SILICON VALLEY BANK CASE

A GESTÃO DO RISCO DE CONCENTRAÇÃO DE PASSIVO

CATÓLICA PORTO BUSINESS SCHOOL

24 MAIO 2023

novobanco

Rui Fontes
Board Member - Chief Credit Officer

Liability (or funding) Concentration Risk

Regulatory guidelines/Definitions

A liability concentration (or funding concentration) *exists when the funding structure of the institution makes it vulnerable to a single event or a single factor, such as a significant and sudden withdrawal of funds or inadequate access to new funding.*

Maturity transformation will lead to a certain level of mismatches but that these must remain within manageable and controllable boundaries to prevent collapse of the business model during stress periods or changes in market circumstances.

Actual liquidity buffer and counterbalancing capacity, including the quality of liquid assets, should be in line with the institution's liquidity risk appetite;

According w/ stress testing principles/guidelines:

- **Stress testing** should be a key tool in the identification of concentration risk (…).
- **Reduce the concentration of its funding profile** with respect to counterparties, peaks in the long-term maturity profile, currencies mismatches, customers sectors, geographies…

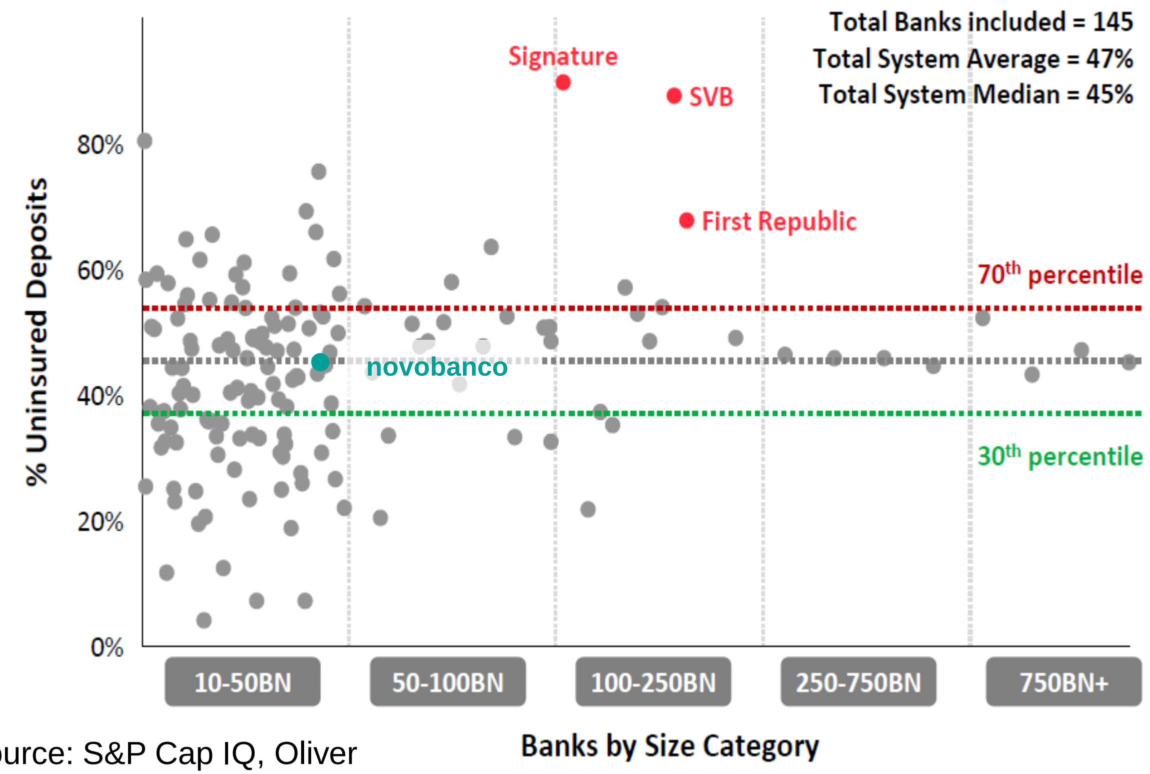
Liabilities categories / concentrations

- Funding concentrations can be split by market, product and counterparty, with different levels of "stickiness":
  - Inter-bank
  - Debt Issuance
  - Off-Balance
  - Customer Deposits (Wholesale and Retail)
- Funding concentration should also be assessed by maturity bucket.
- Deposit concentrations can be assessed by:
  - Single name / Large depositors (above 1%);
  - **Guaranteed vs non-Guaranteed Deposits**
  - **Retail vs non-Retail**
  - Others (sectors)

SVB was an outlier with and high percentage of uninsured and high concentration in deposits from technology focused VC sponsored Clients

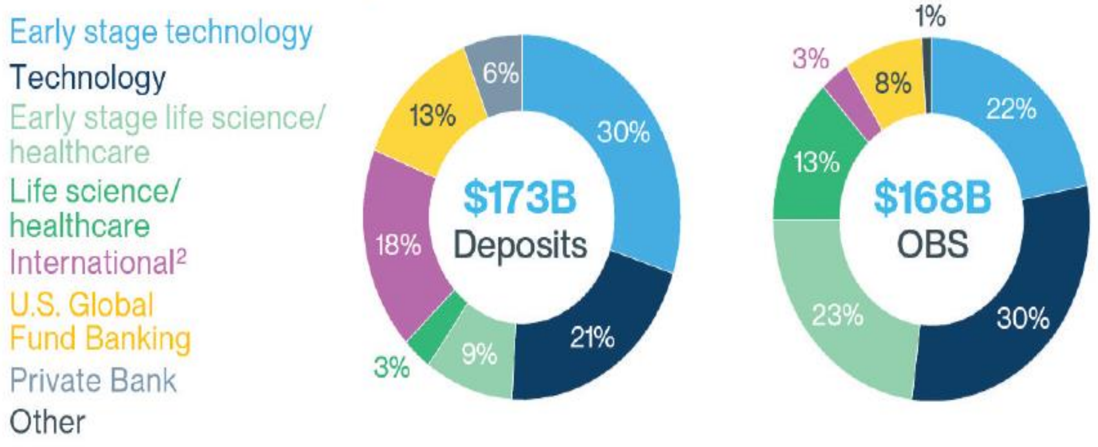
Uninsured Deposits / Total Deposits by Bank Size

