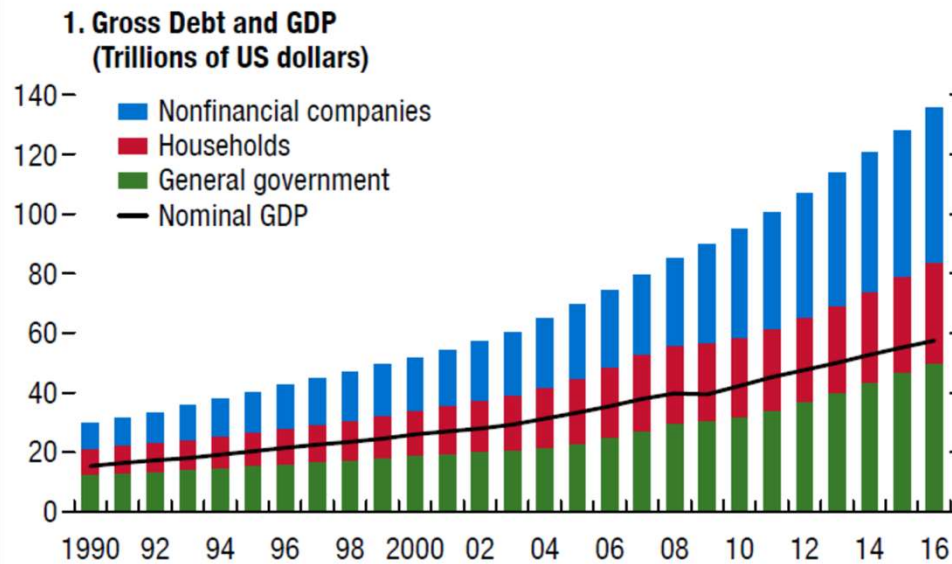


Source: Fitch (2019), "Fitch Credit Outlook 2019", Lisbon, 24 Jan.

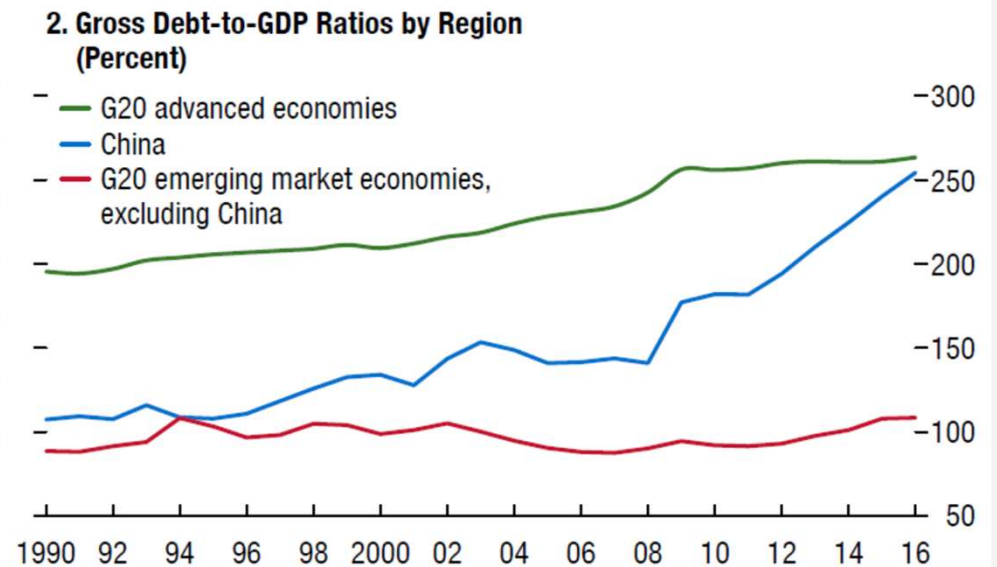
Credit Risk

- ... contrary to what happened in the major economies (G20), where debt kept rising.

Debt has been rising more quickly than GDP ...



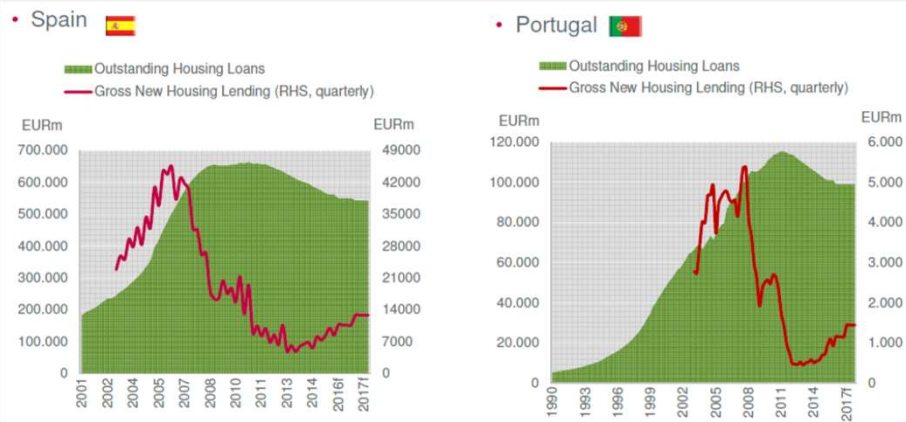
... largely in advanced economies and China ...



Source: IMF (2017), "Global Financial Stability Report", October.

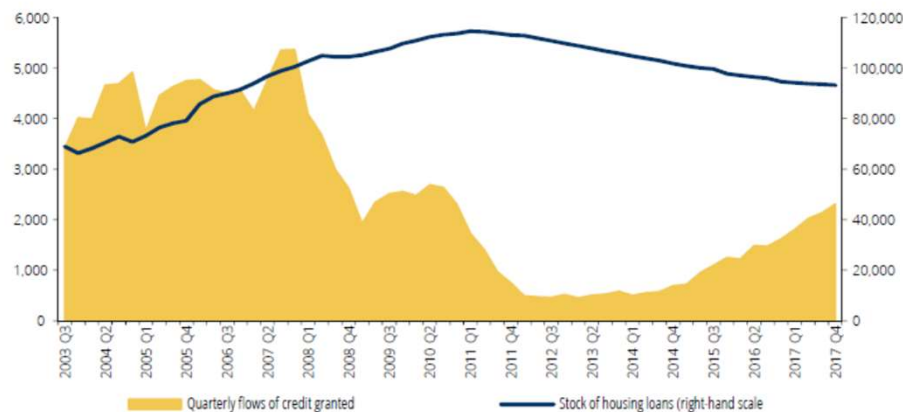
Credit Risk

- New housing loans increased again since 2013, but much below the levels before the subprime crisis....



Source: Fitch (2016), 2016 Fitch Credit Outlook Conference, Lisbon, 28 Jan.

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



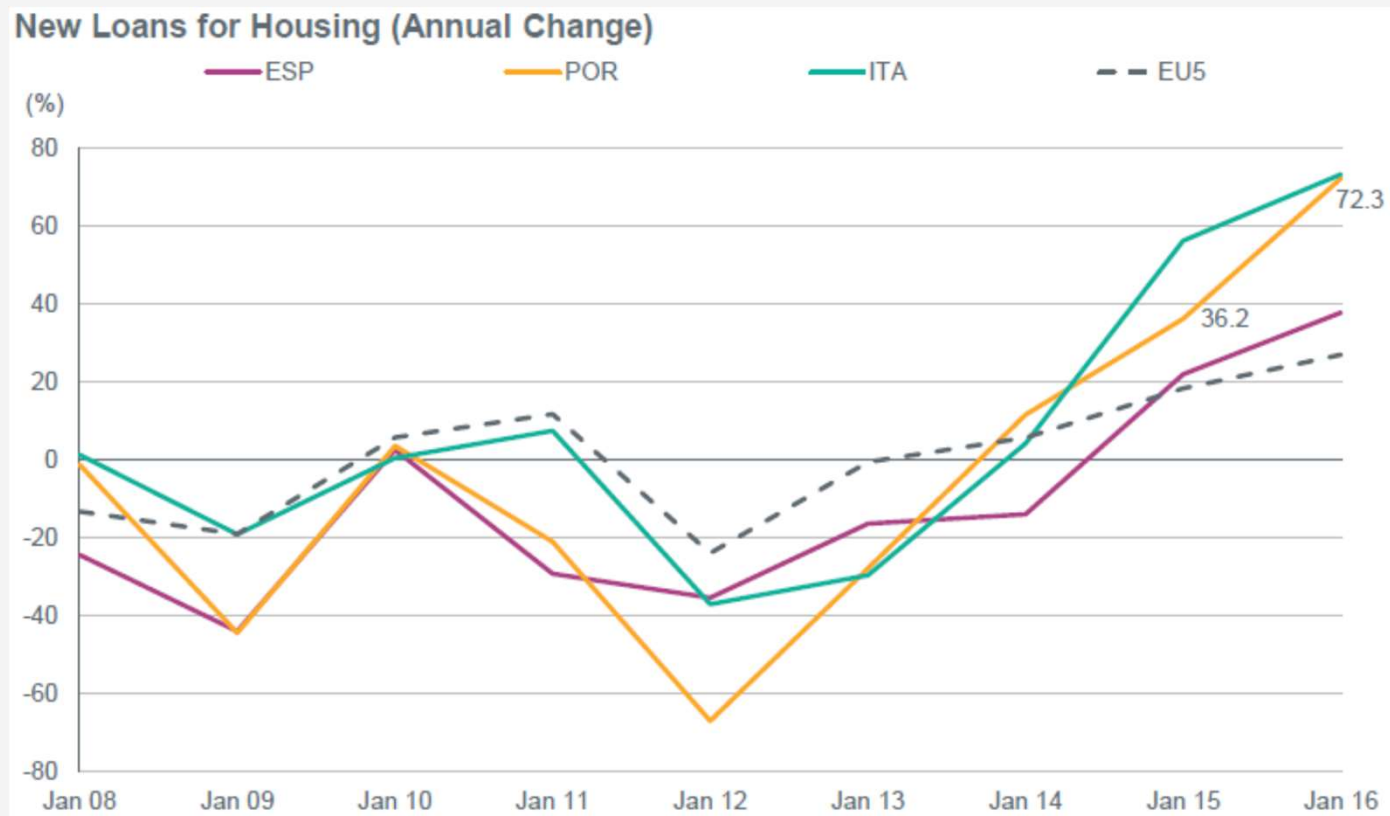
Dwelling Sales and New Housing Loans (Euro billions)



Source: IMF (2019), “Portugal 2019 Article IV Consultation”, July.

Credit Risk

- ... though above the EU average.



Source: Fitch (2017), 2017 Credit Outlook Lisbon, 26 Jan.

Credit Risk

- New housing loans for higher LTVs and longer maturities decreased since 2018.

Chart C4.1 • Distribution of new housing loans by LTV ratio | As a percentage of total housing loans

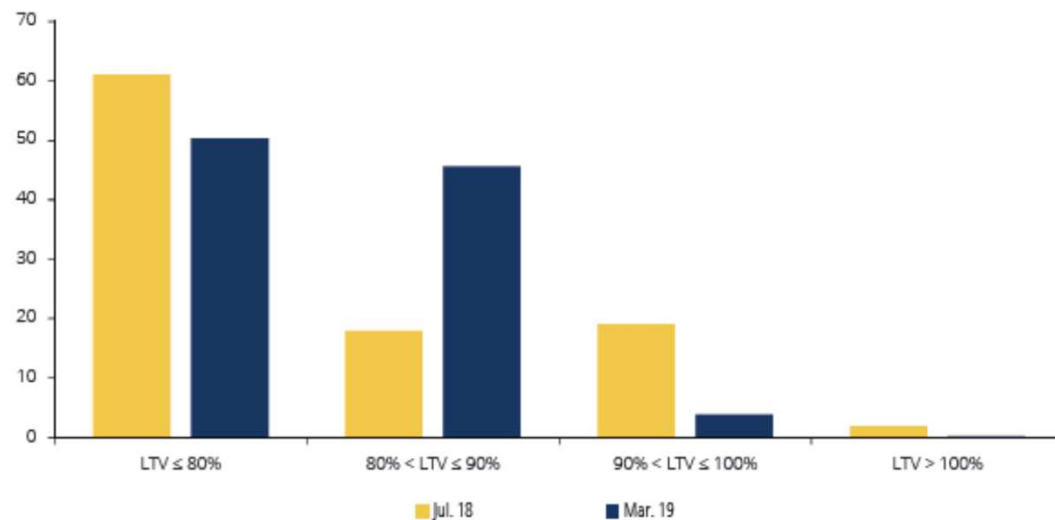
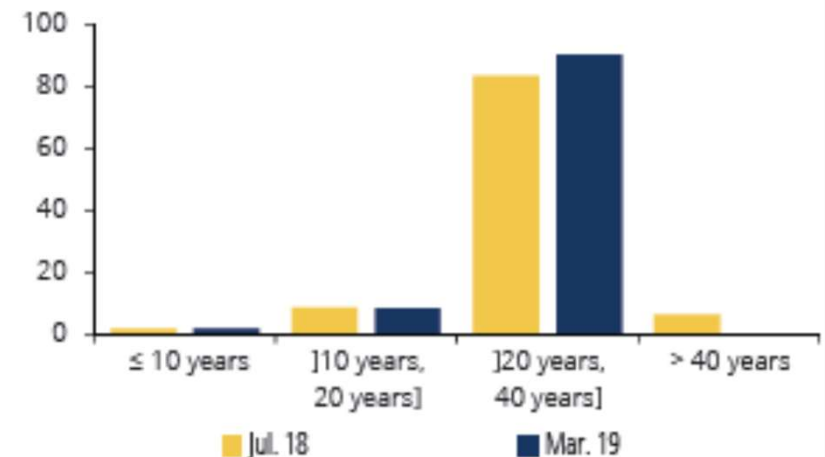


Chart C4.3 • Distribution of new housing loans by maturity interval | As a percentage of total housing loans

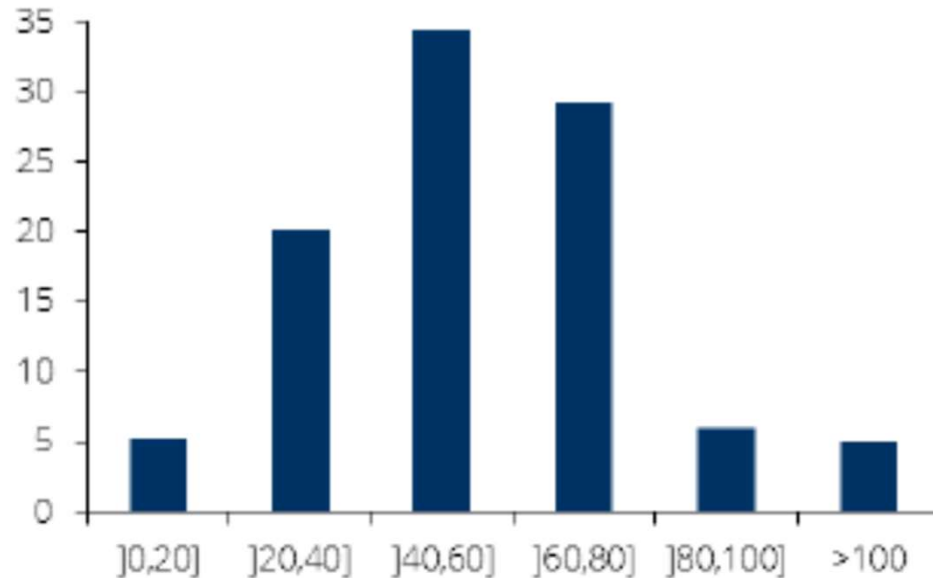


Source: Banco de Portugal (2019), “Financial Stability Review”, June.

Credit Risk

- **Consequently, only 10% of total housing loans have LTV > 80%.**

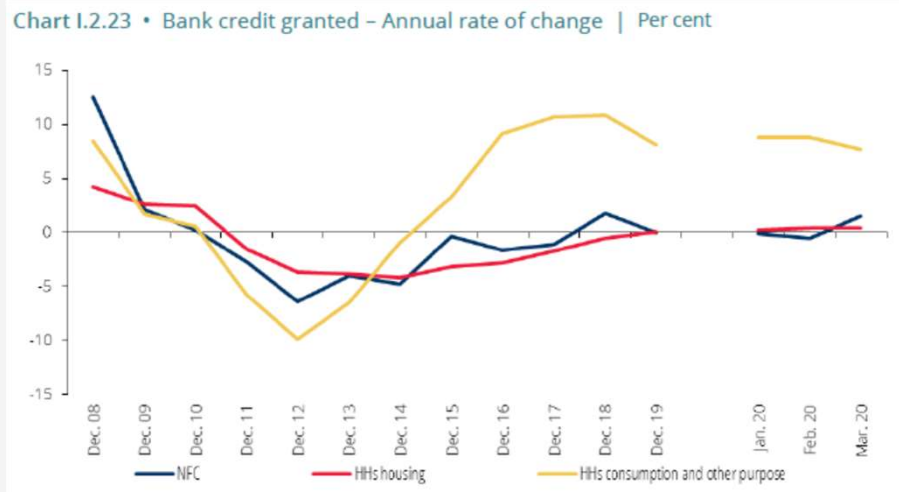
Chart I.2.21 • Current LTV of housing loans stock in 2019 | As a percentage of portfolio



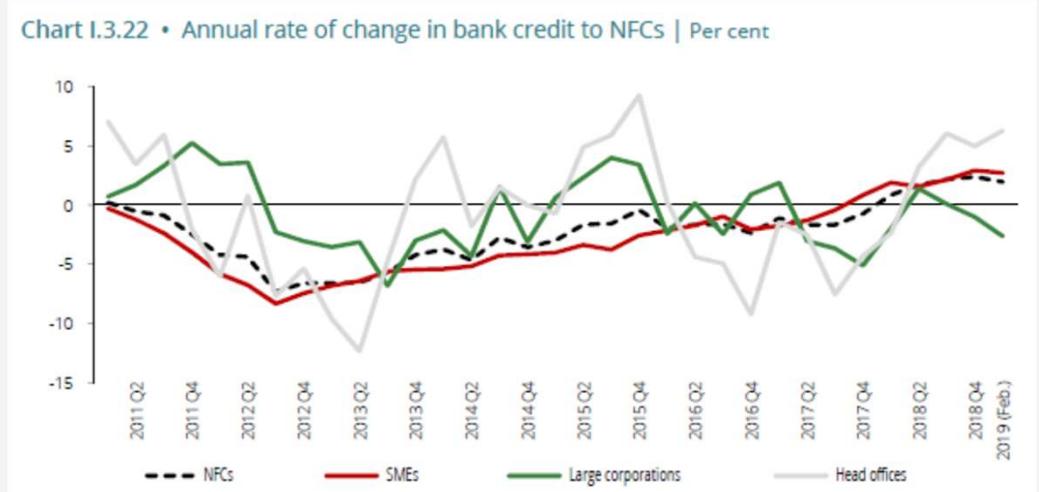
Source: Banco de Portugal (2020), “Financial Stability Review”, June.

Credit Risk

- Consumer loans soared and loans to SMEs gathered pace:



Source: Banco de Portugal (2020), “Financial Stability Review”, June.



Source: Banco de Portugal (2019), “Financial Stability Review”, June.

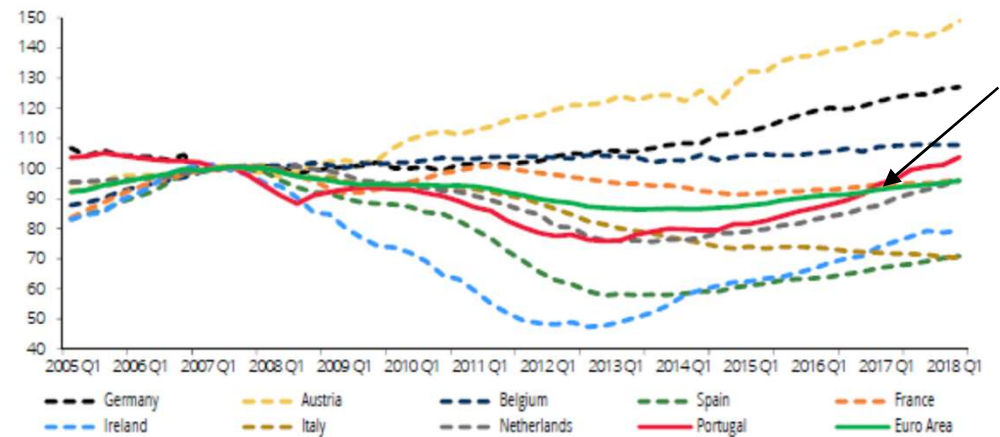
Credit Risk

- Real estate prices recovered since 2013, namely in the housing segment.

Chart I.1.29 • Rate of change of house prices and commercial property prices in real terms | Per cent



Chart I.2.20 • Real house prices | Index 2007 = 100



Source: Banco de Portugal (2020), “Financial Stability Review”, June.

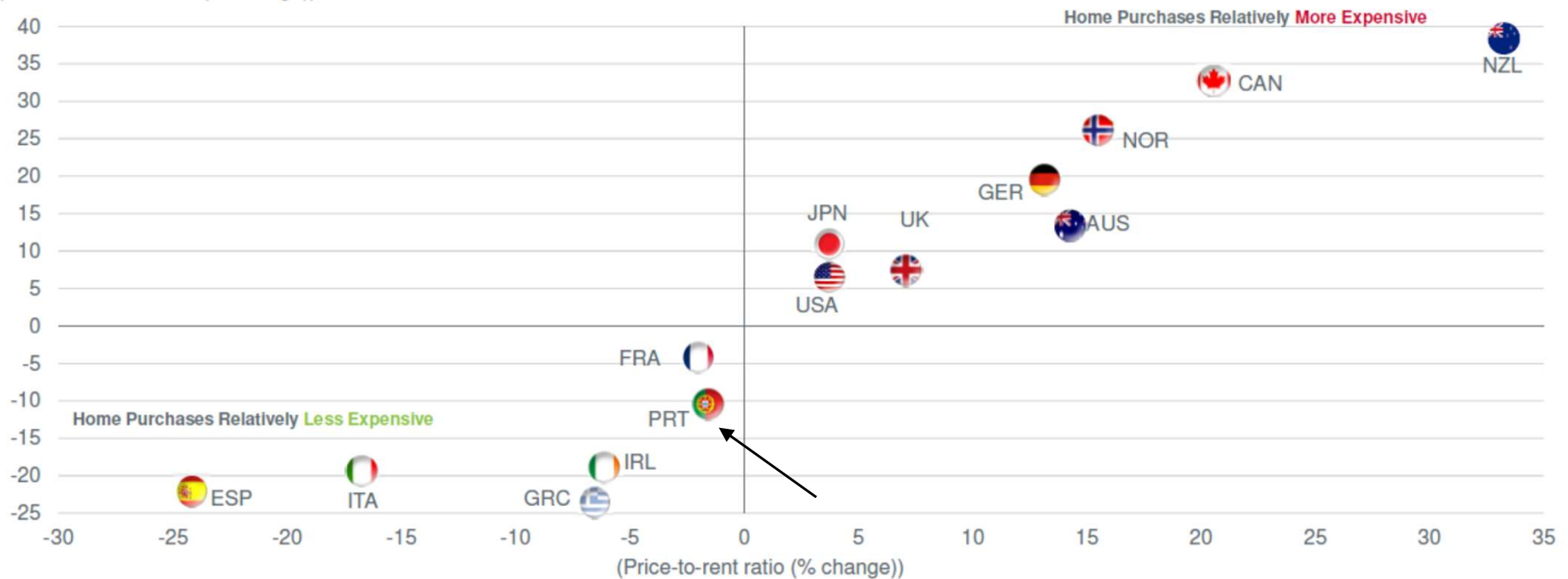
Credit Risk

- The variations in price-to-income and price-to-rent ratios between 2010 and 2016 were less marked than in several other countries worldwide, ...

Change in Price-to-Income and Price-to-Rent Ratios

Change from 2010 to End 2016

(Price-to-income ratio (% change))



Source: Fitch (2018), 2018 Credit Outlook Lisbon, 18 Jan.

Credit Risk

- ... , though both indicators have been increasing significantly since 2014.

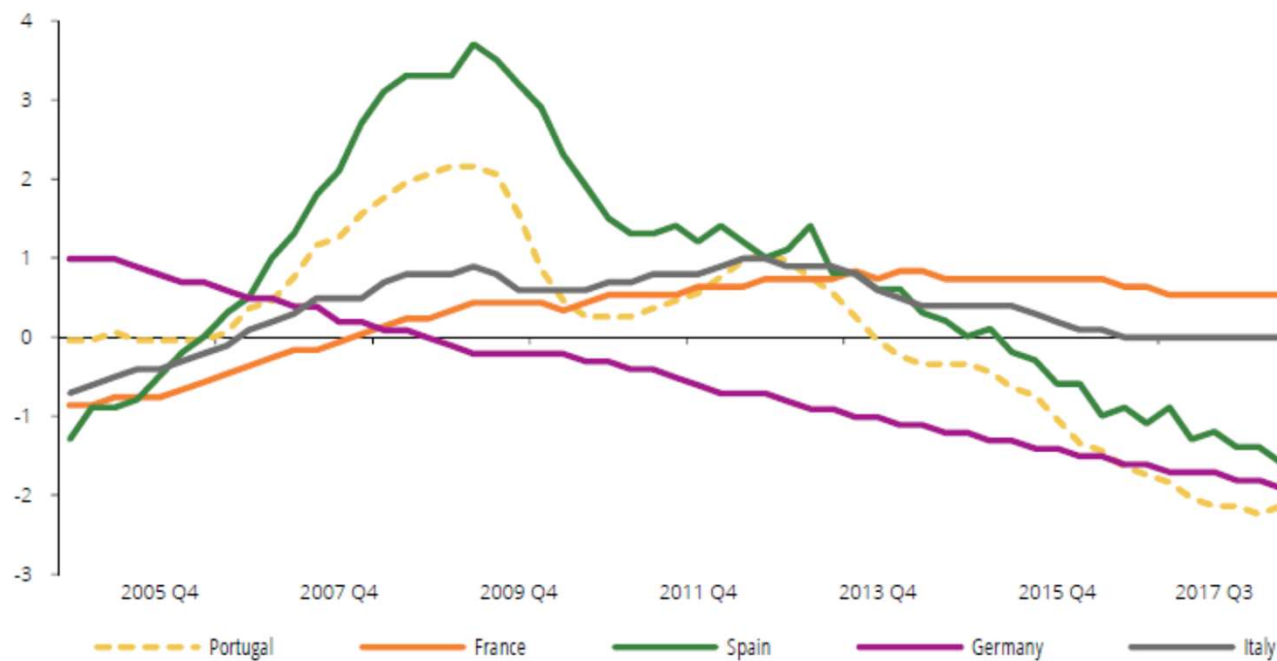


IMF (2019), “2019 Article IV Consultation”, IMF Country Report No. 19/221

Credit Risk

- The level of debt service ratio has benefitted from the downward path of interest rates.

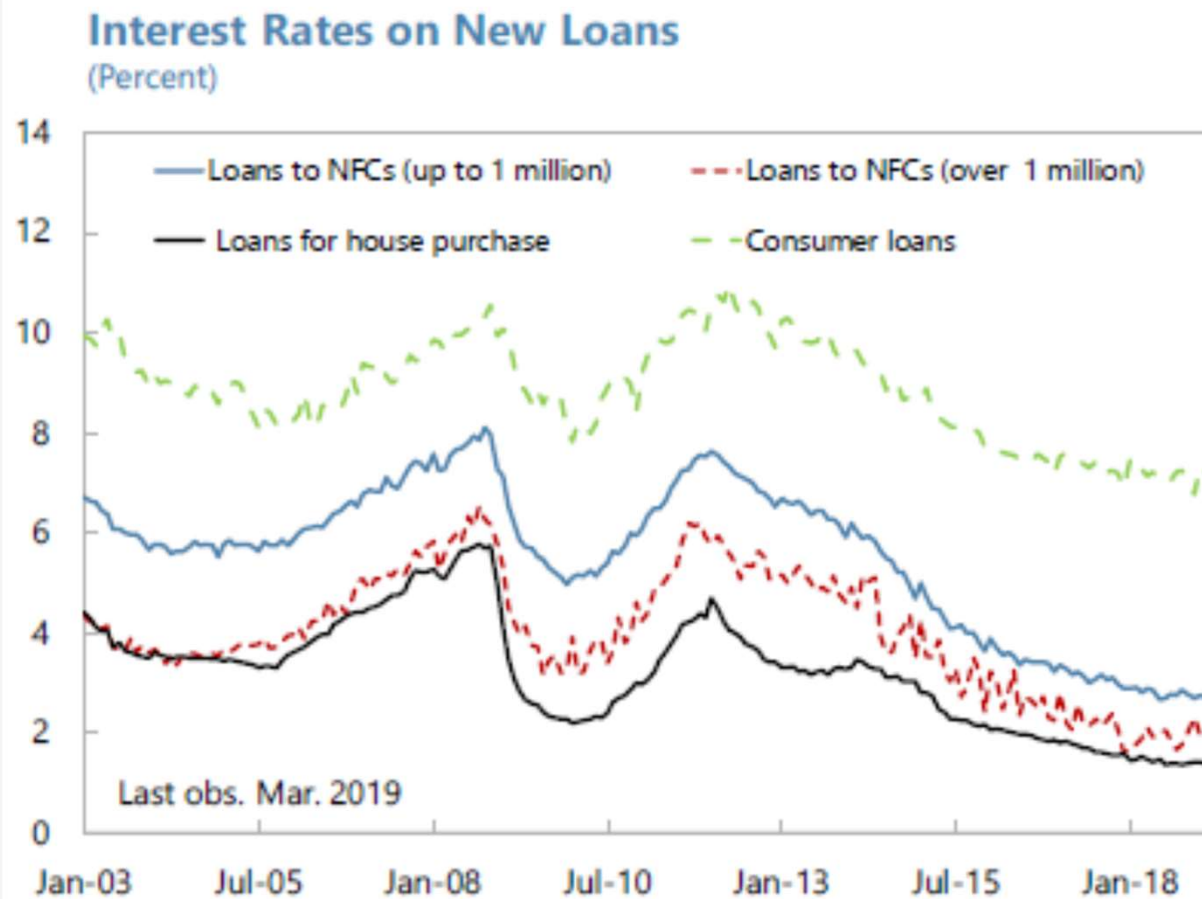
Chart I.3.11 • Private individuals' debt service ratio | Deviation from each country's mean, in percentage points



Source: Banco de Portugal (2018), "Financial Stability Review", May.

Credit Risk

- Actually, interest rates have been following a declining trend.

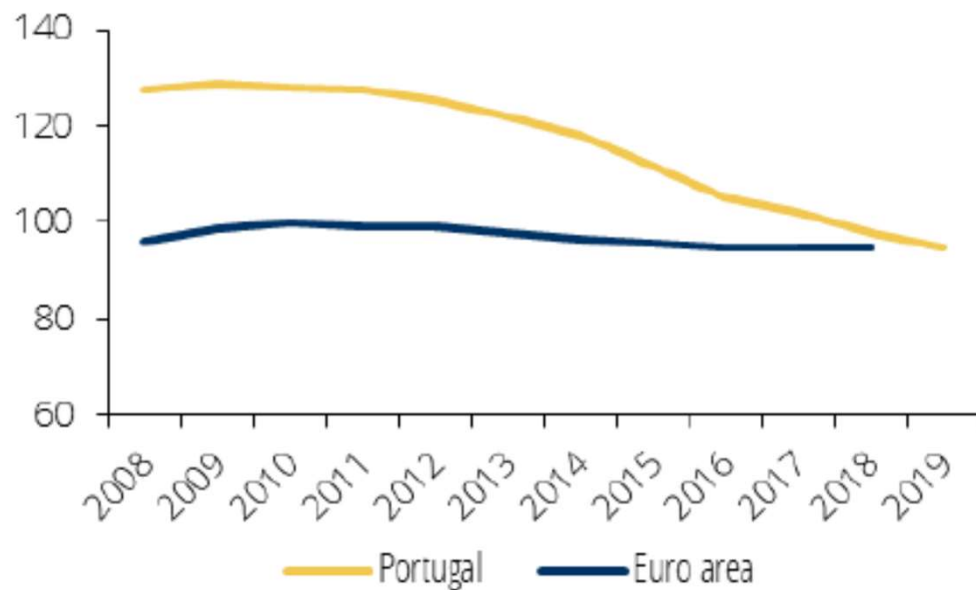


IMF (2019), "2019 Article IV Consultation", IMF Country Report No. 19/221

Credit Risk

- Household debt level also decreased significantly, converging to euro area levels.

