ALM & Funding Strategies for the Current Environment

FHLBank Boston

Strategic partnerships. Reliable funding.

March 29, 2023

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Presenters

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Overview

- A Few Thoughts on SVB, etc.
- Thinking About Liquidity Holistically
- Navigating the Prepayment “Air Pocket”
- Wholesale Funding that Aligns with the Macro Outlook & Balance Sheet Positioning

A Few Thoughts on SVB, etc.

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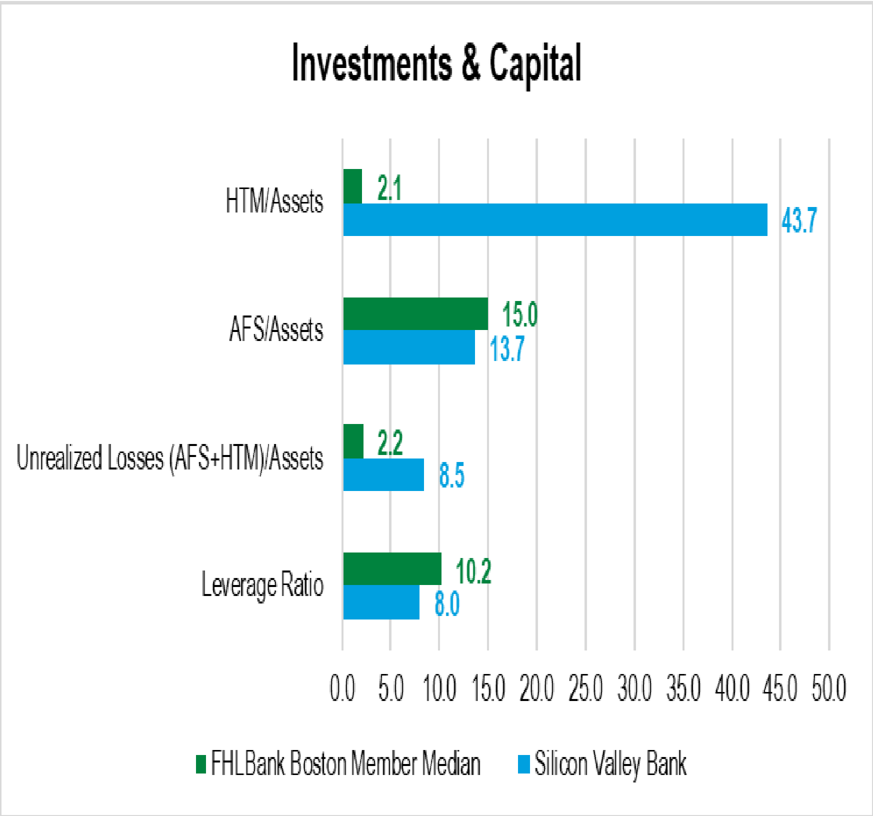
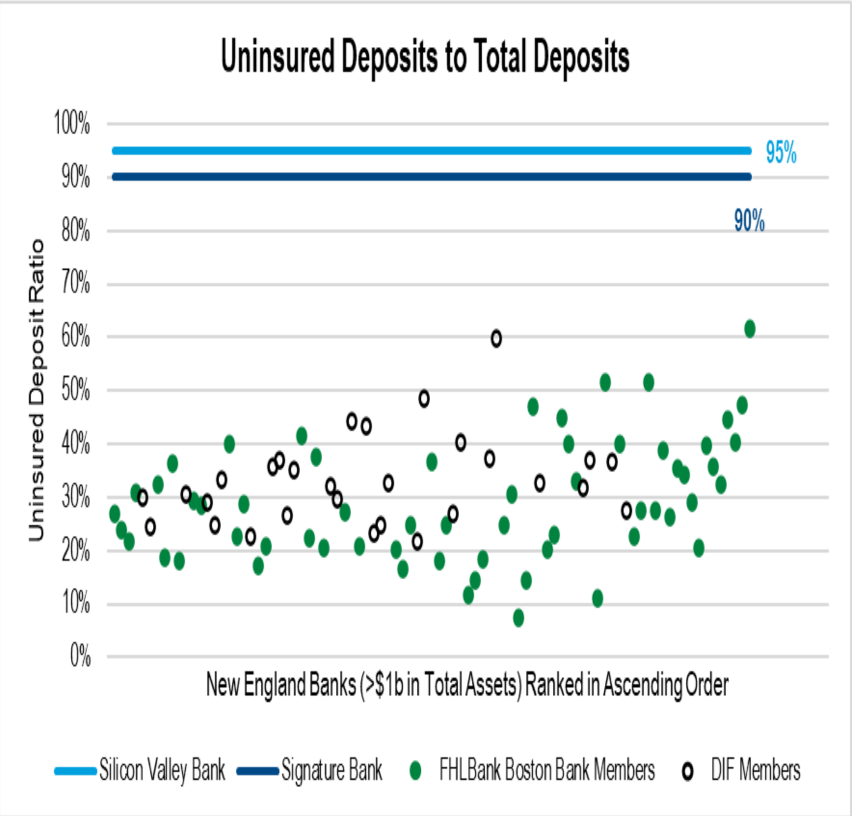
Intersection of Liquidity, Interest-Rate Risk & Capital

There are many takeaways from the SVB story, but ultimately it was about too much concentration risk- reliance on large depositors in a single industry, and how it paired with the positioning of the bank's assets once rates began to change.

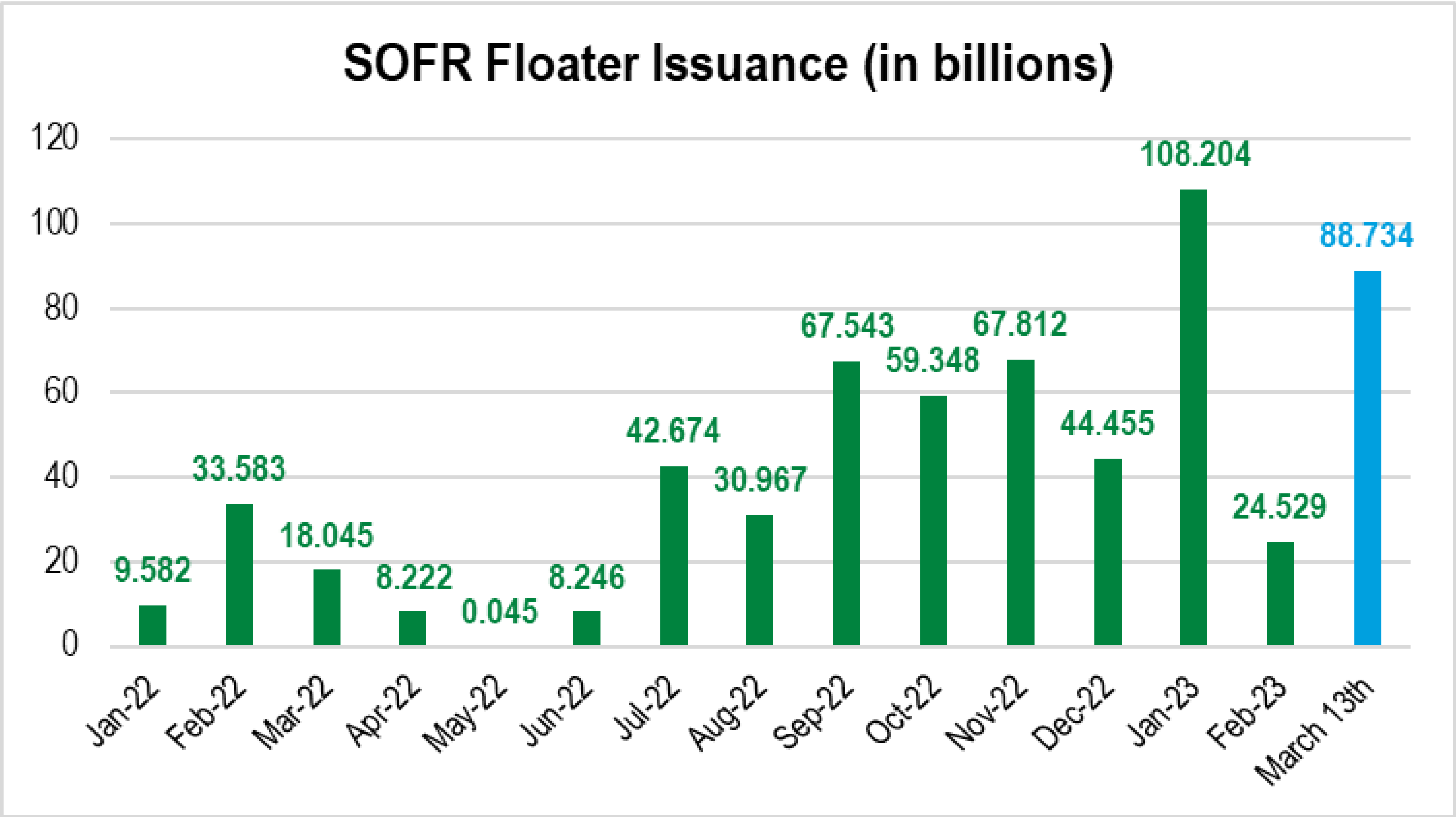




Source: S&P Global, FHLBank Boston

FHLBank Debt Issuance

As it's designed to do in both calm and volatile markets, the FHLBank System met member demand for advances by issuing debt into the capital markets.



Source: Office of Finance, FHLBank Boston

Thinking About Liquidity Holistically

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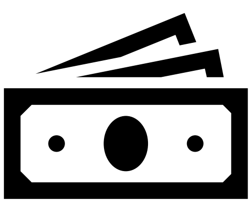
Key Liquidity Metrics

A/L Managers often operate with guidelines around several liquidity metrics, which can broadly be bucketed as being asset-based or liability-based.

Asset-Based Liquidity

- Cash & Due
- Loans/Deposits
- Liquidity Ratio
  - LCR (Liquidity Coverage Ratio)
- Unused Commitments Exposure



Liability-Based Liquidity

- Wholesale Funding
- Borrowing Capacity
  - Collateralized vs. Unsecured
- NSFR (Net Stable Funding Ratio)
- Deposit Concentration

Hidden Economic Relationships Among ALM Risks

It can be easy to set risk limits without contemplating the relationships that exist between different types of assumed risks. All four major ALM risk types can affect one another.

	Credit Risk	Interest Rate Risk	Optionality
Liquidity Risk	Less than Well-Capitalized restricts brokered funding and reciprocal deposit usage Fed Funds lines, derivatives counterparties, loan purchasers or participants could pull back FHLBank borrowing capacity could be reduced on asset valuations, credit status category could be lowered Depositors could leave on lowered confidence	FHLBank borrowing capacity could be reduced on fixed income valuations or restricted on negative TCE and/or lowered credit status category Industry deposit growth likely to be lower in higher rate environments and vice versa Deposit mix could shift among deposit account types Depositors could leave on lowered confidence	Borrowers could re-fi quickly in products with no or weak prepayment provisions, leading to balance sheet changes and attendant borrowing capacity changes Counterparty, broker, FHLBank restrictions could lead to suboptimal economic performance through not being able to call higher rate funding or to assume lower rate funding opportunistically

Hidden Relationships in the Balance Sheet

Because the balance sheet must balance and the income statement impacts equity, financial statement-based metrics influence one another – and all should be emergent from thoughtful identification of risk tolerances.

