



EUROPEAN CENTRAL BANK

EUROSYSTEM

# Macroprudential policy in a heterogeneous Monetary Union

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Disclaimer: The views and opinions expressed in this document do not necessarily reflect those of the ECB or its Governing Council. I am grateful to Giacomo Anesi and Michael Kosiahn for their support in preparing this presentation.

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# Challenges for macroprudential policy

## A. Banking sector resilience

- #1 Calibrating macroprudential capital buffers over the cycle
- #2 Common CCyB strategy with cross-country heterogeneity

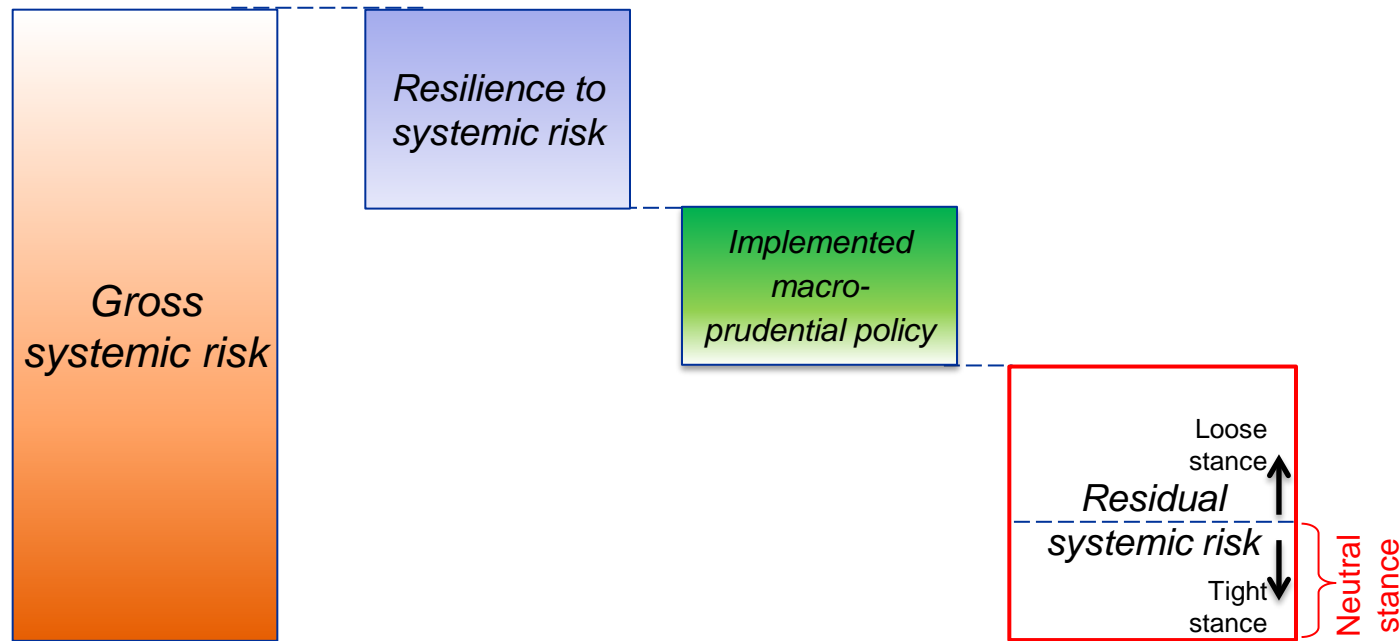
## B. Borrower-based measures

- #3 Interaction with monetary policy
- #4 Borrower affordability tests: trading off idiosyncratic and macro risk

## C. Interaction with other policies

- #5 Interaction with taxation

# Macroprudential stance: managing risk & resilience

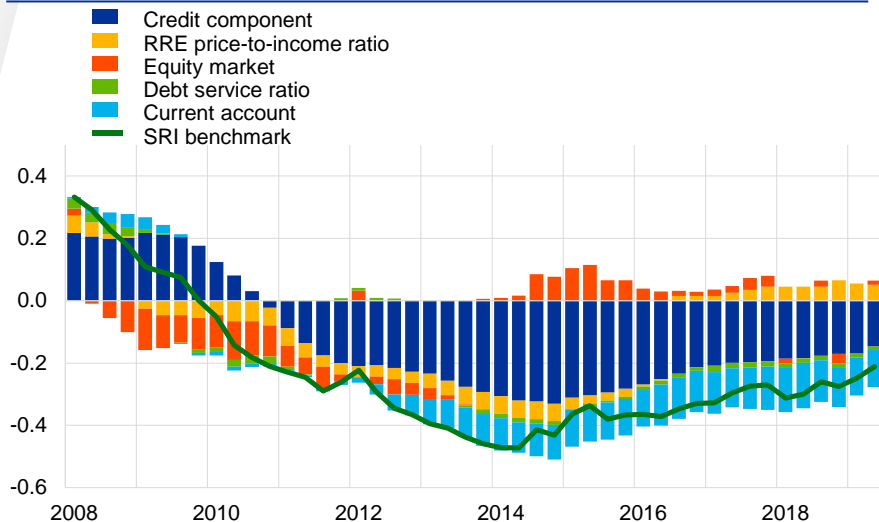


Source: "Features of a macroprudential stance: initial considerations" ESRB report April 2019.

# Cyclical systemic risks gradually building up and outlook tilted to the downside

## Euro area domestic Systemic Risk Indicator

(d-SRI and contributions of components)

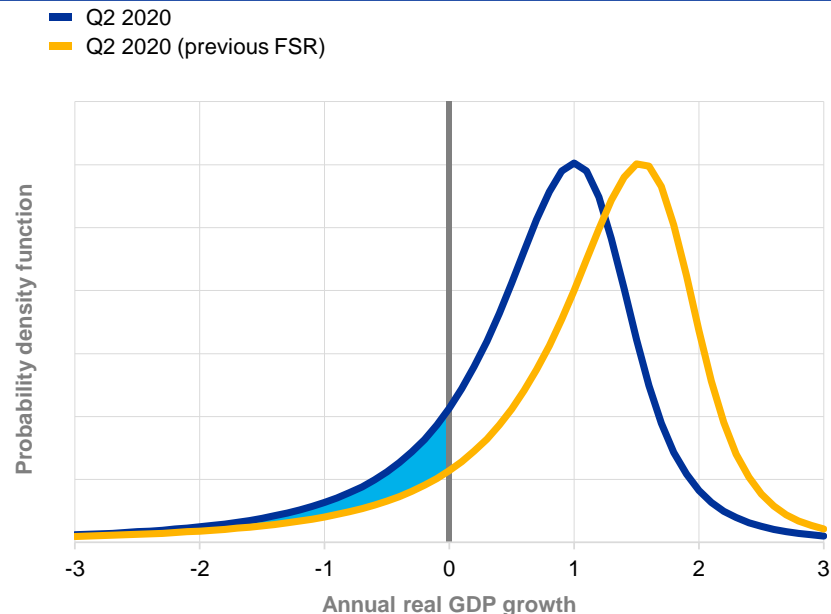


Sources: ECB and ECB calculations. See Lang, Izzo, Fahr, Ruzicka (2019).

Notes: Decomposition based on employs optimal weights for early warning performance: bank credit-to-GDP change (36%), current account balance (20%), RRE price-to-income ratio change (17%), real equity price growth (17%), DSR change (5%), and real total credit growth (5%).

