EUROPEAN CENTRAL BANK

EUROSYSTEM

Session 1:

Interest Rate Risk in Banking

Deutsche Bundesbank - De Nederlandsche Bank - Sveriges Riksbank

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The views expressed in this presentation are my own and do not necessarily reflect those of the ECB

Setting the scene

- Sharp increase in official interest rates in 2022-2023
  - Winners and losers
  - Exposure varied across banks, depending on business models and hedging
- March 2023, failures of mid-size US banks
  - Very special business models, extreme exposure to rising rates
  - Assets: largely locked into LT government bonds; low cash buffers
  - Liabilities: mainly corporate customers, well connected, concentrated in one industry, largely uninsured -> ideal setting for a bank run

Setting the scene

- Fundamental question: understanding the effect of changes in interest rates on bank health
  - Assets / liabilities
  - Fixed / variable remuneration
  - Maturity transformation / duration gap
- Level of interest rates and speed of change matter
  - SVB: had locked in relatively low-yielding assets, which lost value rapidly
  - Were not able to adjust through other assets, or by changing liability structure

Paper: ‘Interest Rate Risk in Banking’
by Peter de Marzo, Arvind Krishnamurty, and Stefan Nagel

This paper:

- Considers asset and liabilities sides.
- Bank creates franchise value from
  - Charging premium on loans
  - Paying below market rates for deposits
- Model allows for both fixed and floating components, as well as term deposits.
- Study effects of interest rate risk on franchise values
  - Empirical model using U.S. bank income statements and balance sheet data

Paper: ‘Interest Rate Risk in Banking’ – main findings

- For median bank, bank deposit franchise value declines as interest rates rise (positive duration, albeit small)
    - (Interesting! Counterintuitive? Other papers: sticky deposits imply that it increases)
- Loan franchise: declines with rising interest rates, especially for longer-duration securities
    - (Intuitive: bond portfolios lose value)

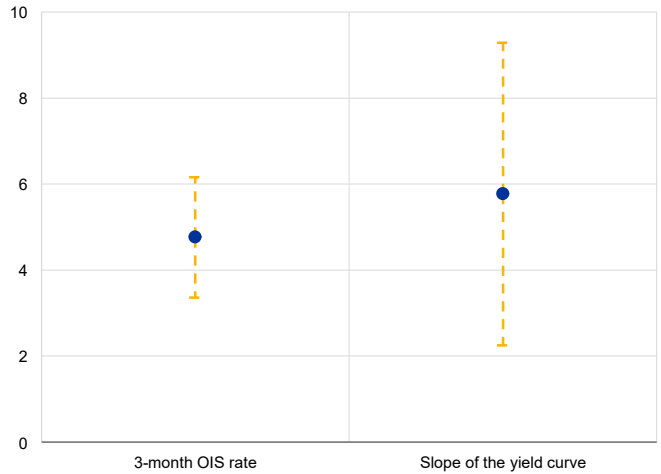
=> very topical analysis. Study bank heterogeneity? Implication for bank role in funding the real economy? Policy implications?

Euro area banks benefitted, on aggregate, from higher interest rates

- Historical data show a positive relationship between interest rates and bank net interest margins
- Since 2021, monetary policy tightening led to increased interest income, driven by floating rate lending

Sensitivity of bank net interest margin to changes in interest rates

Bps per 1 pp change in short term rates and yield curve slope

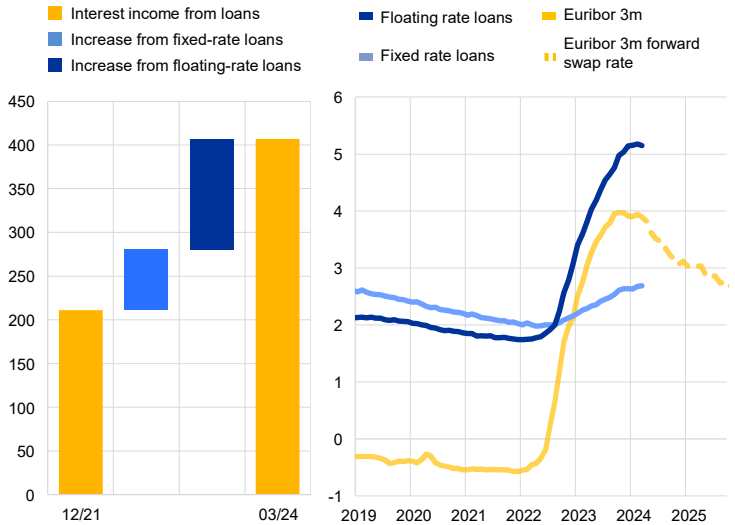


Note: ranges indicate a 90% confidence interval. Based on a panel regression using 2014-2023 data for 122 euro area banks.

