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EUROPEAN BANKING AUTHORITY 2011 EU-WIDE STRESS TEST AGGREGATE REPORT

Executive summary

- **The stress test exercise.** The 2011 EBA's EU wide stress test had the objective of assessing the resilience of a large sample of banks in the EU¹ against an adverse but plausible scenario. The scenario assesses banks against a deterioration from the baseline forecast in the main macroeconomic variables such as GDP, unemployment and house prices – for instance, GDP would fall 4 percentage points from the baseline. The scenario includes a sovereign stress, with haircuts applied to sovereign and bank exposures in the trading book and increased provisions for these exposures in the banking book. Changes in interest rates and sovereign spreads also affect the cost of funding for banks in the stress. The stress testing methodology, which was published by the EBA on March 18th, 2011², entails a static balance-sheet assumption, and also does not allow the banks to take actions to react to shock. The resilience of the banks is assessed against a benchmark defined with reference to capital of the highest quality -- Core Tier 1 (CT1) -- set at 5% of risk weighted assets (RWA).
- **Context.** The stress test exercise is a general macro-economic scenario across all countries in the EU. The results shed light on the sensitivities of the European banking sector to a general economic downturn and movements in external variables, such as interest rates, economic growth and unemployment. The stress test does not directly capture all possible outcomes of the current sovereign crisis, which is rightly being handled by relevant fiscal authorities, but the transparency of this exercise is designed to provide investors, analysts and other market participants with an informed view on the resilience of the EU banking sector.
- **The process.** The exercise has been conducted in a constrained bottom-up fashion by the 90³ banks whose results are published in this report. The results were scrutinised and challenged by home country supervisors before a peer review and quality assurance process was conducted by EBA staff with a team of experts from national supervisory authorities, the European Central Bank (ECB) and the European Systemic Risk Board (ESRB). This process resulted in three rounds of submissions and changes to the outcomes, in some cases materially, as the EBA made efforts to apply the methodology consistently and in some areas applied caps or averages. However, the EBA has relied on the quality review work of national authorities and on the internal processes of the banks to assess such areas as earnings trends, asset quality, model outcomes and the magnitude of the impact on assets and liabilities.
- **The starting point.** The exercise runs from 2010 to 2012. On average, the banks in the sample started the exercise in a strong capital position. They had an average Core Tier 1 capital ratio (CT1R) of 8.9%. This figure included some EUR160bn of government support at end 2010 reflecting the measures that EU

¹ Includes non-EU European Economic Area banks where appropriate

² <http://eba.europa.eu/News--Communications/Year/2011/The-EBA-publishes-details-of-its-stress-test-scena.aspx>

³ The exercise was initially undertaken on a sample of 91 banks but results are published for only 90.

governments have been put in place to strengthen banks balance sheet. Year end capital included EUR50bn of 2010 retained earnings.

- **The results of the exercise.**

- Based on end 2010 information only, the EBA exercise shows that 20 banks would fall below the 5% CT1 threshold over the two-year horizon of the exercise. The overall shortfall would total EUR26.8 bn.
 - However, the EBA allowed specific capital actions in the first four months of 2011 (through the end of April) to be considered in the results. Banks were therefore incentivised to strengthen their capital positions ahead of the stress test.
 - Between January and April 2011 a further amount of some EUR50bn of capital was raised on a net basis.
 - **Once capital-raising actions in 2011 are added, the EBA's 2011 stress test exercise shows that eight banks fall below the capital threshold of 5% CT1R over the two-year time horizon, with an overall CT1 shortfall of EUR2.5bn. In addition, 16 banks display a CT1R of between 5% and 6%.**
- The adverse scenario has a significant impact on loss figures. The stress shows provisions of around EUR200bn in each of the two years, equivalent to the loss rates of 2009 repeated in two consecutive years. The high level of provisions is coupled with reduced profitability under the adverse scenario: both net interest income and pre-provision income are roughly one third lower than the 2009 equivalent levels for the two years of the stress test exercise.
 - To mitigate the impact of the adverse scenario's shock, the banks participating in the exercise rely upon a broad series of measures, such as the use of countercyclical provisions, divestments, capital raisings and other back-stops, as well as other management actions. Where necessary, these measures have been thoroughly described in the disclosure templates of the respective banks.
 - The EBA also notes the forthcoming introduction of new capital requirements under the Capital Requirements Directive (CRD IV), which will raise capital standards including for systemically important financial institutions. Combined with the need to repay government support this adds further impetus to the need for banks to strengthen capital positions beyond the time horizon of the stress test.
 - **Transparency on the current situation of EU banks.** The 2011 EU wide stress test contains an unprecedented level of transparency on banks' exposures and capital composition to allow investors, analysts and other market participants to develop an informed view on the resilience of the EU banking sector. The lack of common EU definitions in some areas created challenges in this regard and the EBA has ensured that caveats have been added where appropriate. The EBA will undertake longer term efforts to address data comparability in the EU to address this situation.
 - **Recommendations for follow-up action: banks below the 5% threshold.** The capital shortfalls highlighted in the stress test need to be promptly remedied. The EBA recommends that national supervisory authorities request banks whose Core Tier 1 Ratio falls below the 5% threshold under the adverse scenario defined in the stress test exercise to promptly remedy this capital

shortfall. In particular, national supervisors should ensure that these banks are requested to present within three months (by 15 October 2011) to their competent authorities a plan to restore the capital position to a level at least equal to the 5% benchmark based on this analysis. The remedial measures agreed with the competent authority will have to be fully implemented by end-2011, with flexibility allowed only if justified by market conditions or required procedures.

- It is the assessment of the EBA that bringing all banks above the 5% threshold is necessary but not sufficient to address potential vulnerabilities at this conjuncture. Further actions are needed to make sure that EU banks' capital positions are strong enough to weather possible further shocks. While the features of the adverse scenario are still in line with the commitment of the European Union to prevent one of its Member States defaulting on its liabilities, a further deterioration in the sovereign crisis might raise significant challenges, both on the valuation of banks holdings of sovereign debt and through sharp changes in investors' risk appetite. In turn this could lead to funding pressure (in terms of both cost and availability) affecting some banks' earning power and internal capital generation capacity which, if not promptly addressed by the banks and their national authorities, could further affect market confidence in these banks. The EBA notes that national authorities in countries currently in IMF-EU programmes are strengthening the capital of banks in their countries and in many cases have, or will be, setting capital standards to a higher level than that in the EU wide stress test in order to address uncertainties.
- The EBA is aware of the funding liquidity challenges in the current environment and national authorities are taking steps to extend maturities, increase buffers and develop contingency plans.
- **Additional recommendations for follow-up actions** The EBA recommends that national supervisory authorities request all banks whose Core Tier 1 ratio under the adverse scenario is above but close to 5% and which have sizeable exposures to sovereigns under stress to take specific steps to strengthen their capital position, including where necessary restrictions on dividends, deleveraging, issuance of fresh capital or conversion of lower quality instruments into Core Tier 1 capital. These banks are expected to plan remedial action within three months (by 15 October 2011). The plans need to be fully implemented within nine months (by 15 April 2012).
- National authorities will be requested to provide detailed overviews of measures to be taken by the banks in question to the EBA by 31 October 2011. The EBA will review the actions undertaken by banks and national authorities between August and December 2011 and will publish reports in February and June 2012 on the implementation of these recommendations.
- **EBA's follow up action.** This recommendation, published in Annex 3, is issued in line with Art. 21.2(b) of the EBA Regulation. The EBA will review the actions undertaken by banks and national authorities between August and December and will publish reports in February and June 2012 on the implementation of these recommendations.

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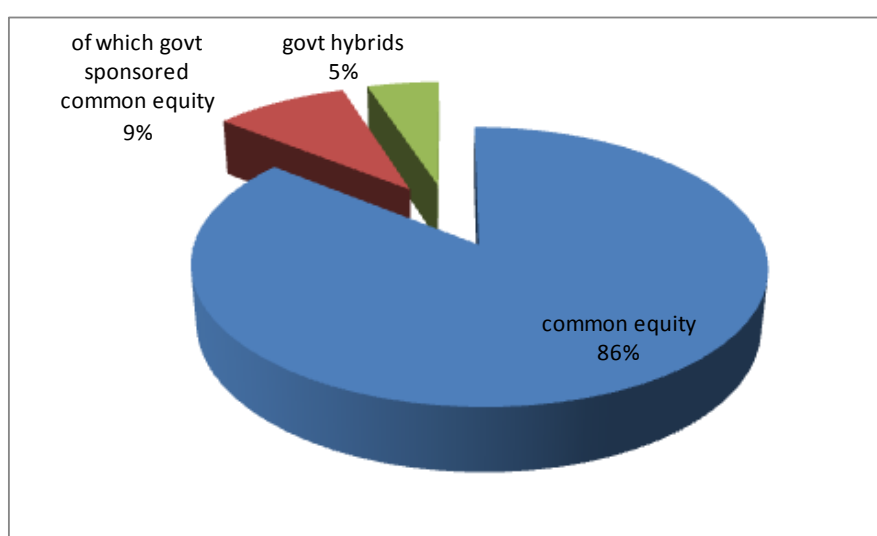
The information is based on data supplied by each bank, via its respective national supervisor. The accuracy of this data is primarily the responsibility of the participating bank and national supervisor. This information has been provided to the EBA in accordance with Article 35 of EU Regulation 1093/2010. The EBA bears no responsibility for errors/discrepancies that may arise in the underlying data. The information in this report is aggregate data only and is compiled on a best efforts basis. The EBA reserves the right to update the charts and data in this report after initial publication.

1. Aggregate outcome of the exercise

a. Evolution and dispersion of capital ratios

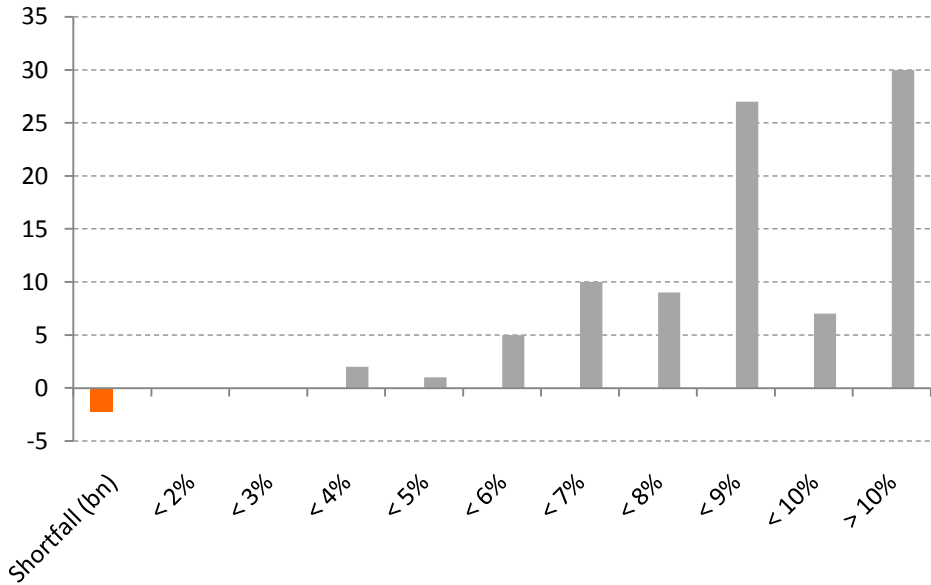
The sample of 90 banks started the exercise with strengthened capital positions having bolstered their capital levels in recent years. Overall the sample of banks had an average capital ratio (CT1R) of 8.9% at end 2010 or approximately EUR1 trillion of which 95% was common equity. In total the CT1 figure included around EUR160 bn of government support of which EUR103 bn was common equity and the rest consisted of other capital instruments subscribed by governments or other public entities during the crisis. At the end of 2010 some EUR50 bn had been added to core tier 1 capital in the form of retained earnings from 2010.

Chart 1 Government support as a proportion of CT1 end 2010



Despite the strengthened capital ratios at the end of 2010 three banks had CT1R lower than 5%. Without any government support the end 2010 picture would be very different. Eighteen banks would find their CT1R below 5%, with a shortfall of approximately EUR50 bn. The extent of government support is also relevant for the future capital needs of banks as repayment will be necessary in most cases in the future.

