2018 EU-wide Stress Test
Final Methodology

European Banking Authority

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List of abbreviations

Abbreviation	Meaning
APR	All price risk
AMA	Advanced measurement approach
AML	Asset and liability management
BB	Banking Book
CA	Competent authority
CCR	Counterparty credit risk
CVA	Credit valuation adjustment
EaR	Earnings at risk
EBA	European Banking Authority
EC	European Commission
ECB	European Central Bank
ECL	Expected credit losses
EIR	Effective interest rate
ESRB	European Systemic Risk Board
EU	European Union
FV	Fair value
FVO	Fair value option

Abbreviation	Meaning
FVOCI	Fair value in other comprehensive income
FVPL	Fair value through profit and loss
HFT	Held For Trading
IFRS	International Financial Reporting Standards
IRB	Internal ratings-based (approach)
IRC	Incremental risk charge
LGD	Loss given default
NCBs	National central banks
NII	Net interest income
NTI	Net trading income
OCI	Other comprehensive income
PD	Probability of default
P&L	Profit and loss (account)
REA	Risk exposure amount
SREP	Supervisory review and evaluation process
S1/S2/S3	Stage 1/ stage 2 / stage 3
SSM	Single Supervisory Mechanism
STA	Standardised approach
SVaR	Stressed value at risk
VaR	Value at risk

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Introduction

The EBA published in November 2017 the final methodology to be considered in the 2018 EU-wide stress test

The EBA is required, in cooperation with the ESRB, to initiate and coordinate EU-wide stress tests to assess the resilience of financial institutions to adverse market developments.

Objective

- To provide supervisors, banks and other market participants with a **common analytical framework** to consistently compare and assess the resilience of EU banks to shocks and to challenge the capital position of EU banks.

Common methodology

- The exercise is based on a common methodology and relevant scenarios, and a set of templates that capture starting point data and stress test results to allow a rigorous assessment of the banks in the sample.
  - The **common methodology** defines how banks should calculate the stress impact of the common scenarios and, at the same time, sets constraints for the bottom-up calculations.
  - It also aims to provide banks with adequate **guidance** and support for performing the stress test. Nonetheless, it does not cover the quality assurance process of possible supervisory measures that should be put in place following the outcome of the stress test.
  - The **templates** are used for collecting data from the banks as well as for disclosing the outcome of the exercise. These templates will be provided by the end 2017.

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Main aspects of the exercise

Calendar

According to the EBA final timeline of the 2018 EU-wide stress test, the final templates and further guidance to participating banks will be published by the end of the year, and the exercise will be launched in January 2018. The results are expected by 2nd November 2018

Dec. 16

- Announcement by the EBA of its decision to carry out a **EU-wide stress test in 2018**, which for the first time considers IFRS 9.

Jun. 17 – **Draft**

- Publication by the EBA of its 2018 EU-wide stress test **draft methodology** and **templates** for discussion, as well as the **list of institutions** participating in the exercise.

Nov.17 – **Final**

- Publication of the **2018 EU-wide stress test final methodology**,

End 17 – **Templates**

- The **final templates and further guidance** to participating banks will be published .

Jan.18

- The **2018 EU-wide stress test** will be launched.

2nd November 2018

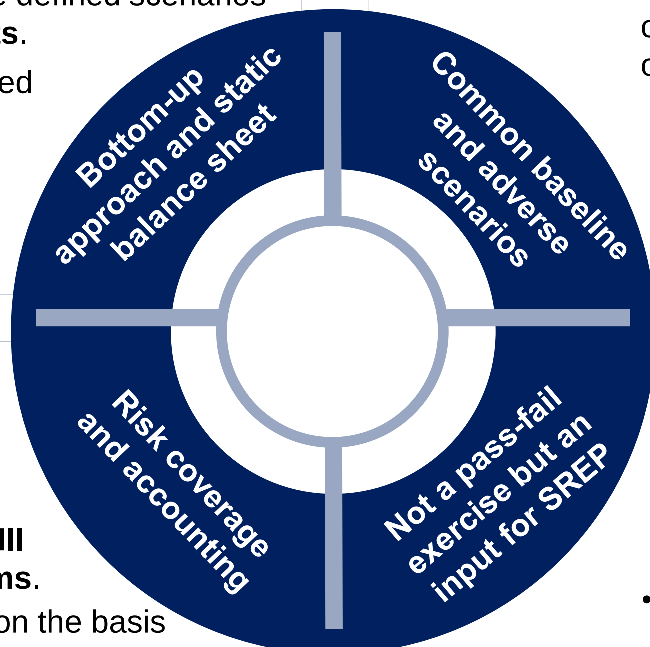
- Publication of the **results** of the exercise. The EBA will provide detailed **results on a bank-by-bank level and also aggregate analyses**.

