

Deposit Valuation Analysis

Part 2: Using FHLBank Boston Advances to Efficiently Price Deposits

July 2022



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Sean Carraher

Senior Financial Strategist



- Joined FHLBank Boston in May 2022 as the new senior financial strategist
- More than 20 years of experience in banking and in financial analysis
- Served as treasurer for two different multibillion-dollar FHLBank Boston members in recent years
- Has chaired ALCOs, created and managed profitability and risk frameworks, and identified and executed funding and derivatives strategies

Deposit Economics + ALM Metrics

- **Deposits derive economic value from several attributes**
 - The *degree* to which pricing adjusts with market changes
 - The *speed* with which pricing adjusts with market changes
 - The *volatility* of balances at any given time
 - The *amount of time* over which the deposit is expected to remain outstanding
 - The *opportunity benefit* of maintaining client funds relative to wholesale funds
- **Each economic attribute has an associated ALM metric**
 - Beta = degree of pricing adjustment
 - Lag = speed of pricing adjustment
 - Decay rate = volatility
 - Average Life = amount of time a deposit is expected to exist
 - Term Liquidity Premium (TLP) = opportunity benefit of maintaining client funds

Deposit valuation methodologies should account for each of these economic attributes

Valuation Methodology Overview

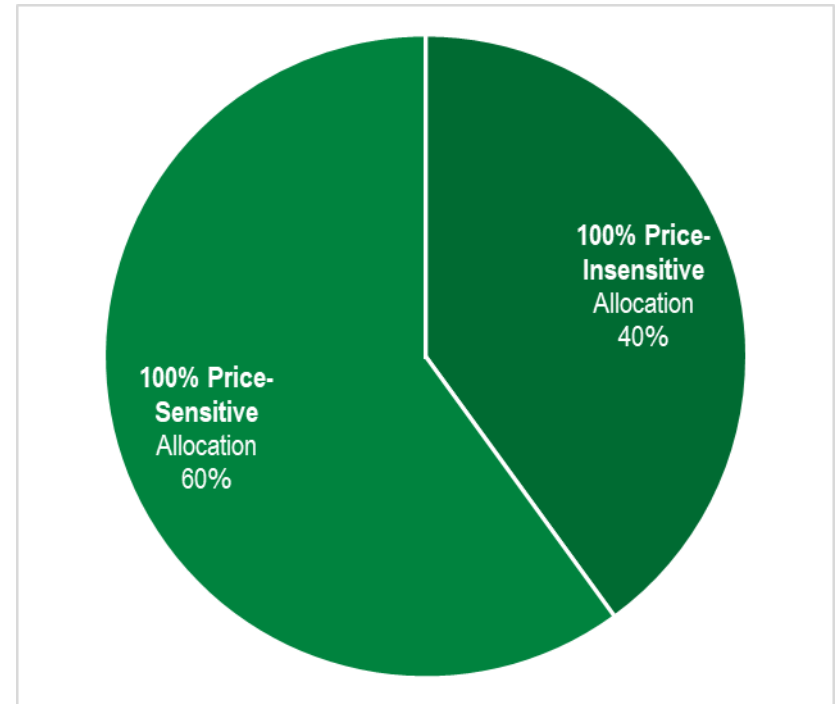
- **Bucket balances in deposit products by their repricing behavior**
 - Some balances are likely volatile and/or price sensitive
 - Some balances are less volatile and less price sensitive

- **Assign each bucket a term associated with that behavior**
 - More volatile and more price-sensitive buckets should be assigned shorter terms
 - Less volatile and less price-sensitive buckets should be assigned longer terms

- **Add a premium to each bucket to recognize the opportunity benefit of maintaining client deposits irrespective of their other economic attributes**

