# **Strategies for Depository Institutions**

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For Institutional Use Only

- Appreciate a 30,000 foot view of the industry and the challenges currently faced, as well as the resulting implications for one's own institution
- Understand relative value across the investment universe, and where other institutions are currently most active
- Explore hedging strategies being utilized by various institution types/profiles, to discover analogs to one's own profile
- Discuss other transaction types currently active within depository universe



Industry State of the State

- To examine peer positioning, the charts below summarize loan and deposit growth in recent years/quarters
  - 2022Q2 saw significant loan growth coupled with deposit outflows, reversing a trend not seen since 2018Y





- Loan growth and deposit outflows resulted in an increase in the Loan/Deposit Ratio
- Deposit outflows were visible in the significant drop in cash balances quarter over quarter









- Securities/Assets saw large increases but have leveled off in recent quarters as loan growth picked up
- Recent deposit outflows have resulted in a slight uptick in borrowings









- Net Interest Margins finally reversed due to increased loan growth and rising interest rates
- Cost of Funds has remained low as of 6/30/2022, but has seen signs of pressure in 2022Q3









- Yield on securities increased as a result of rising interest rates and spread widening in certain sectors
- Yield on loans increased slightly in second quarter and likely will continue into the second half of 2022









# Capital Trends: Reaching an Inflection Point

- With improved earnings and rotation out of cash into loans, leverage ratios have increased while risk-based capital is being used more efficiently
- TCE/TA remains under pressure as unrealized losses in AFS portfolios flow through AOCI







All Banks

Source: S&P Global, all banks \$100M to \$50Bn Total Assets as of 2022Q2.

Medians

12.00 10.79 11.00 10.37 10.12 9.68 10.00 8.86 8.48 9.00 8.00 7.00 6.00 2022Q1 2021Y 2022Q2 2018Y 2019Y 2020Y

TCE/TA



## **Profitability Trends:** *Reaching an Inflection Point*

- The asset sensitive industry is seeing better returns as interest rates have risen
- Efficiency ratios peaked in first quarter and saw a decline in second quarter





All Banks





• The growth in money supply peaked in 2021 at just above 25%, but has now moved back towards 5% recently, which the U.S. commercial bank total deposits have followed.

# Federal Reserve's Balance Sheet Size As % of Nominal GDP







U.S. Commercial Bank Asset Growth Relative to Money Supply Growth





# 4Q'19 Through 2Q'22



# Thus, The Increase In The Money Supply Is Ultimately The Largest Driver of Deposit Growth













• The table below compares TBV at risk and TCE/TA across rate scenarios for a group of 21 peers that Stifel ran portfolios for as of 8/31/2022 with greater than \$5.0Bn in total assets:

	A	Convition	AFC/		Cain //Loss)	Doutfalia	0/ af	TBV at	Risk (% C	hange in \$	of TBV)		TCE	/TA	
Bank	(\$bn)	/Assets	AFS/ Securities	Securities	% <sup>1</sup>	WAL	% of Floaters	-100	Base	+100	+300	-100	Base	+100	+300
1	54.4	9.8%	29.8%	70.2%	-9.5%	10.1	3.7%	1.7%	0.0%	-1.7%	-4.8%	7.62%	7.50%	7.39%	7.17%
2	46.2	19.3%	69.5%	30.5%	-11.7%	8.3	5.1%	7.8%	0.0%	-8.0%	-23.1%	7.97%	7.44%	6.89%	5.82%
3	39.9	16.1%	59.5%	40.5%	-9.4%	11.7	5.1%	5.6%	0.0%	-5.5%	-16.0%	9.53%	9.07%	8.61%	7.73%
4	32.0	34.6%	72.3%	27.7%	-7.2%	5.2	12.8%	9.5%	0.0%	-9.7%	-29.0%	7.54%	6.93%	6.30%	5.03%
5	26.7	38.0%	63.1%	36.9%	-8.5%	5.9	3.0%	8.9%	0.0%	-9.0%	-26.7%	7.86%	7.26%	6.65%	5.43%
6	24.2	28.8%	60.3%	39.7%	-9.2%	7.2	18.8%	5.4%	0.0%	-5.6%	-18.0%	8.51%	8.11%	7.69%	6.74%
7	23.6	5.7%	100.0%	0.0%	-3.4%	4.6	2.4%	1.7%	0.0%	-1.7%	-4.8%	9.99%	9.84%	9.69%	9.42%
8	23.2	29.8%	63.1%	36.9%	-11.6%	7.2	3.9%	8.5%	0.0%	-9.0%	-26.9%	8.76%	8.13%	7.46%	6.08%
9	22.0	19.6%	67.9%	32.1%	-12.5%	9.6	27.2%	3.6%	0.0%	-3.7%	-11.2%	10.34%	10.02%	9.69%	9.00%
10	21.2	6.7%	100.0%	0.0%	-7.8%	5.2	5.8%	1.8%	0.0%	-1.9%	-5.8%	10.30%	10.14%	9.97%	9.61%
11	18.1	12.0%	91.1%	8.9%	-10.4%	7.9	1.1%	4.2%	0.0%	-4.4%	-12.9%	10.27%	9.89%	9.50%	8.72%
12	16.9	15.4%	78.9%	21.1%	-5.9%	5.4	20.6%	5.1%	0.0%	-4.9%	-14.2%	8.65%	8.26%	7.89%	7.17%
13	16.6	19.2%	85.7%	14.3%	-9.9%	6.2	3.4%	6.1%	0.0%	-6.5%	-19.5%	9.50%	9.00%	8.47%	7.38%
14	14.5	12.3%	41.2%	58.8%	-5.9%	5.4	14.9%	1.7%	0.0%	-1.8%	-5.3%	8.83%	8.70%	8.56%	8.27%
15	14.2	16.6%	61.9%	38.1%	-10.9%	6.2	2.3%	5.1%	0.0%	-5.2%	-15.4%	8.39%	8.01%	7.63%	6.87%
16	9.2	22.3%	21.5%	78.5%	-16.6%	12.3	0.2%	2.8%	0.0%	-2.8%	-8.0%	7.49%	7.30%	7.11%	6.75%
17	8.8	8.0%	100.0%	0.0%	-8.7%	9.9	1.1%	2.9%	0.0%	-3.3%	-10.3%	11.06%	10.78%	10.46%	9.77%
18	8.6	15.8%	97.0%	0.2%	-7.0%	8.5	21.1%	7.3%	0.0%	-7.4%	-22.0%	8.97%	8.41%	7.84%	6.69%
19	7.3	29.4%	69.4%	30.6%	-6.4%	6.4	4.7%	7.9%	0.0%	-8.0%	-23.7%	8.59%	8.02%	7.42%	6.23%
20	6.7	26.4%	100.0%	0.0%	-7.5%	7.8	17.2%	13.6%	0.0%	-13.5%	-40.7%	8.49%	7.55%	6.60%	4.62%
21	16.8	36.9%	62.0%	38.0%	-10.7%	7.0	0.1%	11.8%	0.0%	-12.4%	-37.4%	7.94%	7.17%	6.33%	4.61%
Peer Average	21.5	20.1%	71.2%	28.7%	-9.1%	7.5	8.3%	5.9%	0.0%	-6.0%	-17.9%	8.89%	8.45%	8.01%	7.10%

1. Gain/(Loss) % is entire portfolio and does not take AFS vs HTM into account

2. Includes 21 Banks for which Stifel has a run a securities portfolio as of 8/31/2022, with total assets greater than \$5.0Bn

3. Total Assets, TCE and TBV data per S&P Global as of 6/30/2022



## TBV at Risk for \$5.0Bn+ Peer Group

• The following graph explores the relationship between size of portfolio, TBV at risk, and HTM utilization. The chart compares a group of 21 peers that Stifel ran a portfolio for as of 8/31/2022 with Total Assets greater than \$5.0Bn.



Fixed Income Capital Markets

2. Total Assets, TCE and TBV data per S&P Global as of 6/30/2022



• HTM utilization fell steadily through 2020, only to pick up in recent quarters to highest levels in 5 years. The chart below shows HTM/Securities for public banks with total assets of \$5bn-\$10bn, \$10bn-\$25bn, \$25-\$50bn.



• The following chart explores the breakdown of HTM utilization for the most recent quarter, indicating that while portfolio size as a percent of the total balance sheet is similar regardless of institution size, the level of HTM utilization and the percentage of banks within each cohort that utilize HTM are more heavily weighted toward larger institutions:

	Asset Size	# of Banks	Total Assets (\$Bns)	Securities / Assets	HTM %	AFS %	% Banks with >5% HTM	% HTM for those with >5% HTM
	\$25bn-\$50bn	22	37.7	22%	30%	67%	68%	44%
blic	\$10bn-\$25bn	50	17.9	23%	28%	70%	84%	34%
Ρu	\$5bn-\$10bn	66	7.3	20%	17%	80%	50%	33%
	Total	138	0.0	21%	23%	74%	65%	35%



### HTM Data: Trends based on Sector

- The held-to-maturity designation is not applied equitably among securities sectors. Institutions tend to allocate the most price sensitive securities, particularly longer bullet like securities with some credit exposure, to HTM. While Agency Pass Throughs and Treasuries/Agencies account for 13% and 25% of all bank HTM portfolios, municipal securities remains the largest HTM allocation, accounting for 33% of HTM allocations across the industry.
- HTM allocations by sector are also not consistent across the asset size spectrum or between public and private institutions. 48% of HTM portfolios at smaller private institutions are municipals vs. just 25% at the largest public institutions. Similarly, corporate securities account for 11-17% of HTM utilization at sub-\$5bn public banks compared to just 5% at the largest public entities. In aggregate, credit sensitive instruments are almost 60% of small private HTM portfolios vs. approximately 40% across the universe.

		# of Banks	Treasury/ Agency	Agency Pass Throughs	Agency CMOs	NA RMBS	CMBS	ABS	Municipal	Corporate	Structured
	\$25bn-\$50bn	25	7%	35%	11%	0%	10%	0%	25%	5%	6%
	\$10bn-\$25bn	63	8%	25%	13%	0%	18%	0%	30%	5%	0%
olic	\$5bn-\$10bn	71	11%	32%	11%	0%	8%	0%	29%	6%	3%
Puł	\$1bn-\$5bn	266	15%	21%	8%	1%	5%	0%	39%	10%	0%
	\$100M-\$1bn	342	15%	25%	6%	1%	3%	0%	33%	17%	1%
	Total	767	11%	28%	10%	1%	9%	0%	31%	9%	2%
	\$25hn-\$50hn	5	37%	0%	7%	0%	0%	0%	11%	0%	50%
	\$10hn-\$25hn	11	0%	74%	2%	0%	7%	0%	17%	0%	0%
ate	\$5bn-\$10bn	30	11%	29%	9%	0%	15%	0%	27%	10%	0%
riva	\$1bn-\$5bn	404	16%	19%	5%	0%	3%	2%	35%	17%	1%
4	\$100M-\$1bn	3.396	24%	13%	2%	0%	2%	0%	48%	11%	0%
	Total	3,846	17%	27%	5%	0%	5%	1%	27%	8%	10%
	4										
	\$25bn-\$50bn	30	9%	32%	10%	0%	10%	0%	24%	5%	10%
	\$10bn-\$25bn	74	7%	30%	12%	0%	17%	0%	29%	5%	0%
=	\$5bn-\$10bn	101	11%	31%	11%	0%	10%	0%	29%	7%	2%
A	\$1bn-\$5bn	670	16%	20%	6%	1%	4%	1%	36%	14%	1%
	\$100M-\$1bn	3,738	23%	14%	3%	0%	2%	0%	46%	11%	0%
	Total	4,590	13%	25%	8%	0%	8%	0%	33%	8%	2%



### **Stifel's CECL HTM Solution**

- Ongoing availability of this data is a paramount concern, as is granularity and detail. Establishing a model that will be used on a go-forward basis for audited financial statements based on freely available Moody's or S&P reports has been a point of concern for many institutions. If those reports are significantly altered, discontinued, or paywalled, it could pose substantial challenge to the process moving forward.
- In order to both secure ongoing access to the data, and to provide a "plug-and-play" CECL HTM solution, <u>Stifel has</u> <u>contracted with Moody's Analytics to provide clients with access to Moody's ImpairmentStudio platform</u>, which:
  - Is validated, audited, and driven by 60 years of historic transition, default, and loss data across many asset classes and sectors.
  - Can provide detailed reserve calculations and forecasts for virtually any issuer using a manageable set of inputs.
  - Is updated quarterly based on new default and loss information and updated economic data.
  - Is easily formatted and consumed.
- Moreover, our agreement to redistribute the solution to a large number of institutional clients helps keep the per CUSIP costs manageable regardless of the size of the portfolio. This is especially valuable as many expect, and preliminary results have supported, the ultimate reserve numbers for many low risk securities like municipals can be eligible.



