Is This Time Different?

ALM in a Higher Interest Rate Environment

June 2023

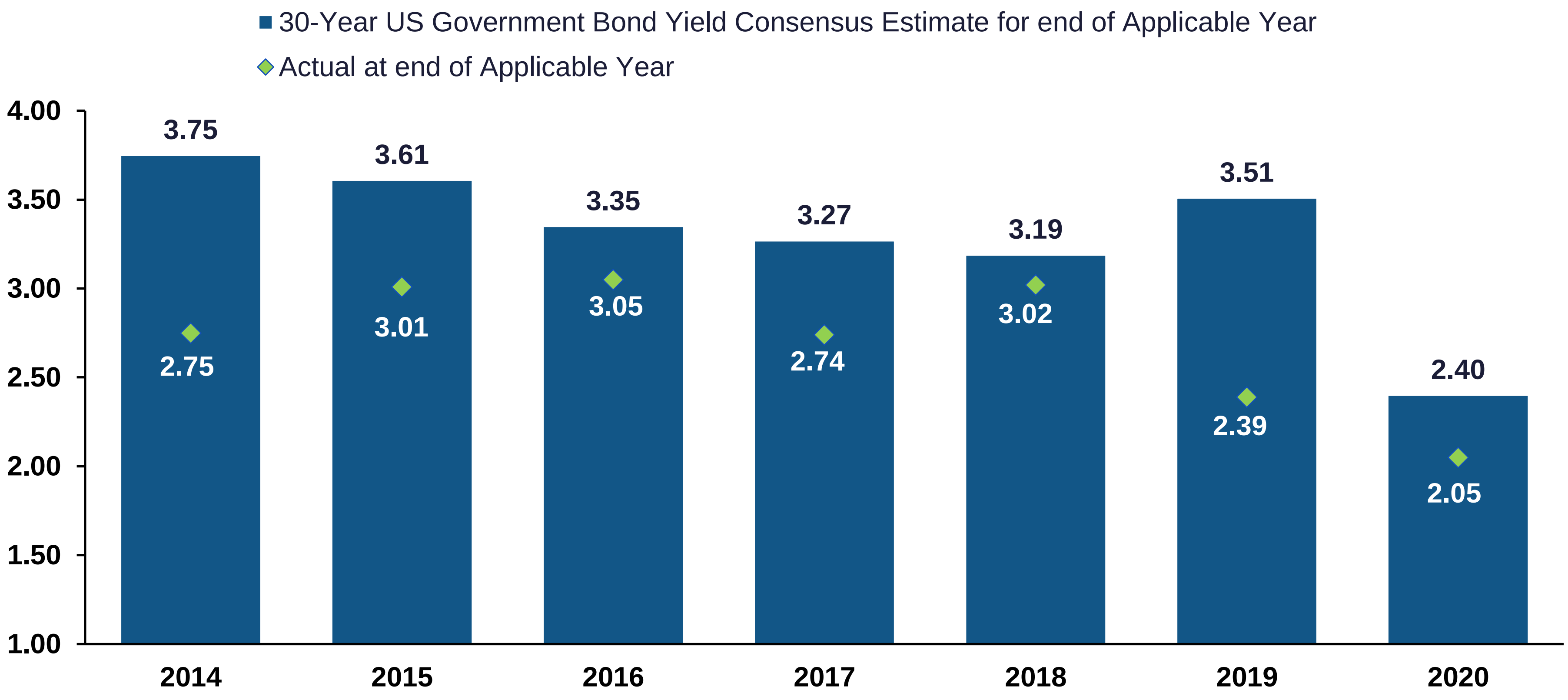
Agenda

Current Interest Environment and Outlook

ALM Challenges in a Rising Rate Environment

For Ten Years We Wished for Higher 30 Year Rates

Realized 30-year treasury rates were consistently lower than expectations



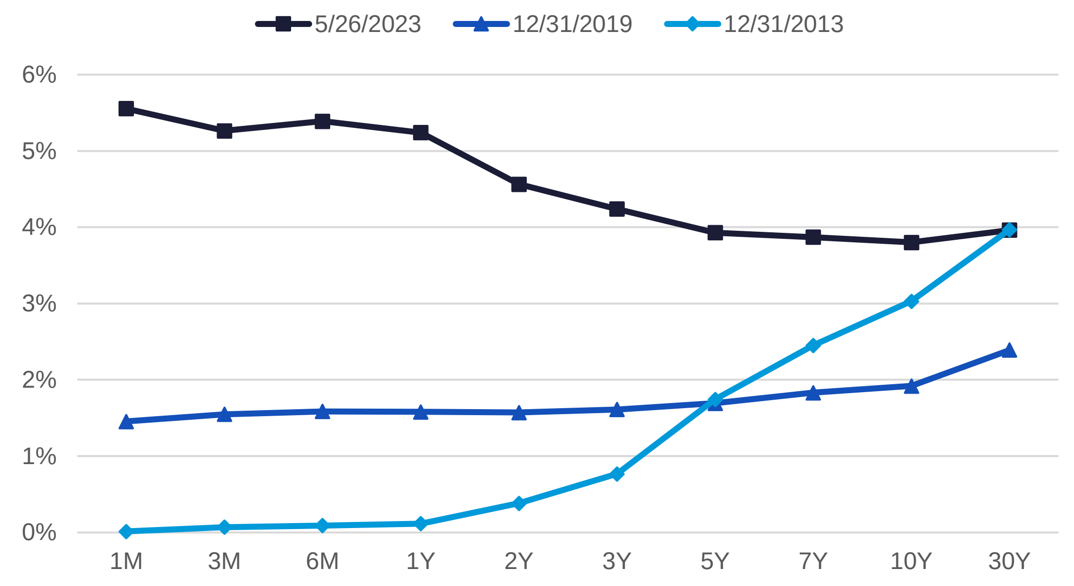
Source: Factset; Goldman Sachs Asset Management; *30y actual yield is as of 1/29/20, as of 12/30/20 it ended at 1.64%

