McKinsey & Company

# Dynamic Deposit betas in ALM

Dr. Andreas Bohn

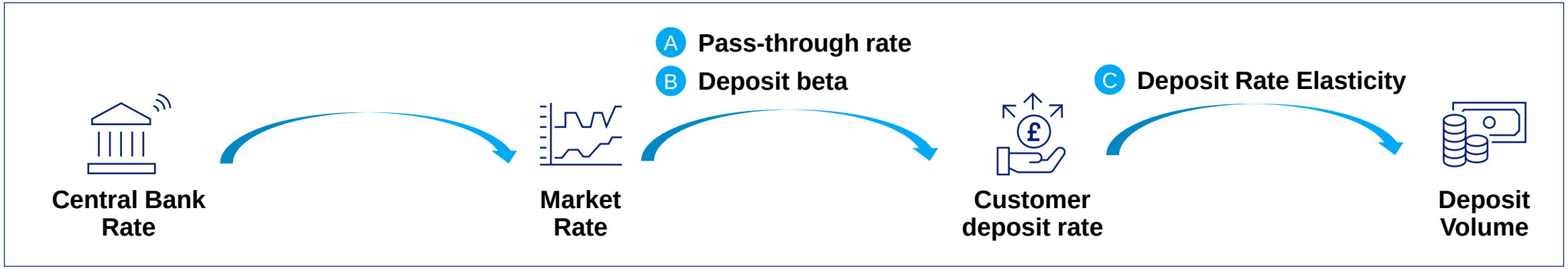
26 June 2024

ALMA
ASSET & LIABILITY MANAGEMENT ASSOCIATION

CONFIDENTIAL AND PROPRIETARY | © 2024 McKinsey & Company.
This material is intended solely for your internal use and any use of this material without specific permission of McKinsey & Company is strictly prohibited. All rights reserved.

# Introduction: Pass-through-rate, Deposit beta and deposit rate elasticity – key parameters for ALM steering are interdependent

Pass-through-rate, Deposit beta

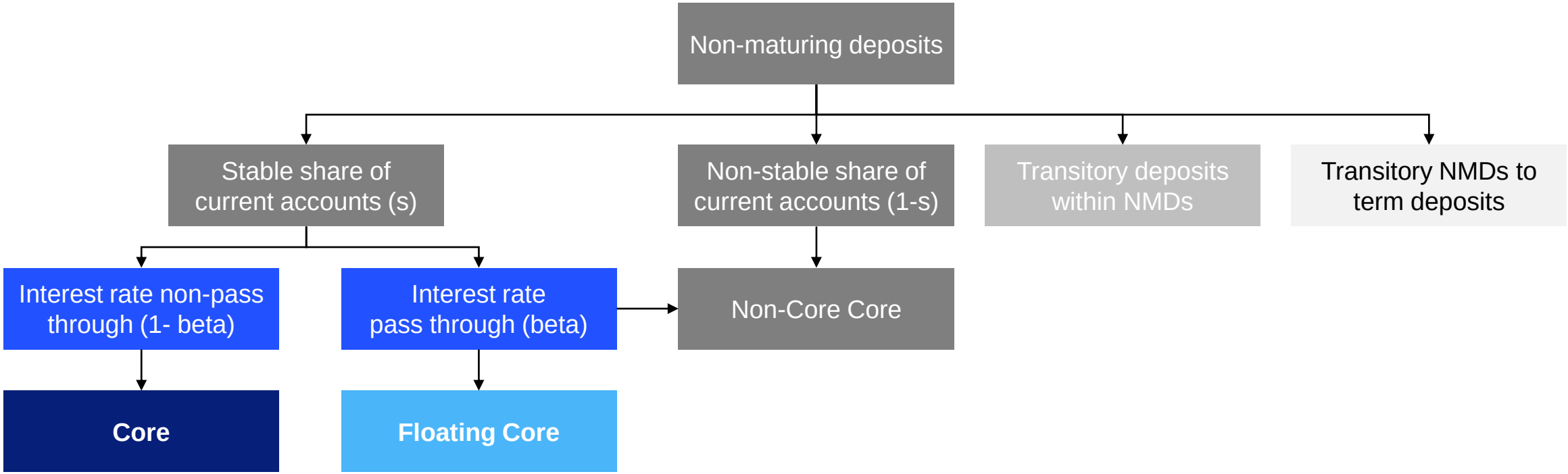



| Metric | Description | Formula |
|---|---|---|
| A **Pass-through rate** | • Broader expression predominantly referring ( macro) change in customer rate due to changes in costs<br>• In the context of deposits often used in the context of the overall industry and over a longer time horizons<br>• Also used in EBA guideline on IRRBB | $\frac{\text{Change in deposit interest rate}}{\text{Change in market interest rate}}$ |
| B **Deposit beta** | • Measure the sensitivity of a bank's deposit cost to changes in the short-term interest rate.<br>• Often used by analysts and practitioners in the context of a single bank<br>• Recently also used by Central Banks and analysts in the context of the industry | |
| C **Deposit Rate Elasticity** | • Percentage change in deposit quantity relative to percentage changes in the deposit interest rate<br>• Not explicitly referred to in IRRBB regulations<br>• Often used for pricing optimization on the business side | $\frac{\%\ \text{Change in Quantity of deposits}}{\%\ \text{Change in deposit interest rate}}$ |

Source: McKinsey & Co.