• Public Bank interest rate risk positioning per SNL Q1 broken down by asset size

### <u>NII</u>

Immediate

	All	<b>All</b> 135		< <b>5b</b> 65		32	10-50b	34	50+b	3
	-100	+100	-100	+100	-100	+100	-100	+100	-100	+100
Observations	117	128	61	62	28	30	25	32	3	3
Min	-24.9	-7.6	-11.0	-7.6	-10.0	-2.4	-24.9	-1.2	-8.3	3.6
Max	8.3	31.5	0.7	11.0	2.0	11.2	8.3	31.5	-3.5	10.2
Median	-3.6	3.1	-3.4	1.7	-3.8	2.7	-4.2	5.0	-4.8	7.9
Average	-4.0	3.6	-3.7	2.4	-4.1	3.2	-4.7	5.8	-5.5	7.2
StDev	3.3	4.5	2.3	4.0	2.9	3.7	5.4	5.4	2.5	3.4

#### <u>NII</u>

Gradual 12 month

	All	70	<5b	22	5-10b	12	10-50b	22	50+b	14
	-100	+100	-100	+100	-100	+100	-100	+100	-100	+100
Observations	47	55	19	15	9	10	14	16	5	14
Min	-12.8	-1.5	-12.8	-1.5	-7.6	-0.8	-10.0	0.5	-7.1	2.1
Max	2.0	11.2	0.4	8.5	0.9	11.2	2.0	5.7	-2.9	8.0
Median	-3.4	3.3	-3.7	4.3	-1.6	2.0	-3.1	3.1	-4.9	4.3
Average	-3.5	3.7	-4.0	3.7	-2.2	3.3	-3.2	3.2	-4.9	4.5
StDev	3.0	2.6	3.6	3.2	2.7	4.0	2.7	1.4	1.5	1.7



• Public Bank interest rate risk positioning per SNL Q2 broken down by asset size

### <u>NII</u>

Immediate

	<b>All</b> 153		<5b	< <b>5b</b> 70		37	10-50b	34	50+b	12
	-100	+100	-100	+100	-10	0 +100	-100	+100	-100	+100
Observations	136	131	65	63	3	3 32	32	31	6	5
Min	-15.4	-8.6	-10.9	-8.6	-13.	3 -2.1	-14.2	0.2	-15.4	2.2
Max	7.7	16.8	7.7	7.2	0.	9 16.8	0.4	15.7	-0.7	6.7
Median	-4.6	2.7	-3.8	1.1	-5.	1 2.8	-6.3	4.2	-5.2	5.5
Average	-4.7	2.7	-3.5	1.5	-5.	4 3.0	-6.2	4.6	-6.6	4.9
StDev	3.7	3.5	3.5	3.1	3.	5 3.9	3.3	2.9	5.4	1.7

#### <u>NII</u>

Gradual 12 month

	All	80	<5b	22	5-10b	11	10-50b	27	50+b	20
	-100	+100	-100	+100	-100	+100	-100	+100	-100	+100
Observations	58	51	19	14	9	7	15	15	15	15
Min	-12.4	-1.8	-8.3	-1.8	-6.8	-0.9	-12.4	0.7	-6.9	0.1
Max	2.7	10.4	2.7	5.9	0.5	6.9	-0.3	10.4	-0.9	6.0
Median	-3.3	2.4	-3.5	2.4	-1.3	1.5	-4.2	2.4	-3.4	2.9
Average	-3.6	2.6	-3.5	2.2	-1.9	2.5	-4.9	3.1	-3.6	2.7
StDev	2.8	2.3	2.9	2.5	2.1	2.6	3.4	2.5	1.8	1.6



### • Stifel's 10 largest private bank ALM clients interest rate risk positioning

	Max	Min	Average	Median
+400 NII % Change	68.2%	-5.0%	16.1%	6.9%
+300 NII % Change	53.2%	-3.6%	12.8%	5.1%
+200 NII % Change	37.0%	-2.1%	8.8%	3.7%
+100 NII % Change	19.3%	-4.3%	4.6%	2.3%
-100 NII % Change	-0.1%	-12.5%	-5.5%	-5.3%
-200 NII % Change	-1.7%	-29.6%	-11.0%	-9.9%
	Max	Min	Average	Median
+400 EVE % Change	41.6%	-28.1%	-4.9%	-5.7%
+300 EVE % Change	32.1%	-20.5%	-2.4%	-2.8%
+200 EVE % Change	23.4%	-12.8%	-0.5%	-0.7%
+100 EVE % Change	12.0%	-7.6%	0.4%	0.5%
-100 EVE % Change	4.0%	-15.0%	-5.2%	-4.4%
-200 EVE % Change	7.3%	-38.9%	-14.4%	-13.2%



Page 241.Source: Stifel ALM Data2.Note: Assumes an immediate and parallel shift in the yield curve using a static balance sheet.

# **Peer Securities Portfolio Metrics**

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- Portfolio growth tapered off in recent months while Book Yield continued to move higher.
  - Portfolio balances increased by nearly 17% through April, but growth has flattened out since, increasing by only 0.2% in August.
  - Though still moving higher month over month, the 4 basis point increase in average Book Yield was the smallest increase in 6 months.





Source: Stifel

- After changing dramatically through April, portfolio compositions have been relatively consistent. •
  - Portfolio Weighted Average Life (WAL) increased by 1.5 years between December and April, but has increased by only 0.2 years since.
  - Average mark-to-market moved to a new low of -8.8% in August, though the pace of change of slowed meaningfully from the early months of 2022.





Page 27 Includes bank portfolios with >\$100MM of Book Value who received portfolio analytics each month from Dec '21 – August '22 Portfolio gain/loss includes all holdings, including those designated as HTM

- Agency CMBS holdings increased by 0.1% for the second consecutive month while MBS Fixed allocations continued to decline.
- Sector weightings held fairly steady otherwise. •



Fixed Income Capital Markets

Source: Stifel

Includes bank portfolios with >\$100MM of Book Value who received portfolio analytics each month from Dec '21 – August '22

•	Largest sector increase =
	Treasuries

- Largest sector decrease = MBS Fixed
- Yield (TEY) increased 21bps QoQ to 2.05%
- Price Vol +300 bps unchanged QoQ
- Portfolio WAL and cash flows extended
- Unrealized loss of -9.17% June 2022 vs. -5.43% March 2022
- Increase in bonds classified in HTM from 10.6% March 2022 to 14.2% June 2022

Security Category							
		Quar	tile		All Banks	All Banks	Change
	1	2	3	4	6/30/22	3/31/22	QoQ
Allocations:							
Treasuries	4.0%	5.6%	7.4%	15.1%	8.0%	6.6%	1.4%
CDs	0.3%	0.4%	0.5%	0.8%	0.5%	0.6%	0.0%
Agencies	4.0%	6.0%	6.5%	17.2%	8.3%	8.0%	0.3%
MBS Fixed	19.7%	27.6%	27.9%	26.2%	25.8%	27.8%	-2.0%
SBA Fixed	1.6%	3.1%	1.9%	0.7%	1.8%	1.9%	0.0%
ARM	1.0%	1.0%	1.6%	0.7%	1.1%	1.2%	0.0%
SBA Floating Rate	2.8%	2.0%	4.8%	1.2%	3.0%	3.0%	0.0%
Agency CMO	13.6%	15.5%	28.3%	12.9%	19.0%	19.4%	-0.4%
Private CMO	3.5%	2.3%	0.5%	0.3%	1.5%	0.7%	0.8%
Asset-Backed, Other Amortizing	1.7%	1.3%	0.3%	0.1%	0.7%	0.7%	0.1%
Municipals	41.8%	31.4%	16.0%	18.6%	25.3%	25.3%	0.0%
Corporates, Other Non-Amortizing	6.1%	3.7%	4.3%	6.1%	5.0%	5.0%	0.0%
Total	100%	100%	100%	100%	100%	100%	0.0%
Tax Equivalent Yield	2.70%	2.21%	1.91%	1.53%	2.05%	1.84%	0.21%
Effective Duration	5.31	5.30	4.92	4.22	4.93	4.70	0.23
Up 300 bps Price Volatility	-15.44%	-15.25%	-14.00%	-12.03%	-14.13%	-14.15%	0.02%
WAL	9.12	8.36	6.80	6.18	7.48	6.72	0.76
2-Yr Principal Cash Flow	14.63%	15.32%	18.61%	22.43%	17.92%	19.24%	-1.32%
Gain (Loss) %	-8.08%	-9.77%	-9.44%	-9.15%	-9.17%	-5.43%	-3.74%
HTM %	15.16%	17.67%	8.62%	18.56%	14.20%	10.62%	3.58%



### Liquidity/IRR Consideration Matrix



Fixed Income Capital Markets

# Where do each of you sit within the quadrant shared a moment ago?

- Asset Sensitive/Less Liquidity Large floating rate asset base, low cash, strong loan demand
- Asset Sensitive/Greater Liquidity Large floating rate asset base, high cash/lower loan demand
- Neutral or Liability Sensitive/Less Liquidity Large fixed rate asset base, low cash, strong loan demand
- Neutral or Liability Sensitive/Greater Liquidity Large fixed rate asset base, stable/greater liquidity, lower loan demand



**Investment Securities : Relative Value** 



#### MBS Summary of Views: Autumn 2022

The performance of the MBS Index has been extremely volatile over the past five months, including a record high of +129bps excess return in July and near-record lows of -105bps in April & -100bps in August. We attribute the volatility to 1) the backup & extension, 2) tapering & end of QE4 and 3) economic uncertainty as the Fed battles inflation. Although QE4 is over, years of quantitative easing has compressed spreads, primarily on the low end of the coupon stack. Meanwhile, the Fed's impact on higher coupons, which make up the bulk of new supply, has been much more benign. Hence, the yield curves for 30yr & 15yr MBS are steeply inverted on a yield/duration basis (i.e., higher coupons are cheap, lower coupons are rich). We do not expect the Fed to sell MBS and we do not expect spreads to gap wider. Prepayment risk is very low and most MBS are fully extended. A flat/inverted yield curve is a better scenario for MBS than bullet/rolldown products such as Treasuries, Agencies and Corporates. With the majority of the market priced at a deep discount, we expect the MBS Index to generate positive excess returns in a range-bound or rates-down scenario, which is consistent with Stifel Chief Economist Lindsey Piegza's 18-month forecast. **We recommend an overweight for the MBS basis, with a bias for higher coupons**.

Portfolio Strategy 1: **Move Up-in-Coupon in 30yr MBS to 4s & 4.5s.** Years of quantitative easing by the Fed distorted valuations in the MBS market, particularly for lower coupon 30yr & 15yr passthrus. The yield curves for 30yr & 15yr MBS are INVERTED on a yield/ duration basis. Spreads are wider, yields are higher, durations are shorter moving incrementally up the coupon stack. We are strong advocates of the up-in-coupon trade.

Portfolio Strategy 2: **Move Up-in-Coupon in CMOs to 4s & 4.5s.** The raw material used to create CMOs is relatively cheap on the high end of the coupon stack owing to a) less distortion by the Fed and b) slower projected speeds. An UIC trade out of 2%, 2.5% or 3% passthrus or CMOs into 4-4.5% CMOs picks yield, spread, total return & shortens duration.

Portfolio Strategy 3: **Buy Floaters to Ride the Tightening Wave.** The futures market is pricing-in another 150bps of rate hikes by the Fed over the next 6 months. A "hike & hold" strategy by the FOMC could keep short-term rates elevated for a sustained period. The inversion of the yield curve has dramatically reduced the yield concession to own floaters.

Portfolio Strategy 4: **Find Surrogates for 15yr MBS.** Demand for extension protection is strong and 15yr MBS are a natural fit. However, the supply of 15yr collateral is historically low and there's simply not enough 15yr pools to go around. Spreads are tight and the 15yr sector remains a beatable benchmark for relative value trades involving similar duration alternatives, such as front PAC, SEQ & VADM CMOs, 7yr & 10yr hybrid ARMs & 20yr MBS.

Portfolio Strategy 5: **Take Advantage of the Agency/Non-Agency Basis.** The yield and spread diff. between Agency and AAA-rated SSNR private label bonds is historically wide.



#### Headwinds in Housing Bode Well for High LTV Collateral

- The S&P Case-Shiller Home Price Index is up 44.9% since the start of the pandemic
- The Fannie Mae Home Purchase Sentiment Index printed at 62.0 in August, its lowest level since 2011
- HLTV collateral has been a reliable form of prepay-protection during periods of no/slow HPA

	Pool	Security					Pricing	I-Sprd	Mkt	Mkt		12mo	Proj	Zvol	Opt	Libor	Eff	Eff
#	Number	Description	Cpn	WAC	Age	WAM	Spread	(YldBk)	Price	YTM	WAL	TRR	LTCPR	LOAS	Cost	OAS	Dura	Cnvx
Bu	y FR RA7642	30yr 4.5% 95 HLTV	4.50	5.42	2	356	+8/32s vs. FN 4.5s	125	99.047	4.64	9.70	4.59	6.8	113.6	106.1	7.5	3.51	-1.59
Se	FN MA4548	30yr 2.5% Passthru	2.50	3.29	8	350	+0/32s vs. FN 2.5s	50	87.922	3.93	11.34	3.92	4.2	48.0	42.2	5.8	6.86	-0.84
dif	ference		2.00	2.13	-6	6		75	11.125	0.71	-1.64	0.67	2.6	65.5	63.9	1.7	-3.35	-0.75
3	S&P Con	eLogic Case-Shiller 20 (Base Year: Jar Prices rose 44.9%	City Co nuary 2 6 from	mposit 000 = 1 Feb 2	te Hoi 100) 2020	me Prio	te Index	100 -		Fannie	e Mae (Base	Home Year:	Purchas March	e Sentii 2011 =	ment In 60)	dex		
P CoreLogic Case-Shiller 20 City Composite HPI	00 - 75 - 50 - Home prices 25 - than 10% an August 2002 00 - 75 - 50 - 50 -	rose more nually from to May 2006	~~~	Hom 20% twelv 18.79	e price annual ve mon % in Ju	its rose m lly over t hths, incl ne	ore than he past uding Wae Home Purchase Sentiment Index	95 - 90 - 85 - 80 - 75 - 70 - 65 - 60 -	J. C.	A <sub>L</sub>	N	The Fanr Sentimer index de housing- perception Fannie N	nie Mae Ho ht Index (H signed to t related att ons using s lae Nation	me Purcha PSI) is a co rack consu itudes, inte ix question al Housing	se mposite mers' entions, and s from the Survey.		fyh	W.
N 10		2004 2005 2006 2008 2008	2010	2012	2014 2015	2016-2017-	SPCS20 Index	55 - 50	2012	2013	2014	2015	2016	2017	Fannie its low	est reading	l to 62.0 ii g since 20	August, 11









### Up-in-Coupon Trade –20yr 4.5% Passthrus. 15yr 2.5% Passthru



Yield Curve Twist Scenarios:

UpStp150 - 3mo LIBOR up 50bps, 5yr Swap up 100bps, 10yr swap up 150bps

UpStp75 - 3mo LIBOR up 25bps, 5yr Swap up 50bps, 10yr swap up 75bps

UpFlt150 - 3m LIBOR up 150bps, 5yr Swap up 75bps, 10yr Swap up 50bps UpFlt75 - 3mo LIBOR up 100bps, 5yr Swap up 50bps, 10yr Swap up 25bps

\* Total Return Scenarios are ramped to a 12, 24 & 36 month horizon and assume constant-OAS horizon pricing to a 12, 24 & 36 month horizon; P&I payments are reinvested at 1 month LIBOR.