Note: Chart depicts the consensus expectation of market participants as of the beginning of each year for the yield on the US 30-Year Treasury bond at the end of that year. Diamond represents the actual yield as of the end of the indicated year.

It is Finally Here…Now What?

Although rates has reached highs last seen in 2013, curve shapes are drastically different

Yield Curve



Yields of Ten-Year and Thirty-Year Treasuries Since 2012

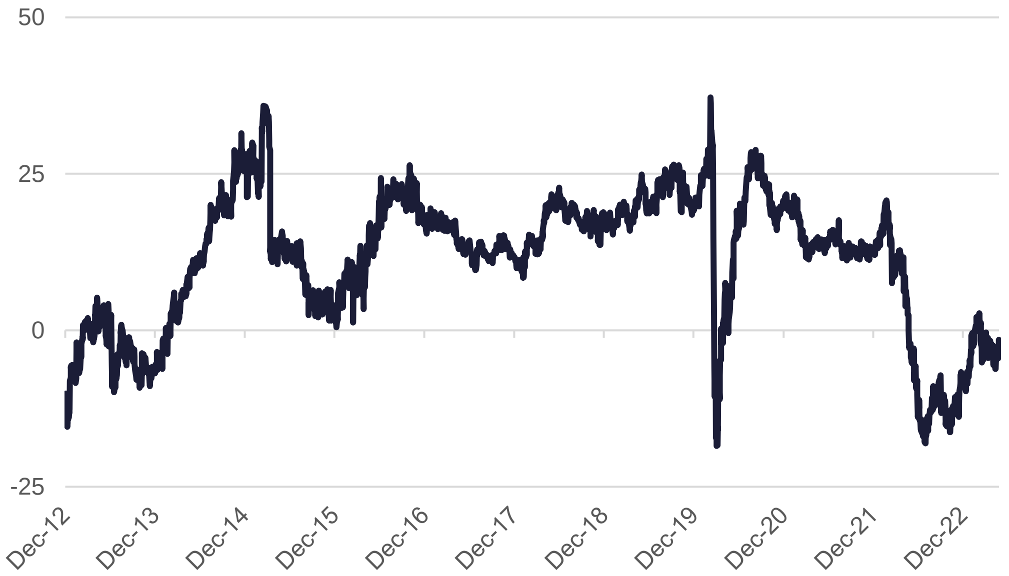
Source: Bloomberg

10s30s Curve are much flatter than 10 Years ago…

No matter where you look, there is no term premium

10s30s Yield Curve since 2012 (bps)

