The Convexity Maven

A Commentary by Harley Bassman

January 25, 2024

"Sharp Curve Ahead"

Notice: All investments have risks

Market wags often speak of making the "easy money"; this is so silly since such investments are typically only obvious after the event. And if it were so easy, these nattering nabobs would be sipping cocktails on a yacht near a Caribbean Island instead of blathering nonsense to anyone who will listen.

Notwithstanding that, some easy money was available last October when the UST two-year clipped 5.25% to touch the lower bound of the FED Funds rate. As such, unless there was another hike in the offing, this was the top.

Presently, I have no problem suggesting that widows and orphans buy the UST two-years at 4.35%, which in California and New York is close to a 5.00% "gross" yield once the State and Local tax exemption is included.

But for risk takers (levered money), the next big money trade will be discerning <u>when and how the FED will start to cut their target interest rate</u>; and which investments will most efficiently offer superior returns.

Today we consider a few of the winners of a steeper Yield Curve.

The reason the markets pays such close attention to the -nam line- shape of the Yield Curve is its perfect record of presaging -gray bar- recessions. Specifically, since 1978, a recession has occurred each time the three-month US Treasury rate rose above the ten-year UST rate - an inverted Yield Curve.
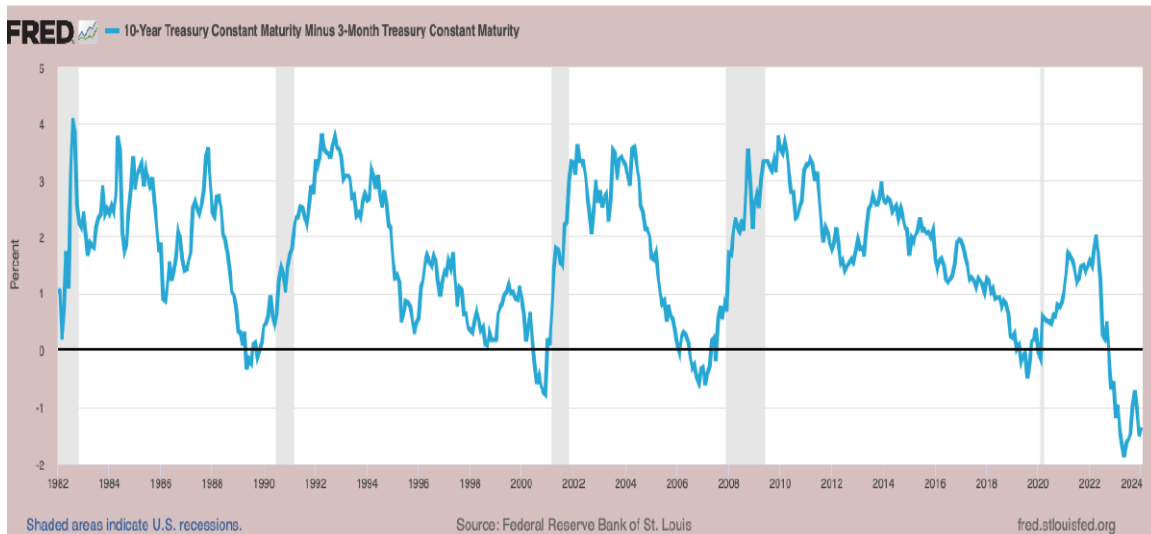
With a strangeness near clairvoyance, to maintain its perfect record, the Yield Curve inverted just prior to the March 2020 COVID recession that resulted from the Government-mandated economic shut-down.