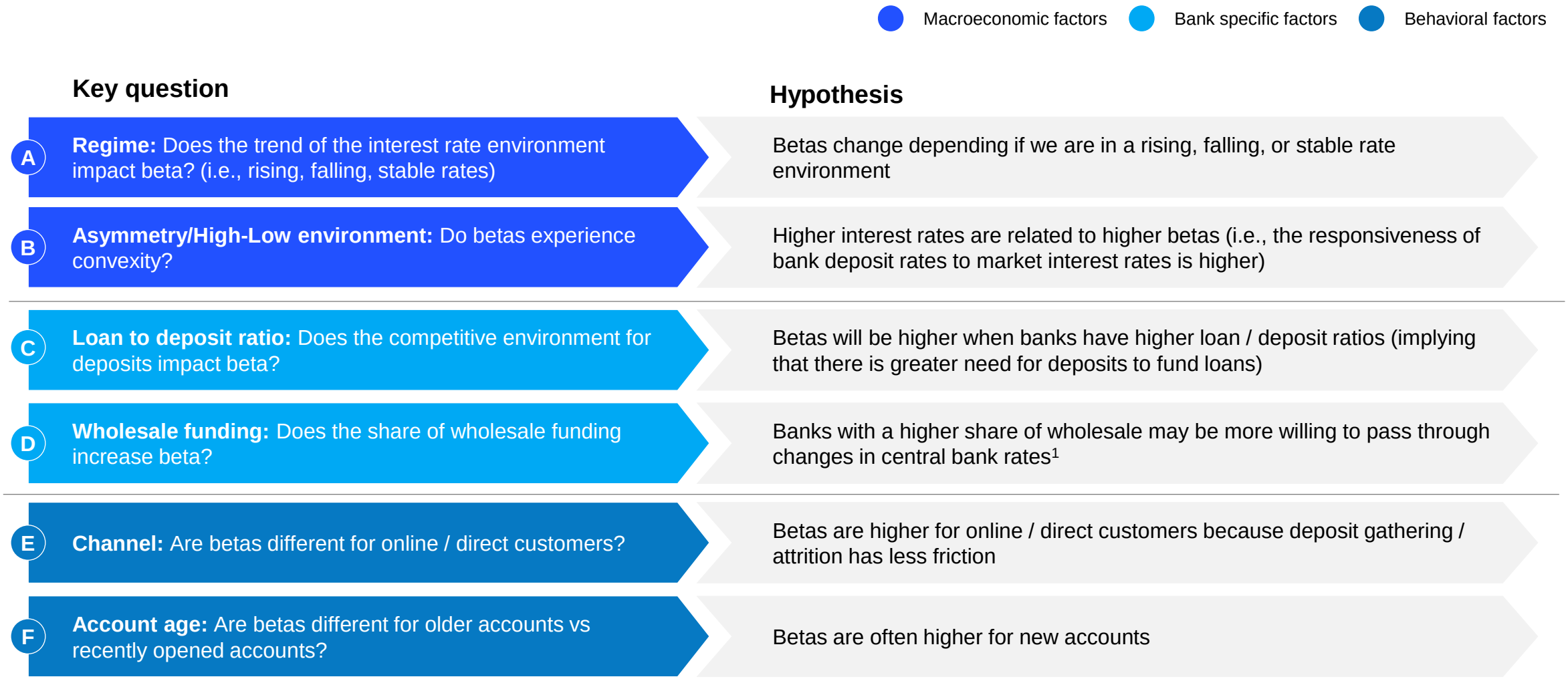
# Deposit betas are pivotal for IRRBB management

- Suggested framework in 2015 BIS draft
- Additions in 2022 EBA IRRBB guideline
- Core focus of IRRBB management
- Pass-through-rate / Deposit beta
- Additional considerations from a funding perspective
- Not recognizable as NMDs for modelling purposes for delta EVE and delta NII



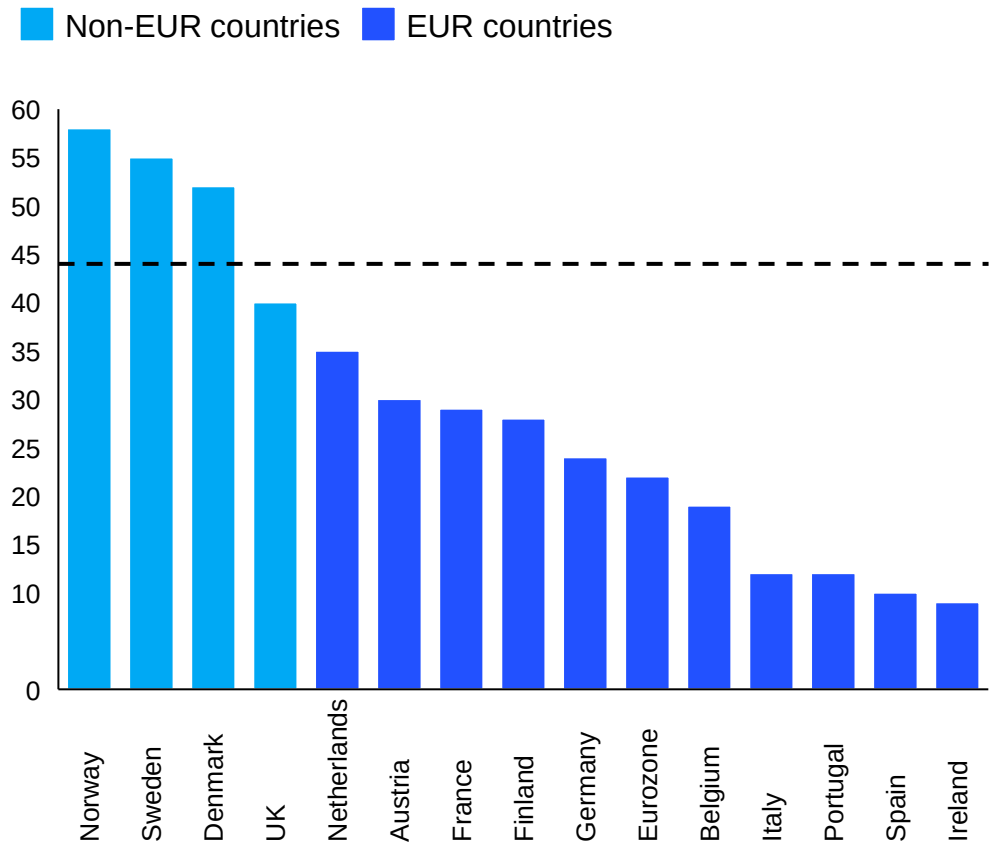

Source: BCBS, Interest Rate Risk in the Banking Book, 2015 and 2016, and McKinsey & Co.

