

# FINANCIAL STABILITY MONITORING: THE EXPERIENCE OF THE BANK OF SPAIN

**Ángel Estrada**

*GD Financial Stability Regulation and Resolution*

CEMLA, X MEETING ON FINANCIAL STABILITY, PANEL 3

Virtual Meeting

September 11, 2020



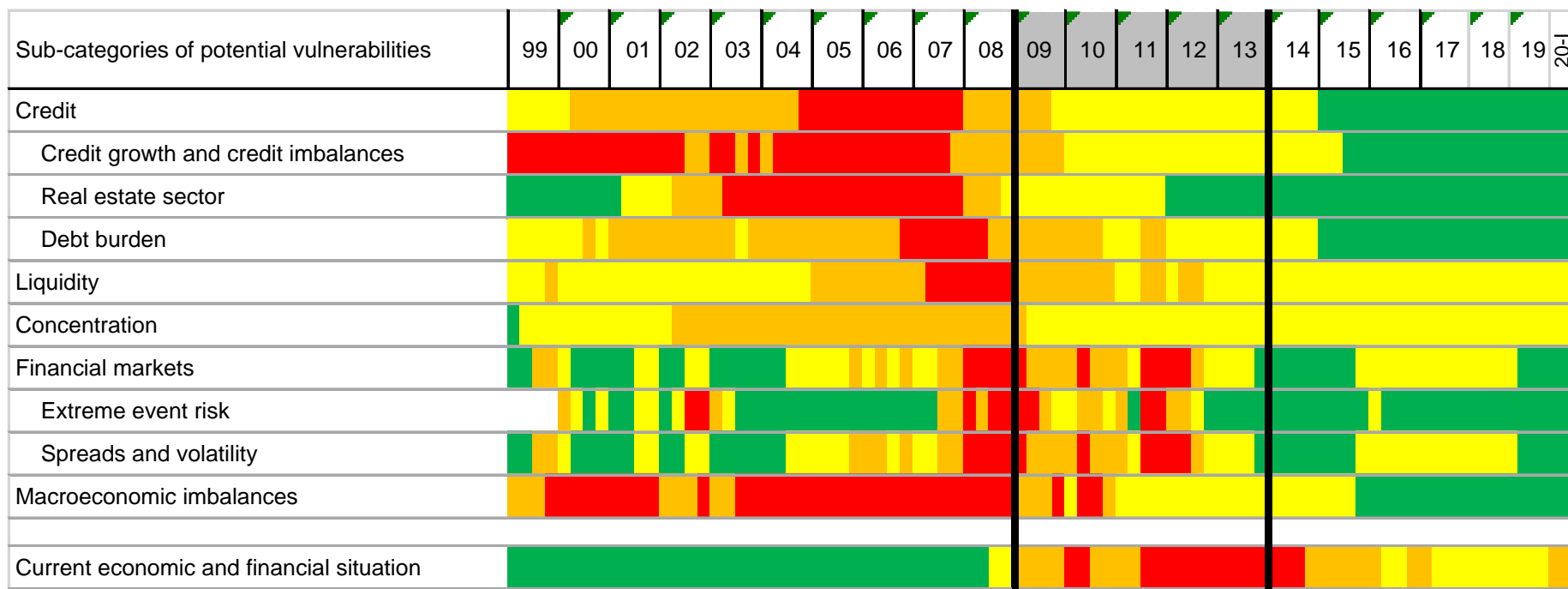
## OUTLINE

1. Introduction
2. Monitoring cyclical systemic risk
3. Monitoring structural systemic risk
4. Future challenges for financial stability monitoring after the coronavirus crisis outbreak

- **The identification of systemic risks is a complex task**
- **Systemic risk is an unobservable variable that entails monitoring two dimensions, which could reinforce each other:**
  1. Time/cyclical
  2. Structural
- **Diverse indicators proposed for the identification of systemic risks in these two dimensions:**
  - From data driven to model-based approaches
- **Our objectives:**
  1. **Summarize the main indicators developed by Bank of Spain to monitor financial stability**
  2. **Analyse main challenges ahead after the coronavirus crisis outbreak**