Chart 2 Starting point end 2010 number of banks in each bucket of CT1



Outcomes of the stress test without capital raising in 2011

Applying the shock under the adverse scenario to the end-2010 balance sheets, 20 banks fall short of the 5% capital threshold, with an overall capital deficit of some EUR25 bn. The CT1 ratio for the overall sample declines from 8.9% to 7.4%

Chart 3 Number of banks in each bucket of CT1 ratio without capital raising

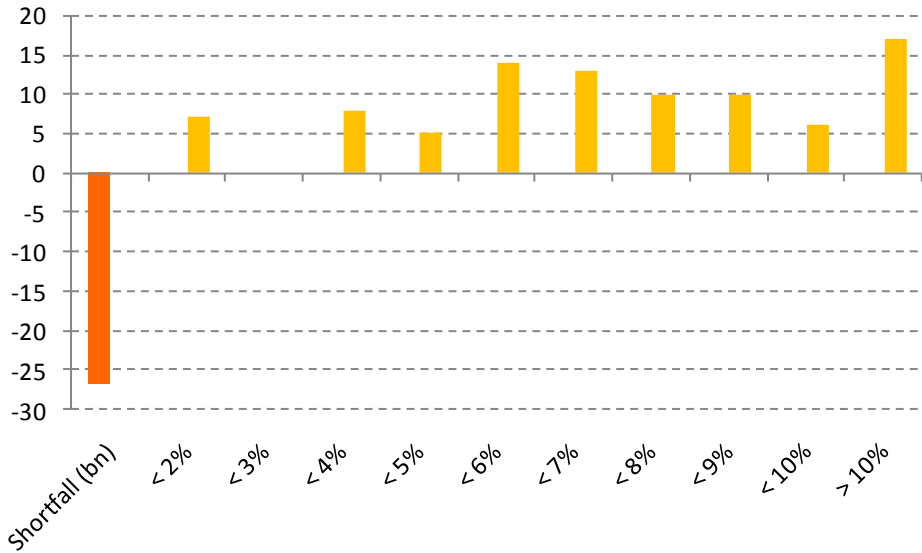


Table 1 Banks capital ratios without capital raising

Adverse scenario

	2010	2012	< 2%	< 3%	< 4%	< 5%	< 6%	< 7%	< 8%	< 9%	< 10%	> 10%
AT	8.2%	7.6%	0	0	0	1	0	0	1	1	0	0
BE	11.4%	10.2%	0	0	0	0	0	0	0	0	0	2
CY	7.7%	4.8%	0	0	1	0	0	1	0	0	0	0
DE	9.4%	6.8%	0	0	1	0	2	2	3	1	0	3
DK	9.8%	10.8%	0	0	0	0	0	0	0	0	1	3
ES	7.4%	6.5%	4	0	3	2	7	2	0	3	2	2
FI	12.2%	11.6%	0	0	0	0	0	0	0	0	0	1
FR	8.4%	7.5%	0	0	0	0	0	2	1	1	0	0
GB	10.1%	7.6%	0	0	0	0	0	1	2	1	0	0
GR	10.2%	5.7%	1	0	0	1	2	0	2	0	0	0
HU	12.3%	13.6%	0	0	0	0	0	0	0	0	0	1
IE	6.2%	-0.1%	2	0	1	0	0	0	0	0	0	0
IT	7.4%	6.5%	0	0	0	1	1	2	1	0	0	0
LU	12.0%	13.3%	0	0	0	0	0	0	0	0	0	1
MT	10.5%	10.4%	0	0	0	0	0	0	0	0	0	1
NL	10.6%	9.4%	0	0	0	0	0	1	0	1	1	1
NO	8.3%	9.0%	0	0	0	0	0	0	0	1	0	0
PL	11.8%	12.2%	0	0	0	0	0	0	0	0	0	1
PT	7.1%	5.2%	0	0	1	0	1	2	0	0	0	0
SE	9.0%	9.5%	0	0	0	0	0	0	0	1	2	1
SI	5.7%	4.2%	0	0	1	0	1	0	0	0	0	0
Total	8.9%	7.4%	7	0	8	5	14	13	10	10	6	17

Outcome of the stress test including capital raising in 2011

The exercise was conducted on the basis that banks had an opportunity to take action to strengthen balance sheets in the first four months of 2011 via capital raising and mandatory restructuring plans. These actions have also been factored into the exercise.

Substantial capital raising was undertaken before end April 2011, also with a view to ensuring resilience in the EBA’s 2011 stress test. In all about EUR50 bn of capital was raised in relation to the banks in the sample (EUR 46 bn net of reimbursement of capital support received by governments). This was done through (i) the issuance by the banks of common equity in the private market, (ii) government injections of capital or provision of other public facilities, (iii) conversion of lower-quality capital instruments (such as hybrid instruments) into CT1, and (iv) restructuring plans approved by all competent authorities and fully committed which was factored into the results.

Taking into account the substantial capital raising in 2011 for the full sample of banks participating to the EU-wide stress test exercise, the **CT1R would decline, on average, from 8.9% in 2010 to 7.7 % under the adverse scenario. Eight banks would fall below the 5% benchmark, with an overall shortfall of EUR 2.5 bn. A further 16 banks show CT1R in the range of 5-6%.**

Chart 4 Number of banks in each bucket of CT1 ratio

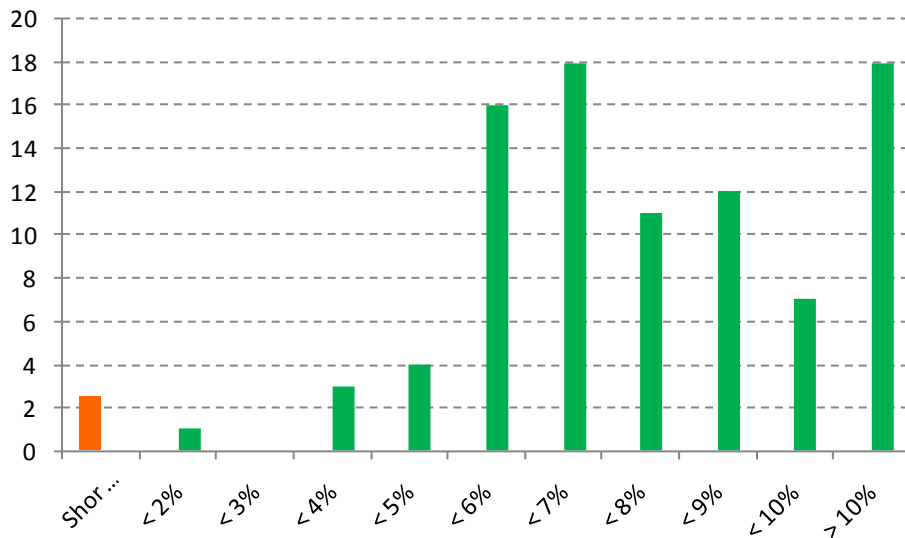


Table 2 Banks capital ratios with capital raising to 30th April 2011

Adverse scenario

	2010	2012	< 2%	< 3%	< 4%	< 5%	< 6%	< 7%	< 8%	< 9%	< 10%	> 10%
AT	8.2%	7.6%	0	0	0	1	0	0	1	1	0	0
BE	11.4%	10.2%	0	0	0	0	0	0	0	0	0	2
CY	7.7%	5.7%	0	0	0	0	1	1	0	0	0	0
DE	9.4%	6.8%	0	0	0	0	2	4	2	1	1	2
DK	9.8%	11.9%	0	0	0	0	0	0	0	0	1	3
ES	7.4%	7.3%	0	0	3	2	7	5	1	3	2	2
FI	12.2%	11.6%	0	0	0	0	0	0	0	0	0	1
FR	8.4%	7.5%	0	0	0	0	0	2	1	1	0	0
GB	10.1%	7.6%	0	0	0	0	0	1	2	1	0	0
GR	10.2%	6.1%	1	0	0	1	2	0	2	0	0	0
HU	12.3%	13.6%	0	0	0	0	0	0	0	0	0	1
IE	6.2%	9.8%	0	0	0	0	0	0	1	0	0	2
IT	7.4%	7.3%	0	0	0	0	1	2	1	1	0	0
LU	12.0%	13.3%	0	0	0	0	0	0	0	0	0	1
MT	10.5%	10.4%	0	0	0	0	0	0	0	0	0	1
NL	10.6%	9.4%	0	0	0	0	0	1	0	1	1	1
NO	8.3%	9.0%	0	0	0	0	0	0	0	1	0	0
PL	11.8%	12.2%	0	0	0	0	0	0	0	0	0	1
PT	7.1%	5.7%	0	0	0	0	2	2	0	0	0	0
SE	9.0%	9.5%	0	0	0	0	0	0	0	1	2	1
SI	5.7%	6.0%	0	0	0	0	1	0	0	1	0	0
Total	8.9%	7.7%	1	0	3	4	16	18	11	12	7	18

Chart 5 depicts the evolution of the aggregate CT1R – computed as the weighted average for the sample of 90 banks – both under the baseline and the adverse scenarios. With respect to the opening position of 2010, the average CT1R would fall by 1.2 percentage points in the stress scenario equivalent to some EUR163 bn of CT1. In comparison to the baseline scenario, which implies a continuation of economic recovery, the adverse CT1R is worse by 210bp (9.8% for baseline, 7.7% for adverse).

Chart 5 The evolution of CT1 ratios under the baseline and adverse scenarios shows a 210bp drop

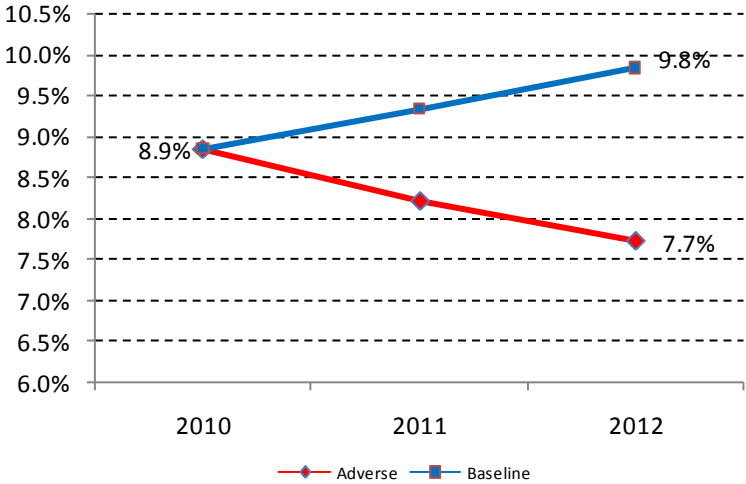
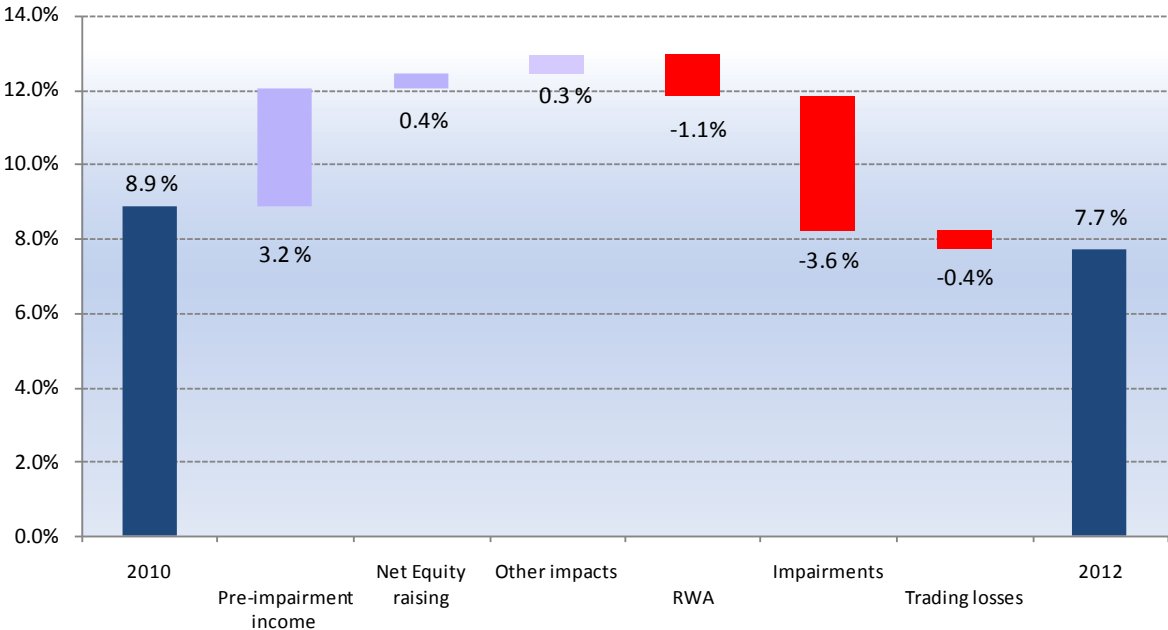


Chart 6 focuses on the determinants of the evolution of CT1R. It identifies the impact of the different drivers under the adverse scenario with respect to 2010 figures. The largest driver is impairment charges which lead to a CT1 impact of 3.6 percentage points, including provision against sovereign exposures. This would have reduced CT1 capital by some 20% if not offset by pre-provision income, which contributes to an increase in the ratio by 3.3 percentage points. Trading losses have a limited impact on CT1R (about 0.4%) and include valuation losses (EUR10.5 bn) due to the application of a haircut on European sovereign debt holdings in the trading book. The increase of the risk-weighted assets contributes to the reduction of the CT1R by about 1 percentage point.

