The Convexity Maven

A Commentary by Harley Bassman

May 2, 2023

"Transitory Dreams"

@profplum99 - April 2003

Jerome Powell, the Chair of the Federal Reserve Bank (FED), first discussed the concept of "transitory" in his June 22, 2021, testimony to a Congressional Oversight panel. Here, he was responding to the recently reported 5.0% year-over-year increase in Consumer Price Inflation (CPI).

Powell noted "recent price gains mostly reflected temporary supply bottlenecks" and that "they don't speak to a broadly tight economy – the kind of thing that has led to high inflation over time".

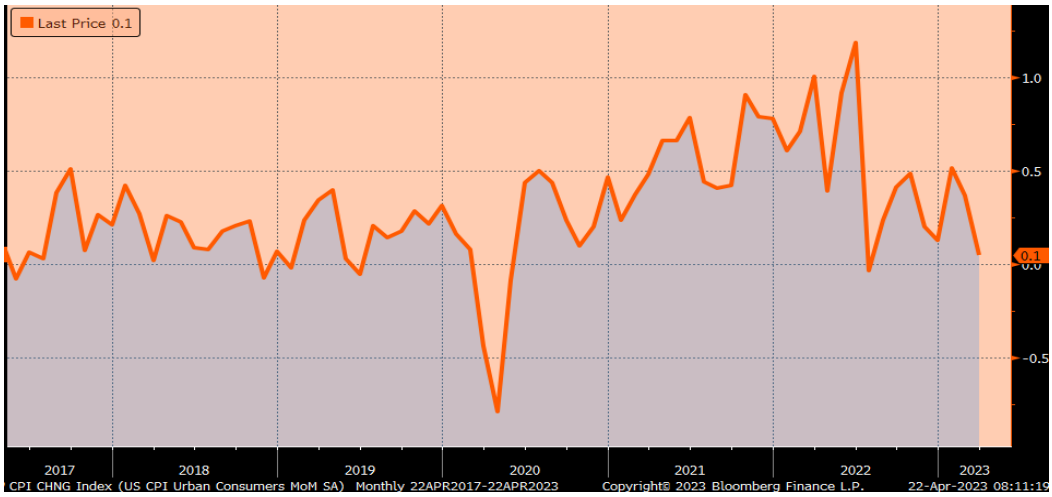
That same day, FED policy committee Vice Chair John Williams echoed that high inflation is likely transitory and that "I expect…inflation will come down from around 3% this year [2021] to close to 2% next year [2022] and in 2023."

I dubbed pundits who aligned themselves with this notion as "Team Transitory"; and while their logic has some merit, their timing has been awful. The good news, as I will soon detail, is that the near record Yield Curve inversion combined with an elevated level of Implied Volatility finally offers some rather dreamy investment opportunities.