## Risks tilted to the downside: future GDP prob. distribution

(near-term expected euro area real GDP distributions)



Source: ECB calculations. ECB Financial Stability Review November 2019.



# Banking sector resilience

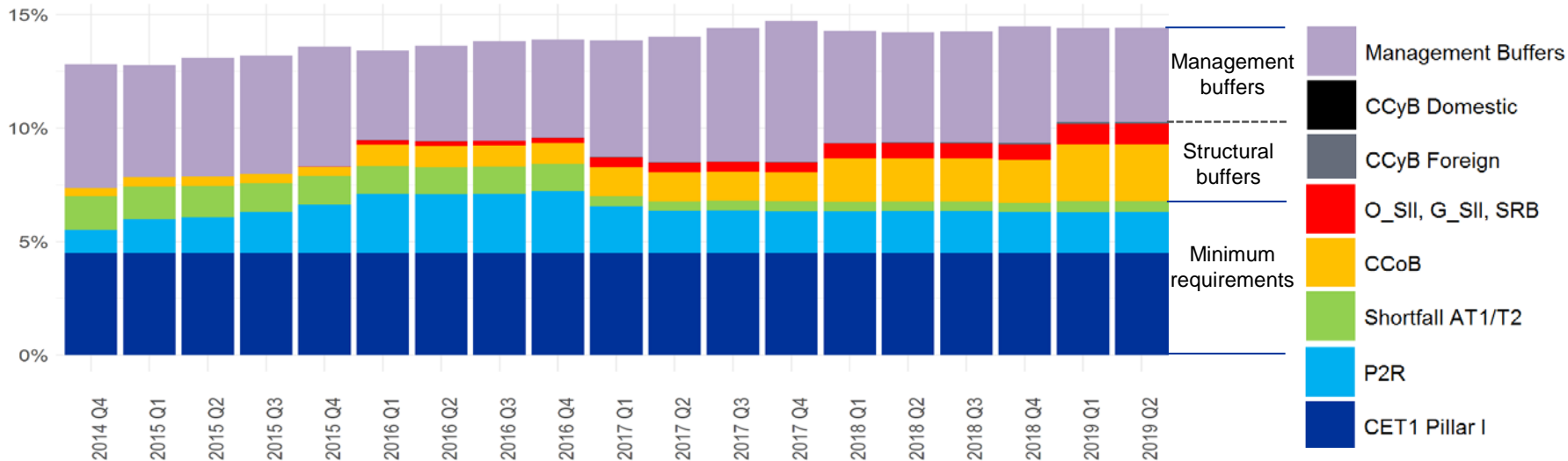
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Capital ratios and calibration  
of requirements

# Bank resilience strengthened, also on account of req.

## CET1 bank capital ratio, requirements and management buffers

(CET1 capital ratio in % of risk weighted assets, euro area Significant and Less Significant Institutions, 2014Q4 - 2019Q2)



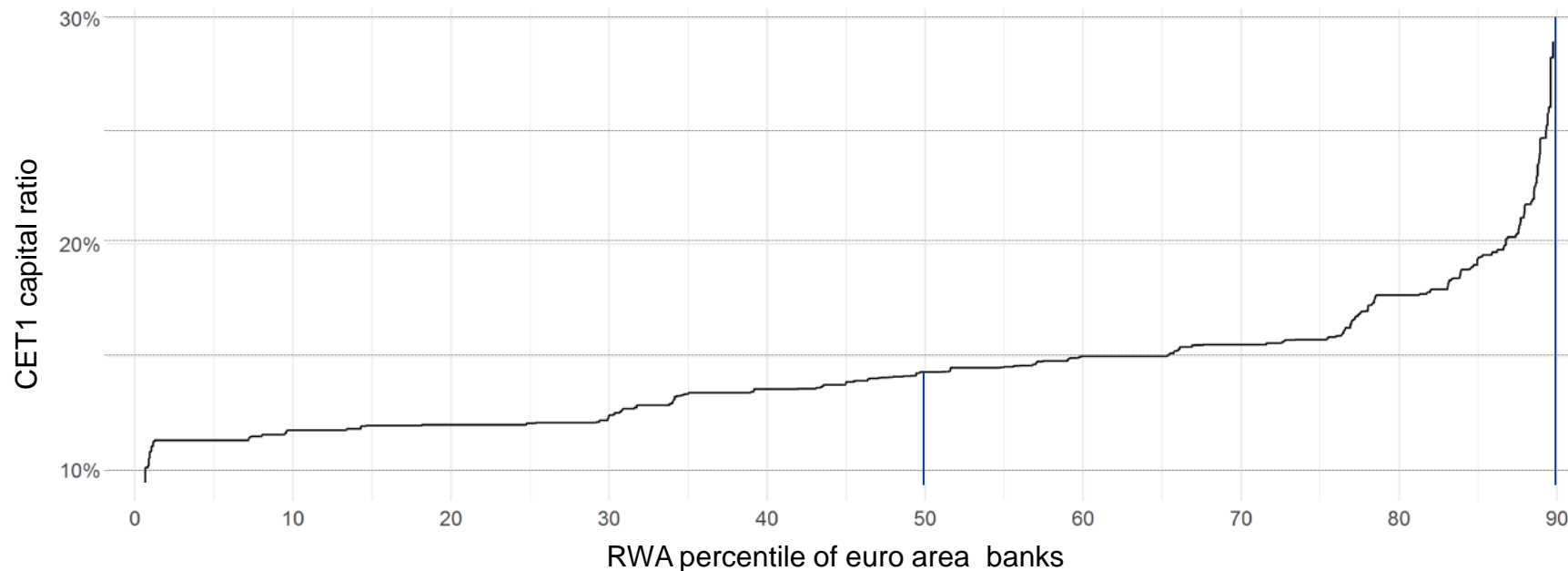
Sources: ECB and ECB calculations.

Notes: AT1 stands for additional Tier 1, T2 for Tier 2 and P2R for Pillar 2 requirement. The microprudential Pillar 2 guidance (P2G) is included in the management buffers. The distinction of CCyB ratios into domestic and foreign is quantitatively not relevant at the aggregate level, but for individual countries. SyRB requirements are not adjusted for exposures, but are considered at the consolidated level in the country of domiciliation.