%, year end 2022; excludes bank banks less than $10Bn in assets



Source: S&P Cap IQ, Oliver Wyman

Total client funds by client niche[1]



Note: All figures as of December 31, 2022 unless otherwise noted.

1. Represents management view of client niches.
2. International balances do not represent foreign exposure as disclosed in regulatory reports. Includes clients across all client niches and life stages, with International Global Fund Banking representing 3% of total client funds.
3. Based on deposit rates and total deposit balances at December 31, 2022.

Source: SVBFG 2022:Q4 financial highlights, January 19, 2023.

SVB *implicit* LCR was well below European Banks

Regulatory outflows coefficients depends on type of deposits: retail / non-retail, operational / non-operational, …

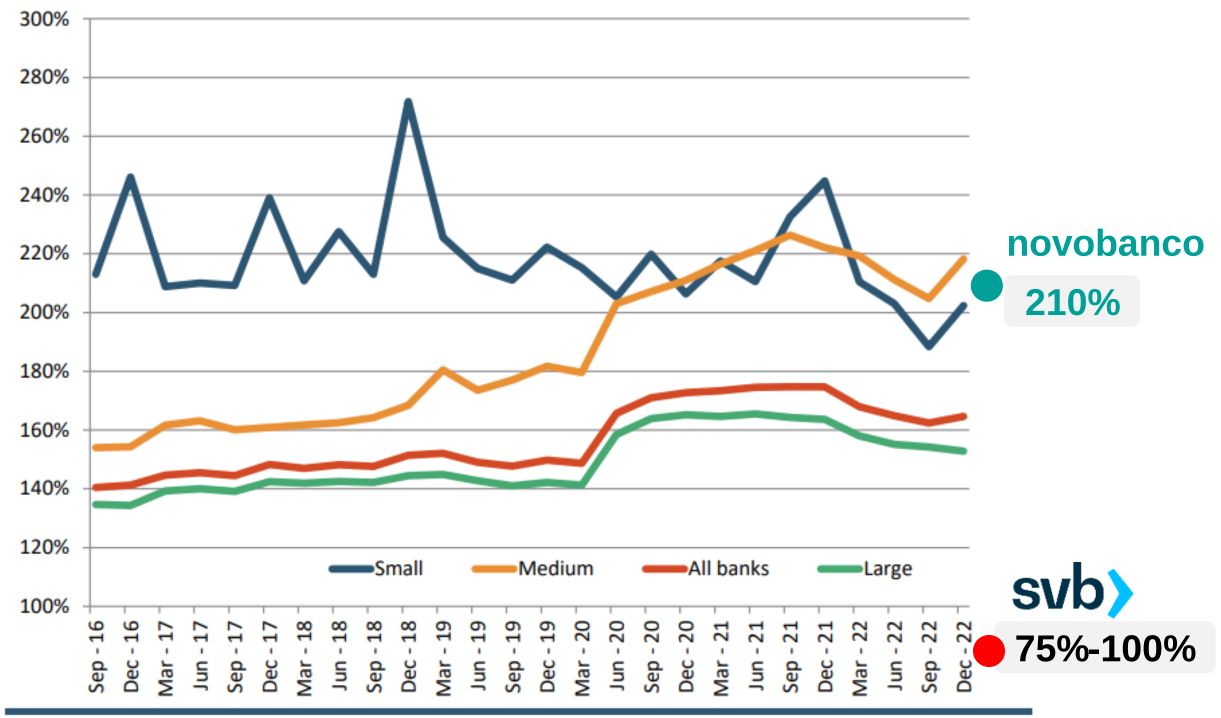
The liquidity coverage ratio (LCR) is designed to ensure that banks hold a sufficient reserve **of high-quality liquid assets (HQLA) to allow them to survive a period of significant liquidity stress lasting 30 calendar days**

$$LCR = \frac{\text{Stock of HQLA}}{\text{Net cash outflows over 30 days}} \geq 100\%$$

Cash Outflows

- Run-off of **retail** deposits:
  - Stable / Guaranteed (0%, 5%)
  - Less-stable / Other (10%, 12.5%, 17.5%)
- Run-off of **Wholesale** deposits:
  - Corporate operational (5%, 25%)
  - Corporate non-operational (20%, 40%)
  - Financial customers (100%)
- Committed and Uncommitted OBS facilities (≈1% to 100%)

LCR by bank size EBA (%)

