



EUROPEAN CENTRAL BANK

EUROSYSTEM

Macroprudential Policy at the ECB – the assessment toolkit

Jérôme HENRY
DG-Macroprudential Policy and
Financial Stability
European Central Bank

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Macro interaction, Policy Panel

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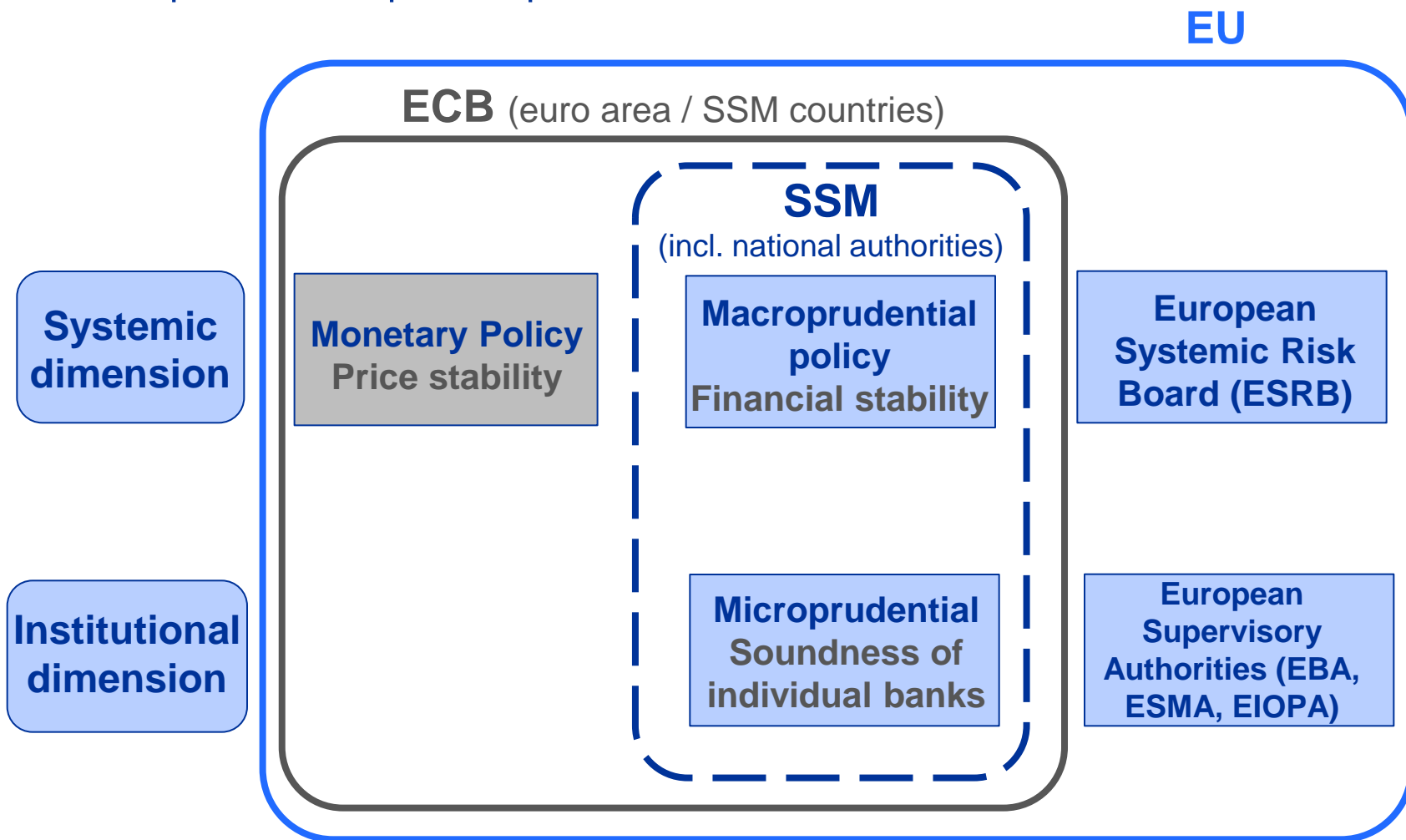
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Overview

- 1** Macroprudential policy in the EU – the institutional set-up
- 2** Stress Test for Macroprudential Purposes in the €area (STAMP€)
- 3** Policy-relevant simulations – illustrative examples
- 4** Concluding remarks

