



OESTERREICHISCHE NATIONALBANK
EUROSYSTEM

Discussion: „Banks in an environment of higher interest rates” by Antonio Sánchez Serrano

Joint Latvijas Banka / ECB / ESRB workshop

“Financial stability analysis of large changes in interest rates”

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Research Question and Method

How increases of interest rates affect banks'

1. profitability via

1.1. net interest income

1.2 fair value of financial assets and liabilities

1.3 credit losses.

2. market value of equity.

1. Theoretical Part

2. Empirical Part

Back (almost) a decade...

End 2016: 4th Research Workshop of the MPC Task Force on Banking Analysis for Monetary Policy

| | Altavilla et al (2017) | Kerbl & Sigmund (2016) |
|------------------|--|---|
| Focus | Equity value of banks | Net interest income |
| Effect of rate ↓ | ↑ | ↓ (-16bps per 100bps) |
| Method | Event study around interest rate decreases | Panel econometrics |
| Reference | Altavilla C., Boucinha M. and Peydro J.L. (2017) Monetary policy and bank profitability in a low interest rate environment, ECB Working Paper No 2105. | Kerbl S. and Sigmund M. (2016). From low to negative rates: an asymmetric dilemma, Oesterreichische Nationalbank, Financial Stability Report, Vol. 32, pp. 120–137. |

Possible explanations of different conclusion:

| | | |
|---------------------|---|---|
| Sample: | Large banks (publicly traded) | all (Austrian) banks incl. small banks |
| Metrics of interest | Equity value (proxy for comprehensive profits incl. credit losses) | Net interest income |

→ Sánchez Serrano paper too, finds $r \uparrow \rightarrow$ NII and profits \uparrow , but also \downarrow on equity value.

→ Both explanation cannot solve the puzzle.

Part 1: A simplified representation of a bank

Fixed vs
Variable
(new)

S1,S2,S3

| Assets | Liabilities |
|---|------------------------------------|
| Loans (L) = | Equity (E) = |
| Performing loans (PL) + | Capital (C) + |
| Non-performing loans (NPL) | Loan Loss Provisions (LLP) |
| Equities (EQ) | Wholesale funding (WF) |
| Debt securities (DS) = | Deposits (D) = |
| Debt securities held-for-trading (DST) + | Insured deposits (ID) + |
| Available-for-sale debt securities (DSA) + | Uninsured deposits (UD) |
| Debt securities held-to-maturity (DSM) | Other liabilities (OL) |
| Liquid assets (LA) | |
| Other assets (OA) | |

Term vs.
Overnight
Government
Interbank & CB
NBFI

→ Production of formulas expressing P&L items.

→ But we need to apply healthy scepticism towards equations (see following slides).

Part 1: Issues in the analytical framework (1)

Accounting for loan/deposit growth:

e.g. wholesale growth, eq (4):

$$InterestExpense (wholesale) = i'''_t WF_t = \overbrace{\left(1 - \frac{1}{mw_t}\right) (i'''_t WF_t)}^{\text{Old wholesale}} + \underbrace{\frac{1}{mw_t} [i'''_t WF_t (1 + w_t)]}_{\text{New wholesale}} \quad (4)$$

But equation only correct *if* $w_t = 0$ (zero growth).

1. Correctly accounting for (loan/deposit/etc) growth. If $WF_t = w_t WF_{t-1}$, then

$$NewWholesale = \frac{1}{m_t} WF_{t-1} + w_t * WF_{t-1}$$

(also: different interest rates on new and old wholesale, so two distinct i'''_t)

2. Pass through modelled according to parameter φ_i

e.g. interest rate pass through to variable loans

$$\hat{i}_t^{td} = \varphi_1 * r_t$$

If $\varphi_i < 1$ strange as banks charge lower rates than official rate

If $\varphi_i > 1$ strange as pass-through more than 100%

Part 1: Issues in the analytical framework (2)

3. Interest Gap

$$IG_t = \frac{\delta NII_t}{\delta r_t}$$

Eq(7)

Change in the Interest Gap, ΔIG_t and the derivative of this

Eq(11)

$$\frac{\delta \Delta IG_t}{\delta r_t} = \delta \left(\frac{\delta NII_t}{\delta r_t} - \frac{\delta NII_{t-1}}{\delta r_{t-1}} \right) / \delta r_t$$

The sensitivity of the change in the sensitivity of NII to r_t with regard to r_t

4. On credit losses:

$$\Delta L_t^1 + \Delta L_t^2 + \Delta L_t^3 = 0$$

(bottom, page 10)

$$\Delta L_t^1 = L_t(1 + c_t) - \Delta L_t^2 - \Delta L_t^3$$

Eq(20)