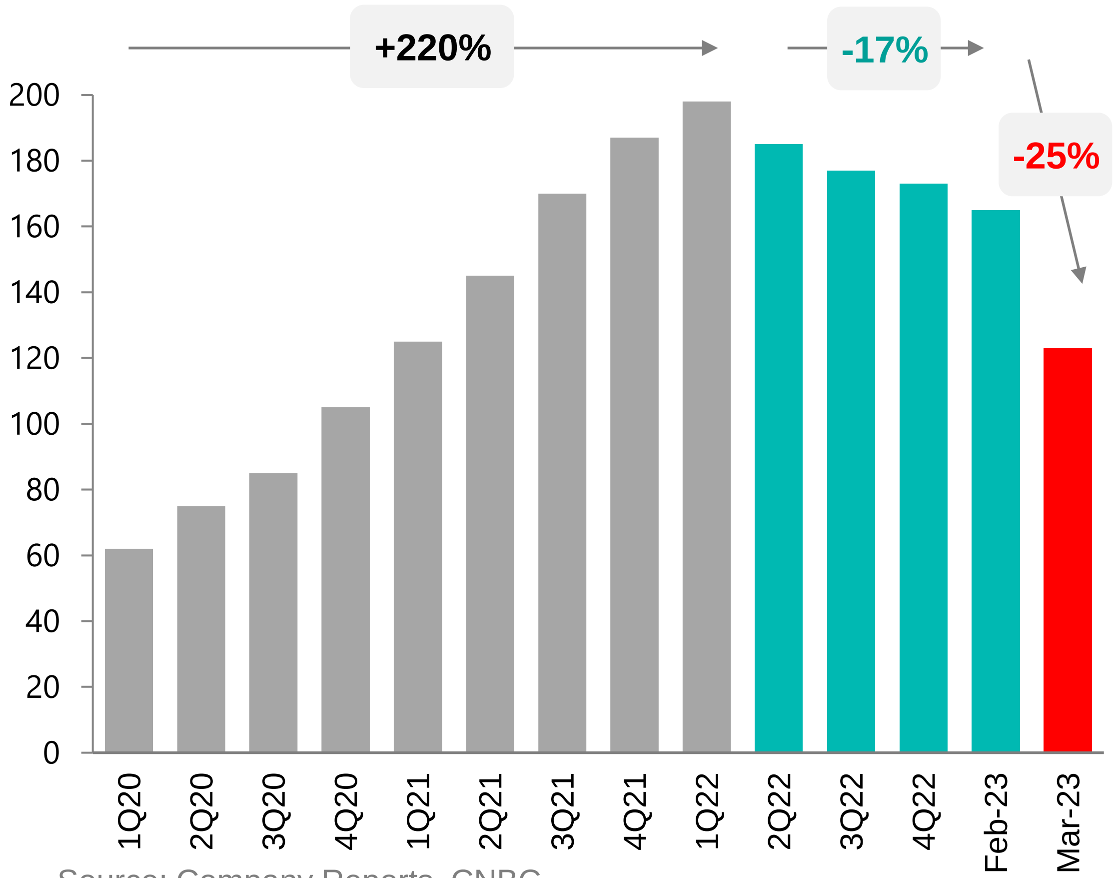


Weighted average. Banks are classified in the size class according to their average total assets between Dec. 2014 and Dec. 2022.

Source: EBA

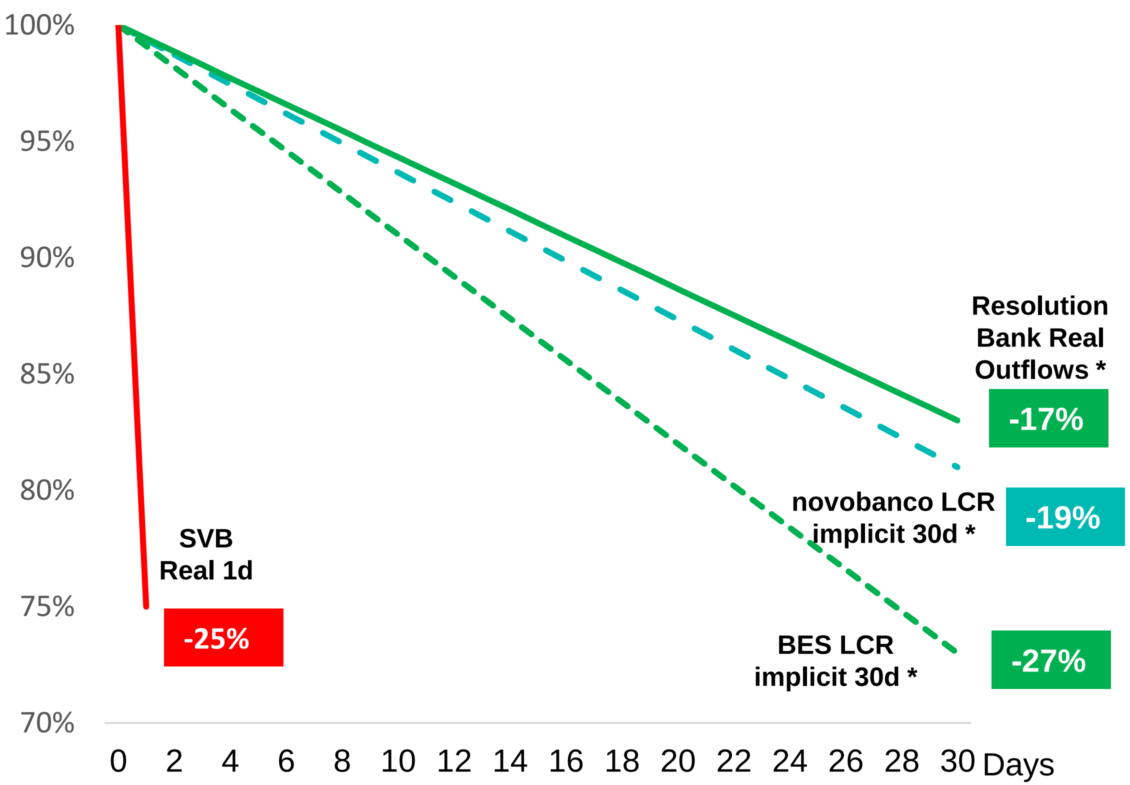
Deposit Concentration (and reputational issues) led to an "unprecedented" deposit outflow