10s30s BBB Spread Curve since 2012 (bps)



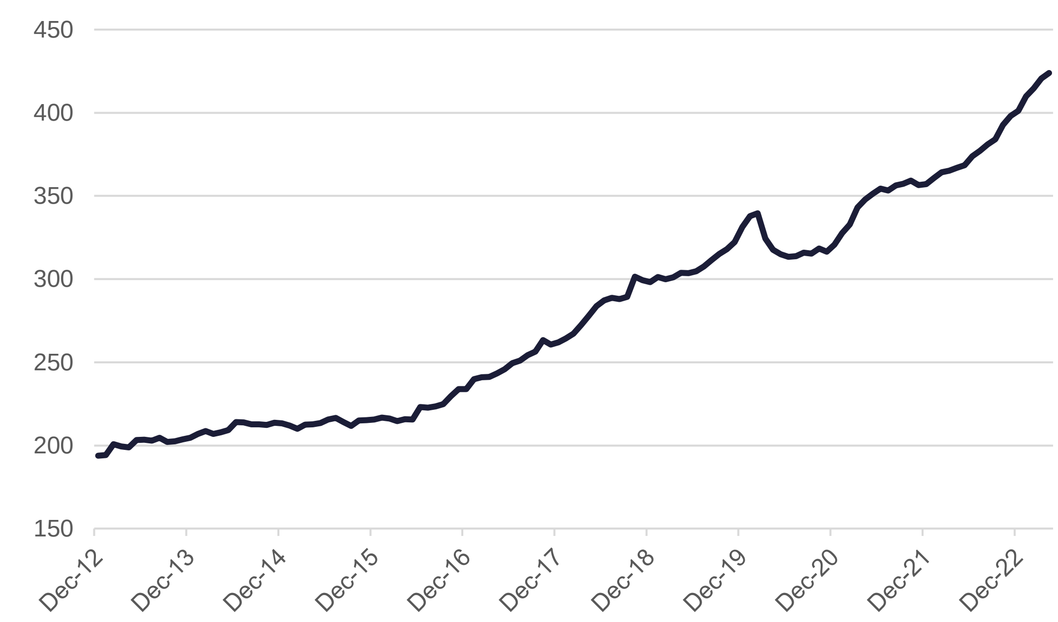
Source: Bloomberg

FORTITUDE RE.