Chart I.1.25 • Households' total debt | As a percentage of disposable income



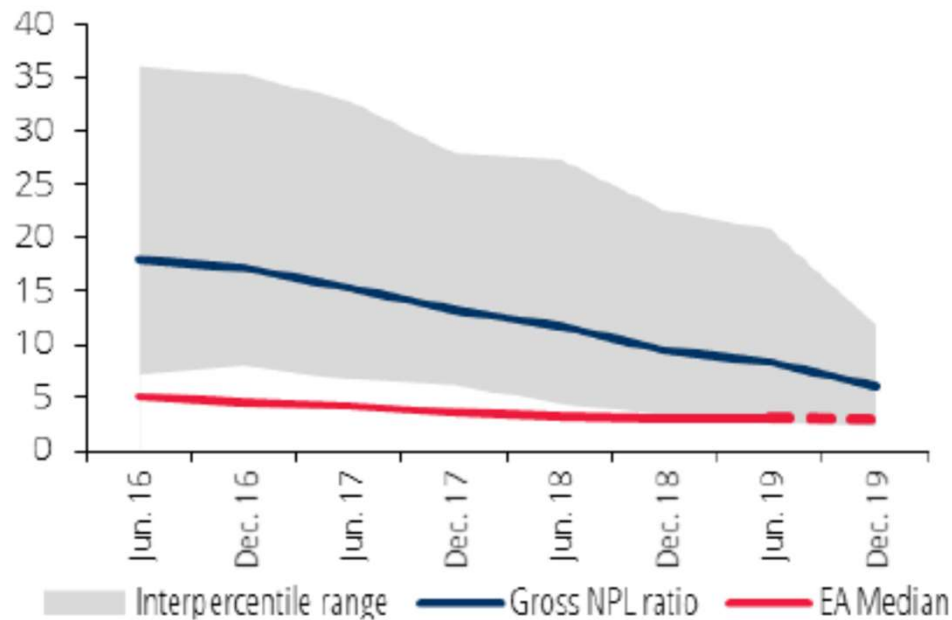
Source: Eurostat. | Note: Households' total debt includes loans, debt securities and trade credits on a consolidated basis.

Source: Banco de Portugal (2020), "Financial Stability Review", Junho.

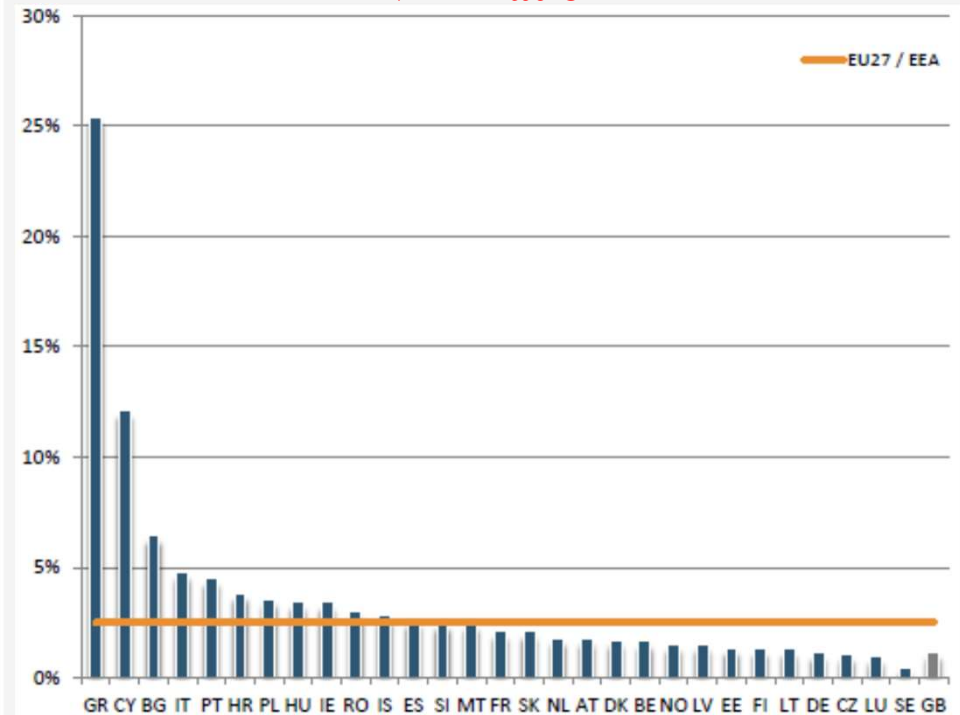
Credit Risk

- NPL ratios decreased since mid-2016, but to levels still above the Euro Area, with the domestic system exhibiting the 3rd highest ratio ...

Chart I.2.10 • Gross NPL ratio | Per cent



NPE Ratio

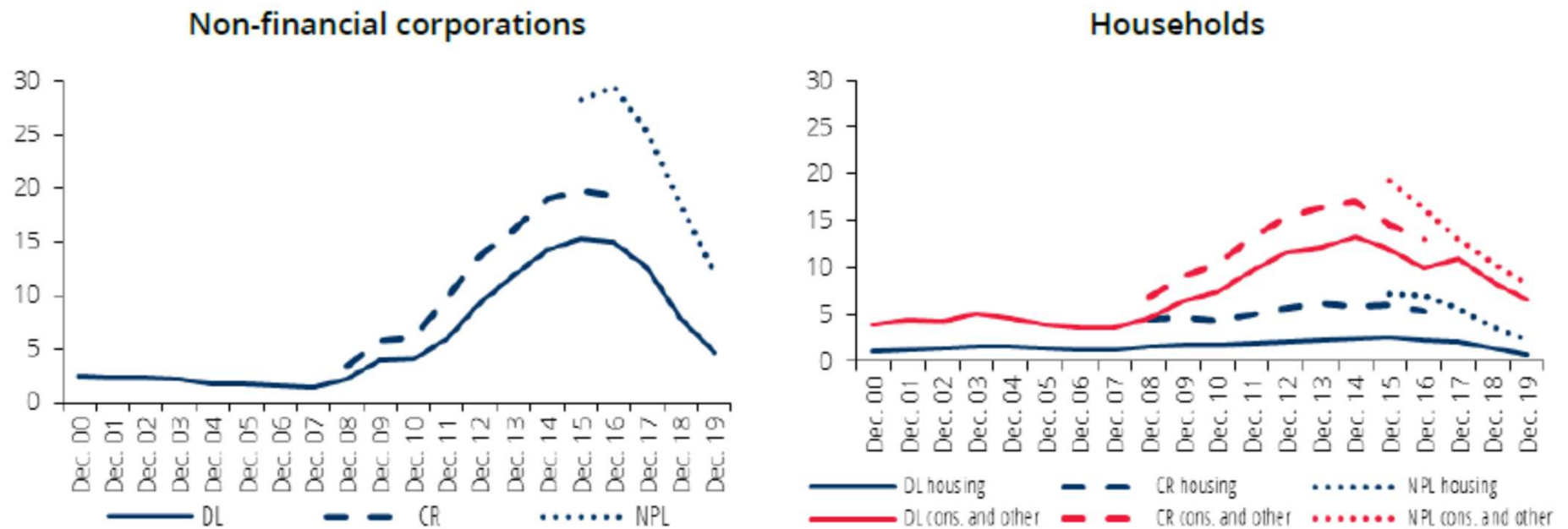


Source: Banco de Portugal (2020), “Financial Stability Review”, Jun. Source: EBA (2020), “Risk Dashboard – Data as of Q2 2020”, Oct.

Credit Risk

- ... mostly benefiting from the behavior of NFC, ...

Chart I.2.12 • Developments in doubtful loans, credit at risk and gross NPL ratios | Per cent

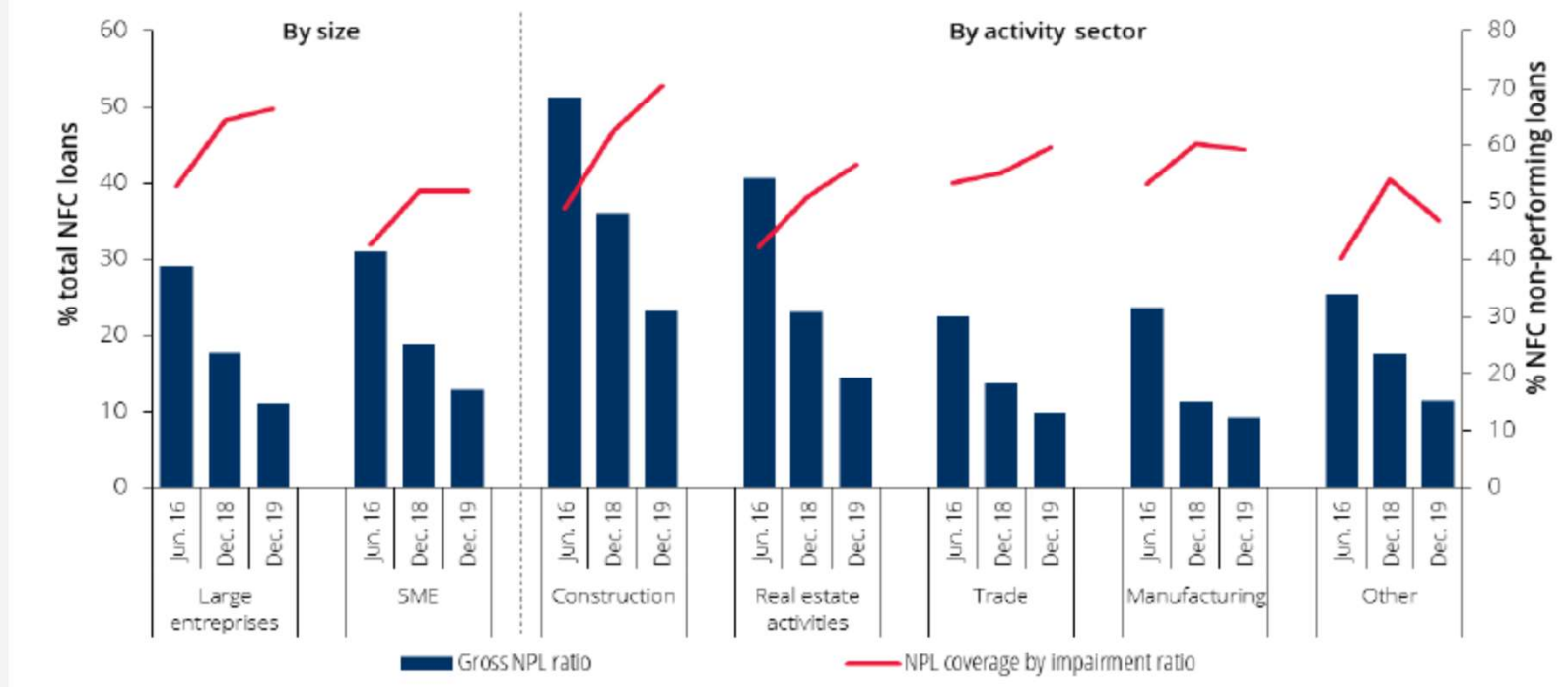


Source: Banco de Portugal (2020), “Financial Stability Review”, Junho.

Credit Risk

- ... mainly in the construction sector, ...

Chart I.2.16 • NFC non-performing loans by firm size and activity sector

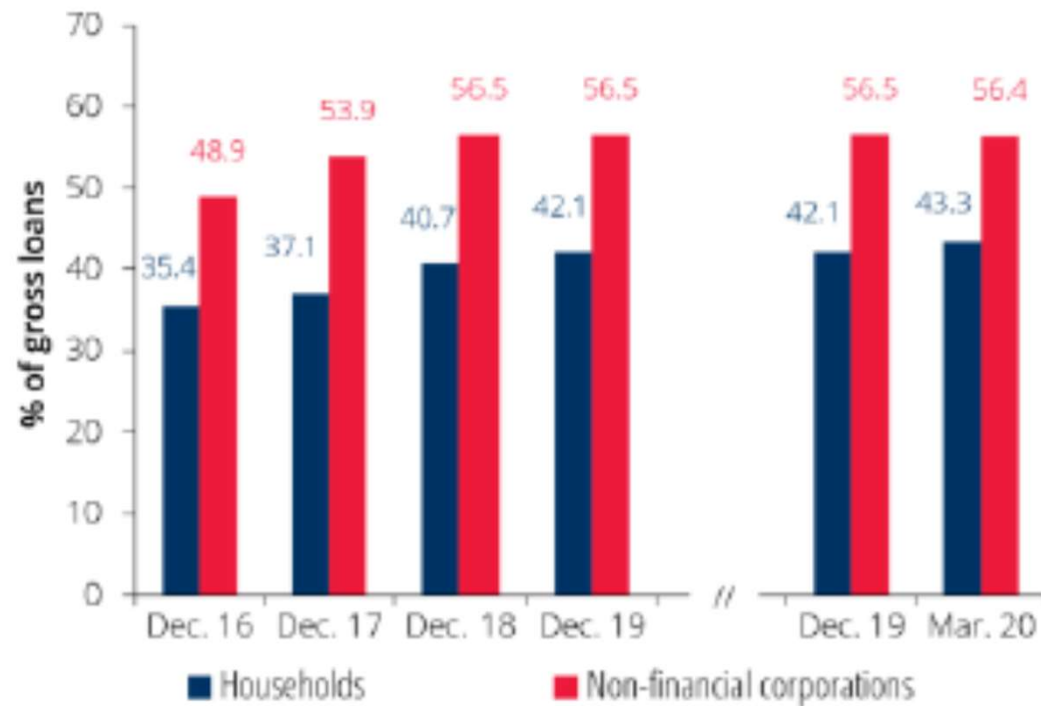


Source: Banco de Portugal (2020), “Financial Stability Review”, Junho.

Credit Risk

- ... while coverage ratios have been increasing, ...

Chart 3 • NPL coverage ratios



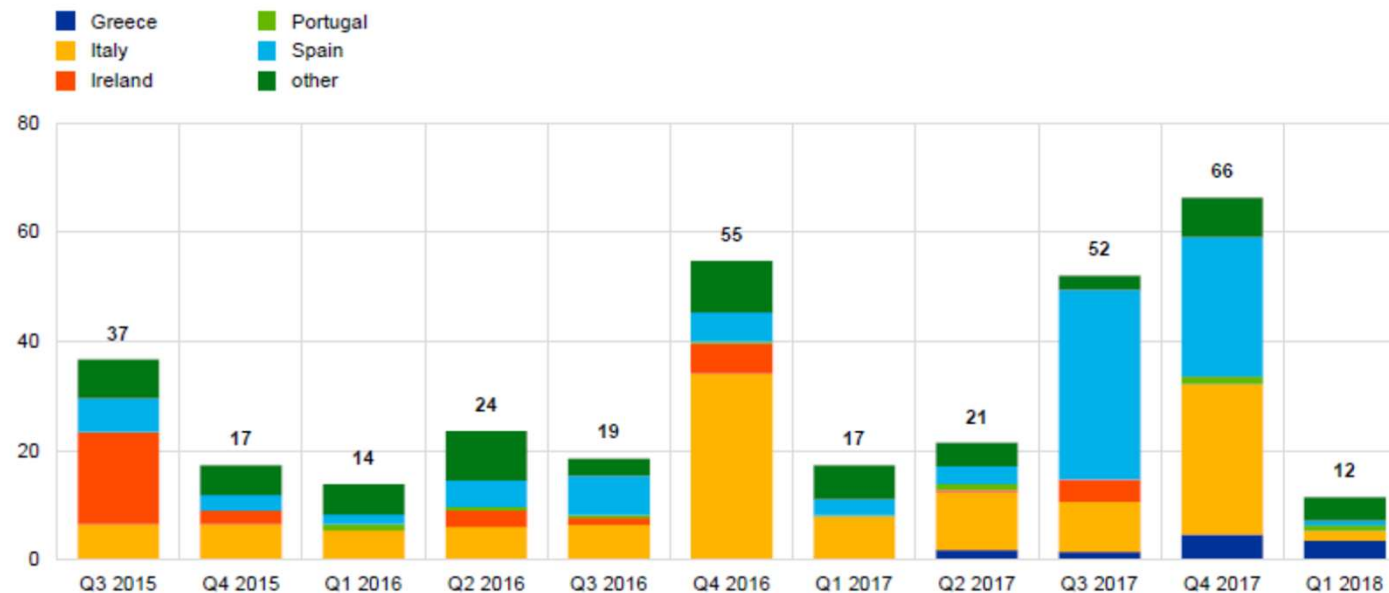
Source: Banco de Portugal (2020), "Portuguese Banking System: Recent Developments - 1Q20"

Credit Risk

- Besides the improvement of macroeconomic conditions, NPL ratios benefited from increasing sales of NPL portfolios in crisis afflicted European countries, namely Italy, Spain and Portugal, ...

Total gross book value of traded NPL portfolios in the euro area

(Q3 2015 – Q1 2018; EUR billions)



Sources: KPMG Debt Sales Monitor and ECB calculations.

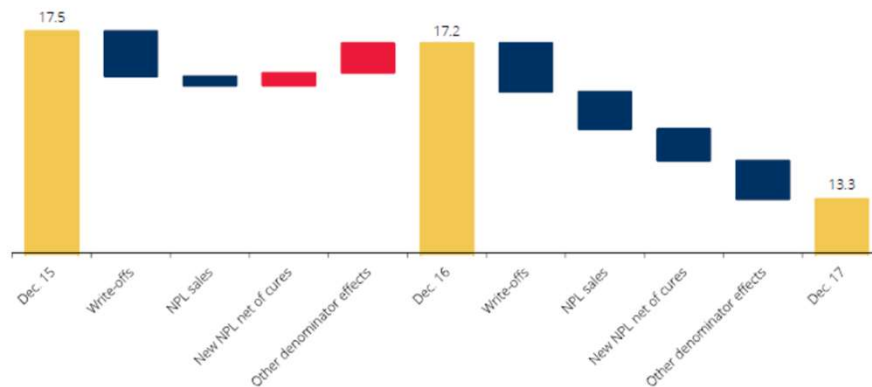
Notes: €115 billion of transactions were reported as ongoing at the cut-off date of this FSR. Numbers above bars indicate total European transaction volumes for each quarter.

Source: European Central Bank (2018), “Financial Stability Review”, May.

Credit Risk

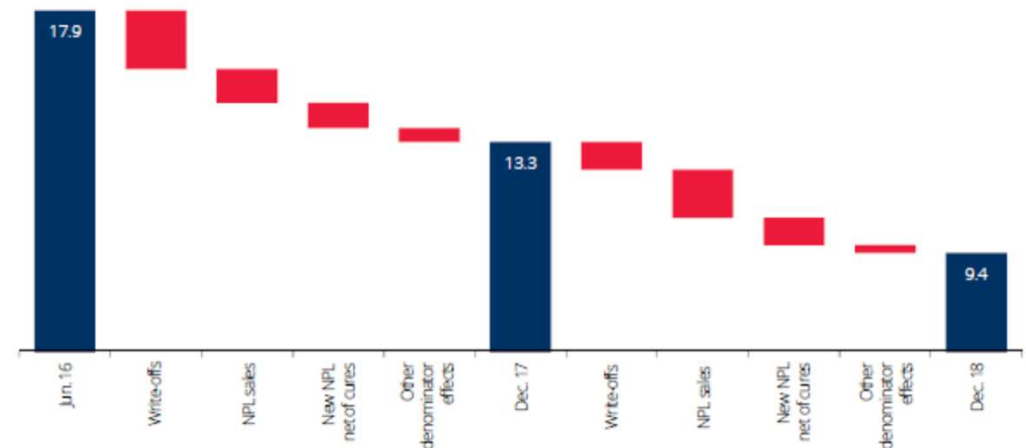
- ..., where write-offs have also been playing a decisive role.

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



Source: Banco de Portugal (2018), “Financial Stability Review”, June.

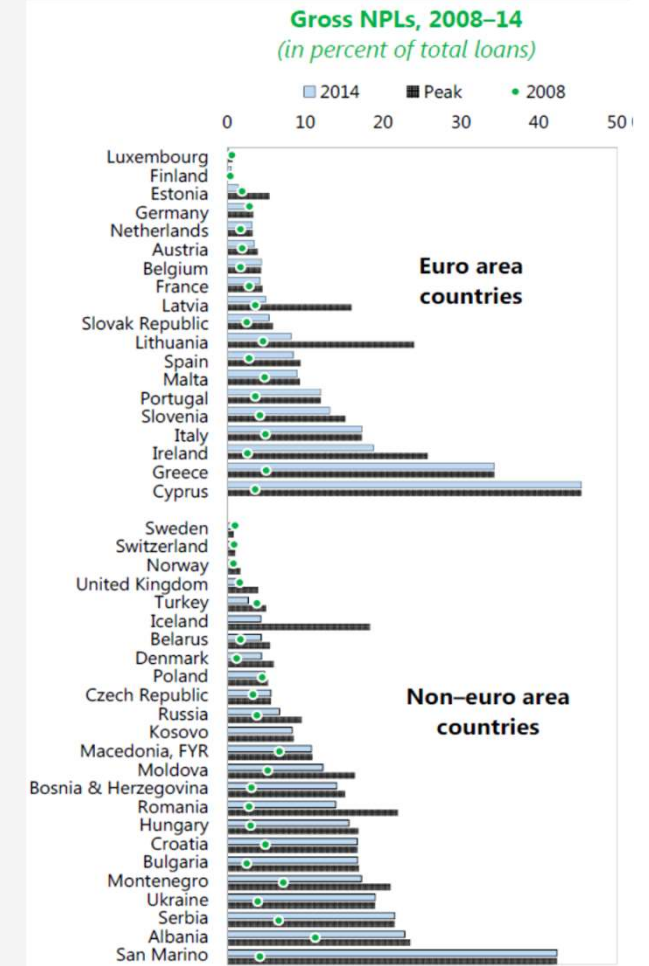
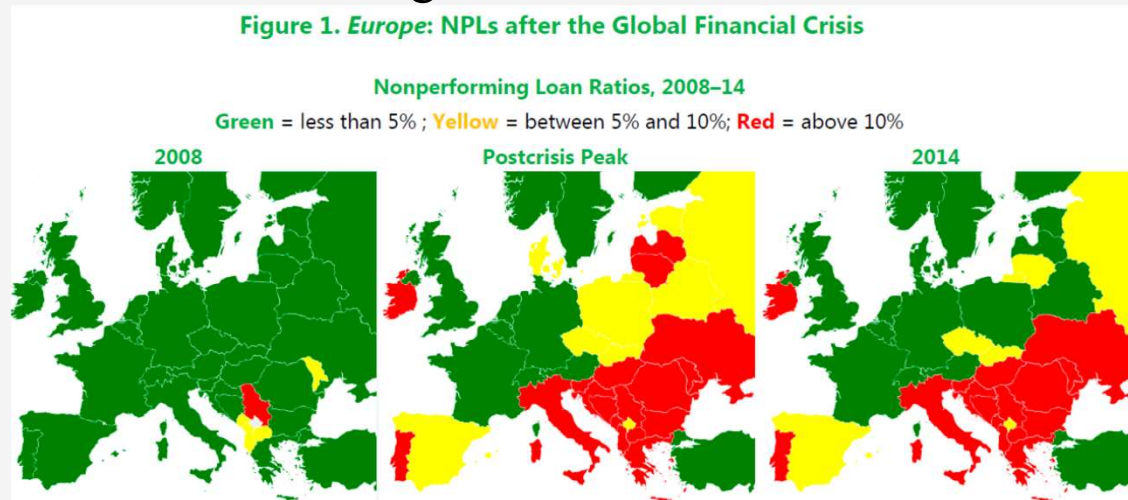
Chart I.4.12 • NPL ratio – Contributions to change | Per cent and percentage points



Source: Banco de Portugal (2019), “Financial Stability Review”, June.

Credit Risk

- The stock of NPLs in the EU banking sectors was near €1.0 trillion in 2014, around 7% of total loans and also its GDP, more than doubling since 2008 and reaching exceptionally high levels in Cyprus (more than 40%) and Greece (35%), with 16 banks in 8 countries exhibiting NPEs of 30% or higher.**

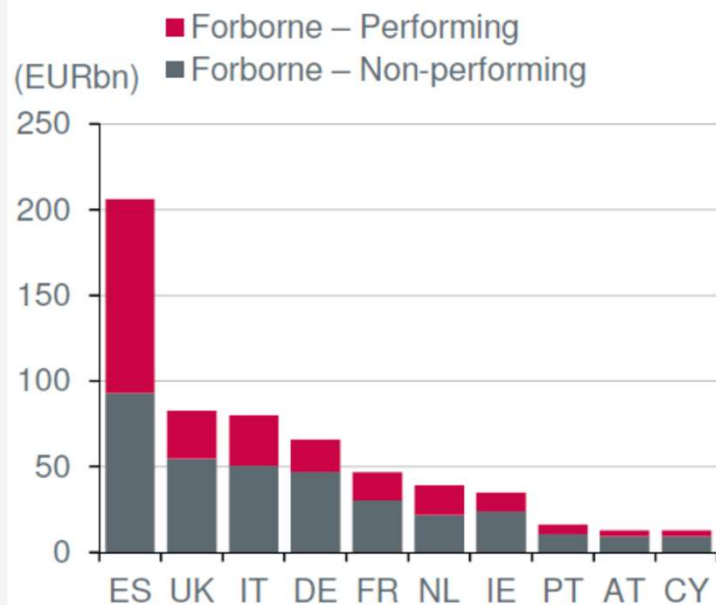


Source: IMF (2017), “A Strategy for Resolving Europe’s Problem Loans”, Shekhar Aiyar, Wolfgang Bergthaler, Jose M. Garrido, Anna Ilyina, Andreas Jobst, Kenneth Kang, Dmitriy Kovtun, Yan Liu, Dermot Monaghan, and Marina Moretti, I M F Staff Discussion Note.

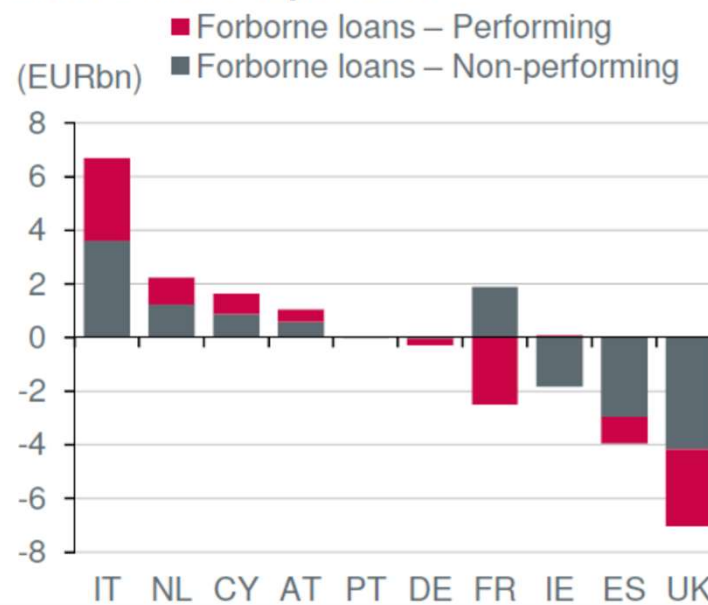
Credit Risk

- These NPLs included most of forborne loans (635B€ in EU, with around 260B€ performing).

Forborne loans at 1H15, aggregated by country of each bank's home supervisor



Change in forborne loans (1H15 vs end-2014), aggregated by country of each bank's home supervisor

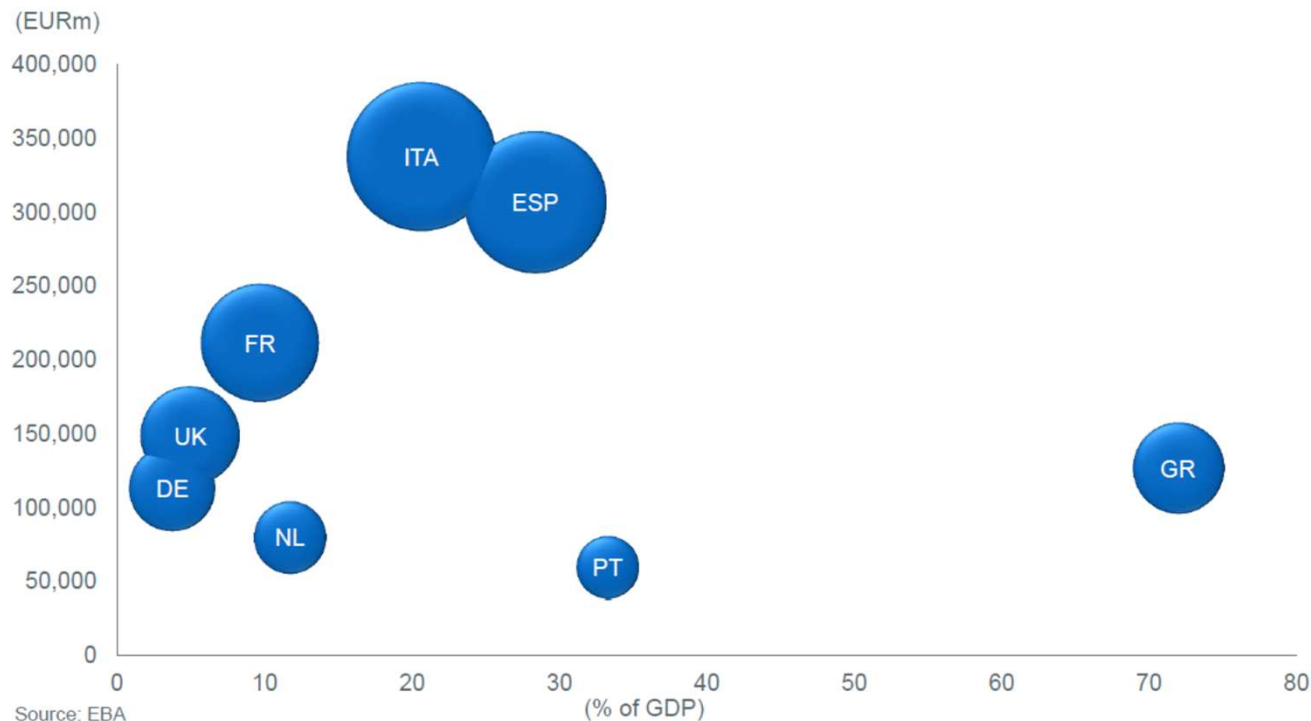


Source: Fitch (2016), 2016 Fitch Credit Outlook Conference, Lisbon, 28 Jan.

Credit Risk

- Notwithstanding being a small market, the NPLs in Portugal reached a very significant share of the GDP (>30% in mid-2016).

Materiality of NPL and Restructured Loans (June 2016)



Fitch (2017), "Credit Outlook Lisbon 2017", 26 Jan.