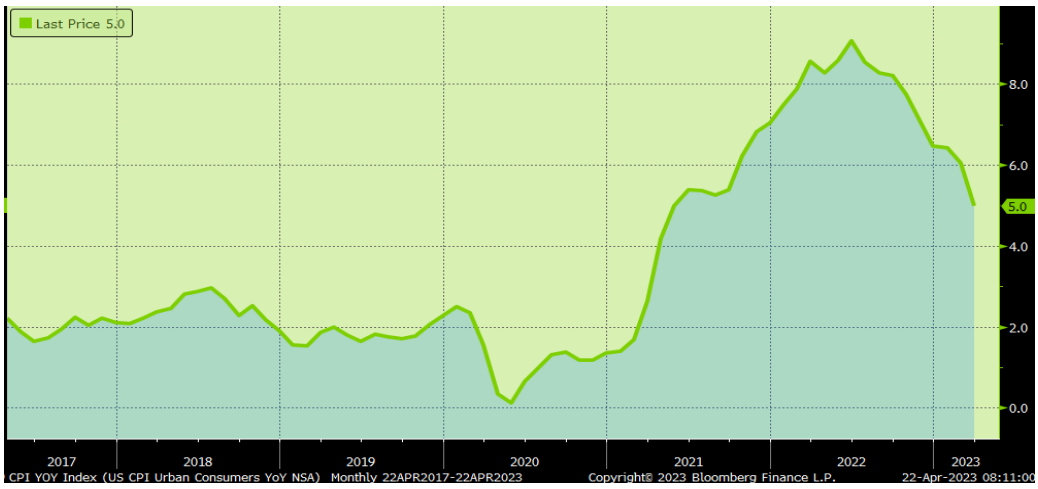
Looking forward and back

CPI is reported once a month as both a -arancia line- single month's (MOM) change, as well as a -verde line- year-over-year (YOY) number.

The most recent one-month CPI (March reported in April) clocked in at 0.1%, so using bonehead math (ignoring rounding, compounding, seasonality, etc.) we could say this implies a one-year CPI of 1.2%. [0.1% times 12]



This is silly, so the Government also offers the annual (YOY) CPI change, which was reported as 5.0%. While the annual number is theoretically more robust, it too has limitations, given it is backward looking and can be greatly biased by "base effects".

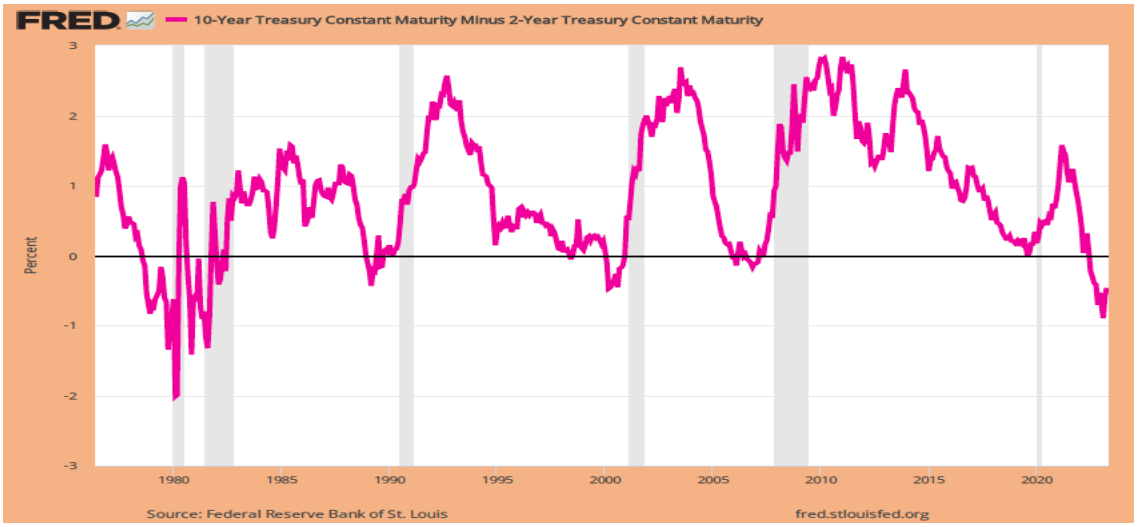


COVID-related declines of 0.4% and 0.8% in March/April 2020 contributed to the YOY CPI change from 2.3% to 0.1%. While those monthly dips quickly reversed, they remained in the YOY calculations until April 2021. Once removed, YOY CPI gapped to 5.0% from 2.6% which contributed to a bit of an Inflation panic.