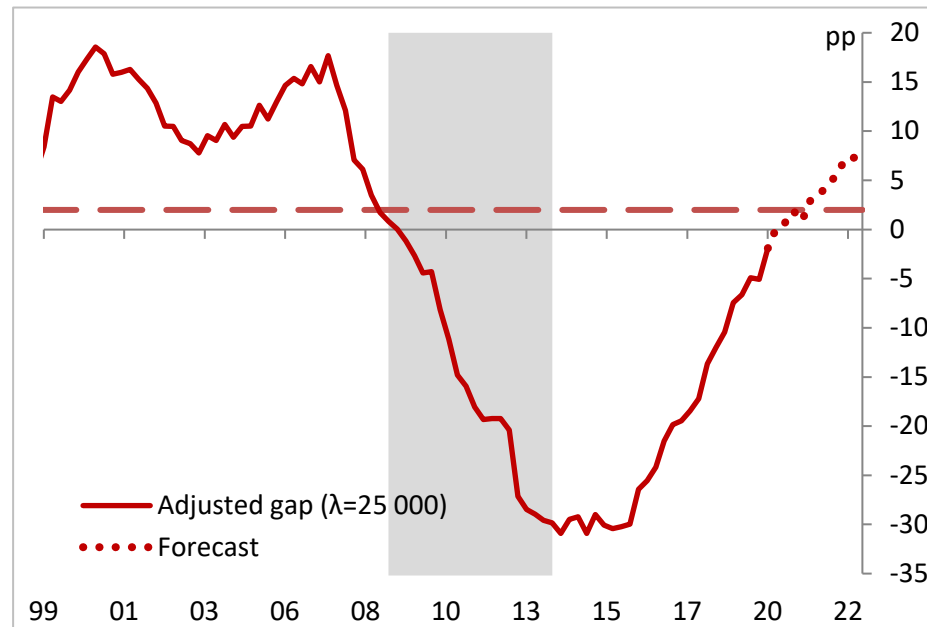
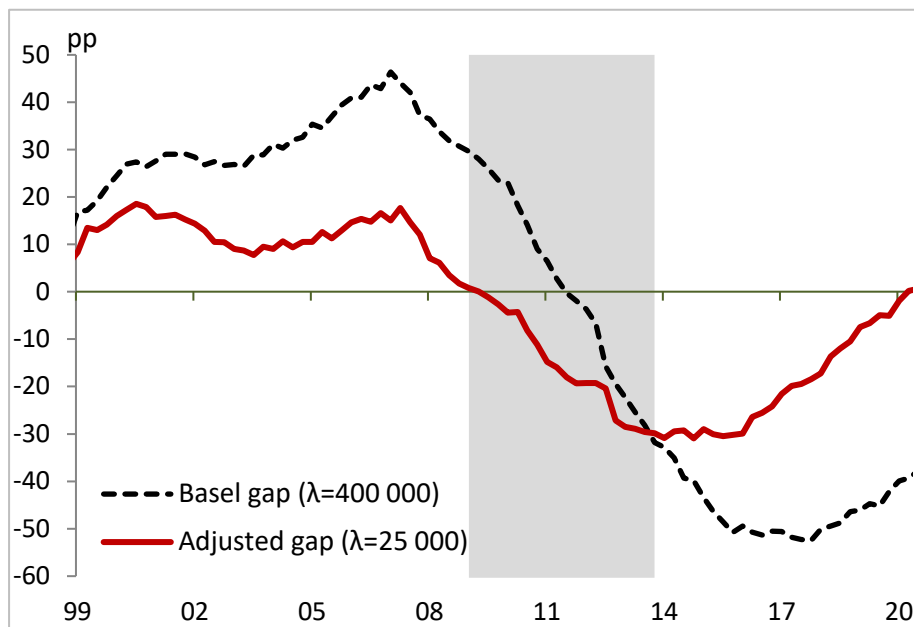
## Data-driven indicators: Heatmap

- We have developed a quarterly dashboard, based on 130 indicators, whose history goes back in many cases to the 1970s.
- These indicators are aggregated into a heatmap addressing the main systemic risk dimensions. The aggregation weights more those indicators with better early warning properties.