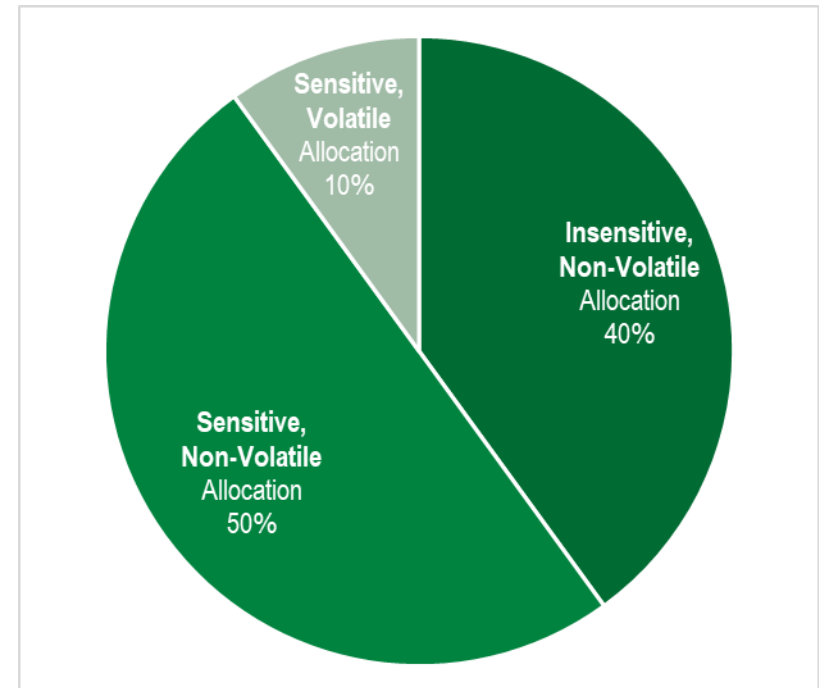
Price-Sensitive vs. Insensitive Balances

- For interest-bearing non-maturity deposits, betas can be theoretically used to identify the *portion* of deposit balances that are price sensitive
 - A beta is applied against the entire balance of a deposit, but can be mathematically differentiated into two buckets: one that is 100% price sensitive and one that is 100% price insensitive
 - The beta % is the relative size of these buckets with respect to the whole
 - The chart at right shows these allocations for an MMDA with a 60% beta
 - 60% of the deposit is 100% price sensitive
 - 40% of the deposit is 100% price insensitive



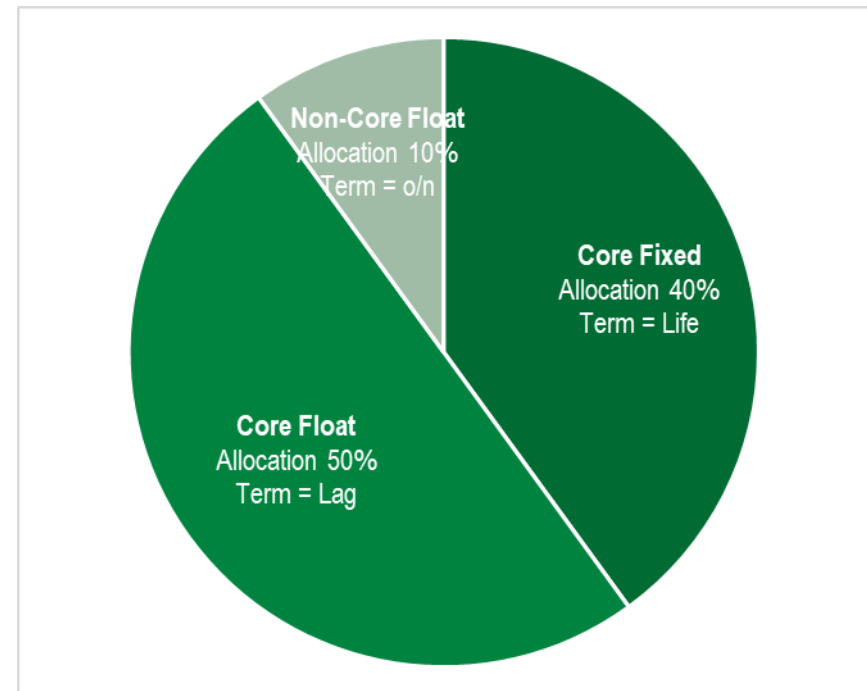
Volatility

- **Volatility can be included in deposit valuation by recognizing a subset of price-sensitive balances**
 - Decay rates, essentially by definition, can be used to identify the portion of deposit balances that are potentially volatile at a given time
 - These potentially volatile balances can be theorized to be a subset of sensitive balances
 - The chart at right shows these allocations for an MMDA with a 60% beta and a 10% decay rate
 - For non-interest-bearing DDAs that are assumed to have a 0% beta, volatile balances necessarily represent the only portion of balances that are sensitive