# Typically, macroeconomic, bank specific and client behavioral factors need to be analyzed




1. See also Milan Fičura, Jiří Witzany: Determinants of Non-Maturing-Deposit Pass-through rates in Eurozone Countries

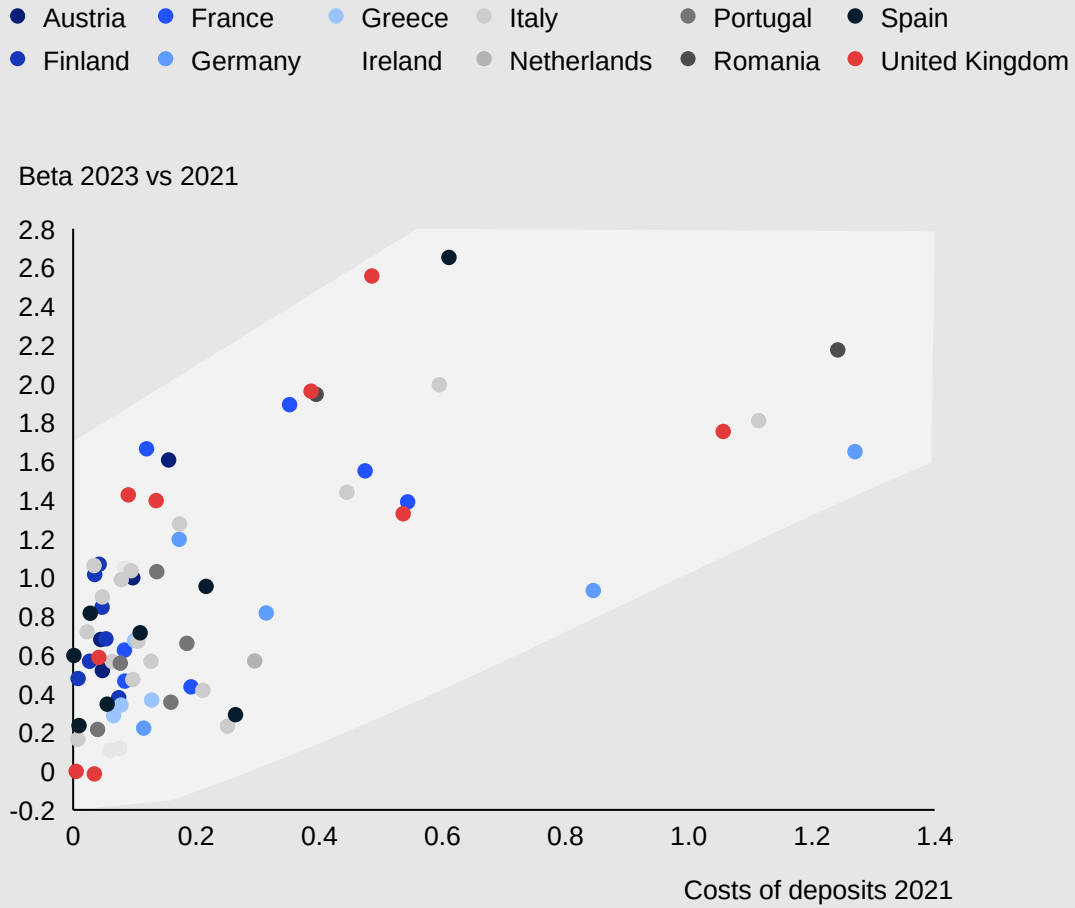
# Deposit betas vary widely across Europe




Source: CapitalIQ, McKinsey & Co.

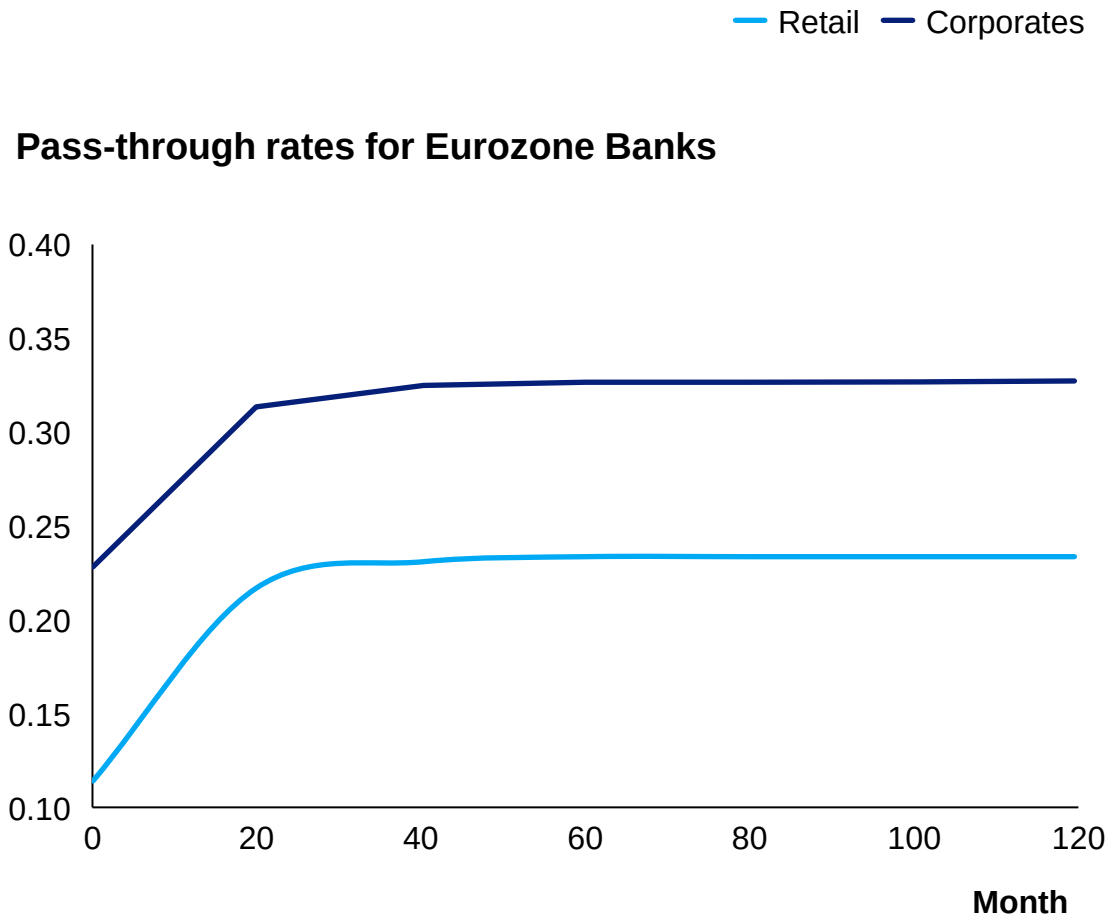
# Lower initial deposits costs go along with lower Deposit beta