## Relative Value Comparison: 4.5% VADM off 30yr 4.5s vs. 4.0% 15yr Passthru



### Yield Curve Twist Scenarios:

UpStp150 - 3mo LIBOR up 50bps, 5yr Swap up 100bps, 10yr swap up 150bps UpStp75 - 3mo LIBOR up 25bps, 5yr Swap up 50bps, 10yr swap up 75bps UpFlt75 - 3mo LIBOR up 100bps, 5yr Swap up 50bps, 10yr Swap up 25bps DnFlt150 - 3mo LIBOR down 75bps, 5yr Swap down 125bps, 10yr Swap down 150bps DnFlt75 - 3mo LIBOR down 37.5bps, 5yr Swap down 62.5bps, 10yr Swap down 75bps DnStp150 - 3mo LIBOR down 150bps, 5yr Swap down 75bps, 10yr Swap down 50bps



## 30yr Passthru: SSNR 30yr 4.0% Passthru vs. Fannie 30yr 4.0% Passthru

	Pool	Security					Pricing	I-Sprd	Mkt	Mkt		12mo	Proj	Zvol	Opt	Libor	Eff	Eff
#	Number	Description	Cpn	WAC	Age	WAM	Spread	(YldBk)	Price	YTM	WAL	TRR	LTCPR	LOAS	Cost	OAS	Dura	Cnvx
Buy	JPMMT 2022-8 A3	SSNR 30yr 4.0% Passthru	4.00	4.77	3	356	-92/32s vs. FN 4.0s	159	95.102	4.73	9.09	4.69	6.8	145.7	62.8	83.0	4.47	-1.14
Sell	FN MA4732	30yr 4.0% TBA (new)	4.00	4.97	1	360	+0/32s vs. FN 4.0s	112	97.977	4.26	10.75	4.22	5.6	101.4	99.4	2.0	3.89	-1.71
diffe	erence		0.00	-0.20	2	-4		47	-2.8750	0.47	-1.66	0.47	1.2	44.3	-36.6	80.9	0.58	0.57

### Front Sequential: SSNR 4.0% Front SEQ vs. Freddie 15yr 4.0% Passthru

	Pool	Security					Pricing	I-Sprd	Mkt	Mkt		12mo	Proj	Zvol	Opt	Libor	Eff	Eff
#	Number	Description	Cpn	WAC	Age	WAM	Spread	(YldBk)	Price	YTM	WAL	TRR	LTCPR	LOAS	Cost	OAS	Dura	Cnvx
Buy	JPMMT 2022-8 A4A	SSNR Front SEQ 4.0% Jumbo	4.00	4.77	3	356	-88/32s vs. Dw 4.0s	133	97.133	4.56	5.96	4.52	6.8	124.2	75.3	48.9	3.09	-1.13
Sell	FR RC2603	15yr 4.0% (new wala)	4.00	4.86	2	178	+0/32s vs. Dw 4.0s	75	99.883	4.00	5.46	0.00	8.7	65.6	49.4	16.2	3.35	-0.63
diffe	erence		0.00	-0.09	1	178		58	-2.7500	0.56	0.50	4.52	-1.9	58.6	25.9	32.7	-0.26	-0.50

## Last Cashflow Sequential: SSNR 4.5% Last Cashflow SEQ vs. Ginnie 4.5% LCF SEQ

	Pool	Security				Pricing	I-Sprd	Mkt	Mkt		12mo	Proj	Zvol	Opt	Libor	Eff	Eff
#	Number	Description	Cpn WAC	Age	WAM	Spread	(YldBk)	Price	YTM	WAL	TRR	LTCPR	LOAS	Cost	OAS	Dura	Cnvx
Buy	JPMMT 2022-8 A5	SSNR LCF SEQ 4.5% Jumbo	4.50 4.77	3	356	+210/i/15CPR	158	94.031	5.02	18.41	5.05	6.8	179.4	71.4	108.0	6.79	-1.62
Sell	GNR 2022-124 BY	4.5% LCF SEQ   30yr 4.5s	4.50 5.02	3	357	+118/c/478PSA	100	101.125	4.43	17.90	4.60	10.1	120.9	80.9	40.0	6.48	-1.67
diffe	erence		0.00 -0.25	0	-1		58	-7.0938	0.60	0.51	0.45	-3.4	58.5	-9.5	68.0	0.31	0.05



**Municipal Market Update**: Municipal Ratios





## Municipal Market Update: Fund Flows & Ratios

- Municipal credit remains solid. Accordingly, much of the cheapness on the long-end is attributable to forced selling out of municipal funds, not fundamental credit concerns.
- Long-end muni-treasury ratios peaked over 110% in April and now hover around 105%, which looks very attractive vs. ratios that averaged 75.8% through all of calendar 2021.
- Although recent weeks have seen sporadic fund inflows, outflows have dominated for most of the year. On average, municipal funds shed \$2.6bn weekly through September 2022.



Fixed Income Capital Markets

### Municipal Mutual Fund Flows vs. Muni/Treasury Ratios

# Municipal Market Update: State-Level Spreads

- State-level spreads have largely moved as a function of both supply trends and perceived credit trends.
- Some states with a lower upgrade-to-downgrade ratio than peers have seen meaningful spread widening throughout the year, including IL, TX, WA, MD, and MA. Other traditionally benchmark states with stronger credit performance like NC, VA, and TN have tightened since January 1.
- Even in states with similar ratings performance to the national peer group, like California, shorter tax-exempt spreads remain tight, again arguing for longer allocations.

State Spreads: State GO vs. AAA Benchmark											
10 yr State	GO Spread to	AAA Benchm	ark	Upgrade/	California <b>10Y</b> General Obligation Spreads						
State	2-Jan-22	2-Oct-22	Δ	Downgrade Ratio	50.00						
Illinois	63.36	157.41	94.05	76.3%	30.00						
New Jersey	27.74	69.80	42.06	98.2%							
Texas	4.73	32.31	27.58	60.1%							
Wisconsin	1.94	28.82	26.88	84.4%							
Massachusetts	2.52	23.24	20.72	72.3%	(10.00)						
Washington	8.49	25.52	17.03	66.7%	(20.00)						
California	2.57	19.20	16.63	79.5%	(30.00)						
Virginia	1.28	17.88	16.60	88.0%							
New York	(0.02)	16.49	16.51	82.0%							
Michigan	6.42	22.72	16.30	94.7%	<i>4 7 4 7 4 7 4 7 4 7 1</i>						
Ohio	4.50	19.31	14.81	70.4%	California <b>2Y</b> General Obligation Spreads						
Maryland	0.71	14.43	13.72	61.3%	50.00						
Georgia	(1.33)	12.38	13.71	64.1%	40.00						
Connecticut	25.03	38.54	13.51	86.5%	30.00						
Minnesota	0.78	10.43	9.65	87.6%	20.00						
Pennsylvania	19.93	29.40	9.47	60.1%							
North Carolina	1.90	10.93	9.03	86.4%							
Florida	4.61	13.59	8.98	88.9%							
South Carolina	2.04	5.67	3.63	61.3%							
Tennessee	13.56	9.98	(3.58)	78.8%	(30.00)						
					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						

State Spreads: State GO vs. AAA Benchmark



## Municipal Market Update: Municipal Curve Steepness

- The municipal curve retains meaningful steepness, both on an absolute and relative basis vs. prior periods. This argues for continued deployment into longer dated tax-exempt product.
- On September 30<sup>th</sup>, 2022, the 2s/10s municipal spread was positive 20bps compared to a negative (inverted) 45bp 2s/10s treasury spread. The resulting 64bp spread differential, while not as attractive as it was in June and July, is significantly higher than was seen through all 2021 and remains attractive vs. the 27bps average spread differential in 2018 and 2019.
- The longer end of the curve also remains steep. 10s/20s municipal spreads were 51bps on Sept. 13<sup>th</sup> vs. a 41bp average in 2021.

### Municipal and Treasury Yield Curves – 2022 and 2018



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# Spreads and Value: Yield, Product, and Tax Rate Sensitivity Analysis

- Taxable product generally remains more attractive vs. taxexempts at shorter points on the curve.
- As of Sept. 30<sup>th</sup>, 2022, tax-exempt 3% and 4% coupons picked up significant spread vs. taxables outside of about 11 years, although duration and price volatility remain concerns with deep discounts.
- Longer 5% coupons (>17yrs) have also recently started to pick yield vs. similar maturity taxables as rates have continued to move higher. These avoid many of the issues with lower coupons.



#### 3% Coupon 4% Coupon 5% Coupon Federal Tax Rate Federal Tax Rate Federal Tax Rate 21.0% 28.0% 21.0% 28.0% 21.0% 28.0% 1Y (0.14)(0.53)(0.16)(0.56)(0.51)(0.19)2Y (0.44)(0.05) (0.50)(0.12) (0.57)(0.20)(0.34)0.06 (0.45)(0.05)(0.56)(0.18) 3Y (0.24)0.18 (0.38)0.03 (0.53)(0.14)**4**Y (0.13)0.30 (0.31)0.11 (0.49)(0.09)5Y (0.04) 6Y 0.41 (0.25)0.18 (0.46)(0.05) 0.06 0.52 (0.19) 0.25 (0.42)(0.01)7Y (0.39)0.14 0.62 (0.14)0.31 0.04 8Y 0.23 0.72 (0.08)0.38 0.08 9Y (0.35)0.31 0.81 (0.03)0.44 (0.31)0.13 10Y 0.38 0.89 0.02 0.49 (0.28) 0.17 11Y 12Y 0.45 0.97 0.06 0.55 (0.24) 0.22 enor 13Y 0.52 1.05 0.10 0.59 (0.20) 0.26 0.58 1.12 (0.17) 0.31 14Y 0.14 0.64 15Y 0.64 1.19 (0.13) 0.35 0.18 0.69 0.70 16Y 1.26 0.22 0.73 (0.09) 0.40 0.76 17Y 1.33 0.26 0.78 (0.04) 0.45 18Y 0.82 1.40 0.29 0.82 0.50 0.00 19Y 0.87 1.46 0.86 0.05 0.55 0.33 0.93 1.52 0.90 0.09 0.61 20Y 0.36 0.98 1.58 0.95 0.15 0.67 21Y 0.41 22Y 1.04 1.65 0.45 0.20 0.73 0.99 23Y 1.09 1.71 0.25 0.79 0.48 1.04 24Y 1.15 1.76 0.52 1.08 0.31 0.84 1.20 25Y 1.82 0.56 1.12 0.36 0.90

### STIFEL | Fixed Income Capital Markets

### Matrix of Tax-Exempt vs. Taxable Municipal Spreads

## Municipal Landscape: 21% Tax Rate



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Assumes a 21.0% fede 25 yta Taxablend an OBps cost of funds. Sources: Stifel; Bloomberg LP

- Yields on transaction executed between August 17<sup>th</sup> and September 14<sup>th</sup> jumped considerably compared to those executed between July 13<sup>th</sup> and August 17<sup>th</sup>. This was primarily driven by renewed focus on longer higher coupon (4% and some 5%) general market tax-exempts that have pulled closer to par in rates up.
- Call structures extended somewhat, although shorter than 10yr call periods remain attractive.

	Depository Purchase Activity - <u>8/17 to 9/14</u>												
Municipal Sector	Allocation (%)	Market Price	Coupon	Maturity (Years)	Next Call (Years)	Market Yield	Avg. Life						
Municipal	100%	102.10	4.11	18.47	7.33	4.67	16.64						
BQ GO	16%	102.36	3.94	17.60	6.26	4.33	14.56						
BQ Rev	2%	97.77	3.59	13.81	5.43	4.48	12.62						
GM GO	66%	103.11	4.20	19.19	8.56	4.73	17.34						
GM Rev	4%	102.60	4.20	13.56	5.15	4.17	12.49						
Taxable GO	3%	88.54	2.55	10.15	6.44	3.97	9.57						
Taxable Rev	3%	94.29	3.61	10.27	4.76	4.32	9.55						
GM TEMS	4%	102.61	5.00	30.08	-	6.18	30.00						
GM MTEMS	0%	100.00	4.03	19.04	-	5.22	18.96						

	Depository Purchase Activity – 7/13 to 8/17												
Municipal Sector	Allocation (%)	Market Price	Coupon	Maturity (Years)	Next Call (Years)	Market Yield	Avg. Life						
Municipal	99%	103.38	3.96	14.15	5.88	4.00	12.29						
BQ GO	23%	103.55	3.88	14.92	6.36	3.90	12.55						
BQ Rev	3%	102.07	3.70	13.83	6.41	4.17	12.46						
GM GO	49%	105.88	4.19	15.31	6.78	4.02	13.34						
GM Rev	8%	103.25	4.11	14.49	5.77	4.31	11.97						
Taxable GO	10%	95.23	3.05	8.58	3.24	3.72	7.93						
Taxable Rev	5%	96.65	3.71	7.88	1.57	3.91	7.44						
GM TEMS	1%	103.34	5.00	30.07	-	6.12	29.94						
GM MTEMS	0%												