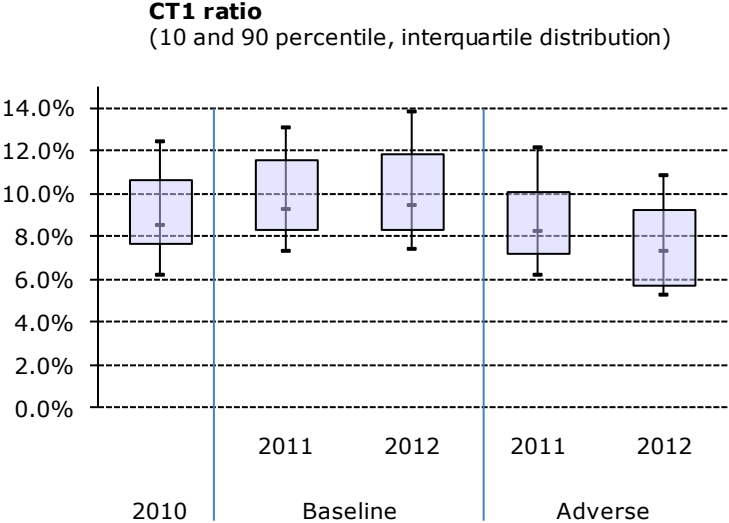
Chart 6 Core Tier 1 ratio evolution



While aggregate results show, on average, capital levels well above the 5% threshold also under the stress scenario, the dispersion across banks is significant. Chart 3

provides information on the 10th and 90th percentiles of the distribution as well as the interquartile range and the median. As expected, the adverse scenario does affect markedly the CT1Rs, moving downward the interquartile range and determining the ratio of some banks to fall below the 5% threshold. In 2012, under the adverse scenario the CT1 ratio (first decile) ranges from 5.3 to 11%, with a median figure of about 7.7%.

Chart 7. Core tier 1 ratio dispersion across banks



The change in CTIR for banks in the sample varies with an average of 1.2 percentage points movements in CT1 for the adverse from the 2010 position and 2.5 percentage points from the baseline.

Chart 8. Difference in CT1 ratios between 2010-2012 across banks

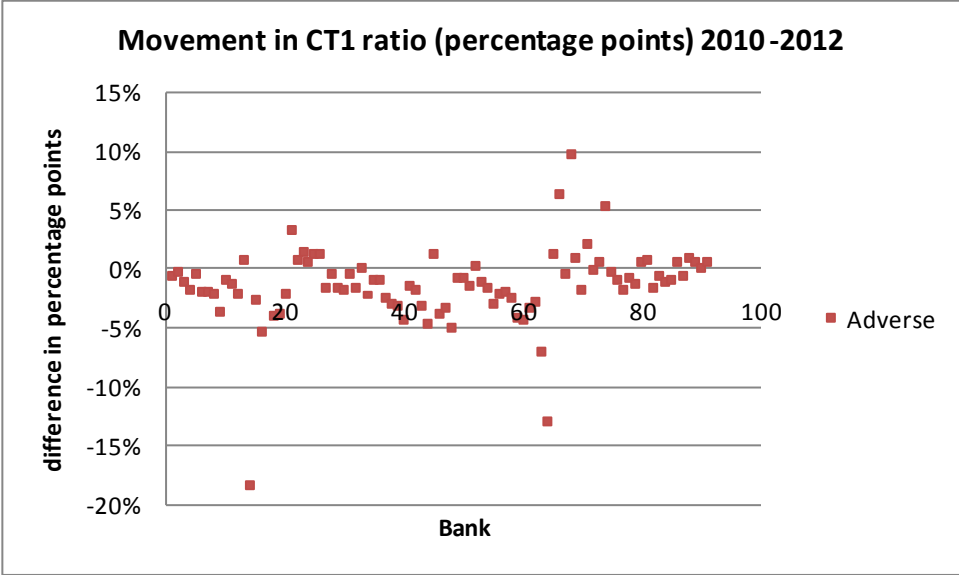
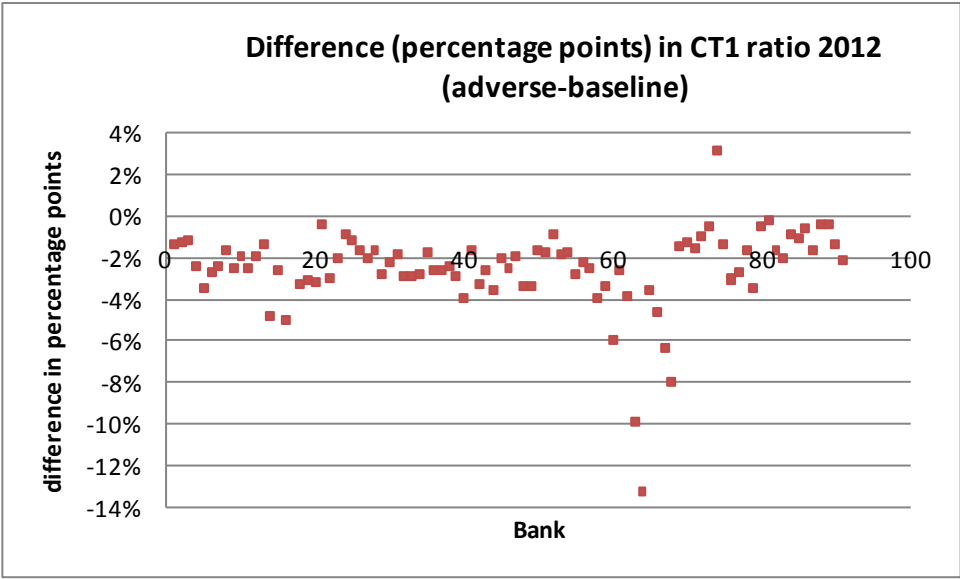


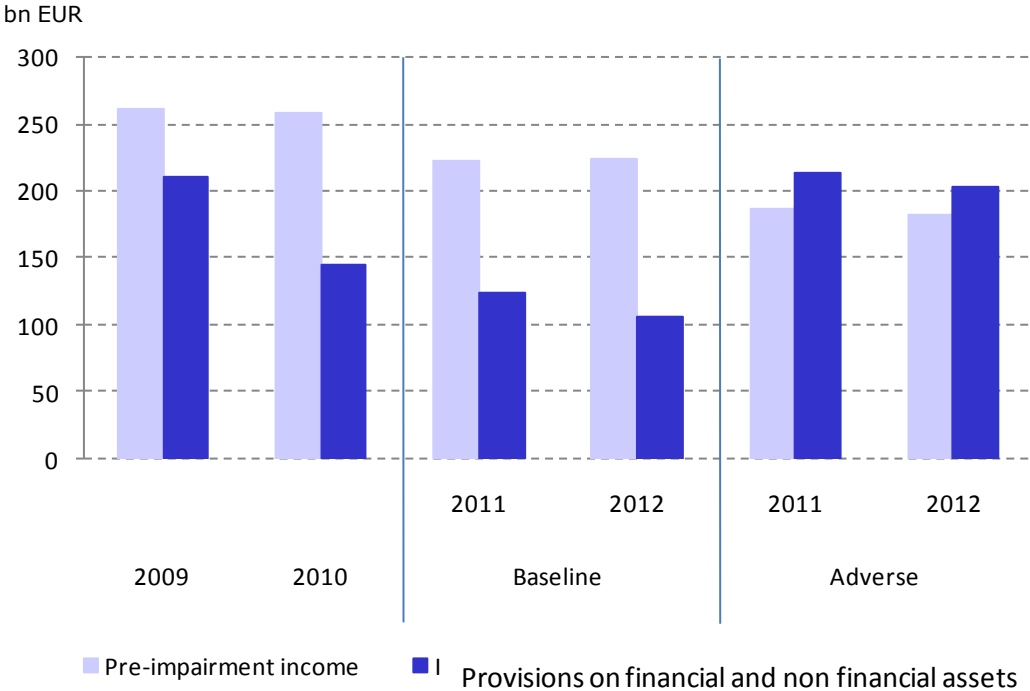
Chart 9. Difference between CT1 ratio in 2012 between adverse and baseline scenarios



b. Provisions

The impact of the stress test can be seen in provision levels in the adverse scenario, which are around EUR400 bn (EUR210 bn in 2011 and EUR197 bn in 2012). This level of provisions compares to historical periods of stress which for many EU countries was as recently as 2009 when provisions were just over 200bn. In the stress horizon these provision levels are effectively repeated in two consecutive years and show marked divergence, almost doubling, from the baseline.

Chart 10. Evolution of income and provisions

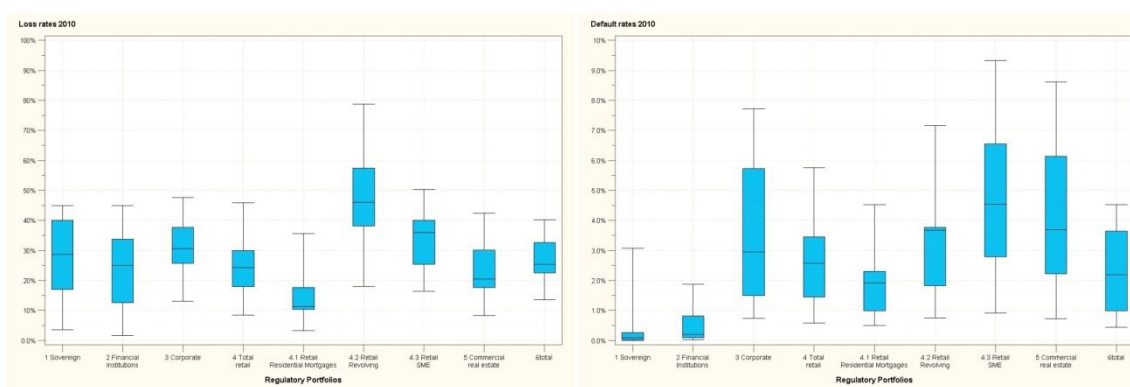


c. The evolution of default and loss rates

Credit risk is a key component of the stress test exercise. The interpretation of the results requires therefore an analysis of the evolution of the default and the loss rates used by banks for estimating the impairment flows and, consequently, the level of provisions. Chart 9 presents the distribution of loss and default rates in 2010 for the different regulatory portfolios. These figures, based on banks' historical experience, have been used as the starting point for calculating the flow of impaired positions in 2011 and 2012 under the adverse scenarios.

Chart 11. Dispersion of Loss and Default rates – 2010.

(Median, interquartile range, 5th and 95th percentiles)



The chart demonstrates that the dispersion of default rates (right) is particularly evident for the Corporate, Commercial Real Estate and the Retail SMEs portfolios. Results are clearly affected by the heterogeneity of borrowers, frequently located in different countries. On the other hand, dispersion remains sizeable also looking at the breakdown by country of banks' counterparties. (see also the thematic part on regulatory risk parameters).

Chart 12 shows the dispersion of the changes of loss rates and default rates after the application of the adverse shock. The median increase of the parameters is marked, particularly for some portfolios. For the loss rates, the median increase for the corporate portfolio is 17%; 15% for exposures in Commercial Real Estate. As for the default rates, the increase ranges from about 50% for the Corporate and Retail portfolios (65% for revolving exposures) to 60% for the Commercial Real Estate, with a huge dispersion across banks.

Chart 12. Dispersion of the changes of Loss and Default rates – 2012 (adverse scenario)

(Median, interquartile range, 5th and 95th percentiles)