# Cross-bank heterogeneity to be taken into account

## Distribution of CET1 bank capital ratio in euro area, by risk weighted assets

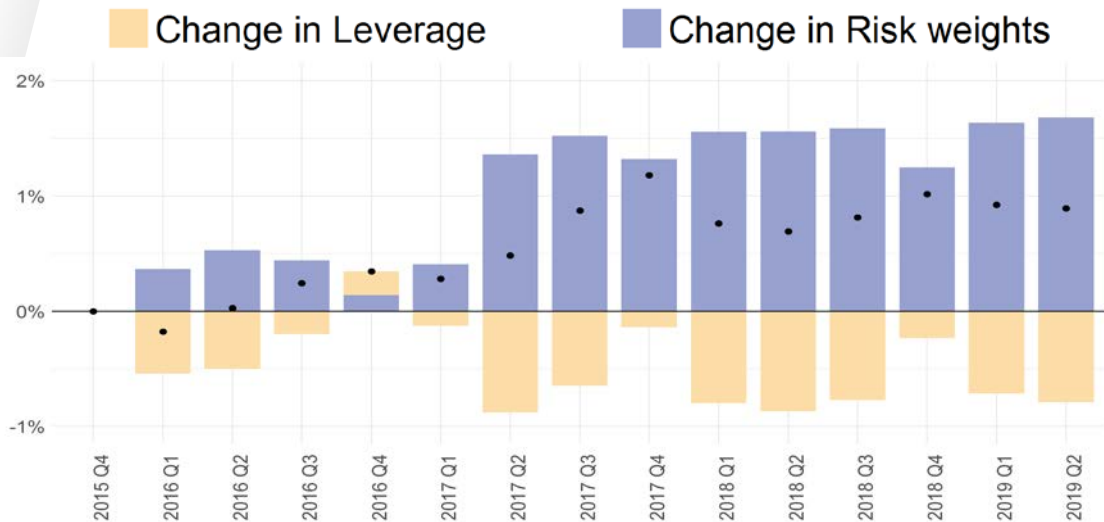
(CET1 capital ratio in % of risk weighted assets, euro area Significant and Less Significant Institutions, 2019Q2)



Sources: ECB and ECB calculations. Supervisory data.

# Risk weight declines supported CET1 capital ratios

**Cumulated changes in CET1 capital ratios and contributions**  
(in % of RWAs, euro area SIs & LSIs, 2015Q4 - 2019Q2)



- **Increases in leverage have contributed to reductions in CET1 capital ratio**  
⇒ assets grew faster than capital
- **Lower aggregate risk weights supported CET1 capital ratios**
- **Changes took place in times of increasing systemic risk**

Sources: ECB and ECB calculations. Supervisory data.

Notes: Change in Leverage is computed as the change of CET1 capital over Total Assets.

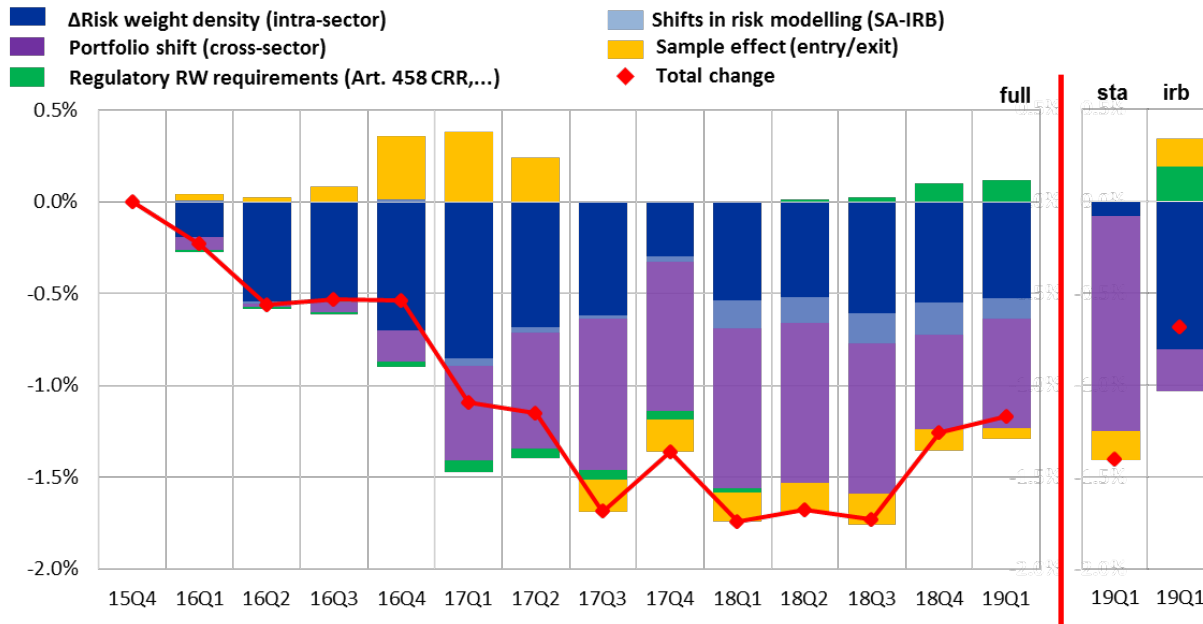


# Only some RW drivers are of macropru relevance

1. **Sectoral RWA density** (intra-sector)
  - **Macro environment:** higher income, net worth, asset valuation reduces PD, LGD (IRB)
  - **Business models:** Shifts from e.g. high- to low-LTV borrowers
2. **Relative portfolio shift** from high-RW (NFC) to low-RW (household) sector
3. **Regulatory RW req.** e.g. RW floors or add-ons
4. **Shifts from exposures with SA to IRB modelling**
5. **Changing banking sample:** bank entry/exit affects banking system's RW

# Credit RWs declined also due to portfolio shifts

Cumulated changes in credit risk weight densities of euro area banks  
(in percentage points, significant and less significant institutions, 2015Q4-2019Q2)



- Credit risk weights declined over 2016 and 2017 albeit increasing cyclical systemic risks

Full sample: decline due to sectoral RW densities & portfolio shifts  
SA exp.: portfolio shifts  
IRB exp.: sect. RW densities

- Regulatory RW changes countered general decline in view of increasing cyclical risks.

Sources: ECB and ECB calculations, supervisory data.

Notes: Contributions aggregated from changes in the mortgage, NFC, central government and 'other' sector. The 'other' sector is computed as residual to total RWAs.

# #1: Calibrating capital buffers for countercyclical policy

**‘Optimal capital level’ remains holy grail of macroprudential policy, but level of requirements needs to be commensurate to systemic risk**

- Cyclical systemic risk gradually increased since 2014 with cross-country heterogeneity
- Macropru stress-tests with countercyclical scenarios are important benchmark for calib.
- Capital requirements in the past focused mainly on structural buffers (CCoB, G-/O-SII,...)
- Banking system risk weight densities can fluctuate procyclically and due to portfolio shifts

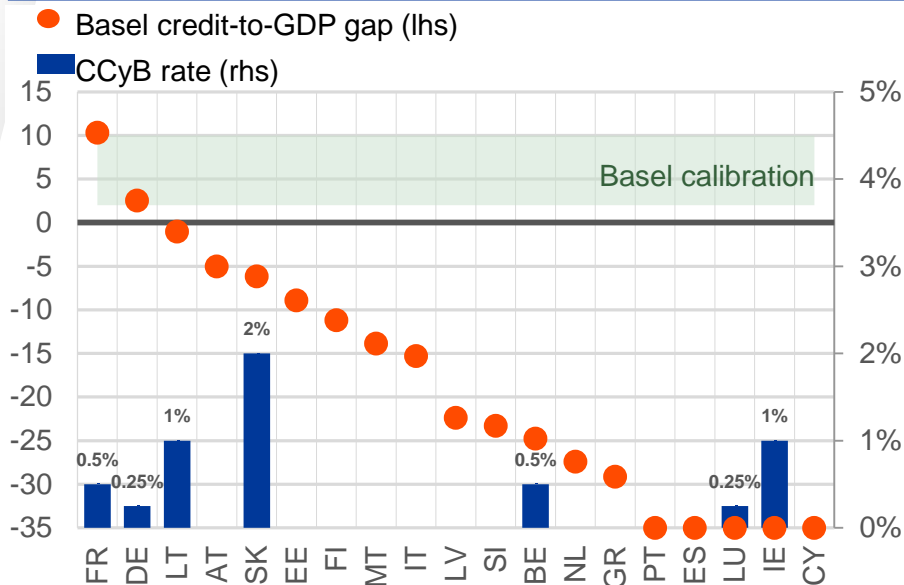
⇒ **Countercyclical macroprudential policy serves as stabilisation tool**