Credit Risk

- **Slow reduction in the NPLs' stock of European banks after the subprime crisis => macroprudential and financial stability issues:**
 - (i) NPLs consume management attention and scarce financial resources (liquidity and capital) => **lower loan supply.**
 - (i) Higher NPLs => Increased uncertainty about banks' asset values => costs of funding and capital unnecessarily increased for the sector as a whole => higher cost of credit to borrowers => **lower economic growth.**

Credit Risk

- The speed of NPL resolution was too slow in the Euro Area => doubts over financial stability => “wait-and-see” approach had to be discouraged => NPLs should be reduced faster but avoiding fire sales => EA strategy:
 - 1) Swift recognition of NPLs;
 - 2) Losses borne primarily by banks’ shareholders and other investors to avoid moral hazard.
 - 3) Long-term viability assessment of the affected banks.
 - 4) High stocks of NPLs addressed in a comprehensive package.

Credit Risk

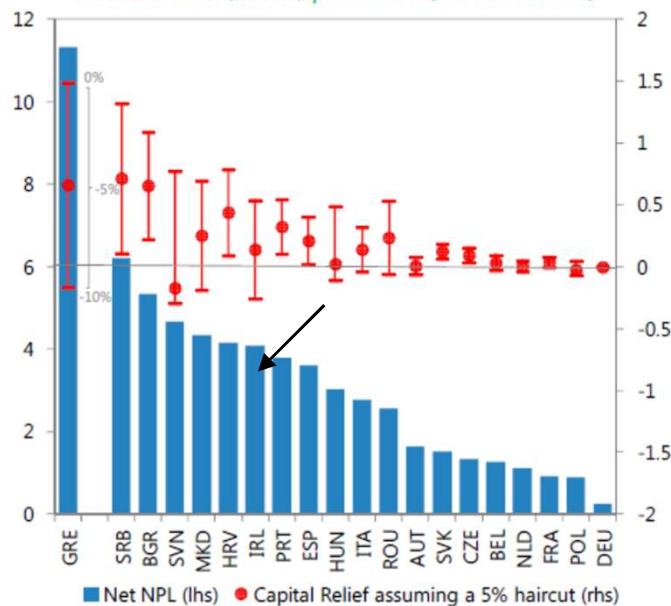
- The macroeconomic impact of the reduction in NPLs depended on the values agreed, with small haircuts already implying additional capital needs:
 - 1) NPLs sold at their net book value (i.e. the book value minus provisioning) – reduction of NPL ratios to their historical average of 3–4% => capital release = €54 B (0.5% of GDP) => new lending of up to around €550 B (i.e. 5% of GDP, keeping capital ratios).
 - 2) NPLs sold at a haircut of 5% on net book values - the freed-up capital would be only €24B, amounting to 0.2% of the combined GDP, and a corresponding new lending capacity of up to €247B (2.4 % of GDP).
 - 3) **With larger haircuts, the capital “relief” could be negative in some cases.**

Credit Risk

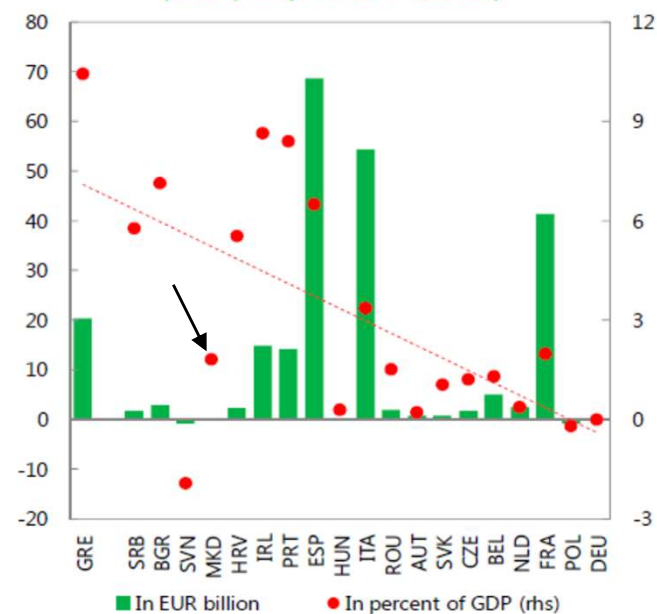
- Portugal was one of the countries with higher potential benefits.

Figure 4. Potential Capital Relief and New Lending from NPL Disposal

Europe: Net NPLs and Capital Relief from NPL Reduction (2014, percent of total assets)



Europe: New Lending Capacity from NPL Reduction (2014, uniform 5% haircut)



Source: IMF (2017), “A Strategy for Resolving Europe’s Problem Loans”, Shekhar Aiyar, Wolfgang Bergthaler, Jose M. Garrido, Anna Ilyina, Andreas Jobst, Kenneth Kang, Dmitriy Kovtun, Yan Liu, Dermot Monaghan, and Marina Moretti, I M F Staff Discussion Note.

Credit Risk

■ 3 steps policy recommended for EA banks:

- 1) Clear upfront diagnosis of the size and scope of the NPL problem, followed by an operational separation of NPLs from other, performing assets of the bank.
- 2) NPLs of the concerned banks should be subject to valuation, to distinguish between:
 - (i) viable and non-viable exposures – to be restructured and liquidated, respectively.
 - (ii) NPLs to remain in the banking system (to be gradually resolved by the banks, whilst being separated from the going-concern operations) and to be removed from the banking system (through direct sales to investors, transfers to asset management companies (AMCs) and securitisation).
- 3) Assessment of the viability of each individual bank following the resolution of their NPLs needs to be made - banks may need to be restructured, merged or sold to facilitate their return to sustainable profitability. If necessary, the bank must be resolved or liquidated.

Credit Risk

- **Recommendations for microprudential authorities in order to strengthen their efforts to improve banks' NPL management:**
 - 1) enforce compliance with the EU NPL definition and prudent measurement of NPLs (and prudent valuation of collateral)
 - 2) request regular updates of NPL reduction strategies and setting targets for NPL reduction;
 - 3) request banks with high NPL levels to report data necessary to assess their viability in a scenario whereby NPLs are to be resolved;
 - 4) implement an European blueprint for national authorities based on international best practices, with common templates for NPL data and possible future NPL trading platforms, where investors would be able to acquire NPLs from multiple banks;
 - 5) Impose additional capital requirements.

Credit Risk

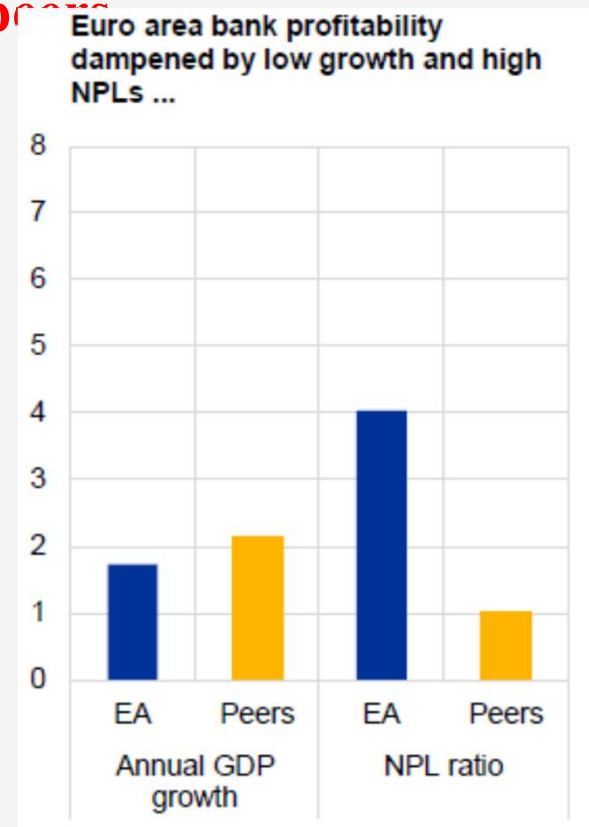
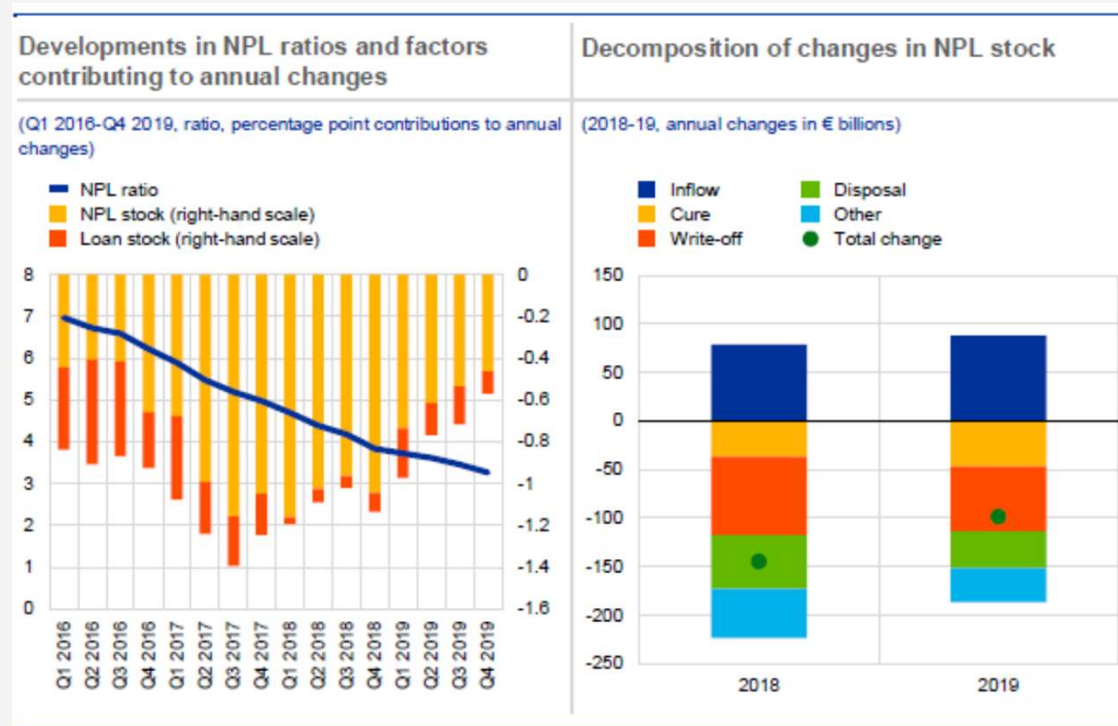
- **EU Action Plan to Tackle Non-Performing Loans in Europe approved in 2018** (after ECB (2017), “Guidance to banks on non-performing loans”, March):
 - (i) guidelines on management of nonperforming exposures and forborne exposures (based on SSM guidelines);
 - (ii) blueprint for asset management companies;
 - (iii) measures to strengthen NPL data infrastructure;
 - (iv) measures to develop secondary markets for NPLs and enhance the protection of secured creditors;
 - (v) guidelines for the monitoring of loan tapes;
 - (vi) measures to enhance disclosure requirements on asset quality;
 - (vii) measures to address potential under-provision of newly originated loans.

Credit Risk

- **Measures already taken in Portugal:**
 - (i) improvement of the legal, judicial and tax framework, including the recent establishment of a common decision body between the tax authority and the social security administration to participate in restructuring negotiations;
 - (ii) enhancement of in-court restructuring and insolvency frameworks (including through digitalization of processes);
 - (iii) introduction of measures to speed up out-of-court settlement procedures;
 - (iv) higher capital requirements for banks with higher NPLs.

Credit Risk

- NPL ratio in Euro Area has decreased from 7% to 3%, mostly due to write-offs and sales of NPLs, but it is still above the main peer countries**



Source: ECB (2019), Financial Stability Review, May.

Credit Risk

- **BoP announced in Feb18 macroprudential measures focused on credit risk in new mortgage and consumer loans, in effect since Jul18**, under the principle of ‘comply or explain’, namely:
 - (i) LTV for new mortgages for primary residence $\leq 90\%$ (80% for other purposes and 100% for properties held by the bank or for leasing).
 - (ii) DSTI $\leq 50\%$, with the following requirements:
 - (1) DSTI calculated assuming interest rate increases of 100 bp for loans with maturity $< 5y$, 200 bp for maturities between 5 and 10 years, and 300 bp for maturities >10 years.
 - (2) Income is net of taxes and social security contributions and taking into account the impact of a reduction in the borrower’s income, if the borrower’s age at the loan maturity is $> 70y$.

Credit Risk

(3) exclusions:

- Up to 20% of loans granted each year – DSTI \leq 60%;
- Up to 5%: no DSTI limit.

(iii) Limits to maturities:

- (i) New mortgage and related loans \leq 40y, with the average maturity of new credit agreements having gradually to converge to 30y by 2022.
- (ii) Consumer credit agreements - maturity of new loans \leq 10y.

Liquidity Risk

- **Definition: the risk of losing the ability to have enough cash to keep operating smoothly, while the bank is solvent.**
- Illiquidity means that banks cannot get cash by selling assets at reasonable prices.
- Being solvent, i.e. complying with capital requirements, and preserving eligible collateral to offer, a bank is not expected to face liquidity problems, as it keeps the ability to raise cash from the central bank.
- Conversely, fire sales of assets may lead to losses, impacting on the solvency and therefore triggering additional liquidity problems.
- Liquidity problems may be provoked by exogenous market events, e.g. lower risk-appetite or by endogenous factors, due to mismatches between assets and liabilities.

Liquidity Risk

- **Liquidity risk stems from:**
 - (i) **asset side** - off-balance sheet loan commitments (e.g. credit cards, current accounts, overdraft facilities) allow customers to withdraw money from the bank.
 - (ii) **liability side** - the very high percentage of short-term liabilities, matched by a very low percentage of liquid assets (more relevant).
- In the US, deposits represent 75% of liabilities.

TABLE 17-1
Assets and
Liabilities of U.S.
Banks, June 2006 (in
billions of dollars)

Source: Federal Deposit
 Insurance Corporation Web
 site, November 2006.
www.fdic.gov

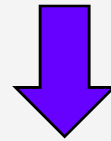
	Assets		Liabilities*	
Total cash assets	\$ 397.6	4.14%	Total deposits	\$6,383.0 73.96%
Total securities	2,731.1	28.44	Borrowings	1,954.3 22.64
Total loans	5,589.3	58.21	Other liabilities	293.2 3.40
Other assets	884.3	9.21	Total liabilities	\$8,630.5
Total assets	<u>\$9,602.3</u>			

*Excluding bank equity capital.

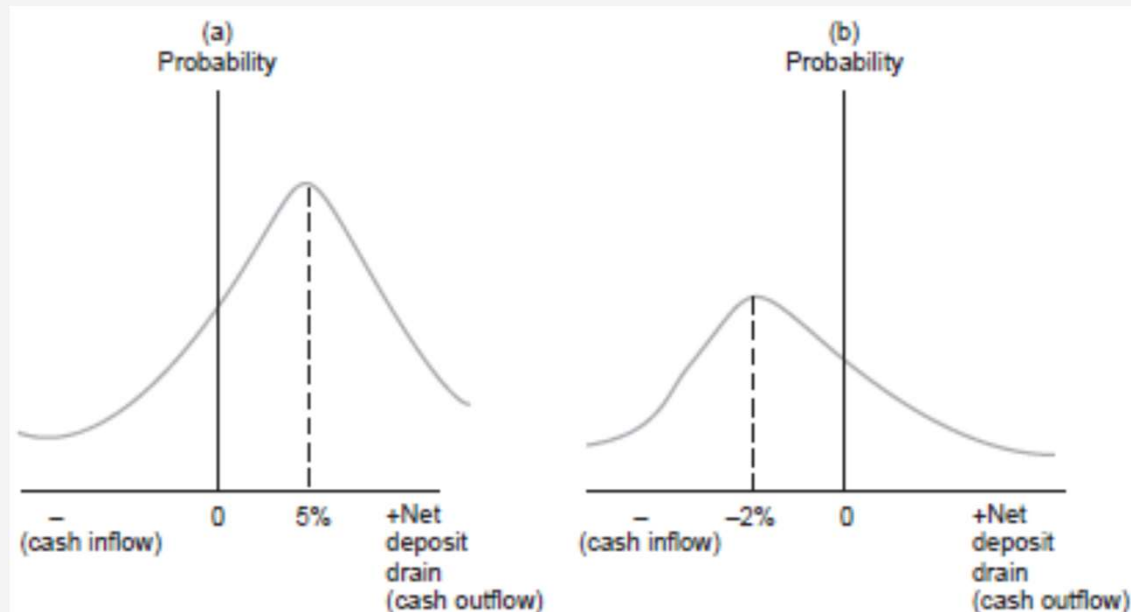
Source: Saunders, Anthony and Marcia Millon Cornett (2008), "Financial Institutions Management – A Risk Management Approach", McGraw-Hill.

Liquidity Risk

- A significant part of short-term liabilities corresponds to core or stable deposits.



- Banks are able to estimate the probability distribution of net deposits drain, unless something very unexpected occurs – bank runs:



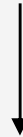
Source: Saunders, Anthony and Marcia Millon Cornett (2008), "Financial Institutions Management – A Risk Management Approach", McGraw-Hill.

Liquidity Risk

- 1) Metrics
 - Liquidity gaps
 - Eligible collaterals in liquidity operations with the Central Bank
 - Liquidity ratios
- 2) Consequences of the Government Debt crisis
- 3) Recent evolution

Liquidity Risk

- Main indicator under normal market conditions: liquidity gaps (or maturity laddering method):



differences between assets and liabilities generating liquidity flows (payments or receivables) in different maturity buckets (usually up to 1y).

- Static vs dynamic gaps: static gaps are calculated assuming that the current balance sheet will not change, while dynamic gaps result from assumption on activity growth, namely credit, deposits and securities held or issued.
- Nonetheless, even for static gaps behavioral assumptions are required, e.g. for revolving loans and deposits.

Liquidity Risk

- Negative cumulative dynamic gaps => Funding Plan is insufficient to ensure an adequate liquidity position and has to be revised.
- Positive cumulative dynamic gaps => Funding Plan may be revised to accommodate the liquidity surplus.

Table 3.4 Liquidity Funding – Maturity Ladder Approach (£000)*

	Week 1	Week 2	Week 3	Week 4
<i>Cash inflows</i>	12 000	10 000	10 000	8 500
Assets (week they mature)	1 500	8 000	2 000	1 000
Sales planned	10 000	1 000	3 000	2 500
Agreed credit lines	500	1 000	5 000	6 000
<i>Cash outflows</i>	11 700	9 500	10 700	8 900
Liabilities due	7 000	3 000	9 000	4 000
Contingent liabilities (e.g. credit lines)	4 500	6 000	1 500	4 500
Unplanned cash outflows	200	500	200	400
Net funding needs	-300	500	700	400
Cumulative net funding needs	-300	-800	-100	300

Source: Heffernan, Shelagh (2005), “Modern Banking”, John Wiley & Sons.

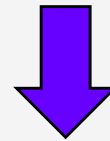
Liquidity Risk

- **Liquidity gaps => interest rate risk** either under fixed or floating rates, as long as there are mismatches between the indexing rates and/or the repricing dates.
- When a bank is under pressure regarding its market liquidity sources (in the retail or in the wholesale markets, i.e. deposits and bonds) => reliance on the central bank.
- However, the ability of raising liquidity from the central bank is limited by the volume of eligible collaterals (usually bonds and loans) the bank has to offer => in these cases, **the most important liquidity indicator becomes the volume of eligible collaterals available.**

Liquidity Risk

- **Additionally**, banks have to comply with the minimum level of 100% for the Liquidity Coverage Ratio (LCR) imposed by the European regulation approved after the subprime crisis:

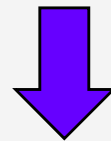
$$\frac{\text{Stock of high quality liquid assets}}{\text{Net cash outflows over a 30-day time period}} \geq 100\%$$



- **This ratio imposes a volume of HQLA that at least has to match the outflows expected to occur in the next 30 days.**
- Nonetheless, during a period of financial stress, banks may use their stocks of HQLA, with the LCR allowed to fall below 100%.

Liquidity Risk

- **Total net cash outflows** = total expected cash outflows - total expected cash inflows in the specified stress scenario for the subsequent 30 calendar days.
- **Total expected cash outflows** = outstanding balances of various categories or types of liabilities and off-balance sheet commitments x run off rates.
- **Total expected cash inflows** = outstanding balances of various categories of contractual receivables x rates at which they are expected to flow in under the scenario, up to an aggregate cap of 75% of total expected cash outflows.



- **Different assumptions are set in regulation about liquidity of assets and inflows and outflows, with the weights for outflows depending on their stability.**

Liquidity Risk

- **Minimum run-off factors according to liability types:**

- (i) Retail deposits - deposits by individuals, divided into “stable” and “less stable”:

- Stable deposits - amount of the deposits fully insured by a deposit insurance scheme and where depositors have other established relationships with the bank that make withdrawal highly unlikely, or the deposits are in transactional accounts (e.g. accounts where salaries are automatically deposited): 5%.
 - Less stable deposits: 10%.

Liquidity Risk

- (ii) **Unsecured wholesale funding run-off** - liabilities and general obligations that are raised from non-natural persons and are not collaterals of the borrowing institution.
- funding by small business customers: 5% (10% for less stable)
 - deposits generated by clearing, custody and cash management activities: 25%
 - deposits of cooperative banks in central institutions within networks: 25%
 - funding provided by non-financial corporates and sovereigns, central banks, multilateral development banks, and PSEs: 40% (20% for the deposit amounts fully covered by a deposit insurance scheme).
 - funding provided by other legal entity customers: 100%

Liquidity Risk

- **HQLA composition:** Level 1 + Level 2A + Level 2B (with Level 1 comprising the most liquid assets).

- **HQLA principles:**
 - (i) be eligible at central banks for intraday liquidity needs and overnight liquidity facilities (except Level 2B assets);

 - (ii) be well diversified within the asset classes themselves (except for sovereign debt of the bank's home jurisdiction or from the jurisdiction in which the bank operates; central bank reserves; central bank debt securities and cash).

Liquidity Risk

■ Fundamental characteristics of HQLA:

- (i) **Low risk** - less risky assets tend to have higher liquidity: higher rating, lower degree of subordination, low duration, low legal risk, low inflation risk and denomination in a convertible currency with low currency risk enhance liquidity.
- (ii) **Ease and certainty of valuation** – higher liquidity if market participants are more likely to agree on its valuation: assets more standardised, with simple and publicly available structures and pricing formulas (which rules out most structured or exotic products).
- (iii) **Low correlation with risky assets** - not subject to wrong-way (highly correlated) risk, e.g. assets issued by FIs are more likely to be illiquid in times of liquidity stress in the banking sector.
- (iv) **Listed on a developed and recognised exchange** - increases asset's transparency.

Liquidity Risk

- **Level 1 assets – no limits or haircuts** (but national supervisors may require haircuts based on their duration, credit and liquidity risk):
 - (a) **cash** - coins and banknotes;
 - (b) **central bank reserves** (including required reserves), to the extent that the central bank policies allow them to be drawn down in times of stress;

Liquidity Risk

- (c) **High Quality Public Debt** - marketable securities representing claims on or guaranteed by sovereigns, central banks, PSEs, BIS, IMF, ECB and EC, or multilateral development banks and satisfying all of the following conditions:
- assigned a 0% risk-weight under the Basel II Standardised Approach for credit risk;
 - traded in large, deep and active repo or cash markets characterised by low concentration;
 - have a proven record as a reliable source of liquidity in the markets (repo or sale) even during stressed market conditions;
 - not an obligation of a financial institution or any of its affiliated entities.

Liquidity Risk

(d) where the sovereign has a non-0% risk weight:

- sovereign or central bank debt securities issued in domestic currencies by the sovereign or central bank in the country in which the liquidity risk is being taken or in the bank's home country;
- domestic sovereign or central bank debt securities issued in foreign currencies are eligible up to the amount of the bank's stressed net cash outflows in that specific foreign currency stemming from the bank's operations in the jurisdiction where the bank's liquidity risk is being taken.

Liquidity Risk

- Level 2 assets (2A and 2B) - if they comprise no more than 40% of the overall stock after applying haircuts:
 - Level 2A: haircut = 15%
 - Level 2B: haircut = 50% (25% for RMBS fulfilling several requirements).

Liquidity Risk

- **Level 2A assets:**

- (a) Marketable securities issued or guaranteed by sovereigns, central banks, PSEs or multilateral development banks satisfying all the following conditions:
 - assigned a 20% risk weight under the Basel II Standardised Approach for credit risk;
 - traded in large, deep and active markets characterised by low level of concentration;
 - have track record as a reliable source of liquidity in the markets even during stressed conditions;
 - not an obligation of a financial institution or any of its affiliated entities.

Liquidity Risk

(b) Corporate debt securities (including commercial paper) and covered bonds satisfying all of the following conditions:

- not issued by a FI or any of its affiliated entities;
- covered bonds not issued by the bank or any of its affiliates;
- either (i) have a long-term rating from a recognised external credit assessment institution (ECAI) of at least AA or, in the absence of a long term rating, a short-term rating equivalent; or (ii) are internally rated as having a PD corresponding to a rating of at least AA-;
- traded in large, deep and active markets with a low level of concentration;
- have track record as a reliable source of liquidity in the markets even during stressed conditions.

Liquidity Risk

- Level 2B assets:

- (a) Residential mortgage backed securities (RMBS) that satisfy all of the following conditions - 25% haircut:

- not issued by the bank or its affiliates;
 - long-term credit rating from a recognised ECAI of AA or higher, or in the absence of a long term rating, a short-term rating equivalent;
 - traded in large, deep and active markets characterised by low concentration;

Liquidity Risk

- have track record as a reliable source of liquidity in the markets even during stressed conditions;
- underlying asset pool restricted to residential mortgages (cannot contain structured products);
- the underlying mortgages are “full recourse” loans (i.e. in the case of foreclosure the mortgage owner remains liable for any shortfall in sales proceeds from the property) and have a maximum LTV of 80% on average at issuance; and
- the securitisations are subject to “risk retention” regulations which require issuers to retain an interest in the assets they securitise.

Liquidity Risk

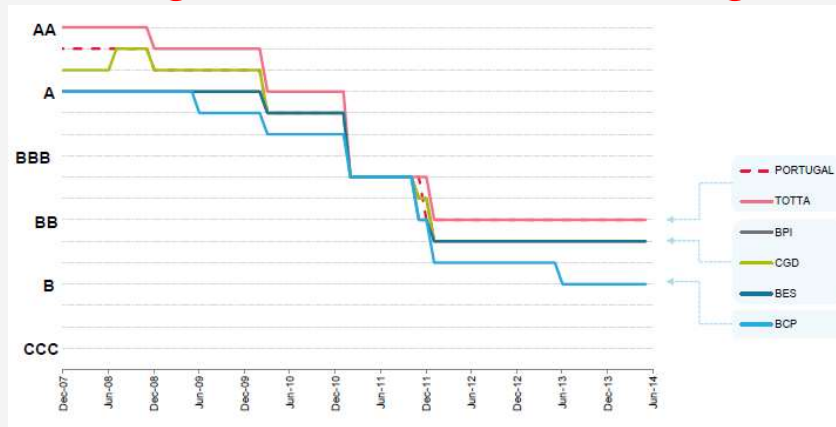
- (b) Corporate debt securities (including commercial paper) that satisfy all of the following conditions may be included in Level 2B, subject to a 50% haircut:
- not issued by a financial institution or any of its affiliated entities;
 - either (i) have a long-term credit rating from a recognised ECAI between A+ and BBB- or in the absence of a long term rating, a short-term rating equivalent; or (ii) do not have a credit assessment by a recognised ECAI and are internally rated as having a PD corresponding to a credit rating of between A+ and BBB-;
 - traded in large, deep and active characterised by a low level of concentration; and
 - a track record as a reliable source of liquidity in the markets even during stressed conditions.

Liquidity Risk

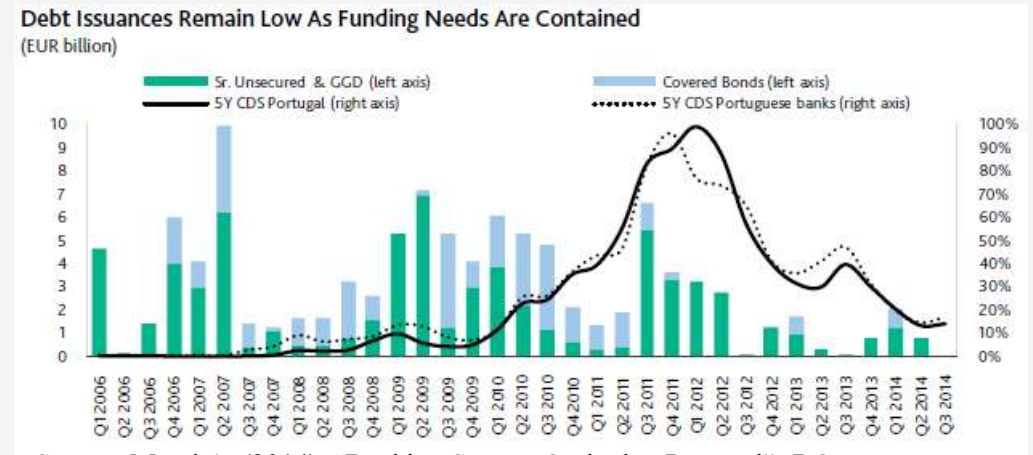
- (c) Common equity shares that satisfy all of the following conditions may be included in Level 2B, subject to a 50% haircut:
- not issued by a financial institution or any of its affiliated entities;
 - exchange traded and centrally cleared;
 - included in the major stock index in the home jurisdiction or where the liquidity risk is taken;
 - denominated in the domestic currency of a bank's home jurisdiction or in the currency of the jurisdiction where a bank's liquidity risk is taken;
 - traded in large, deep and active markets characterised by low concentration;
 - have a track record as a reliable source of liquidity in the markets even during stressed conditions.

Liquidity Risk

- Sovereign debt crisis => Speculative grade ratings for the banks => bond market funding more difficult to Portuguese banks => ...



Source: S&P (2014), “European Sovereign Ratings: after the storm”, presentation in Lisbon, June.



Source: Moody’s (2014), “Banking System Outlook – Portugal”, 7 Oct.

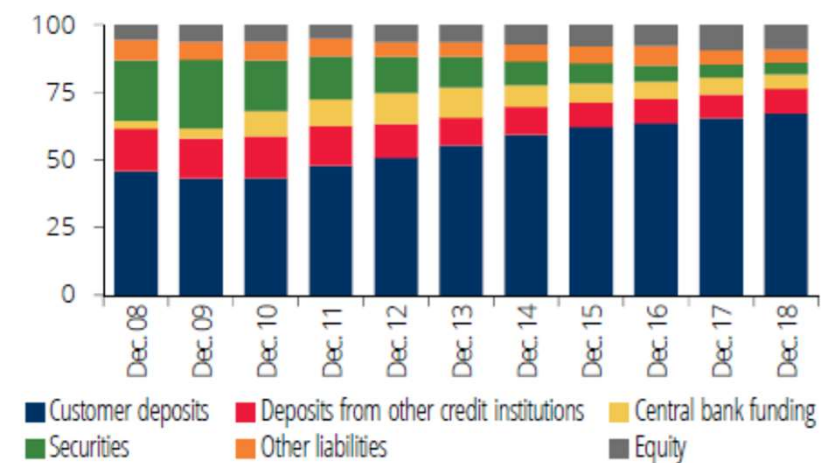
Bank	LT IDR	Outlook/RW
Banco BPI S.A.	BBB	Stable
Banco Comercial Portugues, S.A.	BB	Stable
Caixa Economica Montepio Geral, caixa economica bancaria, S.A.	B+	Stable
Caixa Geral de Depositos, S.A.	BB	Positive
Santander Totta, SGPS, S.A.	BBB+	Stable

Fitch (2019), Credit Outlook Lisbon, 24th Jan.