Source: Coulier, L., S. Gardó, B. Klaus, F. Lenoci, C. Pancaro, A. Reghezza (2023), "Assessing risks from euro area banks' maturity transformation", ECB, Financial Stability Review.

Aggregate interest income and lending rates

Left panel: interest income, EUR bn;
Right panel: interest rates, percentage



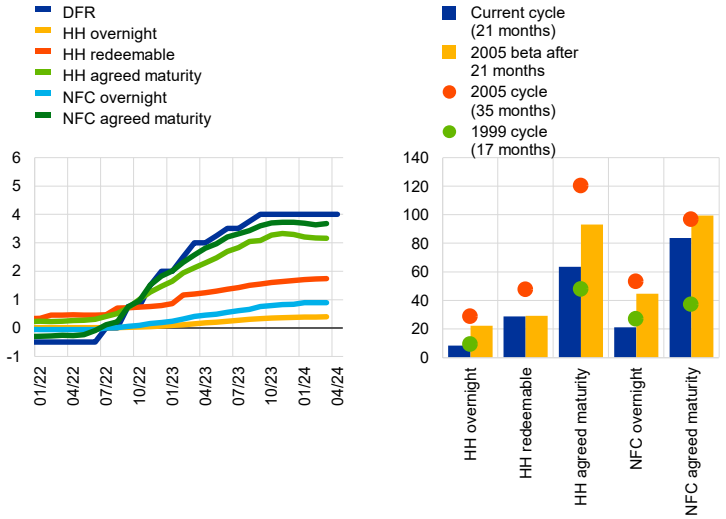
Source: ECB calculations.

Deposit franchise has supported bank profitability

- Deposit repricing has been slow in comparison to past hiking cycles
- Average cost of funding increased, although deposit franchise contributed relatively little to the increase, as migration from overnight to term deposits has been gradual

Deposit interest rates and deposit betas

Left panel: percentages; right panel: deposit rate change as percentage of changes in official interest rates.

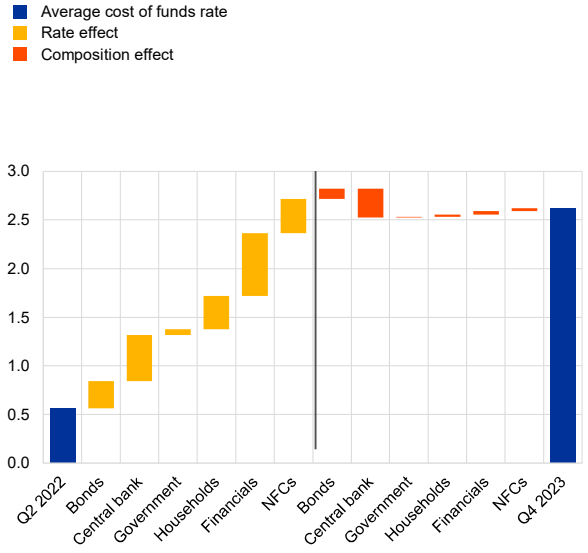


Note: deposit betas capture the percentage pass-through of the increase in the ECB's deposit facility rate (DFR) to new business deposit rates since the start of the respective hiking cycles.

Source: ECB calculations

Average cost of funding changes

(percentage, changes in percentage points)



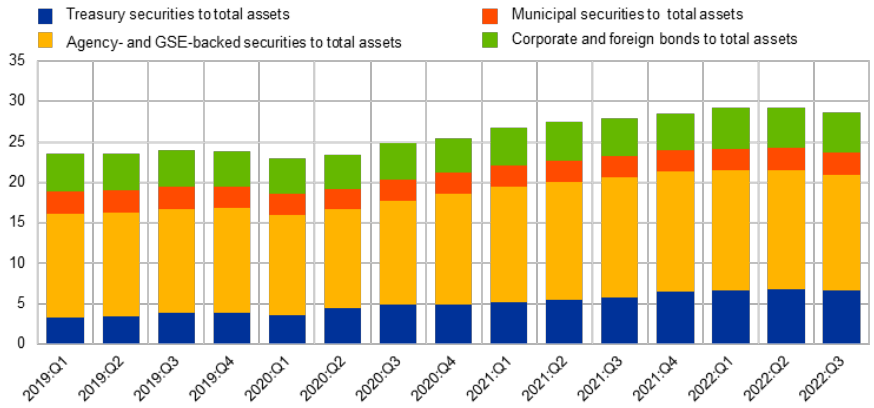
Source: ECB calculations.