1.1. The Institutional Framework – Allocation of responsibilities

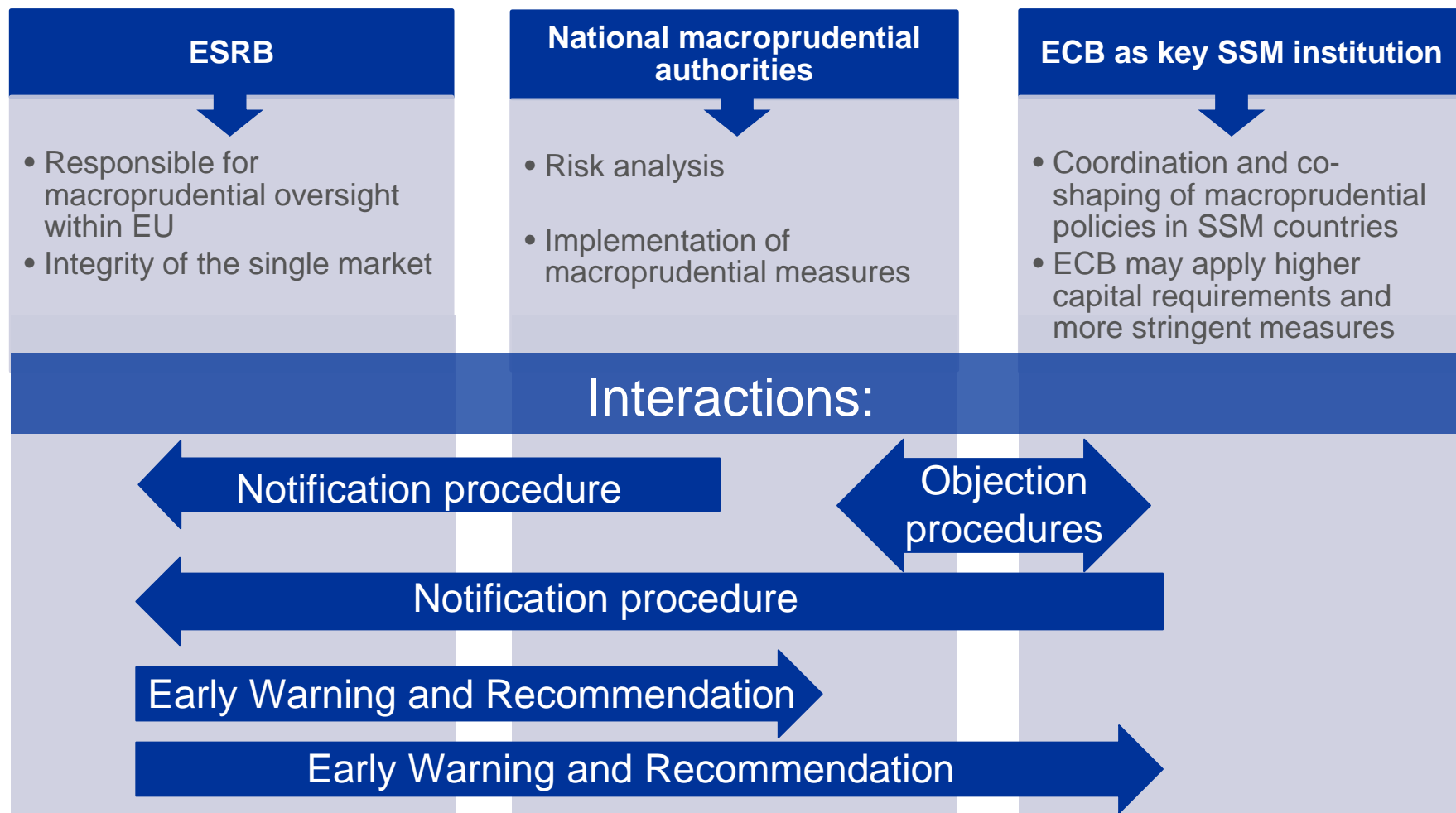
Monetary and prudential policies at the ECB and in the EU
The “separation principle”



Source: ECB

1.2. The Institutional Framework – the Macroprudential side

Macroprudential policy in the EU



2.1. Stress Test Analytics for Macroprudential Purposes in the €area

An ECB e-book, staff tools for “macropru ST”



STAMP€:

Stress-Test Analytics for Macroprudential Purposes in the euro area

Edited by Stéphane Dees, Jérôme Henry and Reiner Martin

February 2017

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Macroprudential stress tests: A new analytical tool

Vitor Constâncio
22 February 2017

The Global Crisis and its aftermath led to greater use of stress tests and to the establishment of macroprudential policy as a new policy area. In this column, ECB Vice-President Vitor Constâncio introduces new suite of analytical tools that support the design and calibration of macroprudential policy. The tools go well beyond the requirements of the traditional solvency stress tests applied to banks, and include a broader set of institutions than just banks, an analysis of the financial cycle, as well as an assessment of systemic risk levels associated with the economic and financial shocks considered in adverse scenarios.