Rebalancing capital requirements towards releasable buffers would strengthen countercyclical macroprudential policy

# Calibrating CCyB: Basel guide as a starting point

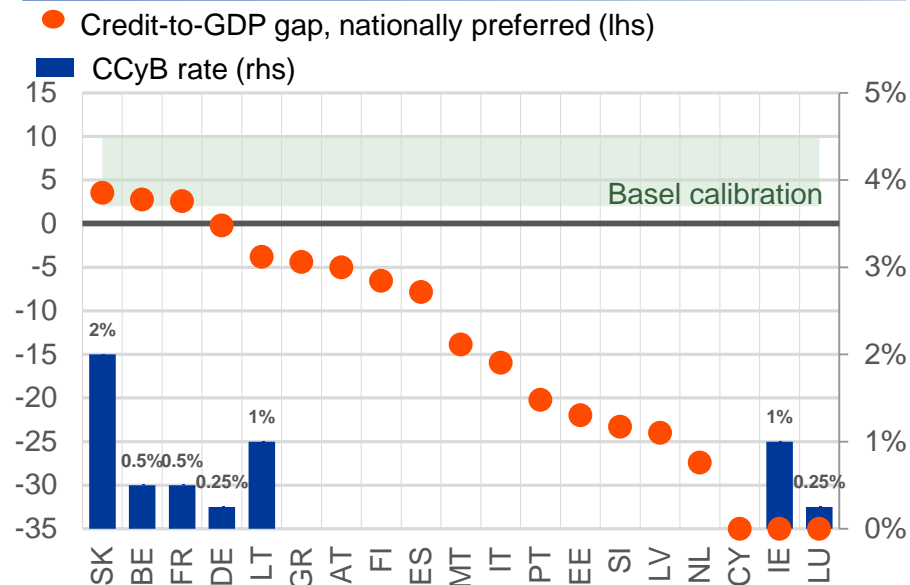
## Basel credit-to-GDP gap and CCyB rates

(Gap in % deviations from trend, CCyB rates in % of RWAs)



## Nationally preferred credit-to-GDP gap and CCyB rates

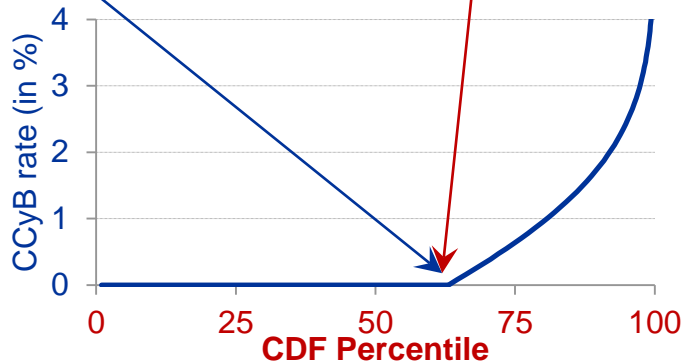
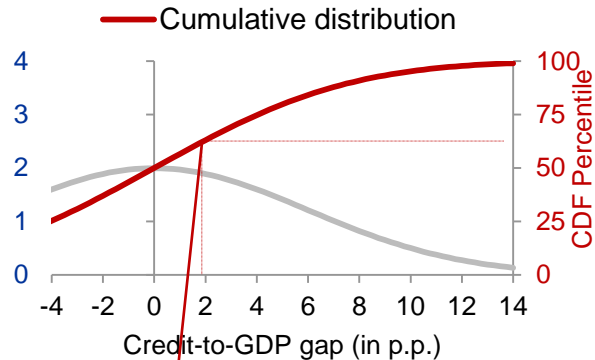
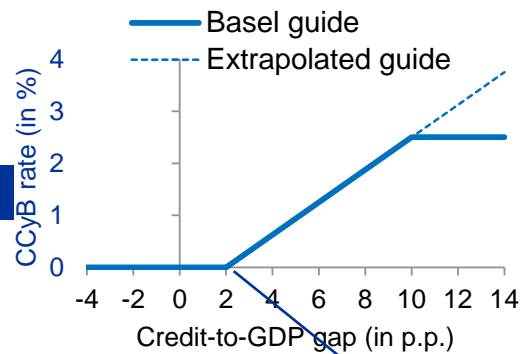
(Gap in % deviations from trend, CCyB rates in % of RWAs)



Source: National Designated Authorities, ECB and ECB calculations.

Notes: Credit-to-GDP gaps at bottom end of chart exceed axis. CCyB rates are latest rates announced by National Designated Authorities.

# CCyB calibration – Cross-country comparison



The “heatmap approach” to cross-country comparison:

**Basel guide** (gap-CCyB rate)

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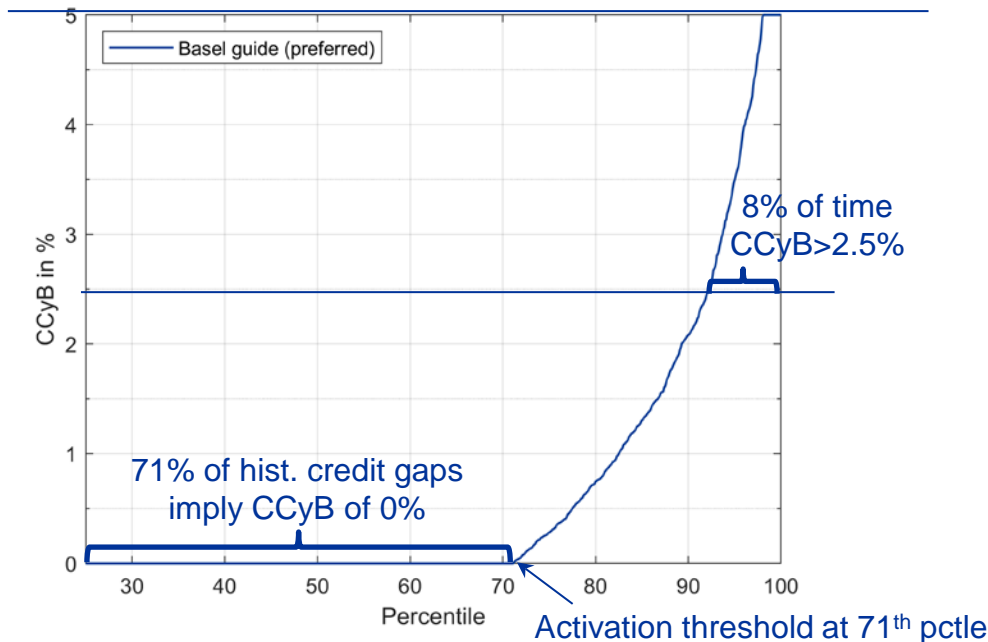
**Historical distribution**  
(cumulated density function)

yield **CCyB rates by pctle.**

# CCyB calibration – cross-country aspects (2)

## Credit-to-GDP gap by percentile and CCyB rates

(Gap percentile in pooled distribution, CCyB rate in % of RWAs)