Speculative traders, being too clever by half, have tried to front-run the FED by purchasing -sikhiav line- long-dated bonds well in advance of a -muang line- change in Monetary Policy.
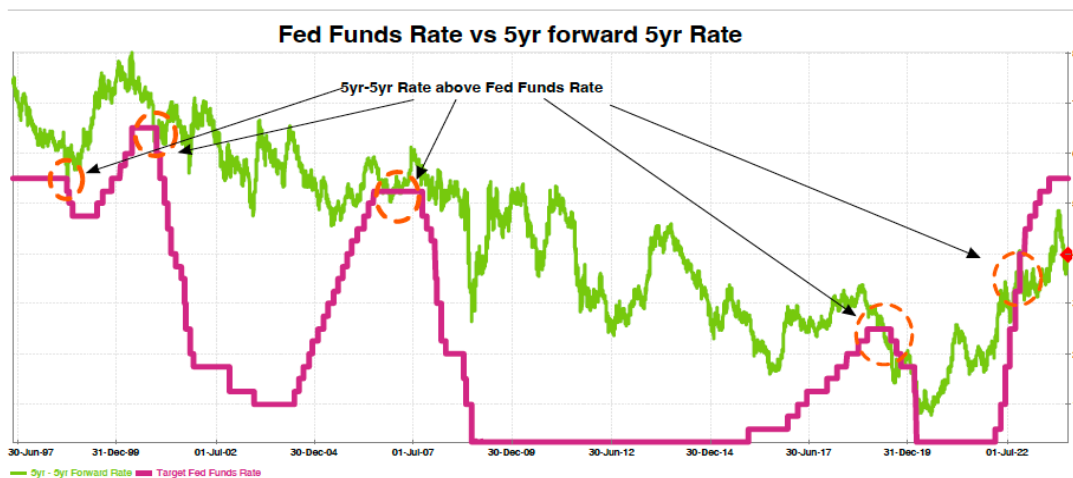
Sources – Unless noted, all charts are Credit Suisse LOCUS

While owning lower yielding long-dated bonds may not matter to "civilian" investors, it can be quite costly for professionals (as I will detail shortly).

While the shape of the Yield Curve captures the headlines, the derived Forward Rates are where the rubber meets the road for professional investors.

The financial press often speaks of "Forward Rates" as being the market's prediction of the future, but this is false. Forward rates are simply the mathematical break even between two different maturity investments.

In a nutshell, if Grandma can buy a one-year CD at 3% or a two-year CD at 4%, she would only buy the one-year CD if she thought in twelve months she could buy another one-year CD at 5% or higher. We would call this 5% rate the one-year rate one year forward (or the break-even rate).

While not entirely equivalent, earning 3% for the first year and 5% for the second year is similar to earning 4% per year for the two years. For any two dates one can approximate the "break even" rate for the third leg so one is indifferent.

Professional interest rate investors can presently buy a one-year interest rate at 4.85% or a two-year interest rate at 4.20%. The -sinamtan line- does the heavy math by calculating the break even for such investors.


Spot 1yr Rate vs Forward 1yr Rate
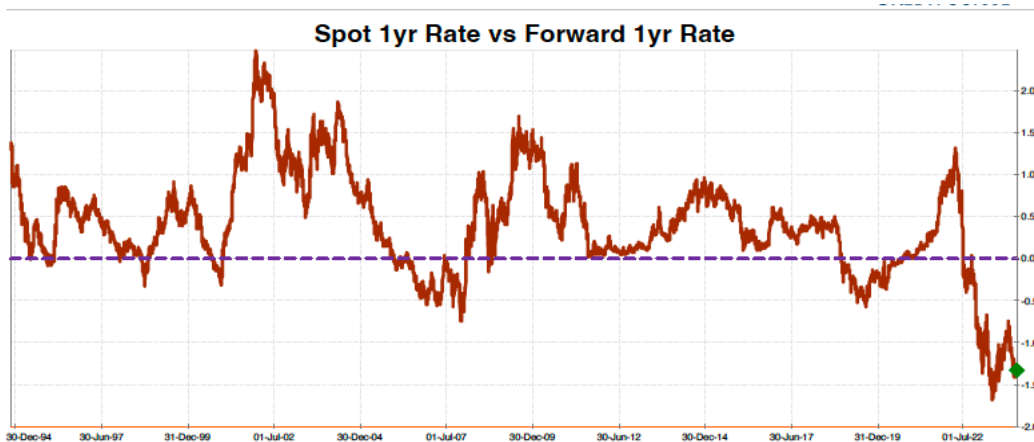
The -bai dot- spread of -130bps means that the one-year rate must be 3.55% or lower (4.85% minus 1.30%) to be better off locking-in the two-year interest rate at 4.20% instead of just buying the one-year rate and rolling it over.

If the one-year rate next year is higher than 3.55%, buying the two-year at 4.20% was a bad trade.

As noted, if Grandma invests in a one-year or two-year CD and is wrong by a quarter percent, she can skip Bingo night. But a quarter percent on $10bn is real money and leveraged professional investors have been fired for less.