Bucketing and Terms of Each Allocation

- **Each bucket can be identified with consistent terminology**
 - Insensitive, Non-Volatile = Core Fixed
 - Sensitive, Non-Volatile = Core Float
 - Sensitive, Volatile = Non-Core Float
- **Each bucket's term can be inferred**
 - Core Fixed balances theoretically stay around indefinitely because they are not price sensitive or volatile and can be valued with a swap term equal to the deposit **average life**
 - Core Float balances theoretically stay around if paid appropriately in a reasonable timeframe and can be valued with a swap term equal to the **lag** assumed for pricing changes
 - Non-Core Float balances are volatile and are assumed to be overnight



TLP (Term Liquidity Premium)

TLP = Value of client liquidity

TLP = Term borrowing costs – Term swap rates

TLP = FHLBank Boston Classic Advances – SOFR swaps

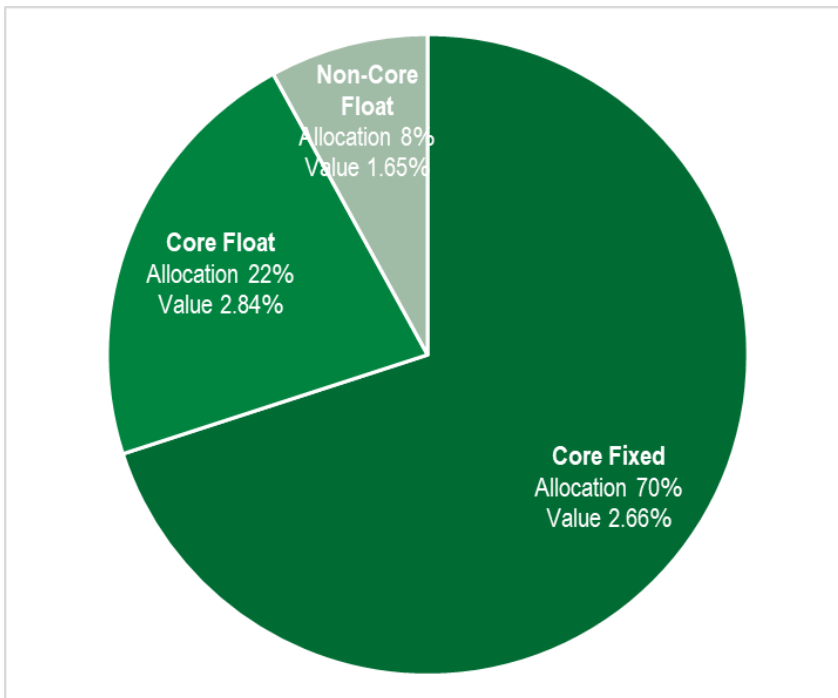
Example: A deposit with an assumed average life of 10-yrs

10-yr Advance	+ 3.71%
10-yr Swap	- 2.62%
TLP	= 1.09%

- **Most client deposits have value over wholesale funding sources**
 - Typically not collateralized
 - Can facilitate client development into other sources of revenue like lending activity or fee income sources
 - Can reduce capital and liquidity requirements through regulatory perception
- **TLPs**
 - Represent the value of client liquidity vs. wholesale funding
 - The marginal cost of borrowing sources relative to swap rates can be used as a market-observable way to estimate TLPs
 - Core buckets represent balances that are theoretically stable and get assigned a TLP equivalent to the life of the deposit
 - The Non-Core bucket is assigned a 1-yr TLP because the balances are volatile within that timeframe

NOW, Average Sensitivity Example

- Example examines a **NOW** with typical repricing sensitivity and long life
- Actual assumptions would be best constructed at institutional level



Rate Paid	%	0.25%
Beta	%	30.0%
Pricing Lag	Months	6
Decay Rate	%	8.0%
Fee Revenue	%	0.30%
Servicing Cost	%	0.40%
Deposit Insurance Premium	%	0.15%
Deposit Life	Years	12.5

Buckets	Allocations	Term Value	TLP
Core Fixed	70.0%	2.66%	1.21%
Core Float	22.0%	2.84%	1.21%
Non-Core Float	8.0%	1.65%	0.29%

Headline Valuation		3.76%
Pricing	-	0.25%
Gross Profitability		3.51%

Fee Revenue	+	0.30%
Servicing Cost	-	0.40%
Deposit Insurance	-	0.15%
Profitability, net of revenues/costs		3.26%