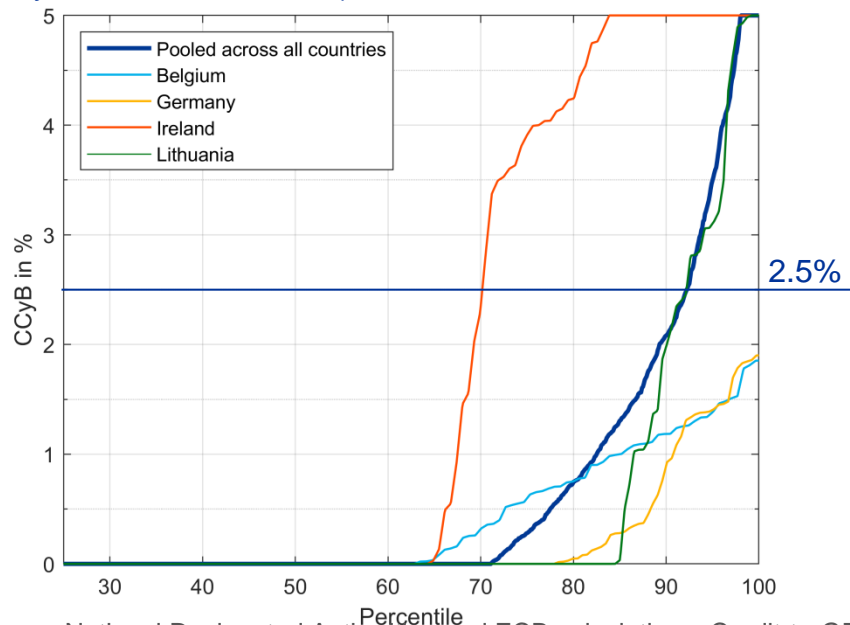
- Pooled historical distribution of credit-to-GDP gaps implies 71% of time without CCyB
- Activation threshold of 2% credit-to-GDP gap at 71<sup>th</sup> percentile
- 8% of time CCyB rates larger than 2.5%
- Pooled distribution serves as general benchmark, but not on specific timing

Source: National Designated Authorities and ECB calculations. Note: Credit-to-GDP gap series are 'preferred' series by national designated authorities. Series are pooled across 19 euro area countries.

# CCyB calibration – cross-country heterogeneity

## Credit-to-GDP gap by percentile and CCyB rates

(Gap percentile in pooled and national distribution, CCyB rate in % of RWAs)



- **CCyB distributions based on national samples differ from pooled distribution**

Do differences reflect

- a. structural country differences?
- b. sample selection?

- **Complementarity of approaches**

- **Country normalisations** useful for historical context and narrative
- **Pooled distribution** looks through cross-country variations to identify common patterns

Source: National Designated Authorities and ECB calculations. Credit-to-GDP gaps 'preferred' series indicated by national designated authority.

Note: First data point for the pooled series is 1970Q2.

## #2: CCyB calibration in light of country heterogeneity

- **Basel guide serves as a starting point for calibrating CCyB**
    - CCyB not widely used (7 countries in euro area, 12 countries in EU) and rates limitedly related to credit-to-GDP gap
    - Basel gap silent about cyclical risks beyond domestic credit imbalances, e.g. external risks, spillovers
    - Basel guide not designed to capture differing country volatility, but normalizing cycle amplitudes not an option
- ⇒ **Guided discretion to accommodate country specificities, but with some structure across countries to maintain effectiveness of communication. Spillover risk among euro area countries one factor for cyclical buffers.**



# B

## Borrower-based measures

Interaction with monetary policy

# Real estate: risks and instruments



Limit behavioural adj.  
before default



Limit default



Limit duration of risk  
(future becomes ever more uncertain)



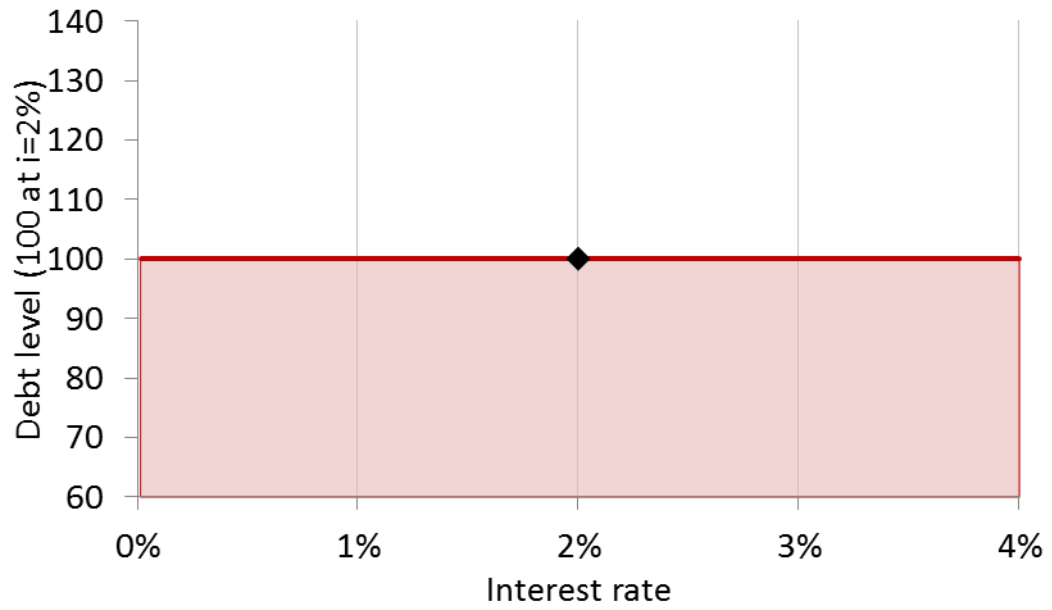
Limit risks from  
collateral valuation



# Borrower-based measures and monetary policy (1)

## Interaction of borrower-based RE measures and interest rates

(Interest rates in %, initial loan size normalized to 100)