SVB Deposits Evolution ($bn)



Source: Company Reports, CNBC

Deposits Outflows (%)



Source: Company Reports, CNBC

* linearized outflows over 30 days

BES / novobanco lost 37% of customer deposits in 5 months

Management tolls - Liquidity Stress Testing Framework: Illustrative

Stress scenarios definition:

- A severe scenario, including simultaneous idiosyncratic and market shocks, with a low likelihood;
- A reverse stress testing (extremely severe) scenario (e.g., used in Recovery Plan), including both idiosyncratic and market shocks but with higher impacts, with a very low likelihood;
- Maintain combined stress scenarios, including both idiosyncratic and market stress events, with different levels of severity;
- A 12 months time horizon for the stress scenarios, based on the existing Medium-Term Plan;
- Consider simultaneously / cumulative liquidity risk impacts for all liquidity risk drivers.

Liquidity Framework

A Sensitivity analysis

A1 Standalone Sensitivities:
- Major counterparty outflow
- Market risk shock (SVaR 10d)
- Retail deposits run-off
- Corporate deposits run-off
- Increases in customer loans

A2 Risk Appetite metrics quantification impacts:
- LCR
- NSFR
- ECB Available Eligible Assets; and
- Available Liquid Assets

B Liquidity shock scenario

B1 Idiosyncratic stress scenario :
- Loss of confidence in the bank
- Rating downgrade

Market stress scenario

B2 Regional market stress scenario – 2020 COVID-19 crisis

B3 **Combined Idiosyncratic + Market severe stress scenario**

B4 **Combined impacts on capital (and liquidity)**

C Reverse stress testing

C1 **Reverse stress testing exercise (an extremely severe stress scenario)** developed by the bank and being part of several exercises, namely:
- Recovery Plan;
- ILAAP;
- Liquidity and Funding in Resolution.

D Contingency Funding Plan / Early Warning Indicators

Liquidity Stress Testing - Risk Identification - Illustrative

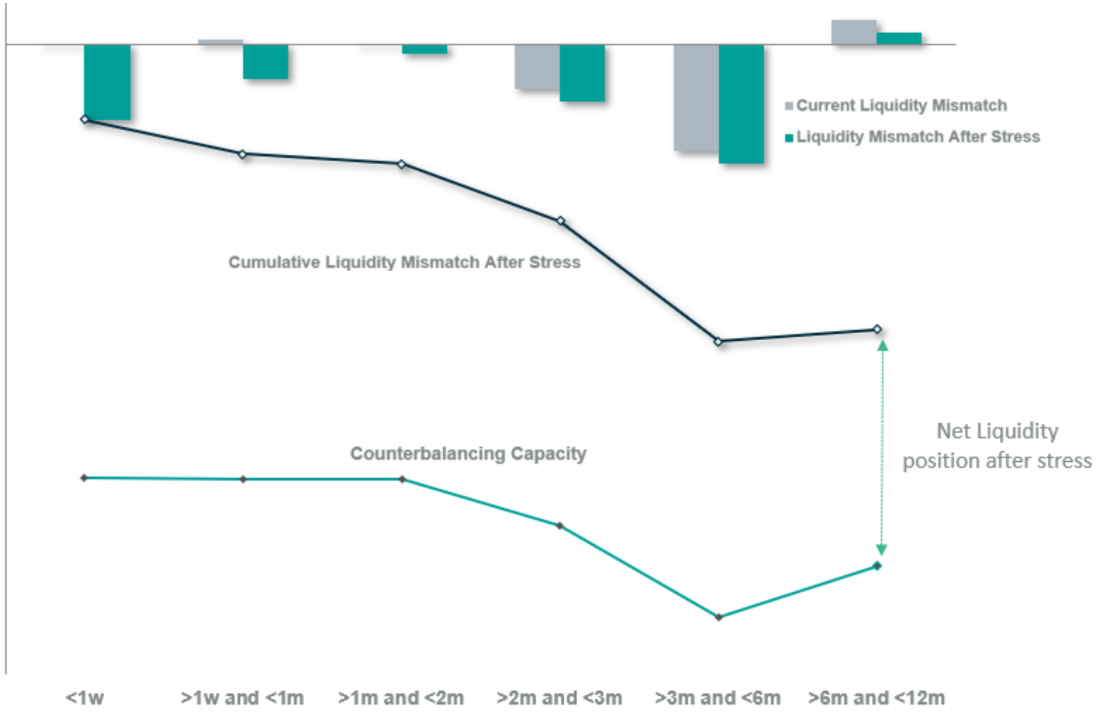
Liquidity Risk driver	Materiality Severe scenario	Materiality Reverse scenario	Quantified in the stress test
Run-off of retail funding	High	High	✓
Reduction of secured and unsecured wholesale funding	High	High	✓
Correlation and concentration of funding	High	High	✓
Additional contingent off-balance sheet exposures	Medium	Medium	✓
Funding tenors	Non-material	Non-material	✗
Impact of deterioration in the firm's credit rating	Non-material	Non-material	✗
Foreign exchange convertibility and access to foreign exchange markets	Non-material	Non-material	✗
Ability to transfer liquidity across entities, sectors and countries	Non-material	Non-material	✗
Estimates of future balance sheet growth	Medium	High	✓
Impact on a firm's reputation or franchise	Non-material	Non-material	✗
Marketable assets risk	Medium	High	✓
Non-marketable assets risk	Non-material	High	✓
Internalization risk	Non-material	Non-material	✗
Intraday risk	Medium	Medium	✓
Shadow banking	Non-material	Non-material	✗
Geopolitical risk	Non-material	Non-material	✗
ESG risk	Non-material	Non-material	✗
Cyber Risk	Medium	Medium	✓