Exposure to long-term fixed-rate debt securities is manageable

- US banks expanded their balance sheets, purchasing Treasuries and agency debt since 2020
- Euro area banks' balance sheets grew due to adding central bank reserves, with securities holdings playing a less prominent role in meeting liquidity requirements

US banks' securities holdings

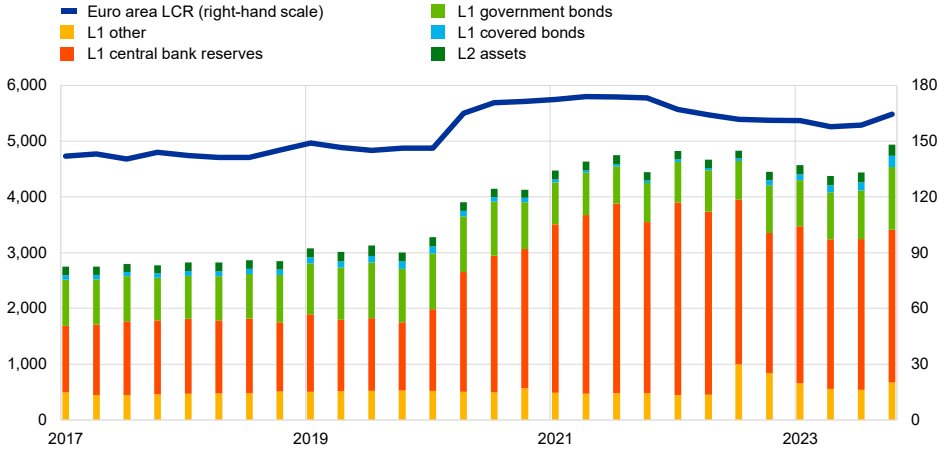
Percentage of total assets



Source: Federal Reserve H.8, ECB calculations.

Euro area banks' liquidity coverage

(left-hand scale: EUR bn; right-hand scale: percentages)

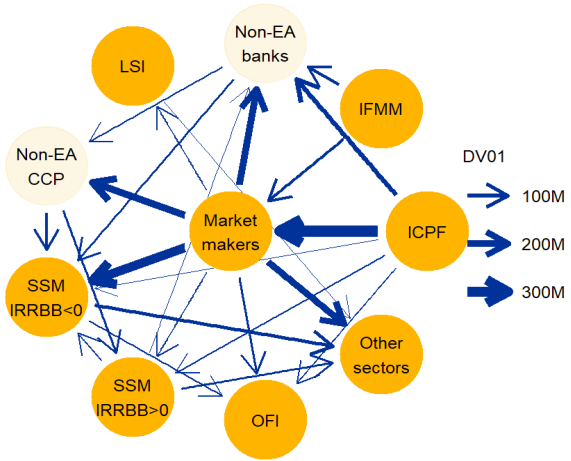


Source: ECB calculations.

Euro area banks actively manage interest rate risk through hedging

- US literature finds very limited evidence of interest rate risk hedging through derivatives (e.g. Drechsler, Savov and Schnabl, 2021)
- Euro area banks transfer duration risk to insurers and pension funds via derivatives, closing a substantial part of duration gaps

Wealth transfers across euro area sectors through interest rate swaps, following an increase in interest rates

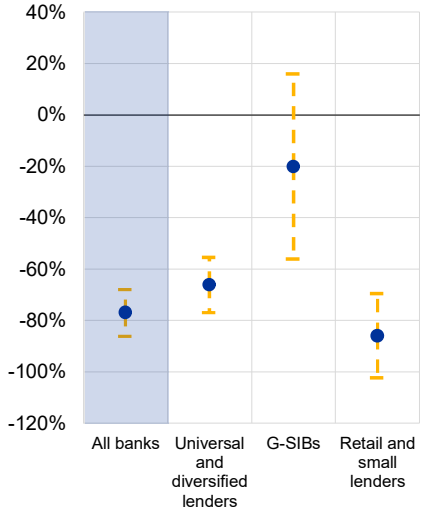


Notes: DV01 is the derivative of the price of an interest rate swap with respect to a 100 basis point parallel shift of the underlying floating interest rate curve. Direction and thickness of arrows represents the direction and magnitude of wealth transfer.

Source: Grassi, A., T. Kockerols, F. Lenoci, C. Pancaro, "Euro area interest rate swaps market and risk-sharing across sectors", ECB Financial Stability Review, November 2022.

Euro area banks' duration gap hedge ratio

Percentage of balance sheet duration gap offset with derivatives



Note: Hedge ratio defined as a regression coefficient from a panel model explaining a bank's duration gap of derivative position with its duration gap from the balance sheet positions and bank-level controls. Source: ECB calculations based on EMIR and STE data.