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Not to belabor the point, but the bond market has not been this disconnected from FED policy in over 30 years. The Yield Curve is contorted in such a manner that the -braok line- current (Spot) two-year interest rate of 4.20% has a projected break even 70bps lower next year to a yield of 3.50%.
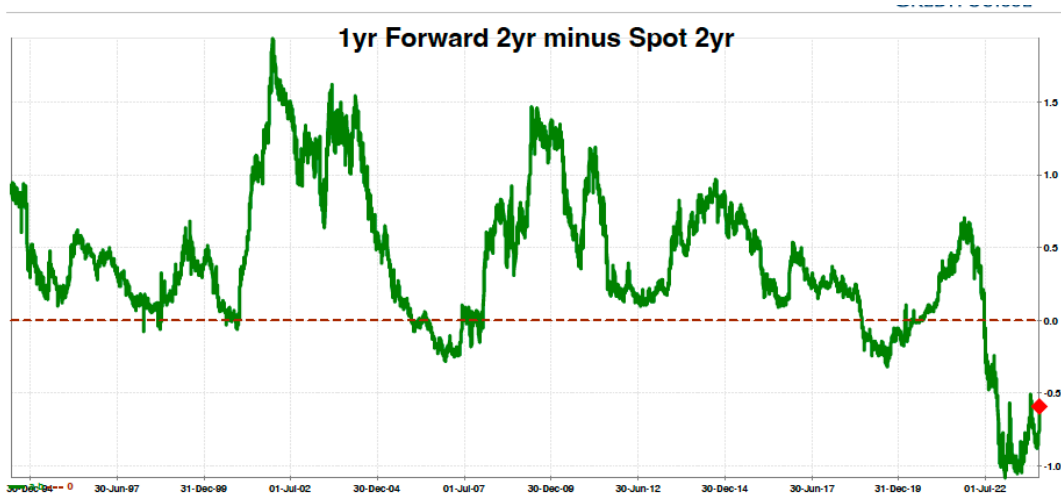
To be clear, I'm not implying the FED won't cut their rate this year. Their DOTs and other public comments suggest the FED is projecting cuts to their overnight interest rate of at least 75bps in 2024. The rub is that the market is anticipating rate reductions of over 130bps, starting as soon as March.

So, the task is to identify the best investments that can profit from the eventual rate reductions (and Yield Curve steepening) with the lowest cost of error.

Presently, -si bua line- FN 5.5% MBS are trading at 99.65 to yield 5.56% (8cpr). This is 143bps above the UST 10yr, and 88bps above -nomai line- IG Corporates
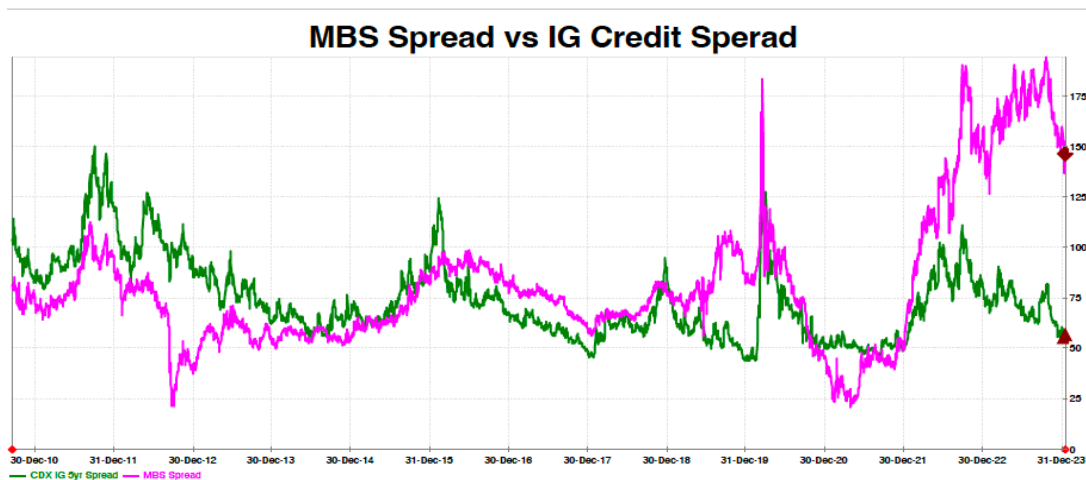
There are two primary reasons why the MBS spread is trading well above its historic spread of 75bps.