Liquidity Stress Testing: Results - Illustrative

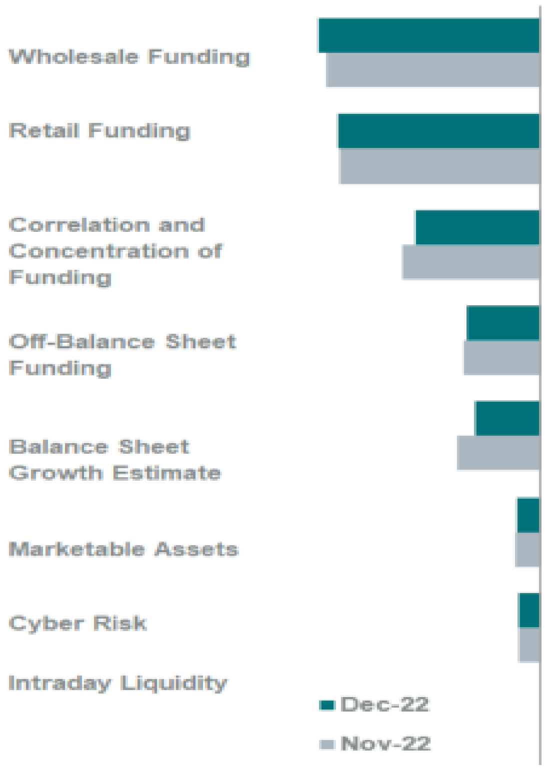
B **Liquidity shock scenario - Pillar Purpose**

A calculation of liquidity and capital impacts after an Extremely Severe Scenario is performed, representing the customer deposits (wholesale, retail and concentration risk) the main outflows in a stress scenario.

Liquidity buffer and Liquidity position in a 12-month stress test



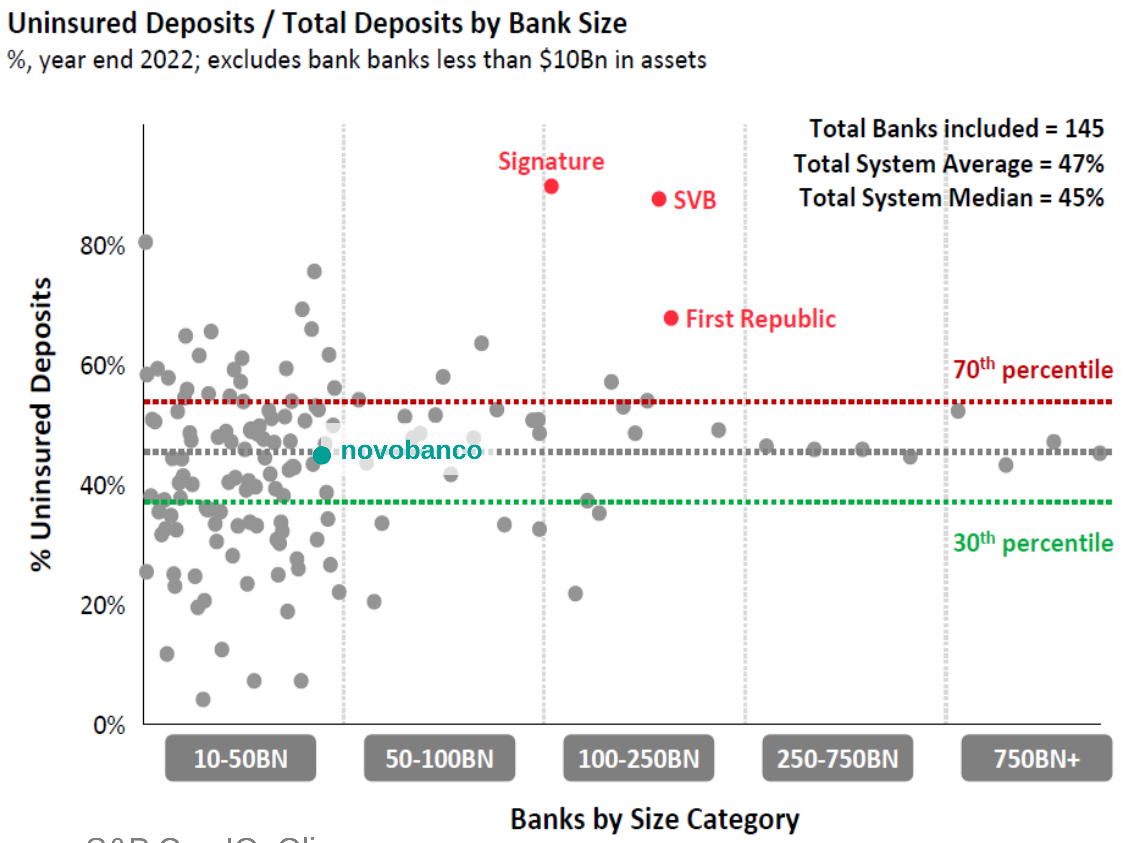
Breakdown of liquidity stress impacts by risk driver after 12 months