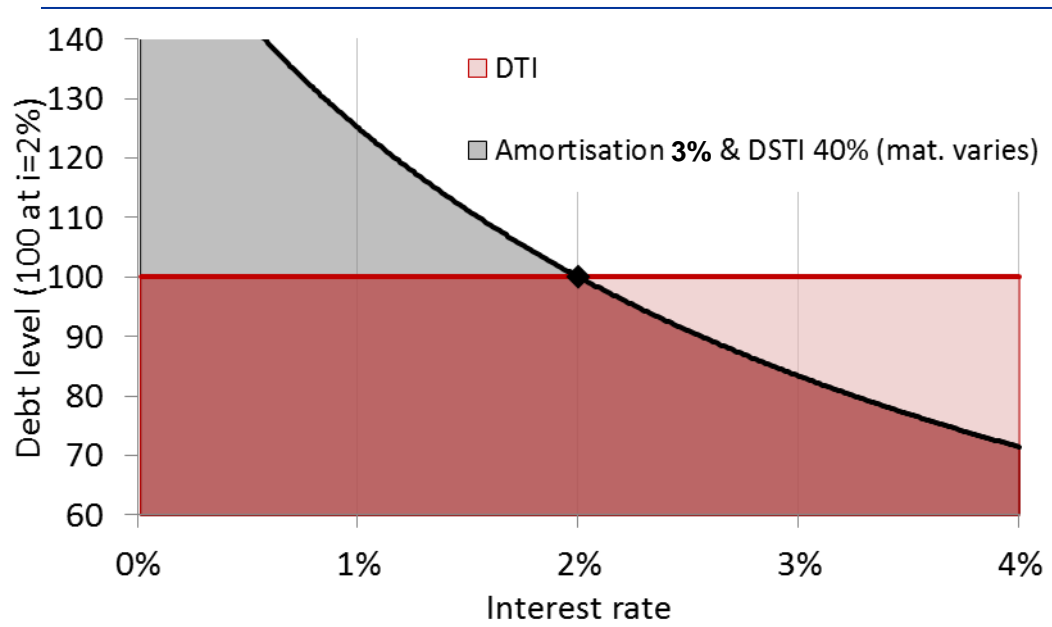
Notes: Calculations based on amortising loan with fixed interest rate at origination.

- **Initial loan:** normalised to 100 (2% interest rate, 3% amortisation, 40% DSTI, 25.6y maturity)
- **DTI limit** independent of interest rate  
⇒ no interaction (except through income)

# Borrower-based measures and monetary policy (2)

## Interaction of borrower-based RE measures and interest rates

(Interest rates in %, initial loan size normalized to 100)



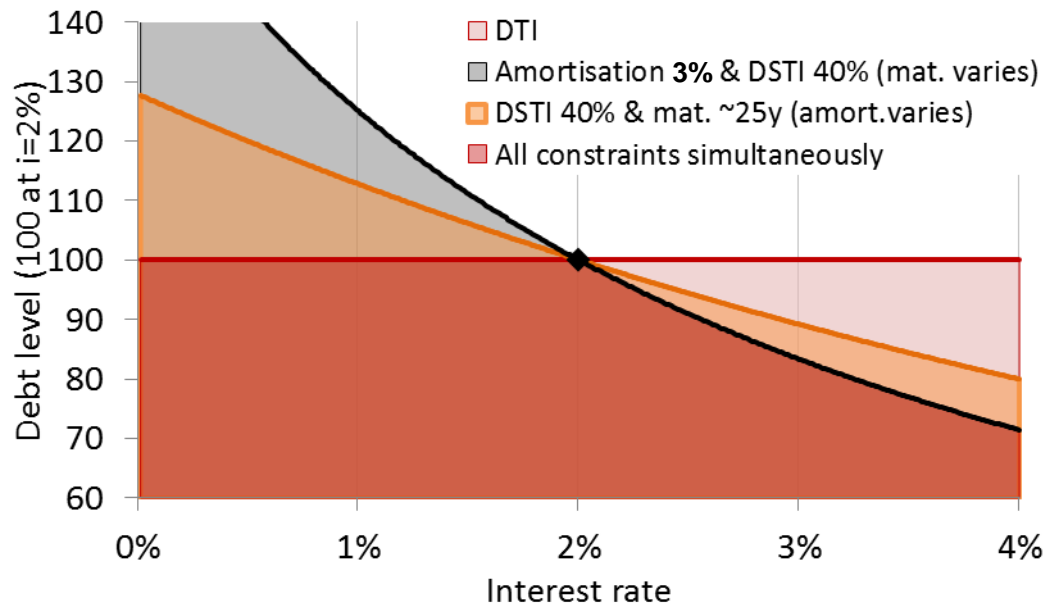
Notes: Calculations based on amortising loan with fixed interest rate at origination.

- **Initial loan:** normalised to 100 (2% interest rate, 3% amortisation, 40% DSTI, 25.6y maturity)
- **DTI limit** independent of interest rate  
⇒ no interaction (except through income)
- **Amortisation requirement** supports mon. policy via quantity relaxation / tightening  
⇒ DTI & amortisation amplify mon.pol. when interest rates increase and restrict it with declining rates

# Borrower-based measures and monetary policy (3)

## Interaction of borrower-based RE measures and interest rates

(Interest rates in %, initial loan size normalized to 100)



Notes: Calculations based on amortising loan with fixed interest rate at origination.

- **Initial loan:** normalised to 100 (2% interest rate, 3% amortisation, 40% DSTI, 25.6y maturity)
- **DTI limit** independent of interest rate  
⇒ no interaction (except through income)
- **Amortisation requirement** supports monetary policy through quantity response  
⇒ DTI & amortisation amplify interest rate increases but restrict it with declining rates
- **DSTI & mat. limit** support monetary policy's signals more smoothly

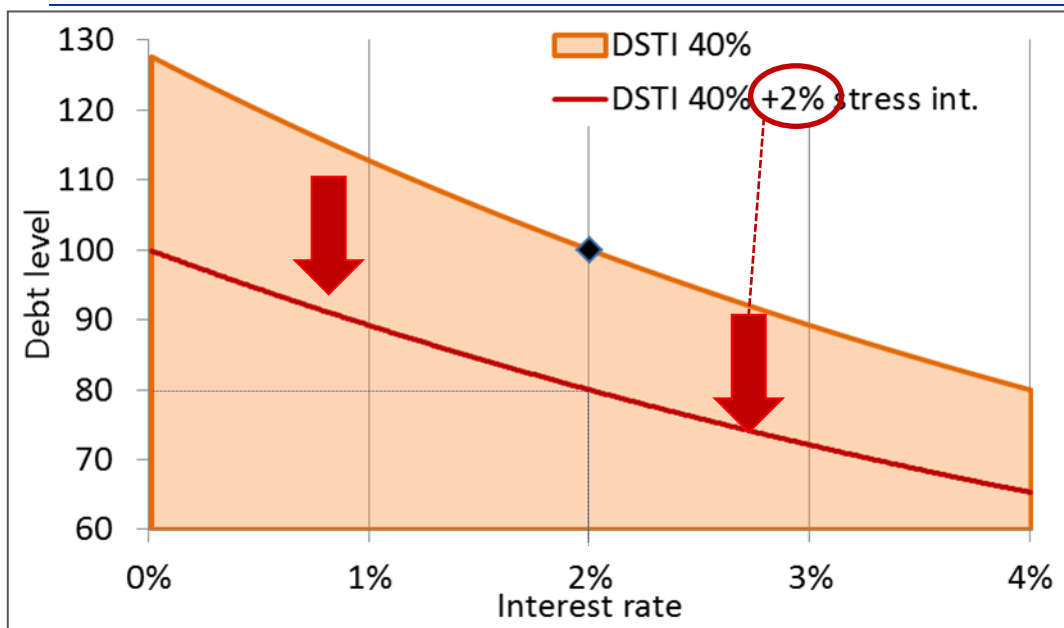
# #3: Interaction of BBMs with monetary policy

- **Borrower-based measures differ in their interaction with monetary policy**
    - **DTI limit and amortisation requirement** strongly constrain quantities
    - **DSTI and maturity limit** mildly support monetary policy interest rate intentions
- ⇒ **Choice of borrower-based measures affects adjustments over the interest rate cycle.**
- When is there a need to recalibrate borrower-based measures?**

# DSTI limits with affordability tests (1)

## DSTI limits with stressed interest rates

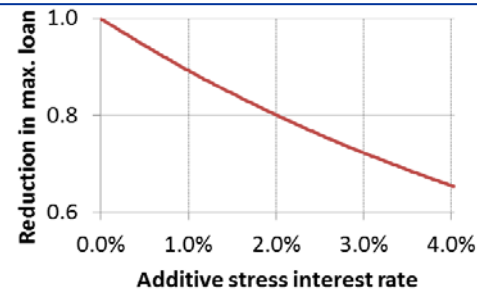
(Interest rates in %, initial loan size normalized to 100)



Notes: Calculations based on amortising loan with fixed interest rate at origination.