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Related

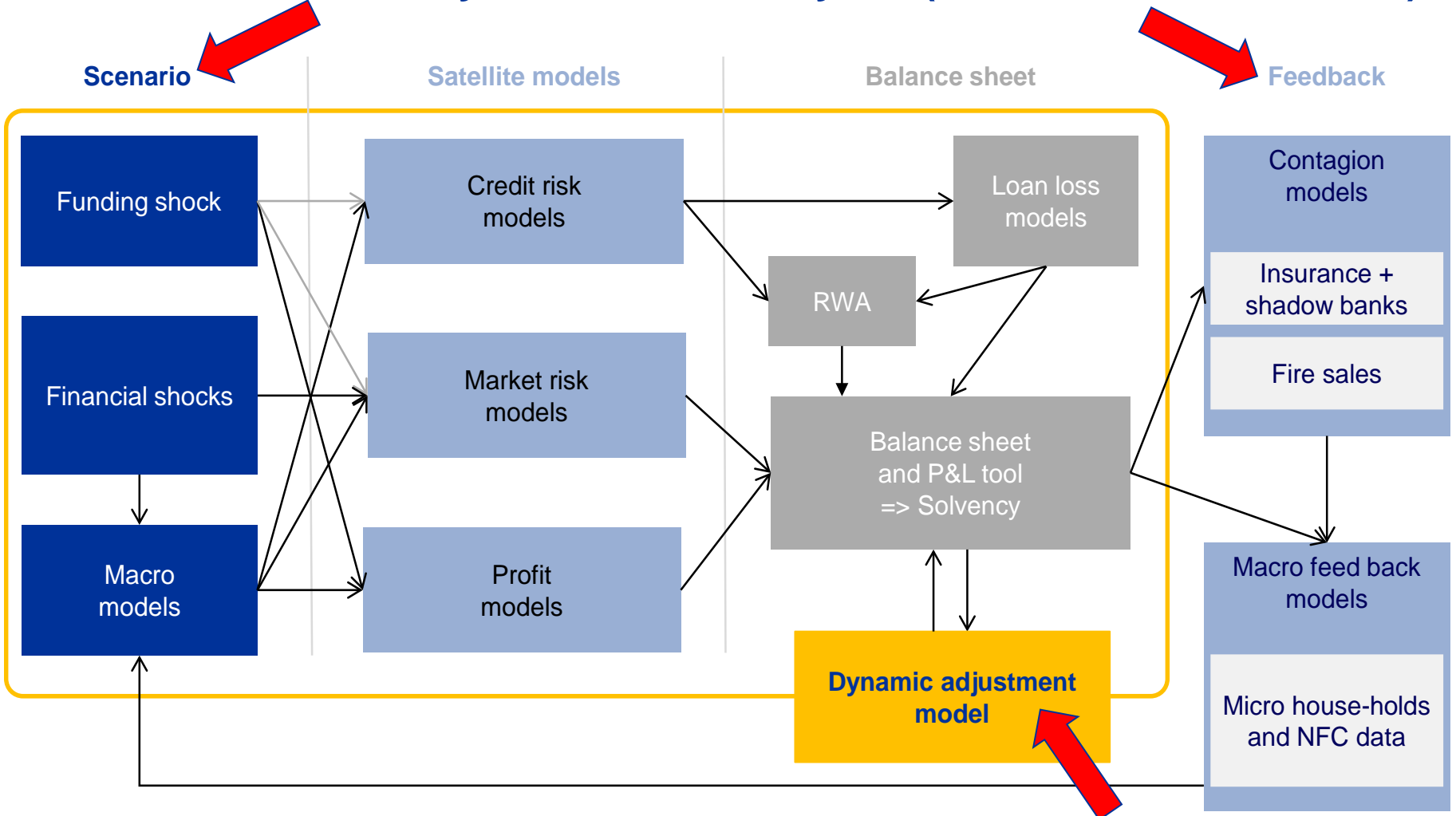
- The objectives of financial stability policy Paul Tucker
- The new ECB Macroprudential Bulletin Vitor Constâncio
- The use and effectiveness of macroprudential policies. New evidence Eugenio Cerutti, Steen Claessens, Liu Laxton