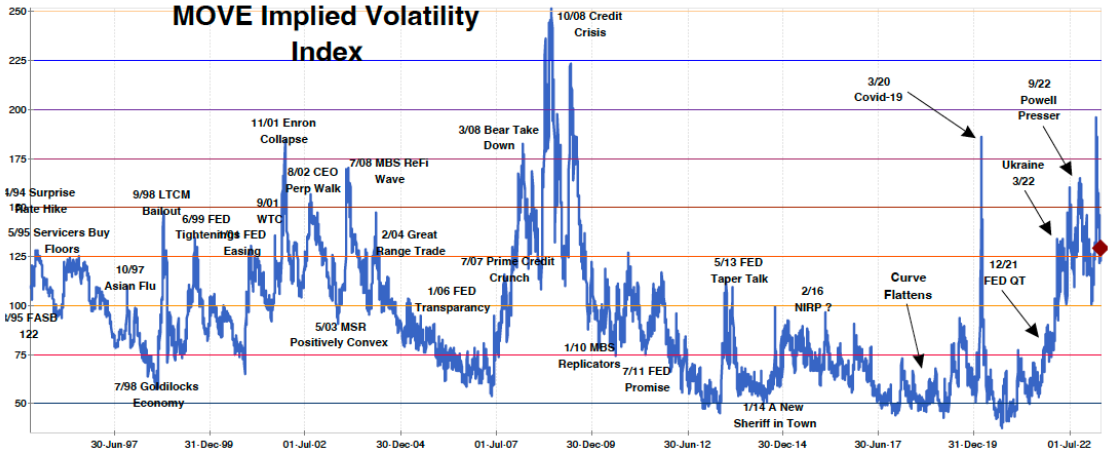
This is how the FED and Team Transitory became entangled in their own shoelaces. They believed the Summer 2021 inflation spike was "base effects" driven and would soon reverse.

For myriad reasons, mostly political, the FED declined to curtail their COVID-linked "helicopter drop" of money until May 2022; and what some might call an uncontrolled ricochet, increased their Federal Funds rate at the fastest pace since Volcker in 1980.

Deferring the "why" and "how" for later, the FED's actions have contributed to the most inverted -rosa line- Yield Curve since September 1981 where the two-year US Treasury presently yields nearly 50bps more than the ten-year UST (and 85bps in Libor rates).



FED actions have also had the undesirable consequence (from the FED's point of view) of dramatically <u>increasing interest rate uncertainty</u> and -oceano line- Implied Volatility, as measured by the MOVE Index, to levels only rarely visited.



Sources – Unless noted, all charts are Credit Suisse LOCUS

Investment Opportunities

I will soon dig into some heavy number crunching, which can be a bit sleep inducing; so, let's not bury the lead before you click the delete button.

A (1) steeply inverted Yield Curve combined with (2) elevated levels of Implied Volatility have made vanilla Mortgage-Backed Securities (MBS) and High-Grade callable Municipal Bonds extremely attractive. Moreover, these securities will out-perform when the Yield Curve inversion dissipates.

Bonds I love:

(a) Agency MBS such as FN 5.0% bonds @ 99.25 (~5.13%)
(b) California GO (AA-) 4.0%, 2044 maty, callable 2029 @ 100.22 (~3.96%)

In preview, both bonds are functionally similar to a "covered call" strategy, but for bonds instead of stocks. One is giving away possible upside in future price performance for a much higher up-front current yield.

The MBS can be "called" when the homeowner prepays the mortgage on their house, either via a refinance or because they sold the home. Generally, this bond will trade down like a 12-year security if rates rise, but rally like a 5-year if rates decline.

The callable Municipal bond described above will act like a 21-year bond if rates rise, but only a 6-year bond on a rally.

Both bonds exhibit Negative Convexity (they go down more than they go up for equal rate changes) because one is short the embedded call option.

Before your knickers bunch up since I mostly advocate "long Convexity", let me repeat an old Wall Street adage: **"No bad bonds, just bad prices"**

Class be seated…..