R-Squared ~ 0.63



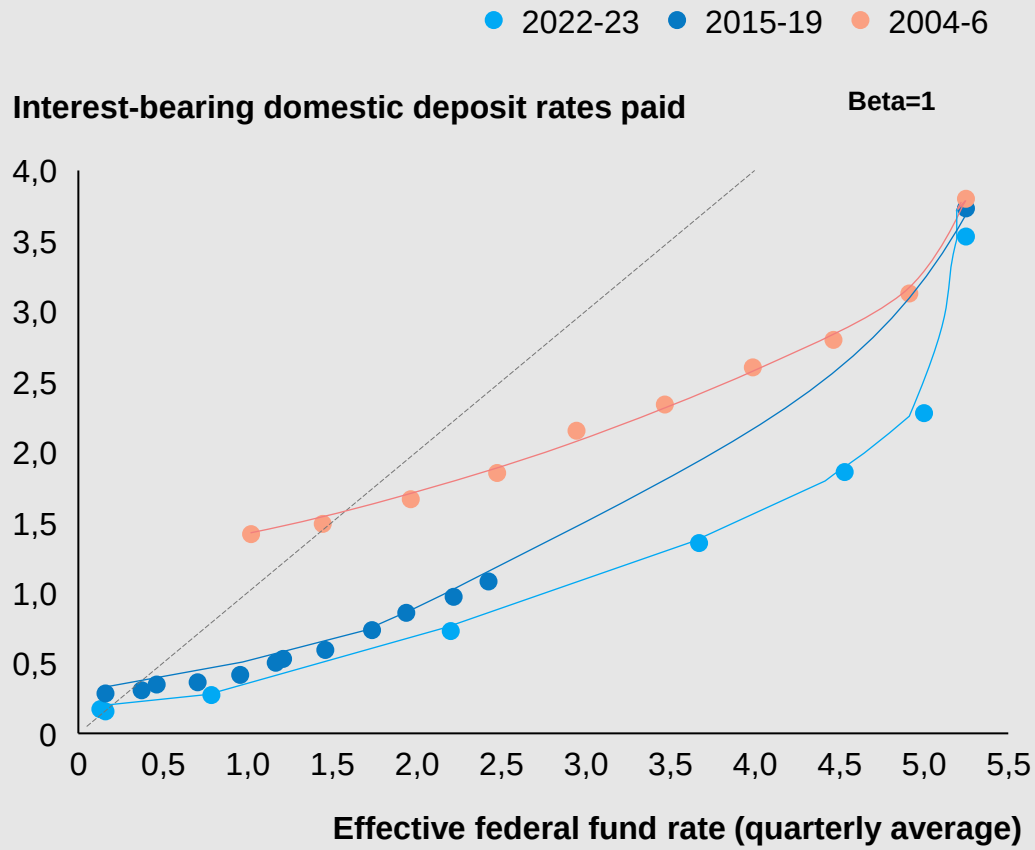
# Time dependency: Full deposit betas phases in over time

## Pass-through rates for Eurozone Banks




Source: Milan Fičura, Jiří Witzany: Determinants of Non-Maturing-Deposit Pass-through rates in Eurozone Countries