According to the EBA, the submission of the templates will take place in June (first submission), July (second submission) and October (third submission) 2018.

Main aspects of the exercise

Key aspects

As in previous years, the 2018 EU-wide stress test will be conducted as a bottom-up exercise and assuming a static balance sheet. It will not be a pass-fail exercise, but a input for the SREP. The methodology covers all relevant risk areas and, for the first time, considers IFRS 9



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- The 2018 exercise will be conducted by banks following a **bottom-up approach**. Thus, banks are required to project the impact of the defined scenarios but are subject to **strict constraints**.
- The EU-wide stress test is conducted on the assumption of a **static balance sheet**.
- Banks under **restructuring** are subject to the **same assumptions**.

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- Banks are required to stress:
  - **Credit risk**, incl. securitisations.
  - **Market risk**, **CCR** and **CVA**.
  - **Operational risk and conduct**.
- Banks are also required to stress **NII** and to stress **P&L and capital items**.
- All projections shall be carried out on the basis of the applicable **accounting** valid on 1 January 2018. Thus, for the first time it considers **IFRS 9**[1].

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- The exercise includes two common scenarios: a **baseline scenario** and an **adverse scenario**.
- The exercise is carried out on the basis of **year-end 2017** figures, over a period of 3 years (end 2018 to end 2020).
- The impact will be reported in terms of **CET1 capital**[2]. In addition, the **Tier 1 capital ratio** and **total capital ratio**, as well as a **leverage ratio**, will be reported.

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- The exercise will **not be a pass-fail exercise** (i.e. no hurdle rates or capital thresholds are defined for the purpose of the exercise).
- However, CAs will apply stress test results as an **input to the SREP**.

(1) For banks commencing to report under IFRS 9 in the first quarter of 2018.
(2) On a transitional and on a fully loaded basis.

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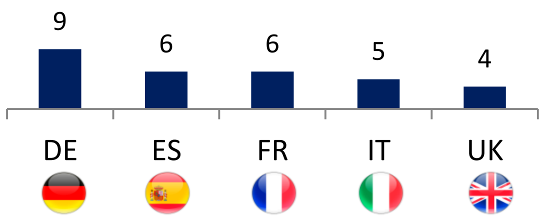
Main aspects of the exercise
Sample of banks

The stress test will cover 49 EU banks, which broadly cover 70% of the banking sector in the Euro area, each non-Euro area EU Member State and Norway

2016 sample of banks

- **51 EU banks** across the EU and including Norway, covering more than **70%** of total EU banking assets.
- The criteria for including institutions in the sample is the following:
  - To be included in the sample, banks have to hold a minimum of **€30 billion**[1] in assets.
  - CAs could include **additional institutions** in their jurisdiction, provided that they have a minimum of **€100 billion** in assets.
  - Banks subject to mandatory **restructuring plans** agreed by the EC could be included in the sample by CAs if they were assessed to be near the completion of the plans.

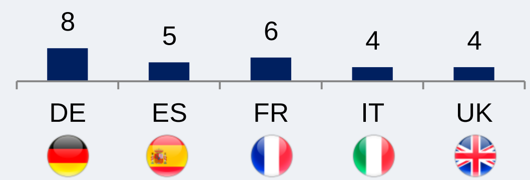
Number of banks subject to the exercise in the main countries



2018 sample of banks

- **49 EU banks** (of which 35 fall under the jurisdiction of the SSM).
- This sample **broadly cover 70%** of the banking sector in the Euro area, each non-Euro area EU Member State and Norway.
- The **same criteria** as in the 2016 stress test is adopted.

Number of banks subject to the exercise in the main countries



(1) El umbral es consistente con el criterio utilizado a efectos de reporting de información a la EBA, así como con la definición de entidad significativa en el SSM.