Contingency Plan options quantification after 12 months

Indicator category	Indicator name
Capital	Common Equity Tier 1 ratio Tier 1 ratio Total Own Funds ratio Leverage ratio MREL
Liquidity	Liquidity Coverage Ratio Net Stable Funding Ratio ECB eligible available assets Available liquid assets
Profitability	Cost-income ratio (commercial) ROA ROE
Asset Quality	NPL Amount Growth rate of NPLs Coverage ratio (Provisions NPL / Total NPL)

SVB was an outlier both on deposit concentration and Unrealized Losses on securities portfolio



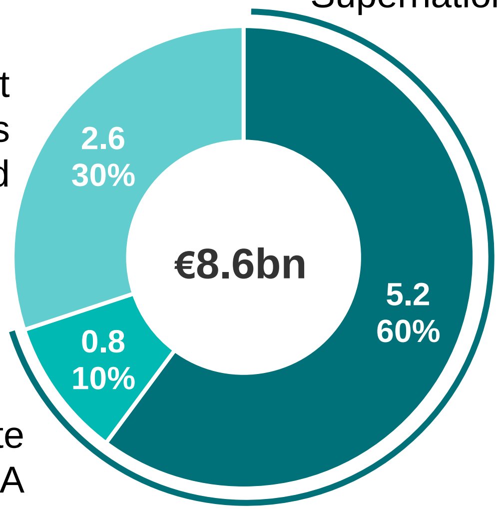
Source: S&P Cap IQ, Oliver Wyman

US Banks CET1 adjusted for unrealised losses on securities (Dec-22; %)

Source: JPM AM; FT

Market Transparency - Illustrative
Theoretical impact of liquidation of securities portfolio at Amortized Cost

Amortized Cost Portfolio
(March 2023; €bn; %)



Liquidation of securities portfolio at Amortised Cost

Conservative risk management translates in a **very limited net unrealised MtM loss in the AC book** with 44% of ALCO portfolio hedged

P&L impact	€mn
Net Book Value	8,604
Market Value	8,103
Unrealised Mark to Market	(501)
Fair Value Hedging Derivatives MtM	191
P&L impact (profit after tax)[1]	**(214)**

Full liquidation of the book would result in a **marginal CET1 ratio phased-in impact.**

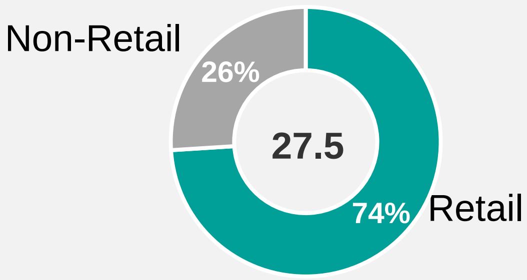
Capital impact	
CET 1 ratio *fully-loaded*	**14.1%**
CET 1 ratio *fully-loaded* pro-forma liquidation	**14.0%**
Impact on CET 1 ratio (bps)	**(14)**

…and very granular and stable deposits base (c.74% retail clients; c.67% customers prior to 2014 resolution).

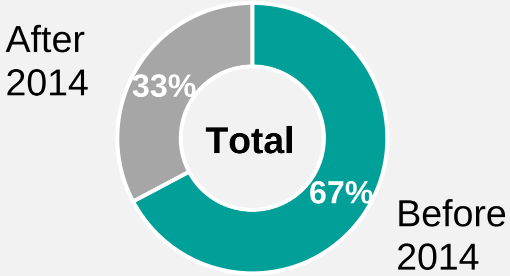
Note: novobanco analysis with reference to 31-March-2023; (1) assumes 31.5% statutory tax rate;

Market Transparency - Illustrative
Deposits comprehensive breakdown

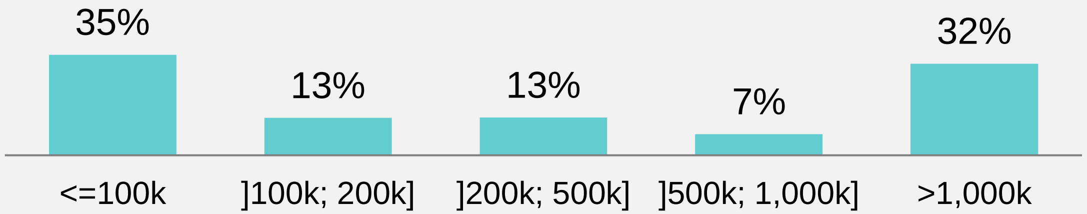
Deposits by Customer
(€bn; %)