# Convexity: U.S. deposit beta tend to increase as rates rise



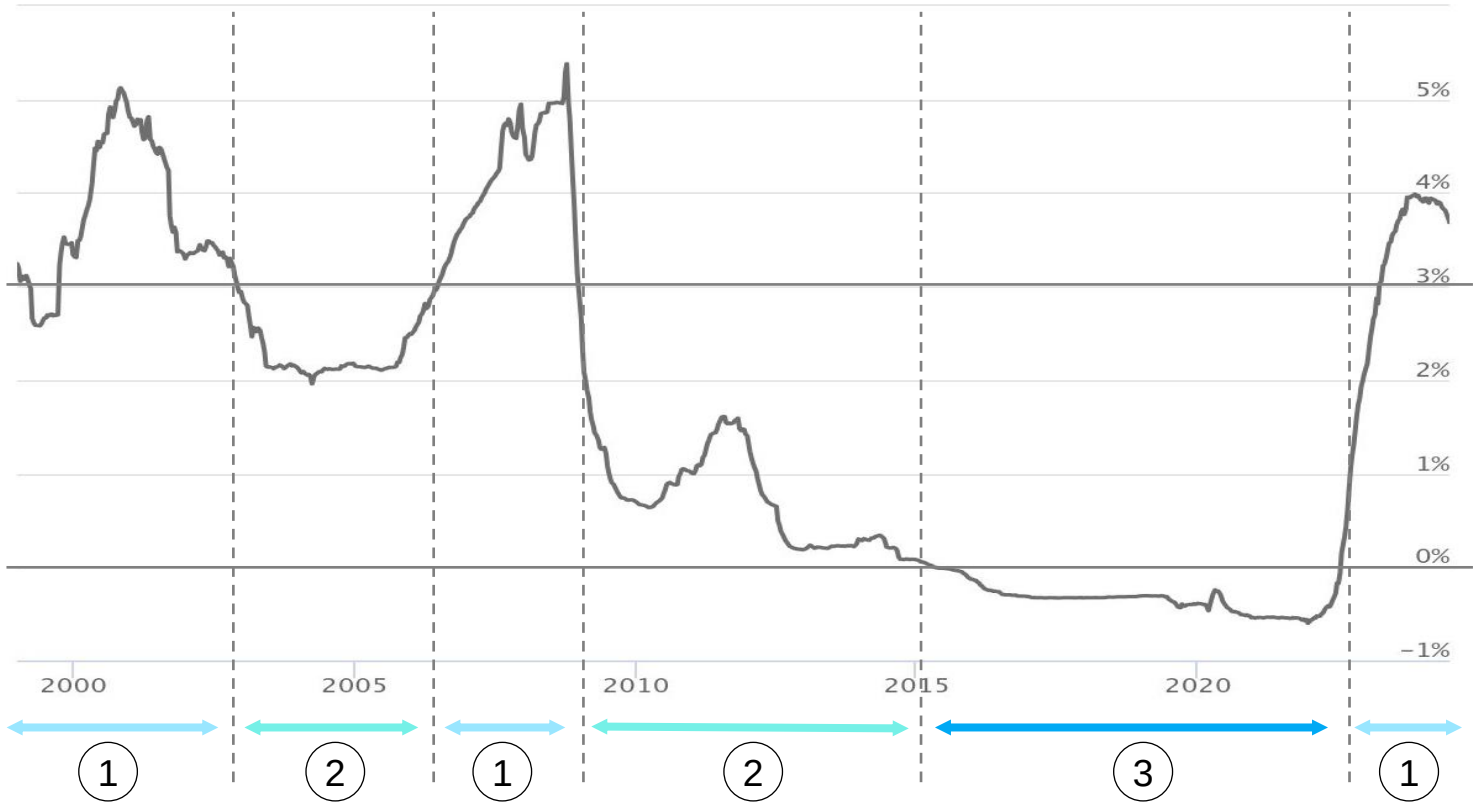

Source: Emily Greenwald, Sam Schulhofer-Wohl and Joshua Younger: Deposit Convexity, Monetary Policy, and Financial Stability, Federal Reserve Bank of Dallas, 2023

# Deposit betas vary based on underlying interest rate regime

Estimation of **different Deposit betas based on three interest rate regimes** (high, medium, negative market interest rate) by regressing the customer interest rate on the market interest rate (as well as potential additional factors). Alternative: two interest rate regimes for rising/falling interest rates

## Development of the 3m Euribor

in %, 1999 to 2024




Source: www.euribor-rates.eu, McKinsey & Co.

### Definition of interest rate regime

| Regime | Description | Range |
|---|---|---|
| 1 | **High** | 3% and above |
| 2 | **Medium** | 0% to 3% |
| 3 | **Zero and below** | 0% and below |

# To determine Deposit betas a regime dependent regression- based approach based on the market deposit rate can be applied

To determine the Pass-through rate for **hedging strategies** and to understand the impact of macro factors on deposit rates and Deposit betas, two possible approaches are typically applied:

| Approach | Description | Mathematical reflection | Purpose/Idea |
|---|---|---|---|
| 1 **Traditional** | A univariate interest rate regime driven regression of the deposit rate on market rates | $\Delta\ \boldsymbol{Deposit\ rate}\ =$ $\boldsymbol{Deposit\ Beta} * \Delta \boldsymbol{Market\ Rate}$ | **Express the sole impact** of any changes in the market rate on the client rate |
| 2 **Extended** | A multivariate regression of the deposit rate on the market rate and additional macroeconomic factors | $\Delta\ \boldsymbol{Deposit\ rate}\ =$ $\boldsymbol{Deposit\ Beta} * \Delta \boldsymbol{Market\ Rate}$ $+\boldsymbol{C1} * \boldsymbol{Macroeconomic\ Factors}$ | **A comprehensive view of the drivers** behind the change of deposit rates<br>**The pure impact** of the market rates on the client rates<br>**A higher ability** to **forecast** the deposit rate |

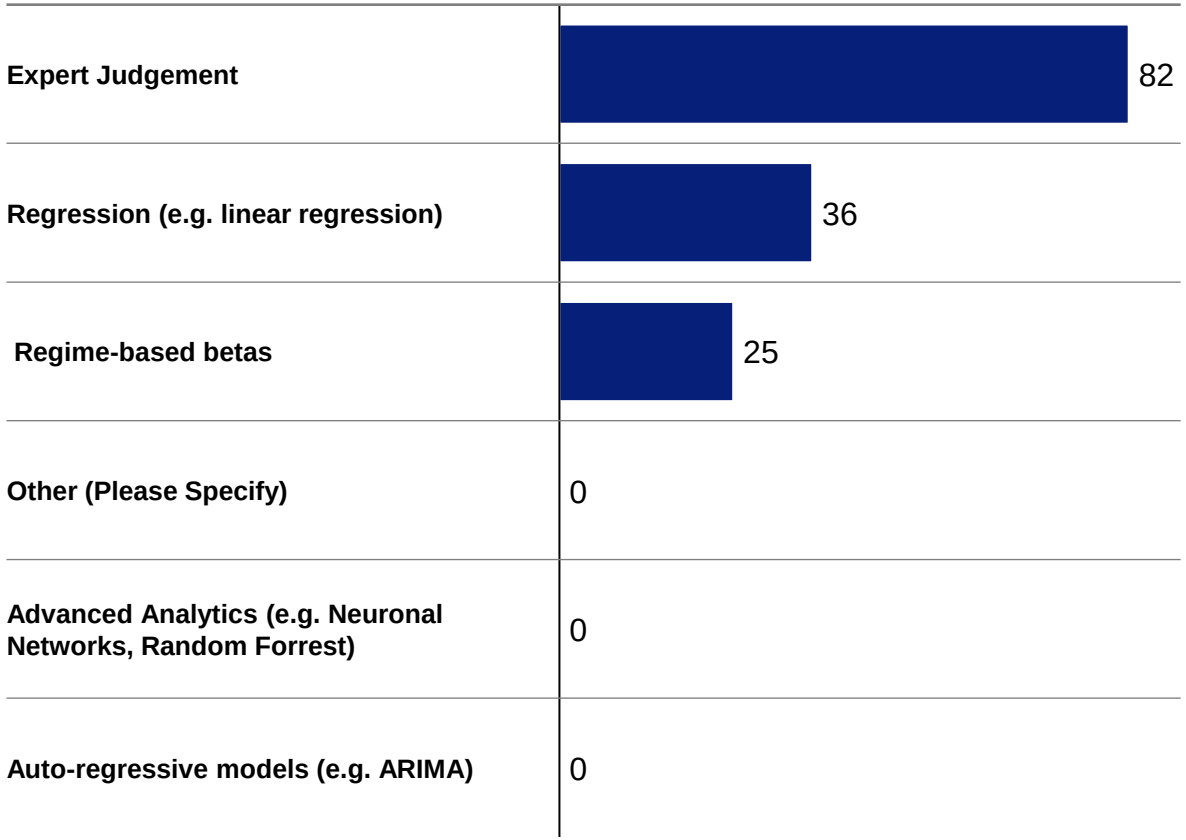
**For each interest rate regime, a separate regression is being estimated**

Source: McKinsey & Co.