Liquidity Risk

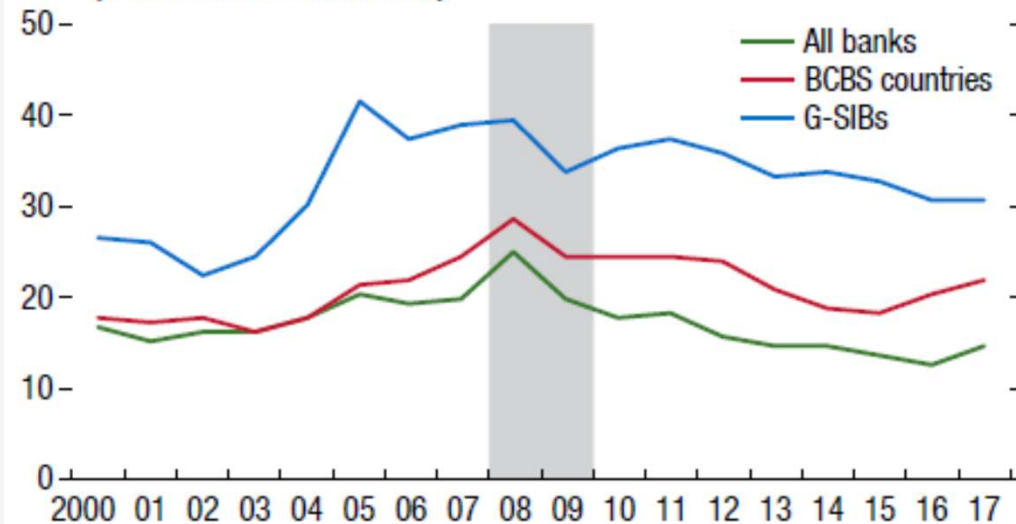
- (i) **Higher reliance on retail funding** (e.g. term deposits, structured products, subordinated bonds and commercial paper), namely from households, absorbing savings previously off-balance (e.g. Investment Funds), in line with international trends.

Chart I.4.38 • Funding structure
| Percentage of total assets



Source: Banco de Portugal (2019), “Financial Stability Report”, June.

3. Wholesale Funding Ratio
(Percent of total liabilities)

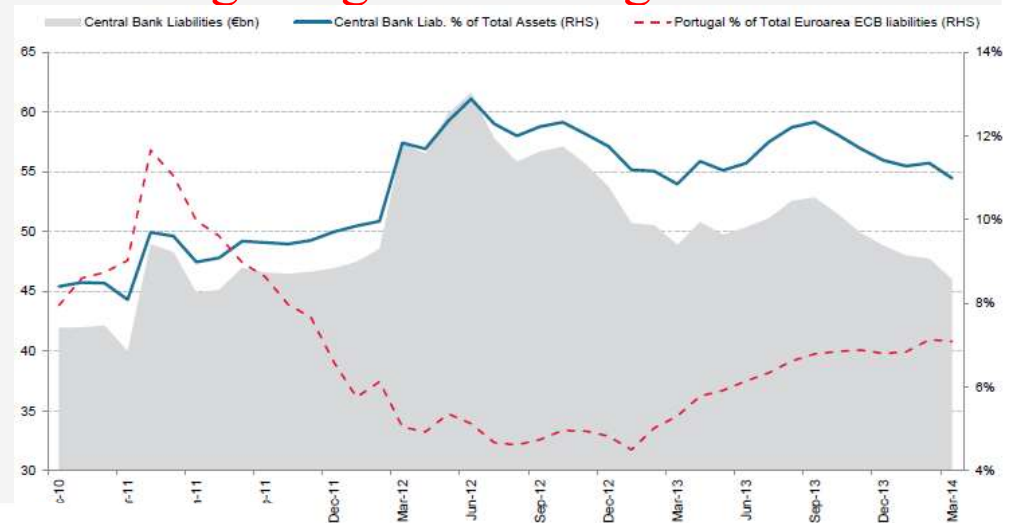


Source: IMF (2018), “Global Financial Stability Report”, October.

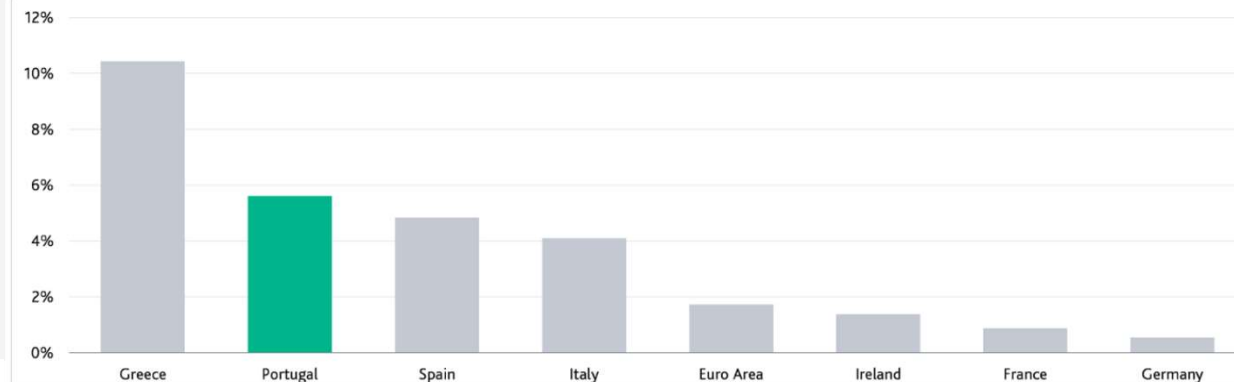
Liquidity Risk

(ii) **Increase of ECB funding until 2013**, through covered bonds and securitization of own assets (used as collateral) => **increasing weight of Portuguese banks on ECB liquidity (around 7%) ...**

Source: S&P (2014), “European Sovereign Ratings: after the storm”, presentation in Lisbon, June.



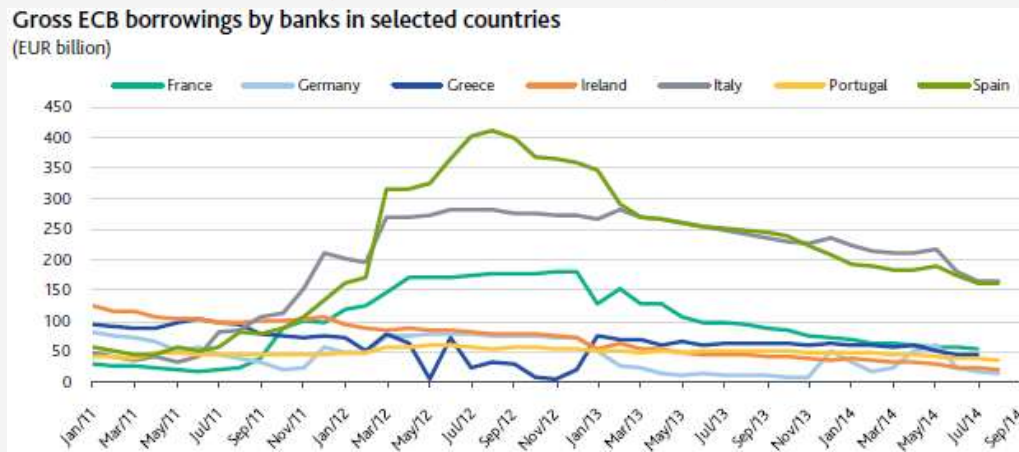
ECB funding / total banking assets in selected countries (July 2015)



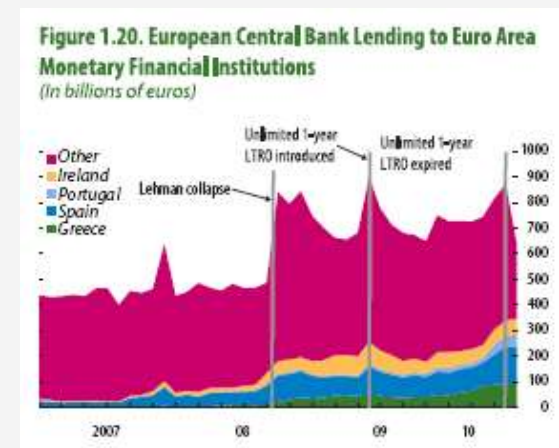
Source: Moody’s (2015), “Banking System Outlook – Portugal”, 15Oct.

Liquidity Risk

- Nonetheless, the amounts of liquidity provision by the ECB have been higher in other countries, e.g. Spain and Italy.



Source: Moody's (2014), "Banking System Outlook – Portugal", 7 Oct.

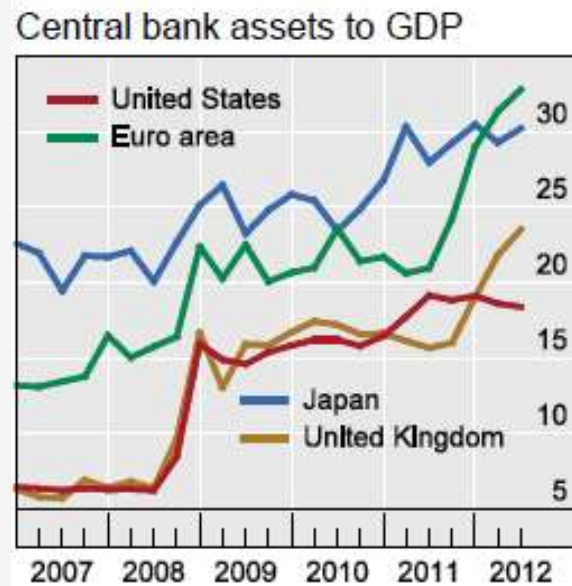


Source: IMF (2010).

- In 7 Jul.2011 the ECB suspended its rating requirements to the Portuguese Government Debt (in line with the previous decision regarding Greece), given that Portugal was under an Adjustment Program.
- After the exit of the program, this requirement was restored and currently PT Government Debt is again receiving investment grade classifications from the major rating agencies.

Liquidity Risk

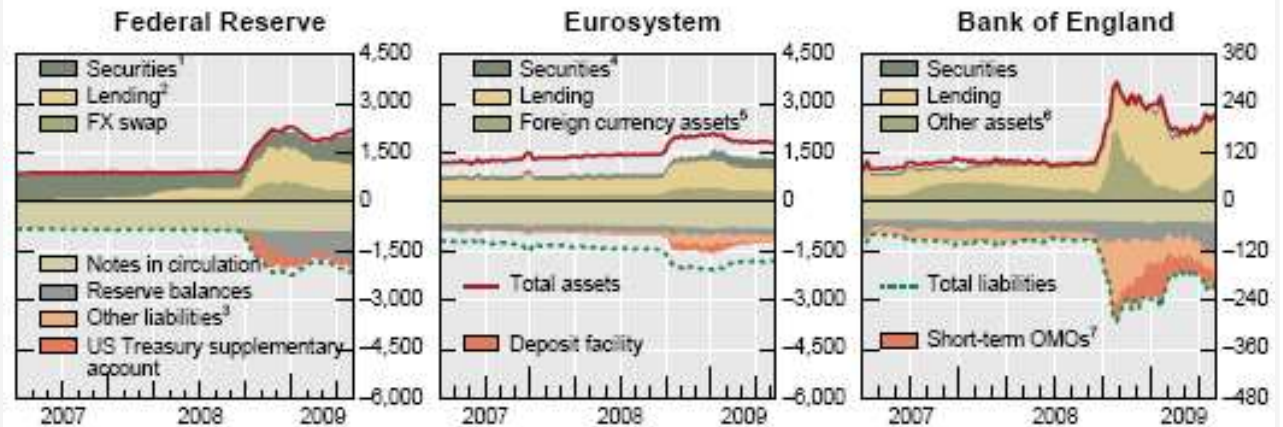
- The higher reliance on the ECB liquidity facilities has occurred in a context of **higher liquidity supply by the main central banks worldwide.**



Source: BIS (2012), "BIS Quarterly Review - International banking and financial market developments", Sept.

Figure 3: Central bank assets and liabilities

In billions of respective currency units

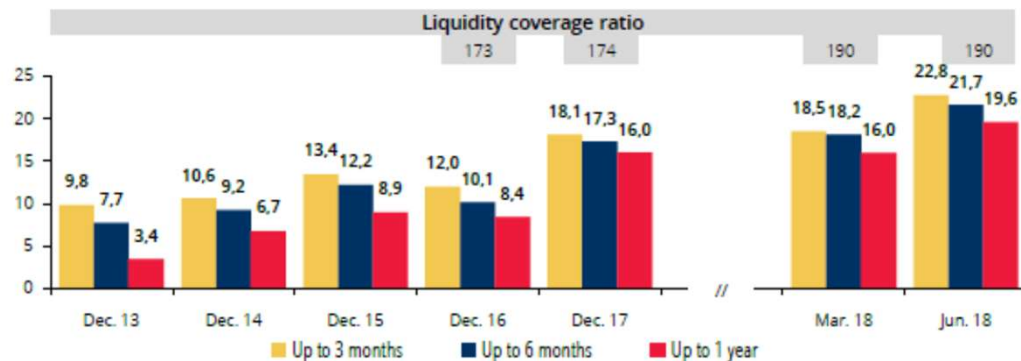


Source: Borio, Clau and Piti Disyatat (2009), "Unconventional monetary policies: an appraisal" BIS WP No 292, Nov.

Liquidity Risk

- As a consequence of the increase in the average maturity of ECB funding, **liquidity gaps have improved steadily since 2011.**

Chart 3.6 • Liquidity gaps for domestic institutions^(a) and Liquidity Coverage Ratio (LCR)^(b), in %



Source: Banco de Portugal (2018), “Portuguese Banking System: Latest Developments - 2Q18”

Notes: a) The liquidity gap is defined as the difference between liquid assets and volatile liabilities in proportion of the difference between total assets and liquid assets, for each cumulative maturity scale. An increase of this indicator reflects an improvement of banks' liquidity position; b) The liquidity coverage ratio is expressed as the ratio between the value of the stock of high quality liquid assets and the total net cash outflows for a 30 calendar day liquidity stress scenario.

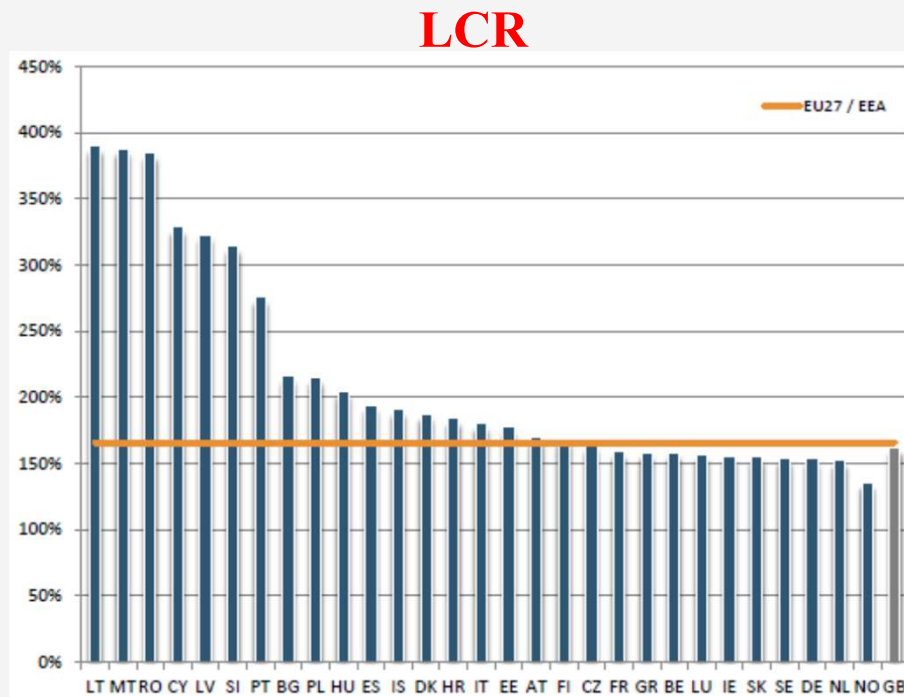
Chart 2 • Liquidity gaps | Per cent



Source: Banco de Portugal (2018), “Financial Stability Review”, June.

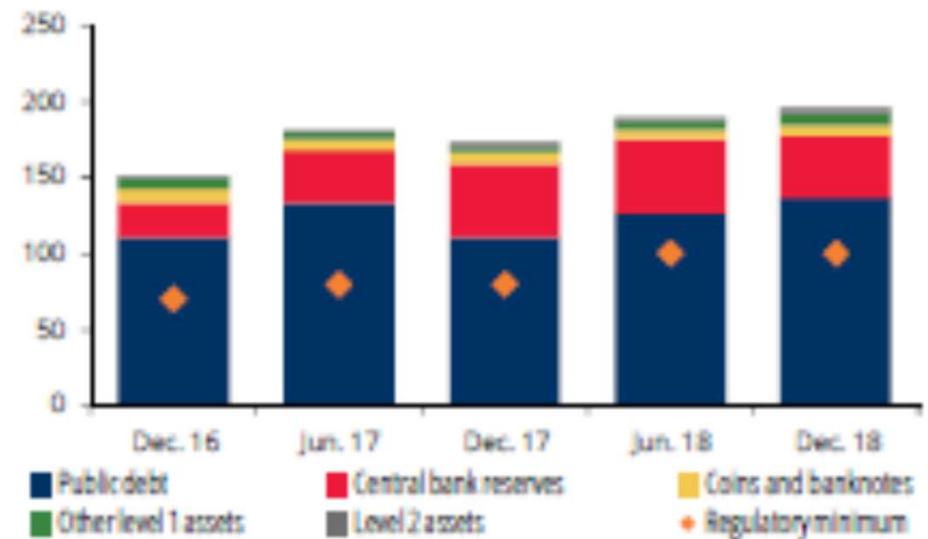
Liquidity Risk

- The LCR in Portugal is above the EU average, with liquid assets represented mostly by Public Debt.



Source: EBA (2020), “Risk Dashboard – as of 2Q 2020”, Oct.

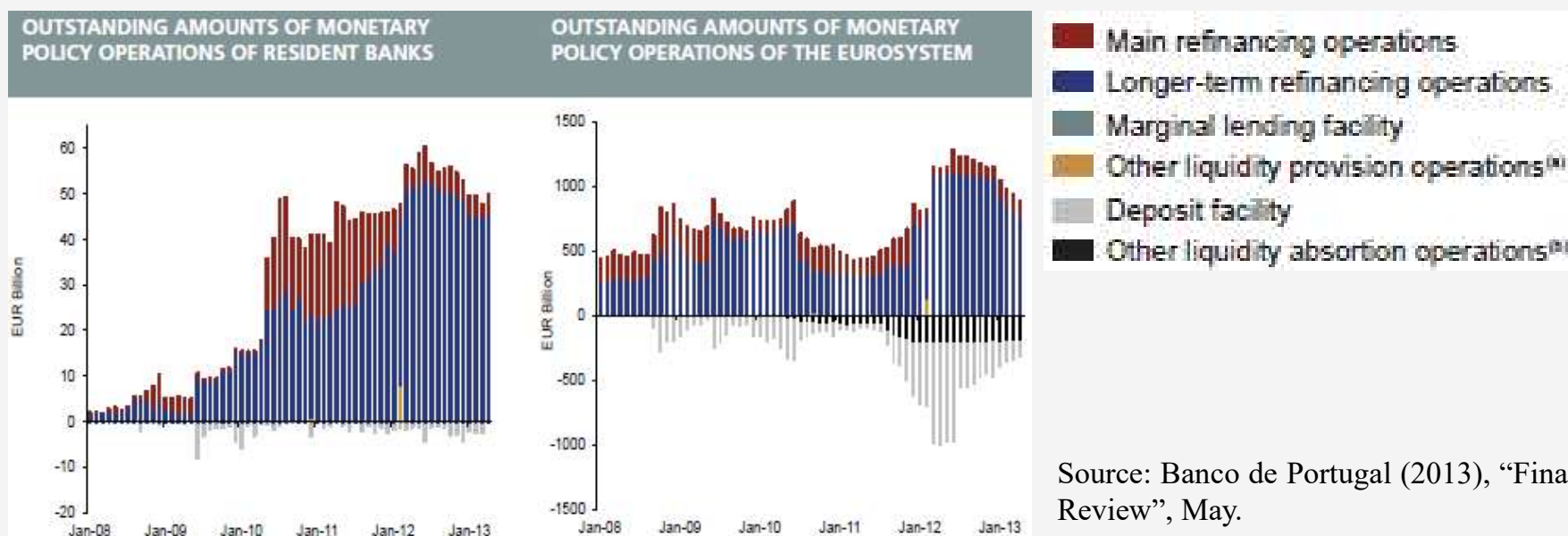
Chart I.4.35 • Liquidity buffer – Structure
| Percentage of net liquidity outflows



Source: Banco de Portugal (2019), “Financial Stability Review”, June.

Liquidity Risk

- The ECB took several measures that benefited liquidity of banks in Portugal and other EU countries since the subprime and the Government debt crises:
 - 1) stability of ECB resources increased with the Long-Term Refinancing Operation (LTRO) occurred in Dec.11 and Feb.12, with a 3-year maturity (option of early repayment 1 year after).

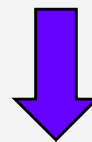


Source: Banco de Portugal (2013), “Financial Stability Review”, May.

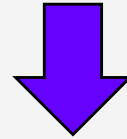
Liquidity Risk

2) enlargement of the pool of assets eligible as collateral for monetary policy operations in Dec.11:

- reduction of the minimum eligibility threshold in terms of securitized assets' ratings;
- permission for domestic central banks to accept additional bank loans complying with specific eligibility criteria, as collateral.



Liquidity Risk



- 3) Approval of the following temporary measures (leading to Instruction No.7/2012 of BdP) in Feb.2012:
- to accept bank loans with PD $\leq 1.5\%$, assessed by internal methods (for IRB banks) or by the COFACE rating tool.
 - to accept portfolios of homogenous bank loans involving debtors with no credit events:
 - mortgage loans to households - haircut of 75%;
 - loans for household consumption purposes - haircut of 85%.

Liquidity Risk

- In 2013, the ECB decided to revise again the framework of eligible assets to monetary policy operations, namely requiring the banks to adopt the IRB approach in the calculation of capital requirements for credit risk, as a necessary condition to use loans as collaterals (Press Release of 18 July 2013).
- Accordingly, Portuguese banks had to submit action plans to BdP until Mar.14, in order to apply to IRB until Feb.15, while the haircuts depended on banks' PDs and LGDs:

$$\text{Haircut} = \left(\sum_{i=1}^n \frac{VN_i}{\sum_{j=1}^n VN_j} PD_i^{\text{stressed}} LGD_i^{\text{adjusted}} \right) + 5\%$$

Liquidity Risk

- In Jun.2014, the ECB announced the decision of:
 - (i) conducting targeted longer-term refinancing operations (TLTROs), aimed at improving bank lending to the euro area non-financial private sector (excluding loans to households for house purchase, over a window of 2 years), maturing in Sep.18, with a fixed interest rate (the current ECB repo rate +10bp);
 - (ii) intensifying preparatory work related to outright purchases (around 100B€) of asset-backed securities purchase programme (ABSPP), with underlying assets consisting of claims against the euro area nonfinancial private sector
=>

Liquidity Risk

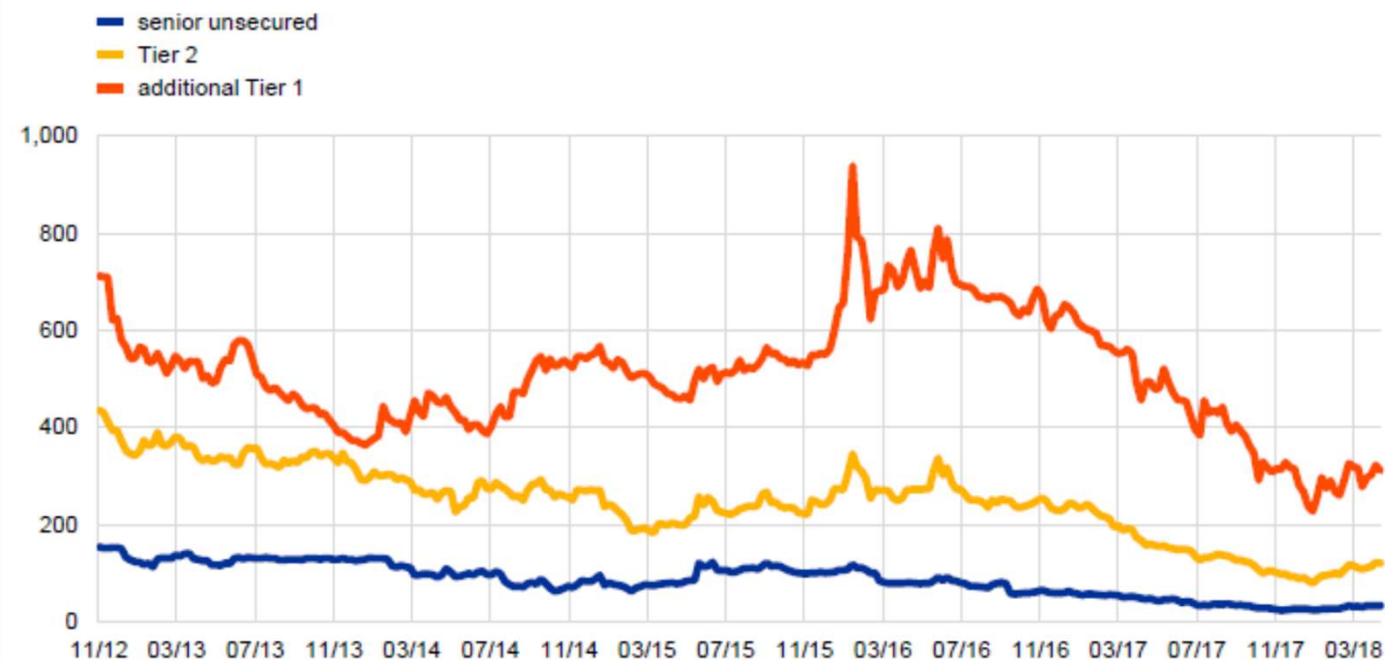
- ⇒ In Nov 2014, the ECB announced the decision ECB/2014/45 on the ABSPP:
- **Minimum rating** - Eligible assets need to be investment grade by, at least, 2 independent agencies, with the issuer based in the Euro area.
 - **Issuers** - No less than 90% of the obligors of the cash-flow generating assets backing the ABS are classified as private sector non-financial corporations or natural persons, based in the Euro area ($\geq 95\%$).
 - **Granularity** - No more than 70% of the outstanding amount of a tranche of ABS (with the same or fungible ISIN) may be purchased and held pursuant to the ABSPP at any time.

Liquidity Risk

- As a consequence of the several monetary policy measures and the economic recovery, the cost of funding in bond markets for Euro area banks decreased, ...

Bond spreads of large euro area banks by debt instrument

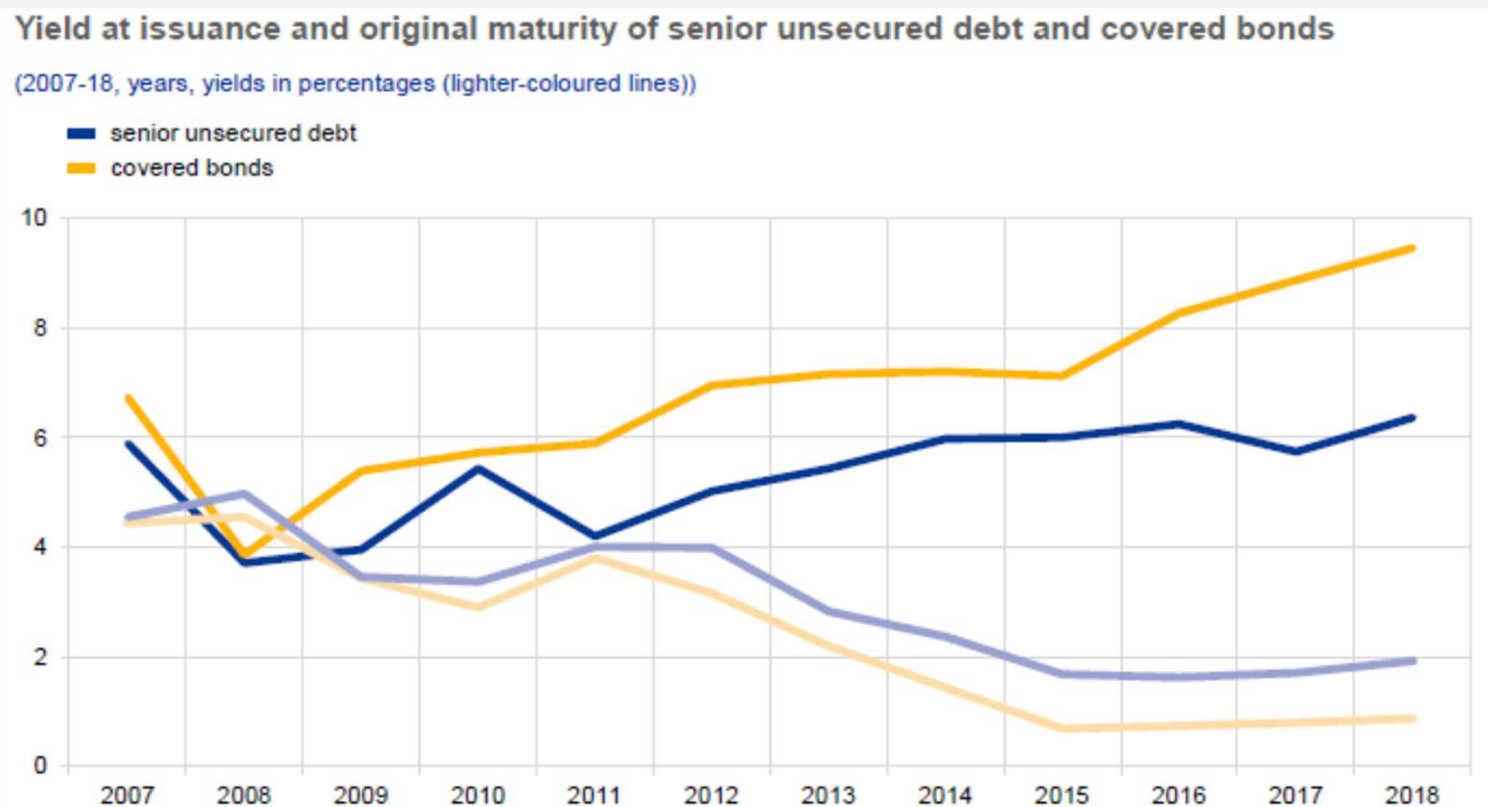
(Nov. 2012 – May 2018, median Z-spreads in basis points)



Source: European Central Bank (2018), “Financial Stability Review”, May.

Liquidity Risk

- ... while average maturities increased, ...



Source: European Central Bank (2018), “Financial Stability Review”, May.

Liquidity Risk

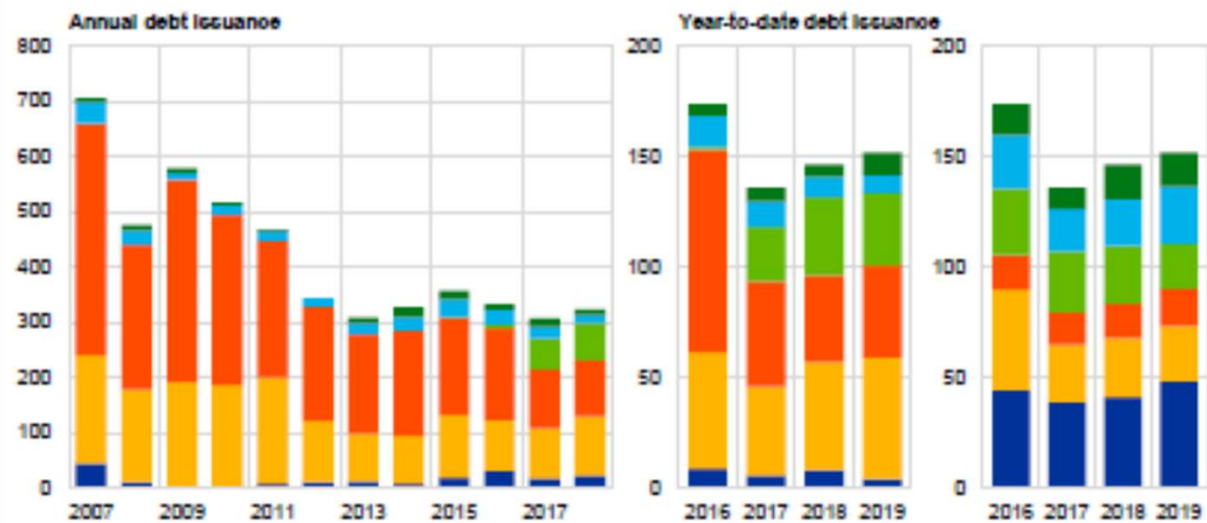
- ... but with volumes issued still much lower than before the crisis.