# **Investment Options**

Investment Options											
						0	-12m <u>o Yie</u>	ld	Pr	ice Volatil	ity
Туре	SubSector	Coupon (%)	Price	Duration	Сvх	-100	Base	+100	-100	+100	+300
Treasury	2yr Tsy	3.25	98.71	1.9	0.0	3.95	3.95	3.95	1.9%	-1.8%	-5.4%
Treasury	3yr Tsy	3.50	98.87	2.8	0.1	3.90	3.90	3.90	2.8%	-2.8%	-8.0%
Treasury	5yr Tsy	3.13	97.47	4.5	0.2	3.69	3.69	3.69	4.6%	-4.4%	-12.5%
Treasury	7yr Tsy	3.13	97.00	6.1	0.4	3.62	3.62	3.62	6.3%	-5.9%	-16.6%
Treasury	10yr Tsy	2.75	93.82	8.5	0.8	3.49	3.49	3.49	8.9%	-8.1%	-22.1%
Agency Debt	2Y Agency Bullet	4.00	100.00	1.9	0.0	4.00	4.00	4.00	1.9%	-1.9%	-5.5%
Agency Debt	3Y Agency Bullet	3.95	100.00	2.8	0.1	3.95	3.95	3.95	2.8%	-2.7%	-8.0%
Agency Debt	5Y Agency Bullet	3.77	100.00	4.5	0.2	3.77	3.77	3.77	4.6%	-4.4%	-12.5%
Agency Debt	7Y Agency Bullet	3.85	100.00	6.0	0.4	3.85	3.85	3.85	6.3%	-5.8%	-16.3%
Agency Debt	10Y Agency Bullet	3.94	100.00	8.1	0.8	3.94	3.94	3.94	8.5%	-7.8%	-21.2%
Agency Debt	3Y nc 1Y CONT	4.86	100.00	1.6	-0.4	4.86	4.86	4.86	1.5%	-1.8%	-5.9%
Agency Debt	5Y nc 1Y CONT	5.06	100.00	1.9	-0.6	5.06	5.06	5.06	1.7%	-2.2%	-7.8%
Agency Debt	7Y nc 1Y CONT	5.23	100.00	2.2	-0.7	5.23	5.23	5.23	1.9%	-2.5%	-9.3%
Agency Debt	10Y nc 1Y CONT	5.30	100.00	2.4	-1.0	5.30	5.30	5.30	2.0%	-2.9%	-11.1%
Agency MBS	10yr 4.0% Fixed MBS	4.00	99.27	2.8	-0.3	4.19	4.17	4.17	2.7%	-3.0%	-9.5%
Agency MBS	15yr 4.0% Fixed MBS	4.00	98.78	3.2	-0.7	4.26	4.23	4.22	2.8%	-3.5%	-11.8%
Agency MBS	15yr 4.5% Fixed MBS	4.50	100.25	2.8	-0.7	4.38	4.42	4.43	2.4%	-3.1%	-10.9%
Agency MBS	20yr 4.0% Fixed MBS	4.00	96.89	4.0	-0.8	4.58	4.53	4.49	3.6%	-4.4%	-14.5%
Agency MBS	20yr 4.5% Fixed MBS	4.50	99.05	3.3	-0.8	4.73	4.66	4.65	2.9%	-3.7%	-12.9%
Agency MBS	20yr 5.0% Fixed MBS	5.00	100.66	2.8	-0.8	4.71	4.86	4.88	2.4%	-3.2%	-11.7%
Agency MBS	30yr 4.5% Fixed MBS	4.50	97.85	3.5	-1.5	5.02	4.80	4.77	2.8%	-4.1%	-15.3%
Agency MBS	30yr 5.0% Fixed MBS	5.00	99.73	2.9	-1.2	5.03	5.04	5.04	2.4%	-3.5%	-13.6%
Agency CMBS	5yr DUS	3.18	96.22	4.6	0.3	4.03	4.03	4.03	4.8%	-4.5%	-12.8%
Agency CMBS	7yr DUS	3.69	97.73	6.0	0.4	4.11	4.11	4.11	6.2%	-5.8%	-16.2%
Agency CMBS	10yr DUS	4.03	99.28	8.0	0.8	4.18	4.18	4.18	8.4%	-7.6%	-20.7%
Agency CMBS	6.5yr Freddie-K AS (SOFR30A + 55 bps)	2.10	100.00	0.0	0.0	1.89	2.89	3.89	0.0%	0.0%	0.0%
Small Business	25yr DCPC (300 WAM)	3.80	96.42	6.4	0.7	4.43	4.36	4.36	6.0%	-6.1%	-16.4%
Small Business	10yr SBIC (114 WAM)	2.94	93.58	6.0	0.5	4.07	4.02	4.02	6.2%	-5.5%	-15.9%
Small Business	SBA FLT Real Est. Pool (208 WAM) (PRIM + 5.5bps	) 4.81	105.75	0.7	0.0	2.92	3.82	4.72	0.6%	-0.6%	-1.6%
Agency CMO	4yr PAC	3.75	97.74	2.6	-1.0	4.38	4.32	4.22	2.2%	-3.0%	-10.6%
Agency CMO	5yr SEQ	3.50	97.24	3.5	-0.5	4.22	4.16	4.13	3.2%	-3.7%	-12.2%
Agency CMO	5yr SEQ	4.00	98.02	3.4	-1.2	4.58	4.44	4.35	3.0%	-3.7%	-13.0%
Agency CMO	6yr SEQ	4.50	99.33	2.3	-1.1	4.66	4.62	4.61	1.8%	-2.9%	-11.2%
Agency CMO	4.3yr Agcy CMO FLT (SOFR1C + 40bps, 6.5% cap)	2.58	99.94	0.4	-0.0	1.73	2.72	3.70	0.5%	-0.5%	-3.0%
CLO	AAA Rated CLO [TSFR3M + 175] 35% CrSup	5.21	100.00	0.1	-0.0	4.27	5.24	6.23	0.1%	-0.1%	-0.3%
CLO	AA Rated CLO [TSFR3M + 235] 25% CrSup	5.81	100.00	0.1	-0.0	4.86	5.85	6.84	0.1%	-0.1%	-0.4%
CLO	A Rated CLO [TSFR3M + 315] 20% CrSup	6.61	100.00	0.1	-0.0	5.67	6.66	7.67	0.1%	-0.1%	-0.5%
Municipal	10yr AA GM Muni	4.00	108.13	5.7	0.2	3.86	3.86	3.86	5.9%	-5.5%	-21.6%
Municipal	15yr AA GM Muni	4.00	100.00	7.3	-0.1	5.06	5.06	5.06	7.2%	-7.4%	-27.6%
Municipal	20yr AA GM Muni	4.00	95.62	9.6	0.8	5.48	5.48	5.48	10.4%	-8.8%	-31.7%
Municipal	5yr AA Taxable Muni	4.33	100.00	4.4	0.2	4.33	4.33	4.33	4.5%	-4.3%	-12.3%
Municipal	10yr AA Taxable Muni	4.54	100.00	7.9	0.8	4.54	4.54	4.54	8.3%	-7.5%	-20.7%
Municipal	15yr AA Taxable Muni	4.85	100.00	9.2	0.7	4.85	4.85	4.85	9.5%	-8.9%	-24.3%
Corporate	A Financial 2Y	4.49	100.00	1.9	0.0	4.49	4.49	4.49	1.9%	-1.9%	-5.5%
Corporate	A Financial 3Y	4.55	100.00	2.8	0.1	4.55	4.55	4.55	2.8%	-2.7%	-7.9%
Corporate	A Financial 5Y	4.72	100.00	4.4	0.2	4.72	4.72	4.72	4.5%	-4.3%	-12.2%
Corporate	A Financial 7Y	4.86	100.00	5.8	0.4	4.86	4.86	4.86	6.0%	-5.6%	-15.8%
Corporate	A Financial 10y	4.99	100.00	7.7	0.7	4.99	4.99	4.99	8.1%	-7.4%	-20.3%

STIFEL | Fixed Income Capital Markets

1. Priced by Stifel's Fixed Income Trading Desk as of 9/26/2022 and may not represent executable levels





• For Banks that continue to hold cash on the balance sheet and have limited loan growth, loan purchases can be considered:

Prime Product	Bank Buyer Yield	Prior Month – Bank Buyer Yield
SFR - Fixed	5.75-6.00	5.00-5.25
SFR - Hybrid ARM	5.10-5.35	4.75-4.95
Auto	5.50-6.00	4.75-5.00
CRE/MBL*	4.75-6.00	4.50-6.00
Consumer	7.25-7.50	6.75-7.25

### Generic Whole Loan Yield Ranges - Buyers As of 9/21/2022

### Generic Whole Loan Pricing Ranges - Bank Trades, Servicing Released As of 9/21/2022

Prime Product	Price to Seller	GWAC	Prepay Assumption	Credit Characteristics	Typical Annual Losses	Typical Weighted Average Life
SFR - 30 yr Fixed	101.50-102.00	5.82	10 CPR	QM, WA 75 LTV, WA 740+ FICO	0 bps	5.50 - 6.50
SFR - 7/1 ARM	101.50-102.50	4.98	25 CPB	QM, WA 75 LTV, WA 740+ FICO	0 bps	2.50 - 3.50
Auto (6 yr Term)	101.50-102.00	4.79	20 CPR	Prime, WA 100 LTV, WA 740+ FICO	10-25 bps	1.50 - 2.50
CRE (25 yr Am, 10 yr Balloon)	100.50-101.50	5.50	0 CPR (Strong PPP/Lockout)	LTV ≤ 70, Stabilized occupancy, 1.25x+ DSCR	0 bps	8.00 - 9.00
Consumer (4 yr Term)	100.25-101.50	<u>9.50</u>	15 CPR	Prime, DTI < 50, WA 740+ FICO	25-50 bps	1.50 - 2.50



# Liquidity and Interest Rate Risk Positioning

Strategies and Considerations







## **Summary of Cash Deploy Strategies**

The following analysis for Sample Bank shows the impacts of three \$20mm cash deploy strategies with varying goals and constraints

Cash funds the purchase of a mix of Agency Debt, Agency MBS, Agency CMBS, Agency CMOs, Municipals and Corporates

Strategy	1: Short Al	location
Juralegy	<b>1: Short A</b>	iocation

\$20mm cash deploy, +300 price volatility ~ 10.0%

					Pr	ice Volatili	ty
Туре	Price	Yield / Cost	WAL	Eff. Dur.	-100	+100	+300
Assets Strategy 1	98.28	4.93%	4.4	3.1	3.0%	-3.2%	-9.9%
Funded with Cash	100.00	3.10%	0.0	0.0	0.0%	0.0%	0.0%
Difference		1.83%	4.4	3.1	3.0%	-3.2%	-9.9%

Strategy	2.	Mid	ΔΙ	location
Jualegy	۷.	IVIIU		location

\$20mm cash deploy, +300 price volatility ~ 13.5%

					Pri	ice Volatili	ty
Туре	Price	Yield / Cost	WAL	Eff. Dur.	-100	+100	+300
Assets Strategy 2	98.19	5.13%	6.3	3.9	3.7%	-4.1%	-13.3%
Funded with Cash	100.00	3.10%	0.0	0.0	0.0%	0.0%	0.0%
Difference		2.03%	6.3	3.9	3.7%	-4.1%	-13.3%

R: Long Allocation	Туре	
S. Long Anocation	Assets Strategy 3	

\$20mm cash deploy, +300 price volatility ~ 15.5%

Strategy 3

					Pr	ice Volatili	ty
Туре	Price	Yield / Cost	WAL	Eff. Dur.	-100	+100	+300
Assets Strategy 3	97.87	5.27%	7.8	4.7	4.6%	-4.8%	-15.6%
Funded with Cash	100.00	3.10%	0.0	0.0	0.0%	0.0%	0.0%
Difference		2.17%	7.8	4.7	4.6%	-4.8%	-15.6%



## Below are the allocations for the three strategies:

Funding													Allocation	n
						0-1	2mo Cost	(%)	Pr	ice Volati	lity	Strategy	Strategy	Strategy
Туре	Maturity	Coupon (%)	Price	Duration	Сvх	-100	Base	+100	-100	+100	+300	1	2	3
Cash	9/27/2022	3.10	100.00	0.0	0.0	2.10	3.10	4.10	0.0%	0.0%	0.0%	100%	100%	100%
		Securities Pu	rchases									1	Allocation	1
						0.	12mo Yie	ld	Pr	ice Volati	lity	Strategy	Strategy	Strategy
Туре	SubSector	Coupon (%)	Price	Duration	Сvх	-100	Base	+100	-100	+100	+300	1	2	3
Agency Debt	3Y nc 1Y CONT	5.27	100.00	1.7	-0.3	5.27	5.27	5.27	1.5%	-1.8%	-6.0%	20%	10%	0%
Agency Debt	5Y nc 1Y CONT	5.50	100.00	2.0	-0.6	5.50	5.50	5.50	1.8%	-2.3%	-7.9%	0%	10%	10%
Agency Debt	7Y nc 1Y CONT	5.67	100.00	2.3	-0.8	5.67	5.67	5.67	1.9%	-2.6%	-9.4%	0%	0%	10%
Agency MBS	10yr 4.0% Fixed MBS	4.00	97.56	2.9	-0.3	4.72	4.68	4.66	2.8%	-3.0%	-9.5%	5%	0%	0%
Agency MBS	10yr 4.5% Fixed MBS	4.50	98.72	3.0	-0.2	4.86	4.84	4.83	2.9%	-3.1%	-9.5%	5%	0%	0%
Agency MBS	15yr 4.5% Fixed MBS	4.50	97.94	3.1	-0.6	5.01	4.93	4.91	2.8%	-3.4%	-11.4%	10%	0%	0%
Agency MBS	15yr 5.0% Fixed MBS	5.00	99.77	3.0	-0.6	5.02	5.03	5.03	2.7%	-3.2%	-10.9%	10%	10%	0%
Agency MBS	20yr 4.5% Fixed MBS	4.50	96.13	3.7	-0.7	5.38	5.20	5.15	3.3%	-4.0%	-13.6%	0%	10%	10%
Agency MBS	30yr 5.0% Fixed MBS	5.00	97.00	3.5	-1.1	5.77	5.48	5.45	3.0%	-4.0%	-14.2%	0%	5%	10%
Agency MBS	30yr 5.5% Fixed MBS	5.50	99.42	3.1	-0.8	5.64	5.60	5.60	2.7%	-3.5%	-12.5%	0%	5%	10%
Agency CMBS	5yr DUS	3.18	94.12	4.6	0.3	4.51	4.51	4.51	4.7%	-4.5%	-12.7%	20%	0%	0%
Agency CMBS	7yr DUS	3.69	95.07	5.9	0.4	4.58	4.58	4.58	6.1%	-5.7%	-16.1%	0%	20%	0%
Agency CMBS	10yr DUS	4.03	96.18	7.9	0.8	4.58	4.58	4.58	8.3%	-7.5%	-20.5%	0%	0%	20%
Agency CMO	5yr SEQ	5.00	98.73	2.1	-0.8	5.59	5.28	5.26	1.7%	-2.5%	-9.9%	10%	10%	10%
Municipal	15yr AA GM Muni	4.00	98.89	7.1	-0.3	5.19	5.19	5.19	6.8%	-7.4%	-27.5%	0%	10%	0%
Municipal	20yr AA GM Muni	4.00	95.10	9.0	0.2	5.53	5.53	5.53	9.2%	-8.8%	-31.6%	0%	0%	10%
Municipal	5yr AA Taxable Muni	4.78	100.00	4.4	0.2	4.78	4.78	4.78	4.5%	-4.3%	-12.2%	10%	0%	0%
Corporate	A Financial 3Y	4.97	100.00	2.7	0.1	4.97	4.97	4.97	2.8%	-2.7%	-7.8%	10%	0%	0%
Corporate	A Financial 5Y	5.13	100.00	4.3	0.2	5.13	5.13	5.13	4.5%	-4.2%	-12.1%	0%	10%	0%
Corporate	A Financial 7Y	5.25	100.00	5.8	0.4	5.25	5.25	5.25	6.0%	-5.6%	-15.6%	0%	0%	10%
Strategy 1 Purch.		4.54	98.28	3.1	-0.2	4.97	4.93	4.92	3.0%	-3.2%	-9.9%			
Strategy 2 Purch.		4.70	98.19	3.9	-0.3	5.19	5.13	5.12	3.7%	-4.1%	-13.3%			
Strategy 3 Purch.		4.85	97.87	4.7	-0.3	5.35	5.27	5.26	4.6%	-4.8%	-15.6%			
Difference		1.44	-1.72	3.1	-0.2	2.87	1.83	0.82	3.0%	-3.2%	-9.9%			
Difference		1.60	-1.81	3.9	-0.3	3.09	2.03	1.02	3.7%	-4.1%	-13.3%			
Difference		1.75	-2.13	4.7	-0.3	3.25	2.17	1.16	4.6%	-4.8%	-15.6%			



	Beginning	Stra	tegy 1	Strat	tegy 2	Stra	tegy 3
	Data	Pro Forma	Change	Pro Forma	Change	Pro Forma	Change
Descriptions							
		Short Allocation	1	Mid Allocation		Long Allocation	
Asset Purchases		20	,000	20	,000	20	,000
Securities Yield		4.9	3%	5.1	13%	5.2	27%
WAL		2	1.4	e	5.3		7.8
Duration		3	3.1	3	3.9	4	1.7
+300 Price Vol.		(9.	9%)	(13	3.3%)	(15	5.6%)
Cash Balance		20	,000	20	,000	20	,000
Cash Yield		3.1	.0%	3.1	10%	3.2	L0%
Net Interest Spread		1.83%		2.	03%	2.	17%
0-12 Month NII		\$	Spread	\$	Spread	\$	Spread
-100 0-12 Mo. NII		574	2.87%	618	3.09%	650	3.25%
Base 0-12 Mo. NII		366	1.83%	406	2.03%	433	2.17%
+100 0-12 Mo. NII		165	0.82%	204	1.02%	231	1.16%
Impact On EVE		\$	%∆	\$	%Δ	\$	%Δ
-100 EVE		596	3.0%	747	3.7%	925	4.6%
+100 EVE		(633)	(3.2%)	(812)	(4.1%)	(966)	(4.8%)
+300 EVE		(1,981)	(9.9%)	(2,667)	(13.3%)	(3,114)	(15.6%)
Key Impacts			%Δ		%Δ		%Δ
Leverage	10.44%	10.44%	0.00%	10.44%	0.00%	10.44%	0.00%
CET1	16.73%	16.38%	(0.35%)	16.38%	(0.35%)	16.38%	(0.35%)
Tot RB Capital	16.73%	16.38%	(0.35%)	16.38%	(0.35%)	16.38%	(0.35%)
TCE/TA	7.41%	7.41%	0.00%	7.41%	0.00%	7.41%	0.00%
NIM	3.10%	3.20%	0.09%	3.21%	0.10%	3.21%	0.11%
ROA	0.89%	0.96%	0.07%	0.97%	0.08%	0.97%	0.08%
ROE	9.42%	10.15%	0.73%	10.23%	0.81%	10.28%	0.86%