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<http://www.ecb.europa.eu/pub/pdf/other/stampe201702.en.pdf>

ECB staff toolkit for Systemic Risk analyses (and EBA/SSM/NCA STs)



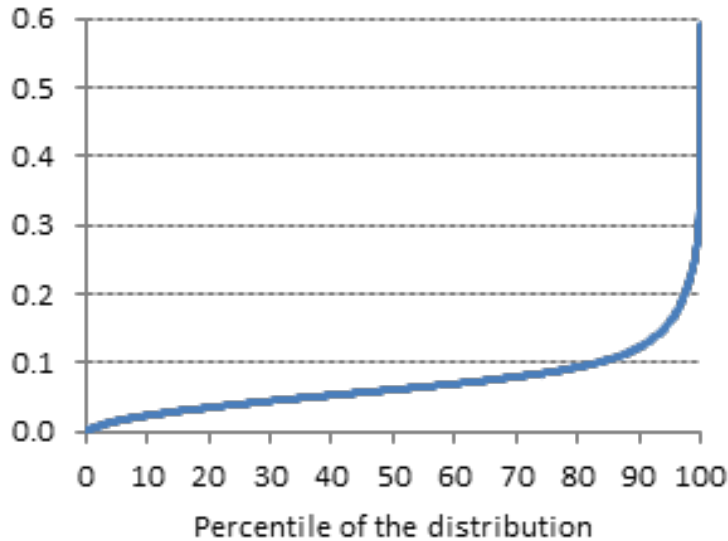
Adapted from Henry J. and C. Kok (Eds.), ECB Occasional Paper 152, **October 2013**

<https://www.ecb.europa.eu/pub/pdf/scpops/ecbocp152.pdf>

3.1. The Macroprudential Extension of the 2016 EBA/ECB ST (MPB)

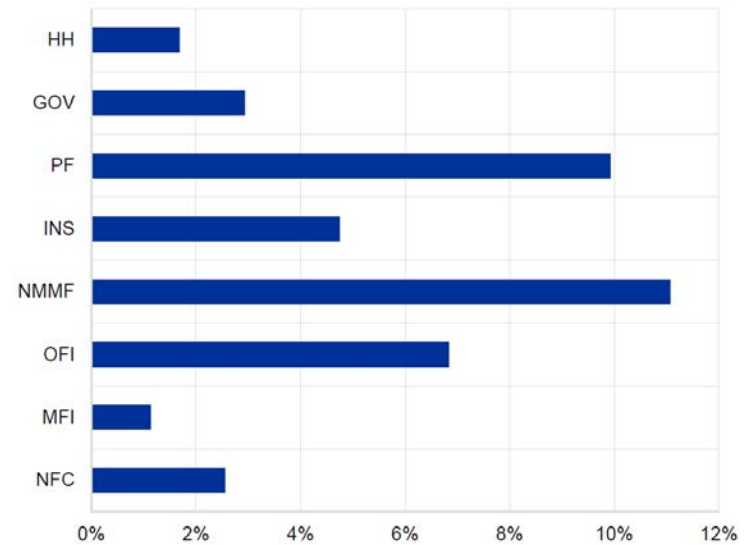
Direct interbank contagion

X-axis: percentile of the distribution; Y-axis: bank losses on interbank exposures to banks falling below 6% CET1



Cross-sector spillovers

Losses triggered by reduction in market value of bank equity in % of total financial assets)