Assets

- Cash & Investments
- Loans

Liabilities + Equity

- Deposits
- Borrowings
- Equity

- **Loans/Deposits** implicitly identifies a relationship between Cash & Investments/Equity (and ALM risks)
  - Loose Loans/Deposits will force lower asset-based liquidity; high liquidity ratio requirements will force lower lending
    - IRR + liquidity risk could be optimized by matching deposit lives and betas with lending maturities and rate terms
  - Borrowings is the valve that allows flexibility for leverage/growth opportunities and funding contingency
- **Borrowing capacity** is emergent from asset selection
  - Lendable values = Investments > Residential > Commercial
  - Floating or short-term adjustable rate assets have more moderated lendable value than long-term fixed rate
- **Capital Ratios** grow or shrink based on ROE
  - Growth > (ROE – dividends) = shrinking capital ratios
  - Growth < (ROE – dividends) = increasing capital ratios
  - Capital ratios can maximally grow in a year by ROA, all else equal

FHLBank Specific Interrelated Risks

FHLBank borrowing capacity is the product of three factors -- asset valuation, haircut, and a collateral adjustment factor.

As rates have risen, many members have seen changes to the lendable values on their pledged assets. While what could happen in the future is both unknowable and idiosyncratic to specific assets pledged, members could benefit from an essential understanding of the factors that could affect their borrowing capacity.

Asset Valuation

- Based on loan level cashflows and/or the value of the underlying property, depending on underwriting characteristics

Haircut

- Based on the possibility of the asset's value being lower in a future liquidation where adverse interest rates, spreads and property values have occurred

Collateral Adjustment Factor

- Institution-specific measure based on a member's track record of pledging eligible collateral vs. ineligible collateral

- At different parts of the credit and interest rate cycle, different factors can affect final lendable values on collateral
- Higher rates can potentially lower asset valuations through discounted cash flow analysis and/or through lower real estate values
- Lower rates could improve asset valuations through discounted cash flow analysis, but if those lower rates are accompanied by a worsening credit environment, then either asset valuations or haircuts could more than offset that change

Opposite Extremes to Risk Guidelines

Two temptations exist in setting guidelines – either set a limit that is so loose that you're unlikely to ever get to it or set a limit that is so tight that you potentially unnecessarily restrict your ability to operate.

Too Loose

- Fail to identify issues or act on them before it's too late
- Little guidance on day-to-day operating
- May promote excess risk-taking

Too Tight

- Might unnecessarily inhibit business
- May ironically increase risk by limiting activity that could offset other risks
  - Derivatives activity
  - Wholesale funding use

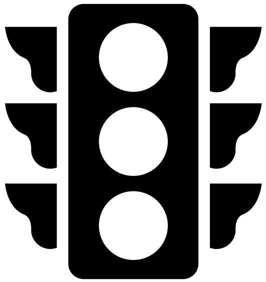
Risk Is a Spectrum, Not a Binary

A range of risk metrics instead of a pass/fail hard limit recognizes reasonable nuances and prevents complacency.

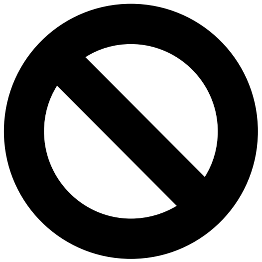
Think about "Green/Yellow/Red" or "Dark Green/Light Green/Yellow/Orange/Red" not just "over/above the limit"

- Is there any material difference between Loans/Deposits at 99.9% and 100.1%?
  - But how about 80% vs. 110%?

- Is there any material difference between a Ramp +/- 200 scenario at -4.9% NII vs. -5.1% NII?
  - But how about -2% vs. -20%?



Vs.



Principles for Determining Overall Risk Metrics

Business strategy and risk tolerances should be the predominant factors in identifying the lineup of metrics.

Strategy

- Determines how a depository operates
- "We serve small businesses, private practices, sole proprietors and the people associated with them in our specific community with traditional banking products."

Client Verticals + Products

- Emerges from the strategy and identifies what specific products are needed
- "We offer working capital lines, equipment loans, construction loans, mortgages and HELs with non-maturity deposits with a focus on medical and automotive."

Risk Types

- Rank order which risks are highest from the products that emerge
- "With a commercial emphasis, credit risk > liquidity risk > option risk > interest rate risk."

Metrics

- Figure out the key metrics that need to be prioritized and let other metrics follow
- "Higher capital ratio target ranges > Higher minimum liquidity ratio, Lower target liquidity ratio > Higher brokered limit > Tighter NII limits"

Principles for Integrated Guidelines

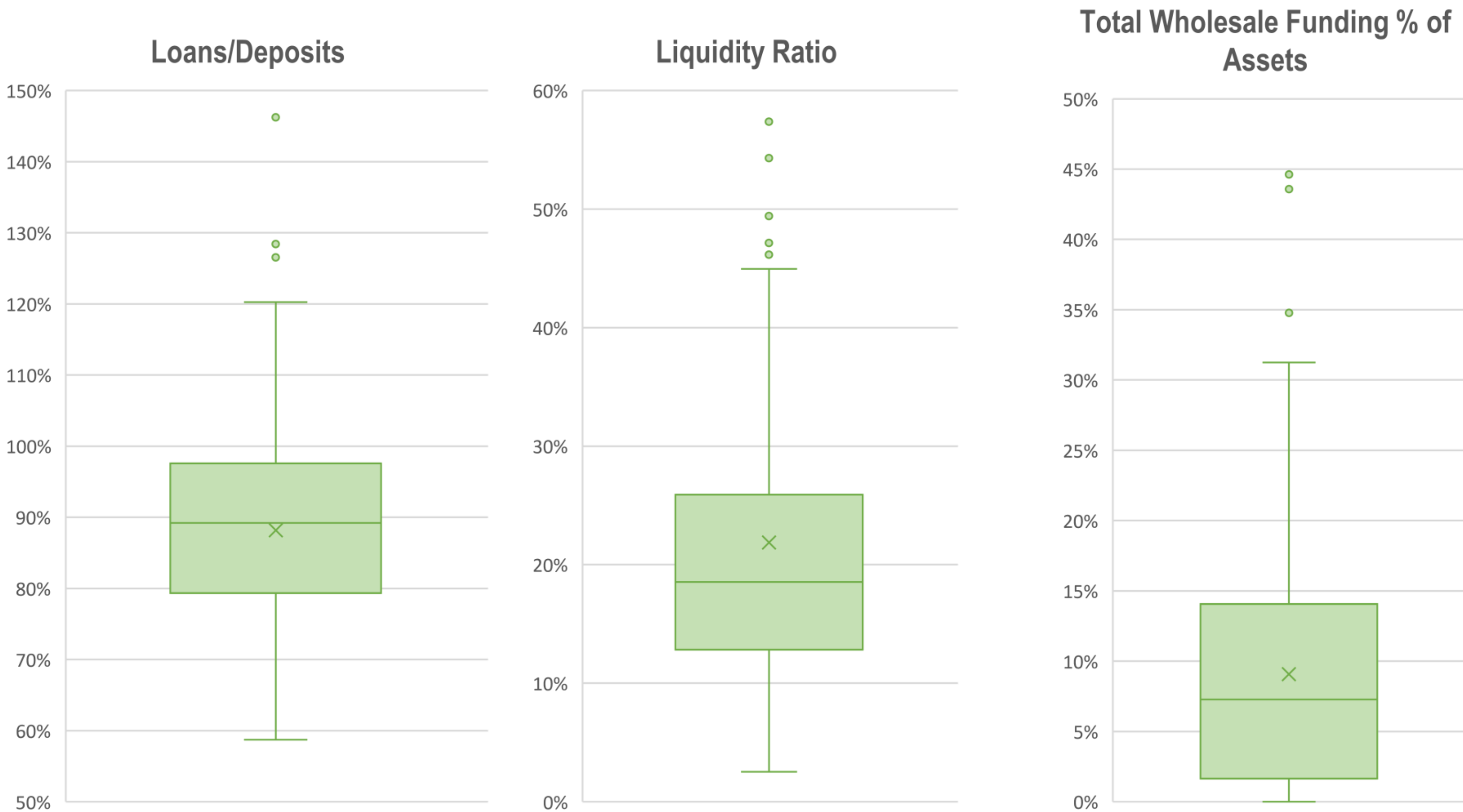
While the following guidelines are not exhaustive, some essential principles can help guide a more rigorous and resilient framework for risk management.

Capital Ratios	**Minimums** = Well-capitalized levels + internal buffer, TCE > 0 + internal buffer **Target** = ranges based on institution stress tests + peer analysis, primarily determined by credit risk
Loans/Deposits	**Maximum** = 100% + risk tolerance of maximum borrowings **Target** = Based on business strategy + client verticals; higher uninsured deposits or higher concentrated deposits argue for a lower ratio; size of levels between risk categories within institution-specific borrowing structure
Liquidity Ratios	**Minimum** = Adequately-capitalized thresholds **Target** = Inversely related to Loans/Deposits
Borrowing Capacity	**Minimum** = Percentage of deposits at fluctuation risk + near-term asset funding (loan pipeline + line drawdowns) **Target** = Minimum + buffer to handle outsized deposit changes + buffer to handle collateral valuation changes
Wholesale Funding	Could break out brokered deposits separate from borrowings because of regulatory treatment, speed + reliability, and correlation with other risks **Maximum** = Bounded by risk tolerance on Loans/Deposits + Liquidity Ratio and institution-specific structure

Peer Bank Comparisons

Box-and-whisker charts below show the relative dispersion of member banks on these metrics as of 4Q22.

The tops and bottoms of the boxes represent the 75%-25% percentiles and the whiskers the full range; outliers are dots.