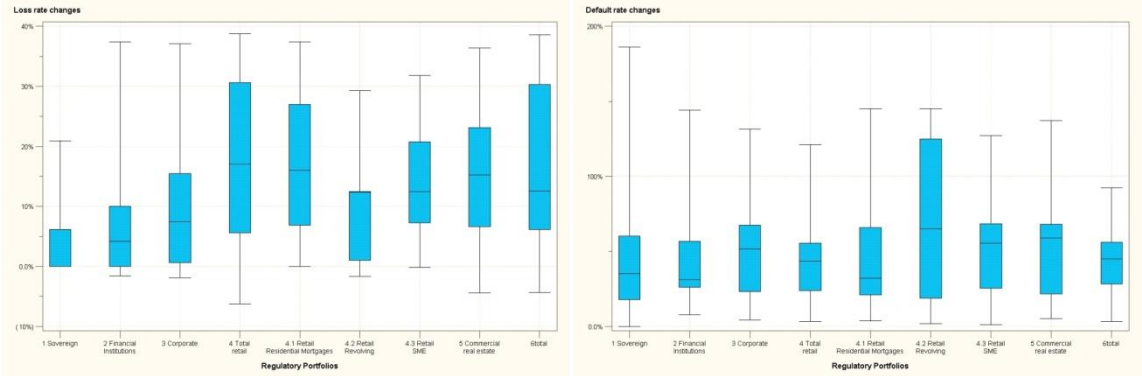


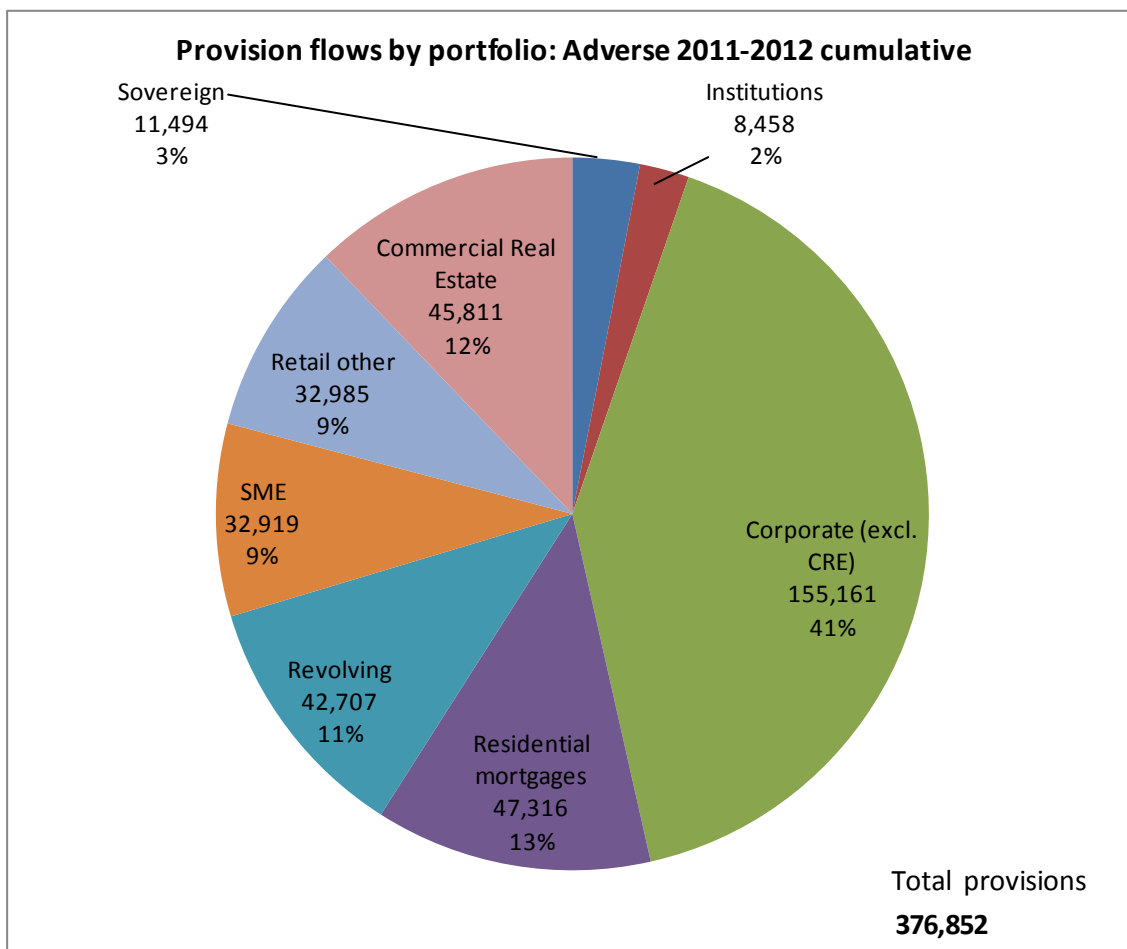
Chart 13 presents the evolution of the average default rates (for all portfolios) in the baseline and the adverse scenarios. Under the baseline, the default rates would have decreased from 1.9 in 2010 to 1.6 in 2012; by contrast, the indicator reaches 2.5% under the adverse scenario showing the sensitivity of default rates to the macro economic variables in the scenario. Default and loss rates benchmarks provided by the EBA as the result of the peer review process have been applied by some banks for estimating the flow of provisions and loan-loss provisions.

Chart 13. Evolution of the default rates with respect to the baseline



Chart 14. Contribution of each regulatory portfolio to loss rates.

The impact of the stress in relation to the level of provisions held in each regulatory portfolio is shown in the chart below. The provision level for sovereigns and FIs are determined to a large extent by the EBA’s additional guidance.



Coverage Ratios

This is the ratio of specific provisions over defaulted assets.⁴ Coverage Ratios were not a specific focus of the EBA 2011 EU-wide stress test but were used during the quality assurance process (see below) to assess the provisioning of banks for non-performing (i.e. defaulted) assets.

The coverage ratios implied by additional non-performing loans and the provisions made for them over the horizon of the exercise were checked against historical levels as well as across peer groups formed out of participating banks. They were analysed on a total portfolio level as well as for sub-portfolios (e.g. corporate loans, residential real estate, consumer loans, SME, commercial real estate) and proved instrumental in identifying outliers. Across the 90 banks, the median coverage ratio (on a total portfolio level) was around 37-38% in the Adverse Scenario.⁵

⁴ More precisely the stock of specific provision at the end of the year divided by the stock of defaulted assets at the end of the year (2011 and 2012 stocks were derived by adding the projected flows in the respective year to the stock at the end of the previous year).

⁵ Collective provisions not included as they are built for still-performing loans..

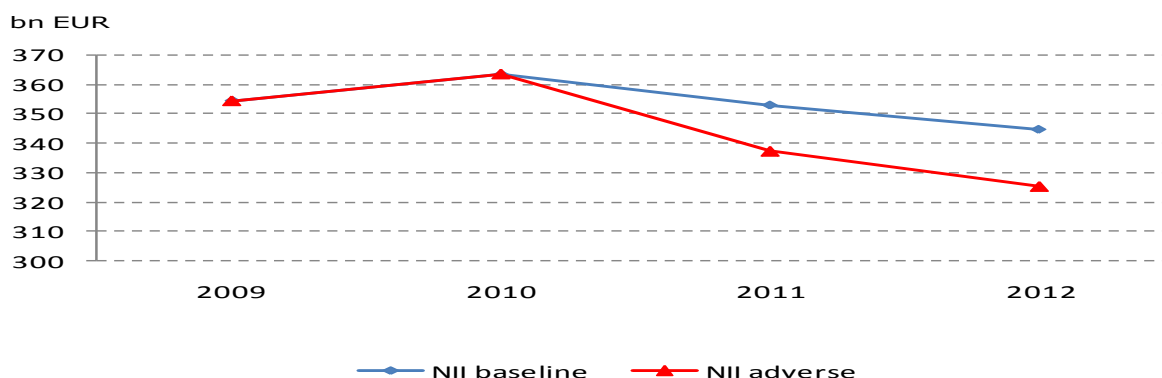
Write-off policies and provisioning policies might be quite different across banks which may have affected the stock of (specific) provisions at end-2010.

d. Evolution of P&Ls

Under the adverse scenario, aggregate pre-provision income (operating income, including net interest income, less operating costs) falls sharply, to around EUR 180 bn (-28% with respect to the already low levels of 2009 and 2010, when pre-impairment income was approximately EUR 250 bn).

Net interest income was a key focus of attention during the stress test. Some banks assumed that in a rising interest rate scenario much of the impact would be passed onto customers without a corresponding increase in the cost of funding – a less likely outcome -- thus leading to rising net interest income. The EBA's quality assurance and peer review process addressed this issue by focusing on the cost of funding (see below) so that eventually net interest income for the sample fell around 10%, significantly below the level of 2009. We note the EBA requested that net interest income be simply capped at 2010 levels in instances where it was rising in the adverse scenario.

Chart 15 NII evolution under baseline and adverse scenarios



The impact of the cost of funding was outlined in the methodology note with specific guidance for central bank funding and wholesale funding. The EBA provided additional guidance on how to estimate the impact on retail funding costs as part of its challenge process.

Chart 16 (below) shows that a large portion of liabilities for the 90 banks are in the form of customer deposits, which are inherently less sensitive to market sentiment changes (such as those driven by sovereign stresses). However, the chart also reveals that a very large element consists of funds raised in the wholesale markets – including interbank. Like national regulators and most market participants, the EBA is particularly concerned about banks' more extensive reliance on short-term wholesale funds, especially those raised in non-domestic markets (which is very often the case) and particularly in foreign currencies (such as USD). Such funds would be most sensitive to adverse shocks impacting their cost, especially when banks accept insufficiently-hedged asset-liability mismatches in terms of rate structure and currency.

Chart 16. Average funding structure 2010

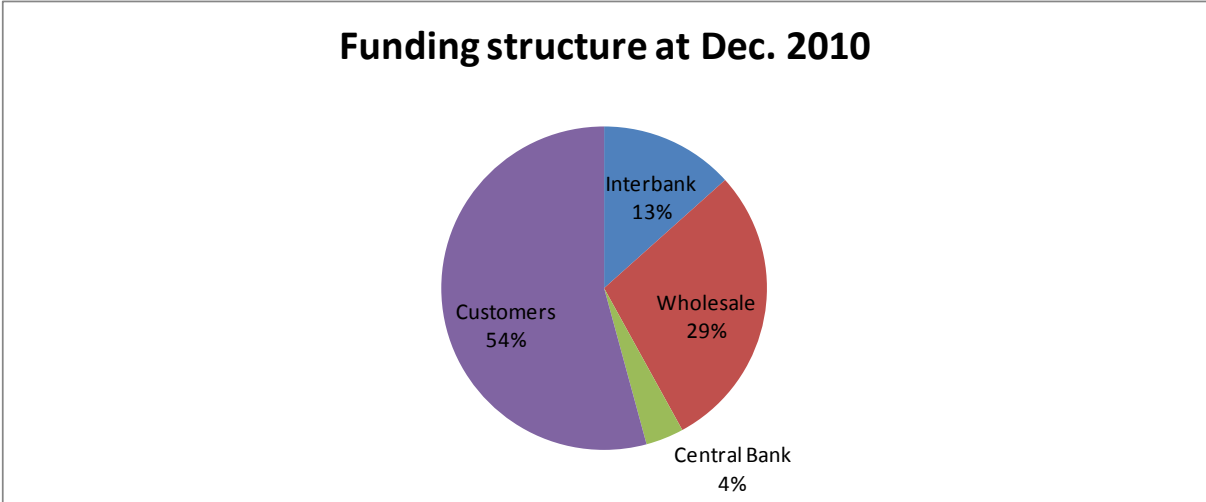
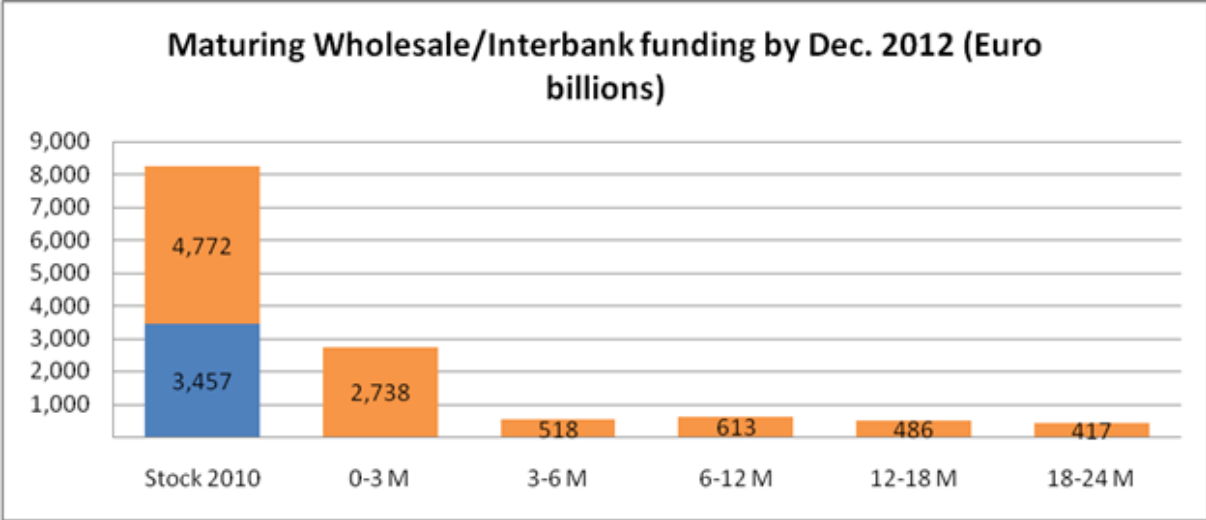


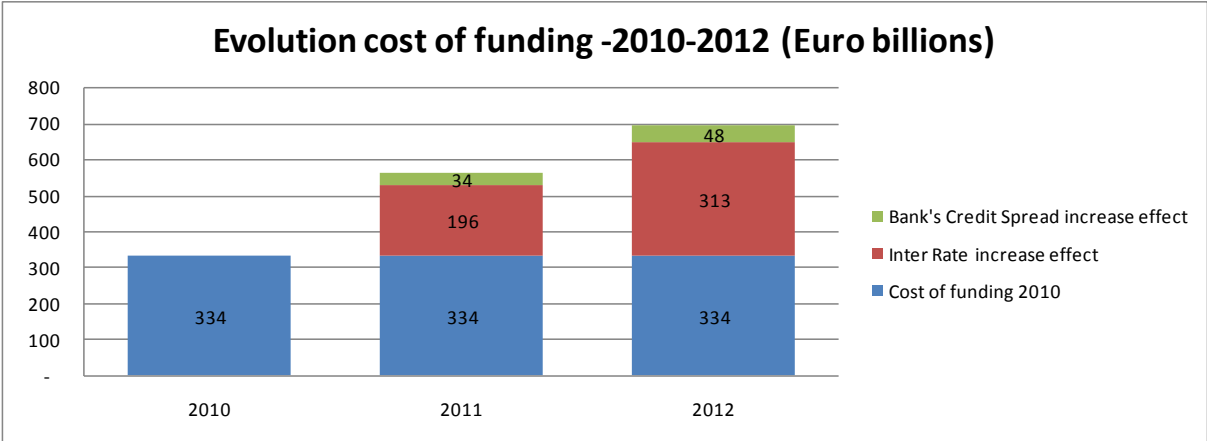
Chart 17 shows the maturity profile of the existing stock of wholesale/interbank liabilities over the next two years, revealing also that some 42% of total funds will mature beyond 2012 (the blue portion of the 2010 stock)