Main aspects of the exercise
Process

The EU-wide stress test involves close cooperation between the ECB, ESRB, EC, EBA, as well as the CAs

Responsible authority	Specific tasks
ECB, ESRB	• Developing the **macroeconomic adverse scenario** and any risk type specific shocks linked to this scenario. • Cooperation: EC, EBA, and NCBs.
ECB	• Supplying the **macroeconomic baseline scenario**.
EBA	• **Coordinating** the exercise and defining the **common methodology**. • Hosting a **central question and answer** facility. • Acting as a **data hub** for the final dissemination of the common exercise. • Providing common **descriptive statistics** to CAs. • Publishing the **results**.
CAs	• Conveying to banks the **instructions** on how to complete the exercise. • Assuming the **quality assurance process**. • Conducting the **supervisory reaction function**. • Incorporating the stress test **findings into the SREP**.

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Methodology by risk type
Overview

The 2018 EU-wide stress test is primarily focused on the assessment of the impact of risk drivers on the solvency of banks

Credit Risk

- Banks are required to assess their credit risk impact on both the **capital available** and **the REA** for positions exposed to risks stemming from the default counterparties.
- A few **key assumptions** have been made regarding the application of **IFRS 9**.

Market risk

- The impact of market risk on all positions at partial or full fair value measurement is to be assessed via **full revaluation** after applying a set of stressed market risk factor shocks.
- Under the **trading exemption**, banks are allowed to not apply a full revaluation on items held with a trading intent and on their related hedges.

Net Interest Income

- Banks may use their **own methodology** and **existing AML systems** and **EaR models** to project their NII.

Conduct risk and other operational risks

- Banks will stress their conduct risk losses under one of the following:
  - **Qualitative approach**: estimate of losses arising from historical and new conduct risk events by assigning probabilities to these events.
  - **Quantitative approach**: project the P&L impact of conduct risk losses over the 3-year time horizon using own methods.
- **Other operational risk** losses will be stressed using own methods.

Non-interest income and expenses

- Banks shall use their **own methodology** to project their non-interest income and expenses not covered by credit risk, market risk and operational risk for both scenarios.

Methodology by risk type
Credit risk

Banks are required to assess their credit risk impact on both the capital available (via impairments and thus the P&L) and the REA. Banks commencing to report under IFRS 9 shall forecast their impairments on the basis of this standard...

Scope

- **P&L**: covers all counterparties and all positions (including sovereign positions) exposed to risks stemming from the default of a counterparty. CCR exposures and fair value positions are excluded[1].
- **REA**: covers the CRR scope for credit risk (securitisations, counterparty credit risk and fair value positions included).

Impact on P&L and OCI

- Bank's internal models should be based on stressed **point-in-time PD and LGD** parameters and **grade migration** reflecting the losses of initially performing assets entering into S3.
- The additional impact for initially S3 defaulted assets is based on **worsening LGD**.
- The additional impact for initially S2 assets is based on **worsening LGD and lifetime PD**.
- There are prescribed loss parameters for **sovereign exposures**.

Impact on REA

- Banks should adhere to **CRR requirements** based on stressed regulatory risk parameters.

Constraints

- No **negative impairments** are permitted, **except** and exclusively in the case of **transitions from S2 to S1**.
- The **coverage ratio** for S1 assets cannot decrease.
- **No cures from S3 assets** (i.e. no transitions by regulatory approach) are permitted.
- The end-2017 level of REA serves as a **floor** for the total REA for **non-defaulted and defaulted exposures** in the baseline and adverse scenarios, and separately for aggregate IRB and STA portfolios.
- Regarding **securitisation exposures**, the end-2017 level of REA serves as a **floor** for the total REA separately for aggregate IRB and STA portfolios.

(1) Thus, FVOCI and FVPL positions are excluded from the estimation of credit risk losses.

Methodology by risk type
Credit risk

…and in this regard the EBA has been conscious of the wide range of practices in place across banks at this early stage, thus a few key assumptions have been made

Assumptions for projection under IFRS 9

- The projection of provisions is based on a **single scenario** in each macroeconomic scenario (baseline and adverse).
- **Perfect foresight on macroeconomic projections** is assumed (i.e. at any point of time in the projection banks should assume the subsequent path of a variable to be known and equal to what is given in the scenario).
- For the estimation of **lifetime ECL**, after the end of the scenario horizon, the **adverse scenario credit risk parameters** (i.e. stage transition probabilities and the corresponding LGD across stages) are assumed **to revert** to the baseline horizon credit risk parameters. The baseline credit risk parameters are assumed to stay flat after year 3.
- A common definition of **S3 assets as non-performing exposures** should be applied for the projections.