Source: S&P Global, FHLBank Boston

Liquidity Metrics Best Practices

- No Pass/Fail metrics
- Recognize the implicit relationships of the metrics and avoid creating overpowered or underpowered levels
- Align the metrics with business strategy and risk tolerances by the type of risk assumed
  - Prioritize the types of risks based on the types of risks necessitated by the strategy
- Use scenario analysis to test the sensitivity of the metrics

Navigating the Prepayment "Air Pocket"

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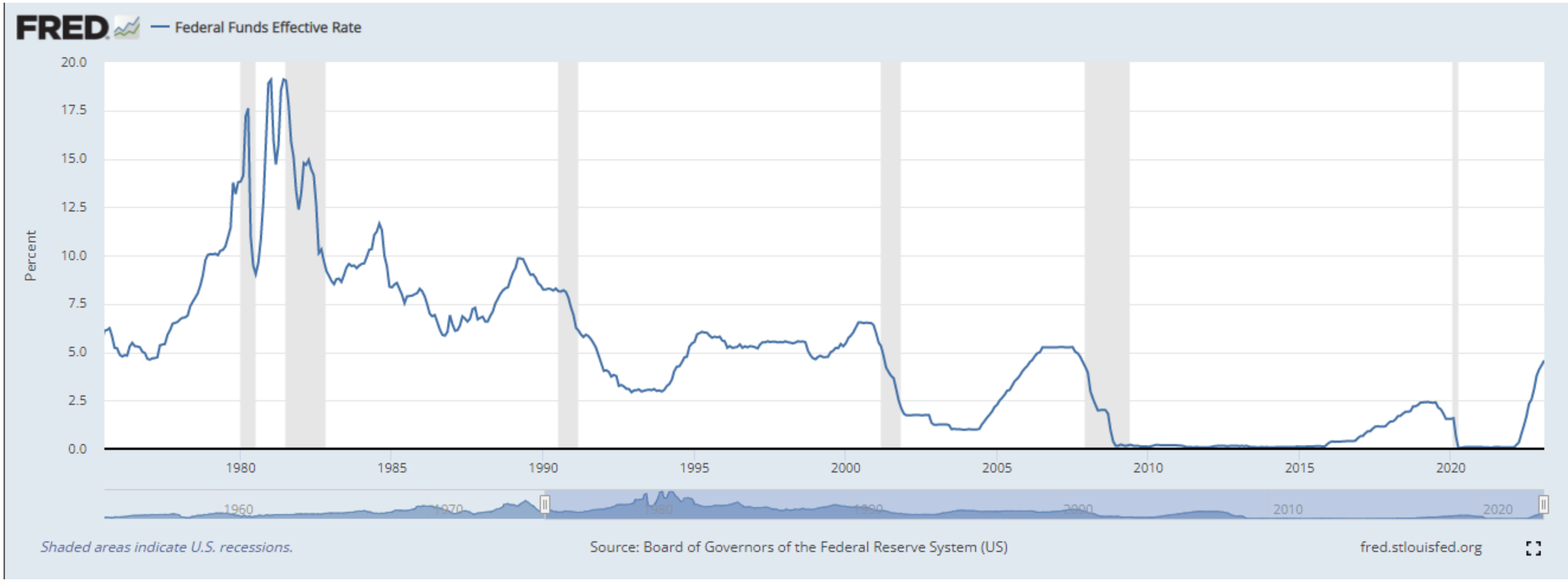
Speed of Fed Funds Changes

Fed Effective has increased > 470 bps in the past year.

The last time the Fed Funds rate moved so much within one year was 1981 when it peaked at ~19%.

Outside of the 1970s-early 1980s inflation era, Fed Funds has never run this far this fast.



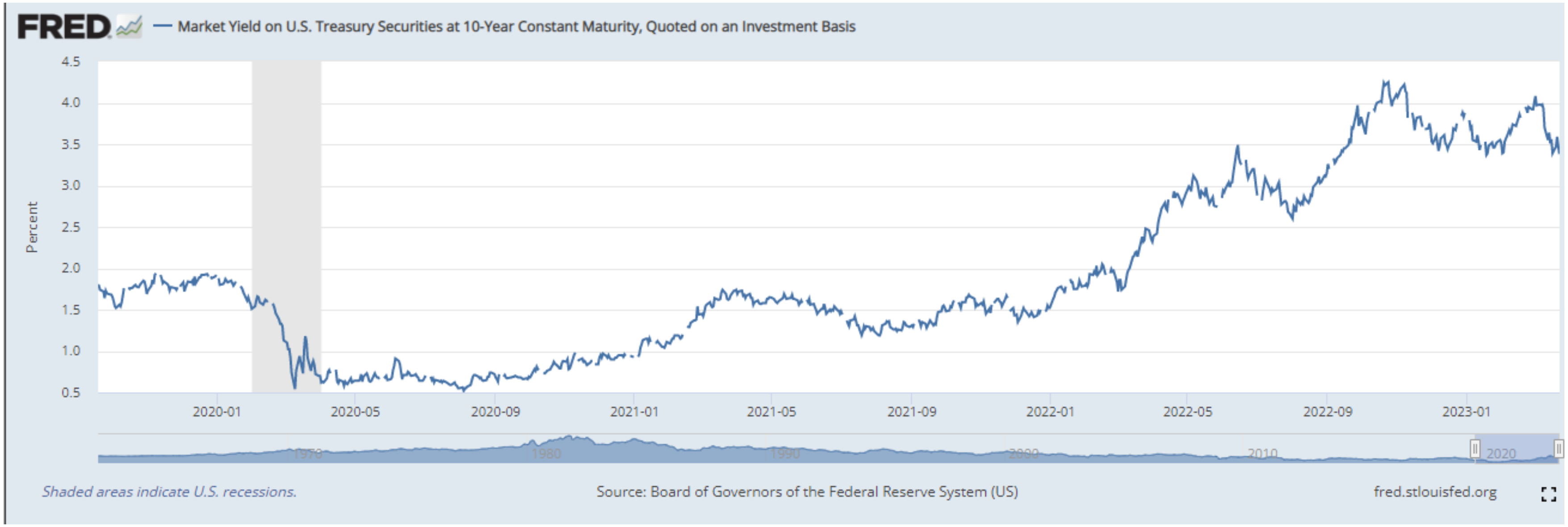
Source: Board of Governors of the Federal Reserve System

Speed of 10-yr Changes

After an extended period < 1.00%, the 10-yr finished 2021 at 1.52%. Less than 10 months later, it had increased 273 bps to 4.25%.

The last time the 10-yr had a move > 200 bps in a single year was 1994 when the yield was ~8%.

The last time the 10-yr had a move > 270 bps in a single year was 1984 when the yield was ~13%.

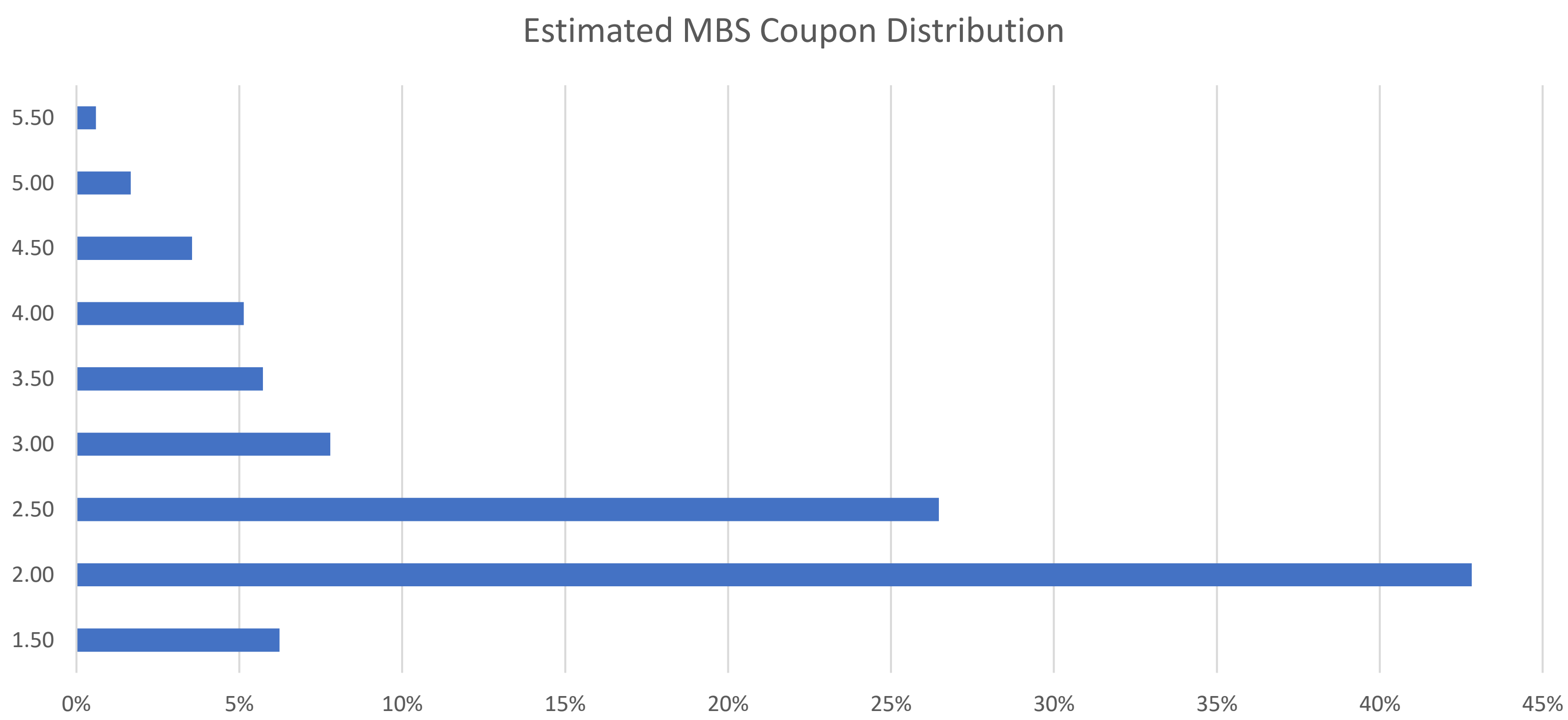


Source: Board of Governors of the Federal Reserve System

Mortgage Coupon Distribution

Both the speed and range of the move in fixed income has resulted in a profoundly uneven distribution of mortgage coupons.

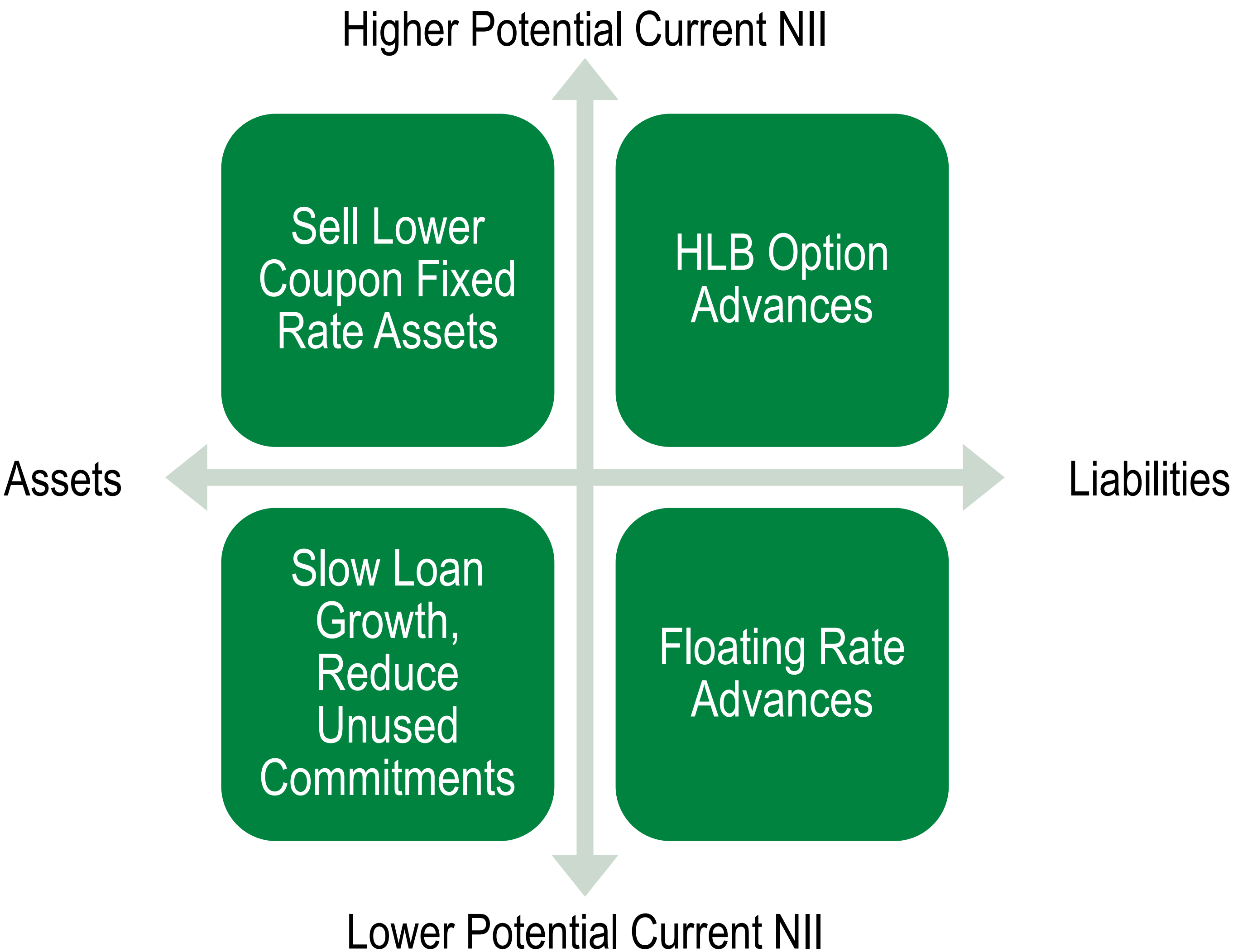
An estimated 70%-75% of MBS have coupons <= 2.5%, which translates into nominal rates of approximately <= 3.5%.