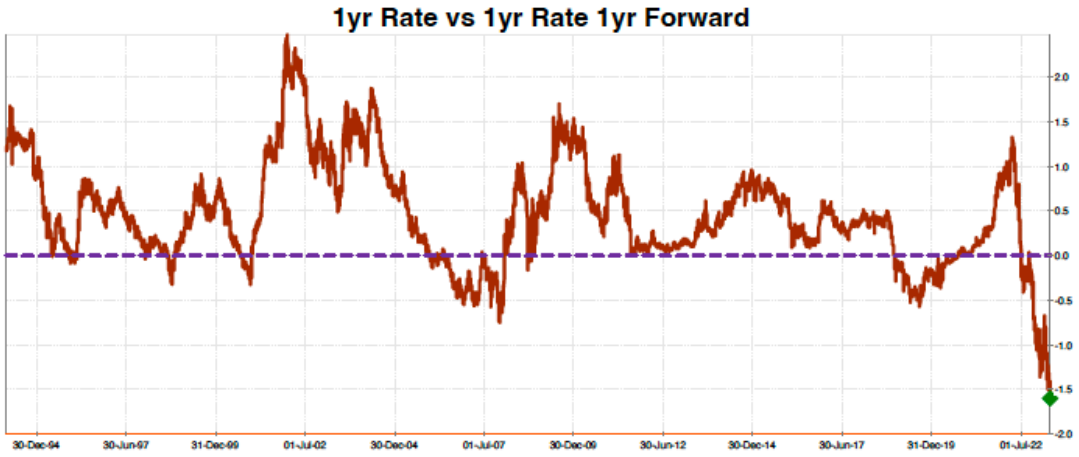
As detailed in "Dangerous Curves" – February 15, 2022: "Forwards are NOT a prediction, rather they are the simple mathematical discounting of the Spot Curve to produce an "arbitrage-free" price, no more, no less."

In a nutshell, if Grandma can buy a one-year CD at 2% or a two-year CD at 3%, she would only buy the one-year CD if she thought she could buy another one-year CD next year at 4% or higher. We would call this 4% rate the one-year rate one year forward (or the break-even rate).

In an Inverted Yield Curve, the math is similar, we just run the turbine backwards.

If the one-year CD is at 4.0%, and the two-year CD is at 3.0%, Grandma would only buy the two-year is she thought the one-year CD next year would be lower than 2.0%.

Presently, the one-year interest rate is 5.02% while the two-year interest rate is 4.27%. As calculated by the -ruggine line- below, the one-year rate next year must decline by at least 157bps to 3.45% to make it rational to buy the current two-year.



So, to review this again, buying the current one-year at 5.02% and rolling it to another one-year next year at 3.45% is mathematically equal to buying the current two-year at 4.27%. Whenever you buy a longer-dated bond, you are implicitly making a statement on your view of rates in the future.

While I was hoping to save this for later, this is why Team Transitory is screaming bloody murder about the economy. The only way for the one-year rate to decline by 157bps next year to 3.45% is for the FED to cut rates massively, and that is only going to happen if the wheels come off the economy, or Putin goes nuclear.

Now that I have your attention, let's move on.

The table below roughly describes the current interest rate structure, and then twists to a possible rate profile if the FED Funds cut its rate to 2.00%. To be clear, I am not saying when this will occur, just that I suspect it will at some point.

From the old bond trader's playbook for the standard Yield Curve:

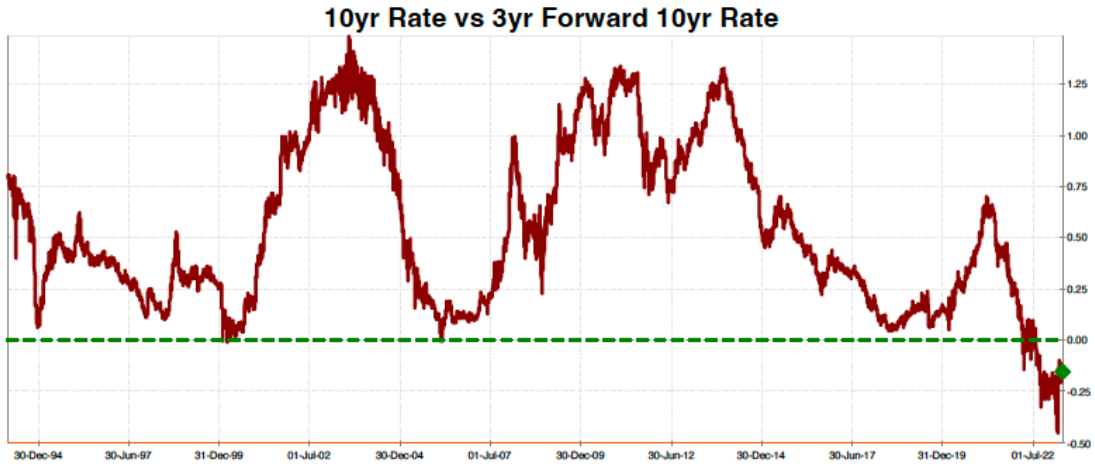
1)The spread between the FED Funds rate and the UST two-year rate is about 50bps.