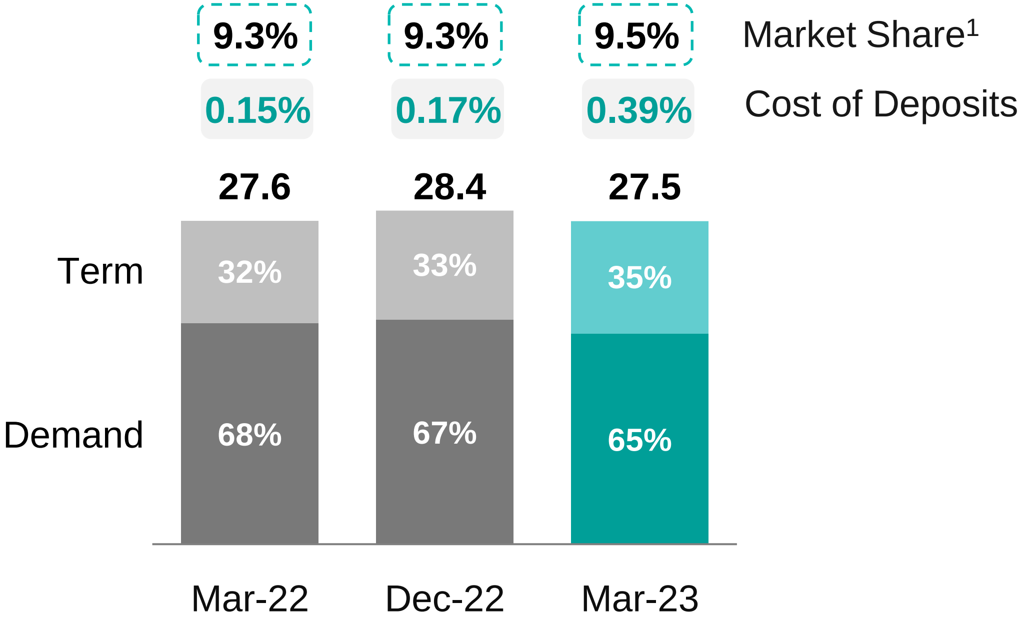
Loyal customer base
(# of active clients)



Client Size Deposit Distribution
(€k; %)



Deposits Breakdown by Type
(€bn; %)

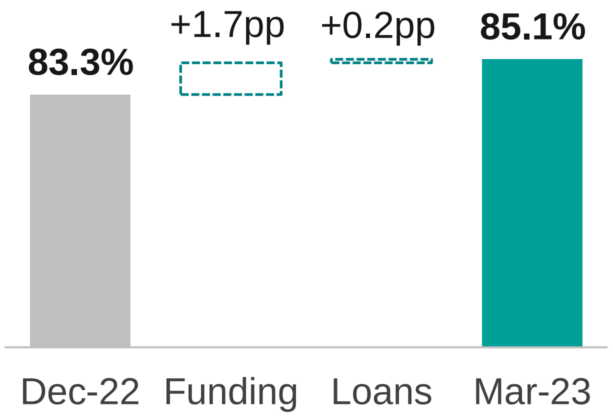


Despite the lower YTD deposits volume, novobanco' deposit market share increased from 9.3% in Dec/22 to 9.5% in Mar/23. Most recent Apr/23 month-on-month figures showing positive performance

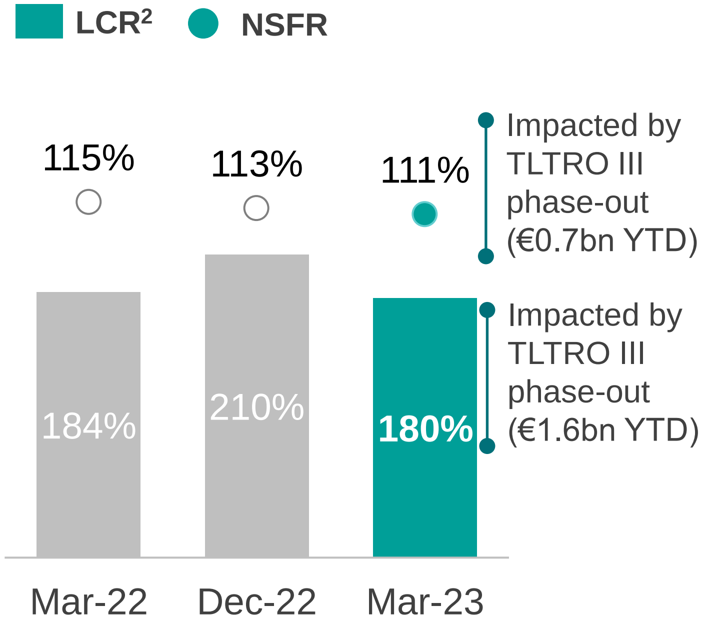
(1) Source: novobanco analysis using Bank of Portugal public information; using most recent available information as of March 2023

Market Transparency - Illustrative
Loan to Deposit Ratio; LCR and Eligible Assets at ECB

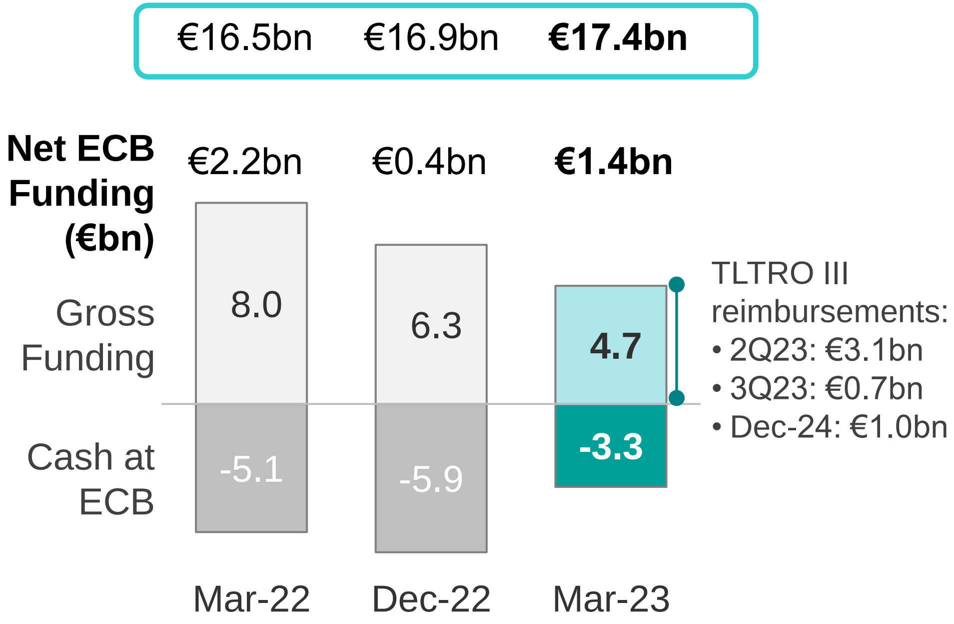
Loan to Deposit Ratio[1] (%)