# **Rates Down Protection**



- The grid below summarize rates down hedging strategies on 1mo CME Term SOFR, \$ premiums reflect \$100mm notional
  - 3yr floor structures are shown using a range of floor strikes
  - 3yr collar structures shown using zero cost strike levels

3y/2.0% Floor ZC Collar 11/1/2022 11/1/2025 100,000,000 2.00%

Floor Structures											Market V	alue Sens	sitivity fro	m Base	
Desciption	Start	Maturity	Notional	Fir Strike A			Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
3y 3.5% Hoor	11/1/2022	11/1/2025	100,000,000	3.50%			1m Term SOFR	2,059,759	2.06%	69	3.6%	1.5%	-0.8%	-1.2%	-1.4%
3y 3.0% Hoor	11/1/2022	11/1/2025	100,000,000	3.00%			1m Term SOFR	1,518,788	1.52%	51	3.0%	1.1%	-0.6%	-0.8%	-1.0%
3y 2.5% Hoor	11/1/2022	11/1/2025	100,000,000	2.50%			1m Term SOFR	1,118,272	1.12%	37	2.3%	0.8%	-0.4%	-0.6%	-0.7%
3y 2.0% Hoor	11/1/2022	11/1/2025	100,000,000	2.00%			1m Term SOFR	823,162	0.82%	27	1.8%	0.6%	-0.3%	-0.4%	-0.5%
Collar Structures											Market V	alue Sens	sitivity fro	m Base	
Desciption	Start	Maturity	Notional	Fir Strike I	Fir Strike II	Cap Strike I	Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
3y/2.50% ZC Collar (Embedded 0 Roor)	11/1/2022	11/1/2025	100,000,000	2.50%	0.00%	5.53%	1m Term SOFR	0	0.00%	0	2.1%	0.9%	-0.9%	-2.0%	-3.5%
3y/ 3.00% Hoor ZC Collar	11/1/2022	11/1/2025	100,000,000	3.00%		4.63%	1m Term SOFR	0	0.00%	0	3.9%	1.8%	-1.7%	-3.7%	-5.9%
3y/2.50% Floor ZC Collar	11/1/2022	11/1/2025	100,000,000	2.50%		5.21%	1m Term SOFR	0	0.00%	0	3.0%	1.3%	-1.2%	-2.8%	-4.7%

<b>Receive Fixed Structures</b>									Market V	alue Sens	sitivity fro	m Base	
Desciption	Start	Maturity	Notional	Receive Fixed	Index	Premium \$	Premium % Notl	Initial Carry	-200	-100	+100	+200	+300
3y Receive Fixed Swap	11/1/2022	11/1/2025	100,000,000	3.82%	1m Term SOFR	0	0.00%	79	5.6%	2.7%	-2.6%	-5.1%	-7.5%

5.92% 1 m Term SOFR

0

0.00%

0



2.2% 0.9% -0.8% -1.9% -3.4%

- 1. Indicative levels using 1 month term SOFR levels as of 9/28/22; may not represent executable levels.
- 2. Information presented above regarding interest rate derivatives is considered general and factual. Please see further disclosures on the last page of this presentation.

- The grid below summarize rates down hedging strategies on 1mo CME Term SOFR, \$ premiums reflect \$100mm notional
  - 5yr floor structures are shown using a range of floor strikes
  - 5yr collar structures shown using zero cost strike levels

<b>Floor Structures</b>								_			Market V	alue Sens	sitivity from	m Base	
Desciption	Start	Maturity	Notional	Fir Strike A			Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
5y 3.5% Hoor	11/1/2022	11/1/2027	100,000,000	3.50%			1m Term SOFR	4,662,119	4.66%	93	7.3%	3.2%	-2.0%	-3.2%	-3.9%
5y 2.75% Hoor	11/1/2022	11/1/2027	100,000,000	2.75%			1m Term SOFR	3,226,229	3.23%	65	4.9%	1.9%	-1.2%	-1.8%	-2.2%
5y 2.5% Hoor	11/1/2022	11/1/2027	100,000,000	2.50%			1m Term SOFR	2,847,910	2.85%	57	4.4%	1.7%	-1.0%	-1.6%	-1.9%
5y 2.0% Floor	11/1/2022	11/1/2027	100,000,000	2.00%			1m Term SOFR	2,214,795	2.21%	44	3.6%	1.4%	-0.8%	-1.2%	-1.4%
Collar Structures											Market V	alue Sens	sitivity from	m Base	
Desciption	Start	Maturity	Notional	Fir Strike I	Fir Strike II	Cap Strike I	Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
5y/ 2.50% ZC Collar (Embedded 0 Roor)	11/1/2022	11/1/2027	100,000,000	2.50%	0.00%	5.02%	1m Term SOFR	0	0.00%	0	4.9%	2.4%	-2.6%	-5.5%	-8.9%
5y/2.75% Hoor ZC Collar	11/1/2022	11/1/2027	100,000,000	2.75%		4.42%	1m Term SOFR	0	0.00%	0	7.0%	3.2%	-3.2%	-6.5%	-9.8%
5y/2.5% Roor ZC Collar	11/1/2022	11/1/2027	100,000,000	2.50%		4.73%	1m Term SOFR	0	0.00%	0	6.2%	2.9%	-2.8%	-5.9%	-9.1%
5y/2.0% Hoor ZC Collar	11/1/2022	11/1/2027	100,000,000	2.00%		5.31%	1m Term SOFR	0	0.00%	0	4.9%	2.2%	-2.1%	-4.6%	-7.4%
Receive Fixed Structures											Market V	alue Sens	sitivity from	m Base	
Desciption	Start	Maturity	Notional	Receive Fixed			Index	Premium \$	Premium % Notl	Initial Carry	-200	-100	+100	+200	+300
5y Receive Fixed Swap	11/1/2022	11/1/2027	100,000,000	3.59%			1m Term SOFR	0	0.00%	56	9.8%	4.8%	-4.5%	-8.7%	-12.7%



- 1. Indicative levels using 1 month term SOFR levels as of 9/28/22; may not represent executable levels.
- 2. Information presented above regarding interest rate derivatives is considered general and factual. Please see further disclosures on the last page of this presentation.

- The grid below summarize deferred starting rates down hedging strategies on 1mo CME Term SOFR, \$ premiums reflect \$100mm notional
  - In 1y for 3y & 5y floor structures are shown using a range of floor strikes
  - In 1y for 3y & 5y collar structures shown using zero cost strike levels

Deferred Starting Floor Structures Mark												sitivity fro	m Base	
Desciption	Start	Maturity	Notional	Fir Strike A		Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
in 1y for 3y 3.0% Hoor	11/1/2023	11/1/2026	100,000,000	3.00%		1m Term SOFR	2,421,261	2.42%	61	3.4%	1.4%	-0.9%	-1.4%	-1.7%
in 1y for 3y 2.5% Hoor	11/1/2023	11/1/2026	100,000,000	2.50%		1m Term SOFR	1,867,586	1.87%	47	2.8%	1.1%	-0.7%	-1.0%	-1.2%
in 1y for 5y 2.5% Hoor	11/1/2023	11/1/2028	100,000,000	2.50%		1m Term SOFR	3,628,008	3.63%	60	5.1%	2.1%	-1.3%	-2.1%	-2.5%
in 1y for 5y 2.0% Hoor	11/1/2023	11/1/2028	100,000,000	2.00%		1m Term SOFR	2,863,700	2.86%	48	4.3%	1.7%	-1.0%	-1.6%	-1.9%
Deferred Starting Collar Structures										Market V	alue Sens	sitivity fro	m Base	
Desciption	Start	Maturity	Notional	Fir Strike I	Cap Strike I	Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
in 1y for 3y 2.75% Hoor ZC Collar	11/1/2023	11/1/2026	100,000,000	2.75%	4.34%	1m Term SOFR	0	0.00%	0	4.2%	1.9%	-1.8%	-3.5%	-5.3%
in 1y for 3y 2.25% Hoor ZC Collar	11/1/2023	11/1/2026	100,000,000	2.25%	5.02%	1m Term SOFR	0	0.00%	0	3.4%	1.5%	-1.4%	-2.8%	-4.3%
in 1y for 5y 2.50% Hoor ZC Collar	11/1/2023	11/1/2028	100,000,000	2.50%	4.30%	1m Term SOFR	0	0.00%	0	4.9%	2.2%	-2.1%	-4.6%	-7.4%
in 1y for 5y 2.00% Hoor ZC Collar	11/1/2023	11/1/2028	100,000,000	2.00%	5.01%	1m Term SOFR	0	0.00%	0	3.8%	1.6%	-1.5%	-3.4%	-5.7%
Deferred Starting Receive Fixed Struc	tures									Market V	alue Sens	sitivity fro	m Base	
Desciption	Start	Maturity	Notional	Receive Fixed		Index	Premium \$	Premium % Notl	Initial Carry	-200	-100	+100	+200	+300
in 1y for 3y Receive Fixed Swap	11/1/2023	11/1/2026	100,000,000	3.51%		1m Term SOFR	0	0.00%	48	5.6%	2.7%	-2.6%	-5.0%	-7.2%
in 1y for 5y Receive Fixed Swap	11/1/2023	11/1/2028	100,000,000	3.38%		1m Term SOFR	0	0.00%	35	9.3%	4.4%	-4.1%	-7.9%	-11.3%



- 1. Indicative levels using 1 month term SOFR levels as of 9/28/22; may not represent executable levels.
- 2. Information presented above regarding interest rate derivatives is considered general and factual. Please see further disclosures on the last page of this presentation.

- The grid below illustrates the net hedged asset yield of the 5y floor structures assuming a 250bps spread over 1mo CME Term SOFR
- \$ payoffs reflect \$100mm notional

			5	iy Roor St	ructure N	let Payofi	is		Hedged Asset Yield				
S	Scenario	1m Term SOFR	5y Swap	3.5% FIr	2.50% Flr	2.25% Flr	2.0% FIr	Floating Asset Yield (SOFR+ 250bps)	5y Swap	3.5% Ar	2.50% Ar	2.25% FIr	2.0% Hr
	4	7.03	-3.44	-0.93	-0.57	-0.46	-0.44	9.53	6.09	8.60	8.96	9.07	9.09
Percent	3	6.03	-2.44	-0.93	-0.57	-0.46	-0.44	8.53	6.09	7.60	7.96	8.07	8.09
	2	5.03	-1.44	-0.93	-0.57	-0.46	-0.44	7.53	6.09	6.60	6.96	7.07	7.09
	1	4.03	-0.44	-0.93	-0.57	-0.46	-0.44	6.53	6.09	5.60	5.96	6.07	6.09
	0	3.03	0.56	-0.47	-0.57	-0.46	-0.44	5.53	6.09	5.06	4.96	5.07	5.09
	-1	2.03	1.56	0.53	-0.10	-0.25	-0.44	4.53	6.09	5.06	4.43	4.28	4.09
	-2	1.03	2.56	1.53	0.90	0.75	0.52	3.53	6.09	5.06	4.43	4.28	4.05
	-3	0.03	3.56	2.53	1.90	1.75	1.52	2.53	6.09	5.06	4.43	4.28	4.05

\$ por	Scenario	1m Term SOFR	5y Swap	3.5% Hr	2.50% Fir	2.25% Fir	2.0% Flr	Floating Asset Yield (SOFR+ 250bps)	5y Swap	3.5% FIr	2.50% Ar	2.25% Flr	2.0% FIr
$\frac{\psi p c r}{100 mm}$	4	7.03	-3,444	-932	-570	-464	-443	9,530	6,086	8,598	8,960	9,066	9,087
<u>100mm</u> Notl	3	6.03	-2,444	-932	-570	-464	-443	8,530	6,086	7,598	7,960	8,066	8,087
(\$000c)	2	5.03	-1,444	-932	-570	-464	-443	7,530	6,086	6,598	6,960	7,066	7,087
<u>(\$0005)</u>	1	4.03	-444	-932	-570	-464	-443	6,530	6,086	5,598	5,960	6,066	6,087
	0	3.03	556	-467	-570	-464	-443	5,530	6,086	5,063	4,960	5,066	5,087
	-1	2.03	1,556	533	-104	-248	-443	4,530	6,086	5,063	4,426	4,282	4,087
	-2	1.03	2,556	1,533	896	752	523	3,530	6,086	5,063	4,426	4,282	4,053
	-3	0.03	3,556	2,533	1,896	1,752	1,523	2,530	6,086	5,063	4,426	4,282	4,053



1. Indicative levels using 1 month term SOFR levels as of 9/28/22; may not represent executable levels.

- The grid below illustrates the net hedged asset yield of the 5y zero cost collar structures assuming a 250bps spread over 1mo CME Term SOFR
- \$ payoffs reflect \$100mm notional

		Sy Collar Structure Net Payoffs           Im Term SOFR         Zy Swap         ZC Collar and Embedde d 0% Fir         ZC Collar 2.75% Fir         ZC Collar 2.5% Fir         ZC						Hedged A	sset Yield				
	Scenario	1m Term SOFR	5y Swap	ZC Collar 2.50% Fr and Embedde d 0% Fr	ZC Collar 2.75% Flr	ZC Collar 2.5% Flr	ZC Collar 2% Flr	Floating Asset Yield (SOFR+ 250bps)	5y Swap	ZC Collar 2.50% Fr and Embedde d 0% Fr	ZC Collar 2.75% Flr	ZC Collar 2.5% Flr	ZC Collar 2% Flr
	4	7.03	-3.44	-2.02	-2.62	-2.30	-1.72	9.53	6.09	7.52	6.92	7.23	7.81
Percent	3	6.03	-2.44	-1.02	-1.62	-1.30	-0.72	8.53	6.09	7.52	6.92	7.23	7.81
	2	5.03	-1.44	-0.02	-0.62	-0.30	0.00	7.53	6.09	7.52	6.92	7.23	7.53
	1	4.03	-0.44	0.00	0.00	0.00	0.00	6.53	6.09	6.53	6.53	6.53	6.53
	0	3.03	0.56	0.00	0.00	0.00	0.00	5.53	6.09	5.53	5.53	5.53	5.53
	-1	2.03	1.56	0.47	0.72	0.47	0.00	4.53	6.09	5.00	5.25	5.00	4.53
	-2	1.03	2.56	1.47	1.72	1.47	0.97	3.53	6.09	5.00	5.25	5.00	4.50
	-3	0.03	3.56	2.47	2.72	2.47	1.97	2.53	6.09	5.00	5.25	5.00	4.50