Chart 17. Maturity of liabilities Dec 2010



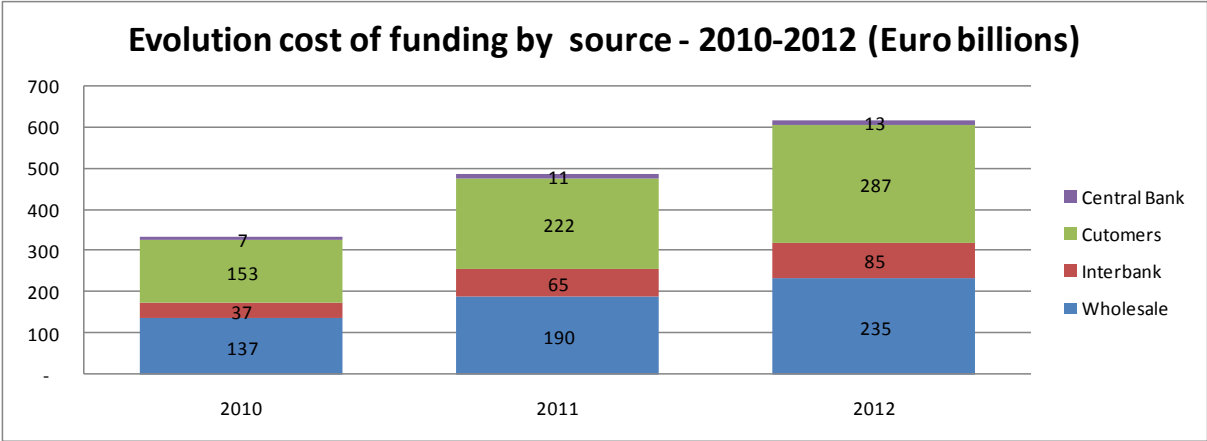
The evolution of funding costs during the adverse scenario are outlined below. The increased impact of the cost of funding across the sample was EUR352 bn.

Chart 18. Evolution of cost of funding 2010 - 2012



The cost of funding by source continued to represent the funding structure as of 2010 as can be seen in the chart below.

Chart 19. Evolution of cost of funding by source 2010 - 2012

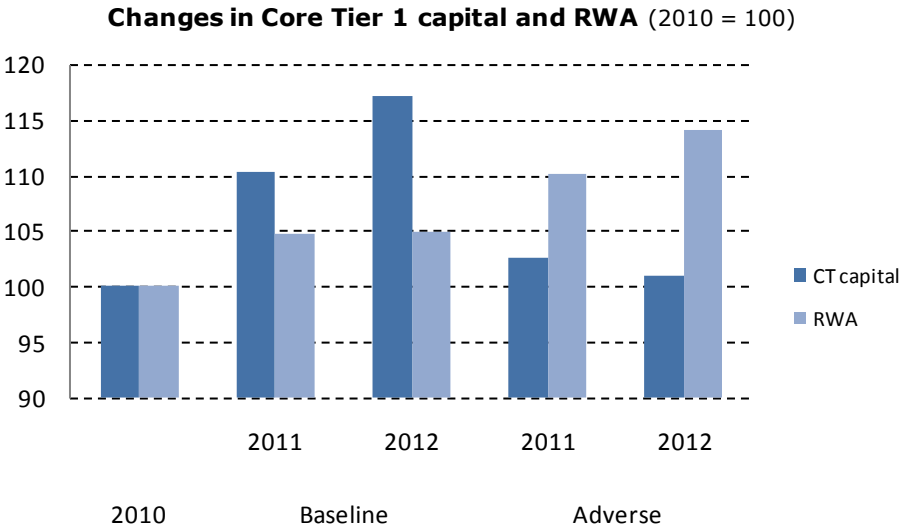


e. Evolution of Risk Weighted Assets

The dynamics of Core Tier 1 (the numerator of the CT1R) and risk-weighted assets (the denominator of the ratio) identify how the adverse scenario – as well as the assumptions and the methodologies underlying the simulations – might affect banks’ balance sheets and prudential requirements.

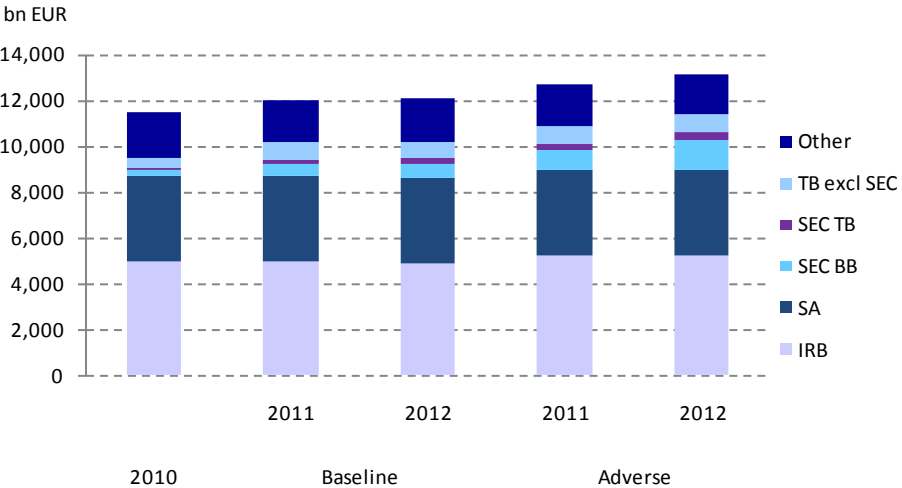
Chart 17 shows the evolution of CT1 and RWAs for the sample of 90 banks. This outcome reflects the large amount of equity issued by banks between December 2010 and April 2011, also in preparation to the EU-wide stress test exercise. This notwithstanding, the decline of CT1 with respect to the baseline scenario is sizeable (about 14%).

Chart 20. Evolution of Core Tier 1 and RWAs



RWAs increase by about 14% in the adverse scenario with respect to 2010. This outcome is of particular importance in the light of the static balance sheet assumption, which implies zero growth for nominal assets. The increase in RWA is almost fully determined by the change of risk-weights for credit exposures under the IRB approach, particularly for the defaulted assets (see the thematic section on regulatory risk parameters), as well as by the securitisation exposures in the banking book. This is clearly shown in Chart 20.

Chart 21. Composition of RWAs



f. Mitigating measures

- To mitigate the impact of the shock, the banks participating in the exercise can rely upon a broad series of measures, which may consist of the use of countercyclical provisions, divestments and management actions or in capital raisings and other

back-stops. Where necessary, these have been thoroughly described, for each bank, in the disclosure templates.

- The mitigating measures outlined in these templates are substantial. They include EUR 14.3bn of provisions and other reserves of which Spanish collective provisions account for EUR 13.4 bn. They also include a further EUR28bn of other existing and future actions which includes a large proportion of divestment and management actions already undertaken in 2011 as part of banks ongoing efforts to strengthen their balance sheets.

2. Review of Key Issues

a. Peer review and quality assurance process

The EBA was supported in its task of reviewing the stress test by a number of experts from countries across Europe and the ECB, ESRB who worked alongside the EBA staff and for the EBA under the same confidentiality rules. They reviewed the results of other countries to check for consistency across piece and worked with national authorities to identify outcomes in relations to peers and adjust the results on that basis.

There are three lines of defence in the quality assurance process

- The banks own quality check processes
- The national supervisory authority's quality assurance checks
- The EBA and the quality assurance task force

The EBA task force undertook the following phases of checks: Checking the data for simple mistakes; Assessing whether the methodology had been applied; Making judgements in conjunction with national authorities on the appropriateness of the outcome based on: (i) the expected outcome of the methodology in relation to the risk profile of the banks (ii) the historical experience of the bank in question (iii) the outcomes of other similar type of exposures/banks (iv) the outcomes of top down stress tests.

The impact of the quality assurance process is difficult to quantify because of other changes going on including corrections to errors and new information being provided. Nonetheless, with those caveats the quality assurance process led to substantive changes in individual banks and the impact across the sample was marked in its impact on areas such as net interest income, the cost of funding and provisioning levels.

As a result of the quality assurance and peer review process additional guidance was issued in June 2011 to increase consistency. This has been published as an annex to the existing guidance on 15th July. The guidance covered funding costs, risk weighted assets and interest income in the trading book as well as exposures to sovereigns and financial institutions.

On funding costs the EBA set new benchmarks for retail funding costs which would be used as a starting point for further discussion.

To address the potential underestimation of risk for sovereign debt held in the banking book, the additional guidance set a floor on the sovereign risk parameters based on publicly available information such as external ratings. That is banks were asked to assess the expected loss based on a probability of default linked to external ratings. For example, the lowest rating that is not a default for Fitch, Standard and Poors and Moodys (CCC-equivalent) would imply, making a simplified assumption based on corporate loss rate data, a probability of default of 36.15%. The EBA suggested that a loss given default (LGD) of 40% was appropriate for the purposes of this stress test. This would mean that for the lowest rated non default bond, with a value of 100, banks would be asked to hold now an expected loss amount of around 15, or 15% of their total holdings. Total provisions for sovereigns in the exercise stands at some EUR 11.5bn.

b. Treatment of the trading book and securitisation

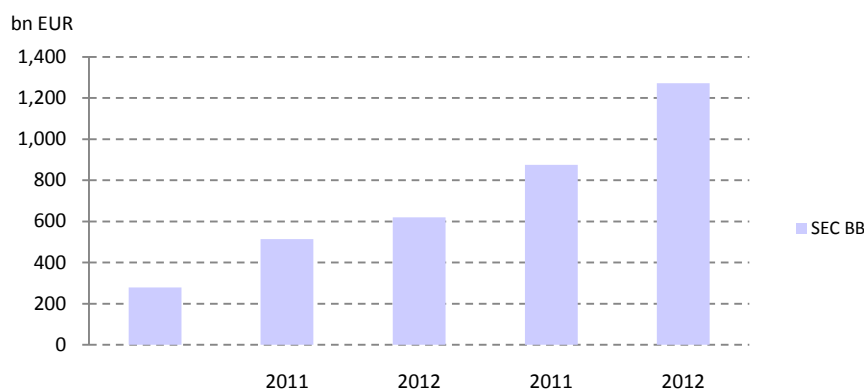
Securitisation stress

The methodology for securitisation positions represents a risk-sensitive approach by distinguishing between two different classes of securitisations: high risk and medium risk assets, where the assignment to the classes takes into account the credit quality of the position, the structure or asset class of the transaction and regional differentiation. The derivation of the risk weights was based on the historical evidence in a relatively prescriptive approach. A number of banks have voiced concern that historical experience should not be used for stress testing purposes as the credit rating agencies have adapted their methodologies. However, for the purposes of this stress test the EBA chose to err on the side of conservatism.

The sample of banks reporting securitisation exposures EU-wide stress test exercise contains overall 72 banks reporting exposures in the banking book and 29 banks reporting trading book securitisation positions. This is compared to overall 90 banks participating in the stress test exercise.

Chart 20 depicts the overall evolution of securitisation RWA in the banking book – computed as the aggregate of 72 banks– both under the baseline and the adverse scenarios. With respect to the baseline scenario, which focuses on an average rating migration observed from 1999 to 2009, the RWA increase by 222 per cent by the end of 2012. Under the stress scenario (average rating migration observed between 2007 and 2009) the stress impact manifests itself in a RWA evolution of 455 per cent by the end of 2012.

Chart 20. Evolution of securitization RWAs in BB

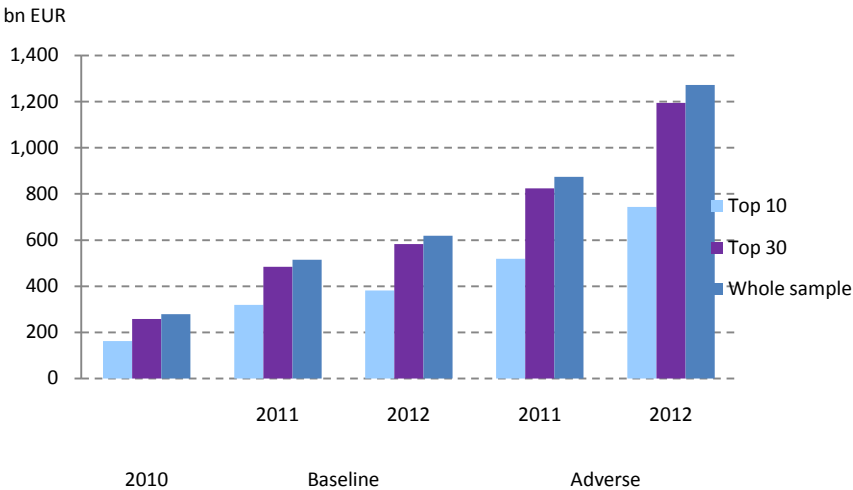


The top 10 banks (ordered by size of banking book securitisation RWA) account for more than 50 per cent of the total amount of securitisation RWA. Moreover, the 30 banks in the EBA's risk assessment sample (See annex 2) represent more than 90 per cent of the sample RWA for both for the baseline and adverse scenario.