- **Affordability test with stressed interest rate reduces maximum loan size**

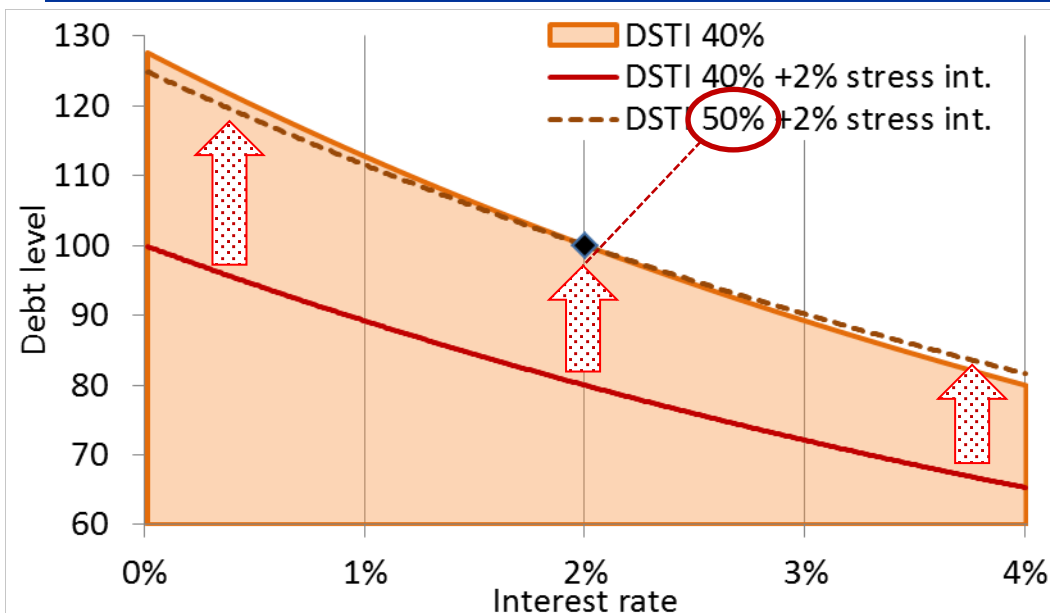
## Stressed interest rate reduces loan size



# DSTI limits with affordability tests (2)

## DSTI limits with stressed interest rates

(Interest rates in %, initial loan size normalized to 100)



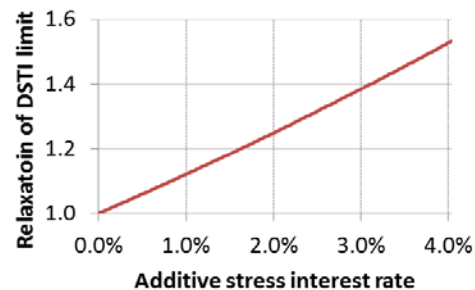
Notes: Calculations based on amortising loan with fixed interest rate at origination.

- **Affordability test with stressed interest rate** reduces maximum loan size

- **Increase in DSTI limit** to compensate stressed interest rate

⇒ **Trade-off between Individual (diversifiable) risk and macro (non-diversifiable) risk**

Increase in DSTI to compensate stressed interest rate

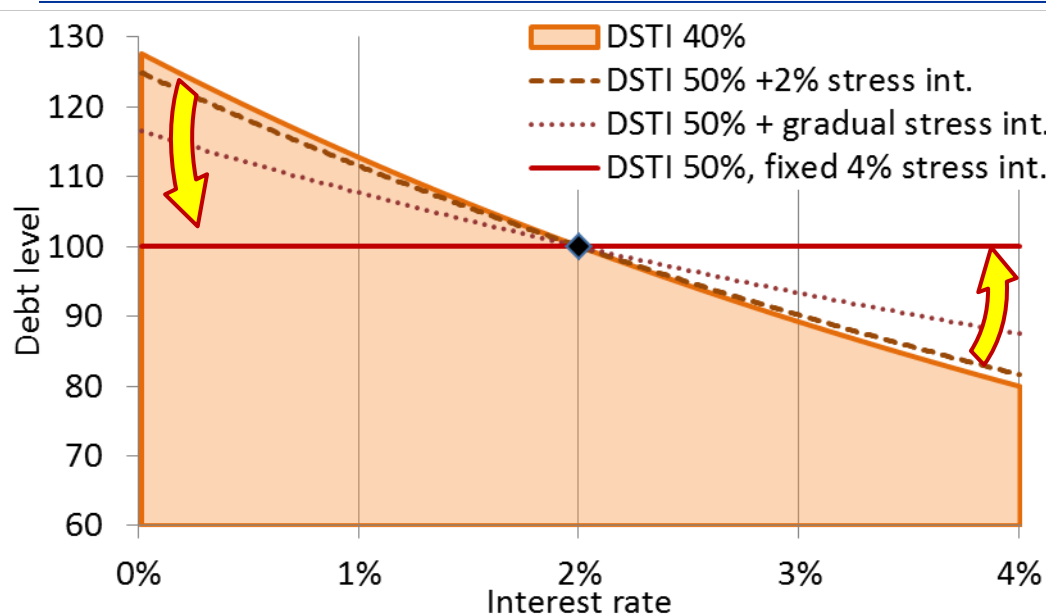




# DSTI limits with affordability tests (3)

## Debt limit with borrower-based measures and interest rates

(Interest rates in %, initial loan size normalized to 100)



Notes: Calculations based on amortising loan with fixed interest rate at origination.

- **Affordability test with stressed interest rate** reduces maximum loan size

- **Increase in DSTI limit** to compensate stressed interest rate

⇒ Individual (diversifiable) risk vs. macro (non-diversifiable) risk

- **Design of affordability test** affects interaction with mon. policy:

- **additive** stress interest rate
- **countercyclical** stress interest rate
- **fixed** stress interest rate