\$ nor	Scenario	1m Term SOFR	5y Swap	ZC Collar 2.50% Fr and Embedde d 0% Fr	ZC Collar 2.75% Flr	ZC Collar 2.5% Flr	ZC Collar 2% Flr	Floating Asset Yield (SOFR+ 250bps)	5y Swap	ZC Collar 2.50% Flr and Embedde d 0% Flr	ZC Collar 2.75% Flr	ZC Collar 2.5% Flr	ZC Collar 2% Flr
$\frac{\psi pcr}{100mm}$	4	7.03	-3,444	-2,017	-2,618	-2,303	-1,723	9,534	6,090	7,517	6,917	7,232	7,811
Noti	3	6.03	-2,444	-1,017	-1,618	-1,303	-723	8,534	6,090	7,517	6,917	7,232	7,811
(\$000c)	2	5.03	-1,444	-17	-618	-303	0	7,534	6,090	7,517	6,917	7,232	7,534
<u>(\$0005)</u>	1	4.03	-444	0	0	0	0	6,534	6,090	6,534	6,534	6,534	6,534
	0	3.03	556	0	0	0	0	5,534	6,090	5,534	5,534	5,534	5,534
	-1	2.03	1,556	466	716	466	0	4,534	6,090	5,000	5,250	5,000	4,534
	-2	1.03	2,556	1,466	1,716	1,466	966	3,534	6,090	5,000	5,250	5,000	4,500
	-3	0.03	3,556	2,466	2,716	2,466	1,966	2,534	6,090	5,000	5,250	5,000	4,500



1. Indicative levels using 1 month term SOFR levels as of 9/28/22; may not represent executable levels.

# Liquidity/IRR Consideration Matrix

		IRR Position	Highly Asset Sensiti	ive	
	Large floating rate asset base, low cash, strong loan demand			Large floating rate asset base, high cash/lower loan demand	
	Consider:			Consider:	
Liqui	<ul> <li><u>Rates down protection through hedging strategies</u></li> <li>Leverage opportunities</li> </ul>			<ul> <li><u>Rates down</u> protection through <u>on-balance sheet</u> strategies (cash deployment, loss/breakeven, duration extension in investment portfolio)</li> </ul>	Liquidity
Lov	ver				Stable/
	Large fixed rate asset base, low cash, strong loan demand Consider:			Large fixed rate asset base, stable liquidity/stable to lower loan demand	Higher
	<u>Hedged funding</u> strategies			<ul> <li>Cash deployment into short duration/hedged assets</li> </ul>	
				<ul> <li>Loss/breakeven in rates up scenario</li> </ul>	
0		IRR Position	Neutra Liabilit Sensiti	al/ ty ive	STIFEL   Fixed Income Capital Markets

# Funding Alternatives



## **Color from Brokered CD Desk:**

- Issuer interest in short term funding in brokered CD markets
- Investor interest primarily 3 month to 3 year, bullet structures
- Retail investor interest very short, institutional investor interest out to 3 years

### **Recent issuance from public institutions:**

Issuer	Term	Coupon	Principal	Settle
ConnectOne	1 Month	3.05%	\$150,000,000	30-Sep
ConnectOne	1 Month	2.95%	\$28,523,000	30-Sep
First Internet Bank of Indiana	2 Years	3.90%	\$21,809,000	28-Sep
First Internet Bank of Indiana	3 Years	4.00%	\$34,611,000	28-Sep
Valley NB	6 Months	3.90%	\$25,000,000	3-Oct
University Credit Union	3 Years	4.00%	\$19,391,000	26-Sep
Cobalt FCU	2 Years	3.55%	\$2,672,000	15-Sep
Cobalt FCU	5 Years	3.60%	\$16,750,000	15-Sep
Industrial Commercial Bank China, USA	6 Months	3.75%	\$35,000,000	3-Oct



	-			
	(	D Funding Price	ng	
Term	Coupon	All In	FHLB Advance*	Spread
3 Month	3.35%	3.45%	3.74%	-0.29%
4 Month	3.60%	3.70%	3.99%	-0.29%
6 Month	3.90%	4.00%	4.25%	-0.25%
9 Month	4.00%	4.10%	4.36%	-0.26%
1 Year	4.05%	4.15%	4.48%	-0.33%
15 Month	4.10%	4.25%	4.50%	-0.25%
18 Month	4.10%	4.25%	4.52%	-0.27%
2 Year	4.15%	4.30%	4.48%	-0.18%
2.5 Year	4.15%	4.30%	4.54%	-0.24%
3 Year	4.20%	4.35%	4.45%	-0.10%
3.5 Year	4.20%	4.35%	4.35%	0.00%
4 Year	4.25%	4.40%	4.35%	0.05%
5 Year	4.25%	4.40%	4.23%	0.17%
6 Year	4.30%	4.45%	4.27%	0.18%
7 Year	4.35%	4.50%	4.24%	0.26%
10 Year	4.40%	4.55%	4.43%	0.12%
15 Year	4.60%	4.75%	4.82%	-0.07%

# Brokered CD Rates October 3-7, 2022

Rates are indications, call for best available pricing/ \*FHLB blended rate



## **Swapping Floating Borrowings to Fixed**

- The grids to the right show indicative levels for effective funding cost of rolling FHLB Chicago funding and swapping to fixed
- Effective funding cost equals fixed swap rate plus estimated funding spread between FHLB and SOFR across various funding structures (1 month fixed rollover, and 3 month fixed rollover)

		Funding			Swap		Compare	e to:
Ter	nor	1m Fixed	1m Term SOFR (Proxy)	Funding Spread	Fixed Swap Rate	Effective Funding Cost	FHLB Term	Difference
2	2y	3.16	2.99	0.17	4.39	4.56	4.49	0.07
3	y	3.16	2.99	0.17	4.20	4.37	4.45	-0.08
4	y	3.16	2.99	0.17	4.06	4.23	4.39	-0.16
5	iy	3.16	2.99	0.17	3.97	4.14	4.26	-0.12
7	'y	3.16	2.99	0.17	3.82	3.99	4.30	-0.31
1(	Ĵу	3.16	2.99	0.17	3.70	3.87	4.39	-0.52

### 3m Short Term Fixed Rate Rollover Swapped to Fixed

1 m Short Term Fixed Rate Rollover Swapped to Fixed

	Funding			Swap		Compare	eto:
Tenor	3m Fixed	3m Term SOFR (Proxy)	Funding Spread	Fixed Swap Rate	Effective Funding Cost	FHLB Term	Difference
2у	3.70	3.56	0.14	4.38	4.52	4.49	0.03
Зу	3.70	3.56	0.14	4.18	4.32	4.45	-0.13
4y	3.70	3.56	0.14	4.04	4.18	4.39	-0.21
5y	3.70	3.56	0.14	3.95	4.09	4.26	-0.17
10y	3.70	3.56	0.14	3.70	3.84	4.39	-0.56

Fixed Income Capital Markets



### 5Y Example Below

presentation.

The grid below summarizes outright cap purchases, collars, and pay fixed swaps on SOFR for a 3 year tenor •

Structure										Market V	alue Sens	itivity fro	m Base	
Description	Start	Maturity	Notional	Cap Strike I (Long)	Cap Strike II (Short)	Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
3y/ 5% Cap	10/1/2022	10/1/2025	100,000,000	5.00%		SOFRRATE	1,170,500	1.17%	39	-0.8%	-0.5%	1.0%	2.6%	4.6%
3y/ 4% Cap	10/1/2022	10/1/2025	100,000,000	4.00%		SOFRRATE	2,239,304	2.24%	75	-1.6%	-1.0%	1.7%	3.7%	6.0%
3y/ 3% Cap	10/1/2022	10/1/2025	100,000,000	3.00%		SOFRRATE	4,041,761	4.04%	135	-2.8%	-1.7%	2.1%	4.4%	6.8%
3y/3-5% Cap Spread	10/1/2022	10/1/2025	100,000,000	3.00%	5.00%	SOFRRATE	2,964,791	2.96%	99	-2.0%	-1.2%	1.1%	1.8%	2.1%
3y/2.5-4.5% Cap Spread	10/1/2022	10/1/2025	100,000,000	2.50%	4.50%	SOFRRATE	3,691,236	3.69%	123	-2.3%	-1.2%	0.9%	1.4%	1.6%

#### \$ premiums reflect \$100mm notional •

### Collars

Caps

Structure

Structure										Market V	alue Sens	itivity from	n Base	
Description	Start	Maturity	Notional	Cap Strike (Long)	Fir Strike (Short)	Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
3y/4% Cap ZC Collar	10/1/2022	10/1/2025	100,000,000	5.00%	3.12%	SOFRRATE	0			-3.6%	-1.6%	1.5%	3.7%	5.5%
3y/4% Cap/1.0% Hr Collar	10/1/2022	10/1/2025	100,000,000	4.00%	1.00%	SOFRRATE	1,956,811	1.96%	65	-2.5%	-1.3%	1.8%	3.9%	6.1%

### Swap

Structure									Market V	alue Sens	itivity from	n Base	
Description	Start	Maturity	Notional	Pay Fixed	Index	Premium \$	Premium % Notl	Initial Carry (bps)	-200	-100	+100	+200	+300
3y Pay Fixed Swap	10/1/2022	10/1/2025	100,000,000	4.04%	SOFRRATE	0	0.00%	1.04	-5.9%	-2.9%	2.8%	5.4%	8.0%



- Indicative levels using SOFR levels as of 9/22/22; may not represent executable levels.
- Information presented above regarding interest rate derivatives is considered general and factual. Please see further disclosures on the last page of this presentation.

• The grid below summarizes outright cap purchases, collars, and pay fixed swaps on SOFR for a 5 year tenor

Caps Structure										Market V	alue Sens	itivity from	m Base	
Description	Start	Maturity	Notional	Cap Strike I (Long)	Cap Strike II (Short)	Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
5y/ 5% Cap	10/1/2022	10/1/2027	100,000,000	5.00%		SOFRRATE	2,268,069	2.27%	45	-1.4%	-0.9%	1.5%	3.8%	6.5%
5y/ 4% Cap	10/1/2022	10/1/2027	100,000,000	4.00%		SOFRRATE	3,807,927	3.81%	76	-2.4%	-1.6%	2.3%	5.2%	8.4%
5y/ 3% Cap	10/1/2022	10/1/2027	100,000,000	3.00%		SOFRRATE	6,330,575	6.33%	127	-4.0%	-2.4%	3.0%	6.3%	9.7%
5y/ 3.0-5.0% Cap Spread	10/1/2022	10/1/2027	100,000,000	3.00%	5.00%	SOFRRATE	4,169,348	4.17%	83	-2.7%	-1.5%	1.5%	2.6%	3.2%
5y/2.5-4.5% Cap Spread	10/1/2022	10/1/2027	100,000,000	2.50%	4.50%	SOFRRATE	5,159,918	5.16%	103	-3.0%	-1.6%	1.3%	2.1%	2.6%

• \$ premiums reflect \$100mm notional

### Collars

Structure										Market V	alue Sens	itivity fro	m Base	
Description	Start	Maturity	Notional	Cap Strike (Long)	Fir Strike (Short)	Index	Premium \$	Premium % Notl	Avg Annual Amort (bps)	-200	-100	+100	+200	+300
5y/4.75% Cap ZC Collar	10/1/2022	10/1/2027	100,000,000	4.75%	2.84%	SOFRRATE	0			-6.1%	-2.8%	2.7%	5.7%	8.8%
5y/4% Cap/2.0% Fr Collar	10/1/2022	10/1/2027	100,000,000	4.00%	2.00%	SOFRRATE	2,313,131	2.31%	46	-5.9%	-2.8%	3.0%	6.3%	9.5%

### Swap

Structure									Market V	alue Sens	itivity from	n Base	
Description	Start	Maturity	Notional	Pay Fixed	Index	Premium \$	Premium % Notl	Initial Carry (bps)	-200	-100	+100	+200	+300
5y Pay Fixed Swap	10/1/2022	10/1/2027	100,000,000	3.77%	SOFRRATE	0	0.00%	0.77	-9.8%	-4.8%	4.5%	8.7%	12.7%



- Indicative levels using SOFR levels as of 9/22/22; may not represent executable levels.
- Information presented above regarding interest rate derivatives is considered general and factual. Please see further disclosures on the last page of this presentation.

### Thoughts on Wholesale Funding Relative Value Across Channels and Tenors

- Overnight to 1 month: FHLB (only available source)
- 3 month to 1 year: Brokered CD (bullet structure)
- 2 year and out: 1 month FHLB, hedged (swapped to fixed or capped)
- Considerations: FHLB dividend adjustment, FHLB symmetrical advance payups, funding spread variability on rollover strategy, callable brokered CD (currently 20-25 basis point payup, at limited size)

Maturity	FHLB	Brokered CD	Hedged 1m FHLB: Swap to Fixed
1 Month	3.22		
3 Month	3.80	3.45	
6 Month	4.24	4.00	
1 Year	4.42	4.15	
2 Year	4.31	4.30	4.20
3 Year	4.26	4.35	3.98
5 Year	4.02	4.40	3.71
7 Year	4.05	4.50	3.57
10 Year	4.25	4.55	3.47

- 1. Indicative pricing as of 10/4/22, may not represent executable levels
- 2. Information presented above regarding interest rate derivatives is considered general and factual. Please see further disclosures on the last page of this presentation.
- 3. FHLB levels per FHLB Chicago as of 10/4/22, CD levels per Stifle CD Desk 10/3/22
- 4. Hedged effective funding cost represents base funding cost (using 1 month term SOFR + 12 bps plus/minus the net hedge payoff per scenario



- The grid below illustrates the net hedged funding positions assuming an underlying short term funding rollover strategy priced at a 12 basis point spread over 1mo CME Term SOFR
- \$ payoffs reflect \$100mm notional

						Hedged Effective Funding Cost												
	Scenario	SOFR	1m Term SOFR	Base Funding Cost (SOFR+ 12bps)	5y Swap	5% Cap	4% Cap	3% Cap	5.0%/ 3.0 % Cap Sprd	4.5%/ 2.5 % Cap Sprd	4% Cap/ 2% Flr Collar	5y FHLB						
Porcont	4	7.00	7.06	7.18	3.89	5.57	4.88	4.39	6.01	6.21	4.58	4.09						
Fercent	3	6.00	6.06	6.18	3.89	5.57	4.88	4.39	5.01	5.21	4.58	4.09						
	2	5.00	5.06	5.18	3.89	5.57	4.88	4.39	4.01	4.21	4.58	4.09						
	1	4.00	4.06	4.18	3.89	4.63	4.88	4.39	3.95	3.65	4.58	4.09						
	0	3.00	3.06	3.18	3.89	3.63	3.94	4.39	3.95	3.65	3.64	4.09						
	-1	2.00	2.06	2.18	3.89	2.63	2.94	3.45	3.01	3.21	2.64	4.09						
	-2	1.00	1.06	1.18	3.89	1.63	1.94	2.45	2.01	2.21	2.58	4.09						

¢nor	Scenario	SOFR	1 m Term SOFR	Base Funding Cost	5y Swap	5% Cap	3% Cap	3% Cap	5.0%/ 3.0 % Cap Sprd	4.5%/2.5 % Cap Sprd	4% Cap/ 2% Fir Collar	5y FHLB
<u>ə per</u> 100mm	4	7.00	7.06	7,180	3,890	5,574	4,882	4,386	6,014	6,212	4,583	4,090
Netl	3	6.00	6.06	6,180	3,890	5,574	4,882	4,386	5,014	5,212	4,583	4,090
(* 0 0 0 o)	2	5.00	5.06	5,180	3,890	5,574	4,882	4,386	4,014	4,212	4,583	4,090
<u>(\$000S)</u>	1	4.00	4.06	4,180	3,890	4,634	4,882	4,386	3,954	3,652	4,583	4,090
	0	3.00	3.06	3,180	3,890	3,634	3,942	4,386	3,954	3,652	3,643	4,090
	-1	2.00	2.06	2,180	3,890	2,634	2,942	3,446	3,014	3,212	2,643	4,090
	-2	1.00	1.06	1,180	3,890	1,634	1,942	2,446	2,014	2,212	2,583	4,090

• Indicative levels using SOFR levels as of 9/22/22; may not represent executable levels.