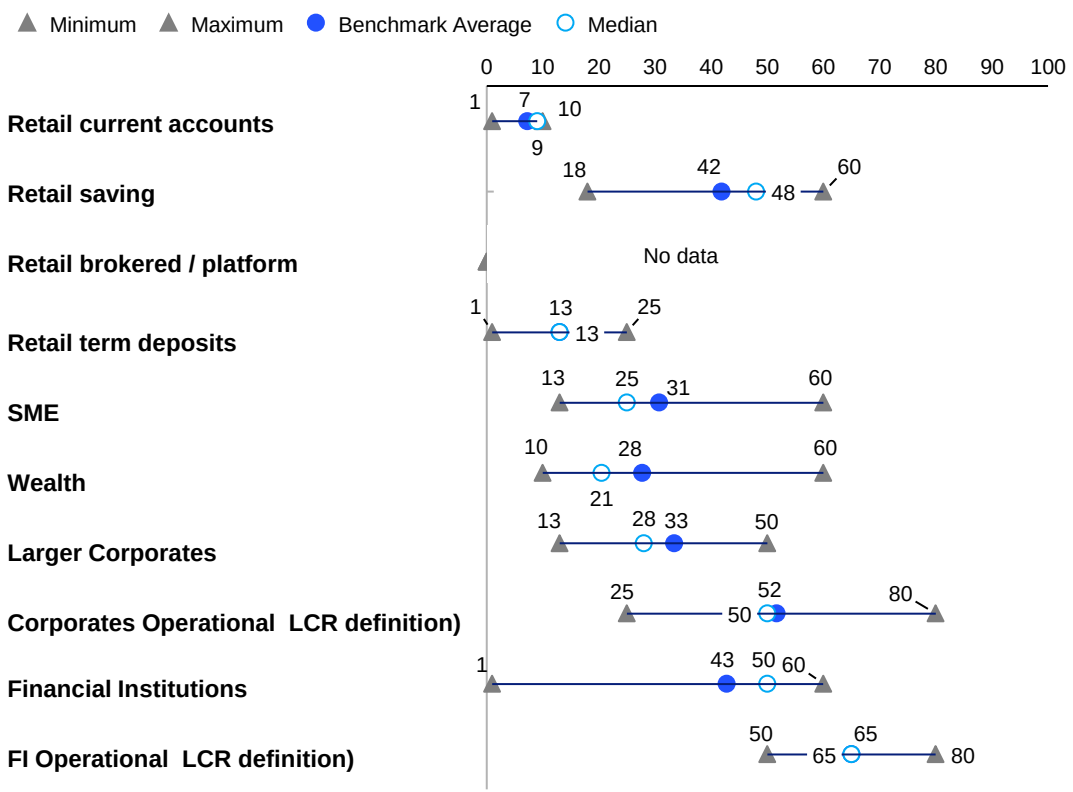
# For ALM, banks often apply expert judgement for determination of Deposit betas – derived parameters vary by client and products