2) The spread between the UST two-year and the UST ten-year rate is about 100bps

I have smoothed out the current (Libor) Yield Curve with a FED rate at 5.00%; 2s vs 10s at negative 100bp; 10s vs 30s at negative 20bp; and 30s vs 40s at negative 20bp.

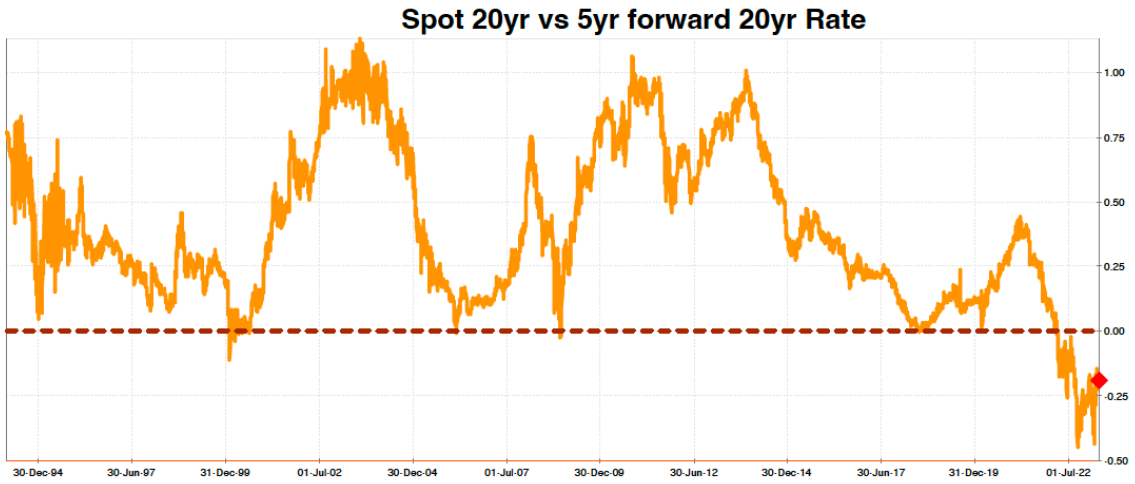
	~Current Curve	HB Twisted Curve			
	Rate	Rate	Change		
Fed Funds	5.00%	2.00%	-3.00%		
1m	5.25%	2.25%	-3.00%		
3m	5.25%	2.25%	-3.00%		
1yr	5.10%	2.25%	-2.85%		
2yr	4.50%	2.50%	-2.00%		
3yr	4.00%	2.75%	-1.25%		
5yr	3.75%	3.00%	-0.75%		
7yr	3.60%	3.25%	-0.35%		
10r	3.50%	3.50%	0.00%		
20yr	3.50%	3.60%	0.10%		
25r	3.40%	3.55%	0.15%		
30yr	3.30%	3.50%	0.20%		
40yr	3.10%	3.50%	0.40%		
3yr - 10yr Rate	3.31%	3.85%	0.54%		
5yr - 20yr Rate	3.27%	3.75%	0.48%		
3y - 10yr Call Option	Px = 6.01	PX = 4.06	-1.95	K = 3.50%	Ivol = 100
5yr - 20yr Call Option	Px = 10.32	Px = 7.37	-2.98	K = 3.50%	Ivol = 80

This Curve construction creates a 10yr rate 3yrs forward of 3.31%, which is 19bp lower than the 3.50% Spot 10yr rate. It is instructive to notice the -sporco line- difference between these Forward and Spot rates has never been negative over the past thirty years.