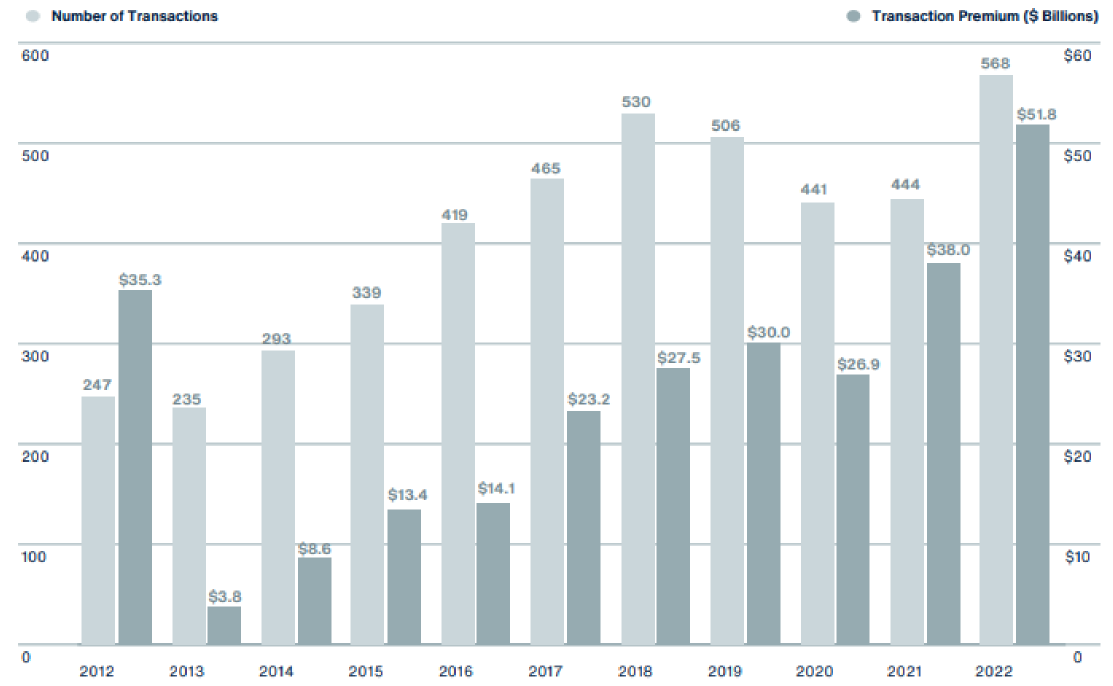
From Unrelenting Pension and Insurance Buying

Liability-driven investors remain committed to reducing interest rate risk

Treasury Held in Stripped Form ($bn)



U.S. PRT Transaction Volume



Source: Bloomberg; Aon, "US Pension Risk Transfer Market Insights"

Agenda

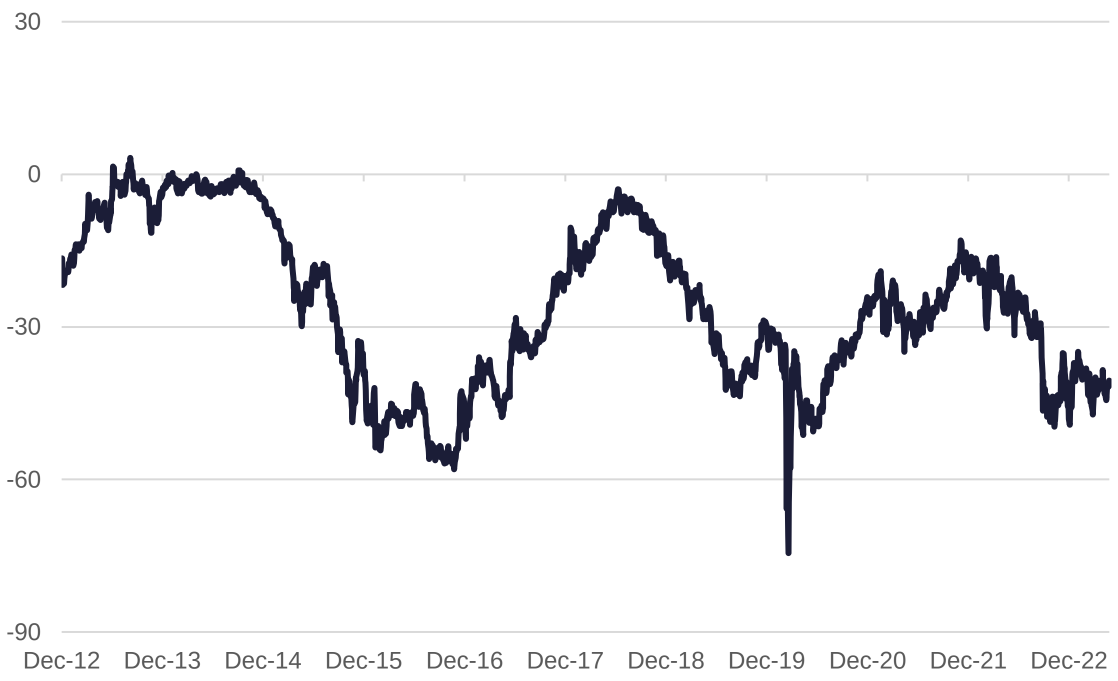
Current Interest Environment and Outlook