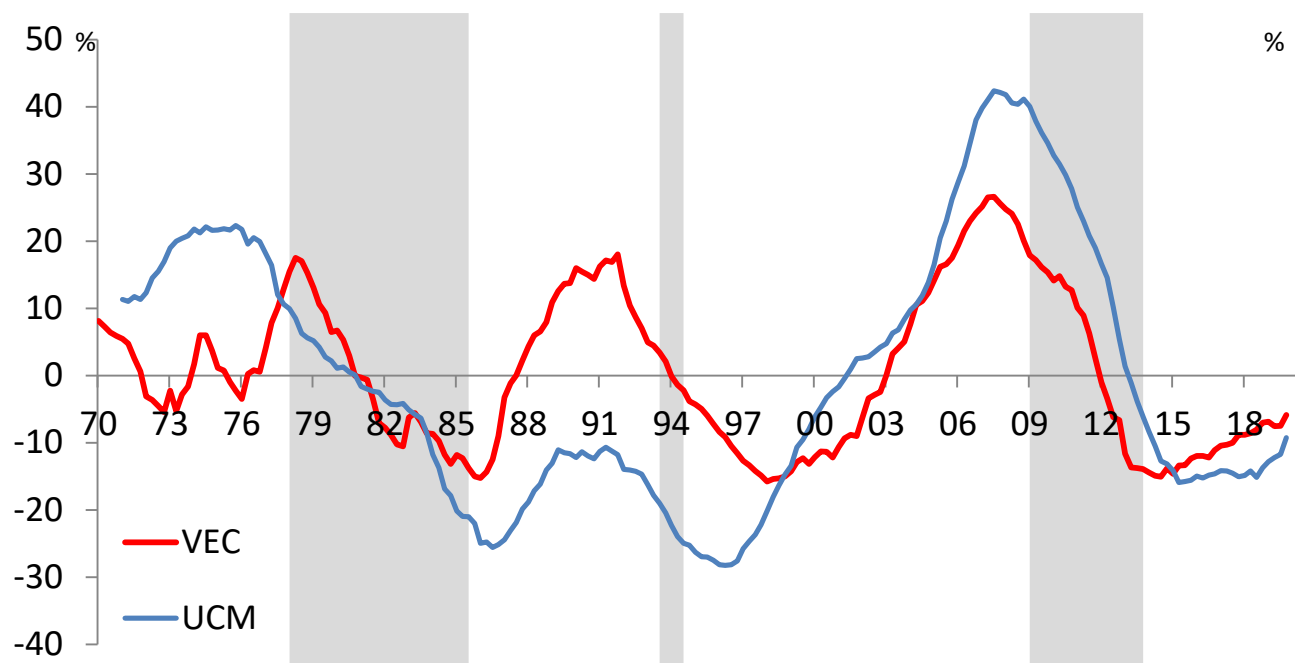


## Data-driven indicators: Credit-to-GDP gap

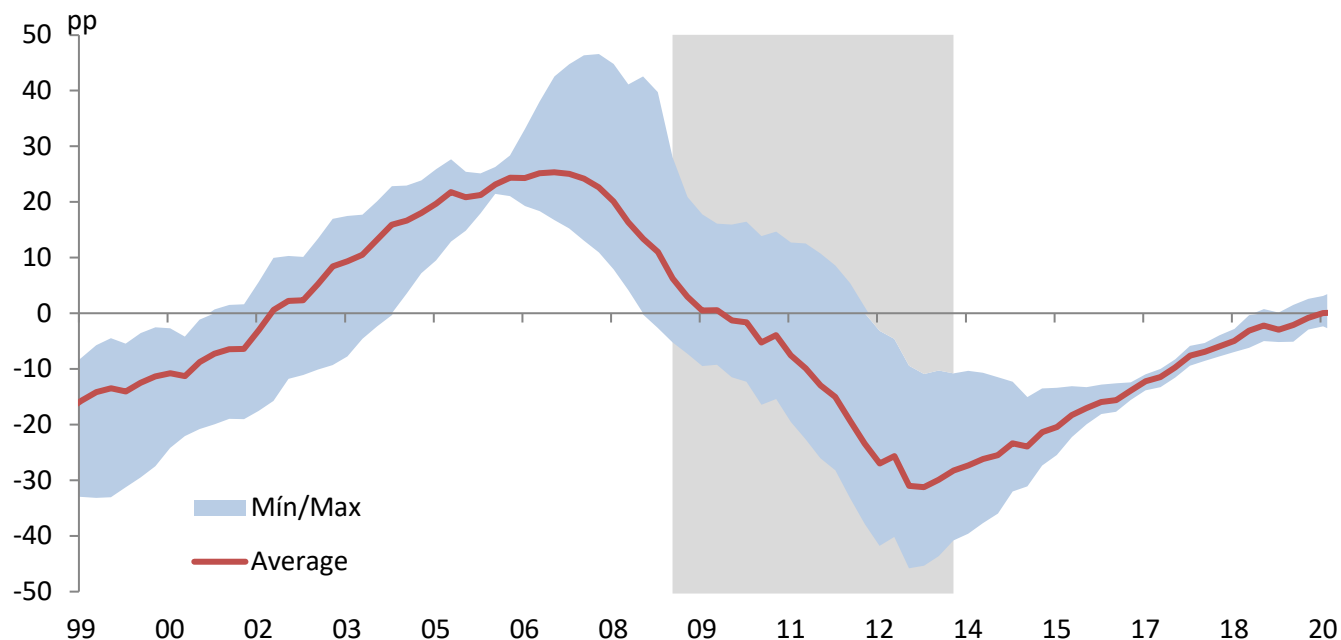
- Credit-to-GDP gap: Deviation of credit-to-GDP ratio from its long-term trend
- Adaptations of the HP filter that assume a lower length of the credit cycle more consistent with empirical evidence in Spain
- Conflicting signs regarding CCyB activation: Credit-to-GDP gap conceived to detect early imbalances in expansionary phases generated endogenously



- As an alternative to the purely statistic trend in the credit-to-GDP gap, it is possible to measure the deviations of the credit-to-GDP ratio with respect to an equilibrium level based on economic fundamentals
- For instance, we have developed an unobserved components model (UCM) and a vector error correction model (VEC), which consider variables related to GDP, interest rates and house prices.