Let's take a quick moment to remember, this is NOT a prediction, it is simply the arbitrage free break-even rate to make one indifferent between buying the current 13yr or buying the current 3yr and then buying the 10yr three years from now.

Similarly, consider the current 20yr rate of 3.50% relative to its five-year forward rate of 3.27%. This -mandarino line- difference of 23bp between the Forward and Spot rates is also extreme.



One last tough part, and then it's all downhill…

On the table above, notice what happens if we simply twist the Yield Curve around the 10yr maturity. I pulled the FED Funds rate down 300bp to 2.00% to near the FED's 2.0% inflation target. I marked the 2yr at 2.50%, up 50bp from the FED rate. I left the 10yr unchanged at 3.50% (up 100bps from the 2yr). Finally, I set the 30yr to equal the 10yr at 3.50%, with a slight "hump" for the 20yrs at 3.60%. (Please, don't ask)

Notice the 3yr forward 10yr rate whips up 54bp to 3.85% and the 5yr forward 20yr jumps 48bp to 3.75%; and all this occurs without touching the 10yr rate at 3.50%.

OK…take a deep breath…the hard part is done…

As noted, an MBS is effectively a US Treasury (UST) covered call package since there is functionally no credit risk for a Fannie Mae security.

We can roughly construct a FN 5% MBS as:

1) Long a 10yr UST at 3.50%
2) Short a three-year call option struck at 3.50%

At first glance, it seems this is an "at-the-money option" since I modeled the 10yr at 3.50%. But note that the Forward rate is 3.31%. If a 10yr at 3.50% has a price of 100, that 10yr at 3.31% has a price of about 102. Since the option calculator uses the forward rate for pricing, the option is modeled as if it were an in-the-money option.

You buy AMZN stock at 100 and want to sell a 100-strike call; but before you can do it AMZN's stock price jumps to 102. You can now sell the 100-strike call at a higher price.

This is functionally what is happening here; you are buying a bond at 100 but selling the 100-strike covered call when the market is at 102.

Currently, a FN 5% MBS could be modeled as:

1) Long a 3.50% 10yr UST @ 100
2) Short a three-year call with a strike of 3.50% @ ~6 points

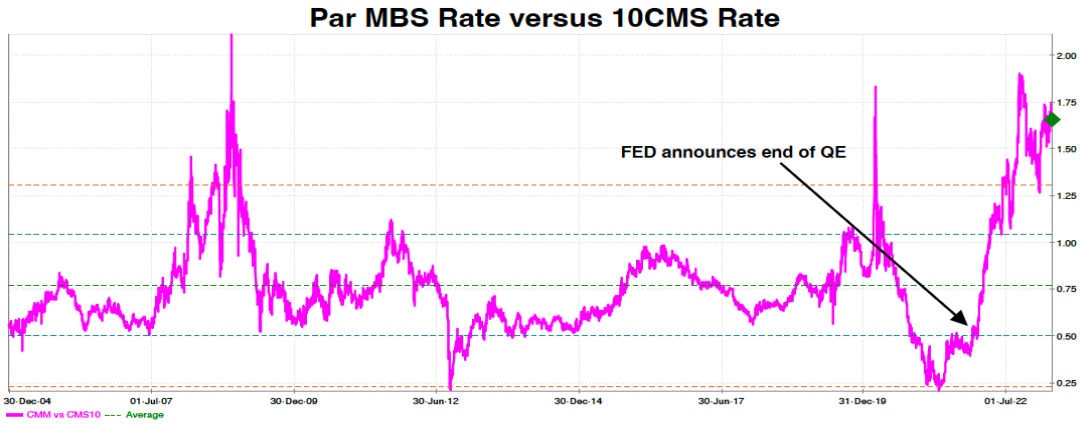
Total value of covered call strategy = 94