1) Elevated -sifa line- Implied Volatility
2) The inverted Yield Curve
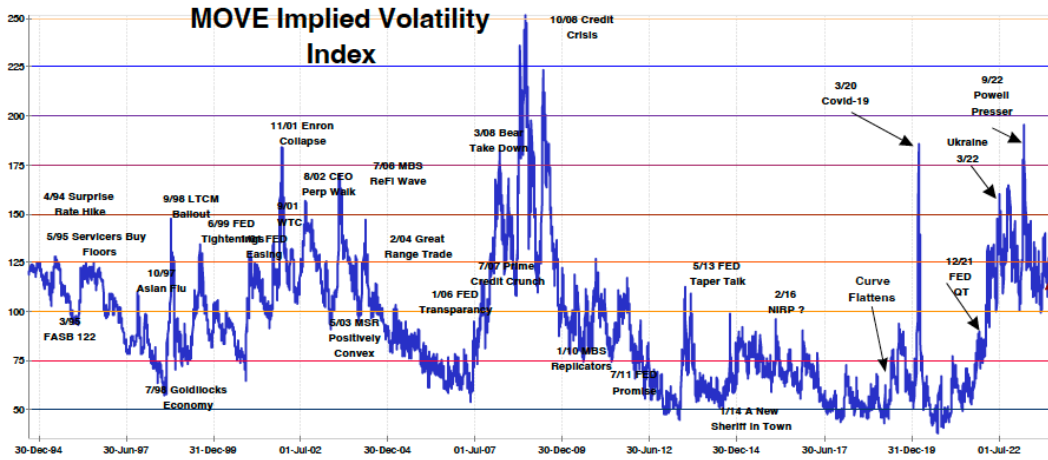
As detailed in "The Center Cut" – November 1, 2023, a Mortgage-Back Security (MBS) can be modeled as a "buy-write" strategy of owning a UST bond paired with selling a call option. Consequently, the higher the Implied Volatility, the larger the option value and the greater the MBS yield.

Less obvious is the impact of an inverted Yield Curve.

For the first time that I have record, the -muk line- three-year forward ten-year rate is less than the current (Spot) ten-year rate. This totally scrambles the MBS pricing models and significantly increases the option value.
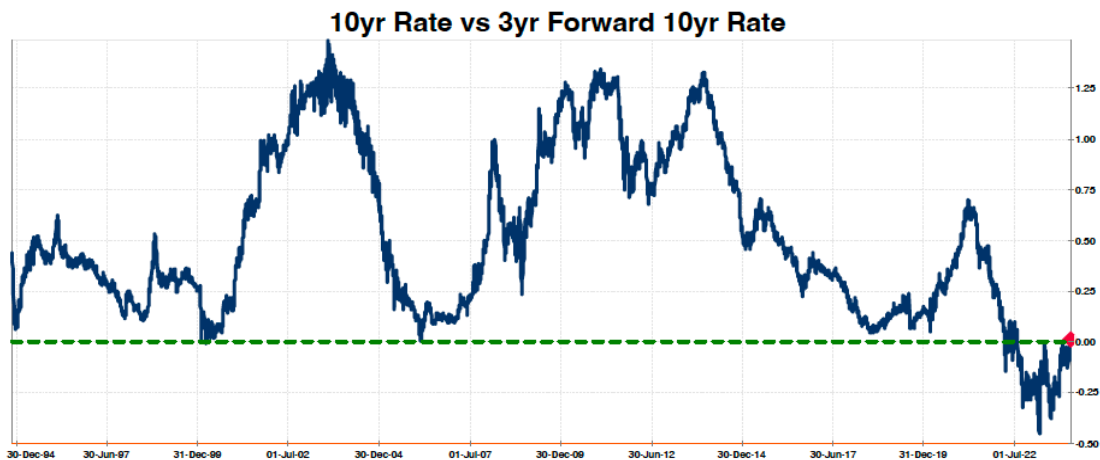
Let's dig into why the shape of the Yield Curve is the primary factor driving MBS valuations, and why they will outperform when the Curve steepens.

Again, we can model an MBS bond trading near 100 as a simple "buy-write" where one buys a UST 10yr at 100 and then sells a three-year expiry call option.

The -thongfa column- is the current interest rate profile for professional traders.
1) The FED Funds rate at 5.25% is the peak of the Yield Curve
2) The 2yr rate of 4.23% is above the 10yr rate of 3.75%
3) The 3yr forward 10yr rate of 3.72% is below the current 10yr rate.

Using a standard option model, a three-year interest rate call option struck at 4.00% and a 100nv Implied Volatility has a price of 6.25 points.