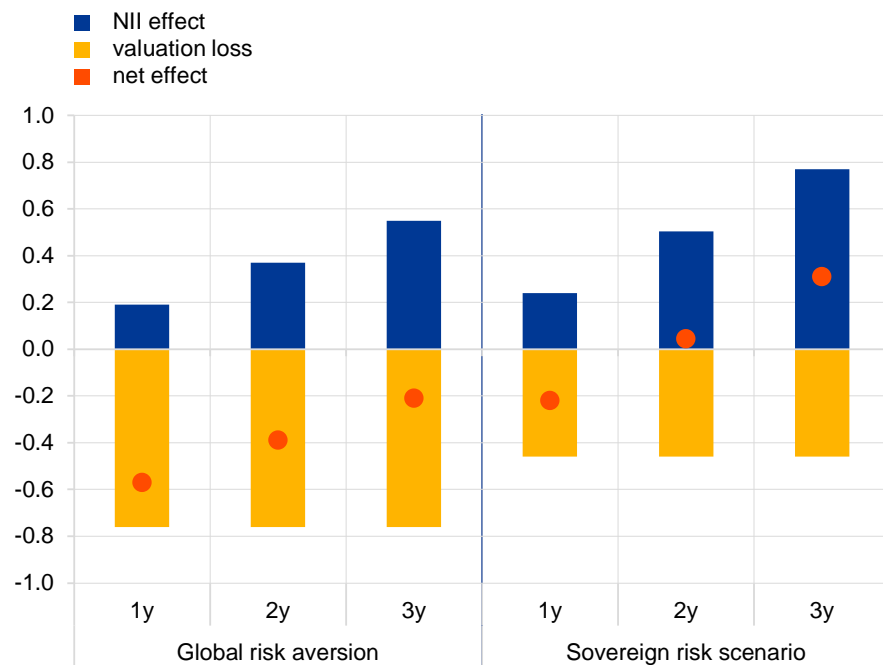
- **Systemic risks arising from interconnectedness usually appear to be contained** further analysis needed on price contagion and funding stresses
- **Interbank contagion** related to direct bilateral exposures remains immaterial, below 10 basis points for most **“simulated” interbank networks (unsecured)**
- **Investment funds** and **pension funds** most strongly affected by spillovers from reduction in market values of bank stocks **via FoF networks (country-specific)**

3.2 Impact of higher long-term rates on financial institutions (FSR)

- Impacts of higher long-term interest rates (NII+ valuation losses) on banks' capital varies across risk scenarios.
- The share of bonds in total assets is much more limited for banks than for insurers, pension funds and investment funds.

Potential impact of an increase in long-term interest rates on banks' net interest income and MtM valuation losses under two risk scenarios

(net effect; CET1 percentage point)

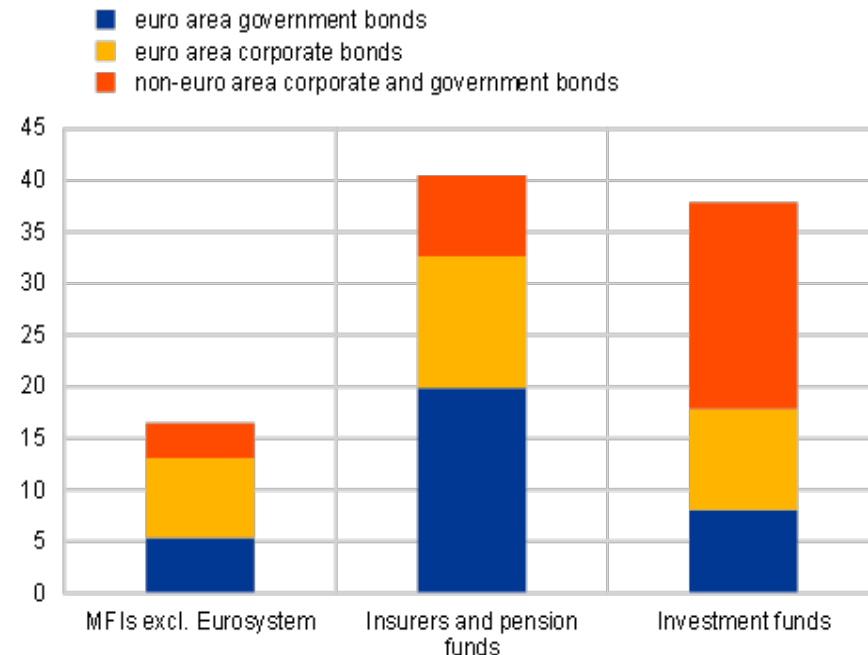


Source: ECB calculations.

Note: The global risk aversion scenario also includes a funding cost shock which has a -0.25p.p. impact on the CET1 ratio.

Financial institutions' bond holdings

(percentages of total assets)



Source: ECB calculations.