Graph 21 shows the RWA evolution for the top 10 banks, top 30 banks and the whole sample, respectively. The percentage increase for all three samples is in both scenarios rather similar. As end of 2012 in the adverse scenario RWA for top 10 banks raise by

459 per cent, for top 30 banks by 463 per cent and for the total sample by 455 per cent indicating a consistent application of the methodology across participating banks.

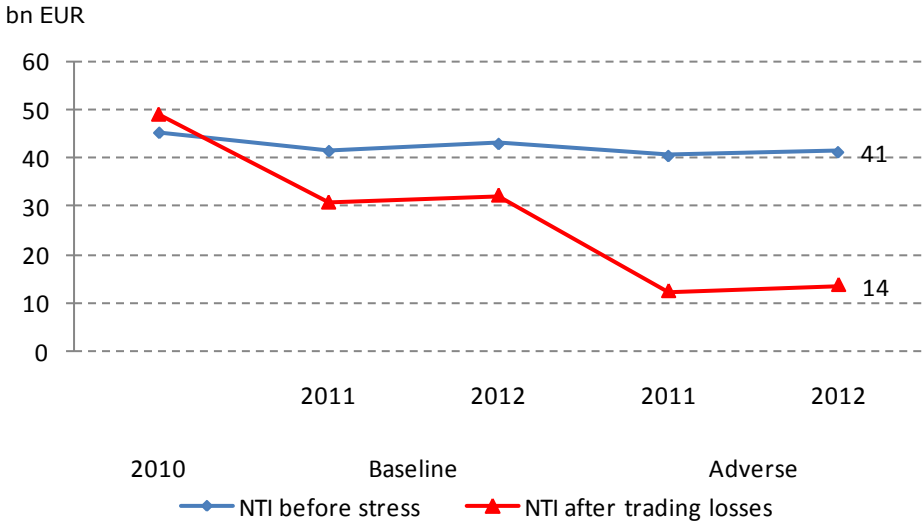
Chart 21. Evolution of securitization RWA for top 10, top 30, and all banks



Trading book stress

Chart 22. Evolution of net-trading income

The net trading income in the EBAs stress test shows a fall from the baseline stress of more than 50% of income.



The net trading income in the EBA’s stress test is a function of the average five year net trading income which is then impacted by an instantaneous market risk shock. The historical average captures periods of high profit and of significant losses for many banks in the sample.

The table below shows the historical average net trading income distribution for the sample of banks which demonstrates challenging years in 2008 and 2009 which are factored into the stress before an application of an additional instantaneous shock from which the net trading income for the stress period is derived.

Table 5. Historical average net trading income distribution

	2006	2007	2008	2009	2010	Average
Min	-98	-602	-33795	-3300	-2126	-2316
25%	10	0	-90	19	0	0
Median	55	30	0	112	50	34
75%	297	205	90	457	254	155
Max	10300	11227	11523	8381	9358	9667

c. Insights into the risk parameters used in the stress testing

Of the 90 banks in the EU-wide stress test exercise 59 participating are IRB banks, i.e. their internal models have been validated for at least a regulatory portfolio and they provided data on regulatory risk parameters (Table 1). On average, the risk weighted assets under the IRB approach, excluding equity and securitisation, represent about 43% of the stress test sample.

Table 6. Number of banks with IRB models by portfolio

Portfolio	No. of banks with IRB models
Sovereign	36
Institutions	44
Corporate	58
Retail Residential	53
Mortgage	
Retail Revolving	31
Retail SME	44
Total retail	53
Commercial Real Estate	54
Total	59

The levels of PDs and LGDs used by banks are very diverse. Charts 1 and 2 show the median, the interquartile range, the 5th and 95th percentiles of regulatory LGDs and PDs in 2010. Looking at the breakdown by portfolio, the dispersion is evident. For the LGD, the interquartile range appears sizeable for the retail revolving and retail SMEs as well as for the sovereign and financial institutions, which are however low default portfolios. As for the PDs, the dispersion is high for the commercial real estate and for most retail portfolios. This information was used in the EBA's quality assurance to identify outliers, question the underlying risk profiles of the exposures in question and where necessary require adjustments to be made.

Chart 23. Dispersion of LGD – 2010.
 (Median, interquartile range, 5th and 95th percentiles)

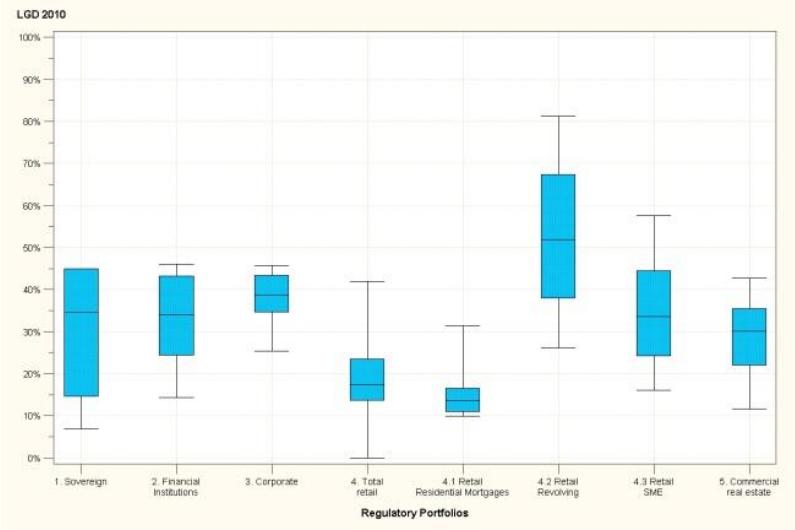
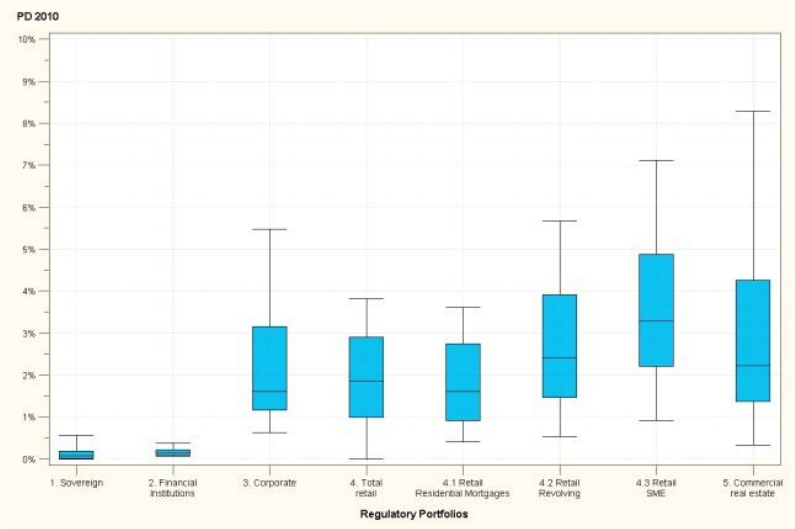


Chart 24. Dispersion of PD – 2010.
 (Median, interquartile range, 5th and 95th percentiles)



Dispersion of risk parameters across banks is not a sign of inconsistency per se, for example the composition of portfolios may differ across banks as the result of different markets (e.g. geography) different risk appetite and borrowers’ selection criteria. However, the dispersion of PDs and LGDs remains material for the same regulatory portfolio and located in the same countries. A substantial dispersion may signal that the methodologies used by some banks for the estimation of risk parameters will require further analysis.

Chart 25. Dispersion of LGD under the adverse scenario – 2012
(Median, interquartile range, 5th and 95th percentiles)

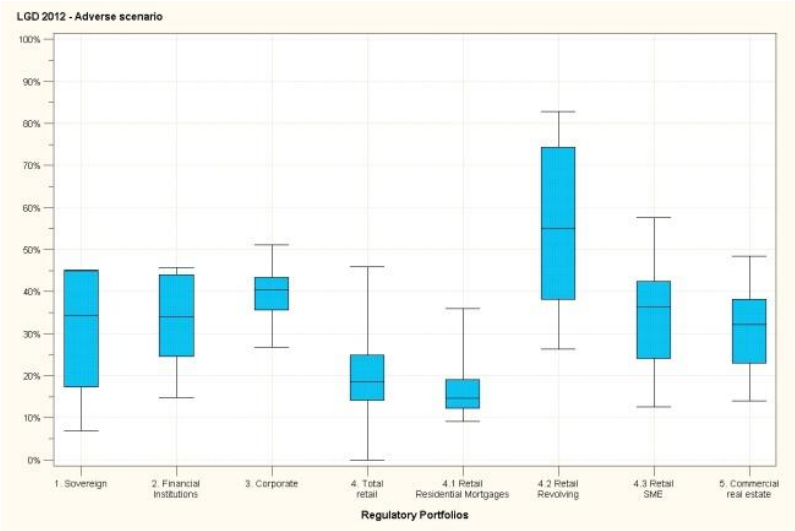
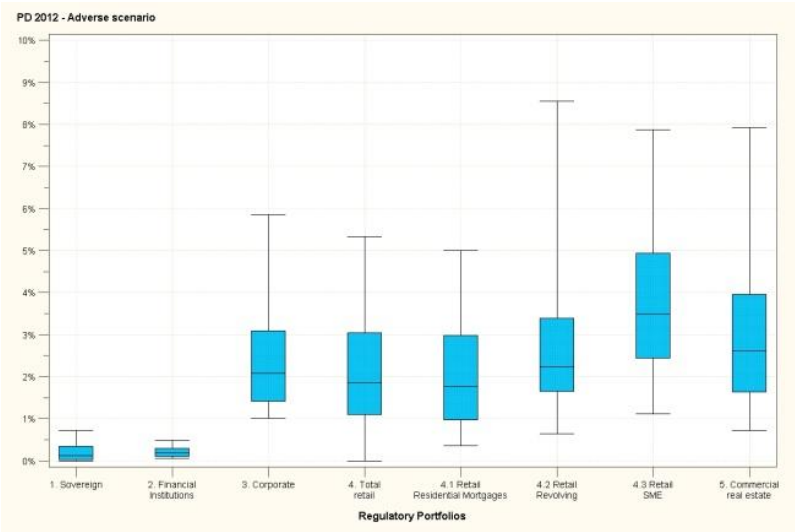


Chart 26. Dispersion of PD under the adverse scenario – 2012.
(Median, interquartile range, 5th and 95th percentiles)



In sum, this preliminary analysis shows significant dispersion in the risk parameters used by banks⁶. This phenomenon is material for both the starting levels of PDs and LGDs and for the after-stress figures. The additional dispersion with respect to the starting points suggests that banks did employ different approaches for estimating the evolution of risk parameters under the stress scenario. The information collected so far, while very useful for providing initial insights on the way banks estimate risk parameters under the IRB approach, is however not sufficiently granular for drawing any conclusive policy message. Further analyses based on more detailed information on portfolios’ composition may contribute to enrich supervisors’ understanding of commonalities and differences in banks’ implementation of IRB methods.

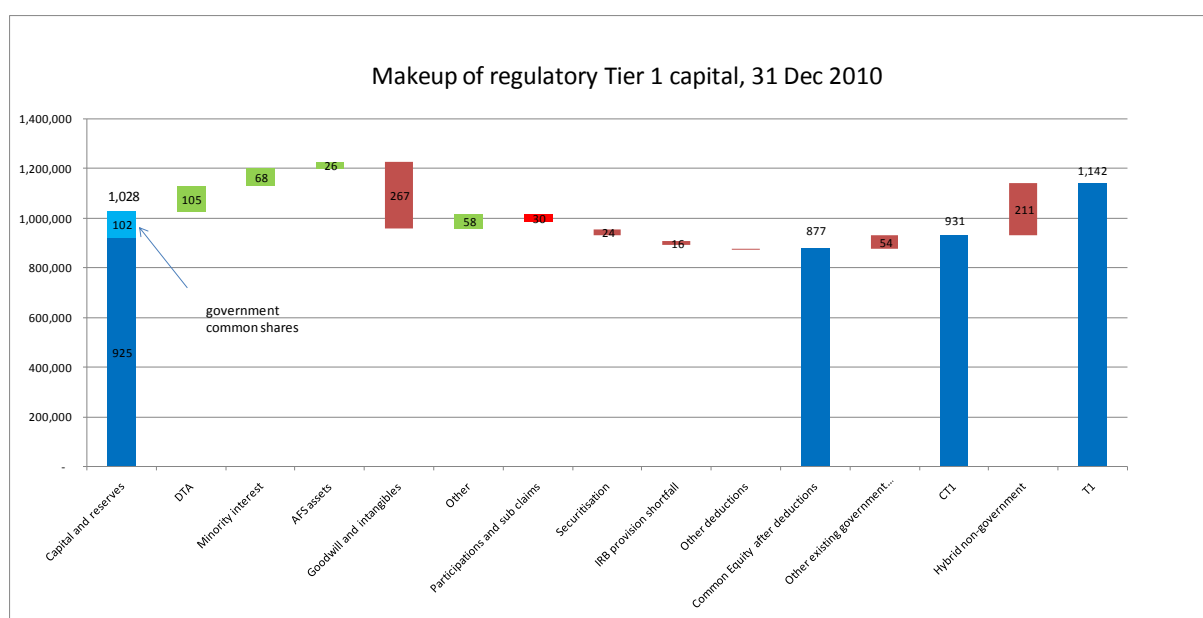
⁶ The interpretation of this evidence requires some caveats. First, results are not weighted by banks’ size or relevance – e.g. market share – in every specific portfolio/country. This implies that banks with relatively small exposures towards a given country/portfolio may affect the distribution of the risk parameters, increasing the dispersion indicators

d. Capital and other issues in interpreting the results

The EBA’s definition of capital focuses on commercial instruments of the highest quality are included in this CT1 definition – ordinary shares or similar instruments in line with the principles detailed in CEBS/EBA guidelines on core capital.