Source: Federal Housing Finance Agency, FHLBank Boston

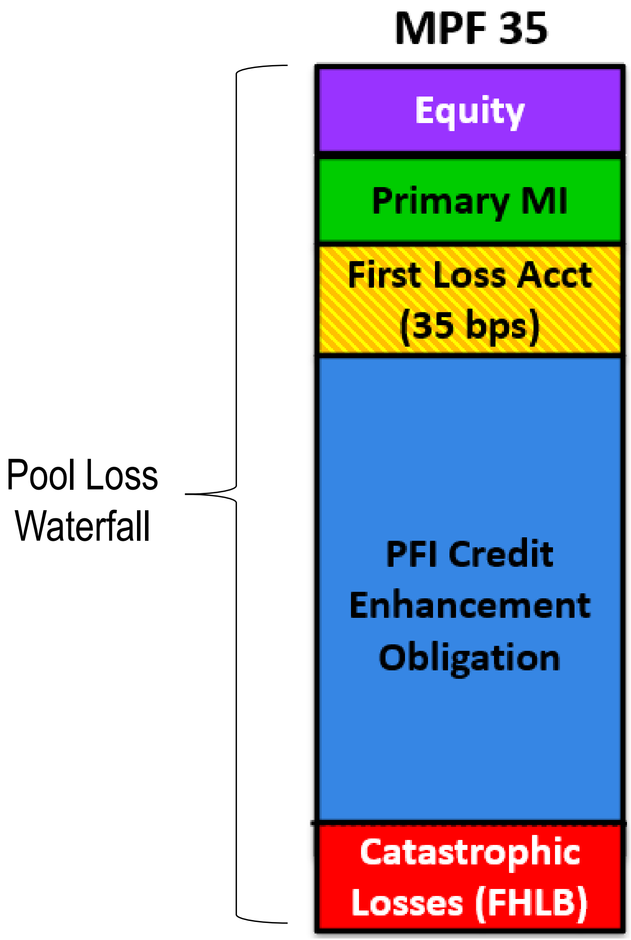
More Liability-Sensitive, Looking for Liquidity?

Many depositories could be more liability-sensitive in 2023 than they traditionally might seem if rates stay higher for longer. Selling lower coupon fixed rate assets or judiciously using HLB Option advances could balance risk and income.



MPF Program Overview

Mortgage Partnership Finance® Program or MPF® Program offered by FHLBank Boston has become increasingly attractive because of a combination of factors, including pricing adjustments and changes to Fannie Mae's offering.

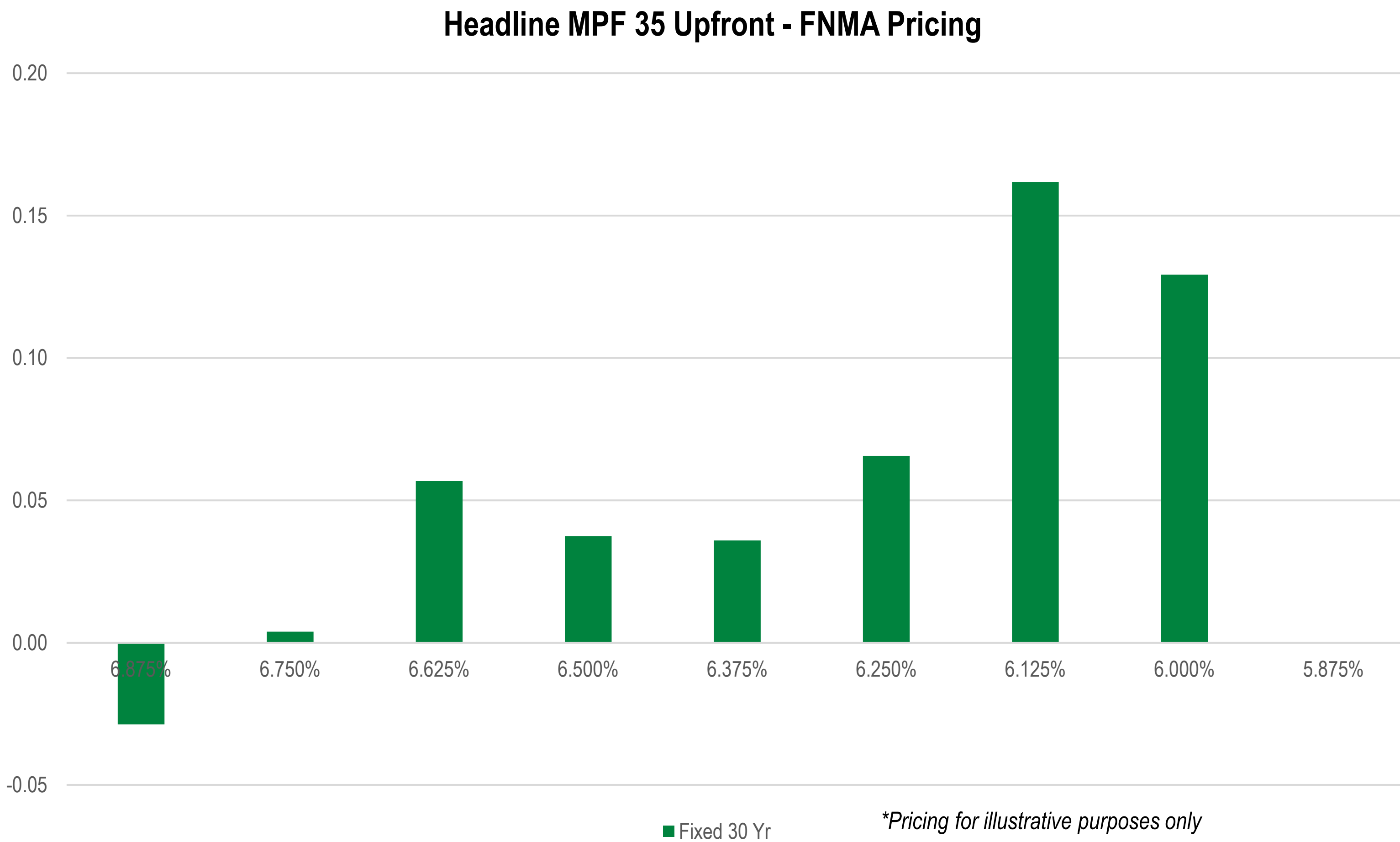


- MPF features a loss-sharing arrangement between the selling member (Participating Financial Institution, or PFI) and FHLBank Boston
  - Potential losses are taken at a pool level, not at an individual loan level
- FHLBank Boston would take the first 35 bps of losses after equity and mortgage insurance is exhausted
- At inception based on credit characteristics, a credit enhancement obligation is identified that defines the maximum losses that the selling member could incur
  - Can vary, but typically low-to-mid single digit percentage
  - Fees are paid monthly to the member while the assets perform
    - In MPF 35 Upfront, that fee is 7 bps/year after Year 1
- Any further losses are absorbed by FHLBank Boston

"Mortgage Partnership Finance," "MPF," are registered trademarks of the Federal Home Loan Bank of Chicago.

MPF Pricing

The chart below illustrates that MPF 35 Upfront compares favorably to Fannie Mae's (FNMA) estimated pricing across a variety of coupons on 30-yr fixed rate product.



**Pricing for illustrative purposes only*

"Mortgage Partnership Finance," "MPF," are registered trademarks of the Federal Home Loan Bank of Chicago.

Tool to Evaluate MPF vs. FNMA

Because of loan level price adjustments required by FNMA, MPF can be a very competitive alternative.

Inputs

MPF Product Type	MPF 35 Upfront
Term Product Type	Fixed 30 Yr
MPF Commitment Horizon (Days)	5
FNMA Commitment Horizon (Days)	10
FNMA Delivery Type	Best Efforts
Interest Rate	6.125%
LTV	75.01 –80.00%
Credit Score	700 – 719
Use	Purchase
Property Type	Single Family
Number of Units	1
Additional Features	None
First-time homebuyer w/qualifying income?	No
Loan Amount	$500,000
Expected life of Loan (years)	4

Clear All Inputs

mpf Mortgage Partnership Finance FHLBank Boston

Evaluation

Metric	Value	MPF or FNMA?
Estimated MPF Headline Price	101.06	
Estimated FNMA Headline Price	100.89	
Estimated Headline Price Difference	**0.172**	**MPF**
PV of MPF CE Trailer	0.187	
Estimated Price Difference w/CE Fees	**0.359**	**MPF**
FNMA LLPA, Credit Score + Use	1.375	
FNMA LLPA, Property Type	0.000	
FNMA LLPA, Additional Features	0.000	
FNMA LLPA, High Balance	0.000	
FNMA LLPA Waiver	0.000	
*Total FNMA LLPAs	1.375	
Mortgage Pricing Adjustment to Borrower	**0.34%**	
Estimated Price Difference w/LLPAs + CE Fees	**1.734**	**MPF**

MPF Estimated Price Timestamp	3/27/23 8:25 AM
FNMA Estimated Price Timestamp	3/27/23 8:00 AM

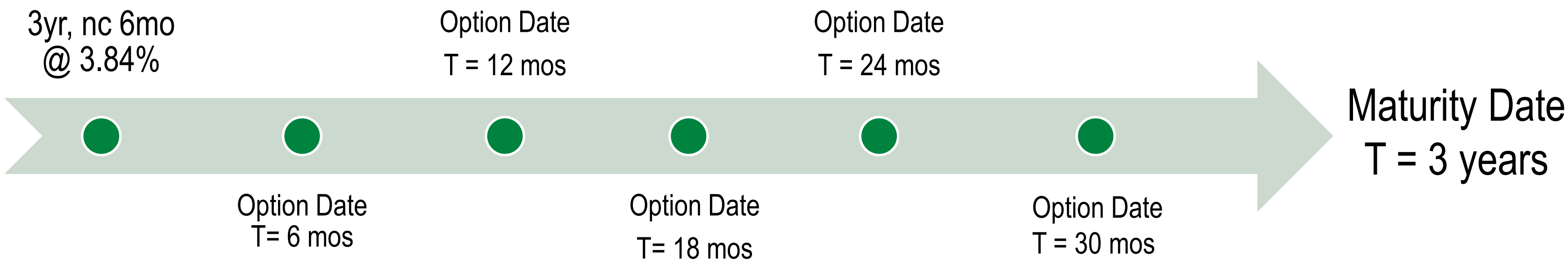
*Assumes that "standard" MI is charged on LTVs > 80%

***Pricing for illustrative purposes only*

HLB Option Advances

Member institutions take funding at a fixed rate and sell FHLBank Boston the option to call the advance on a specific date or series of dates after an initial lockout period.