So, fudging a bit, think of the MBS as buying a UST 10yr at 100 and selling the call option at 6.25 for a total price of 93.75. This is why the MBS yields more than the UST 10yr.

	~Recent Curve	Steeper Curve	
	Rate	Rate	Change
Fed Funds	5.35%	2.50%	-2.85%
1m	5.30%	2.50%	-2.80%
3m	5.30%	2.50%	-2.80%
1yr	4.84%	2.75%	-2.09%
2yr	4.23%	3.00%	-1.23%
3yr	3.97%	3.20%	-0.77%
5yr	3.79%	3.40%	-0.39%
7yr	3.75%	3.60%	-0.15%
10r	**3.75%**	**3.75%**	**0.00%**
20yr	3.79%	4.00%	0.21%
25r	3.71%	4.00%	0.29%
30yr	3.63%	4.00%	0.37%
40yr	3.43%	4.00%	0.57%
3yr - 10yr Forward Rate	**3.72%**	**4.13%**	**0.41%**
3y - 10yr Call Option	**PX = 6.25**	**PX = 4.68**	**1.57**
K = 4.00%; Ivol = 100			

Using this same modeling, let's consider what happens when the FED starts to cut it rate and the Yield Curve steepens to its terminal -algea column- profile.

1) The FED's inflation target is 2.0%
2) The FED will eventually set its rate at inflation +50bp, or 2.50%
3) The 2yr rate will settle in at Fed Funds +50bp, or 3.00%
4) The 10yr rate will settle in at the 2yr +75bp, or 3.75%

(Note: I am using "professional" (SOFR) interest rates for modeling; the UST 10yr rate will be ~25bp higher at 4.00% so the UST 2yr vs 10yr will be +100bps)

The only change was <u>rotating the Yield Curve</u> around its current level. The FED cut their rate to their DOTs projected terminal value of 2.50%, and long-term interest rates "dis-inverted".

The three-year Forward rate of 3.72% rose by 41bps to 4.13%, and holding the Implied Volatility unchanged, the option price declined by 1.57 points to 4.68.

Using our buy-write kluge, all else equal, the MBS price would rise from 93.75 (100 – 6.25) to 95.32 (100 – 4.68).

It is under-appreciated that **MBS bonds are most impacted by the Yield Curve**, even more than Implied Volatility. Using the same model, a 10% reduction in Vol would only reduce the option price by half a point.

This 1.57-point rise in MBS prices will reduce their rate by about 40bps, and thus compress the -si bua line- spread to near 100bps. Toss in a 10% drop in the MOVE Index and MBS will return to near their historic spread of 75bps.
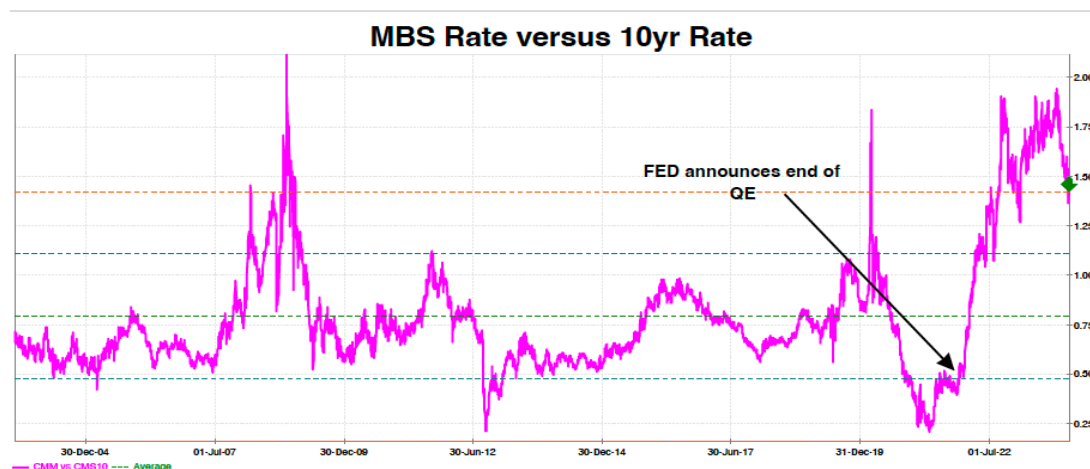
This is why I think owning near-par (price = 100) MBS is the best way to capitalize on the steepening of the Yield Curve. We all know the FED is going to ease at some point, and they have told the market (via DOTs) that their terminal rate will be near 2.50%. What we do not know is when they will start, and how fast they will move, to the ultimate denouement.