⇒ Specific design can emulate DTI

## #4: Affordability tests: idiosyncratic vs. macro risk

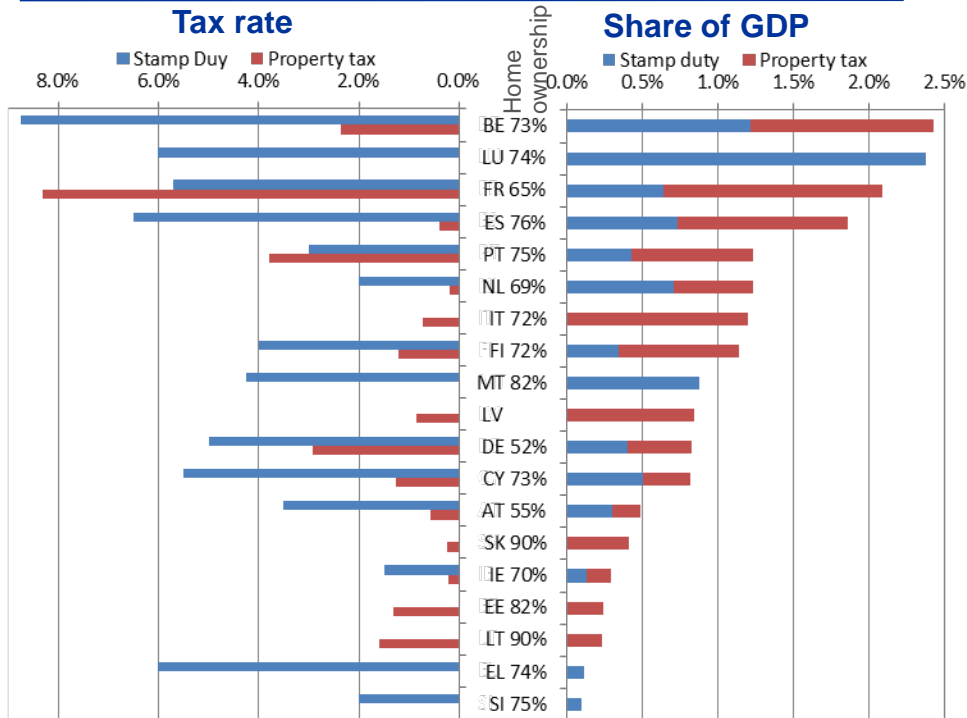
- **Affordability tests trade off individual (diversifiable) and macro (non-diversifiable) risk**
    - Country-specific design of affordability tests in a monetary union influences interaction with common monetary policy
    - Cross-country comparison of measures requires assessment in more detail than headline BBM limits
- ⇒ **Design of affordability tests to be assessed also through the cycle**

# C

## Interaction with other policies: taxation

# #5: Interaction with other policies, e.g. taxation

Stamp duty and property tax rates and as share of GDP  
(applied tax rate in %, share of GDP in %)



- **Stamp duty inherently countercyclical**  
booming RE generates stronger fiscal income, but extracts wealth from HHs and implies higher LTV for borrowers
  - **Property tax income** tightly related to home ownership (more structural)
- ⇒ **Use of tax instruments vs. BBMs**  
also affected by fiscal revenue needs

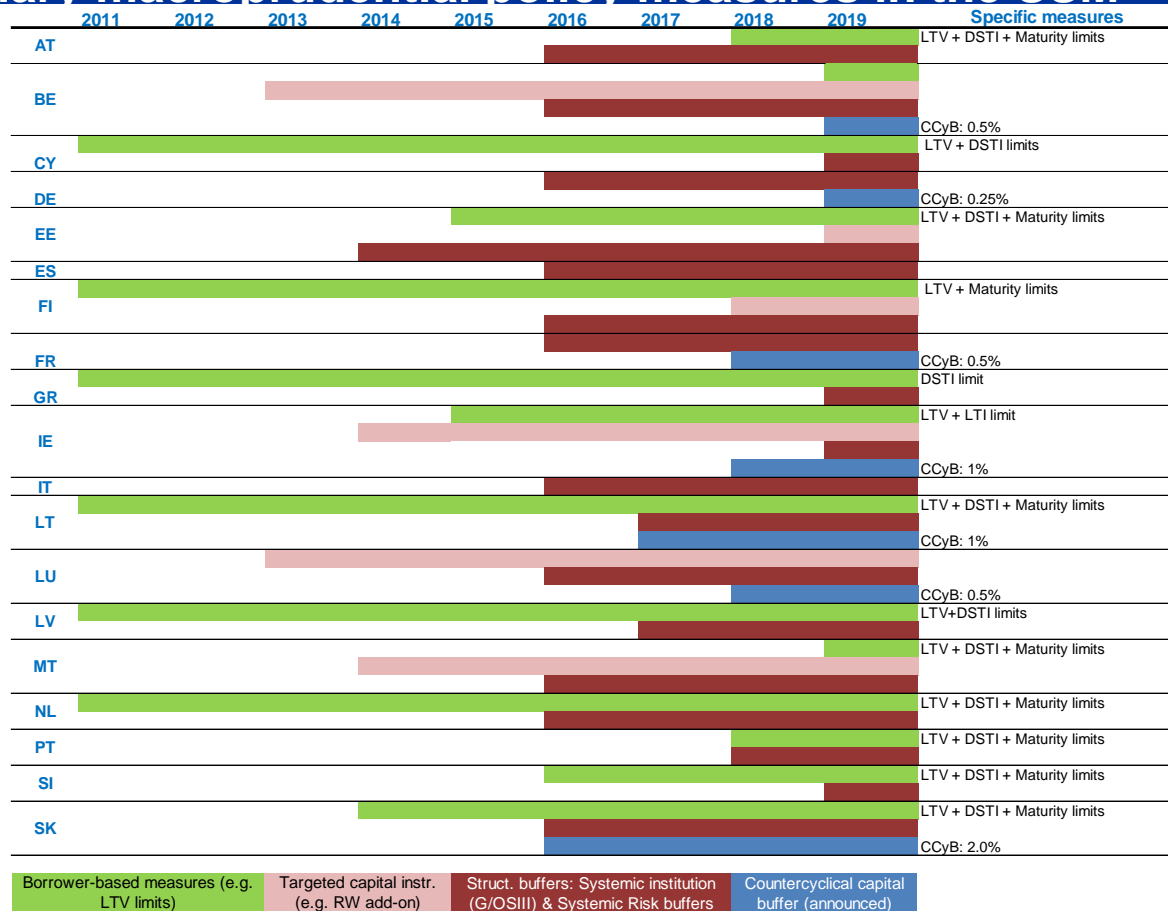
# Concluding remarks

## Challenges

- #1 Calibrating macroprudential capital buffers over the cycle  
*Rebalancing capital requirements from structural to releasable buffers*
- #2 Common CCyB strategy with cross-country heterogeneity  
*Cyclical systemic risks broader than elements in Basel guide, e.g. spillover risk*
- #3 Borrower-based measures – interaction with monetary policy  
*Choice of borrower-based measures relevant over the interest rate cycle*
- #4 Borrower affordability tests: trading off idiosyncratic and macro risk  
*Affordability test designs affects monetary policy - financial stability interaction*
- #5 Interaction with other policies: taxation  
*Design of RE taxation policies interact with BBMs: transaction vs. asset focus*

# Background

# Discretionary macroprudential policy measures in the SSM



■ Borrower-based measures (e.g. LTV limits)
 ■ Targeted capital instr. (e.g. RW add-on)
 ■ Struct. buffers: Systemic institution (G/OSIII) & Systemic Risk buffers
 ■ Countercyclical capital buffer (announced)

Source: ECB. OSII and GSII buffers not included in the table. For borrower based measures, also non-legally binding measures are included in the table. Legend: BBM: borrower-based measures; CCyB: countercyclical capital buffer; SyRB: systemic risk buffer; LTV: loan-to-value ratio; LTI: loan-to-income ratio; DSTI: debt service-to-income ratio; RW: risk weights