HLB Option structures can be customized for a wide variety of terms and lockouts.



Features			
Fixed or Floating?	Fixed	**Prepayable, Callable?**	Yes, four business days notice
Available Maturity	Variety, likely 10 years max	**Call Frequency**	Default of 3 months, could be negotiated
Available Lockouts	Variety, minimum of 3 months	**Minimum Size**	$2,000,000
Interest Paid	Second business day	**Availability**	Any time, variety of structures
Principal Paid	At call date or maturity date	**Settlement**	Two days forward

HLB-Option Advances

By selling the option, the fixed rate on an HLB-Option advance is net lower than equivalently termed bullets for the lockout period.

HLB-Option Advance Indicative Pricing*

LOCKOUT	MATURITY 24	36	48	60
3	4.05%	3.69%	3.43%	3.22%
6	4.30%	3.84%	3.57%	3.51%
12	4.54%	4.21%	3.92%	3.69%
24		4.47%		3.95%
36				4.12%

Spread to Bullet (Lockout)*

LOCKOUT	MATURITY 24	36	48	60
3	-1.01%	-1.37%	-1.63%	-1.84%
6	-0.85%	-1.21%	-1.58%	-1.64%
12	-0.55%	-0.88%	-1.17%	-1.40%
24		-0.22%		-0.74%
36				-0.40%

- By selling options, members taking this advance most fully benefit if rates are static and volatility is low
- HLB Option advances have a highly similar option risk profile to a residential mortgage
- Structures with shorter lockouts and longer maturities have lower fixed pricing because more options are sold
- Likely the worst-case scenario for these advances is a sudden decline in rates resulting in the advance remaining at then above-market rates

*Indicative pricing only as of 3/22/23; all pricing is subject to change and rates and spreads are not guaranteed

Wholesale Funding that Aligns with the Macro Outlook & Balance Sheet Positioning

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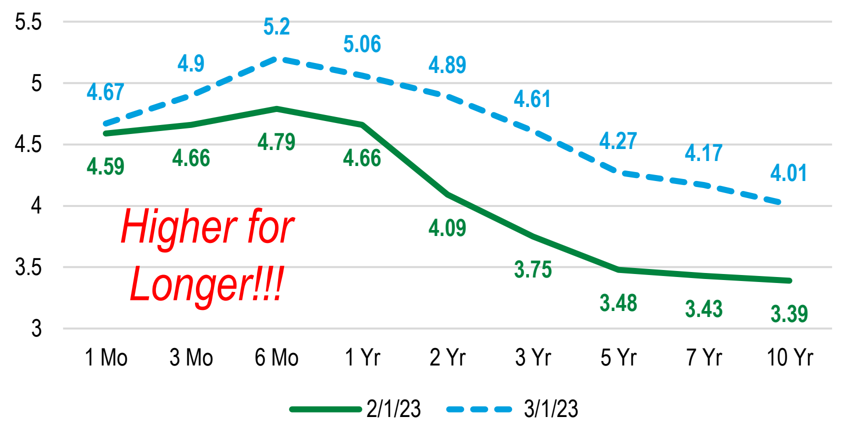
Aligning Funding with the Macro Outlook & Balance Sheet

- Yield Curve Gyrations
- What's Priced into the Yield Curve?
- Balancing Liquidity & Rate Risk Needs
- "Do-it-yourself" Floaters
- Scenario #1- Abrupt Pause and Pivot
- Scenario #2- Drawn-out Pause
- Scenario #3- Higher for Longer

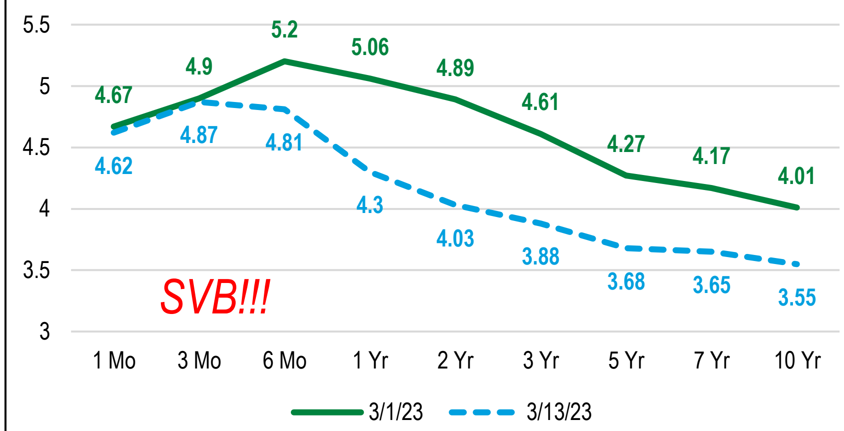
Yield Curve Gyrations

The last two months have been a wild ride for rates- when and at what rate will the Fed shift gears?