MMDA, Average Sensitivity Example

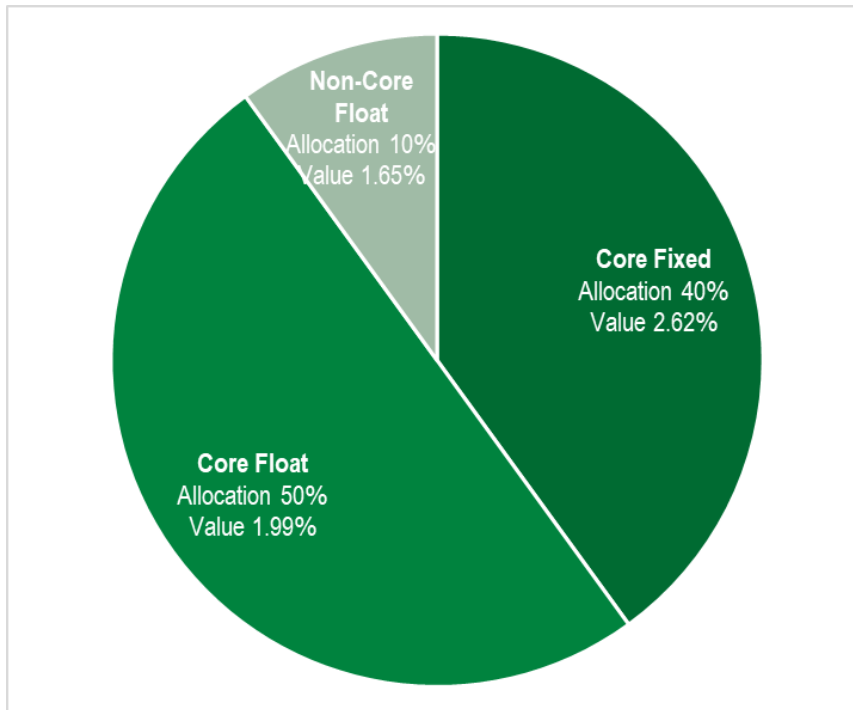
- Example examines an **MMDA** with typical repricing sensitivity and a long life
- Actual assumptions would be best constructed at institutional level

Rate Paid	%	0.80%
Beta	%	60.0%
Pricing Lag	Months	2
Decay Rate	%	10.0%
Fee Revenue	%	0.25%
Servicing Cost	%	0.30%
Deposit Insurance Premium	%	0.15%
Deposit Life	Years	10.0

Buckets	Allocations	Term Value	TLP
Core Fixed	40.0%	2.62%	1.09%
Core Float	50.0%	1.99%	1.09%
Non-Core Float	10.0%	1.65%	0.29%

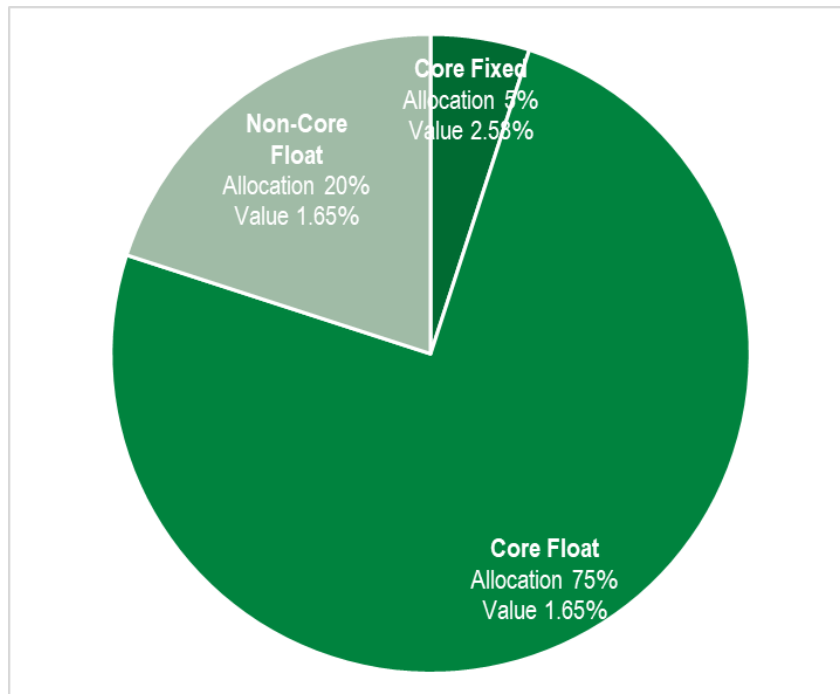
Headline Valuation		3.22%
Pricing	-	0.80%
Gross Profitability		2.42%