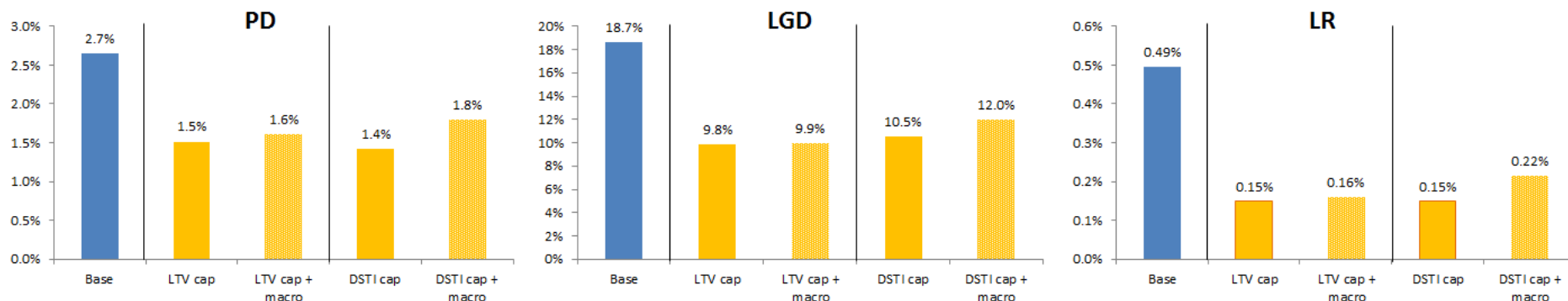
Note: December 2016 data for MFIs and Investment funds and June 2016 data for ICPFs.

3.3 Linking micro and macro to assess borrowers' measures

Integrated Dynamic Household Balance Sheet model

- Micro-macro model relating individual households and macro data
- Balance sheet data, cash flow, debt and collateral for 60,000+ households (150,000+ members) from 15 EU countries (HFCS).
 - **Stress testing / sensitivity**, conditional on scenarios.
 - **Impacts of (borrower-based) macroprudential policy**

Impact on households PDs, LGDs, LRs (1st and 2nd round)



See Gross and Población (2017), “Assessing the efficacy of borrower-based macroprudential policy using an integrated micro-macro model for European households”, *Economic Modelling*, Vol. 61.

Conclusions – a lot has been done but further challenges to be faced!

1. STAMP€, ECB e-book reflecting an evolving toolkit

- A 'living' infrastructure developed for macroprudential analyses
- **Dynamic balance sheets** and other **amplification + feedbacks**

2. Need to go beyond banks and beyond solvency

- **Cooperation with ESAs: ST (Insurers, CCPs) + Repo market data**
- **Solvency and Liquidity ST**: time dimension issue, crisis vs. stress

3. Implementation requirements

- **IT platforms** to handle **complex** models with close to **“big data”**
- **Identify / specify behaviour** of eg funds / asset managers
- Address **data gaps** especially needed for extension to non-banks