On a Yield Curve twist – the forward jumps to 3.85% and the option value sink:

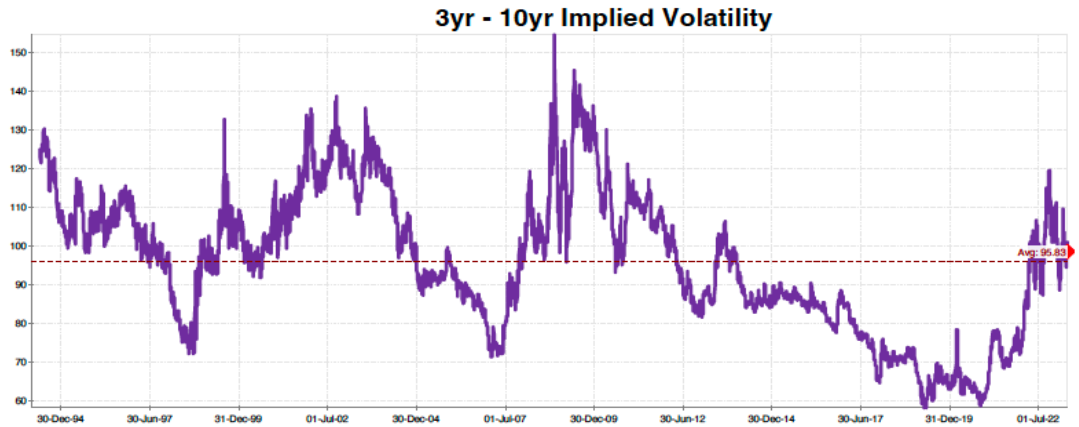
1) Long 10yr UST at 3.50% @ 100
2) Short three-year call with strike of 3.50% @ ~4 points

Total value of covered call strategy = 96

This is the primary reason MBS bonds have -gomma line- tanked to 175bp over 10s. The inversion of the Yield Curve has pressured the Forward rate to well below the Spot rate, so the option model considers the embedded option as "in-the-money".



The -vino line- jump in Implied Volatility has further escalated the option value.



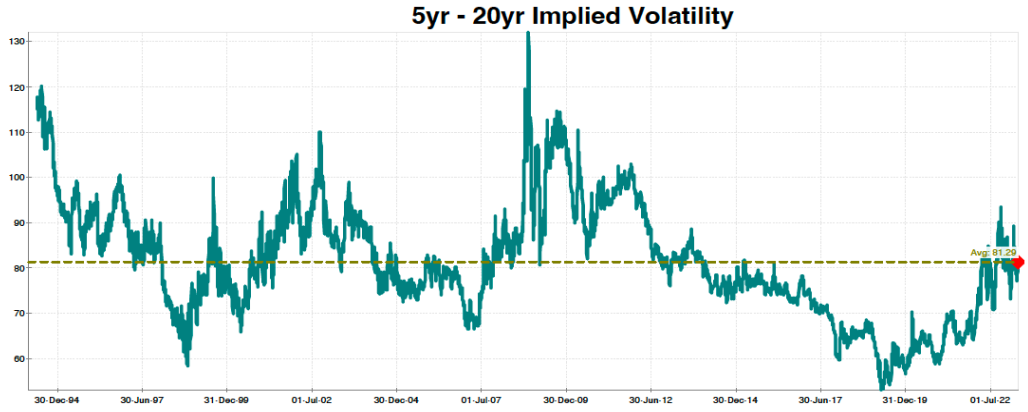
Let's be clear, I have taken a lot of liberties here to deconstruct a MBS bond, there are a few more moving parts that I sort of glossed over. But from 30,000 feet, one is selling a three-year option of a ten-year bond that models up at about 6 points.

Buying a callable highly rated Municipal Bond takes this same idea and amps it up.

Earlier I suggested a 2044 maturity High-Grade (AA-) Municipal Bond callable in 2029. Cutting a few corners, I could model this up as a 5yr option on a 20yr bond.