Fee Revenue	+	0.25%
Servicing Cost	-	0.30%
Deposit Insurance	-	0.15%
Profitability, net of revenues/costs		2.22%



MMDA, High-Cost/High-Sensitivity

- Example examines an **MMDA with high cost** and high sensitivity, as might be used in a special offering
- While *pricing* is only presently 70 bps higher than the typical MMDA, *profitability* is **156 bps lower** b/c of economics



Rate Paid	%	1.50%
Beta	%	95.0%
Pricing Lag	Months	0
Decay Rate	%	20.0%
Fee Revenue	%	0.10%
Servicing Cost	%	0.15%
Deposit Insurance Premium	%	0.15%
Deposit Life	Years	5.0

Buckets	Allocations	Term Value	TLP
Core Fixed	10.0%	2.58%	0.76%
Core Float	70.0%	1.65%	0.76%
Non-Core Float	20.0%	1.65%	0.29%

Headline Valuation		2.36%
Pricing	-	1.50%
Gross Profitability		0.86%

Fee Revenue	+	0.10%
Servicing Cost	-	0.15%
Deposit Insurance	-	0.15%
Profitability, net of revenues/costs		0.66%

Deposit Value Erosion Through Cannibalization

Deposit Type	Profitability, net of costs	Starting Mix	Scenario One Mix	Scenario Two Mix	Scenario Three Mix
DDA	3.55%	25%	25%	24%	25%
NOW	3.26%	15%	15%	14%	15%
Savings	2.69%	25%	25%	24%	25%
MMDA	2.22%	35%	30%	30%	20%
High Cost	0.66%	0%	5%	8%	15%
		100%	100%	100%	100%
NMD Profitability		2.82%	2.75%	2.67%	2.59%

- The Starting Mix considers the value of the existing book based on assigned metrics
- Scenario One evaluates what occurs to valuation if 5% of MMDAs migrate to the High Cost product
- Scenario Two evaluates the effect of 1% migrations in other NMD types and an 8% migration in MMDAs
- Scenario Three isolates the effect of a 15% migration from MMDA

The Advances Alternative

	Current Gross	Current w/Dividend	Future Gross	Future w/Dividend
FHLBank Advance	1.70%	1.56%	2.95%	2.76%
High Cost Price	1.50%	1.50%	2.69%	2.69%
Difference	0.20%	0.06%	0.26%	0.07%

Deposit Type	Profitability, net of costs	Starting Mix	Scenario One Mix	Scenario Two Mix	Scenario Three Mix
DDA	3.55%	25%	25%	24%	25%
NOW	3.26%	15%	15%	14%	15%
Savings	2.69%	25%	25%	24%	25%
MMDA	2.22%	35%	30%	30%	20%
High Cost	0.66%	0%	5%	8%	15%
		100%	100%	100%	100%
NMD Profitability		2.82%	2.75%	2.67%	2.59%
High Cost or FHLB?		High Cost	FHLB	FHLB	FHLB

Based on the erosion of deposit profitability and assumed future pricing, a means of estimating the relative value of taking short-term FHLBank advances vs. introducing a High Cost product is evaluated

The Starting Mix scenario assumes present pricing based on dividend-adjusted FHLBank Boston rates
 The other scenarios assume, essentially, 100% betas on FHLBank Boston pricing and whatever beta is input to value the High Cost product

Cannibalization Break-Evens

	Current	Current	Future	Future
Mix Shift Break-Evens	Gross	w/Dividend	Gross	w/Dividend
DDA	6.9%	2.0%	9.1%	2.4%
NOW	7.7%	2.2%	10.1%	2.7%
Savings	9.9%	2.9%	13.0%	3.5%
MMDA	12.9%	3.7%	16.9%	4.5%

Building on the assumptions and analysis from the prior slides, stand-alone single product cannibalization break-evens are identified

- **2.4% of purely DDA balances could migrate to a High Cost before FHLBank Boston advances become more attractive in the long run**
- **4.5% of purely MMDA balances could migrate before FHLBank Boston advances are more attractive in the long run**

Thank You

If you have questions or if you want more information about how to use the FHLBank Boston Deposit Pricing Analysis tool, please contact me or your relationship manager.



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