BACKGROUND

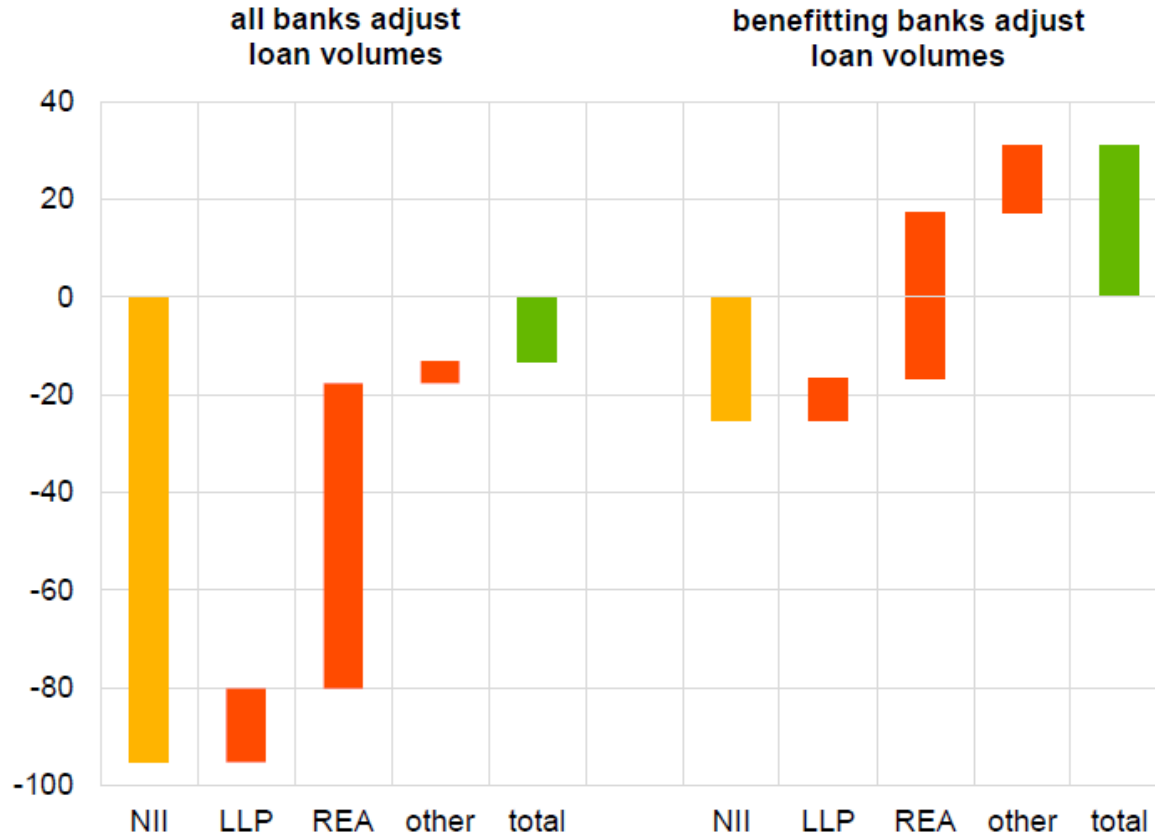
Dynamic vs Static Balance Sheets

Micro and Macro-sectoral networks

B1 DELEVERAGING “good” loans can have negative income effects

Contributions to the difference in CET1 ratios between static balance sheet and loan reduction

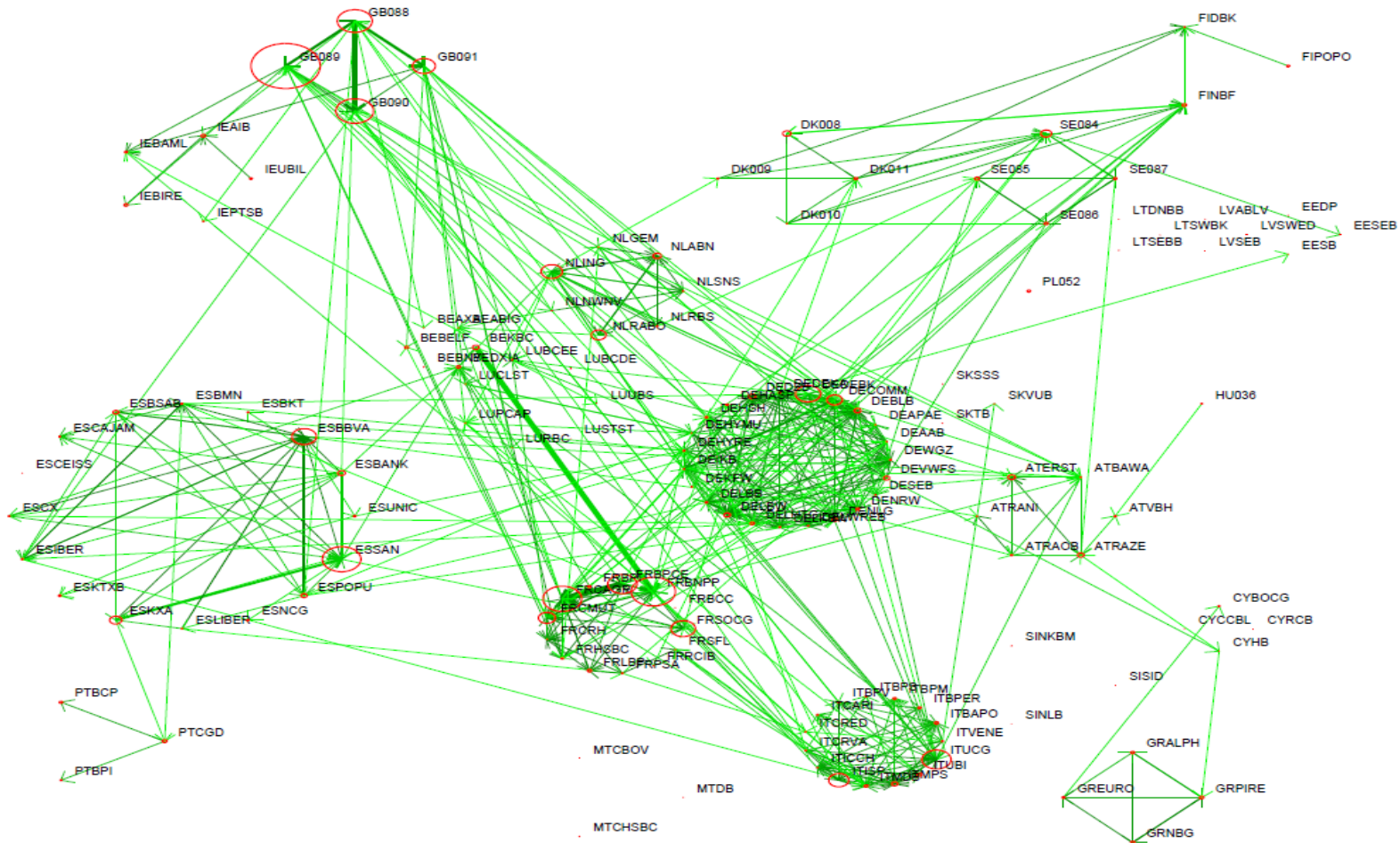
(basis points of the aggregate CET1 capital ratio)