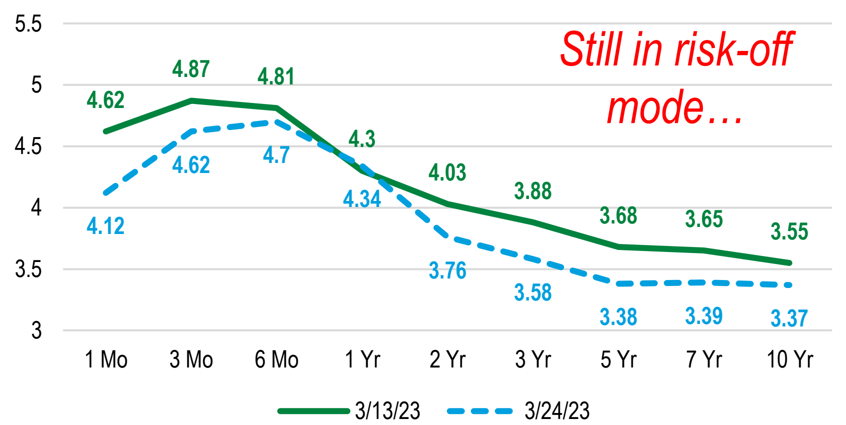
Treasury Yield Curve: 2/1 vs. 3/1



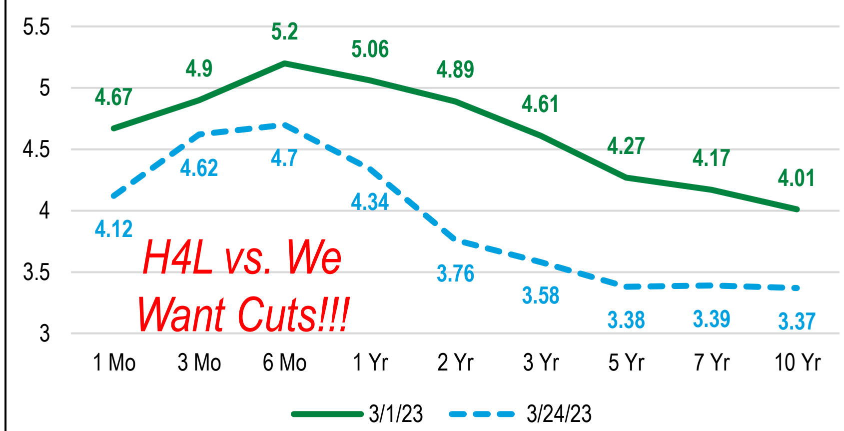
Treasury Yield Curve: 3/1 vs. 3/13



Treasury Yield Curve: 3/13 vs. 3/24



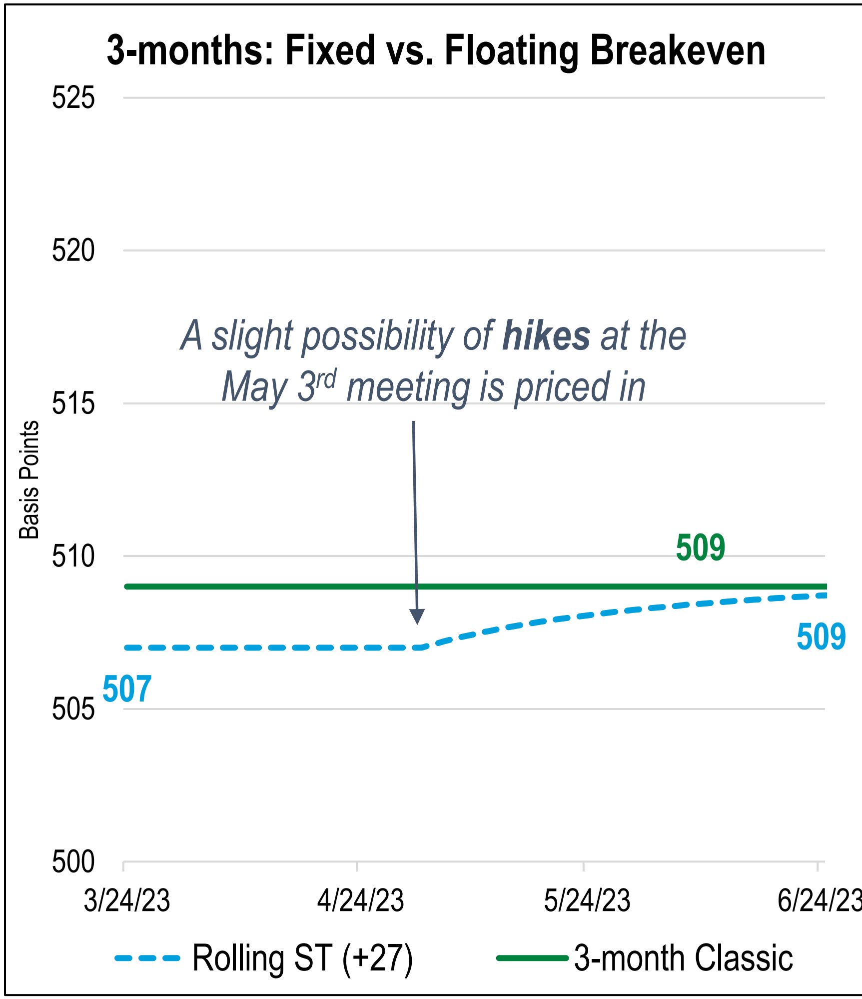
Treasury Yield Curve: 3/1 vs. 3/24

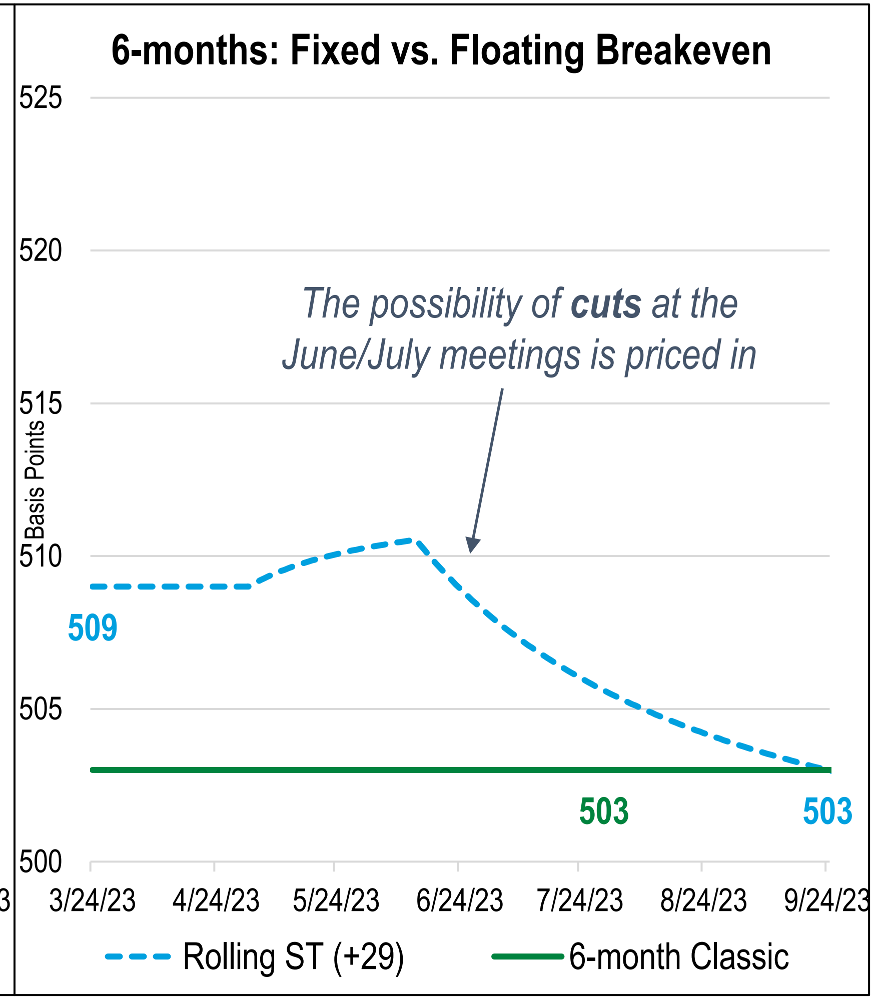


Source: U.S. Treasury, FHLBank Boston

What's Priced into the Yield Curve?

Scenario analysis comparing fixed vs. floating alternatives can inform what expectations are embedded into the yield curve.

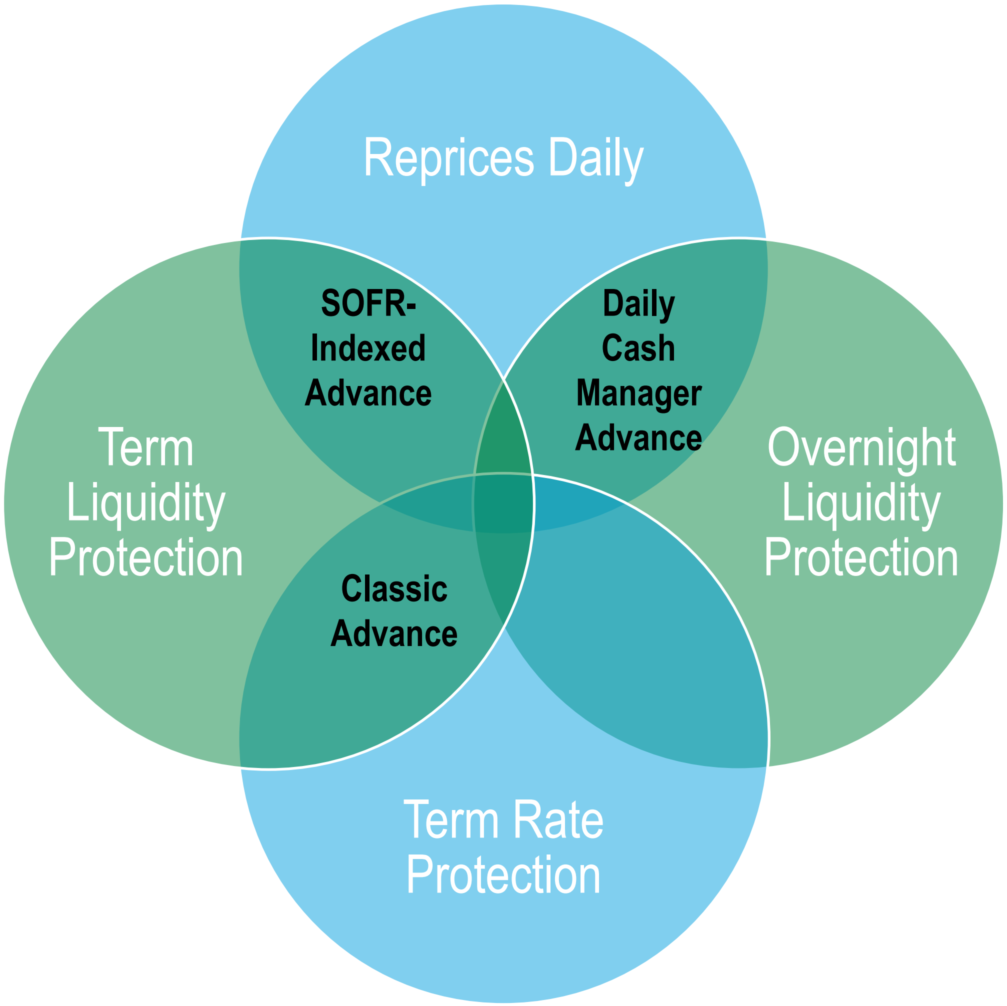




Source: Federal Reserve Bank of New York, FHLBank Boston

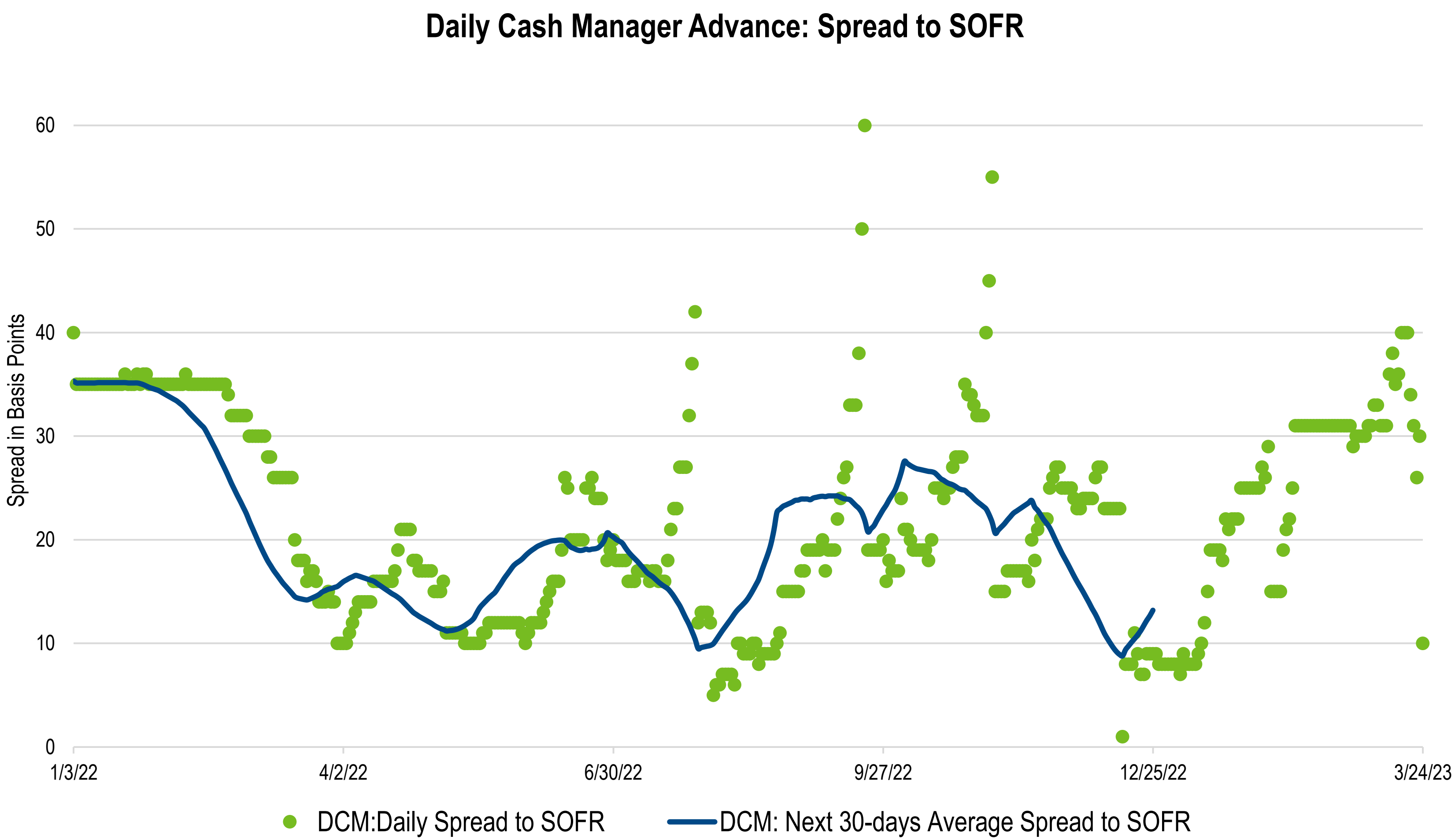
Fixed vs. Floating & Term vs. Overnight Borrowings

Flexibility exists to bundle (or unbundle) interest-rate risk and liquidity risk to get the exposure you want.