Euro area banks' annual and year-to-date debt issuance by debt type (left and middle panels) and year-to-date debt issuance by country (right panel)

(2007-18, 2016-19, € billions)

■ ABS
■ Covered
■ Senior unsecured
■ NPS/HoldCo
■ T2
■ AT1

■ FR
■ DE
■ IT
■ ES
■ NL
■ Other countries



Source: European Central Bank (2019), "Financial Stability Review", June.

Interest Rate Risk

- **Definition: sensitivity of the balance sheet and the P&L to interest rate shifts.**
- 2 types of interest rate risk:
 - Risk of NII fluctuation
 - Risk of optionality embedded in assets and liabilities, e.g. prepayment of loans and early redemption of deposits
- Sources of interest rate risk:
 - liquidity flows:
 - Direct – new loans, issued debt or deposits received
 - Indirect - prepayments, early redemptions
 - repricing of existing assets and liabilities

Interest Rate Risk

■ EBA guidelines:

- FIs must measure their exposure to IRR in the banking book, in terms of both potential changes to economic value (EV), and changes to expected NII or earnings, considering:
 - different scenarios for potential changes in the level and shape of the yield curve, and to changes in the relationship between different market rates (i.e. basis risk);
 - assumptions made on non-interest bearing assets and liabilities of the banking book (including capital and reserves);
 - assumptions made on customer behaviour for ‘non-maturity deposits’ (i.e. the maturity assumed for liabilities with short contractual maturity but long behavioural maturity);
 - behavioural and automatic optionality embedded in assets or liabilities, considering:
 - (a) impacts on current and future loan prepayment speeds from the underlying economic environment, interest rates and competitor activity;
 - (b) the speed/elasticity of adjustment of product rates to changes in market interest rates; and
 - (c) the migration of balances between product types, due to changes in their features.

Interest Rate Risk

- FIs must demonstrate that their internal capital is adequate for their IRR in banking book, taking into account the impact on capital resources of potential changes in their economic value and future earnings resulting from changes in the levels of interest rates.
- FIs must identify all different components of the interest rate risk in their banking book. All material risk sub-components should be measured.
- The institution's tolerance for IRRBB must be expressed in terms of limits on acceptable short-term and long-term impact of fluctuating interest rates on both EV and NII.
- The frequency of internal reports should increase with the complexity of the FI's operations, with quarterly reports being the minimum frequency for institutions with less complex portfolios.

Interest Rate Risk

■ Measurement:

(i) interest rate or repricing gaps:

- differences between assets and liabilities to be repriced in different time buckets (usually up to 1 year, with usual time bands being 1 week, 2 weeks, 1m, 2, 3, 6 and 12m)
- excludes non-interest rate bearing balance sheet items (e.g. fixed assets and capital, even though capital may be considered as a fixed rate liability).
- **as in liquidity risk, these gaps may be static or dynamic.**

Table 3.3 Gap Analysis for Interest Rate Risk (£m)

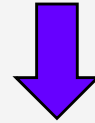
	Overnight-3 months	>3-6 months	>6-12 months	>1-2 years	>2-5 years	5 years or not stated ^a
<i>Earning Assets</i>						
Notes & coins	£5					
3-Month bills	£5					
Interbank loans	£20					
5-Year bonds						
Overdrafts		£20				
5-Year loans					£20	
Property						£30
<i>Funding Sources</i>						
Retail and term deposits	(-£100)		(-£50)	(-£45)		
3-Month wholesale deposits	(£5)					
Capital				(-£10)		
Net mismatch gap	£15	£20	(-£50)	(-£55)	£20	£30
Cumulative mismatch gap ^b	0	(-£35)	(-£55)	(-£5)	£50	£30

Source: Heffernan, Shelagh (2005), "Modern Banking", John Wiley & Sons.

Note: Only 10% of the retail and term deposits are assumed to be interest-rate sensitive.

Interest Rate Risk

- (ii) Earnings-at-risk (EaR) – impact on earnings (NI or EV) from several very unfavorable scenarios for interest rates.
- (iii) Duration Gap Analysis – change in the net worth of banks due to changes in interest gaps



$$\Delta NII_i = (GAP_i) \Delta R_i = (RSA_i - RSL_i) \Delta R_i$$

(RSA and RSL = risk sensitive assets and liabilities)

- ΔNII_i = Change in net interest income in the i th bucket
- GAP_i = Dollar size of the gap between the book value of rate-sensitive assets and rate-sensitive liabilities in maturity bucket i
- ΔR_i = Change in the level of interest rates impacting assets and liabilities in the i th bucket

- Hedging of gaps is done through the spot market, forward/futures, options or swaps, as well as by changing the pricing structure of the balance sheet.

Interest Rate Risk

- For the 1st gap in the table below, the impact of a 1 pp increase in interest rates is: $\Delta NII_i = (-\$10 \text{ million}) \times .01 = -\$100,000$

	(1)	(2)	(3)	(4)
	Assets	Liabilities	Gaps	Cumulative Gap
1. One day	\$ 20	\$ 30	\$-10	\$-10
2. More than one day–three months	30	40	-10	-20
3. More than three months–six months	70	85	-15	-35
4. More than six months–twelve months	90	70	+20	-15
5. More than one year–five years	40	30	+10	-5
6. Over five years	10	5	+5	0
	\$260	\$ 260		0

Source: Saunders, Anthony and Marcia Millon Cornett (2018), Financial Institutions Management – A Risk Management Approach, 9th Edition, McGraw-Hill International.

- 1y cumulative repricing or interest rate gap:

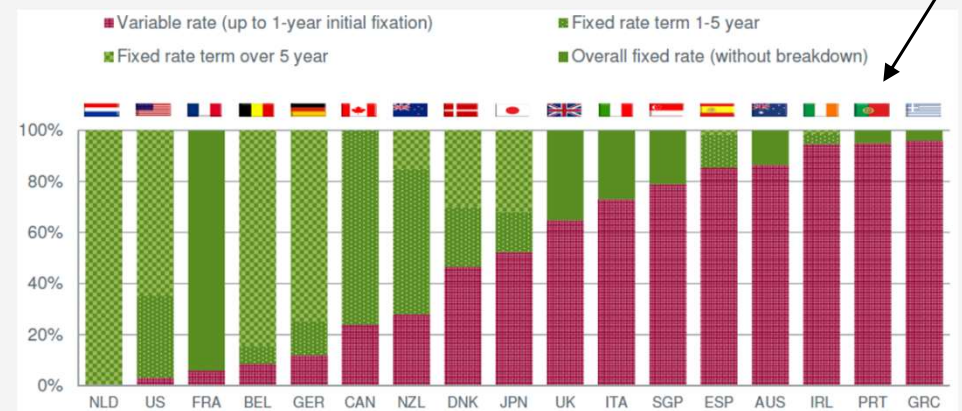
$$CGAP = (-\$10) + (-\$10) + (-\$15) + \$20 = -\$15 \text{ million}$$

- Assuming a parallel upward shift in the yield curve up to 1y:

$$\begin{aligned} \Delta NII_i &= (CGAP) \Delta R_i \\ &= (-\$15 \text{ million})(.01) = -\$150,000 \end{aligned}$$

Interest Rate Risk

- Portuguese banks usually have positive interest rate gaps, as credit rates are mostly indexed to money market rates (e.g. Euribor), while among liabilities only bonds issued are usually indexed, as term deposits are mostly short term liabilities (though may be renewed) with interest rates fixed by the bank => **short term interest rate decreases are, *ceteris paribus*, unfavorable to banks.**
- However, we must also bear in mind that higher rates may reduce credit risk.
- As illustrated below, Portugal is one of the countries with the highest % of variable rate loans.

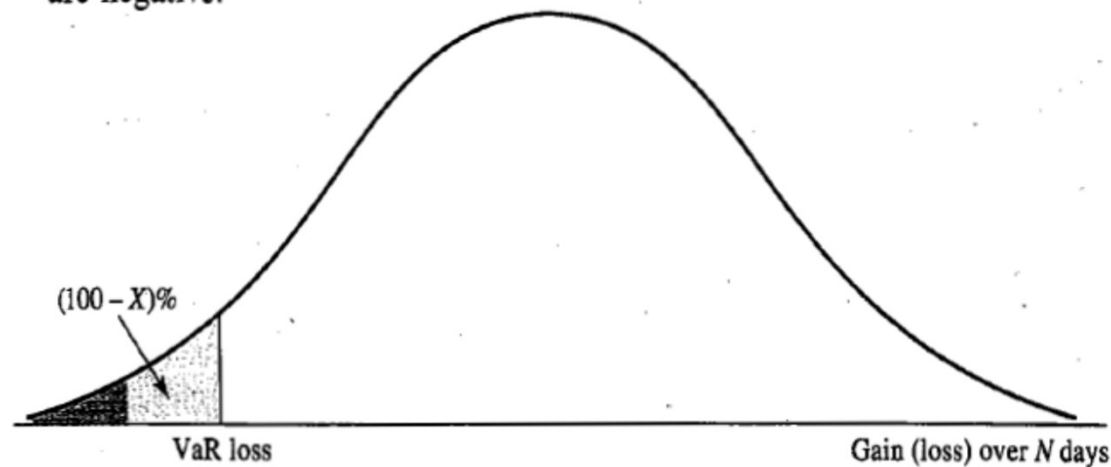


Source: Fitch (2016), 2016 Fitch Credit Outlook Conference, Lisbon, 28 Jan.

Market Risk

- **Definition: risk of losses due to the impact of interest rate, exchange rates or other financial asset price moves on the value of actively traded portfolios.**
- Market risk of a portfolio is usually computed by VaR for a high confidence level and a short maturity (usually 99%, 10-day), offering a conservative loss measure.

Figure 20.1 Calculation of VaR from the probability distribution of the change in the portfolio value; confidence level is $X\%$. Gains in portfolio value are positive; losses are negative.



Source: Hull, John (2009)

Market Risk

- The simplest methodology to calculate VaR is based on the assumption of normally distributed daily returns (delta-normal method):

$$\text{VaR} = \omega' \Sigma \omega \times N^{-1}(p) \times \sqrt{T}$$

where Σ is the variance-covariance matrix of the portfolio's assets, ω corresponds to the weights of each asset in the portfolio and p is the VaR level of confidence (e.g. 99%).

- If the portfolio has only 1 asset, VaR results only from that asset volatility.
- The VaR calculation can be done from historical observations (the choice of the period is key), or through non-parametric methods, based on return simulation:
 - Monte Carlo – based on the normality of returns
 - Bootstrapping – replicates samples with the empirical distribution of the observed returns.

Market Risk

- Additionally to the VaR calculation, stress tests and backtests are usually performed.
- **Stress tests** – often done by assuming values for the volatilities and correlations observed in previous financial crisis.
- **Backtests** - comparison between losses observed in the past and losses estimated by the VaR, to determine whether the % of days with losses $>$ VaR exceeded the VaR confidence level.
- **C-VaR** – while VaR is the level of losses that are not expected to be exceeded, in a given term and with a given probability, the expected shortfall (or Conditional VaR, C-VaR) is the expected loss if the loss is higher than the VaR (i.e. the mean of the losses higher than the VaR).

Operational Risk

- **Definition:** the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events, and includes legal risk (v.g. CRR and BCBS, “Sound Practices for the Management and Supervision of Operational Risk,” July 2002).
- Some FIs include reputational risk and strategic risk in operational risk.

Operational Risk

- Banks usually develop key risk indicators (KRIs), that provide an early warning system to track the level of operational risk in the organization:
 1. Staff turnover
 2. Number of failed transactions
 3. Number of positions filled by temporary staff
 4. Ratio of supervisors to staff
 5. Number of open positions
 6. Percentage of staff that did not take 10 days consecutive leave in the last 12 months

Operational Risk

■ 5 sources of operational risk:

- (i) Technology (e.g., technological failure and deteriorating systems)
- (ii) Employees (e.g., human error and internal fraud)
- (iii) Customer relationships (e.g., contractual disputes)
- (iv) Capital assets (e.g., destruction by fire or other catastrophes)
- (v) External (e.g., external fraud).

Source: Saunders, Anthony and Marcia Millon Cornett (2018), "Financial Institutions Management – A Risk Management Approach", 9th Edition, McGraw-Hill International.

Source of Risk	Specific Problem
Employee risk	Employee turnover Key personnel risk Fraud risk Error Rogue trading Money laundering Confidentiality breach
Technology risk	Programming error Model risk Mark-to-market error Management information IT systems outage Telecommunications failure Technology provider failure Contingency planning
Customer risk	Contractual disagreement Dissatisfaction Default
Capital asset risk	Safety Security Operating costs Fire/flood
External risk	External fraud Taxation risk Legal risk War Collapse of markets Reputation risk Relationship risk

Legal Risk

- It is usually considered a type of operational risk, but with an increasing relevance.
- Syrett and Devine, (2012), “Managing Uncertainty - Strategies for surviving and thriving in turbulent times”, The Economist:
 - ↳ Legal risk was the 2nd highest risk regarding uncertainty and impact for international companies (1st was political risk).
- Accenture (2013) – 62% of top managers identified legal risk as the highest threat (regulatory risk was the 3rd).
- Legal risk became the main risk for big global companies.

Legal Risk

- What must managers expect from rules: **Clarity and predictability – law has to be known or easily understood.**
- However, this doesn't exist in global business.
- **Instead, rules are often unclear, contradictory** and can be applied in retrospect and outside of their makers' intentions.
- Since 2009, banks have paid more than 250 B\$ in fines.

Legal Risk

- Kurer, Peter (2015), “**Legal and Compliance Risk: A Strategic Response to a Rising Threat for Global Business**”, Oxford University Press”:
 - “**even modern states are far away from being highly rational bureaucracies** as they have been described by Max Weber. Rather, they are in a state which many would describe as a legal jungle, as disorder, or entropy”.
- Companies are motivated to participate in enforcement actions against themselves, namely by identifying compliance breaches or internal control deficiencies.
- Earlier, a compliance breach would be dealt by lower ranks of the organization, but these issues have moved to the top management more recently.
- Therefore, **personal exposure of executives is much larger nowadays.**

Legal Risk

- Modern legal ordeals are not honest and unbiased, but event-driven, aggressive and emotional, hold in media instead of courthouses, based on "naming and shaming".
- Increasing number of laws:
 - in US, total corporate regulatory costs amount to around 12% of GDP.
 - in Switzerland, total regulatory costs for companies and citizens reach 10% of GDP.
- Increasing relevance of lawyers: in US and most European countries, the legal service industry is already the 2nd largest professional service industry, right after health services.

3.3. The New Business Model

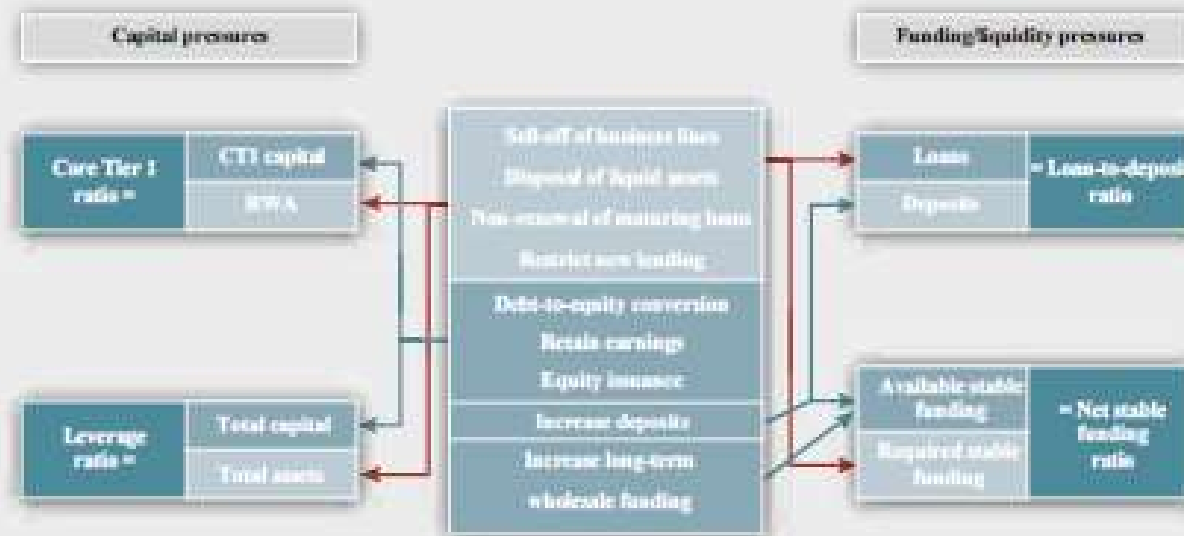
New Business Model

- Main changes in Portuguese banks' business model after the subprime crisis and the Economic and Financial Adjustment Program:
 1. Deleveraging
 2. Funding shift
 3. Higher Government debt exposure
 4. Profitability fall
 5. Capital strengthening

Deleveraging

- The new business model for banking activity in Portugal has been significantly conditioned by the **need to reduce the leverage level** of banks and economy.
- Deleveraging requirements imposed by the Troika: leverage ratio (loans/deposits) $\leq 120\%$

Chart A.1 Deleveraging pressures and means to accommodate them



Source: European Central Bank (2012), "Financial Stability Review", June.

Deleveraging

- Therefore, Portuguese banks had to decrease their leverage levels to figures closer to the Euro area average and in line with the pattern observed in previous financial crisis.

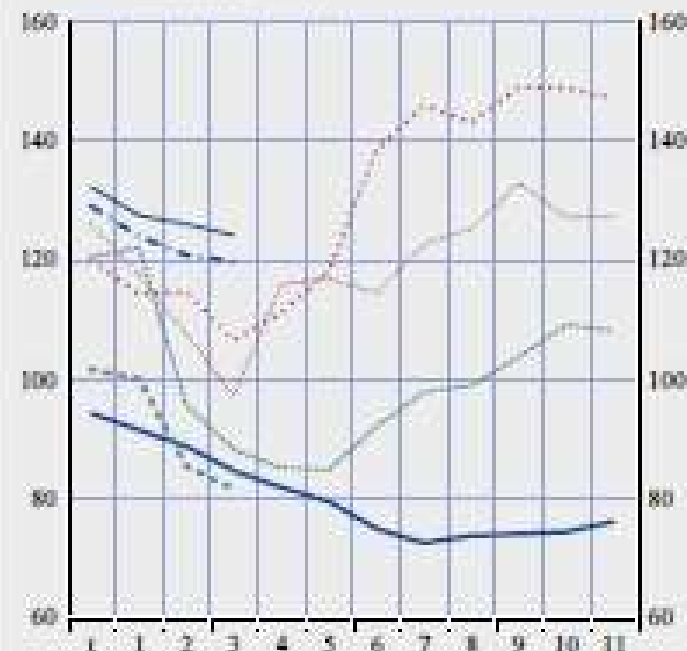
Source: Banco de Portugal (2011), “Financial Stability Review”, Nov.

Chart A.1 Evolution of banks' loan-to-deposit ratios following banking crises

(percentages, non-bank loans over customer deposits)

x-axis: years following banking crisis

Legend:
Japan (t=1997) Finland (t=1991)
Norway (t=1991) Sweden (t=1991)
United States (t=2007) EU (t=2008)
Euro area (t=2008)



Deleveraging

- Actually, Portugal exhibited the highest loan to deposit ratio in Euro Area in 2010.
- However, banking assets as a % of GDP were lower than in several European countries.

Source: Moody's (2011), "Banking System Outlook - Portugal", 28 July.

Banks' loan to deposits ratios in the euro area (as of end-June 2010)

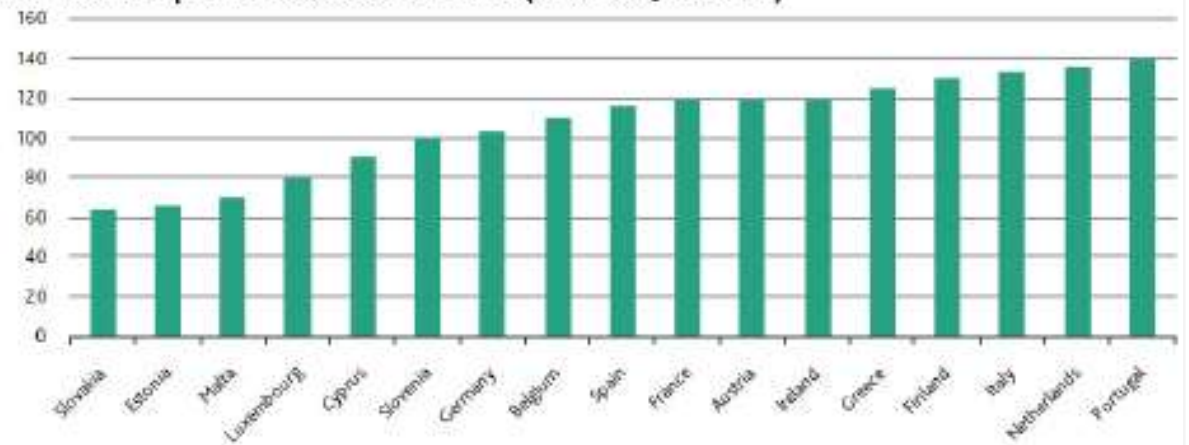
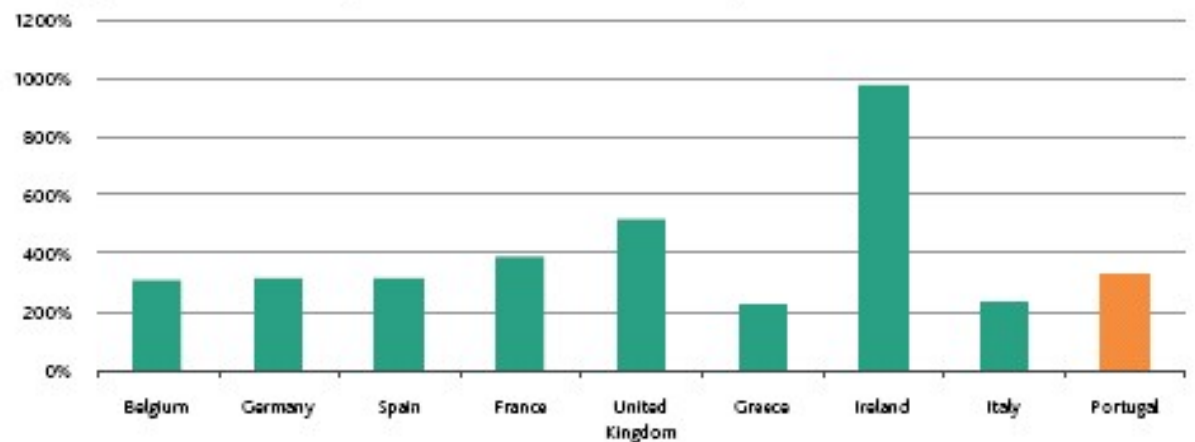


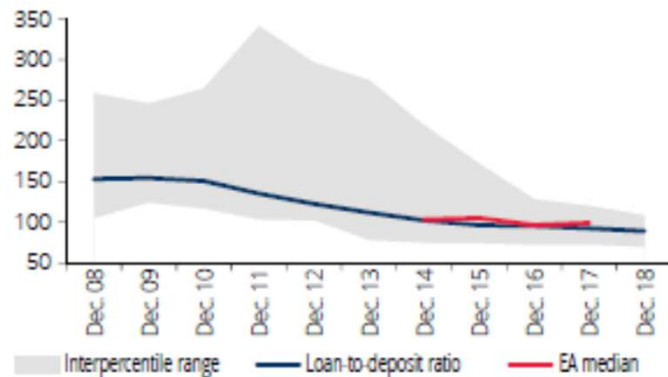
EXHIBIT 4
Banking system assets to GDP (in %, as of end-December 2010)



Deleveraging

- Deleveraging led to a decrease by more than 60 pp in the loan-to-deposit ratio since 2010 (158%), to a level in line with the EA median, ...

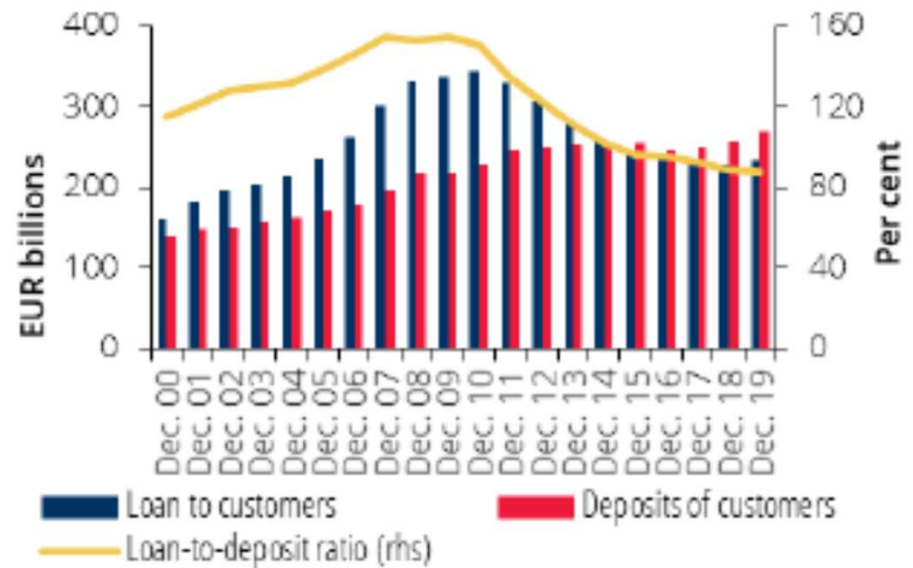
Chart I.4.36 • Loan-to-deposit ratio
| Per cent



Sources: Banco de Portugal and European Central Bank (Consolidated Banking Data). | Notes: The Loan-to-deposit ratio corresponds to the ratio between loans to customers and customer deposits. The interpercentile range was obtained by the difference between the 95th and 5th percentile of the indicator's asset-weighted distribution.

Source: Banco de Portugal (2019), "Financial Stability Review", June.

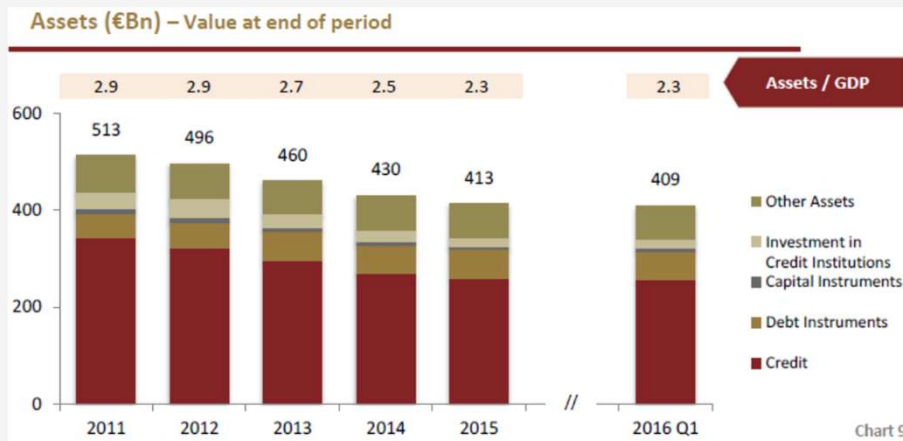
Chart I.2.28 • Loan-to-deposit ratio



Source: Banco de Portugal (2020), "Financial Stability Review", June.

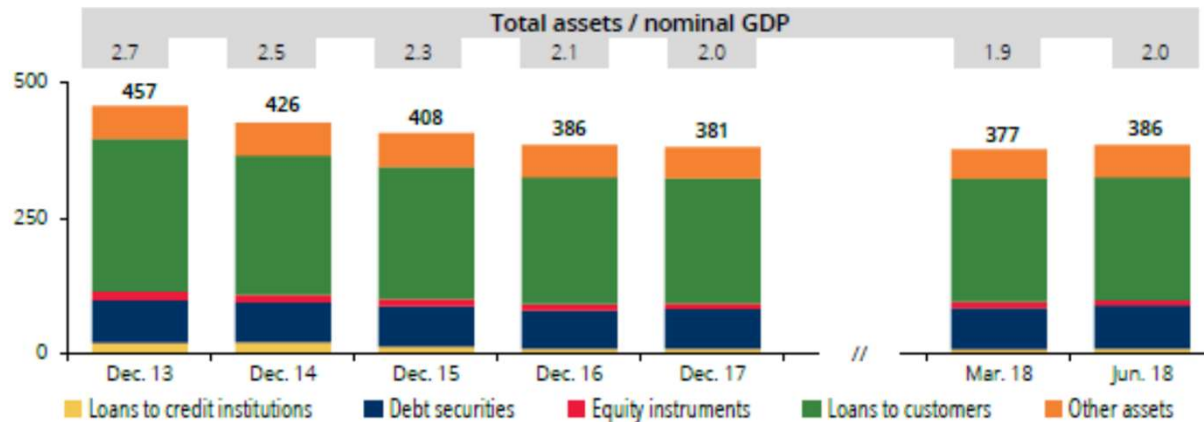
Deleveraging

- ... mostly based on the asset side (namely loans).



Source: Banco de Portugal (2016), “Portuguese Banking System: Recent Developments - 1Q16

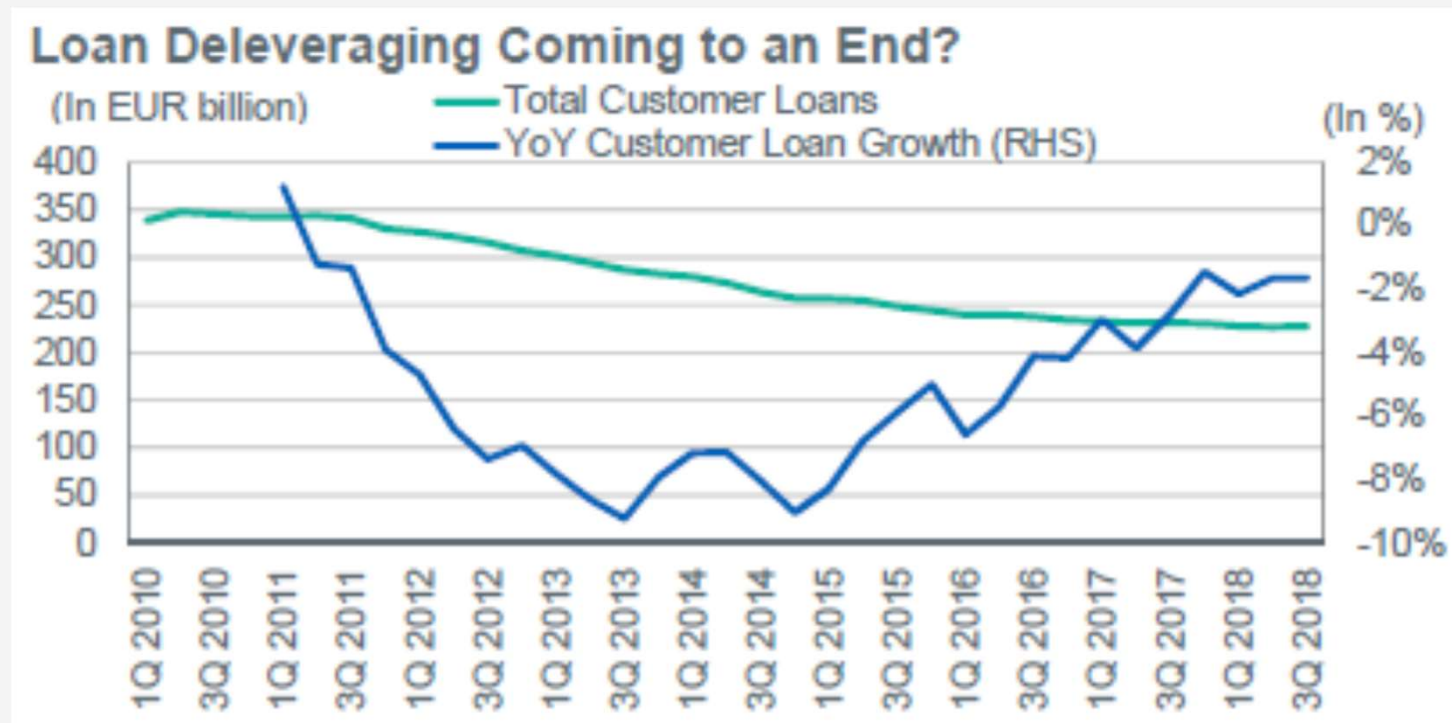
Chart 3.1 • Asset structure, in €Bn



Source: Banco de Portugal (2018), “Portuguese Banking System: Recent Developments - 2Q18

Deleveraging

- Actually, since 2010, the total stock of loans in the Portuguese banking system fell from 350 B€ to around 230 B€ (i.e. 35%).