This definition is based on existing EU legislation in the Capital Requirements Directive (CRD). It takes the existing EU definition of Tier 1 net of deductions of participations in financial institutions and it strips out hybrid instruments including existing preference shares. It recognises existing government support measures, which are identified separately in the results. To ensure a fully harmonised computation by all the banks involved in the exercise, the EBA has mapped the different capital elements of CT1 to the current COREP reporting framework. As reported to the EBA the impact of removing hybrids had the effect of decreasing the capital of the sample banks by 17%. That is the reported tier 1 number is 17% higher than the reported CT1 number.

Chart 27. Hybrids deducted from Tier 1 to reach a CT1 ratio.



In addition other elements of capital have a marked impact on the capital number. Deferred tax assets are important for many banks in the sample making up around 10% of total core tier 1 capital at the start of the exercise. For several banks these increase during the stress as they realise losses and which can limit the impact of loss rates on the actual capital outcome.

Prudential filters, for example AFS reserve movements are also important, but this item is a function of each country’s acceptance of AFS filters.

Basel 1 floors to RWAs are applied in the stress test as they would be during the time horizon of the stress. This can produce counter intuitive movements in the capital outcomes during the stress and potentially lead to CT1 increases as the Basel 1 transitional floors are applied. That is as the floor decreases in the adverse scenario it can produce an increase in CT1 outcomes.

Other issues which may affect the results include the stress scenario itself, which is internally consistent for the EU as a whole and therefore may appear more severe for some geographical areas than others. It does not aim to capture all potential shocks. For example in some jurisdictions the main risk may be an adverse currency movement associated with an impact on foreign currency denominated loans. Similarly whilst the stress test is conducted on a static balance sheet basis there are some exemptions from the static balance sheet where there is a mandatory restructuring plan in place and in some instances acquisitions or divestments in 2010 impact the results. In other cases the level of consolidation may differ, for example the inclusion of leasing companies, which may also impact the profitability of the banks in question.

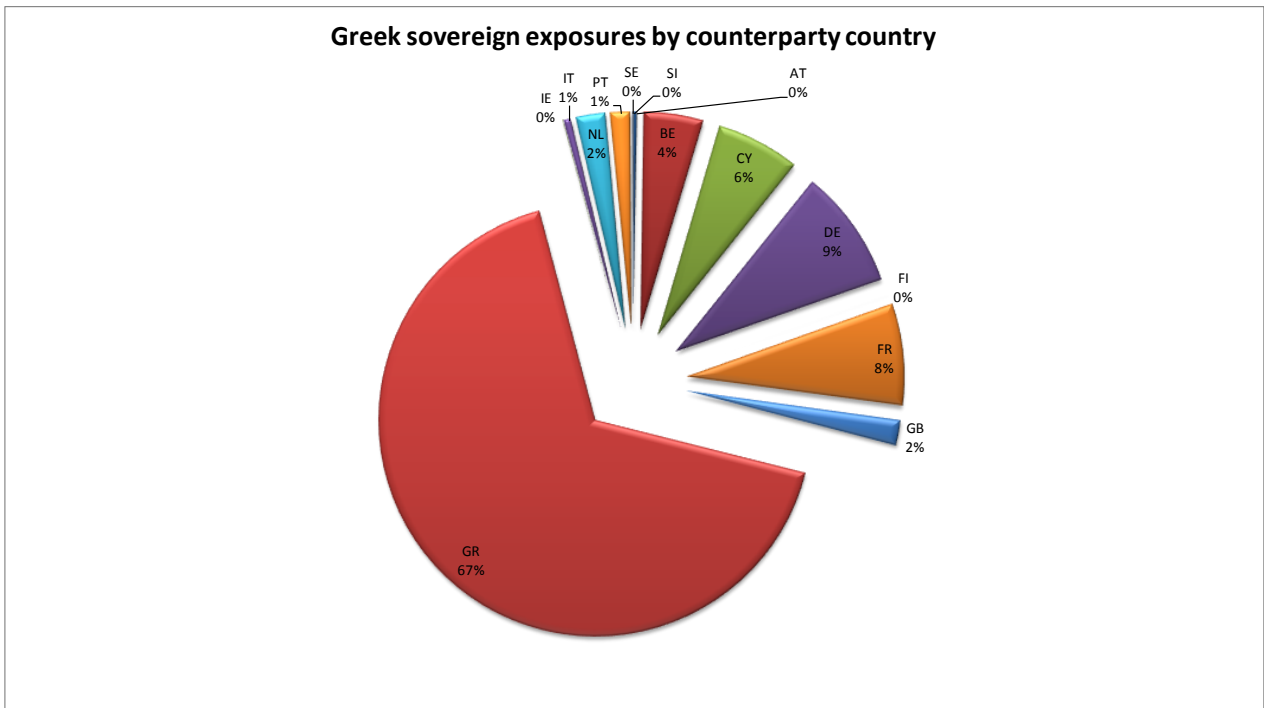
e. Sovereign holdings by EU banks and the impact of potential changes to the treatment of selected sovereign holdings.

The EBA set out a clear approach to the treatment of sovereign risk in its methodology note of March 2011. Sovereign debt held in the trading book would be subject to market risk haircuts which reflected both the interest rate movements in the adverse scenario and widening of sovereign spreads. Sovereign debt held in the banking book should be treated as other credit risk, PDs and LGDs estimated and provisions held where appropriate. Following on the observation of inconsistencies in the treatment of sovereign debt, the EBA issued new guidance during the peer review phase. Specific guidance was given regarding the computation of provisions for sovereign exposures in the banking book. This approach provides a floor to provisioning levels based on conservative estimates of PDs (based on the probabilities of default implied in external ratings) and LGDs (based on the most conservative estimates used by the banks in the sample). Banks have also been asked to provide full disclosure of their sovereign exposures, with a degree of detail that would allow market participants to also calculate the impact of adverse developments with alternative methodologies and scenarios.

The data from the sample of 90 banks (Dec. 2010) shows the aggregate exposure-at-default (EAD) Greek sovereign debt outstanding at EUR98.2 bn. Sixty-seven percent of Greek sovereign debt (and 69% of the much smaller Greek interbank position) is in fact held by domestic banks (about 20% refers to loans which are mostly guaranteed by sovereign). The aggregate EAD exposure is EUR52.7 bn for Ireland (61% held domestically) and EUR43.2 bn (63% held domestically) for Portugal. Importantly, EAD exposures are different from similar exposures reported on a gross basis in the disclosure templates.

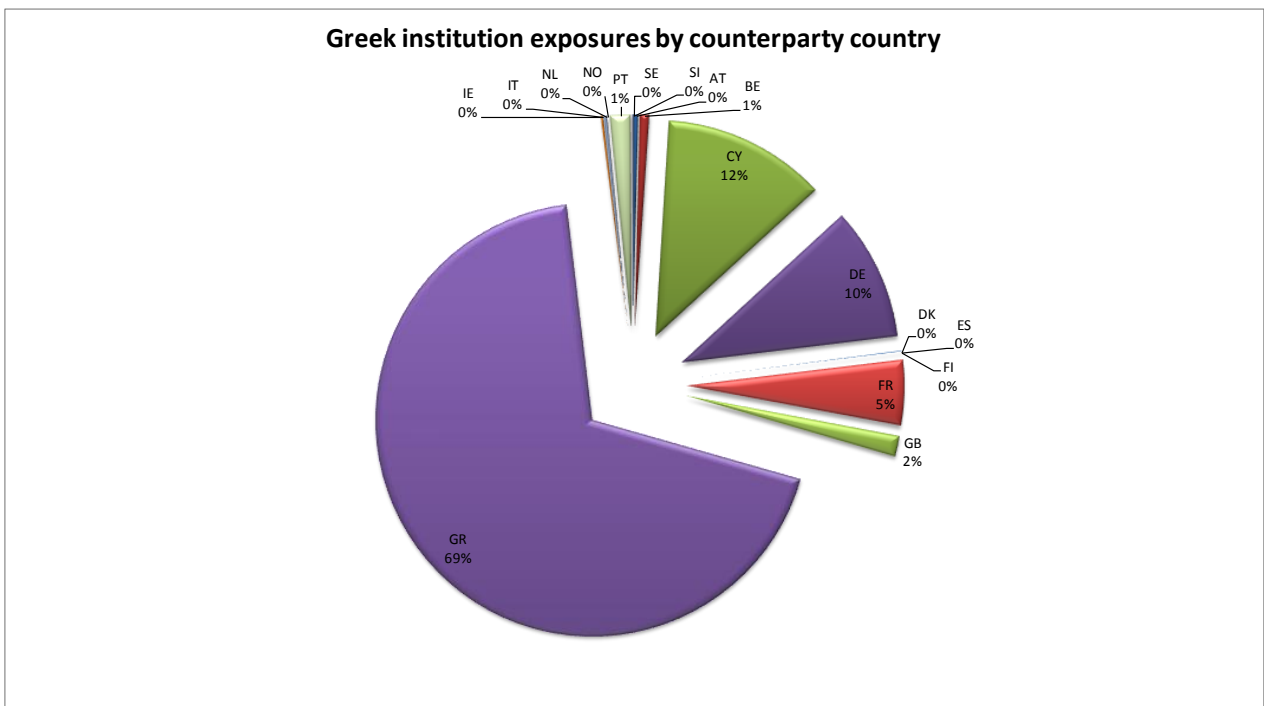
The chart below shows the geographical breakdown of Greek sovereign debt (EAD) held by EU banks participating in the stress testing exercise. In general the EBA is not aware that these figures have changed substantially since end 2010 and for a few banks their holdings of such debt has in fact decreased.

Chart 28 Greek sovereign exposures by counterparty country



Greek interbank holdings by EU banks: EUR17.2 bn in total which are generally held by EU banks which also have larger Greek sovereign exposures. The chart below summarises EU banks' exposures towards Greek institutions

Chart 29 Greek institution exposures by counterparty country



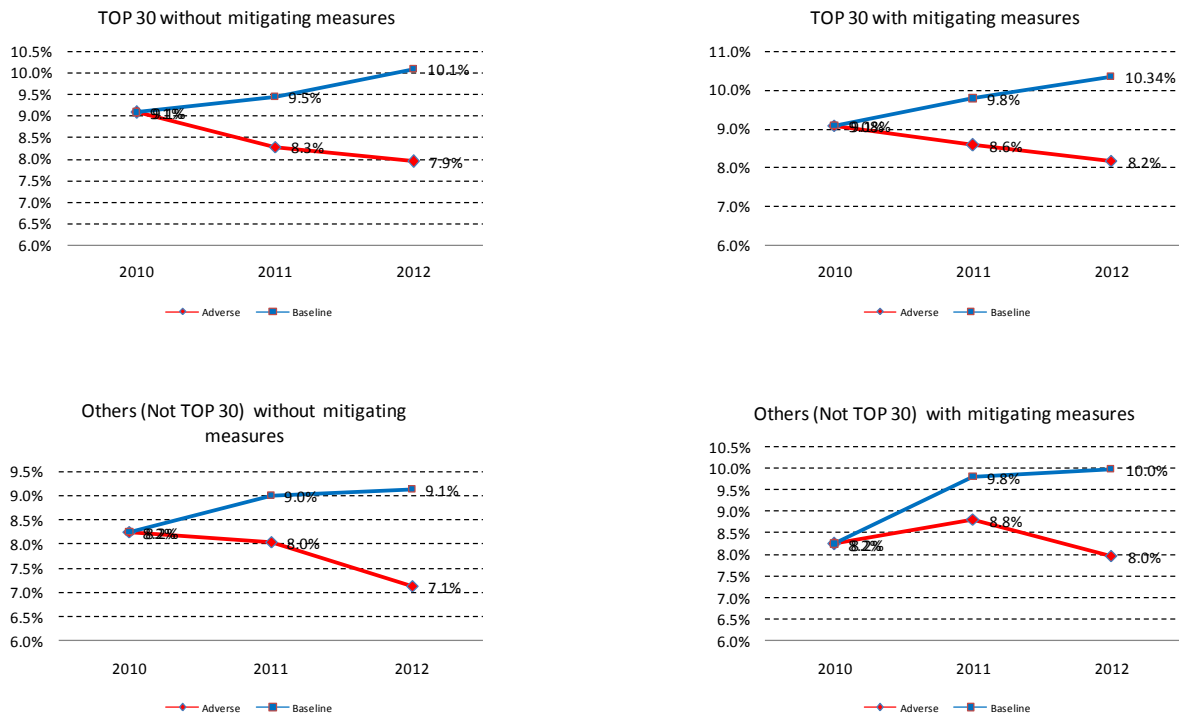
The approach followed in the stress test, of holding provisions against sovereign debt in the banking book, remains consistent with the current situation and in line with some of the proposed options currently being discussed for vulnerable sovereigns. It is also in line with the commitment of the European Union to prevent one of its Member States from defaulting on its liabilities. The EBA understands that market participants, in particular, have raised concerns on EU banks' ability to absorb the impact of a further deterioration of sovereign debt in certain Member States.