Methodology by risk type

Market risk, counterparty credit risk and CVA

The impact of market risk on positions at FV measurement is to be assessed via full revaluation after applying a set of stressed market risk factor shocks. Under the trading exemption, banks are allowed to not apply full revaluation on items held with a trading intent and their related hedges

Scope

- **P&L**: covers FVPL, FVOCI and FVO positions (including sovereign positions), hedge accounting portfolios designated to hedge positions assessed at FV, all positions for which CVA is calculated and positions subject to CCR. The impact of FX risk on the BB and related hedges is excluded.
- **REA**: covers the CRR scope for market risk and CVA.

Impact on P&L and OCI

- Banks shall use their **own projections** for **fees and bid-ask revenues** for their positions held with a trading intent.
- For **comprehensive assessment banks**, there should be full revaluation to all assets categories with full or partial FV measurement under IFRS 9.
- For **trading exemption banks**, there should be revaluation of all assets and liabilities with a full or partial FV behaviour except items held with a trading intent and their related hedges.
- Banks shall also stress the **valuation reserve for Level 2 and Level 3 assets and liabilities** to take into account modelling uncertainty related to those instruments.
- Banks shall assume the default of the **2 most vulnerable counterparties** within their top 10 largest.

Impact on REA

- Constant REA for **STA approaches**.
- Constant **VaR** in the baseline scenario and replaced by **SVaR** in the adverse scenario.
- Stressed **IRC** and **CVA** capital requirements.
- Constant **APR** in the baseline and scaled in the adverse.

Constraints

- No impact for the **baseline scenario**.
- **Simplified approach** for trading exemption banks: 0.20% of the sum of FV of assets and liabilities.
- The simplified approach serves as **floor** for the impact of the **comprehensive approach**.
- **NTI baseline values** prescribed as the minimum of the average across the last 2, 3, and 5 years.
- Client revenues projections are capped by 75% of annual client revenues and 75% of baseline NTI.
- REA for IRC and CVA floored by the **increase for IRB REA**.

Methodology by risk type
Net Interest Income

Banks may use their own methodology and their existing ALM systems and EaR models to project their NII

Scope

- **P&L**: all **interest-earning or interest-paying positions** across all accounting categories, including not only instruments subject to amortised cost measurement but also those subject to fair value measurement, such as FVOCI and FVPL positions and hedge accounting instruments.

Impact on P&L and OCI

- Banks may use their **own methodology to project NII** based on the repricing of their portfolio, together with their projections for risk-free reference rates and margins both under the baseline and adverse scenario.

Constraints

- **NII cannot increase** under the baseline or the adverse scenario.
- Under the adverse scenario, **assumptions cannot lead** (at group level) **to an increase in the bank's NII** compared with the 2017 value before considering the impact of the increase in provisions for non-performing exposures on interest income.
- Under the adverse scenario, banks are required to **project income on non-performing exposures net of provisions**, subject to a cap on the applicable EIR.
- Under the baseline scenario, banks are required at a minimum to reflect a proportion of the changes in the sovereign bond spread of the country of exposure in the **margin component of the EIR** of their repriced liabilities.
- Under the adverse scenario, the **margin paid** on liabilities cannot increase less than the highest amount between a proportion of the increase in the sovereign spread and that of an idiosyncratic component.
- The increase of the margin on repriced assets is **capped** at a proportion of the increase in sovereign spreads.

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Methodology by risk type
Conduct risk and other operational risk

Banks shall project the P&L impact of losses arising from conduct risk and other operational risks, using when relevant, their internal models. In the case of conduct risk, a qualitative approach shall be applied in some cases

Scope

- **P&L**: impact of potential future losses arising from conduct risk and other operational risk.
- **REA**: CRR scope for operational risk.

Impact on P&L and OCI

- Banks shall project the P&L impact of losses arising from these risks using their **own estimations**.
- For **conduct risk** losses, institutions will apply the **qualitative approach** when they report any historical material conduct risk event during the period 2013-17 or if the CA deems it necessary. All remaining banks will apply the **quantitative approach**.
- When banks are unable to provide historical data, losses shall be calculated as a function of **gross earnings** (the relevant indicator) as **fall back approach**.