While buying UST 2yrs is a well-advertised idea, the small detail is that the clock is ticking for professional money managers. When they purchase the UST 2yr on margin (leverage) at 4.35%, they need to borrow money at 5.35%, a so called "negative carry" position. The longer it takes, the more the negative carry reduced their eventual profits.

In contrast, MBS bonds yield MORE than the FED set short-term rate.

The super-charged Yield Curve Steepener

Frequent readers are familiar with my NYSE-listed Interest Rate Hedge Strategy.

Originally issued in May 2021, it was designed to profit from rising interest rates. In fact, it was profiled on Bloomberg News (10/23/2023) as the 10yr rate was kissing 5.0% when it clocked a 200% total return from the start of 2022.

The strategy was originally detailed as "The Helicopter Defense" – May 11, 2021. The strategy was quite simple, it allowed civilian investors to effectively own a seven-year put option on the UST thirty-year bond.

This strategy tightly follows interest rates, with the caveat that it too is priced relative to the Forward interest rate (specifically, the 7yr forward 20yr rate).

Spot 20yr Rate vs 7yr Forward 20yr Rate
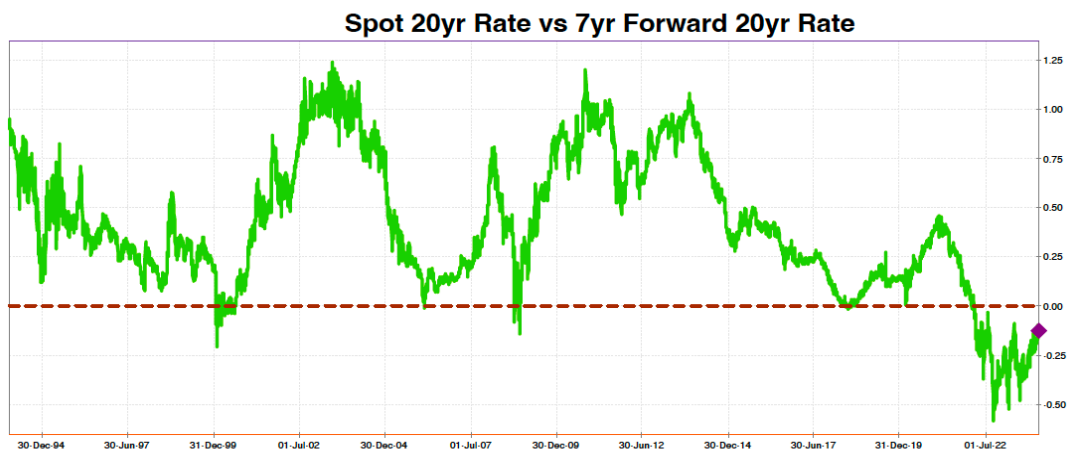
When this strategy was first offered in 2021, the -punkhav line- Forward rate was 38bps above the Spot rate. As the FED jammed rates higher, the Yield Curve inverted such that the Forward rate dipped hard below the Spot rate, which reduced the performance of the Strategy.

Presently, the Forward 20yr rate at 3.68% is 11bps under the - thongfa column- 20yr rate of 3.79%

If the Yield Curve rotated in a similar -algae column- fashion, the Forward rate would jump to a 24bp premium above the Spot rate, or a net move of 35bps with the 10yr rate unchanged.

There are a lot of moving parts here, so this is a ballpark estimate. But a FED rate cut alone would likely bump up the Strategy from its current $48 to $55 (+15%), and if long-dated rates normalized, that could add another $6 to reach a price of $61 (+12%).   [Professionals can check my math on Blooomberg's SWPM]

Program Notes on the Interest Rate Hedge Strategy

The strategy was initially constructed such that each share effectively owned put options on $800 of 30yr bonds. The issue price was $50 and closed 2021 at a price of $37.54 as rates declined and the Yield Curve inverted.

The strategy closed 2022 at $71.61 (up 91%) as rates nearly doubled. It touched $114.42 in October 2023, before nearing year end at $73.71.

At year end, we distributed $2.77 of UST Interest income, and $31.49 of Long-term Capital Gains. Such distributions are mandated by the SEC for all Mutual Funds. The gains occured during portfolio modifications: 1) to extend the option expiry back to a full seven-years, 2) to adjust the strikes for SEC monitored value at risk (VAR) management, and 3) to reduce the option ownership to $600 per share.