ALM Challenges in a Rising Rate Environment

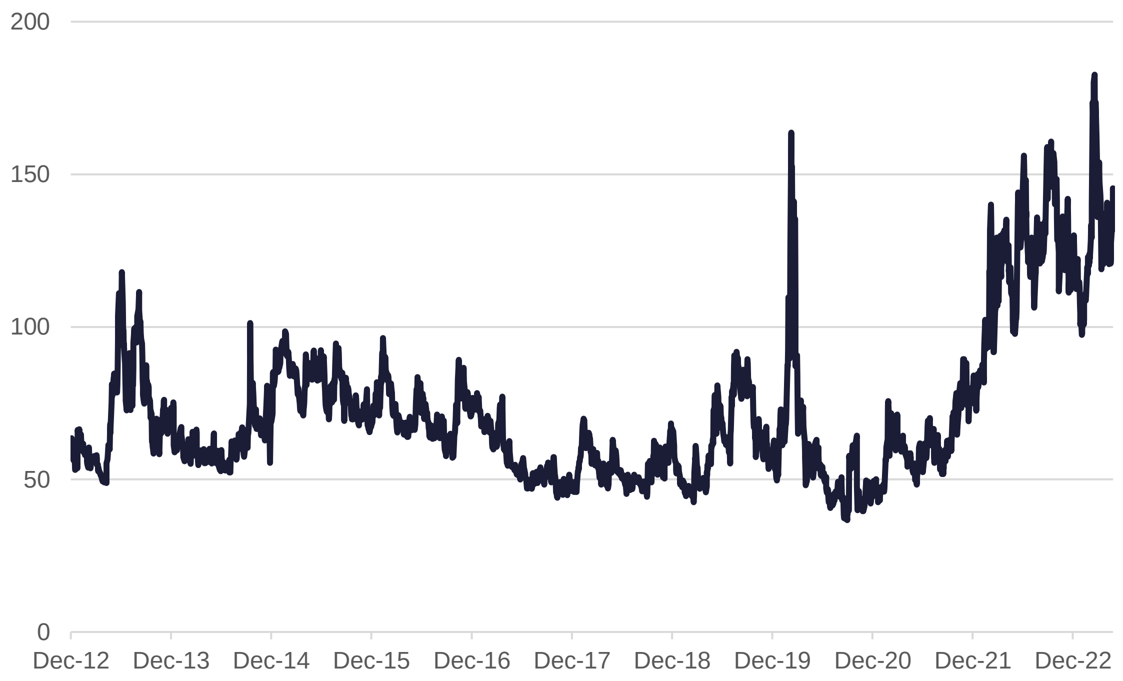
FORTITUDE RE.

With Higher Rate Also comes Higher Hedging Costs

Thirty-Year Swap Spread Since 2012 (bps)



MOVE Index Since 2012 (bps)