Daily Cash Manager & SOFR-Indexed Advances

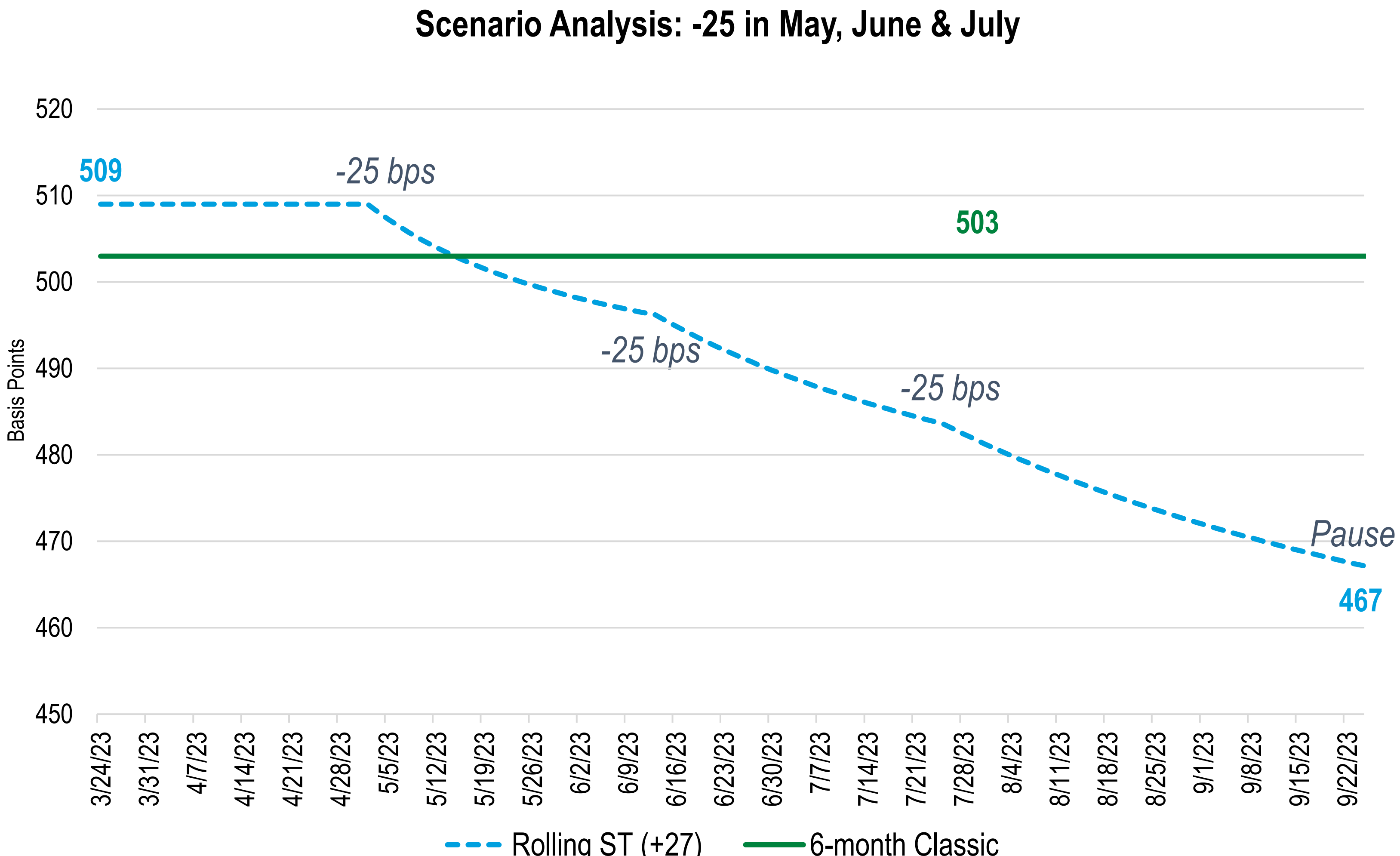
Continually rolling a DCM position is essentially a “do it yourself” floating-rate borrowing, without the benefits of the term protection and the stability of the spread.



Source: FHLBank Boston

Scenario #1- Abrupt Pause & Pivot

Daily repricing and spread stability would allow for the floater to outperform the fixed-rate alternative, if the Fed stops hikes and begins to push ST rates down.



Source: Federal Reserve Bank of New York, FHLBank Boston

Scenario #1- Term Floaters

Asset sensitive but liquidity light, with uncertain wholesale funding needs? Floating-rate options like the Discount Note Auction-Floater Advance can help align interest-rate risk and liquidity risk needs.

Long-term liquidity

- Final maturities of >1 year are more supportive of liquidity metrics as compared to rolling <1-month funding

Short-term rate exposure

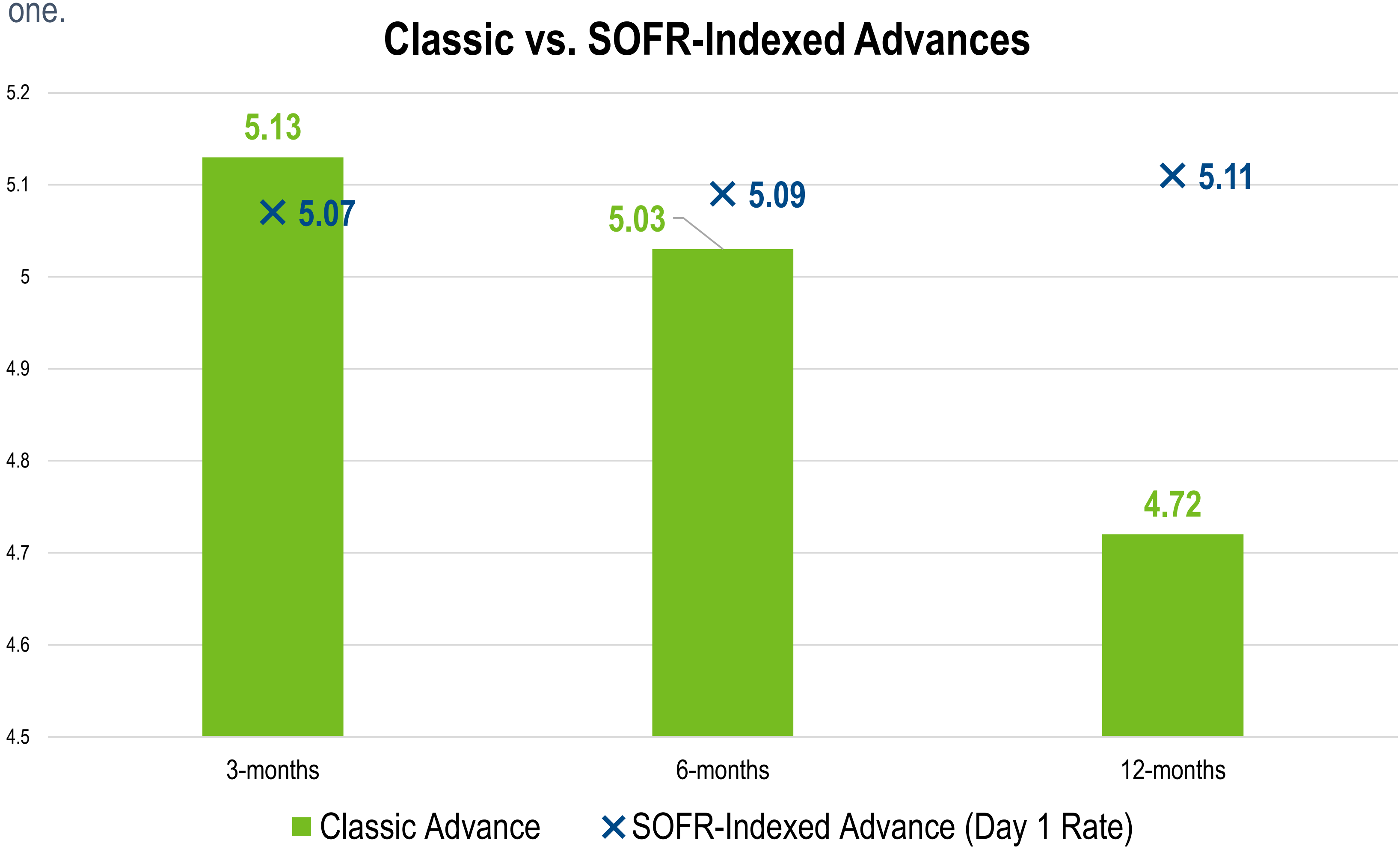
- All-in rate adjusts every 4 (or 13) weeks; spread is fixed at initiation, and the index is highly correlated with other short-term rate instruments like SOFR, T-bills, etc.

Prepayment flexibility

- Member can prepay in full or part at every rate reset, with no prepayment penalty

Scenario #2- Drawn-out Pause

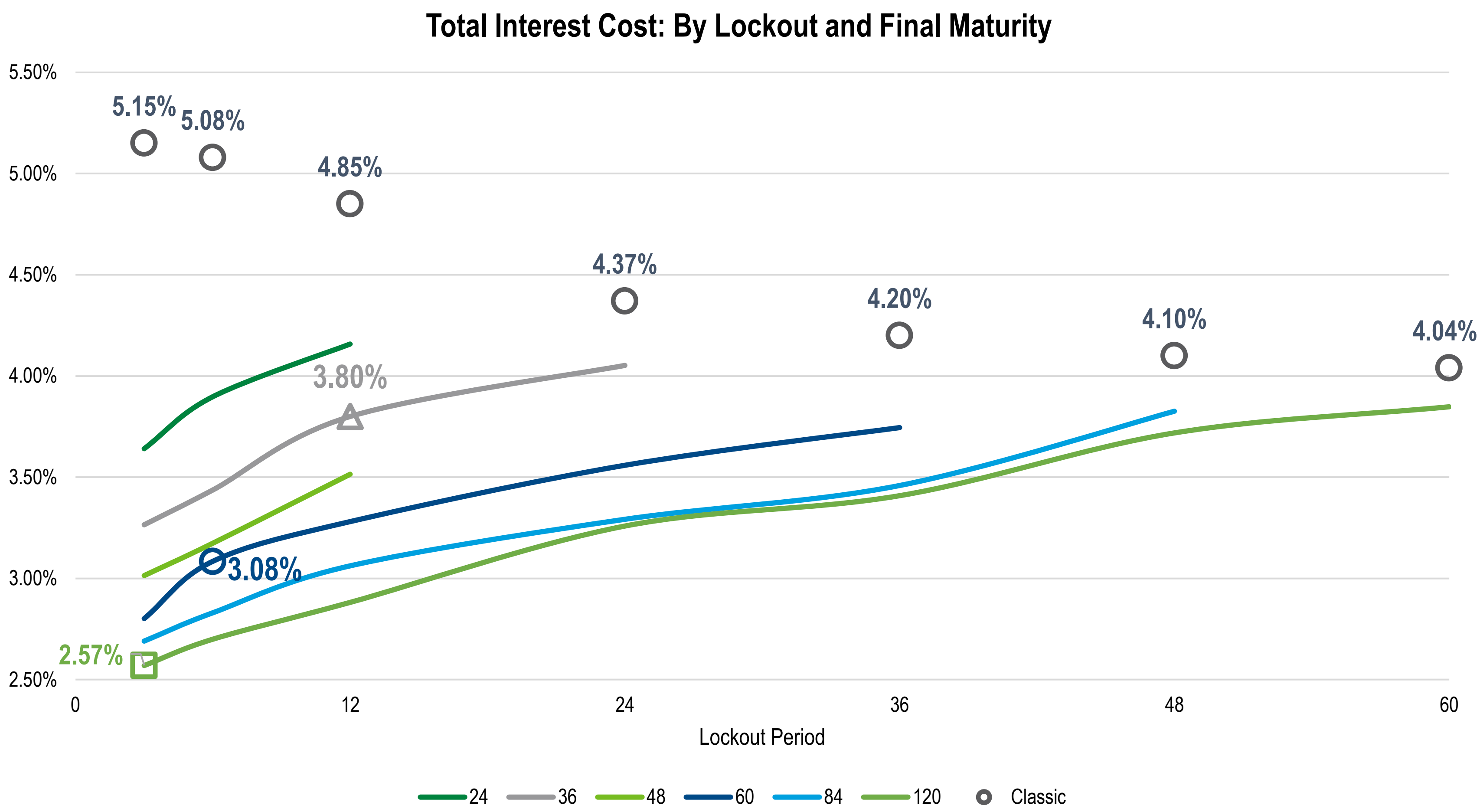
Interest cost savings would depend on the term- inside of 3 months benefits from a prolonged pause. Beyond that, with cuts expected, pricing based off the very front end of the curve is more expensive on day one.



Source: Federal Reserve Bank of New York, FHLBank Boston

Scenario #2- Putable Advances

A wide range of possible outcomes for rates ("will they hike or cut?!?!?") has pushed volatility to high levels, benefitting the absolute and relative rate on putable advances as compared to Classics.