The adjustments have improved the dollar performance of the Strategy. In late December, the Strategy had a rate sensitivity of 26c for each basis point on an $80 price. As shown in the -hung chart- below, the sensitivity is now about 18c per bp on a $45 price. Fewer dollars are required for the same hedge value. *[In professional terms, the Duration expanded from negative 33 to negative 40.]*

Scenario Grid, % Return

Rate Shocks, bps	\-20	\-10	\-5	\-1	0	1	5	10	20
-200	-63.64%	-55.86%	-51.64%	-48.12%	-47.22%	-46.32%	-42.63%	-37.88%	-27.94%
-150	-55.56%	-46.80%	-42.17%	-38.37%	-37.41%	-36.44%	-32.52%	-27.51%	-17.20%
-100	-45.56%	-36.07%	-31.17%	-27.19%	-26.18%	-25.18%	-21.11%	-15.97%	-5.51%
-75	-39.83%	-30.10%	-25.12%	-21.09%	-20.07%	-19.06%	-14.97%	-9.81%	0.65%
-50	-33.62%	-23.74%	-18.72%	-14.67%	-13.65%	-12.64%	-8.55%	-3.40%	6.98%
-25	-26.95%	-17.02%	-12.00%	-7.97%	-6.95%	-5.94%	-1.88%	3.22%	13.47%
-10	-22.75%	-12.83%	-7.83%	-3.82%	-2.81%	-1.80%	2.23%	7.28%	17.43%
-5	-21.31%	-11.40%	-6.42%	-2.41%	-1.41%	-0.41%	3.61%	8.65%	18.76%
-1	-20.15%	-10.26%	-5.28%	-1.28%	-0.28%	0.72%	4.73%	9.75%	19.83%
0	-19.86%	-9.97%	-4.99%	-1.00%	0.00%	1.00%	5.01%	10.03%	20.10%
1	-19.57%	-9.68%	-4.71%	-0.72%	0.28%	1.28%	5.29%	10.30%	20.37%
5	-18.39%	-8.52%	-3.56%	0.42%	1.42%	2.42%	6.41%	11.41%	21.44%
10	-16.91%	-7.06%	-2.11%	1.85%	2.85%	3.84%	7.82%	12.79%	22.78%
25	-12.37%	-2.62%	2.28%	6.19%	7.17%	8.15%	12.08%	16.99%	26.83%
50	-4.54%	4.99%	9.76%	13.58%	14.53%	15.49%	19.31%	24.08%	33.63%
75	3.60%	12.82%	17.43%	21.11%	22.04%	22.96%	26.65%	31.26%	40.48%
100	11.97%	20.80%	25.22%	28.76%	29.65%	30.53%	34.07%	38.50%	47.35%
150	29.20%	37.07%	41.03%	44.21%	45.01%	45.80%	49.00%	53.00%	61.02%
200	46.63%	53.38%	56.81%	59.58%	60.28%	60.98%	63.78%	67.30%	74.41%

Column header (both tables): Volatility Shocks, bps. Left axis: Rate Shocks, bps.