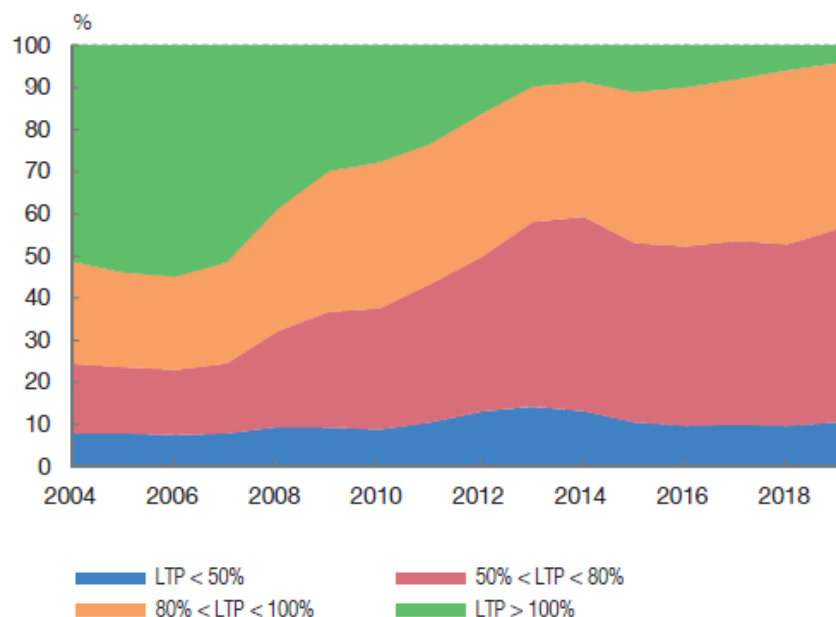
- The real estate sector plays a special role in systemic risk analysis
  - Credit to these activities represents more than 50% of that to the private sector
  - Last three systemic crisis in Spain were related to that portfolio
- To identify real estate sector risks it is useful to rely on several indicators
- We use four housing overvaluation indicators obtained with statistical filters and from econometric models, although all of them have converged in recent years



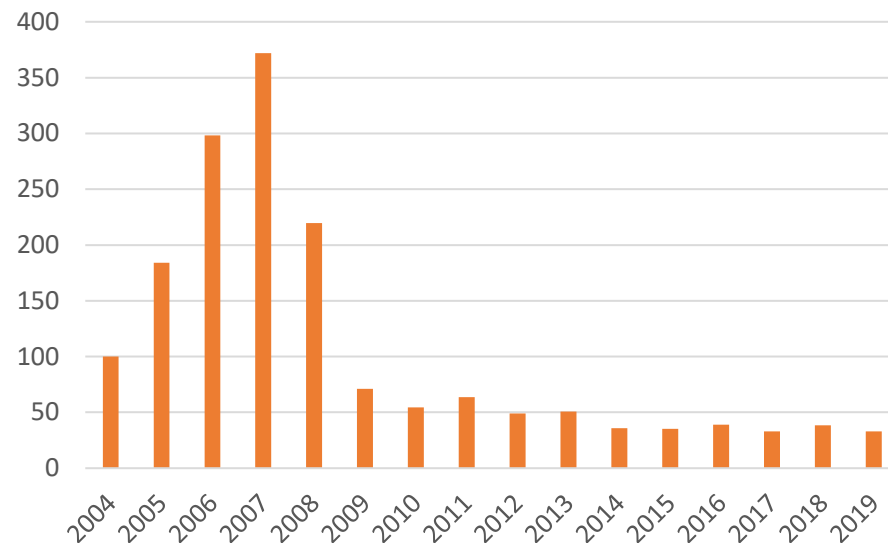
Model based indicators: lending standards, Credit-at-risk,

- Lending standards at the origination have very good predictive properties
  - In particular, LTP and ratios that consider borrowers' income are major determinants of future mortgage defaults
- RRE credit-at-risk index: Represents the risk of new mortgage lending
  - Weights the volume of credit granted in each year and their associated PD
  - Function of credit standards at origination and other controls. Micro data