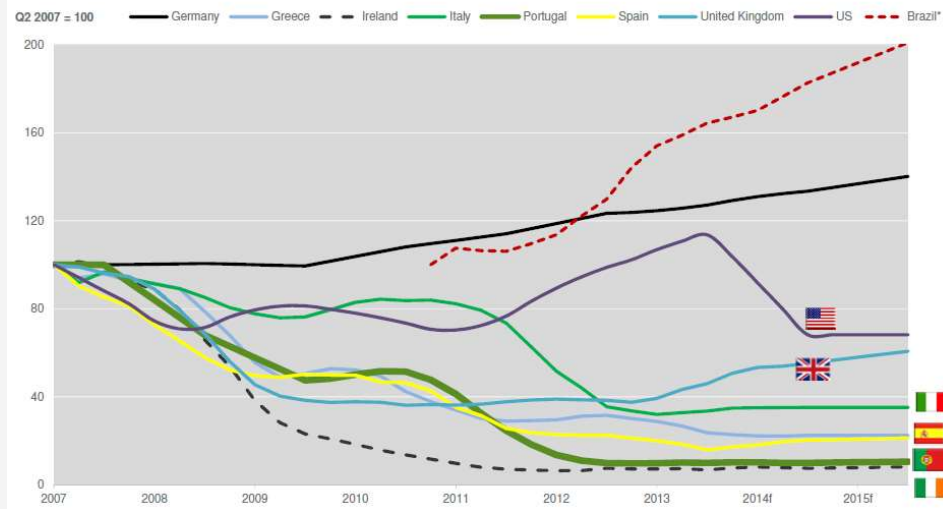


Source: Fitch Ratings (2019), "Credit Outlook 2019", 24 Jan.

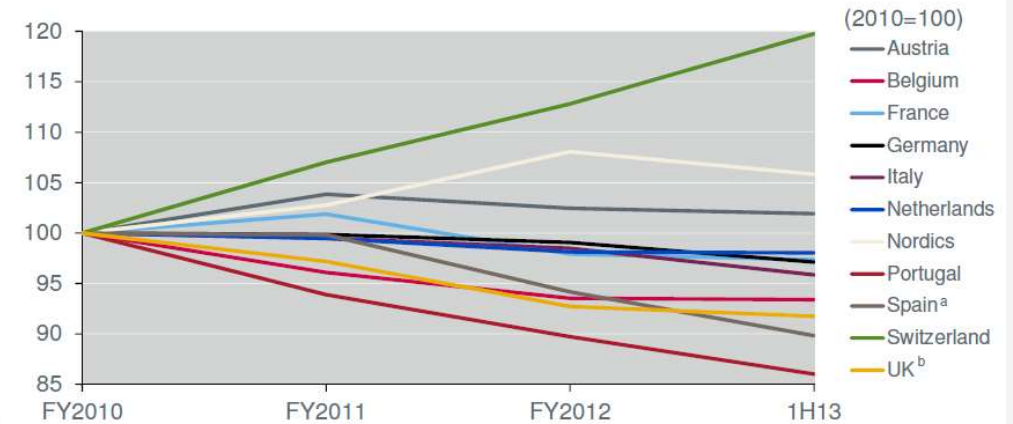
Deleveraging

- This reduction was more marked than in other countries.

Index of Gross New Mortgage Lending



Gross Loan Growth (2010=100)

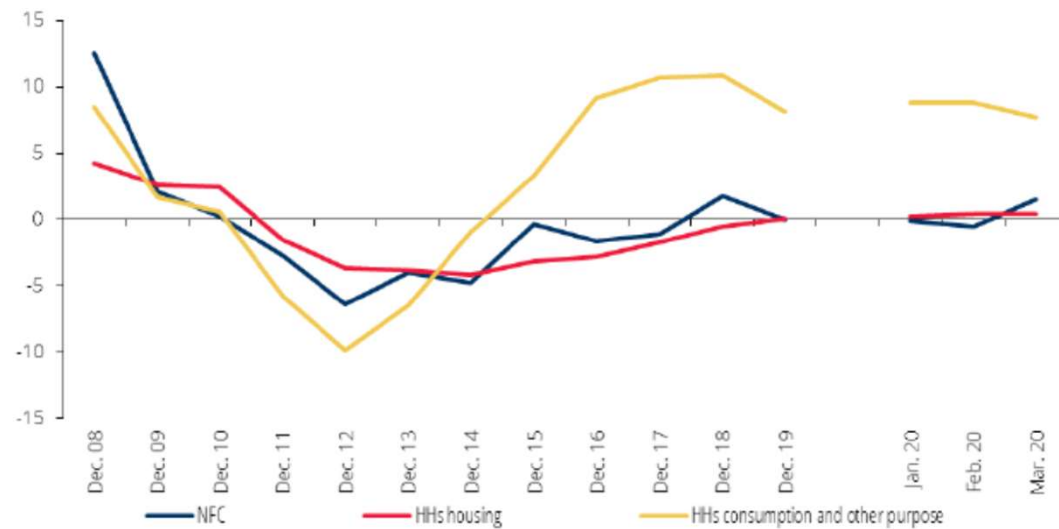


Source: Fitch (2014), “Residential Mortgages and Property Market Outlook”, presentation at the Conference “Why is Funding Key to Recovery”, 2014 Fitch Credit Conference, Lisbon, 6th Feb.

Deleveraging

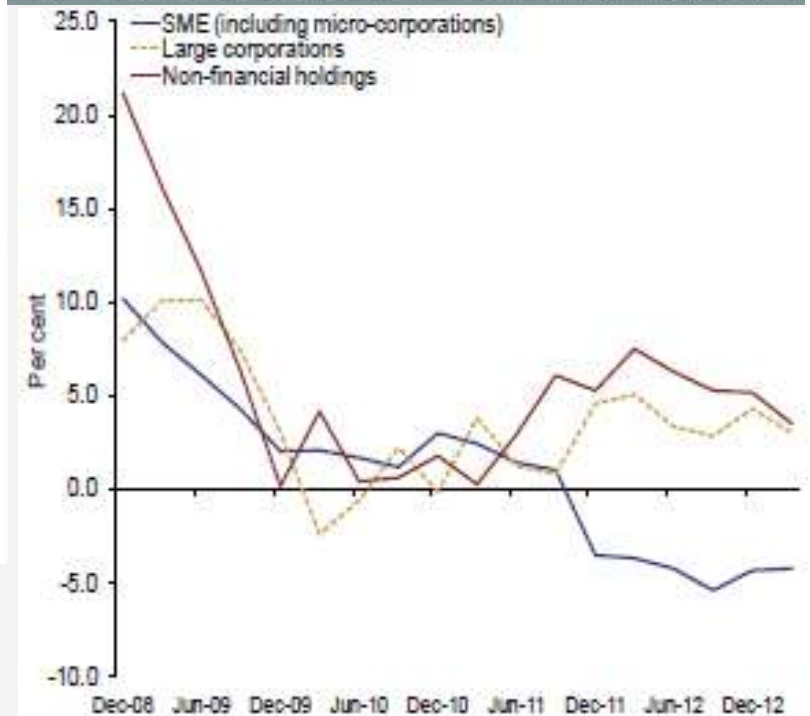
- Reduction of loan portfolios was mostly in consumer loans and in the corporate segment, namely SMEs, ...

Chart I.2.23 • Bank credit granted – Annual rate of change | Per cent



Source: Banco de Portugal (2020), “Financial Stability Review”, Jun.

CREDIT GRANTED TO NON-FINANCIAL CORPORATIONS | ANNUAL RATE OF CHANGE

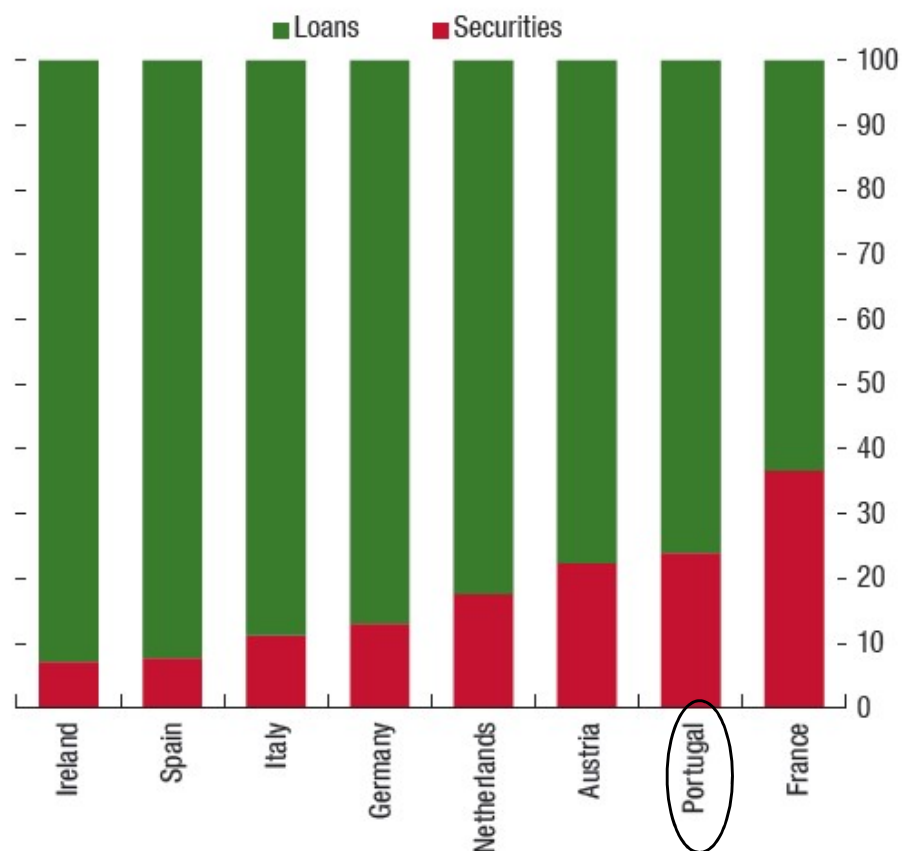


Source: Banco de Portugal (2013), “Financial Stability Review”, May.

Deleveraging

- ... which is particularly relevant, given the weight of banks in the corporate funding, namely considering that most securities issued by non-financial companies are short-term debt bought by banks.

Figure 1.34. Sources of Nonfinancial Corporate Credit, 2013:Q3
(Percent of total)



Source: IMF (2014), "Global Financial Stability Report", Apr.

Higher Government Debt Exposure

- The increase in the exposure to Government Debt was instrumental to mitigate the Net Interest Margin decrease, ...

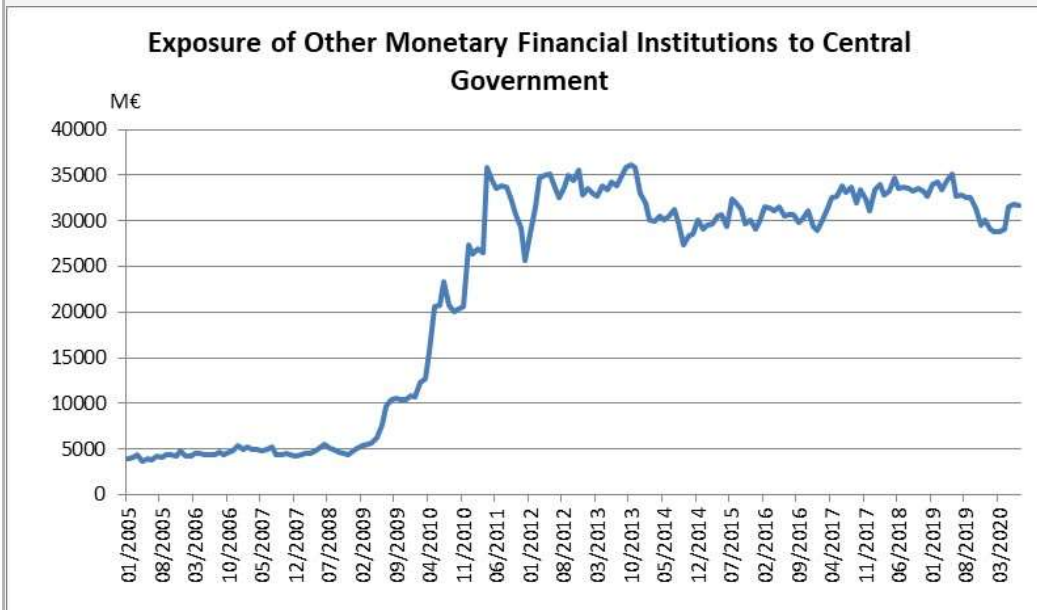
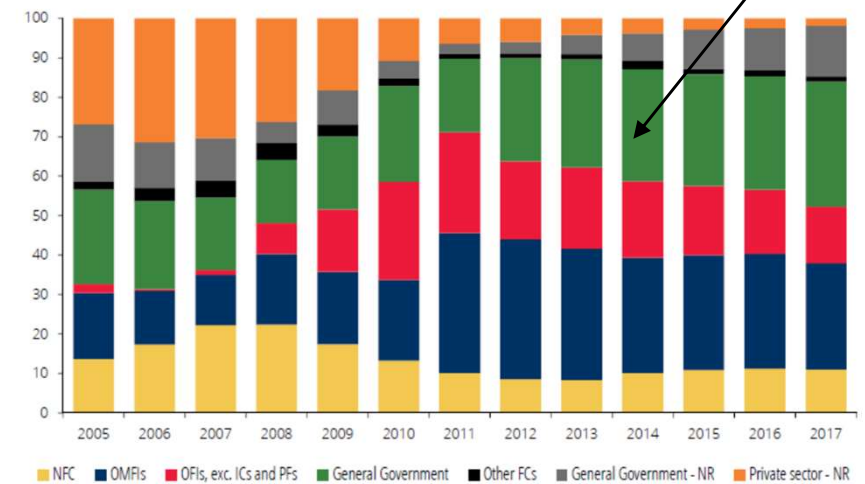


Chart 7 • Composition of the securities portfolio of the domestic banking system | Per cent



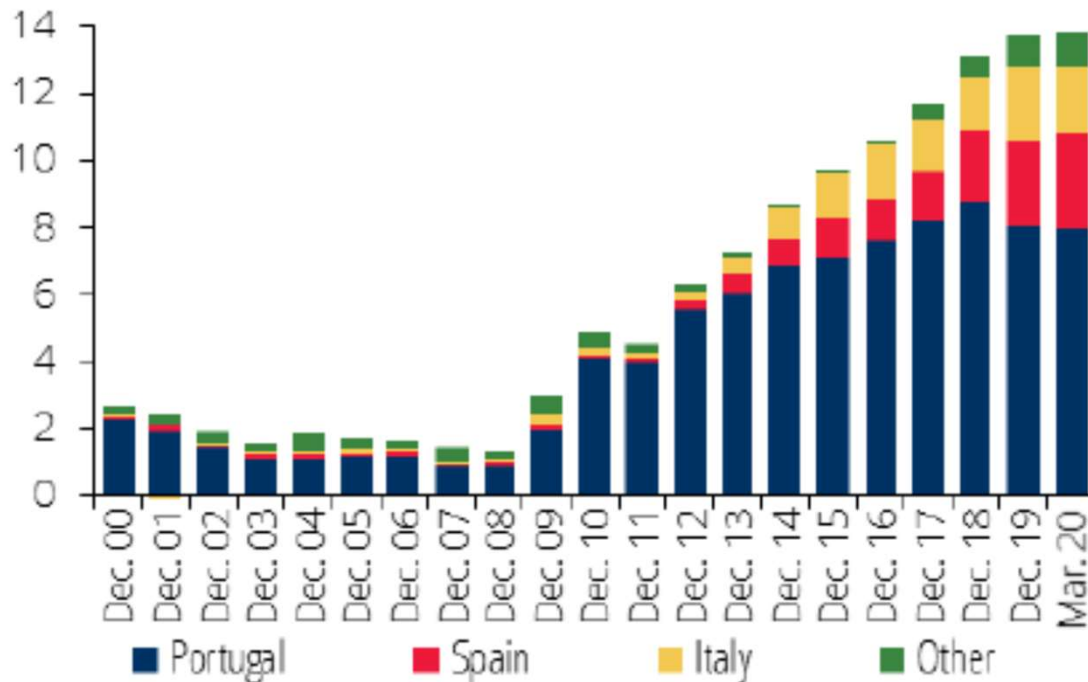
Source: Banco de Portugal. | Notes: NFC = non-financial corporations; OMFIs = other monetary financial institutions (banks and money market funds); OFIs, excl. ICs and PFs = other financial intermediaries excluding insurance companies and pension funds; other FCs = other financial corporations (financial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

Source: Banco de Portugal (2018), “Financial Stability Review”, May.

Higher Government Debt Exposure

- ... still representing around 8% of bank assets, a higher fraction comparing to other EU countries.

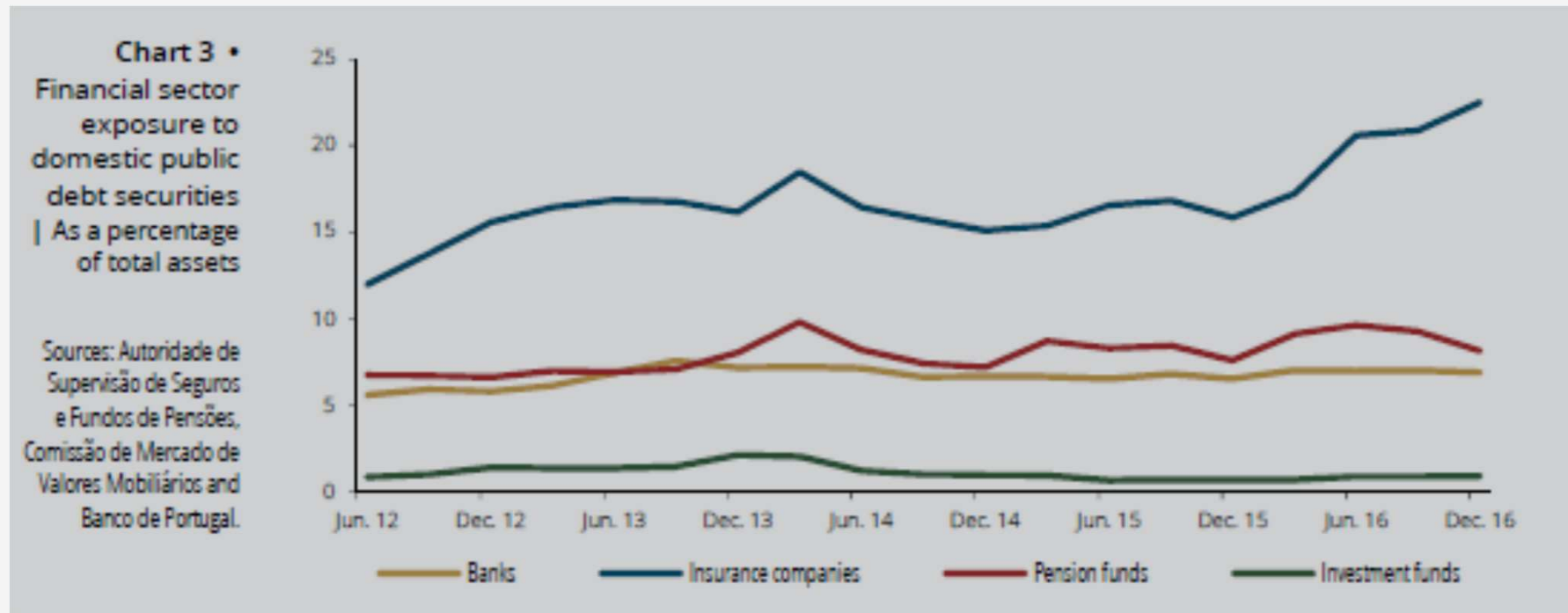
Chart I.2.18 • Sovereign debt securities | As a percentage of assets
By country – domestic activity (d)



Source: Banco de Portugal (2020), “Financial Stability Review”, June.

Higher Government Debt Exposure

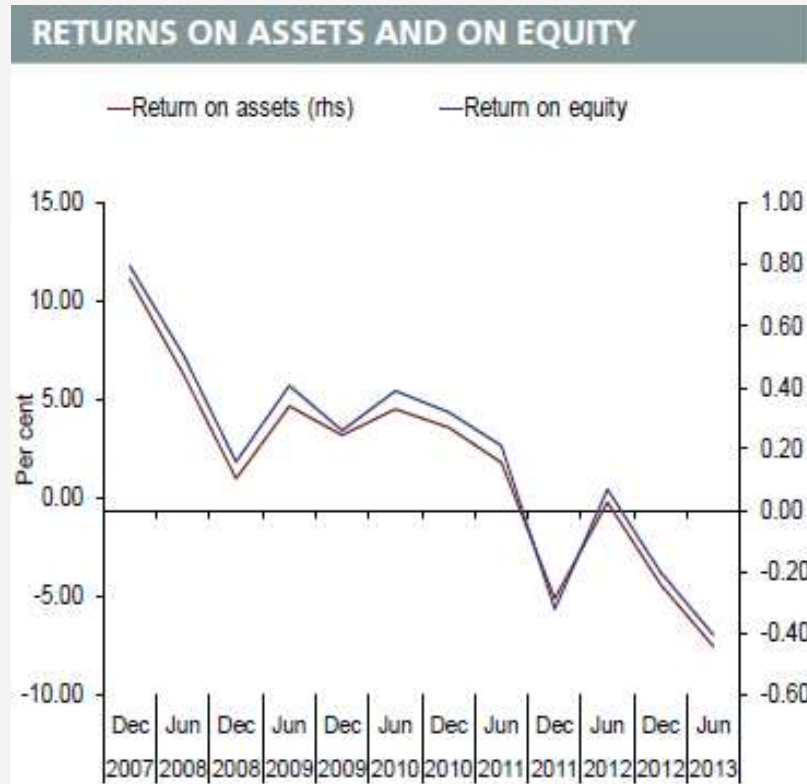
- As a % of total assets, insurance companies have also been exhibiting a higher exposure to Portuguese Government Debt:



Source: Banco de Portugal (2017), “Financial Stability Review”, Jun.

Profitability

- Downward trend in profitability since the eruption of the subprime crisis and until the Troika intervention, with losses after 2011 ...



Source: Banco de Portugal (2013), “Financial Stability Review”, Nov.

Chart I.2.1 • ROA and Recurring operating result | Per cent

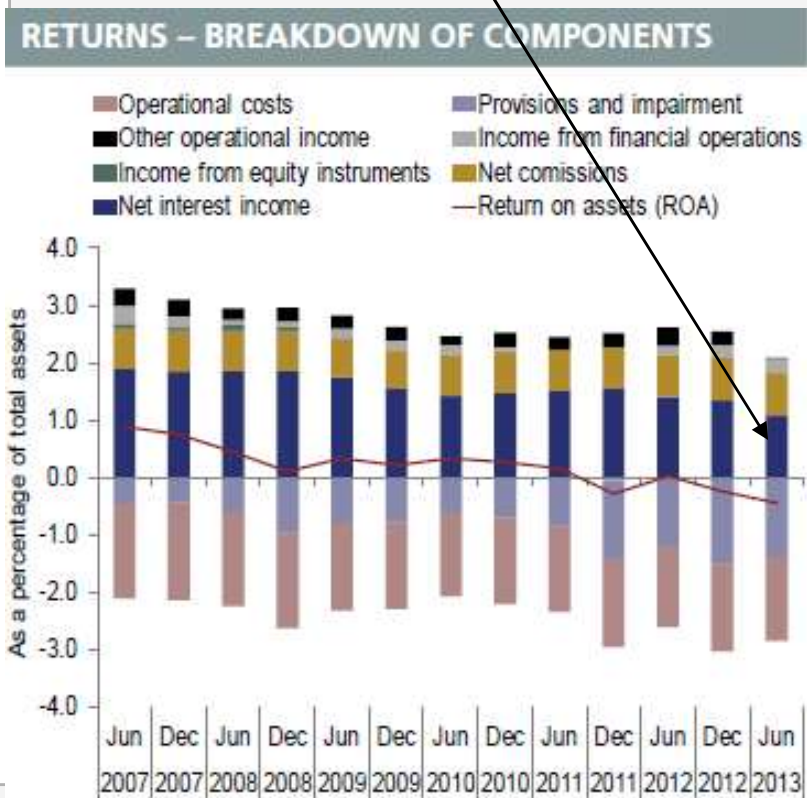


Source: Banco de Portugal (2020), “Financial Stability Review”, Jun

Profitability

■ ... mainly due to:

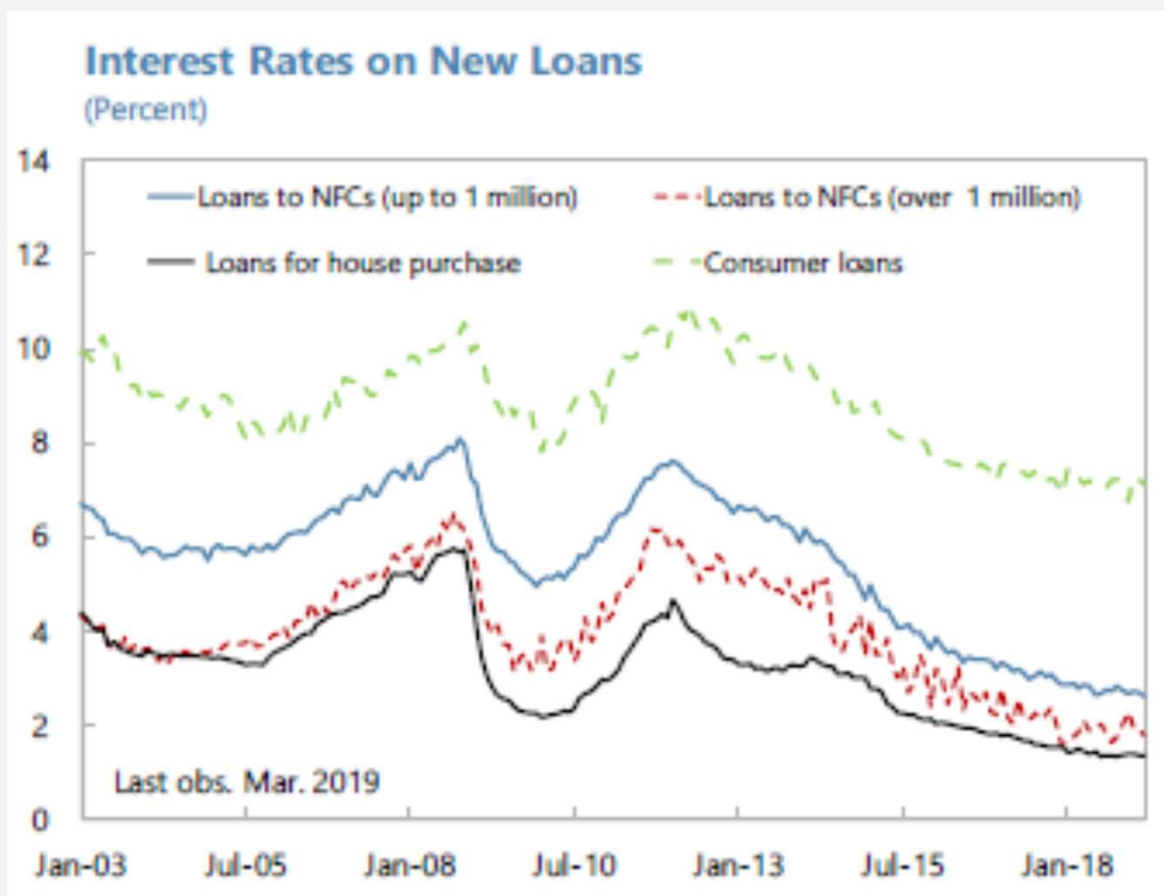
(i) unfavorable behavior of NII, as a consequence of falling Euro interest rates,



Source: Banco de Portugal (2013), “Financial Stability Review”, Nov.

Profitability

- ... impacting on loan interest rates.



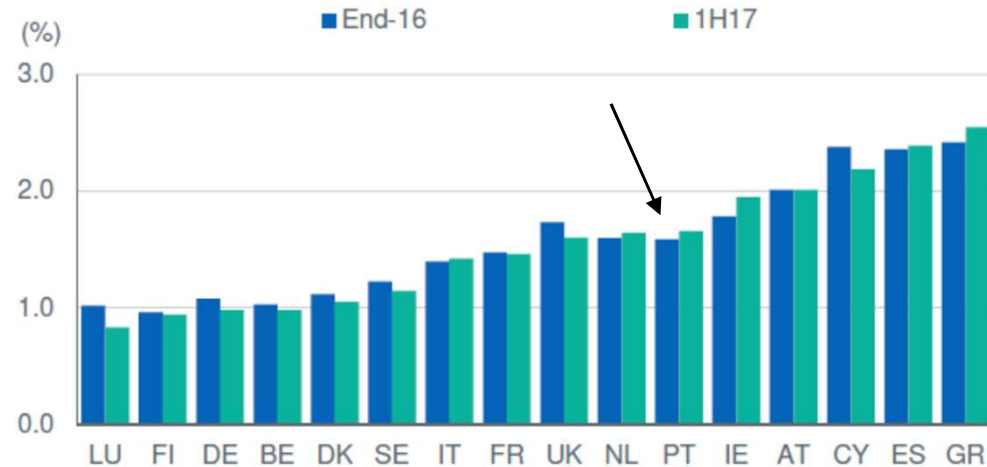
IMF (2019), "2019 Article IV Consultation", IMF Country Report No. 19/221.

Profitability

- The difficulty in improving NII has been more troublesome given that Portugal is one of the banking systems that rely most on NII and less on fees.