Scenario Grid, Δ Share Price

Rate Shocks, bps	\-20	\-10	\-5	\-1	0	1	5	10	20
-200	$ (40.84)	$ (35.85)	$ (33.14)	$ (30.88)	$ (30.30)	$ (29.72)	$ (27.36)	$ (24.31)	$ (17.93)
-150	$ (35.65)	$ (30.03)	$ (27.06)	$ (24.62)	$ (24.01)	$ (23.38)	$ (20.87)	$ (17.65)	$ (11.04)
-100	$ (29.23)	$ (23.15)	$ (20.00)	$ (17.45)	$ (16.80)	$ (16.16)	$ (13.55)	$ (10.25)	$ (3.54)
-75	$ (25.56)	$ (19.32)	$ (16.12)	$ (13.53)	$ (12.88)	$ (12.23)	$ (9.60)	$ (6.29)	$ 0.41
-50	$ (21.57)	$ (15.24)	$ (12.01)	$ (9.41)	$ (8.76)	$ (8.11)	$ (5.48)	$ (2.18)	$ 4.48
-25	$ (17.30)	$ (10.92)	$ (7.70)	$ (5.11)	$ (4.46)	$ (3.81)	$ (1.21)	$ 2.07	$ 8.65
-10	$ (14.60)	$ (8.23)	$ (5.02)	$ (2.45)	$ (1.80)	$ (1.16)	$ 1.43	$ 4.67	$ 11.19
-5	$ (13.68)	$ (7.32)	$ (4.12)	$ (1.55)	$ (0.90)	$ (0.26)	$ 2.32	$ 5.55	$ 12.04
-1	$ (12.93)	$ (6.58)	$ (3.39)	$ (0.82)	$ (0.18)	$ 0.46	$ 3.03	$ 6.26	$ 12.73
0	$ (12.74)	$ (6.40)	$ (3.20)	$ (0.64)	$ -	$ 0.64	$ 3.21	$ 6.43	$ 12.90
1	$ (12.56)	$ (6.21)	$ (3.02)	$ (0.46)	$ 0.18	$ 0.82	$ 3.39	$ 6.61	$ 13.07
5	$ (11.80)	$ (5.47)	$ (2.28)	$ 0.27	$ 0.91	$ 1.55	$ 4.11	$ 7.32	$ 13.76
10	$ (10.85)	$ (4.53)	$ (1.36)	$ 1.19	$ 1.83	$ 2.46	$ 5.02	$ 8.21	$ 14.62
25	$ (7.94)	$ (1.68)	$ 1.46	$ 3.97	$ 4.60	$ 5.23	$ 7.75	$ 10.90	$ 17.21
50	$ (2.91)	$ 3.20	$ 6.26	$ 8.71	$ 9.33	$ 9.94	$ 12.39	$ 15.45	$ 21.58
75	$ 2.31	$ 8.22	$ 11.18	$ 13.55	$ 14.14	$ 14.73	$ 17.10	$ 20.06	$ 25.98
100	$ 7.68	$ 13.35	$ 16.19	$ 18.46	$ 19.02	$ 19.59	$ 21.86	$ 24.70	$ 30.39
150	$ 18.74	$ 23.79	$ 26.33	$ 28.37	$ 28.88	$ 29.39	$ 31.44	$ 34.01	$ 39.16
200	$ 29.92	$ 34.25	$ 36.46	$ 38.23	$ 38.68	$ 39.13	$ 40.93	$ 43.19	$ 47.75

Concluding Thoughts

This commentary went deeper into the "math weeds" than hoped, which surely bothered some of you; but my purpose here was to clarify why the secondary impacts of the Yield Curve create such interesting investment opportunities.

The current UST 2yr (4.35%) vs UST 10yr (4.15%) has a negative 20bps spread. Similar to the "theta" of owning a short-dated option, **this is an expensive position to hold.** It requires a 60bps steepening to a positive 40bps in one year just to break even; and a further move is required to make a profit.

The newly issued **MBS Strategy** is super sensitive to a Yield Curve steepening and **earns income while you wait** (presently near 5.75%). This is not the case with listed MBS Index products which have little Yield Curve exposure and a slim coupon yield of about 3.50%.

Similarly, the **Interest Rate Hedge** strategy offers significant exposure to the Yield Curve, and as presently structured has **a fully loaded cost (decay) of about 1% for the first year**.

Instead of burning your eyes on these pages delving into the math, I would suggest listening to my guest appearance on the Bloomberg Odd Lots podcast where I discuss many of these topics, as well as my macro-market views.

>>> https://omny.fm/shows/odd-lots/011124-odd-lots-harley-bassman-v1

Remember: For most investments, sizing is more important than entry level.

Harley S. Bassman
January 25, 2024

Follow me on Twitter: **@ConvexityMaven**

Your comments are always welcome at: harley@bassman.net
If you would like to be added to my distribution, just ping me.

To become better educated on macro-economic fundamentals and policy, I urge you to connect with my partner, Michael Green, better known as @profplum99.

Special Coda: *Some of the ideas I suggest can be particularly complex via the use of futures contracts and options embedded into Strategies for leverage and/or convexity that is both clever and tricky. I urge you to ping my associates who are waiting for your call to detail these strategies more fully.*

For reference literature on the financial markets - particularly about options and derivatives - I will immodestly direct you to my educational archive at:

http://www.convexitymaven.com/themavensclassroom.html

If you still have kids in the house, please take a vacation that is more interesting than the Four Seasons, Costa Rica – life is not a dress rehearsal. Turn off the Crackberry (did I just date myself ?) and explore with the family. You don't need to break the bank, rent an RV and see the U.S. We traveled with our four kids on five incredible RV trips.

http://bassman.net

Special credit to Gerard Minack, the best macro analyst on the planet.