Source: Bloomberg

Short Duration Business: Lapse Risk

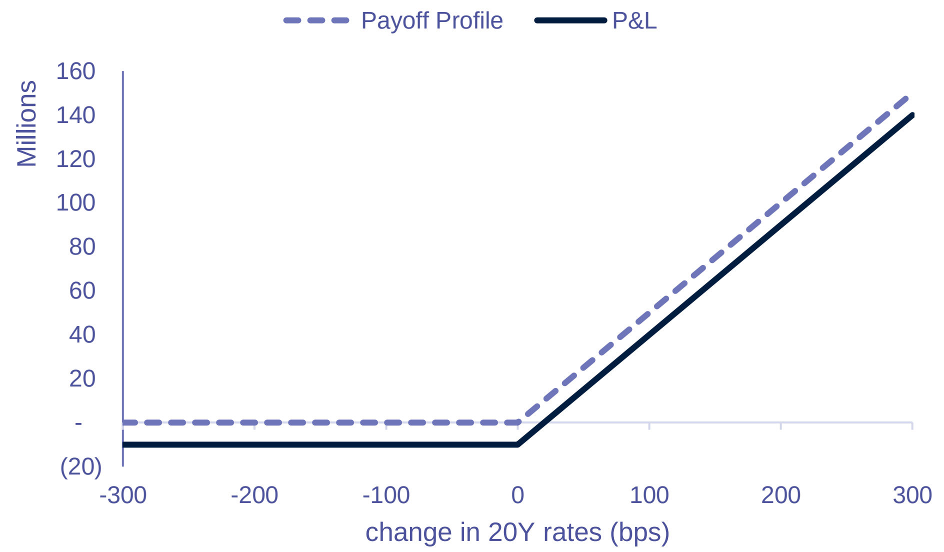
Lapse risk can be managed with option-based strategies, but hedge costs are high and highly sensitive

- To protect against lapse risk in a rapidly rising rate scenario, we can implement an option-based hedging program, which would provide gains when rates increases with the advantage of capped losses when rates fall.
- The costs and efficacy of the hedging program will be highly dependent on the lapse risk model assumptions. The below case study shows how hedge costs vary under different lapse assumptions.

Indicative Costs using Payers(on $1bn liability)

Lapse Risk	Low	Medium	High
% Lapses	10%	20%	40%
Payout needed if rates +200bps ($M)	100	200	400
Cost for 3m protection ($M)	10	20	40
Cost for 1y protection ($M)	19	38	76

Profile for Low Lapse Risk, 3m protection



Source: Bloomberg

Note: Indicative hedge costs as of 5/31/2023. Based off 3M x 20Y and 1Y x 20Y at-the-money payer swaptions.

FORTITUDE RE.

Short Duration Business: Lapse Risk

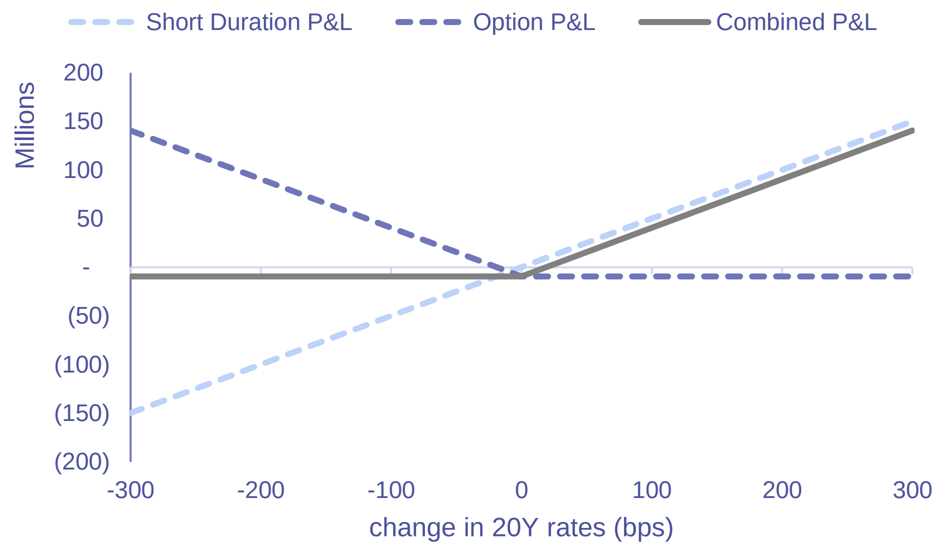
Hedge costs can be reduced by customization and being opportunistic around market conditions

- There are ways to reduce the cost of the hedging program:
  - **Not paying for protection where it is not needed.** We can customize hedges to the lapse risk profile so that we only buy protection at the rate levels where lapses are expected occur.
  - **Buying calls vs. puts depending on market conditions**. For example, there are times when hedge costs can be reduced by positioning the asset portfolio slightly short duration vs. the liability while capping losses with receiver swaptions.