Part 2: Empirics

Data to fill formulas with values:

- EBA Transparency Exercise (Data 2022Q3 - 2023Q3)
 - Size of balance sheet items (bank-specific)
 - Coverage ratios (whole sample)
 - Growth rates (whole sample)
 - *Why for the whole sample and not bank specific?*
- ECB Interest Rate Statistics for **pass-through** of interest rates to loans, overnight deposits and term deposits, and **share of variable loans at country level**
 - *Unfortunately country- and not bank-level due to availability(?)*.
- Assumptions for:
 - maturities,
 - share of variable loans that are repriced each quarter and
 - migration between IFRS stages and corresponding lag in credit losses

Part 2: Results (1)

NII



→ U-shaped: at the beginning no repricing.

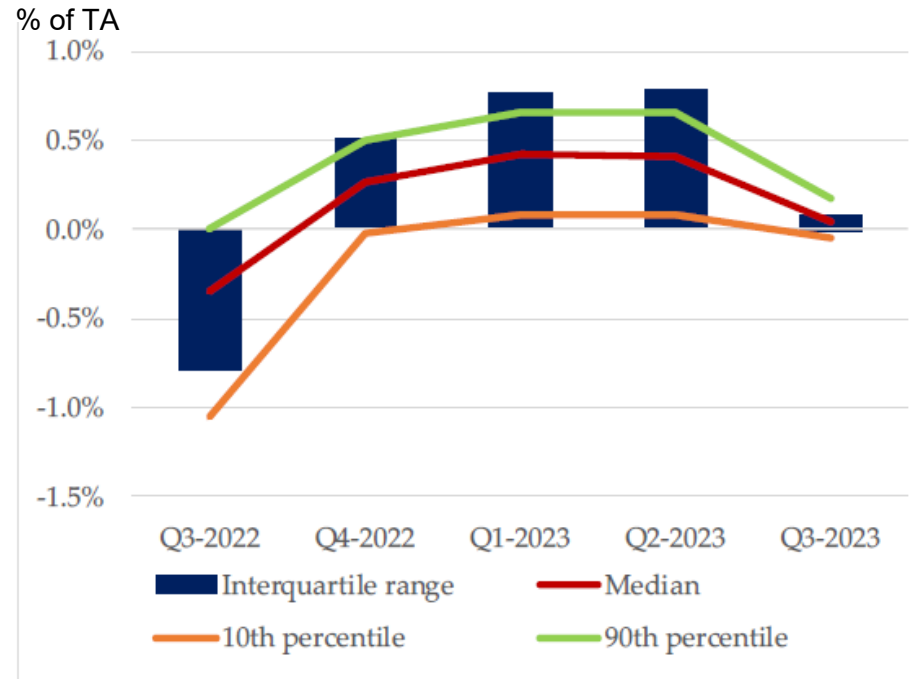
Credit Losses



→ Lag, but assumption- not observation-driven

Part 2: Results (2)

Total Profits:



Market Value of Equity:

Using EBA quantitative impact study on interest rate risk in the banking book, it is possible to compute the duration gap.

“The positive impact of higher interest rates on bank profitability co-exists with an expected negative impact on the market value of equity.” (99 out of 103)

“75% of banks show higher profits and lower market value of equity”

1. Deep Dive into loss-making banks.
2. Comparison with realized values. Important as several findings are assumptions-driven.

Conclusions & a Conundrum

Coming back to Altavilla et al (2017) vs Kerbl & Sigmund (2016):

“To sum up, our empirical analysis finds that EU banks (i) tend to have benefitted substantially from higher interest rates in terms of profitability, and (ii) have seen a decline in the market value of their equity. “

“75% of banks show higher profits and lower market value of equity”

→ Isn't this a conundrum that needs explaining?

$$marketvalue_t = \frac{\mathbb{E}(Profits_{t+1})}{(1 + r_{t,1})^1} + \frac{\mathbb{E}(Profits_{t+2})}{(1 + r_{t,2})^2} + \dots + \frac{\mathbb{E}(Profits_{t+n})}{(1 + r_{t,n})^n}$$

Possible explanations:

1. Expectations are wrong. → Free lunch. Unlikely.
2. Increase in rates has larger effect on discount factors than on profits. → opportunity costs.
3. Incorrect result that if rates ↑ → Profits_t ↑ (no, verified!) or that if rates ↑ marketvalue ↓ ?
4. Longer term profits are impacted negatively, only short term profits are impacted positively?

Danke für Ihre Aufmerksamkeit

Thank you for your attention

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