Net Interest Margin

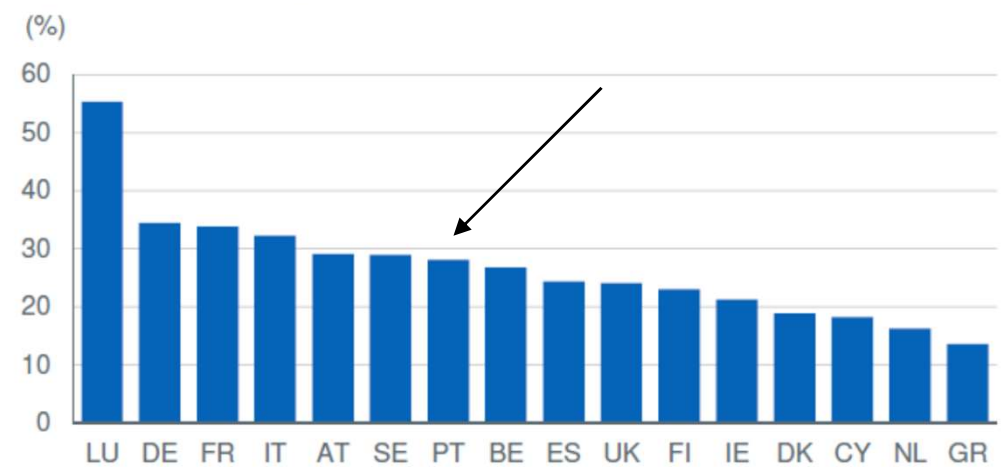
Interest income less interest expense, % loans and advances and debt securities



Source: EBA transparency exercise 2017, aggregated by country or reporting bank

Fee & Commission Income

As a % of total operating income, 1H17 annualised

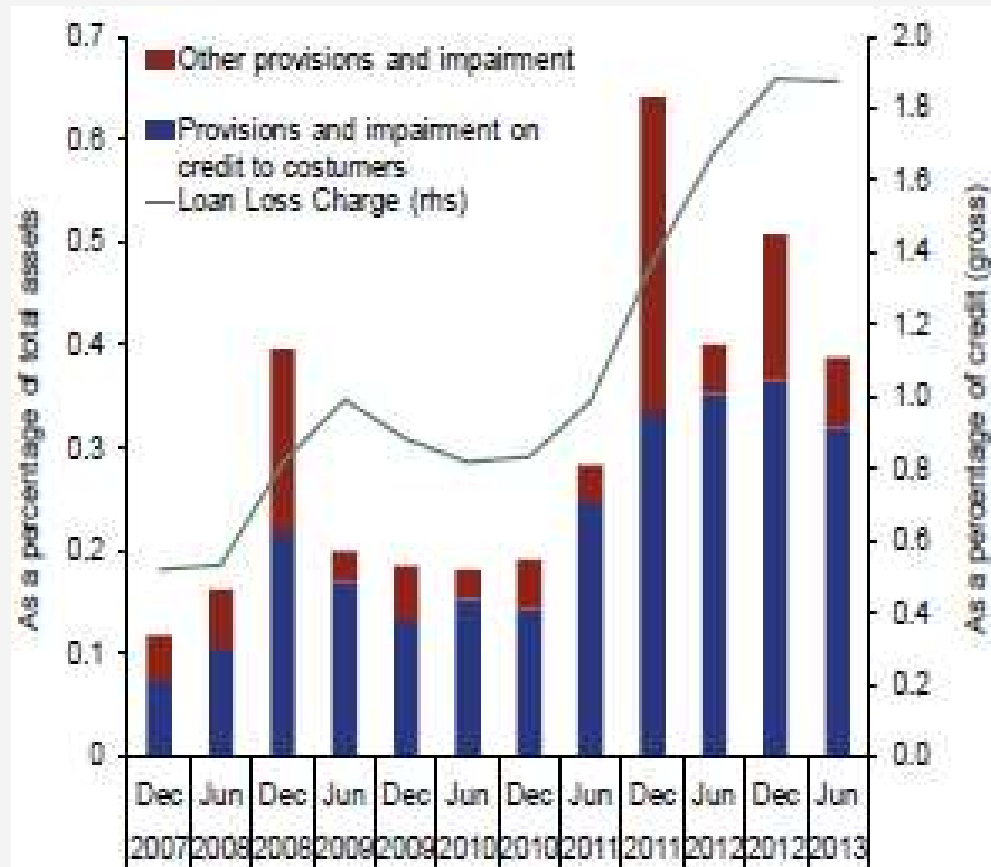


Source: EBA transparency exercise 2017, aggregated by country of reporting bank

Fitch (2018), "Credit Outlook Lisbon 2018", 18 Jan.

Profitability

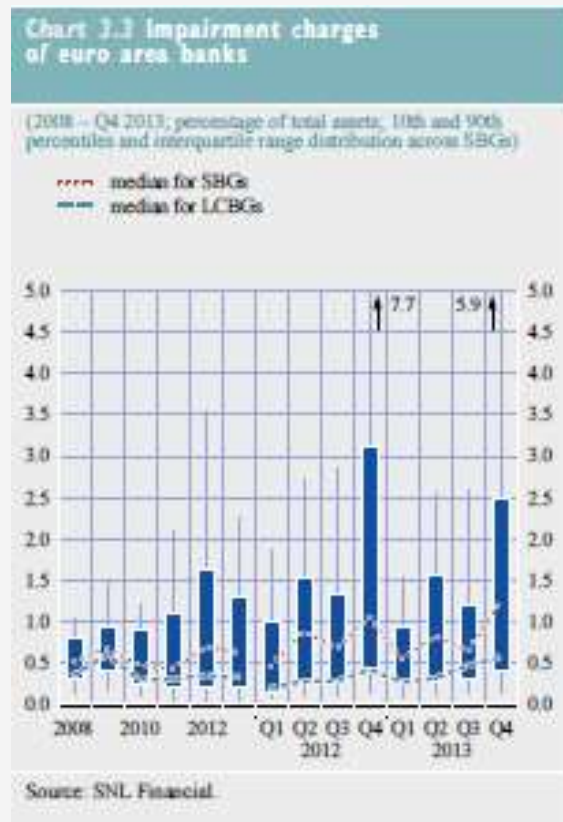
(ii) **increasing impairments** in financial assets, loans and real estate properties, ...



Source: Banco de Portugal (2013), "Financial Stability Review", Nov.

Profitability

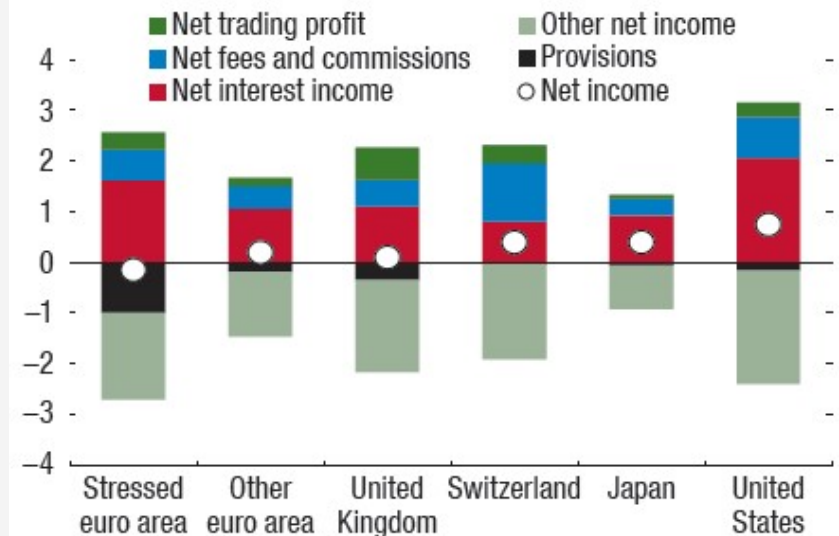
... , in line with other stressed euro area countries.



Source: ECB (2014), "ECB Financial Stability Review", May.

Provisions for nonperforming loans have acted as a drag on bank profitability . . .

1. Bank Profitability, 2013 (percent of tangible assets)



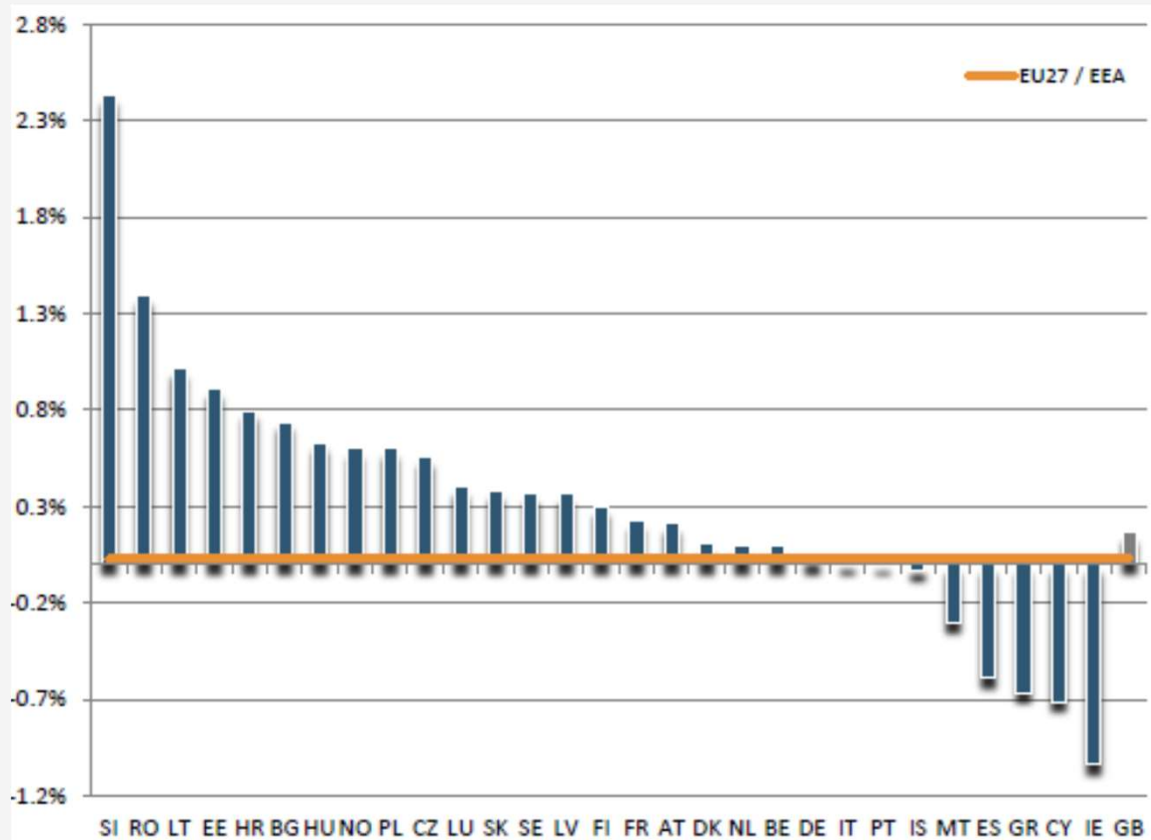
Sources: SNL Financial; and IMF staff estimates.

Note: Based on a large sample of banks headquartered in each region.

Source: IMF (2014), "Global Financial Stability Report", May.

Profitability

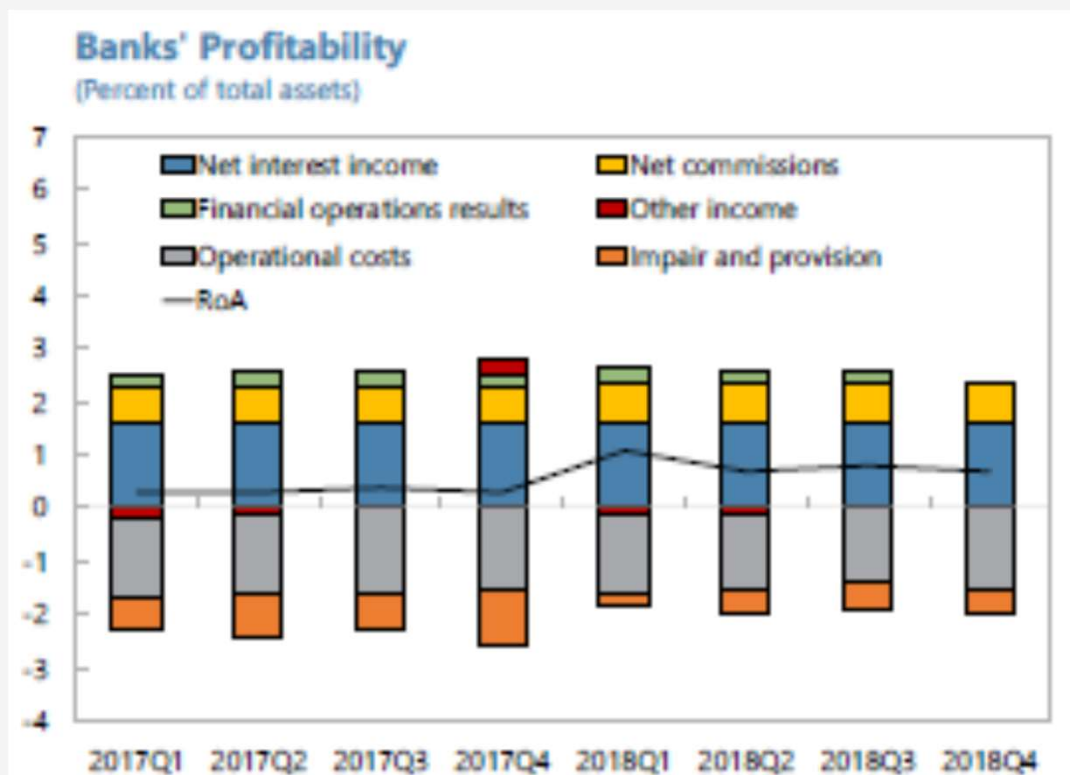
■ Profitability is still below the EU average ...



EBA (2020), "Risk Dashboard – Data as of Q2 2020", October.

Profitability

- ... , notwithstanding the reduction of impairments and ...

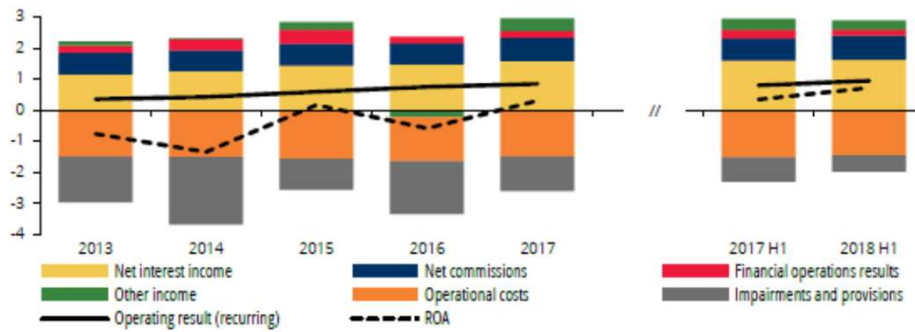


IMF (2019), "2019 Article IV Consultation", IMF Country Report No. 19/221.

Profitability

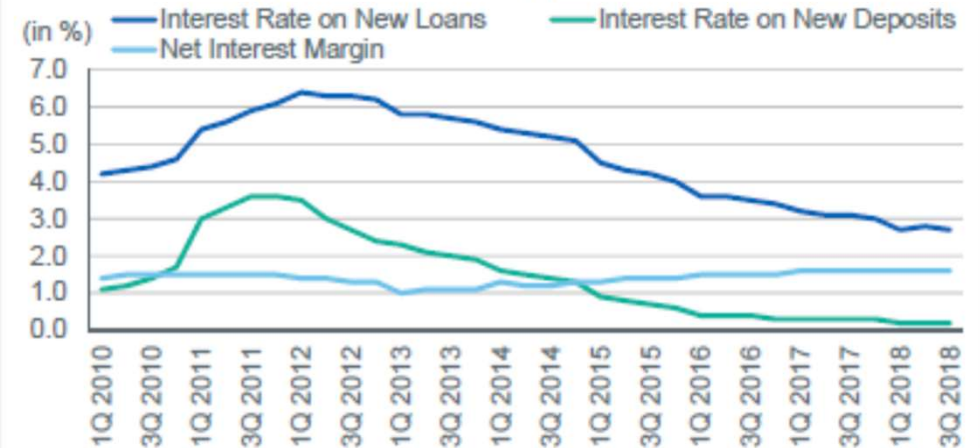
- ... the increase in NII, due to lower interest paid on deposits, ...

Chart 3.10 • Income and costs, in % of average total assets



Source: Banco de Portugal (2018), “Portuguese Banking System: Latest Developments - 2Q2017”.

Lower Funding Costs Have Supported Interest Margins



Source: Fitch Ratings (2019), “Credit Outlook 2019”, 24 Jan.

Profitability

- ... and non-recurring results (e.g. NPL and real estate sales).
- However, profitability levels didn't return to the levels before the GFC and the pandemic led Portuguese banks to start increasing impairments again in 1Q20, leading to a sharp deterioration of profitability.

Chart 4 • Return on equity (ROE), return on assets (ROA) and recurring operating result

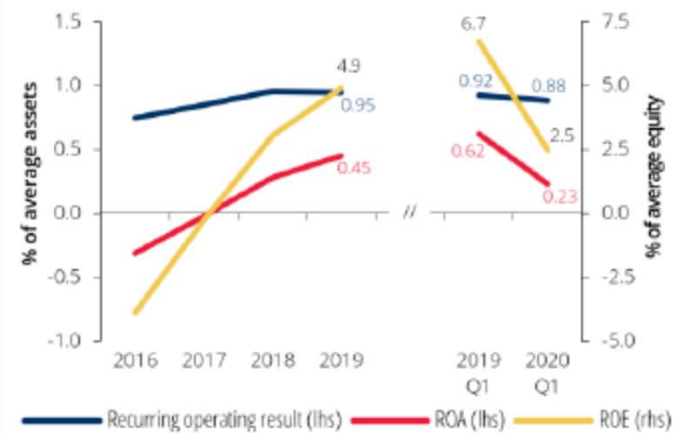


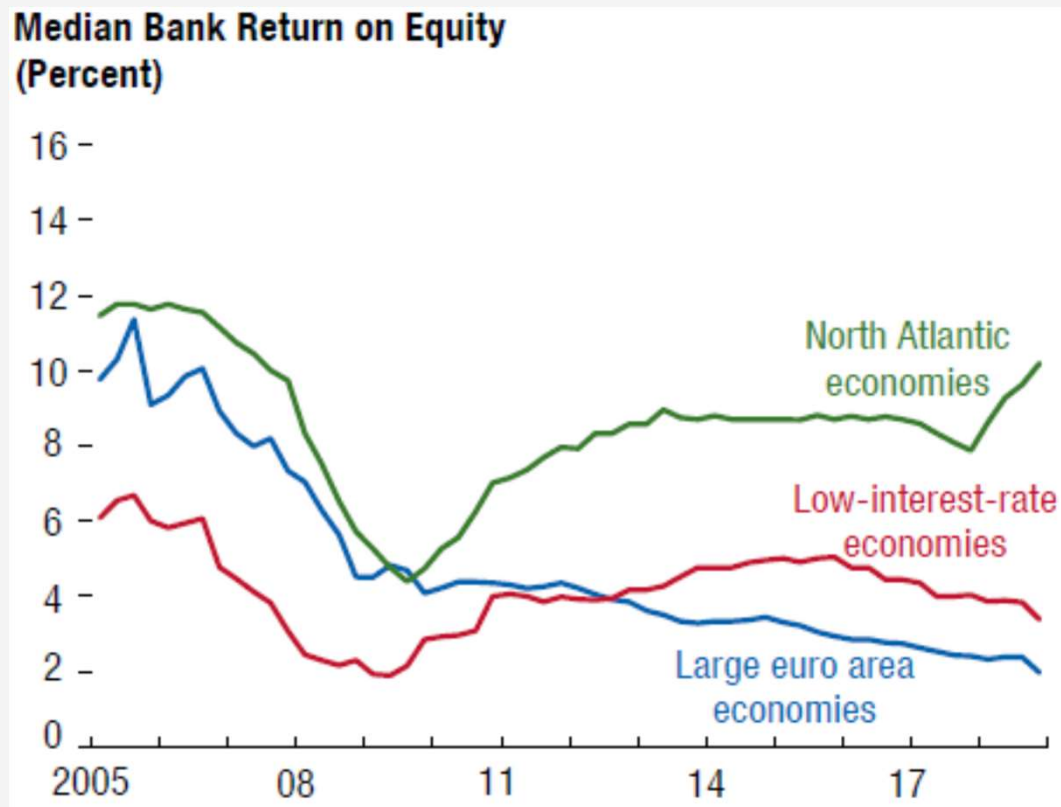
Chart 5 • Cost-to-income and loan loss charge ratios



Source: Banco de Portugal (2020), "Portuguese Banking System: Latest Developments - 1Q2020".

Profitability

- Many European banking systems still show a much lower level of profitability, comparing to other regions and the prospects are for a further deterioration.

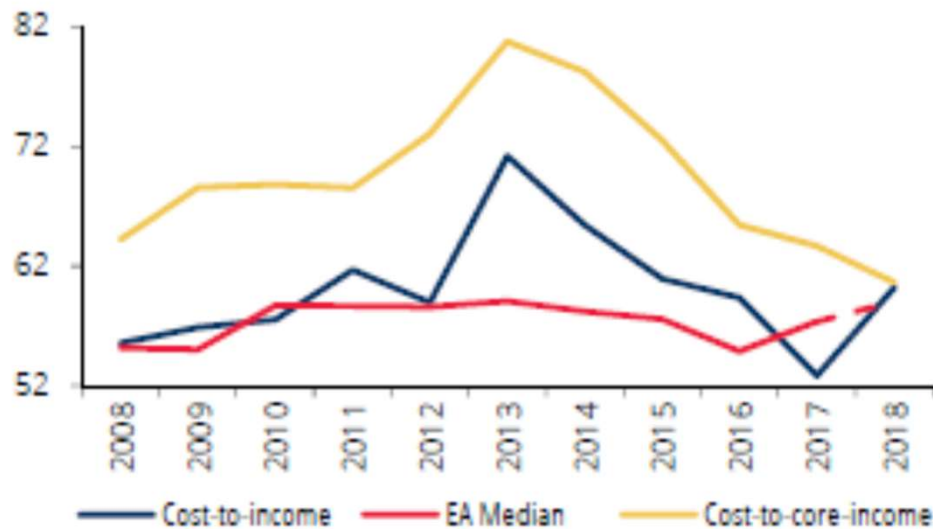


Source: IMF (2020), “Global Financial Stability Report”, April.

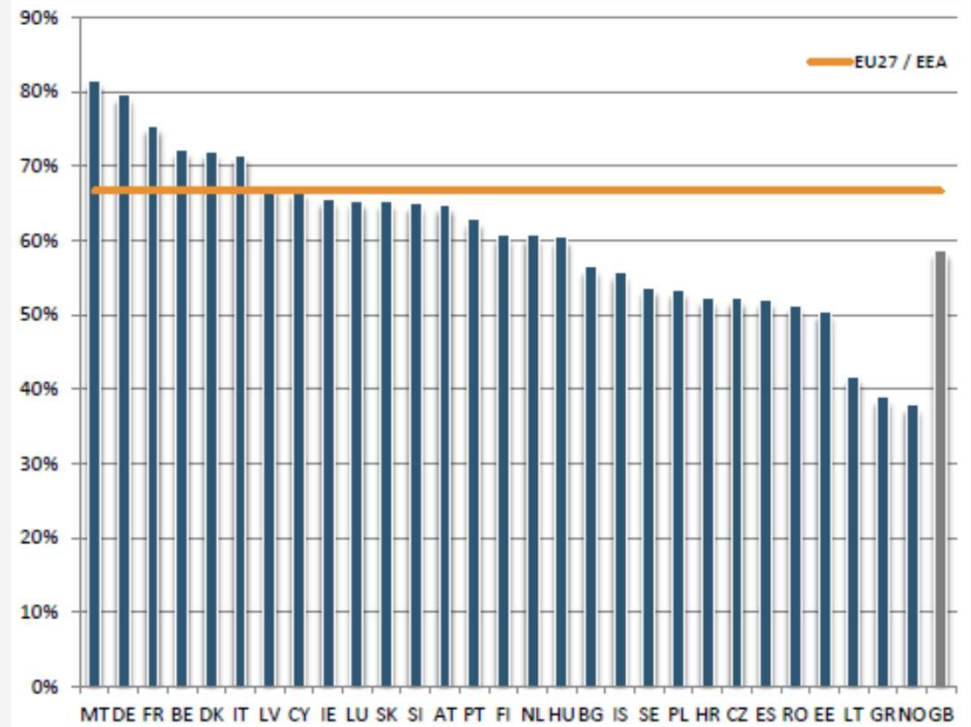
Profitability

- The reduction of operating costs allowed the alignment of the cost-to-income ratio of the domestic banking system to the EA median level.

Chart I.4.9 • Cost-to-income and cost-to-core-income ratios | Per cent



Source: Banco de Portugal (2019), “Financial Stability Review”, June.



EBA (2020), “Risk Dashboard – Data as of Q2 2020”, October.

Profitability

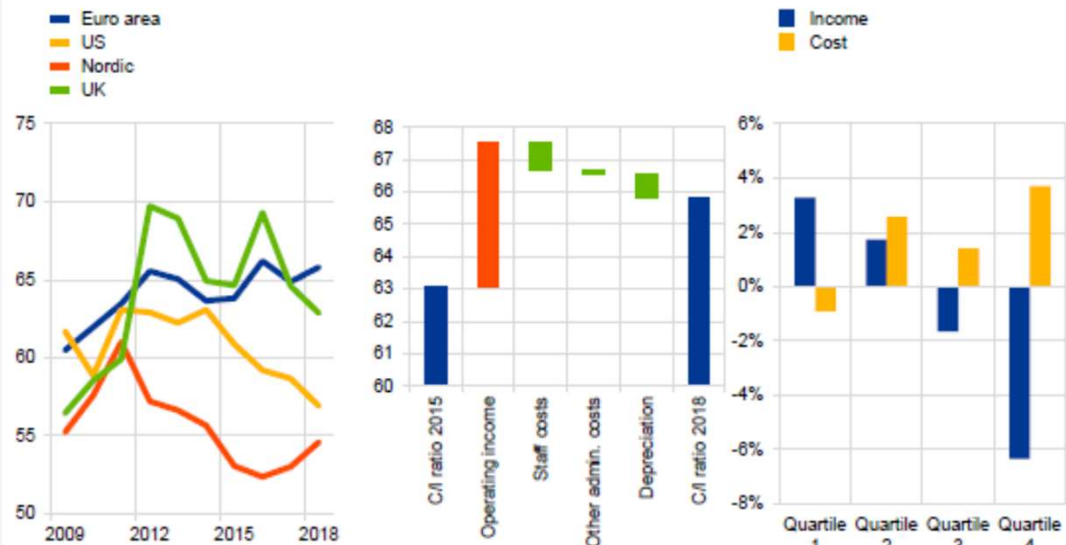
- EA banks still compare unfavourably regarding efficiency.

Chart 3.3

Euro area banks continue to underperform some of their international peers in terms of efficiency, while developments in cost-to-income ratios were rather heterogeneous at the bank level

Cost-to-income ratios in international comparison (left panel), decomposition of the change in euro area significant institutions' cost-to-income ratio between 2015 and 2018 (middle panel) and median annual cost and income changes by quartile (right panel)

(left panel: 2009-18, percentages; middle panel: 2015-18, percentage points; right panel: 2015-18, compound annual growth rates, medians per quartile)

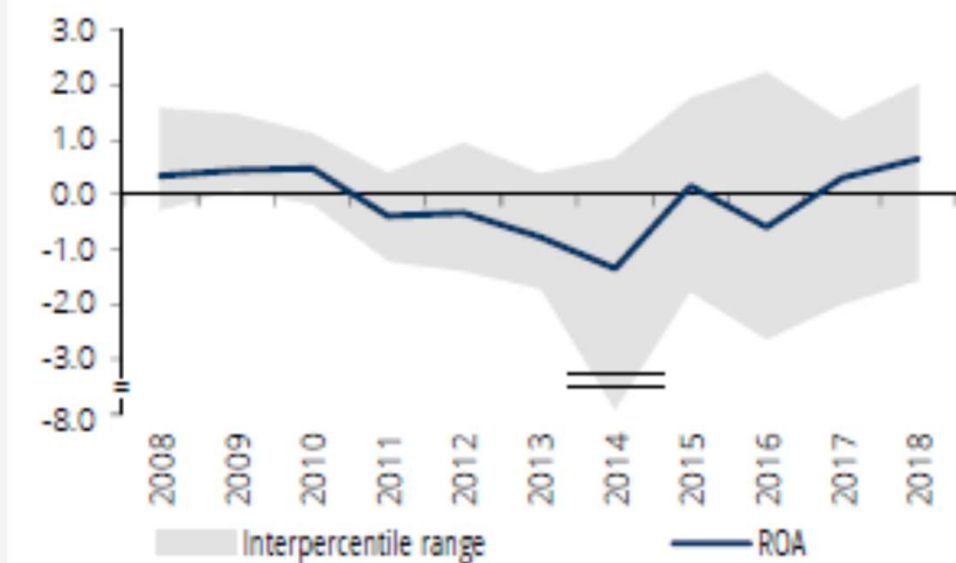


Source: ECB (2019), "ECB Financial Stability Review", May.

Profitability

- Although the profitability recovery has been observed across the board, its heterogeneity has increased, as banks are at different stages of their turnaround processes.

Chart I.4.1 • Return on assets | Percentage of average assets

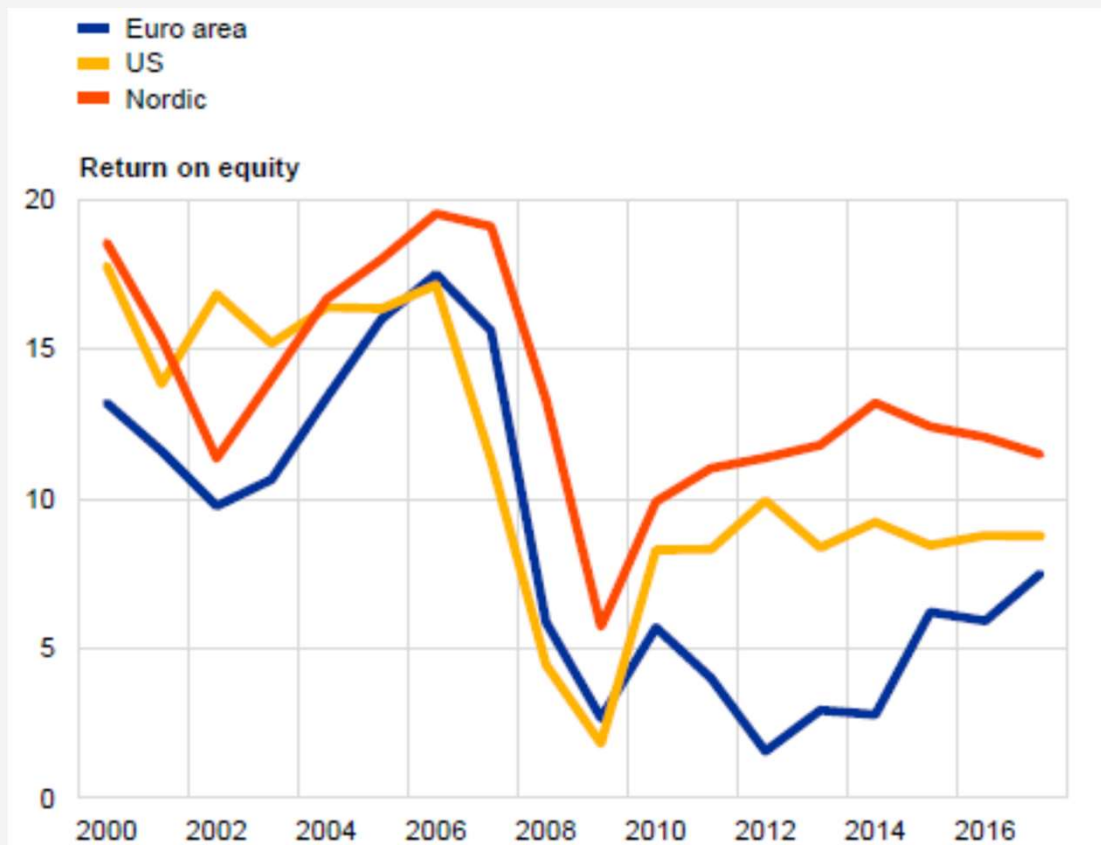


Source: Banco de Portugal. | Notes: Return is measured by profit or loss before tax. The interpercentile range was obtained by the difference between the 95th and 5th percentile of the indicator's asset-weighted distribution.