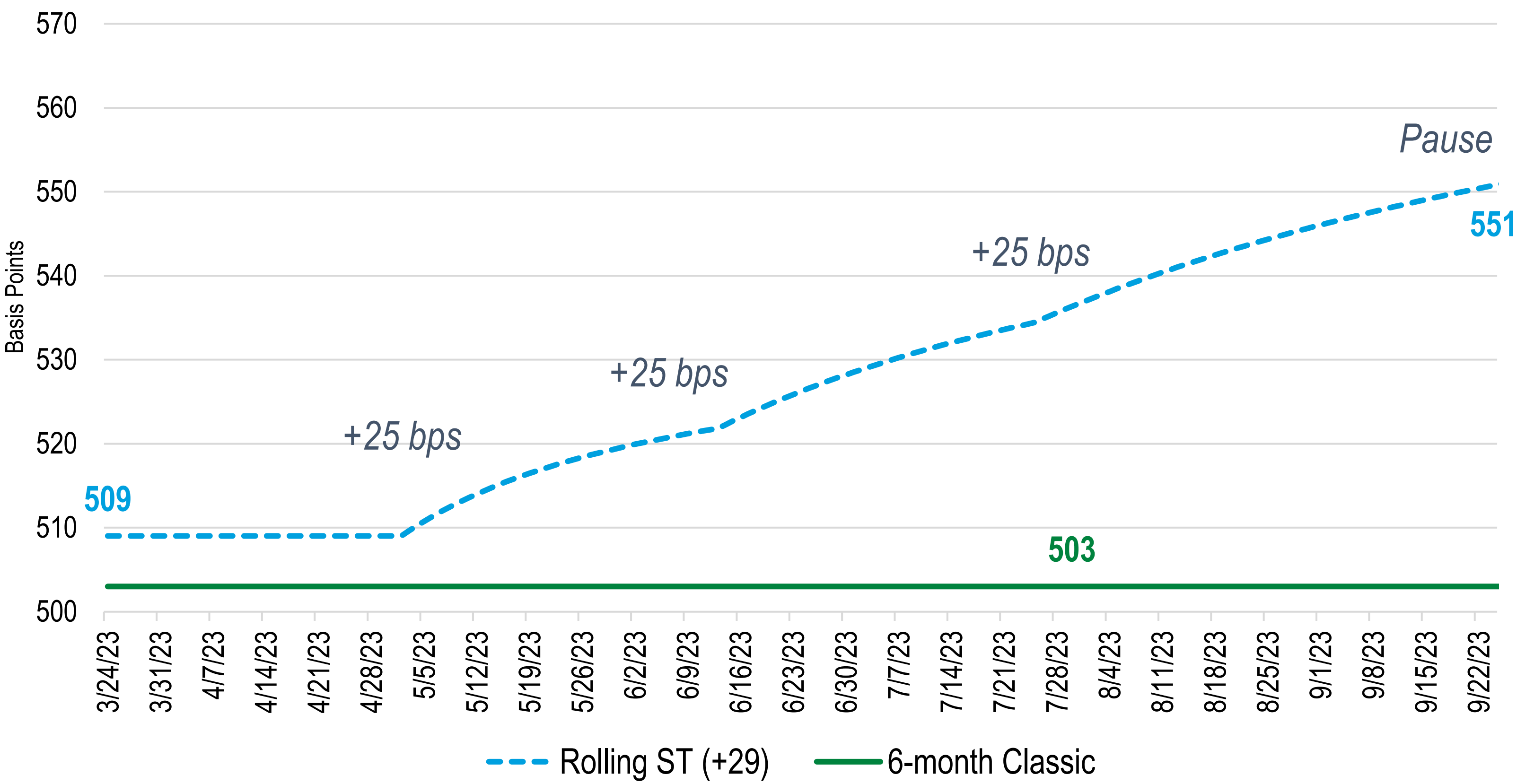


Source: FHLBank Boston

Scenario #3- Higher for Longer

Remember that February 1st to March 1st move up in rates? Hawkish commentary from Fed officials suggests that the measures taken to support the banking system do not automatically signal a pause from higher rates and the fight vs. inflation.

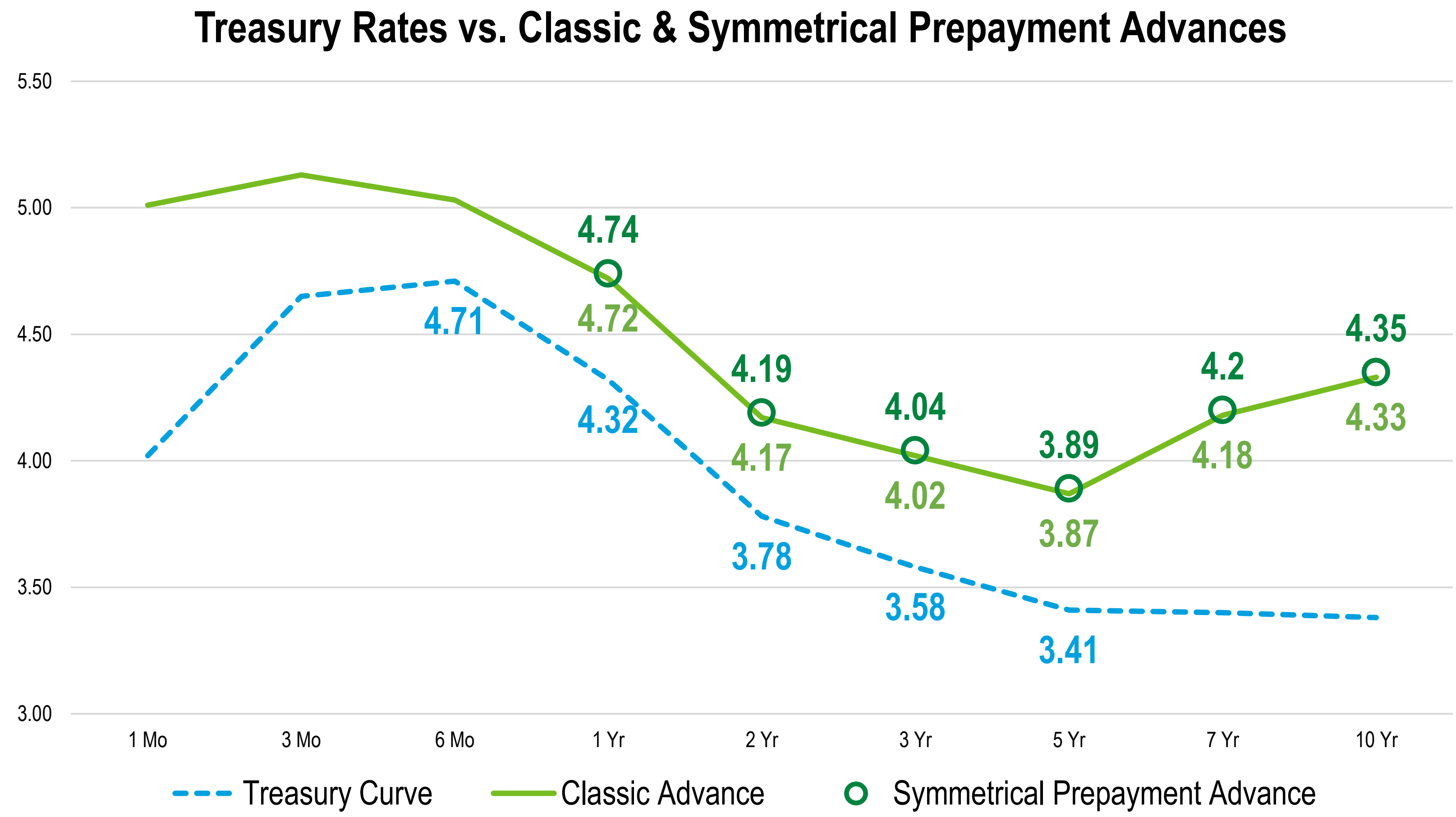
Scenario Analysis: +25 in May, June & July



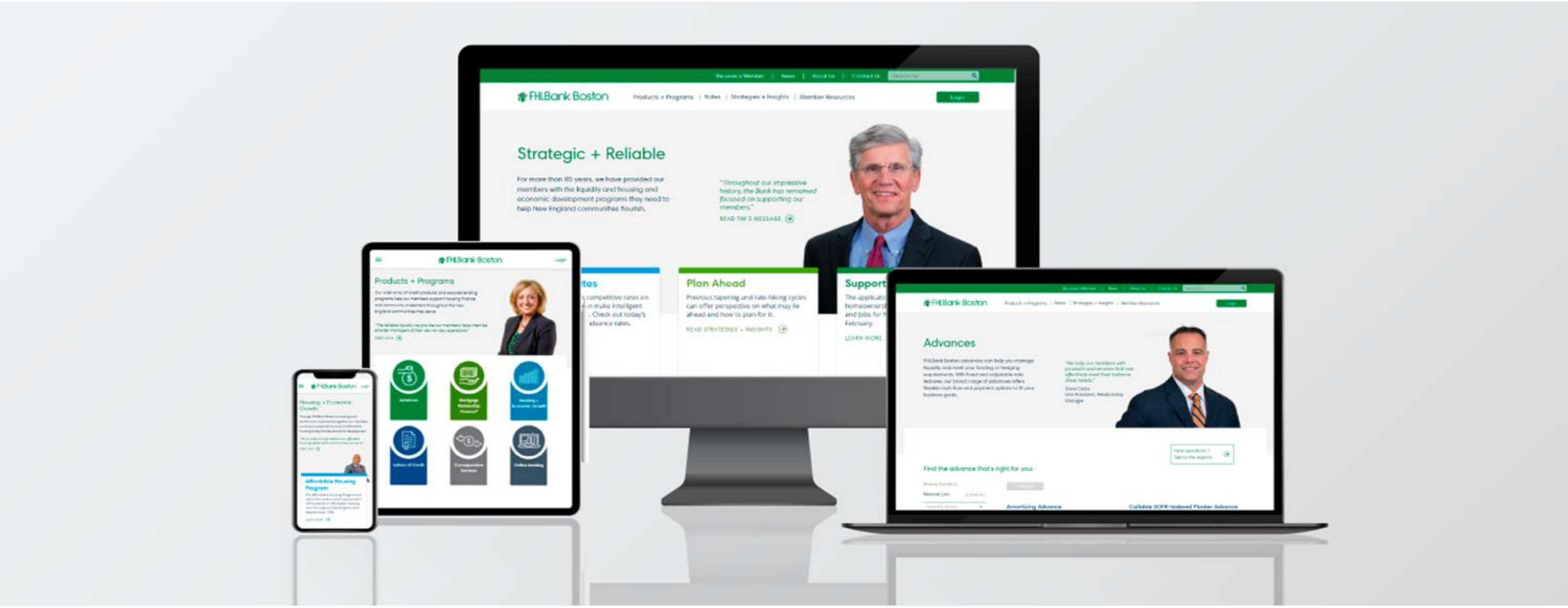
Source: Federal Reserve Bank of New York, FHLBank Boston

Scenario #3- Liability Extension

The Fed continuing to hike may put pressure on the belly of the curve to adapt, pushing rates higher (again, remember February?). An inverted curve and narrower advance spreads could offer cost savings and interest-rate risk mitigation.



Source: U.S. Treasury, FHLBank Boston



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Thank You

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