Liquidity Ratios (%)



Eligible Assets at the ECB[3] (€bn)



…as well as cash at Central Banks and ECB eligible collateral (liquidity buffer of €13.2bn as of Mar/23).

(1) LtD ratio as per BdP definition; (2) LCR stands for Liquidity Coverage Ratio; NSFR stands for Net Stable Funding Ratio; (3) Net of haircut

Benchmarks: novobanco well positioned when compared w/ regional peers

Novobanco is better

Peer is better

				Profitability					Solvency				Asset Quality		Liquidity		
	YTW	Bid-ask spread (bps)	Moody's rating	NIM as % of assets	C:I	CoR 2023E	RoE 2023E	Capital generation (bps)	CET1	Tier 1	TCR	Risk density	Net NPL ratio	NPL coverage	LCR	L/D	Liquidity buffer / Deposits
Novobanco	**11.2%**	**122**	**B1**	**2.2%**	**35%**	**0.50%**	**20.0%**	**300**	**14.1%**	**14.1%**	**16.5%**	**48%**	**0.8%**	**81%**	**210%**	**85%**	**48%**
AIB	6.3%	53	Baa2	1.7%	60%	0.35%	14.7%	(30)	16.3%	18.3%	21.3%	43%	0.6%	81%	192%	58%	60%
Bawag	6.4%	36	Baa2	2.1%	33%	0.33%	22.5%	240	14.1%	16.1%	19.1%	36%	0.4%	71%	215%	122%	47%
BOI	6.7%	64	Baa2	1.6%	62%	0.36%	19.7%	(60)	15.4%	17.4%	20.5%	31%	1.7%	51%	221%	72%	49%
Bankinter	5.2%	64	Baa3	1.4%	33%	0.41%	15.8%	124	12.2%	14.0%	16.3%	34%	0.7%	67%	198%	112%	27%
Average Baa/BBB	**6.1%**	**55**	**n.m.**	**1.7%**	**47%**	**0.36%**	**18.2%**	**69**	**14.5%**	**16.5%**	**19.3%**	**36%**	**0.9%**	**67%**	**207%**	**91%**	**46%**
PTSB	7.4%	167	Ba1	1.5%	85%	0.09%	4.4%	50	15.2%	19.6%	22.3%	41%	0.6%	80%	178%	89%	32%
BPER	8.4%	110	Ba2	1.3%	77%	0.57%	11.0%	(72)	12.8%	13.0%	16.0%	35%	0.6%	80%	195%	79%	28%
BCP	11.2%	153	Ba3	2.4%	37%	0.79%	9.4%	80	12.5%	13.6%	16.8%	48%	1.3%	68%	212%	72%	32%
BPM	7.1%	90	Ba3	1.2%	60%	0.63%	12.6%	(60)	12.8%	15.1%	18.1%	32%	1.7%	59%	191%	106%	38%
Sabadell	7.6%	79	Ba3	1.5%	55%	0.64%	9.4%	32	12.5%	14.6%	17.0%	32%	1.5%	55%	234%	102%	33%
Unicaja	8.0%	138	Ba3	1.0%	54%	0.41%	8.8%	46	13.0%	14.6%	16.4%	34%	1.2%	67%	284%	72%	32%
Average Ba/BB	**8.3%**	**123**	**n.m.**	**1.5%**	**61%**	**0.52%**	**9.3%**	**13**	**13.1%**	**15.1%**	**17.8%**	**37%**	**1.2%**	**68%**	**216%**	**87%**	**32%**
Eurobank	9.9%	111	B2	1.9%	44%	0.81%	12.1%	230	15.2%	15.2%	19.0%	51%	1.5%	72%	173%	73%	45%
NBG	9.6%	125	B2	1.8%	47%	0.78%	11.0%	80	15.7%	15.7%	16.8%	47%	0.8%	84%	259%	66%	49%
Average B	**9.7%**	**118**	**n.m.**	**1.8%**	**45%**	**0.80%**	**11.6%**	**155**	**15.5%**	**15.5%**	**17.9%**	**49%**	**1.1%**	**78%**	**216%**	**69%**	**47%**
Median (all peers)	**7.5%**	**100**	**Ba1**	**1.6%**	**54%**	**0.49%**	**11.6%**	**48**	**13.5%**	**15.2%**	**17.6%**	**35%**	**1.0%**	**70%**	**205%**	**76%**	**35%**

Source: novobanco analysis using most recent data; YTW equivalent to a coupon reset as of May 3rd 2023; 1Q2023 for novobanco, Bawag and Bankinter; remaining peers with 2022YE data; Capital generation refers to 2022 YoY CET1 ratio; RoE calculated as Net Income / CET1

Final Remarks