Source: Banco de Portugal (2019), "Financial Stability Review", Jun.

Profitability

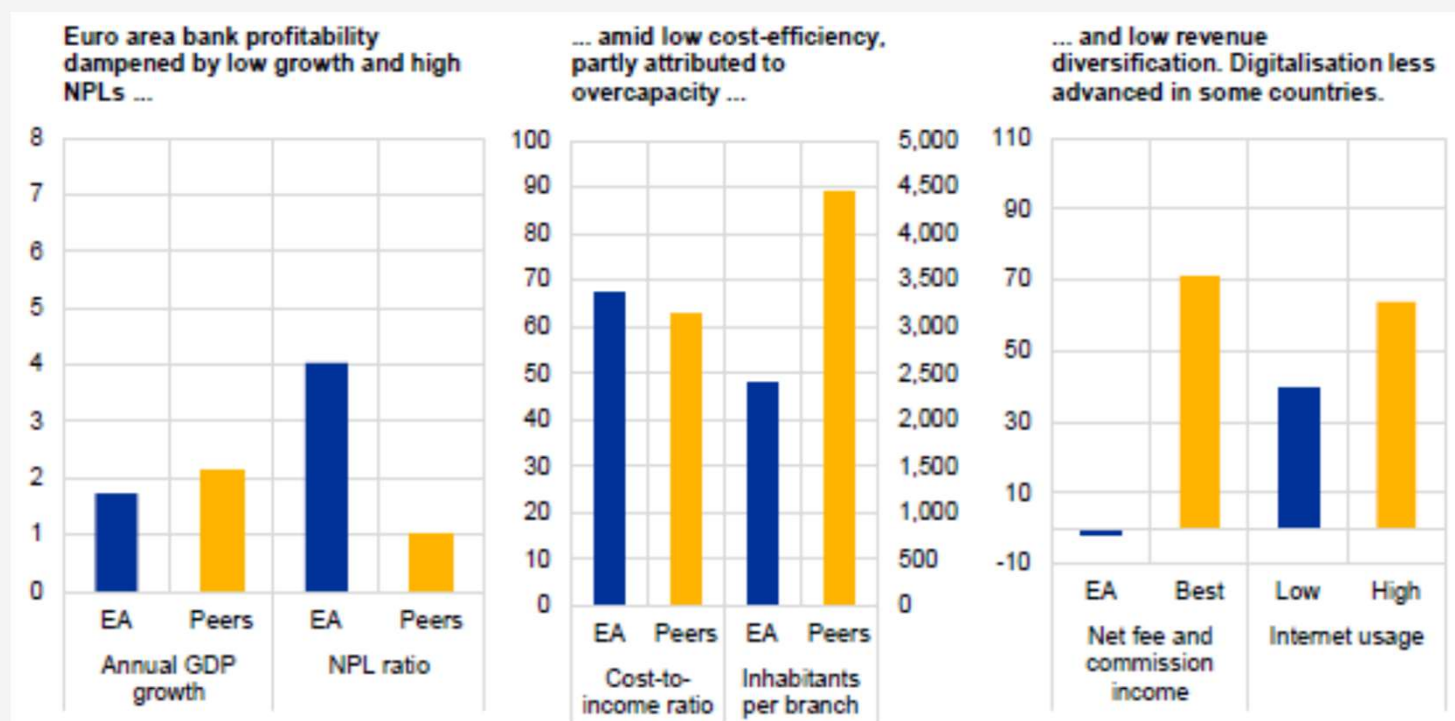
- Profitability has also improved in the Euro Area, but banks are still performing worse than in other economies...



Source: ECB (2018), "ECB Financial Stability Review", Nov.

Profitability

- ... , due to lower economic growth, efficiency and diversification, ...



(left panel: average annual GDP growth in 2011-18 and NPL ratio as a percentage of total loans in 2018; middle panel: average cost-to-income ratio in 2014-18 and inhabitants per branch (right-hand scale); right panel: net fee and commission growth in 2009-18, internet usage as a percentage of the population, low and high usage across euro area countries (right-hand scale))

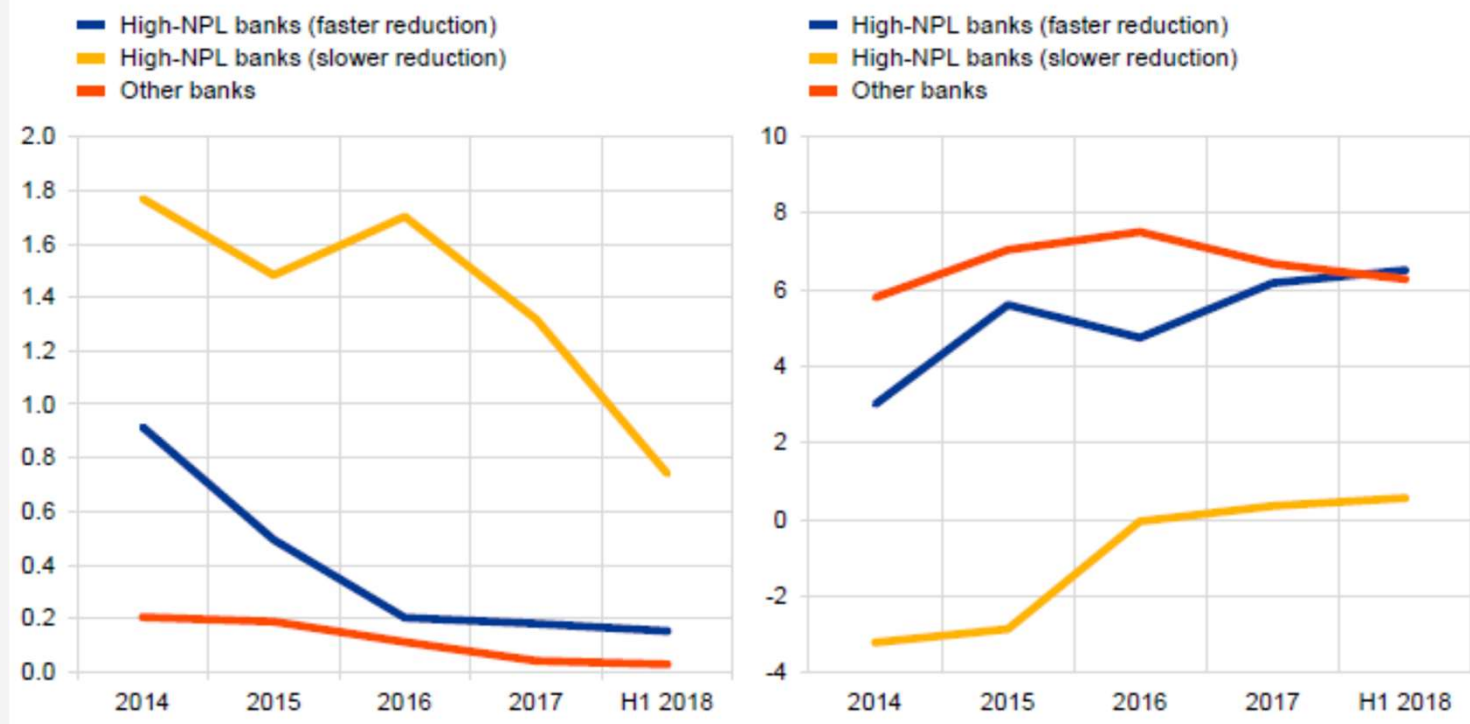
Source: ECB (2019), "ECB Financial Stability Review", May.

Profitability

- ... as well as higher NPLs.

Median ratio of impairments to total loans (left panel) and median ROE (right panel) for high-NPL banks and other banks

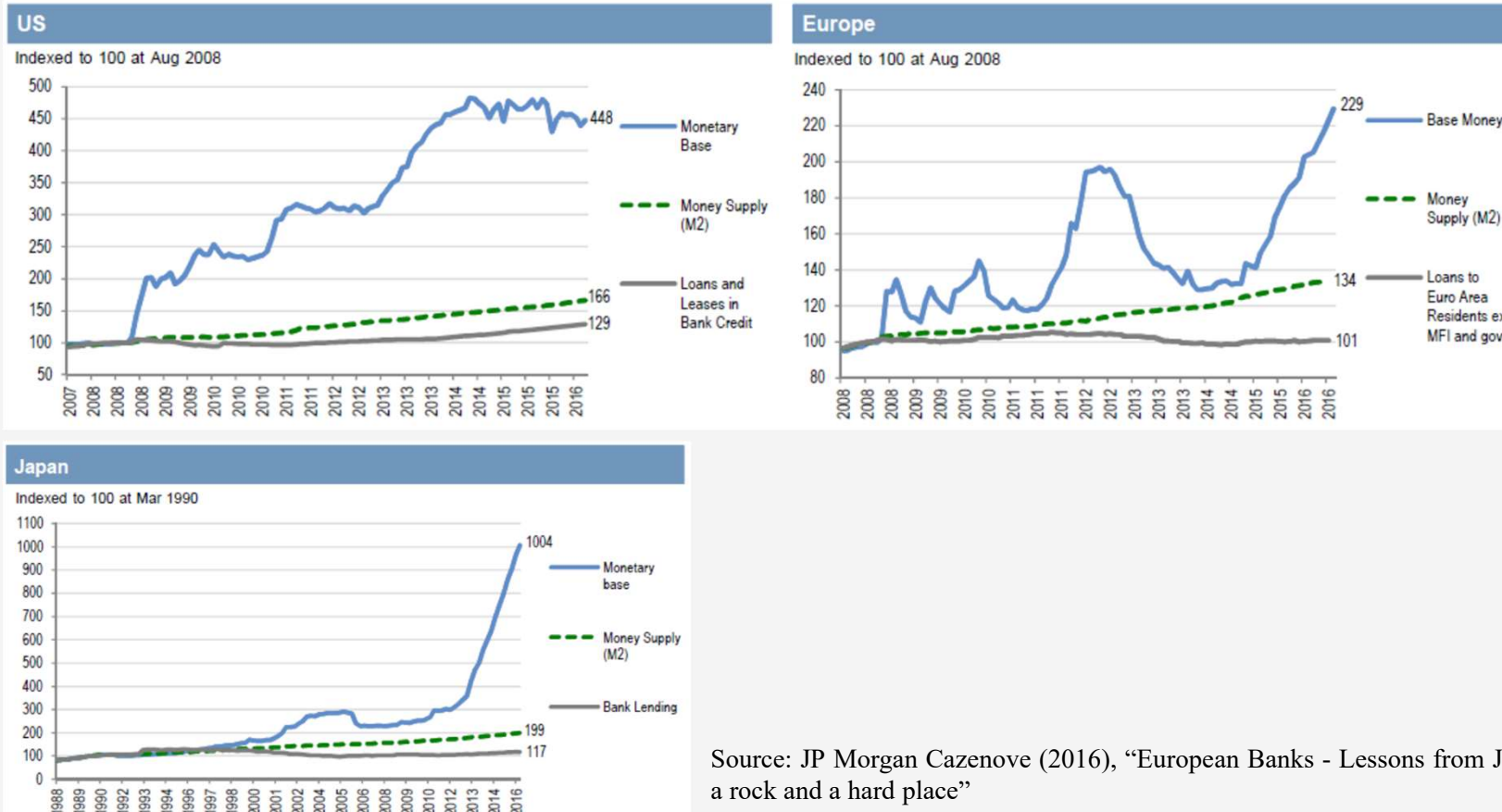
(2014-H1 2018, percentages)



Source: ECB (2018), "ECB Financial Stability Review", Nov.

Profitability

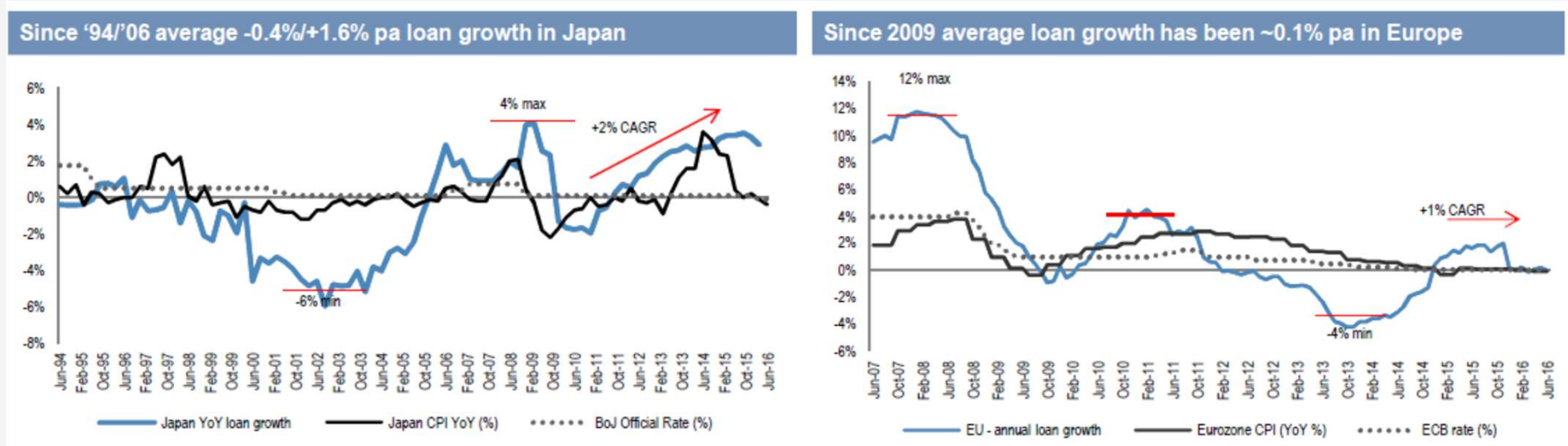
- The contribution of the expansionary monetary policies implemented has not been enough to drive credit growth and significant improvements in NII.



Source: JP Morgan Cazenove (2016), "European Banks - Lessons from Japan: EU Banks between a rock and a hard place"

Profitability

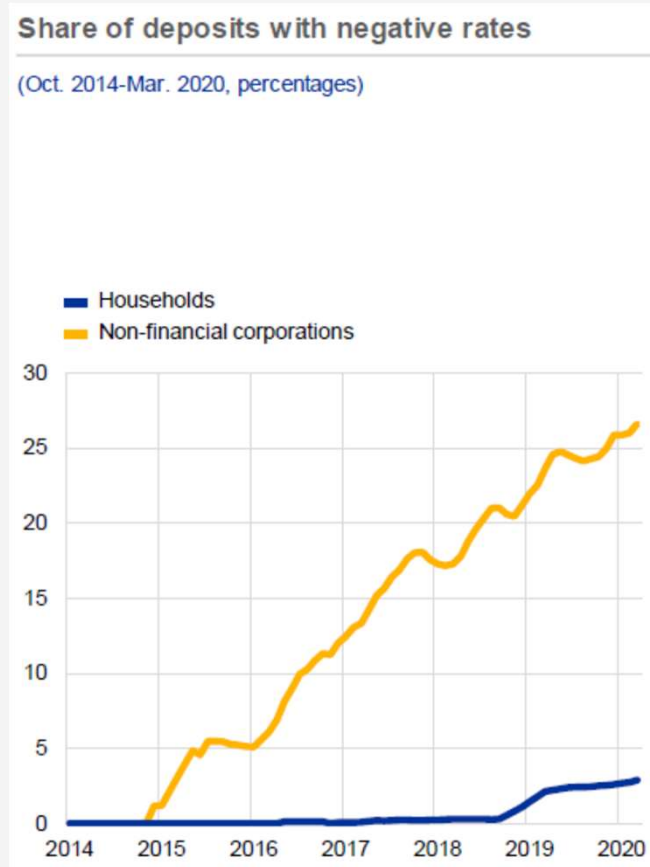
- Actually, low interest rates didn't drive loan growth – the Japanese experience of balance sheet deleveraging is similar in Europe.



Source: JP Morgan Cazenove (2016), "European Banks - Lessons from Japan: EU Banks between a rock and a hard place".

Profitability

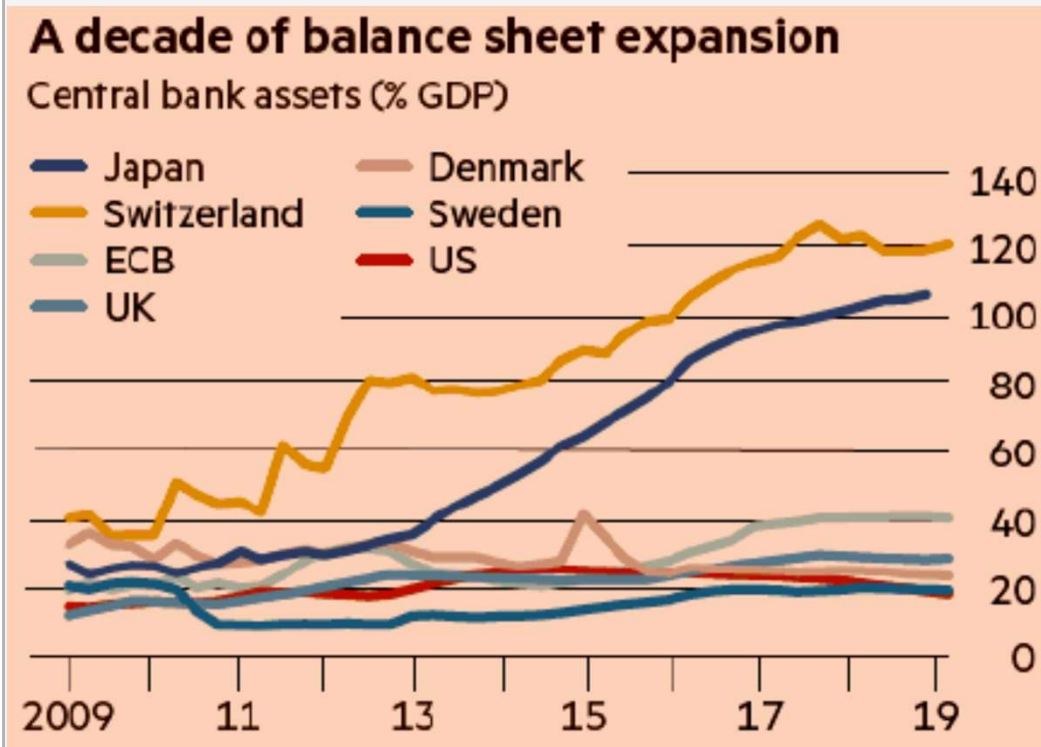
- Banks managed to mitigate the impact of lower interest rates by imposing negative interest rates on deposits by a larger slice of their customers, namely NFC.



Source: ECB (2020), “ECB Financial Stability Review”, June.

Profitability

- The monetary policy stimulus by the major central banks is illustrated by the enormous increase (2 to 4 times in many countries since 2009) in the Balance sheets of central banks.

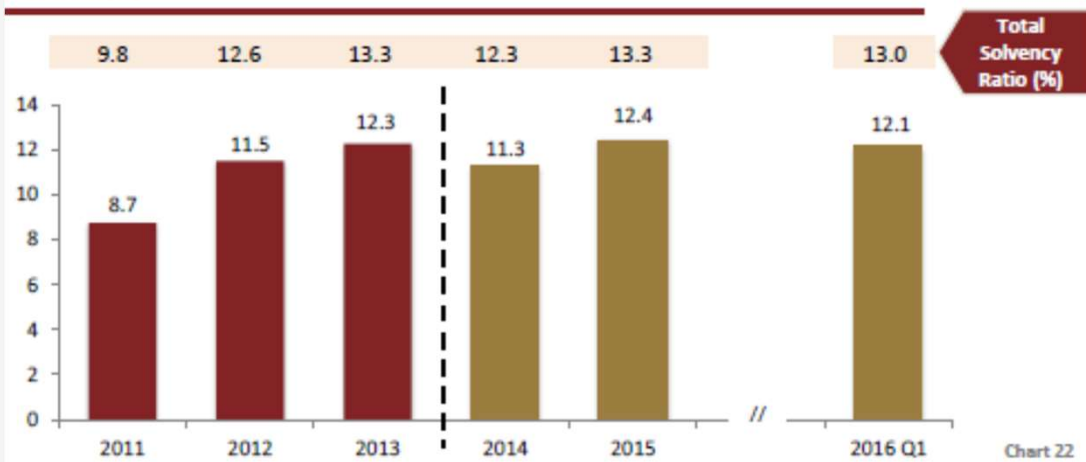


Source: Financial Times (2019), "Credibility gap: Central banks continue to miss inflation targets despite years of easing"

Solvency

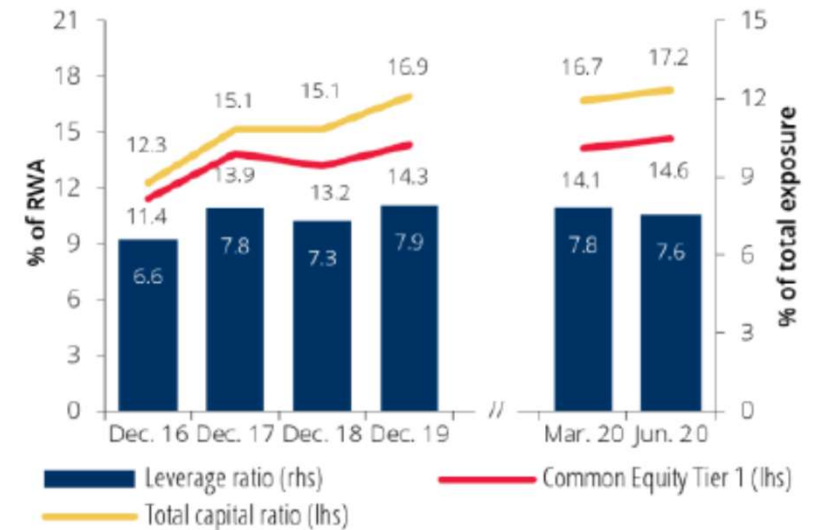
- **Capital increases** since 2012 to face higher levels of capital requirements and loan losses...

Core Tier 1 ratio (until 2013) and CET 1 ratio (from 2014) – Value at end of period (%)



Source: Banco de Portugal (2016), “Portuguese Banking System: Recent Developments (updated:1Q).

Chart 6 • Own funds ratios and leverage ratio

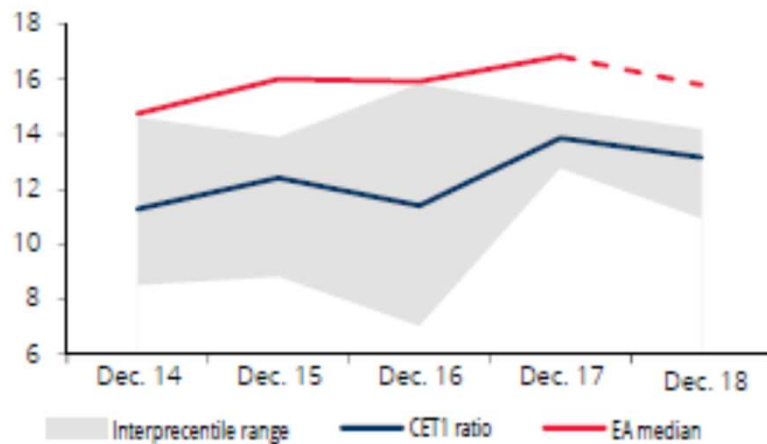


Source: Banco de Portugal (2020), “Portuguese Banking System: Latest Developments”, 2nd Quarter.

Solvency

- ... but still comparing unfavorably to other European countries.

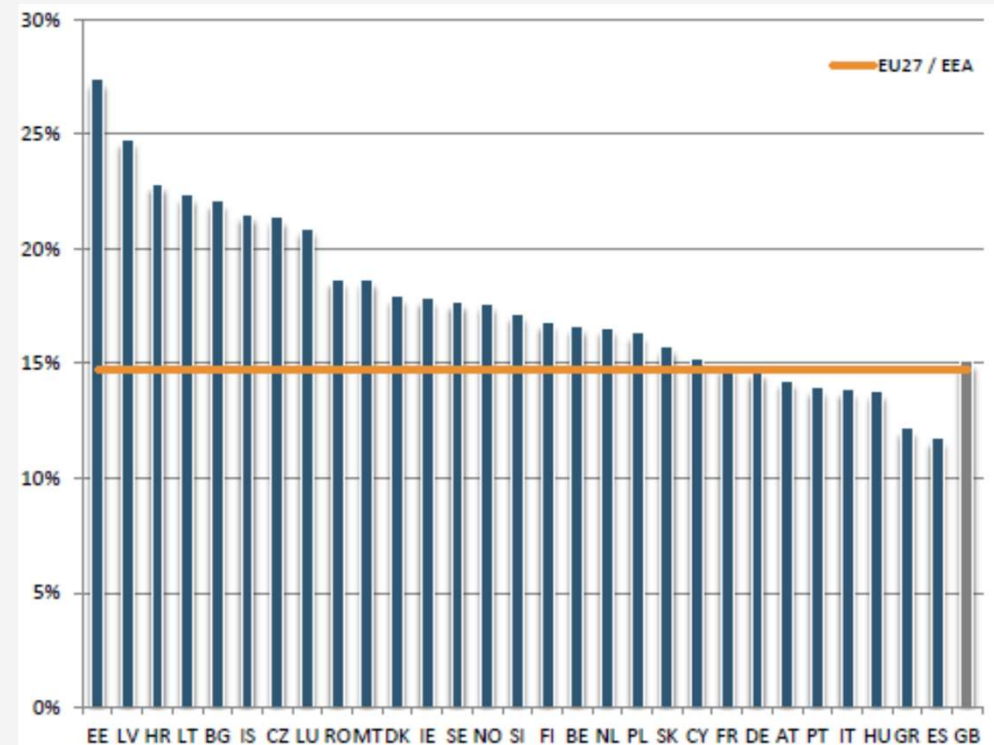
Chart I.4.41 • CET 1 ratio
| Per cent



Sources: Banco de Portugal and European Central Bank (Consolidated Banking Data). | Notes: The interpercentile range was obtained by the difference between the 95th and 5th percentile of the indicator's asset-weighted distribution. The December 2018 euro area median refers to the September 2018 figure since end-2018 data are not available.

Source: Banco de Portugal (2019), "Financial Stability Review", June.

CET1



EBA (2020), "Risk Dashboard – Data as of Q2 2020", October.

Solvency

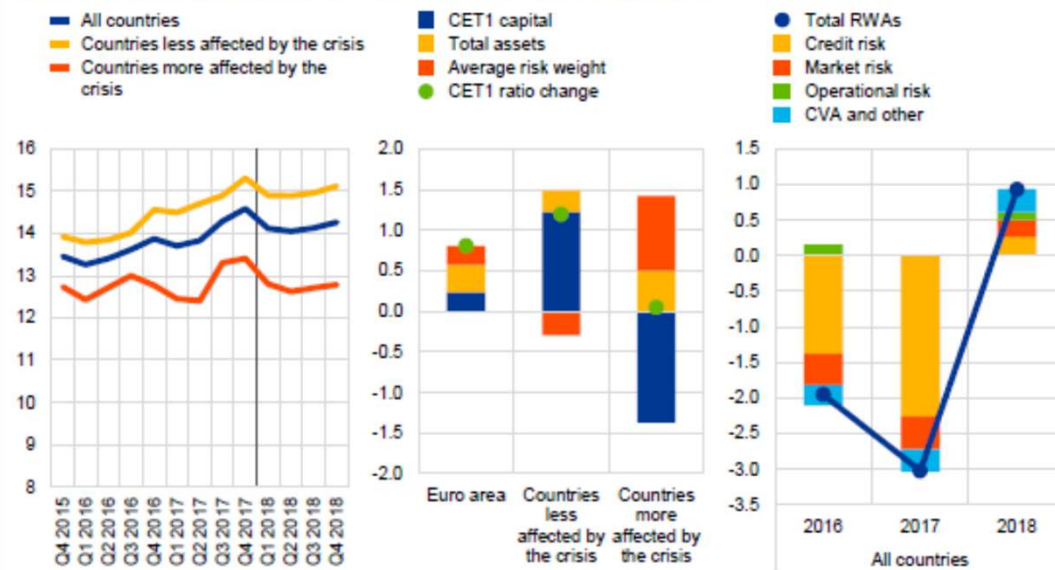
- Capital ratios in EA countries more affected by the crisis improve only slightly and mostly due to the reduction in RWA, as a consequence of deleveraging.

Chart 3.9

Improvements in banks' regulatory capital ratios paused in 2018, while patterns of capital ratio changes markedly differed between country groups

Transitional CET1 ratios (left panel) and a decomposition of CET1 ratio changes since 2015 by country group (middle panel) as well as a decomposition of RWA changes (right panel)

(Q4 2015-Q4 2018, left panel: percentages, middle and right panels: percentage points)



Source: ECB (2019), "ECB Financial Stability Review", May;

Solvency

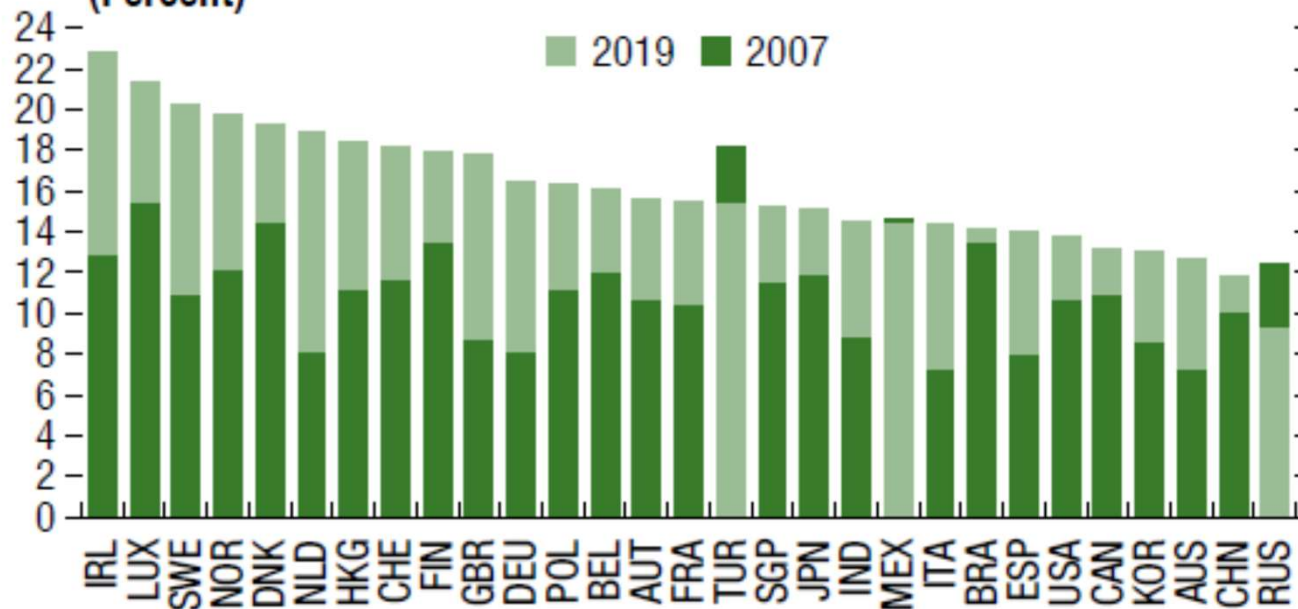
- The improvements in solvency have been observed worldwide.

Figure 1.12. Banks in Large Economies: Resilience Tested

Banks now have more capital to absorb losses ...

1. Banking System Tier 1 Capital Ratios

(Percent)



Source: IMF (2020), "Global Financial Stability Review", Apr;