Results from McKinsey Treasury Survey

## How do you model rate elasticity (Deposit beta/ pass through rate)?



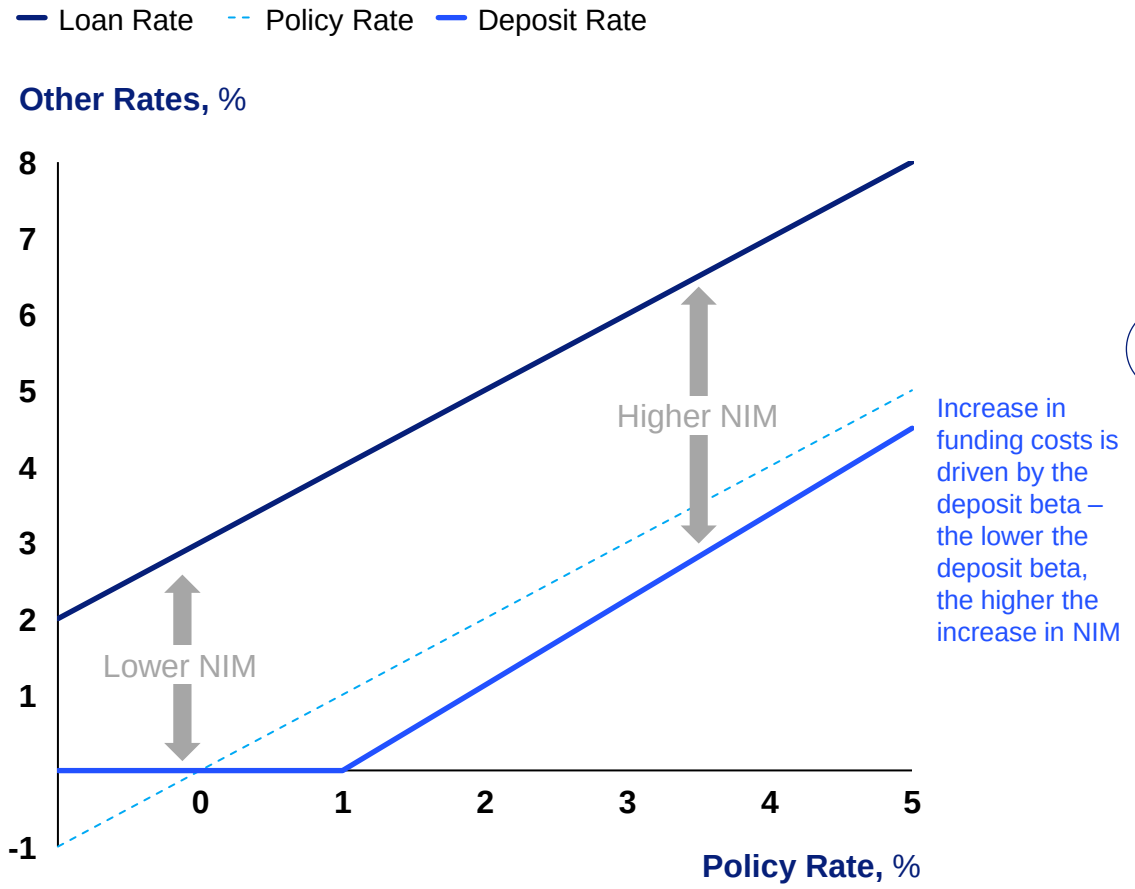

## Change in average interest rate on deposits due to a change in market interest rate (also known as Pass-through rate / Deposit beta)( *(in %)*




Source: Mckinsey & Co. Treasury Survey

# Lower Deposit beta implied higher NIM with rising rates

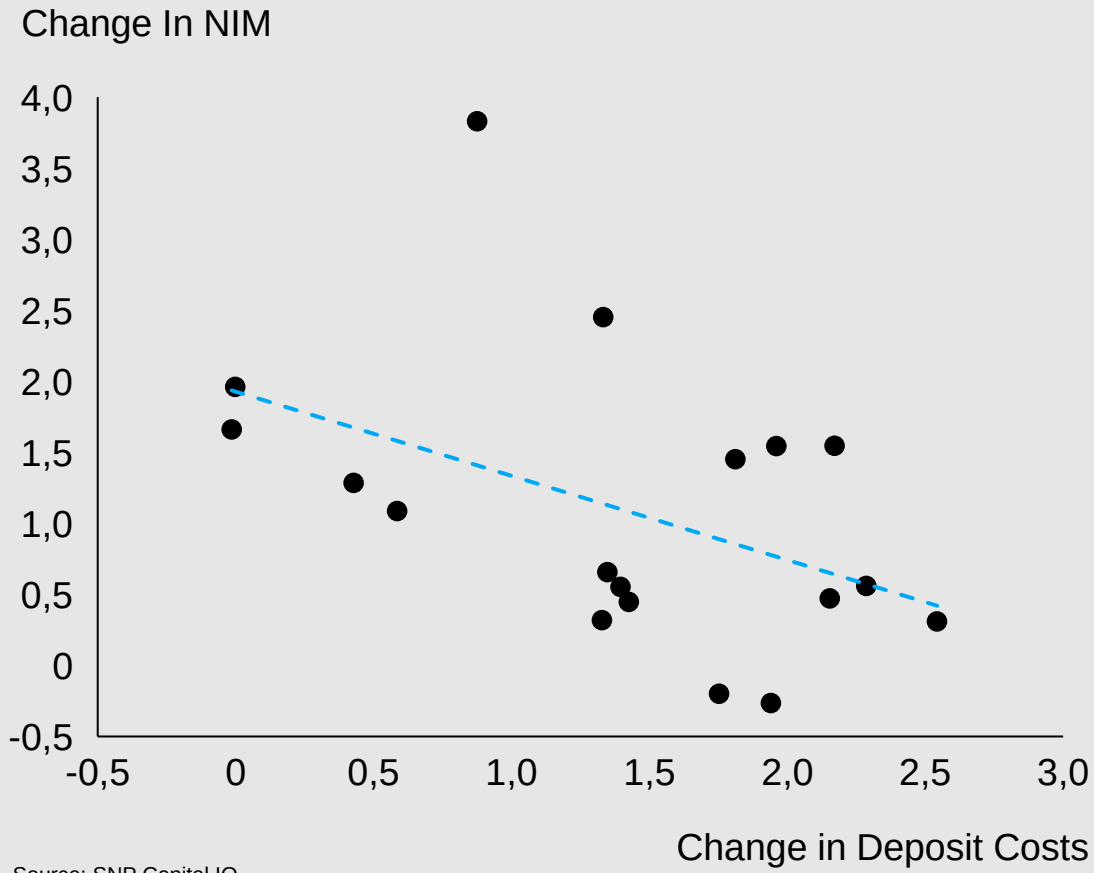
## Theoretical Model for NIM




Source: Alternative Models of Interest Rate Pass-Through in Normal and Negative Territory, Federal Reserve Bank of San Francisco, March 2021

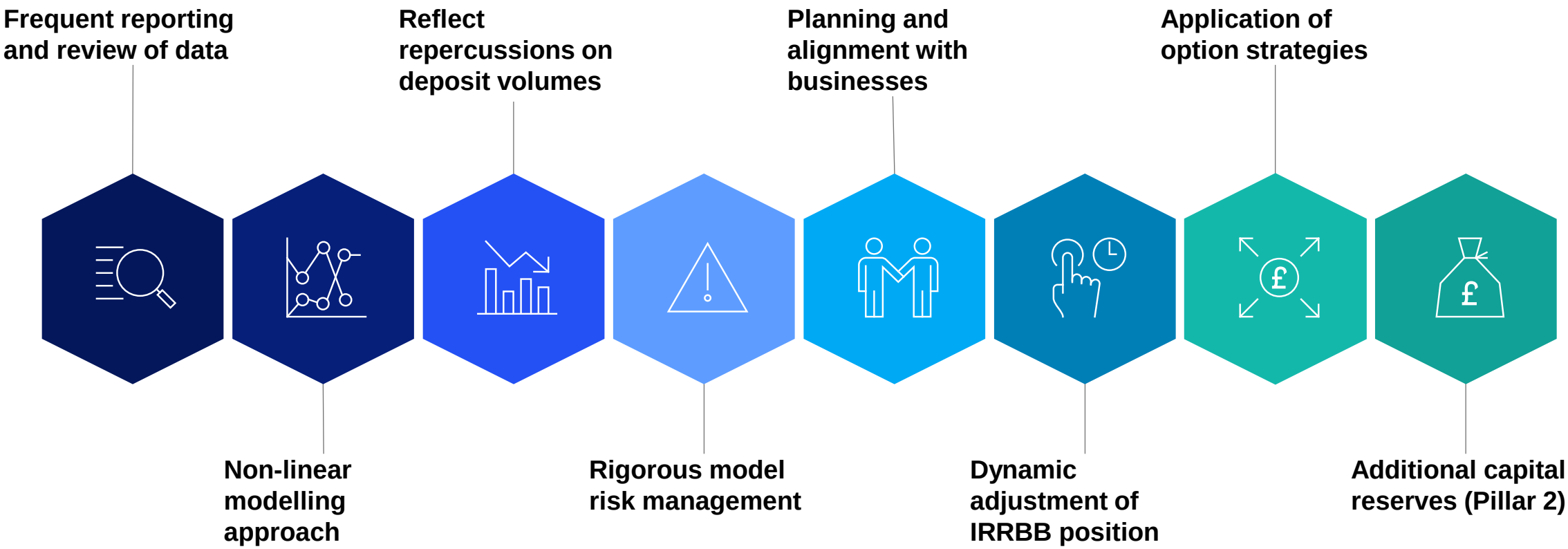
# UK banks experienced this effect during last rate cycle