- 5y FHLB is FHLB Chicago advance indication as of 9/22/22
- Information presented above regarding interest rate derivatives is considered general and factual. Please see further disclosures on the last page of this presentation.



# Liquidity/IRR Consideration Matrix

	IRR Position	Highly Asset Sensitiv	<i>1e</i>			
Large floating rate asset base, low cash, strong loan demand Consider: • <u>Rates down protection through hedging strategies</u>			<ul> <li>Large floating rate asset base, high cash/lower loan demand</li> <li>Consider:</li> <li><u>Rates down protection through on-balance sheet strategies (cash deployment loss/breakeyen</u></li> </ul>			
<ul> <li>Leverage opportunities</li> <li>Liquidity</li> <li>Lower</li> </ul>			duration extension in investment portfolio)	Liquidity Stable/		
Large fixed rate asset base, low cash, strong loan demand Consider: • <u>Hedged funding strategies</u>			Large fixed rate asset base, stable liquidity/stable to lower loan demand Consider: • Cash deployment into short duration/hedged assets	Higher		
	IRR Position	Neutral Liability Sensitiv	<ul> <li>Loss/breakeven in rates up scenario</li> </ul>	STIFEL Fixed Incon Capital Mar		

### **Strategy Overview**

Partial term fair value hedging allows a financial institution to create floating-rate or floating-to-fixed rate exposures by pairing an underlying fixed rate security with an interest rate swap. This strategy captures the spread, without the full benchmark interest rate risk, associated with longer duration securities.

### **Discount Margins**

- On the longer end of the curve, certain Agency CMBS and municipal securities can offer compelling back-end discount margins, given the spreads that are offered
- Examples:
  - 10y agency bullet immediately swapped to +69 basis points over SOFR
  - New issue Freddie K A2 immediately swapped to +86 basis points over SOFR (up to open window at 100cpy)
  - Compared to the recent 10y K-deal floaters priced at +60bps over 30d average SOFR on 9/09/2022

### **Structure and Availability**

- SOFR interest rate swaps presented in each of the following slides are using daily compounded SOFR in arrears- floating daily, capturing real time index movements
  - Whereas certain floating rate products like K-deal floaters noted above, which reference 30d average SOFR a backward looking average, creating a delayed response to index movements
- In terms of availability, the ability to create floating rate exposure by swapping fixed rate securities to floating also opens up greater access to product
- A range of securities for each of these three sectors are shown swapped to floating and swapped to fixed-to-floating structures on the following slides (shown versus SOFR). As of 9/26, overnight SOFR was 2.99%



• The table below illustrates various floating options using fixed rate Agency bullets and CMBS:

	E	Bond										Hedge		Hedged Po	osition				
		Description	Price	Cpn	Yield	Mat	Avg Life	Eff Dur	Px Chg -1	Px Chg +1	l Px Chg +3	Structure	Cpn	Structure	SOFR DM	Eff Dur	Net Px Chg -1	Net Px Chg +1	Net Px Chg +3
Sč	Ī	3y Bullet	99.40	4.25	4.47	3.0	3.0	2.8	2.8%	-2.7%	-7.9%	3y spot	4.26	Flt	+0.21	2.5	-0.1%	0.1%	0.2%
benture		5y Bullet	98.97	4.00	4.23	5.0	5.0	4.5	4.6%	-4.3%	-12.4%	5y spot	4.00	Flt	+0.23	1.7	0.0%	0.1%	0.3%
ency De		7y Bullet	100.00	4.25	4.25	7.0	7.0	6.9	6.4%	-6.0%	-17.1%	7y spot	3.85	Flt	+0.4	1.2	0.1%	-0.1%	-0.5%
Ag		10y Bullet	96.00	3.88	4.38	10.0	10.0	8.1	8.5%	-7.7%	-21.1%	10y spot	3.69	Flt	+0.69	-0.1	-0.3%	0.3%	0.7%
-	1																		
ie K- al		Seasoned 10y K A2	95.74	3.51	4.26	6.5	6.4	5.6	5.8%	-5.4%	-15.2%	5y spot	4.01	Fit	+0.26	0.8	1.3%	-1.1%	-2.9%
Fredd De		New Issue 10y K A2	91.60	3.50	4.58	9.8	9.8	8.0	8.4%	-7.6%	-20.9%	9y spot	3.72	Flt	+0.86	0.1	0.4%	-0.2%	-0.5%
	-																		
e DUS		Seasoned 9.5/10 DUS	96.00	3.78	4.60	6.3	6.0	5.2	5.4%	-5.0%	-14.2%	6y spot	3.92	Flt	+0.68	-0.5	0.1%	0.0%	0.0%
Fanni	_	10/9.5 DUS	95.83	3.99	4.58	9.8	9.8	7.9	8.3%	-7.5%	-20.6%	9y spot	3.71	Flt	+0.87	0.6	0.1%	0.0%	0.1%

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(2) Indicative levels as of 9/26/22; may not represent executable levels.

(3) Price shocks represent an immediate parallel curve shock.

(4) Hedged position yields are uncapped/unfloored

(5) Hedged position yields and discount margins reflect a weighted average based on book value of the asset and the notional amount of the interest rate swap

(6) Information presented above regarding interest rate derivatives is considered general and factual. Please see further disclosures on the last page of this presentation.



• The table below illustrates various floating options using fixed rate, AA Municipals:

	Bond											Hedge		Hedged Po	sition				
	Descrip	tion	Price	Cpn	Yield	Mat	Avg Life	Eff Dur	Px Chg -1	Px Chg +1	Px Chg +3	Structure	Cpn	Structure	SOFR DM	Eff Dur	Net Px Chg -1	Net Px Chg +1	Net Px Chg +3
	11nc9	4.0 <sup>-</sup>	104.02	4.00	4.49	10.9	8.9	8.3	8.4%	-8.1%	-22.5%	9y spot	3.75	Flt	+0.78	1.0	0.8%	-1.2%	-3.2%
шсіраі	15nc9	4.0	98.64	4.00	5.20	15.4	15.4	10.2	9.7%	-10.7%	-27.1%	9y spot	3.71	Flt	+1.49	2.2	1.4%	-3.1%	-6.2%
anpu mu	19nc10	4.0	96.64	4.00	5.38	19.0	19.0	11.5	11.3%	-11.6%	-30.5%	10y spot	3.69	Fit	+1.69	2.8	2.6%	-3.6%	-8.6%
	15nc8	5.0 <sup>-</sup>	108.76	5.00	4.77	15.4	8.4	8.1	7.5%	-8.7%	-25.3%	8y spot	3.75	Flt	+1.08	1.5	0.6%	-2.3%	-7.7%
	19nc10	5.0	108.69	5.00	4.97	18.9	9.9	10.1	9.7%	-10.5%	-28.1%	10y spot	3.69	Flt	+1.34	2.5	1.7%	-3.2%	-8.1%
	4.5y Bi	ıllet	94.50	3.15	4.52	4.5	4.5	4.1	4.2%	-4.0%	-11.4%	4y spot	4.04	Flt	+0.48	-0.2	0.0%	0.0%	0.0%
	6y Bu	llet	96.00	4.08	4.86	5.9	5.9	5.2	5.3%	-5.0%	-14.2%	6y spot	3.91	Flt	+0.95	-0.3	-0.1%	0.1%	0.4%
I d X d DI	10nc6	4.5	97.10	4.50	4.86	10.5	10.5	6.2	5.8%	-6.6%	-20.2%	6y spot	3.94	Flt	+0.91	1.1	0.7%	-1.8%	-6.5%
	15nc10	4.2	92.00	4.20	4.98	14.4	14.4	9.6	9.7%	-9.5%	-25.9%	9y spot	3.71	Flt	+1.28	0.9	1.4%	-1.9%	-4.9%

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Shorter Maturity Partial Term Hedge Options



#### **Strategy Overview**

Partial term fair value hedging allows a financial institution to hedge any portion (front, middle, back) of any fixed rate, callprotected exposure. This presents the opportunity to purchase certain longer fixed rate securities, and swap the front few years to floating at higher floating yields than are generally available in floating rate issues.

Once the interest rate swap matures, the investor would be left with a fixed rate exposure.

### Application of shorter maturity hedges

Using the same menu of representative securities, this section explores hedging longer duration securities with shorter/intermediate maturity interest rate swaps, to shorten duration and create a barbell exposure.

Each of the securities shown in the prior section is illustrated as hedged with a 2y, 3y and 4y spot starting swap.

This shows the flexibility offered under partial term hedging, and provides hedged securities options with compelling front end floating yields and limited overall interest rate risk.



#### • The table below illustrates various floating-to-fixed options using fixed rate Agency bullets and ACMBS:

	Bond										Hedge		Hedged Po	sition					
	Description	Price	Cpn	Yield	Mat	Avg Life	Eff Dur	Px Chg -1	Px Chg +1	Px Chg +3	Structure	Cpn	Structure	SOFR DM	Fixed Yld	Eff Dur	Net Px Chg -1	Net Px Chg +1	Net Px Chg +3
	3y Bullet	99.40	4.25	4.47	3.0	3.0	2.5	2.0%	-3.1%	-7.9%	1y spot 2y spot	4.43 4.44 4.26	Fit to Fxd Fit to Fxd	+0.04 +0.03	4.47 4.47 4.47	1.6 0.6	1.0% 0.1%	-2.1% -1.2%	-5.1% -2.4%
bentures	5y Bullet	98.97	4.00	4.23	5.0	5.0	4.6	4.1%	-5.0%	-13.3%	2y spot 3y spot 4y spot	4.44 4.26 4.12	Fit to Fxd Fit to Fxd Fit to Fxd	+-0.21 +-0.03 +0.11	4.23 4.23 4.23	2.7 1.7 0.9	2.2% 1.3% 0.4%	-3.1% -2.2% -1.4%	-7.7% -5.2% -2.8%
gency De	7y Bullet	100.00	6.75	4.25	7.0	7.0	6.5	6.6%	-6.3%	-17.6%	2y spot 3y spot 4y spot	4.44 4.26 4.12	Fit to Fxd Fit to Fxd Fit to Fxd	+-0.19 +-0.01 +0.13	4.25 4.25 4.25 4.25	4.4 3.5 2.7	4.7% 3.8% 2.9%	-4.4% -3.5% -2.7%	-12.1% -9.6% -7.2%
Ą	10y Bullet	96.00	3.88	4.38	10.0	10.0	8.6	11.6%	-5.7%	-19.8%	2y spot 3y spot 4y spot	4.44 4.26 4.12	Flt to Fxd Flt to Fxd Flt to Fxd	+-0.06 +0.12 +0.26	4.38 4.38 4.38	6.8 5.8 4.9	9.6% 8.7% 7.8%	-3.8% -2.9% -2.1%	-14.2% -11.7% -9.4%
K-Deal	Seasoned 10y K A2	95.74	3.51	4.26	6.5	6.4	5.9	9.5%	-2.2%	-12.5%	2y spot 3y spot 4y spot	4.44 4.26 4.12	Fit to Fxd Fit to Fxd	+-0.18 +0.01 +0.15	4.26 4.26 4.26	3.9 3.0 2.0	7.6% 6.7% 5.8%	-0.4% 0.5% 1.4%	-6.9% -4.4%
Freddie	New Issue 10y K A2	91.60	3.50	4.58	9.8	9.8	8.8	17.1%	-0.5%	-15.1%	2y spot 3y spot 4y spot	4.44 4.26 4.12	Fit to Fxd Fit to Fxd Fit to Fxd Fit to Fxd	+0.14 +0.32 +0.46	4.58 4.58 4.58	6.8 5.8 4.8	<u>15.2%</u> 14.3% 13.4%	1.3% 2.2% 3.1%	-9.5% -7.0% -4.7%
Fannie DUS	Seasoned DUS	96.00	3.78	4.60	6.3	6.0	5.6	11.0%	-0.3%	-10.0%	2y spot 3y spot 4y spot	4.44 4.26 4.12	Flt to Fxd Flt to Fxd Flt to Fxd	+0.16 +0.34 +0.48	4.60 4.60 4.60	3.6 2.7 1.8	9.1% 8.1% 7.2%	1.6% 2.5% 3.4%	-4.5% -2.0% 0.4%
	10/9.5 DUS	95.83	3.99	4.58	9.8	9.8	8.7	15.2%	-2.1%	-16.4%	2y spot 3y spot 4y spot	4.44 4.26 4.12	Flt to Fxd Flt to Fxd Flt to Fxd	+0.14 +0.33 +0.47	4.58 4.58 4.58	6.7 5.7 4.8	13.2% 12.3% 11.4%	-0.2% 0.6% 1.5%	-10.8% -8.3% -5.9%