### Loan-to-price (LTP), new RRE credit

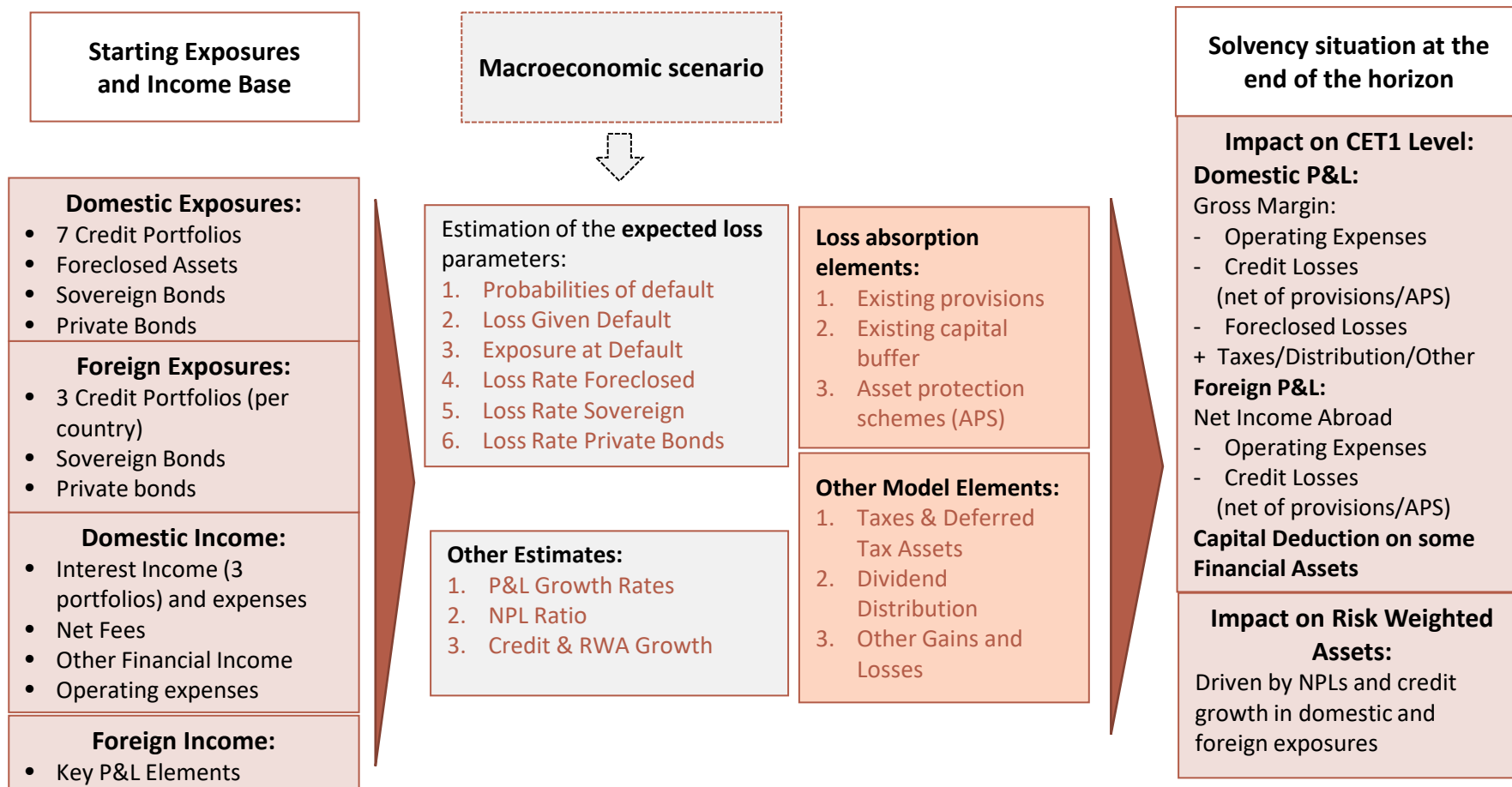


### RRE credit-at-risk index



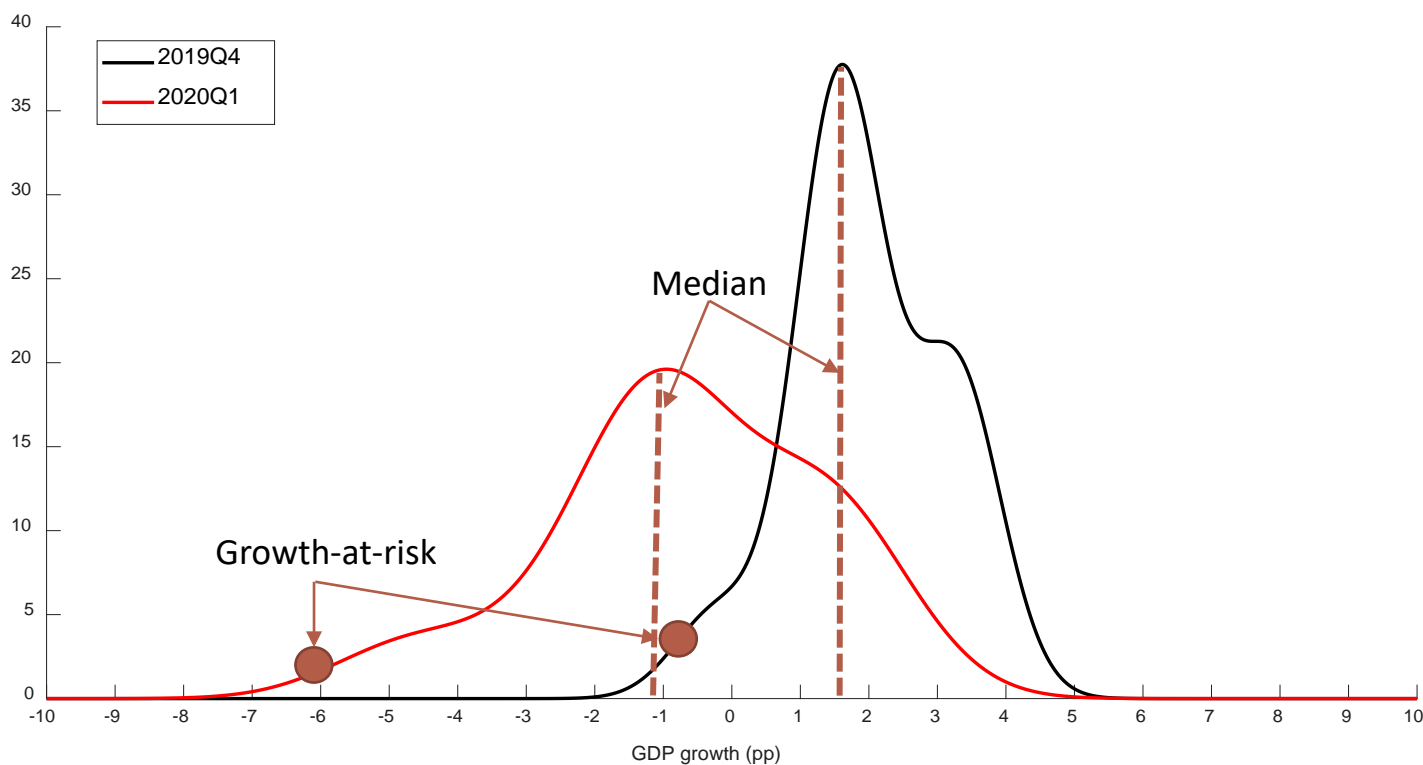


- We have also developed a tool for stress testing
  - The main challenge in this year has been to include the measures adopted by the Government, the ECB and the Supervision authorities



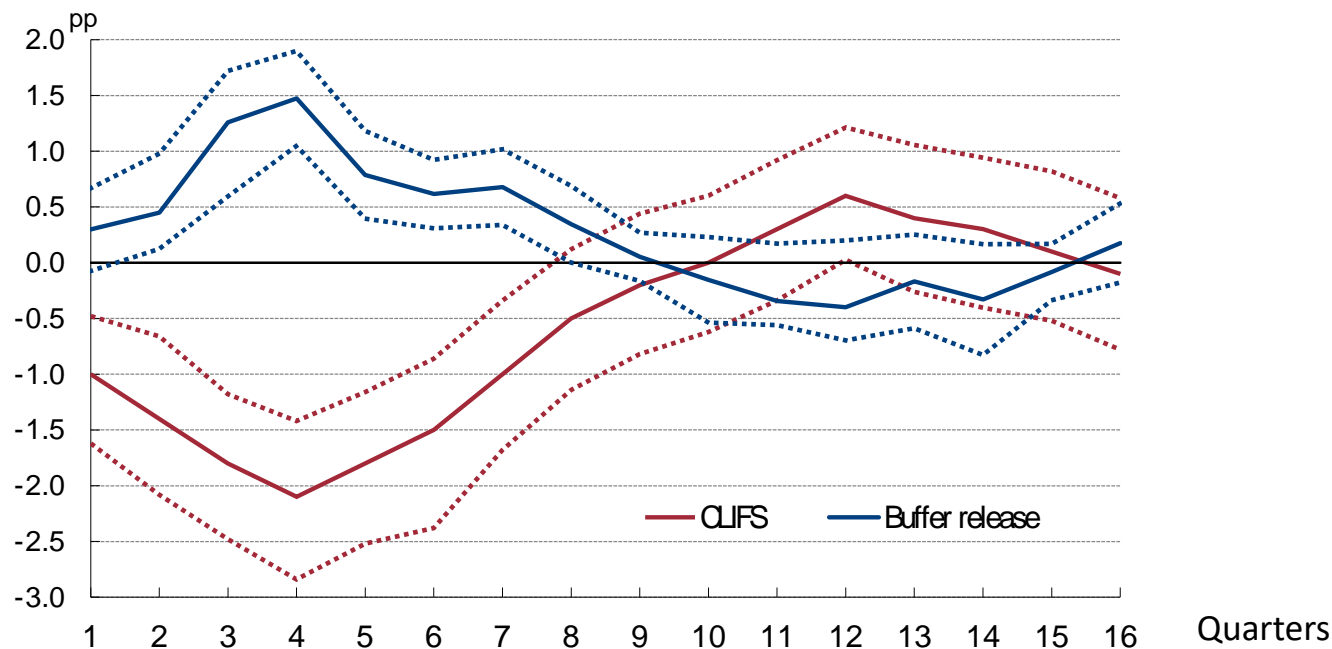
- GaR approach allows to disentangle the impact of a shock on the left tail of the future growth distribution
  - To guarantee robustness it was estimated using information from most of the European countries
  - Explanatory variables include macroprudential tools

SPAIN: 4-quarters ahead GDP growth distribution - 2019Q4 vs 2020Q1



- A potential capital buffer release would positively impact in the left tail of GDP distribution
- Benefits of an hypothetical capital buffer release in Spain would have not compensated the negative impact of higher financial stress in February and March 2020