Indicative Costs Using Receivers(on $1bn liability)

Lapse Risk	**Low**	**Medium**	**High**
% Lapses	10%	20%	40%
Payout needed if rates +200bps ($M)	100	200	400
Cost for 3m protection ($M)	10	19	38
Cost for 1y protection ($M)	18	36	72

Profile for Low Lapse Risk, 3m protection



Source: Bloomberg

Note: Indicative hedge costs as of 5/31/2023. Based off 3M x 20Y and 1Y x 20Y at-the-money payer swaptions.

FORTITUDE RE.

Long Duration Business: Negative IMR and Liquidity

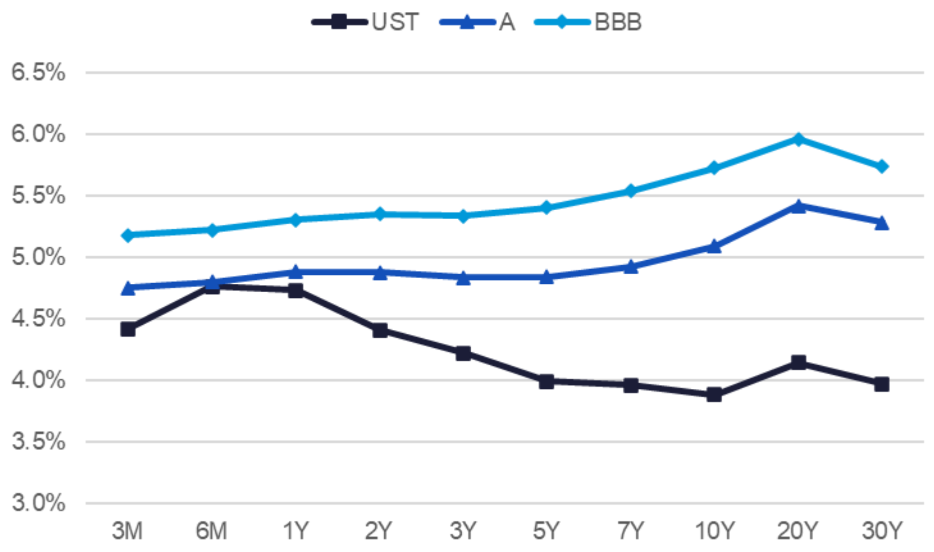
We can extend duration of the portfolio while managing the trade-off between yield pickup and realizing losses

- Assume we hold a portfolio of 10-year A-rated bonds with 7.5-year duration and 95% Market Value/Book Value ratio.
- The first option involves selling the shorter 10-year bonds and purchasing 30-year A-rated bonds. This results in a higher yield pickup, but at the cost of higher realized losses.
- Alternatively, we can receive 30-year fixed swap rates and sell a portion of short bonds to obtain cash for initial and variation margin.[1] This option reduces realized losses, but results in yield drag from maintaining a cash buffer and increased operational complexity from managing the swap's margin.

Duration Extension Strategies 12/31/2022

	Duration	Yield	Realized loss (% of BV)	Yield pickup per year of duration extended (bps)
Original portfolio	7.5	5.09%		
Option 1	15.4	5.28%	5.0%	2
Option 2	15.4	5.03%	0.5%	-1

Yield Curve 12/31/2022



Source: Bloomberg

Note: 1.The initial margin is set at 9.3% of the notional amount, while the variation margin is 15.5% and determined based on a 95% VaR.

Thank you!

FORTITUDE RE.

JERSEY CITY, NJ

Ten Exchange Place
Suite 2210
Jersey City, NJ 07302
USA

NASHVILLE, TN

Seven Springs II
310 Seven Springs Way,
Suite 250
Brentwood, TN 37027
USA

BERMUDA

Chesney House
96 Pitts Bay Road,
3rd Floor
Pembroke Parish HM 08
Bermuda