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lond										Hedge		Hedged Po	osition					
Description	Price	Cpn	Yield	Mat	Avg Life	Eff Dur	Px Chg -1	Px Chg +1	Px Chg +3	Structure	Cpn	Structure	SOFR DM	Fixed Yld	Eff Dur	Net Px Chg -1	Net Px Chg +1	Net Px Chg +3
										2y spot	4.44	Flt to Fxd	+0.01	4.39	6.4	6.5%	-6.3%	-17.2%
11nc9 4.0	104.02	4.00	4.39	10.9	8.9	8.3	8.4%	-8.1%	-22.5%	3y spot	4.26	Flt to Fxd	+0.18	4.39	5.6	5.6%	-5.5%	-14.7%
										4y spot	4.12	Flt to Fxd	+0.32	4.39	4.7	4.8%	-4.7%	-12.5%
										2y spot	4.44	Flt to Fxd	+0.76	5.20	8.3	7.8%	-8.8%	-21.5%
15nc9 4.0	98.64	4.00	5.20	15.4	15.4	10.2	9.7%	-10.7%	-27.1%	3y spot	4.26	Flt to Fxd	+0.94	5.20	7.4	6.9%	-7.9%	-19.0%
										4y spot	4.12	Flt to Fxd	+1.08	5.20	6.5	6.0%	-7.1%	-16.6%
										2y spot	4.44	Flt to Fxd	+0.94	5.38	9.5	9.4%	-9.7%	-24.9%
19nc10 4.0	96.64	4.00	5.38	19.0	19.0	11.5	11.3%	-11.6%	-30.5%	3y spot	4.26	Flt to Fxd	+1.12	5.38	8.6	8.5%	-8.8%	-22.4%
										4y spot	4.12	Flt to Fxd	+1.26	5.38	7.7	7.6%	-8.0%	-20.0%
										2y spot	4.44	Flt to Fxd	+0.45	4.77	6.3	5.8%	-6.9%	-20.2%
15nc8 5.0	108.76	5.00	4.77	15.4	8.4	8.1	7.5%	-8.7%	-25.3%	3y spot	4.26	Flt to Fxd	+0.62	4.77	5.5	4.9%	-6.1%	-17.9%
										4y spot	4.12	Flt to Fxd	+0.75	4.77	4.7	4.1%	-5.4%	-15.8%
										2y spot	4.44	Flt to Fxd	+0.65	4.97	8.4	7.9%	-8.8%	-22.9%
19nc10 5.0	108.69	5.00	4.97	18.9	9.9	10.1	9.7%	-10.5%	-28.1%	3y spot	4.26	Flt to Fxd	+0.82	4.97	7.5	7.1%	-8.0%	-20.6%
										4y spot	4.12	Flt to Fxd	+0.95	4.97	6.7	6.3%	-7.2%	-18.5%
										2v spot	4 44	Elt to Exd	+0.08	4 52	21	2.3%	-2 1%	-5.9%
4.5v Bullet	94.50	3 15	4 52	45	45	41	4 2%	-4 0%	-11 4%	3v spot	4 26	Fit to Exd	+0.00	4.52	1 1	1.3%	-1.2%	-3.4%
noy Danot	01.00	0.10	1.02	1.0	1.0		1.270	1.070	11.170	4v spot	4 12	Fit to Exd	+0.41	4.52	0.2	0.4%	-0.4%	-1.0%
										2v spot	4 44	Flt to Exd	+0.42	4 86	3.2	3.4%	-3.1%	-8.7%
6v Bullet	96.00	4.08	4.86	5.9	5.9	5.2	5.3%	-5.0%	-14.2%	3v spot	4.26	Flt to Fxd	+0.6	4.86	2.3	2.5%	-2.3%	-6.2%
ey Banet	00.00	1.00	1.00	0.0	0.0	0.2	0.070	0.070	11.270	4v spot	4 12	Fit to Exd	+0.75	4 86	1.3	1.6%	-1.4%	-3.8%
										2v spot	4.44	Flt to Fxd	+0.41	4.86	4.2	3.9%	-4.7%	-14.6%
10nc6 4.5	97.10	4.50	4.86	10.5	10.5	6.2	5.8%	-6.6%	-20.2%	3v spot	4.26	Flt to Fxd	+0.6	4.86	3.3	3.0%	-3.8%	-12.1%
	00					0.2	0.070	0.070	10.270	4v spot	4.12	Flt to Fxd	+0.74	4.86	2.4	2.1%	-3.0%	-9.8%
										2v spot	4.44	Flt to Exd	+0.54	4.98	7.5	7.8%	-7.6%	-20.3%
15nc10 4.2	92.00	4.20	4.98	14.4	14.4	9.6	9.7%	-9.5%	-25.9%	3v spot	4.26	Flt to Exd	+0.73	4.98	6.5	6.8%	-6.7%	-17.8%
10110101.2	02.00	1.20	1.00	/	1 1. 1	0.0	0.1 /0	0.070	20.070	4v spot	4 12	Elt to Exd	+0.87	4 98	5.6	5.9%	-5.8%	-15.4%

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Tax-Exempt Municipal

Taxable Muni

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## Liquidity/IRR Consideration Matrix

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Liqui	Large floating rate asset base, low cash, strong loan demand Consider: • <u>Rates down protection through hedging strategies</u> • Leverage opportunities	IRR Position	<ul> <li>Highly Asset</li> <li>Sensitive</li> <li>Large floating rate asset base, high cash/lower loan demand</li> <li>Consider:</li> <li><u>Rates down protection through on-balance sheet strategies (cash deployment, loss/breakeven, duration extension in investment portfolio)</u></li> </ul>	iquidity
Lov	<pre>ver Large fixed rate asset base, low cash, strong loan demand Consider: • <u>Hedged funding strategies</u></pre>	IRR Position	Sta Large fixed rate asset base, stable liquidity/stable to lower loan demand Consider: • Cash deployment into short duration/hedged assets • Loss/breakeven in rates up scenario Neutral/ Liability Sensitive	table/ igher STIFEI

Fixed Income Capital Markets

# Take Loss-Earn Back Strategies



### Tying it All Together: Portfolio Restructuring through Take Loss-Earn Back Strategy

### Why is this a good time to do a portfolio restructure?

- Majority of portfolios consist of fixed rate securities with relatively low yields.
- Portfolios are a much larger part of the overall balance sheet; restructure without adding.
- Allows for opportunity to take advantage of relatively high yields across various points on the curve.
- This rate cycle is moving quickly; this could be the window to restructure, while the economics work.





### Loss-Earn Back Sell Candidates: AA Municipal Curve Steepness

- Optimal break-even sale candidates will vary by institution, but generally include bullet and bullet-like securities that have rolled down the curve over the last four years. This includes corporates, ACMBS, and municipals.
- Municipal securities in particular make ideal sell candidates, as the tax-exempt curve retains significant steepness on both an absolute and relative basis.
- Although absolute municipal levels are significantly higher than they were in 2022, the municipal curve looks similar to how it looked in 2018, but even steeper on the front-end. As a result, intermediate tax-exempt positions purchased several years ago have very small losses or even marginal gains.

### Municipal and Treasury Yield Curves – 2022 and 2018



**Fixed Income** 

**Capital Markets** 



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**Methodology:** When solving for the optimal mix of securities to sell in a loss earn back transaction, it is essential to create a framework of goals and constraints.

### Goal is to improve go forward earnings subject to the following constraints:

- Constraint 1: Earn back Period
- 🖌 🖵 Constraint 2: Loss amount
- ✓ □ Constraint 3: Transaction Size
- ✓ □ Constraint 4: Sector Sale Limitations
- ✓ □ Constraint 5: Specific Reinvestment

Case Study: Goal is to improve go-forward earnings with the most efficient sale size that generates the most earnings, subject to a 1yr earn back period and reinvestment in longer municipals:





Sample Bank: \$500M Total Assets, Asset Sensitive, 8.0% Loss in Current AFS Portfolio

### What are we selling and buying?

	Asset Summary - Strategy Sales													
Category	% of Sales	Book Price	Market Price	Book Yield	WAL	Eff Dur	Gain / Loss (000s)							
MBS Fixed	1%	100.95	101.57	4.29	4.5	3.1	1							
CMO Fixed	16%	100.20	98.95	3.13	3.1	2.7	(14)							
Agency CMBS	20%	99.60	98.34	2.95	2.0	1.9	(18)							
Municipal	28%	101.66	101.06	2.97	3.5	3.0	(12)							
Corporate	35%	100.00	95.18	1.00	1.9	1.9	(120)							
Total	7,146	100.43	98.12	2.32	2.6	2.4	(164)							

 Selling Short: Security sales have a weighted average book yield of 2.32%, a WAL of 2.6yrs and a duration of 2.4, comprised of mostly CMBS, Municipals and Corporates that have rolled down the curve.

	Asset Summary - Purchases													
Category	% of Sales	Book Price	Market Price	Book Yield	WAL	Eff Dur	Gain / Loss (000s)							
Municipal	100%	102.00	102.00	4.70	10.0	9.4	-							

• **Buying Long:** Municipal purchases have a weighted average book yield of 4.70%, a WAL of 10.0yrs and a duration of 9.4.



Sample Bank: \$500M Total Assets, Asset Sensitive, 8.0% Loss in Current AFS Portfolio

### How do we derive a 1yr Earn Back?

Gain / Loss Detail								
Pre-tax Net Gain (Loss)	(164)							
Tax Adjustment	34							
One-time Gain (Loss)	(129)							

- Earn Back Math: The (\$129k) one-time loss is offset by +\$129k income pickup, resulting in a 1 year earn back.
  - **Go-Forward Earnings:** The strategy generates 238bps of positive spread.

Effect on Income (Book Values)											
	Yield	Amount	Income $\Delta$								
Interest Income Given Up	2.32	7,146	(166)								
Reinvestment Income	4.70	7,017	330								
Impact on Pretax Income			164								
Provision for Taxes (Assumes	(34)										
Cumulative Effect on Net Ir	Cumulative Effect on Net Income										



### What is the Portfolio Impact?

• **Current Portfolio:** \$200M portfolio with weighted average book yield of 2.30%, 6yr WAL, 5.0 Duration, and -5.1% +100 Px. Vol.

Portfolio Summary	Book	Gain /	Book	Avg.	Eff.	Price Chg		
Fortiono Summary	Value	Loss	Yield	Life	Dur.	-100	+100	
Current Portfolio	200,000	(16,000)	2.30	6.0	5.0	5.2%	-5.1%	
Security Sales	7,116	(163)	2.32	2.6	2.4	2.3%	-2.4%	
Securities Purchased	6,879	-	4.70	10.0	9.4	9.5%	-9.4%	
Pro Forma Portfolio	199,763	(15,837)	2.38	6.3	5.3	5.5%	-5.3%	

• **Pro Forma Portfolio Impacts :** Selling less than 5% of the overall portfolio, a one-time pre-tax loss of \$163k results in an 8bp increase to book yield, a 0.3 increase to duration, and makes the Bank less asset sensitive (i.e., provides more down-rate protection)



While requests for portfolio restructure modeling will often be centered around the bond portfolio, there are situations where gains from elsewhere on the balance sheet allow for portfolio clean-up opportunities:

- Loan Sales: Gains from selling out of the loan portfolio can be one way to offset losses in the securities portfolio.
- **Visa B Shares:** In preparation for its IPO in 2008, Visa issued Class B shares to its member banks as a way to eliminate the potential impact of a negative result in the Interchange Action. The shares are owned exclusively by U.S. financial institutions and their affiliates and successors. *Most Visa B shares are held at a \$0 value, making all proceeds booked as one-time gains. These gains can be paired with losses in the bond or loan portfolio to increase profitability.*
- **Reserves:** In the final stretch up to the credit standard's final effective date for non PBE's on January 1, 2023, certain institutions are re-evaluating their current reserves in 3Q and 4Q '22. These actions could lead to income events that could be utilized to offset losses where appropriate.
- **One-off Gains:** In the course of doing business, there are times in which gains that hadn't been budgeted can become available within any given quarter. Examples include but are not limited to the sale of a building or other real estate owned, a branch sale, or gains from a joint venture. These unpredictable occurrences are valuable opportunities to offset losses in a portfolio restructuring.
- Sale Leaseback of Branches







#### Low Income Housing Tax Credits (LIHTC)

- Created by the Tax Reform Act of 1986, this incentivizes the acquisition, construction and rehabilitation of affordable rental housing for low or moderate income tenants
- Each year, states receive an annual LITHC allocation and the states allocate the credits to the developers. The developers go through a competitive application process and must meet certain federal and state criteria. Once the developers receive the tax credits they sell them in exchange for an equity investment

### New Markets Tax Credits (NMTC)

- Created by the Community Renewal Tax Relief Act of 2000, this incentivizes Community Development Entities (CDEs) to make eligible low-income community investments
- The CDEs apply to the Treasury Department's Community Development Financial Institutions (CDFI) to receive tax credit authority and then sell those tax credits to investors

### **Historic Tax Credits (HTC)**

- Created through the Federal Historic Preservation Tax Incentives Program, this incentivizes the rehabilitation of historic buildings. There are 39 states that also have their own historic tax credits that can be used in addition to the federal credit
- Developers submit applications to their state historic preservation officers who then submit those applications and their recommendations to the Internal Revenue Service (IRS) and the National Park Service (NPS). Once the developers receive the tax credits they sell them in exchange for an equity investment

### **Renewable Energy Tax Credits (RETC)**

• Incentivizes investments into wind, solar and other types of renewable energy projects

2. National Park Service: https://www.nps.gov/tps/tax-incentives/application.htm



<sup>1.</sup> LIHTC FQA: LIHTC Q&A

- In general, tax credit investments can receive favorable community reinvestment act (CRA) consideration if the activities financed meet the regulatory definition of "community development" within the bank's assessment area(s) or "... located in the broader statewide or regional area that includes the bank's assessment area(s)."
- Given the nature and intent of tax credit financing, many projects will organically meet the definition of community development. However, not all tax credit projects qualify, and the route to qualification will differ for each type of tax credit and each individual project. Institutions should always carefully review each investment prior to claiming CRA credit.

### New Market Tax Credits (NMTCs)

NMTC regulations generally stipulate that investments are targeted at low-income communities where the poverty rate is at least 20% or income levels do not exceed 80% of area medians. Since these thresholds are largely in-line with CRA criteria, regulators will automatically assume that all NMTC investments meet the definition of community development:

*'*[t]he Agencies will presume that any loan to or investment in a ... New Markets Tax Credit eligible Community Development Entity promotes economic development.''

### Low Income Housing Tax Credits (LIHTCs)

LIHTCs also have a regulatory purpose and criteria aligned with CRA objectives and similarly receive an automatic presumption that they qualify for CRA credit:

§ *II.12(t)*—4: What are examples of qualified investments? Projects eligible for low-income housing tax credits;

### Historic Tax Credits (HTCs)

Unlike, LIHTC and NMTCs, HTCs are not presumed to qualify for CRA consideration under current regulations. However, the agencies have explicitly stated that "...in instances in which ... investments in projects that receive HTCs do meet the regulatory definition of community development... CRA consideration should be provided." Qualification should be assessed on a case-by-case basis, but consideration might be given to HTC projects that support job creation/retention in low-to-moderate income areas, provide affordable housing for LMI individuals, or revitalize or stabilize an LMI geography. Although not strictly required, HTC projects that also incorporate NMTC financing likely have an easier route to qualification.



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