Impact on REA

- Banks may use their **own projections** for AMA, basic approach and standard approach.

Constraints

- Losses from **new conduct risk events** are subject to a **floor**, computed in the baseline scenario as the average of the historical non-material conduct risk losses reported by the bank during the 2013-2017 period for non-material events only, and applying a stress multiplier to the average in the adverse scenario.
- Losses from **other operational risks** are subject to a **floor** computed in the baseline scenario as the average of the historical losses 2013-2017 period times a multiplier, and applying a stress multiplier to the average in the adverse scenario.
- Capital requirements for operational risk cannot fall below the 2017 value.

Methodology by risk type

Non-interest income and expenses

Banks shall use their own methodology to project their non-interest income and expenses items not covered by credit risk, market risk or operational risk for the baseline and adverse scenarios

Scope

- **P&L**: the projections of non-interest income and expenses exclude any P&L positions and capital impacts covered in the approaches for credit risk, market risk, operational risk or net interest income.

Impact on P&L and OCI

- Banks may use their **own estimates** but subject to constraints for specific P&L items.
- Market risk methodology and macroeconomic shocks should be applied for stressing **real estate assets** and defined benefit pension plans.

Constraints

- For dividend income, net fee and commission income and share of the profit of investments in subsidiaries, joint ventures and associates outside the scope of consolidation **cannot exceed the 2017 level** in the baseline scenario, while a **minimum reduction** of net income from each item compared to 2017 is prescribed for the cumulative projections in the adverse scenario.
- **Administrative expenses**, **other operating expenses**, **depreciation and provisions** cannot fall below the 2017 value, unless an adjustment for one-offs is permitted. One-off adjustments are subject to a threshold of 5bps of 2017 REA.
- A common **tax rate of 30%** is applied.
- **No P&L contribution** for realised gains or losses, derecognition, goodwill, foreign exchange effects.
- **Other operating income** is capped at the 2017 value.
- For **dividends paid**, the pay-out ratio shall be based on publically declared dividend policies. If no policy is available, the pay-out ratio in the baseline is the maximum of 30% and the median of the pay-out ratios in profitable years 2013-2017; in the adverse, the same pay-out ratio in the baseline scenario is assumed (0 in years which a bank is making loss).

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Annex 1
List of covered banks

AT	Erste Group Bank AG
	Raiffeisen-Landesbanken-Holding GmbH
BE	Belfius Banque SA
	KBC Group NV
DE	Bayerische Landesbank
	Commerzbank AG
	Deutsche Bank AG
	DZ BANK AG Deutsche Zentral-Genossenschaftsbank
	Landesbank Baden-Württemberg
	Landesbank Hessen-Thüringen Girozentrale
	Norddeutsche Landesbank Girozentrale
	NRW.BANK
DK	Danske Bank
	Jyske Bank
	Nykredit Realkredit
ES	Banco Santander S.A.
	Banco Bilbao Vizcaya Argentaria S.A.
	CaixaBank, S.A.
	BFA Tenedora de Acciones S.A
	Banco de Sabadell S.A.
FI	OP Financial Group

FR	BNP Paribas
	Group Crédit Mutuel
	Groupe BPCE
	Groupe Crédit Agricole
	La Banque Postale
	Société Générale
HU	OTP Bank Nyrt.
IE	Allied Irish Banks plc
	Bank of Ireland Group plc
IT	Banco BPM S.p.A.
	Intesa Sanpaolo SpA
	UniCredit S.p.a.
	Unione di Banche Italiane Società Cooperativa per Azioni
NL	ABN AMRO Group N.V. ING Groep N.V.
	Coöperatieve Rabobank U.A.
	ING Groep U.A.
	N.V. Bank Nederlandse Gemeenten
NO	DNB Bank Group
PL	Polska Kasa Opieki SA
	Powszechna Kasa Oszczednosci Bank Polski SA
SE	Nordea Bank - group
	Skandinaviska Enskilda Banken - group
	Svenska Handelsbanken - group
	Swedbank - group
UK	Barclays Plc
	HSBC Holdings Plc
	Lloyds Banking Group Plc
	The Royal Bank of Scotland Group Plc