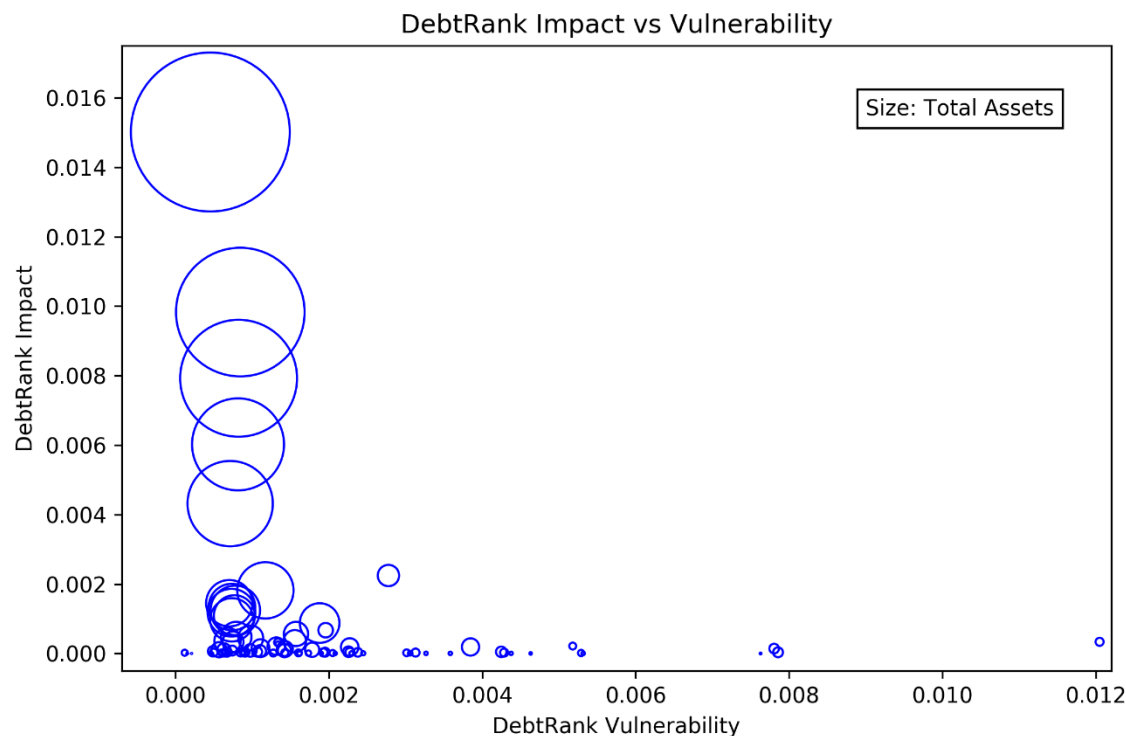
Impact of an increase of CLIFS by 0,2 p and a capital buffer release on *growth-at risk*



- This is an area to be further developed in the future along with upcoming regulatory changes (the new CRR II/CRD V in Europe will address structural systemic risks in a more flexible way)
- Some of the structural risks currently addressed by the application of systemic risk buffers (SyRBs) (only five countries) and/or institution-specific G-SII and O-SII buffers
- **Four types of indicators to activate or release the SyRB**
  1. Indicators of amplification channels: (i) Common exposures, (ii) intra-financial contagion via interconnections, (iii) concentration
  2. Indicators of the importance of the financial sector to the real economy (size of the financial sector)
  3. Indicators of systemic importance of specific institutions (bank-level data)
  4. Structural risk factors that determine the probability and size of shocks to the financial system (country dependent)

Note: Classification based on ESRB(2015) The ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector.

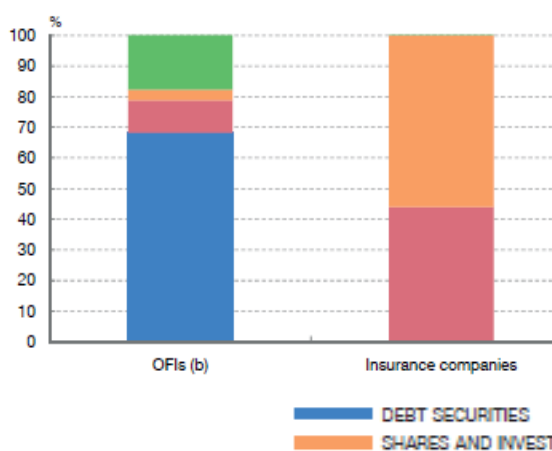
- Network analysis can help understand how shocks propagate through interconnected bank balance sheets and lead to possible amplification of losses
- It can help detect vulnerable banks and also those having a more prominent role in the propagation of shocks



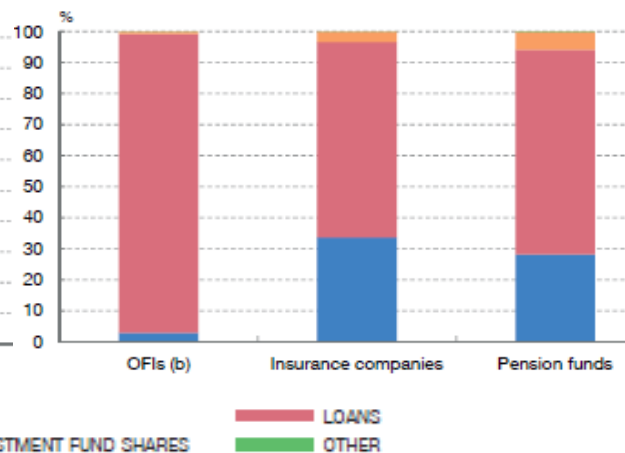
Note: the chart shows banks that could generate larger shocks (high impact, y-axis) are different from those that are more vulnerable (higher vulnerability on the x-axis); this is one illustration of a relatively stable system (based on direct interconnectedness only).