## Change in NIM vs Change in Deposit Rates 2023 vs 2021




Source: SNP Capital IQ

# Several initiatives are necessary to address dynamic nature of deposit betas




Source: McKinsey & Co.

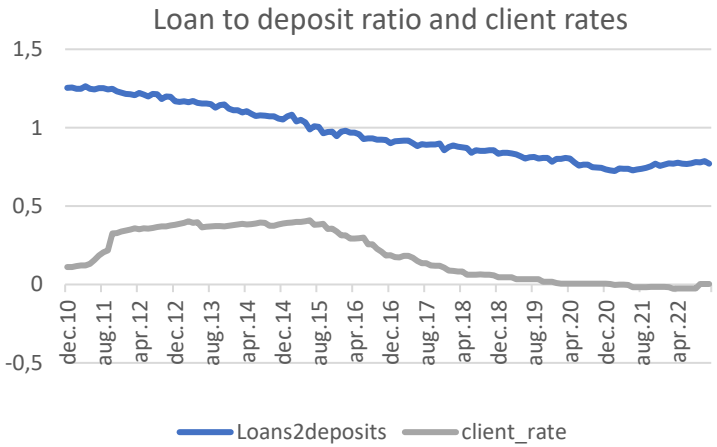
# Appendix

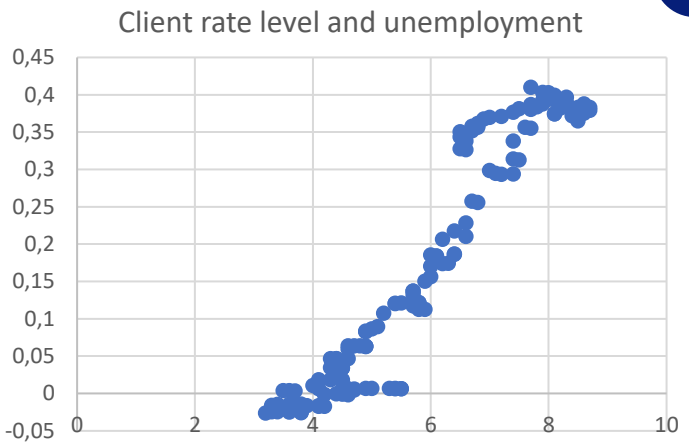
# Typical macroeconomic and industry seem to have an influence on the Deposit beta

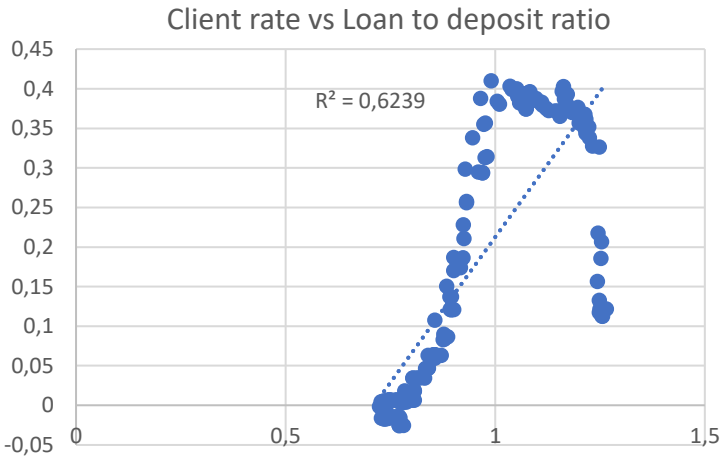
## Description

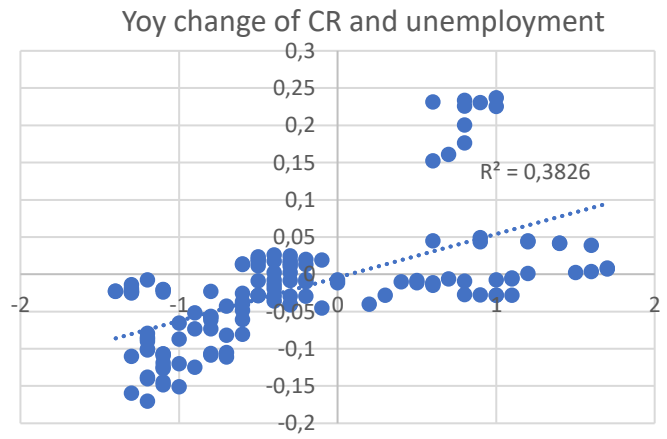
Analysis on **macroeconomic factors** such as Loan to Deposit, unemployment rate, and several productivity indices such as industry turnover and retail trade

## Analyses of influence of Loan to Deposit ratio and unemployment




## Takeaways

We analysed several potential macro drivers such as unemployment rate, loan to deposit ratio, and industry sector indices

Some takeaways are:

- Loan to deposit rate and unemployment rate in particularly seem to explain some movement of the deposit rate
- Yearly differences in the data seem to perform better than monthly and quarterly ones