Because the option is twice a long (six years vs three years) on a bond with a longer maturity (twenty years vs ten years), the modeled option value is nearly ~10 points.

A significant portion of this large value is the -acqua line- increase in Implied Volatility.



A similar Yield Curve twist would decrease the modeled option value by three points, and a 10% decline in Implied Volatility is worth another point.

Closing Comments

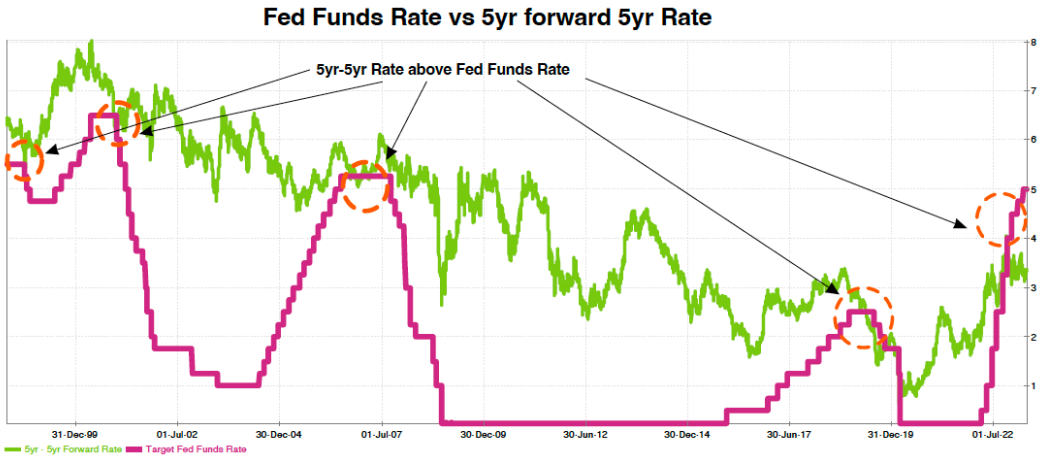
The FED will almost certainly hike their rate to 5.10% tomorrow, and then they are done. Team Transitory may insist this is too high, but it does satisfy the old rule of rates being somewhat near Nominal GDP, which clocked in at near that level last week with a quarterly Real GDP rate of 1.1% and GDP Price Index of 4.0%.

While Team Transitory and I may agree this is the peak for the FED rate, we still disagree about the timing of the first cut, which I think will not be until next year.

The FED's preferred inflation measure of Core PCE marked at 4.9% last week, and the economy is still smoking with an unemployment rate sizzling at 3.50%.

This is a result of early Boomer retirements and sharply curtailed immigration; a point that was truly under appreciated by Team Transitory (who focused upon bottlenecks).

Notwithstanding the -erba line- bond market believes the -cremisi line- FED is slamming the brakes way too hard, $26 Trillion economies do not stop on a dime without some sort of exogenous event.



The FED will not cut rates until unemployment jumps by at least 1.1% to 4.6% or service inflation seriously declines. That leaves a "glowing" Putin, which is unlikely. With a GDP less than Canada or Texas, Russia is now a vassal of Xi and China.

With a MOVE Index near 130, it is my measured opinion that the risk/reward for being short interest rate Convexity is favorable relative to Duration and Credit Risk.

The combination of an Inverted Yield Curve and high Implied Volatility has created a great opportunity in Interest Rate covered call strategies.

My best guess is that the FED cuts rates next year, and the Yield Curve rotates around the 10yr point; if so, MBS and Muni's will rally 2 to 4 points vs their benchmarks.

However, if Team Transitory is right and we hard land in Q3 followed by a quick succession of rate cuts with the entire Curve rallying, these bonds will explode higher.

The FN 5s spent most of 2021 near 111 and the Muni bond I described hugged 120:

A Transitory Dream

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

Harley S. Bassman
May 2, 2023

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: *This Commentary is particularly complex via the jamming futures contracts into Strategies for leverage 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.