‘Are low interest rates fighting back? IRRBB and bank lending in a rising interest rate environment’*, by Lara Coulier (U Ghent), Cosimo Pancaro (ECB) and Alessio Reghezza (ECB, BIS)

- Paper studies build-up and materialisation of banks’ interest rate risk
- During low-for-long: euro area banks increased the duration of their asset side (search for yield)
- Rising rates:
  - Large shift from sticky overnight towards more rate-sensitive term deposits => Reduced duration of liabilities => increase in the duration gap, causing a materialisation of interest rate risk
- Transmission of monetary policy affected?
  - Banks with higher exposure to interest rate risk (larger duration gap) reduced lending more than peers

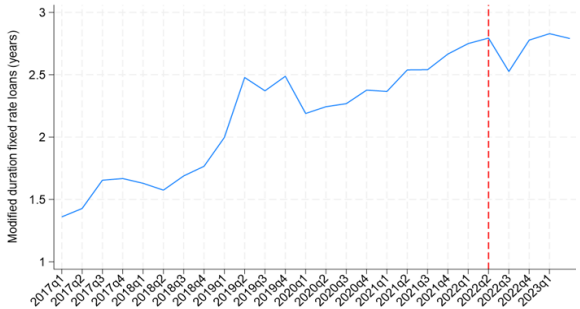
* Forthcoming in ECB WP series

Banks increased duration risk on the asset side but the large inflow of stable overnight deposits kept IRRBB at bay in the low interest rate environment

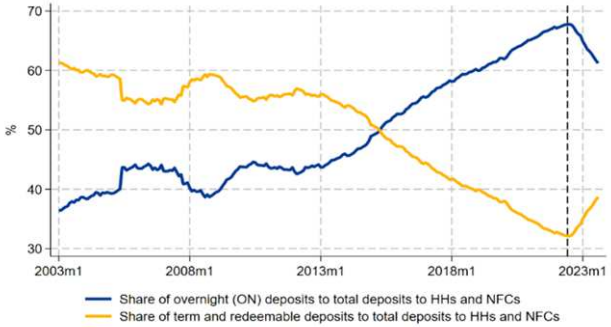
- Banks granted more fixed rate loans with longer maturity to compensate for compressed margins in the “low-for-long” interest rate environment (left), increasing duration risk (middle)
- However, the large inflow of stable overnight deposits lessened the materialisation of IRRBB, as banks in their modelling assumptions assumed these deposits to have longer duration than term deposits (right)

Share of loans with a larger maturity
Jan 2003 – July 2023, percentages

Duration of fixed rate loans
2017Q1-2023Q2, years



Share of deposit types in total deposits to HHs and NFCs
Jan 2003 – July 2023, percentages



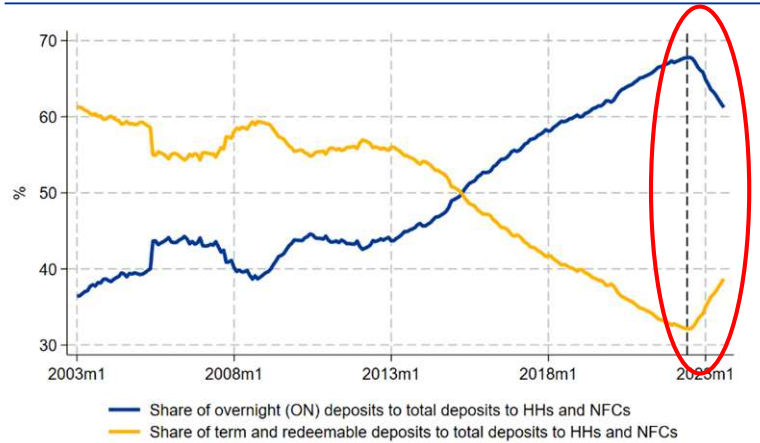
Source: BSI and STE data. Middle chart is based on a sample of 74 significant institutions

The rapid shift from overnight to term deposits in a higher interest rate environment triggered an increase in banks' duration gap

- The large shift from overnight to term (and redeemable) deposits since the hiking cycle (left) reduced the duration of banks' liability-side, increasing banks' duration gap (right)
- Greater duration gap entails closer supervisory scrutiny, potential capital surcharges and lower expected profitability, prompting banks to react quickly on the asset side

Share of deposit types in total deposits to HHs and NFCs

Jan 2003 – July 2023, percentages



Duration gap of euro area banks

Scaled by total assets, 2021Q1-2023Q2, percentages

Source: BSI and STE data. Right chart is based on a sample of 73 significant institutions