Notes: NII – net interest income, LLP – loan loss provisions, REA – risk exposure amount, other – factors other than NII, LLP and REA.

An EU banking system “topography”

(2-tier structure with domestic (local) and global cores)



See Hałaj G. and C. Kok (2013), “Assessing interbank contagion using simulated networks,” *Computational Management Science*, Springer, vol. 10(2).

B3 Contagion – spillovers to other sectors, Flow of Fund NETWORK

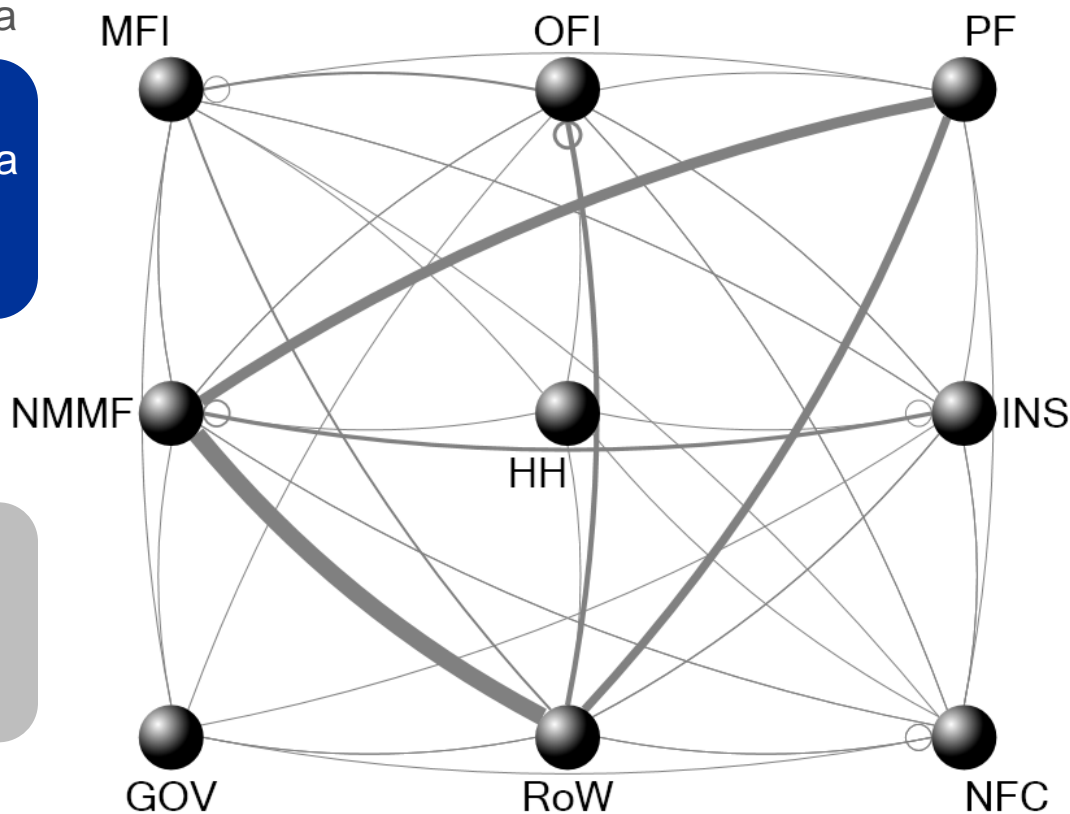
Cross-sectoral interconnections via a FoF network

Flow-of-Funds data

Sectors interconnected via 'Who-to-whom' accounts

Initial shock

Bank capital depletion



Iterative algorithm

1st round: Market value of bank equity decreases

2nd round (iterative): Loss of equity transmitted to sectors holding equity