Given the distribution of the exposures described above, the direct first-order impact, even under harsh scenarios, would primarily be on the home-banks of countries experiencing the most severe widening of credit spreads. In such cases the capital shortfall should be easily covered with credible back stop mechanisms such as the support packages already issued or being defined for Ireland, Portugal and Greece. In this context these countries have announced capital enhancement measures requiring banks to hold capital to a higher level than that used for the EBA's EU wide stress test. Additional capital strengthening measures have been, and will be, announced to ensure this.

It should be highlighted that the assessment of the direct exposures does not take into account any second-order effects. Such effects, including more general changes in investor perception, challenges in funding across a broader set of EU banks and the impact on non-bank counterparties may be more significant.

f. Comparing the results

Chart 30. Capital outcomes with and without additional measures in 2011



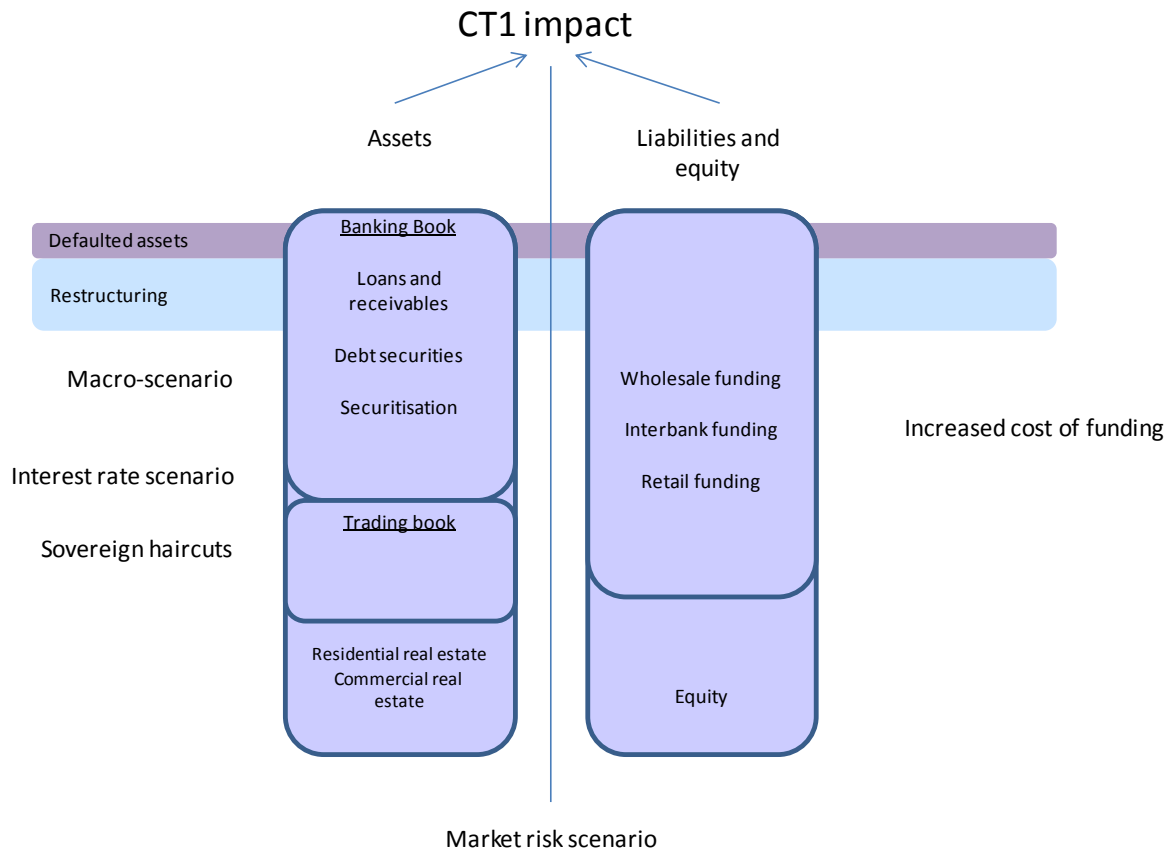
The EBA undertakes a regular risk assessment on a sample of thirty banks in the EU. The sample of banks is based on a combination of asset size, cross border importance, use of IRB models. The names are contained in annex 2.

An analysis of those thirty banks compared to the other 60 banks mostly with smaller asset sizes is undertaken in the graphs above. The top two graphs show the largest 30 banks in the sample before and after capital measures taken in 2011 (the left graph shows the impact of the stress test without capital raising measures). The bottom graphs capture the other 60 banks on the same basis. This shows the impact of capital raising was larger for smaller banks. It also shows that the impact of the stress is marginally similar for the largest thirty banks as for the smaller banks but the largest banks are more highly capitalised.

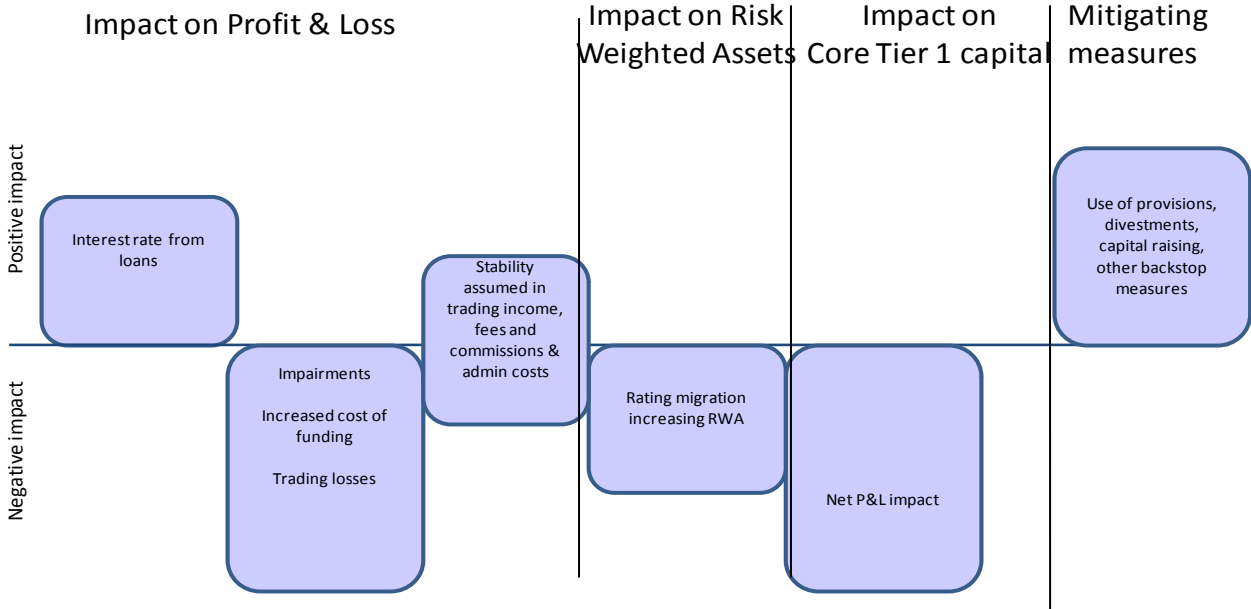
Annex 1

Explaining the stress test

A stress test works by assessing the impact of movements in relevant variables on the assets and liabilities of a bank which in turn impact the capital position.



The chart below shows how different aspects of the banks activities impact on profit and loss and risk weighted assets and eventually on CT1. These should be offset by mitigating measures.



Annex 2

The list of banks on which the EBA undertakes a bi-annual risk assessment

1	ALLIED IRISH BANK	(IE)
	BANCO BILBAO VIZCAYA	
2	ARGENTARIA	(ES)
3	BANCO SANTANDER	(ES)
4	BANK OF IRELAND	(IE)
5	BARCLAYS	(GB)
6	BAYERISCHE LANDESBANK	(DE)
7	BNP PARIBAS	(FR)
8	CAIXA	(ES)
9	CAIXA GERAL DE DEPÓSITOS	(PT)
10	COMMERZBANK	(DE)
11	CREDIT AGRICOLE	(FR)
12	DANSKE BANK	(DK)
13	DEUTSCHE BANK	(DE)
14	DEXIA	(BE)
15	EFG-EURBANK	(GR)
16	ERSTE GROUP BANK	(AT)
17	HSBC HOLDINGS	(GB)
18	ING BANK	(NL)
19	INTESA SANPAOLO	(IT)
20	KBC GROEP	(BE)
21	LLOYDS BANKING GROUP	(GB)
22	MILLENNIUM BCP	(PT)
23	NATIONAL BANK OF GREECE	(GR)
24	NORDEA BANK	(SE)
25	RABOBANK	(NL)
26	ROYAL BANK OF SCOTLAND	(GB)
27	RZB	(AT)
	SKANDINAVISKA ENSKILDA	
28	BANKEN	(SE)
29	SOCIETE GENERALE	(FR)
30	UNICREDIT	(IT)

Annex 3



15 July 2011

Click and type name and address

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Dear xx xxx

Recommendation in accordance with Article 21(2)(b) of the EBA Regulation

The results of the European Banking Authority ("EBA") EU-wide stress test carried out under Article 21(2)(b) of Regulation (EU) No 1093/2010 are being released on 15th July 2011.

As you are aware, the European Council on 17th May 2011 announced that any remaining pockets of vulnerability in the banking sector will be addressed decisively. The Council confirmed that necessary action will be taken following the results of the test, based on private sector solutions but also including a solid framework for the provision of government support in case of need for the restructuring of vulnerable institutions.

In line with these statements, the EBA decided that actions need to be promptly taken to ensure that the capital position of banks that have showed weaknesses in the stress test is strengthened. In order to assess the resilience of EU banks in front of a severe but plausible adverse scenario, the EBA has set a benchmark Core Tier 1 ratio equal to 5%, announcing that banks below such benchmark would have been requested to act and reinforce their capital position. At the same time, the EBA emphasised that the stress test is more than a "pass-fail" exercise and that also banks above such a threshold would have been required to take action, if vulnerabilities were identified in the course of the exercise.

The EBA is acutely aware that the EU banking sector is under severe strain at the time of publication and that the sovereign crisis unfolding in the euro area creates specific pressures. While the adverse scenario is still consistent with the current situation and is in line with the commitment of EU institutions to prevent a Member State defaulting on its liabilities, a further deterioration in the sovereign crisis might raise significant challenges, both on the valuation of banks holdings of sovereign debt and through sharp changes in investors' risk appetite. In turn this could lead to funding pressure (in terms of both cost and availability) affecting some banks' earning power and internal capital generation capacity which, if not promptly addressed by the banks and their national authorities, could further affect market confidence in these banks.

Concerns on the current risk environment and calls for action also on banks which pass the test, but still are perceived by markets to be at risk have been put forward also by the European Systemic Risk Board after its meeting on 22 June 2011.

Based on the information received in the context of the EBA's 2011 EU-wide stress test and in line with Article. 21 (2), lett. B of Regulation 1093/2010 establishing the European Banking Authority, the EBA recommends that:

- national supervisory authorities request banks whose Core Tier 1 Ratio falls below the 5% threshold under the adverse scenario defined in the stress test exercise to promptly remedy this capital shortfall. In particular, national supervisors should ensure that these banks are requested to present within three months (i.e. by 15 October 2011) to their competent authorities a plan to restore the capital position to a level at least equal to the 5% benchmark based on this analysis. The remedial measures agreed with the competent authority will have to be fully implemented by end-2011, with flexibility allowed only if justified by market conditions or required procedures.
- national supervisory authorities request all banks whose Core Tier 1 ratio under the adverse scenario is above but close to 5% and which have sizeable exposures to sovereigns under stress to take specific steps to strengthen their capital position, including where necessary restrictions on dividends, deleveraging, issuance of fresh capital or conversion of lower quality instruments into Core Tier 1 capital. These banks are expected to plan remedial action within three months (15 October 2011). The plans need to be fully implemented within nine months (April 15th 2012).

Your Authority is requested to provide a detailed overview of measures to be taken by the banks in question to the EBA by 31 October 2011 at the latest. The EBA will review the actions undertaken by banks and national authorities between August and December 2011 and will publish reports in February and June 2012 on the implementation of these recommendations.

Yours sincerely

Mr Andrea Enria
Chairperson