- Regular monitoring of direct and indirect interlinkages in the financial system is carried out using National Financial Accounts data and additional sources that provide granular information (security-by-security) on all financial sectors' asset holdings
- Direct exposures show holdings of assets issued by financial sectors themselves (Charts 1 and 2) , while indirect measures (such as portfolio overlap, Chart 3) comprise the amount of common holdings of instruments issued by both financial and non-financial sectors (calculated at the issuer level)
- Common holdings can act as both shock amplification and mitigating mechanisms, depending on the behaviour of relevant agents during moments of stress

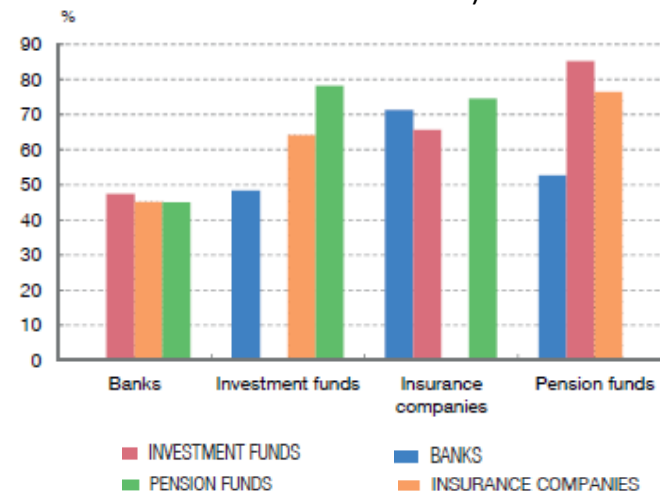
1. Bank assets issued by other financial sectors (a)



2. Bank liabilities acquired by other financial sectors (a)



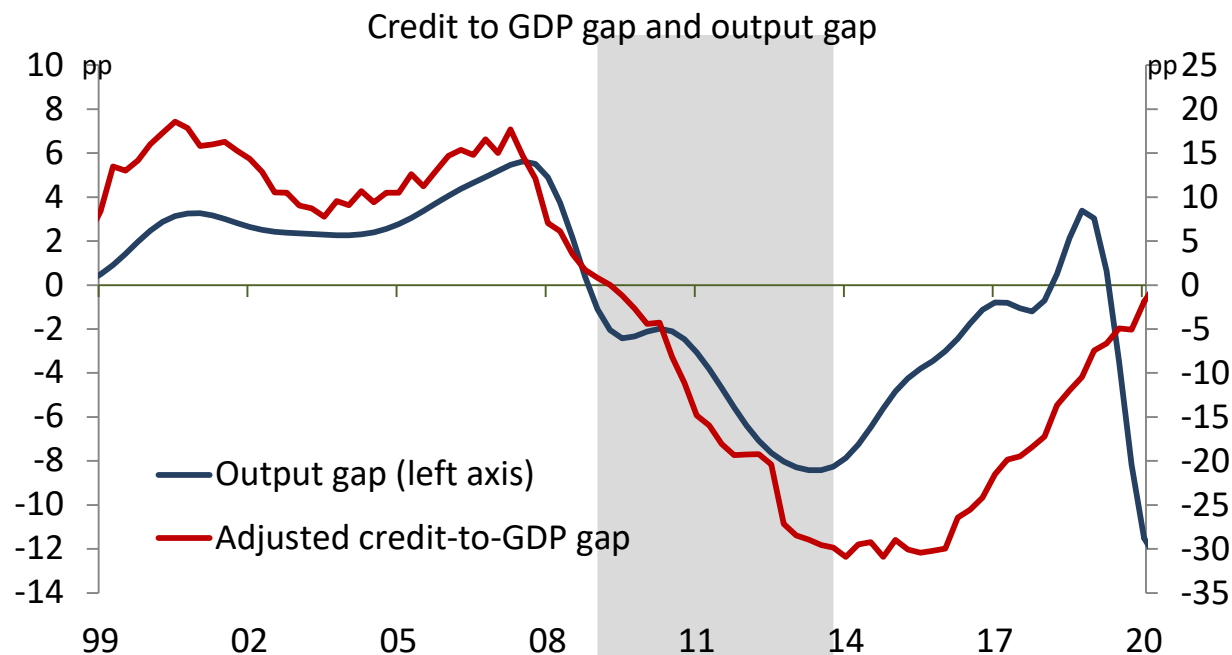
3. Portfolio overlap (% of each sector's total assets)



a) Share of banks' total assets

b) OFI stands for "Other financial intermediaries"

- Most of the existing cyclical indicators were designed to identify endogenously generated imbalances, which explains why the CCyB was not available at the onset of the current crisis
- Alternative indicators, such as the output gap, could improve the CCyB framework to ensure that it is accumulated when economic conditions allow and that it is available in normal times
- Furthermore, a more automatic CCyB framework could provide more transparency, and thus facilitate that banks actually use released buffers



THANK YOU FOR YOUR ATTENTION

