

# The Convexity Maven

A Commentary by Harley Bassman

March 5, 2024

## “The Cost of Carry”



Creel Basket – Isle of Skye, Scotland

**Trigger Warning:** *This Commentary is bond-centric (which can be boring), with a heavy reliance on cash flow math (which is almost always vexing).*

I absolutely loved Michael Lewis’s first book, “Liar’s Poker” (1989). It was ostensibly about the 1980’s bond market powerhouse Salomon Brothers and their mortgage-backed securities (MBS) business he dubbed “the fat men and their marvelous money machine”.

As an MBS trader of that era who worked with many of the characters in the book, I can attest that most of the vignettes are true (including tossing a dwarf wrapped in Velcro).

What goes unmentioned is that the big money was earned by the Arbitrage Group (Sali Arb). They coined risk-free profits by being the first to appreciate the “cost of carry” concept. Today I pull back the curtain on how this process has not changed, and how it still creates huge opportunities for profit.

The most important concept to understand is that “free markets” converge to an arbitrage free condition. The caveat here is that few markets are truly “free” due to inefficiencies such as taxes, borrowing costs, commissions, bid/offer spreads, etc. The corollary in physics is that a feather will fall as fast as a stone in a perfect vacuum, but good luck finding a vacuum.

A good example might be Gold. The price of Gold in **-mirtilo line-** London versus the price of Gold in **-laranja line-** New York should never diverge by more than the cost of shipping Gold between the two locations.

If Gold can be bought in London for \$1950/oz and sold in New York for \$2000/oz, then as long as the cost to move the Gold from London to New York is less than \$50, traders can buy/ship/sell and collect the difference.

Notice the **-limao line-** spread over the past decade has hugged near zero within a \$10 range; and most of that difference can be attributed to the time zone differences between the London and New York exchanges.



Source – The Bloomberg

Of course, the cost to ship must include everything such as insurance, storage, taxes, duties, etc. But the point is there is a mechanism to keep these prices somewhat close together.

A similar concept exists in the trading of financial instruments, but instead of considering the **cost of shipping** a commodity between two locations, one must analyze the **cost of holding** a financial asset over time. In Wall Street shorthand, this is called the “cost of carry”.

In preamble, let me note that some examples will assume that buys and sells are executed on a fully margined basis, as if no cash was ever used.

**This will be counter-intuitive for civilians** because most investors do not borrow (margin) any funds. They buy securities for cash (regular settlement) and they do not "short" securities.

Let's start with a simple example. Assume you have \$100,000 to invest, and that the one-year interest rate is 3.00% and the ten-year interest rate is 4.00%.

You can buy a ten-year bond with a 4% coupon at a price of 100 today and start earning 4.00%, or you can agree to buy this bond at a price, but not pay for it (settlement) until next year. This would be called a one year "forward trade".

In both cases, you agree upon a price today, and thus have the market risk of this bond's price going up or down as interest rates change.

So, what price would you pay for this ten-year bond for settlement one year forward ? At what price would you be indifferent between buying it today, or one year from now ?

If you buy it today, you start earning the 4% immediately, so you would make \$4,000 over the course of a year. If you buy it for settlement in a year, you will only make \$3,000 as that is the one-year rate for your cash. But remember, in both cases you have the market risk of the bond moving up or down.

You should NEVER agree to buy the bond one year forward at a price of 100; here you would have the identical risk but earn \$1,000 (1%) less. Instead, you should buy the bond at a price of 99 (\$1,000 less); this is where you would be indifferent between buying today or buying one year from now.

This might be easier to understand if you assume you borrow the funds necessary to buy the bond. If you borrow the \$100,000 at 3% and buy the bond today at 4%, you will earn \$1,000 over the course of the year. This is known as the "carry" of the investment and is the easy way to back into the "arbitrage free" forward price of 99 (one point less).

This is how the traders at Salomon made "free money". They borrowed money at 3% and bought the 4% bond at 100. Then they sold (shorted) the bond to an unsophisticated investor at 99.75 for settlement next year. The investor was happy about buying the bond a quarter point cheaper than the current market, while the traders at Salomon earned a full point of "carry" on their trade, thus clearing a three-quarter point profit with no risk. Do this a few billion times and soon one is earning real money !

While the trade above is clever, it could never be executed at scale because few investors were interested in trading securities for forward settlement.

This changed when the Chicago commodity exchanges first listed futures contracts on financial instruments in 1981 (and soon after options on these bond futures in 1982). Financial futures allowed traders to buy or sell bonds today but not pay for them (settlement) until a later date.

*[As a personal aside, I landed on Wall Street in 1983 with a semester each of option theory and Basic-language computer programming; the rest is history.]*

The traders at Salomon could now buy bonds today and sell them in the future at a fixed price and lock in a profit; this is known as the UST “basis trade”.

You may have read recently that regulators are worried about a possible breakdown in the financial system due to traders at various Hedge Funds engaging in this basis trade. The risk is not the certainty of the arbitrage, but rather that these hedge funds could fail to meet escalated margin calls when markets become extremely volatile; which almost happened in 2022.

## **The Notion of “Break Even” and “Predictions”**

Circling back to our earlier example, the one-year forward price of 99 for the 4% bond presently priced at 100 can also be considered the “break even” price.

If one buys a bond today at 100, as long as the price of this bond is above 99 one year hence, one is better off having bought the bond than having earned only the 3% one-year rate.

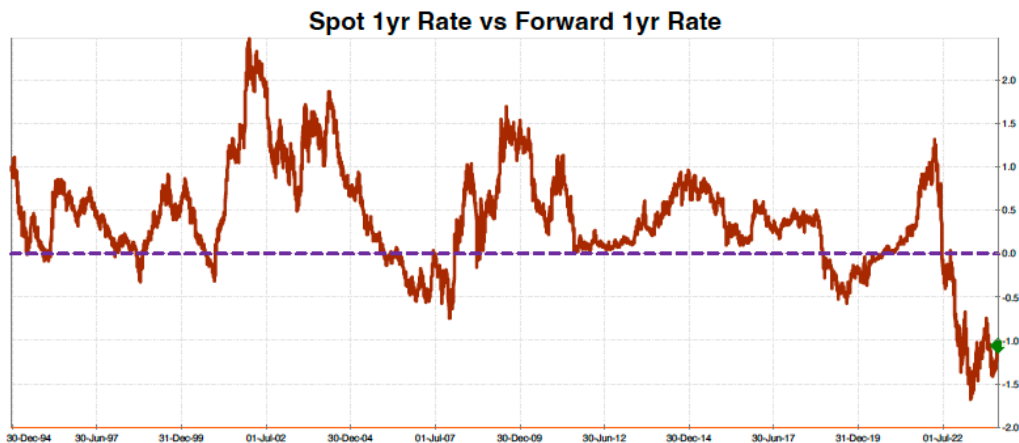
It is this logic (and supporting math) that underpins the notion of using forward prices/rates as a prediction of the future.

Notwithstanding that I have repeatedly decried forward rates as an accurate predictor, to the extent one believes in efficient markets with no “free lunch”, one could certainly embrace the notion that the forward price is the expected fair value in the future.

To think otherwise would be to propose that one could buy or sell assets and earn a superior return with less risk. Writ large, one can consider active management investing as simply the process of selecting assets where one thinks the forward price will not be realized.

## Deconstructing a fully margined trade

I have often offered the **-sujeira line-** chart of the Spot vs Forward one-year rate as a measure of market exuberance. Here the **-alface dot-** at negative 110bps indicates that the current one-year rate of 5.00% must decline to 3.90% to break even. Let's detail how this works (with a few short cuts for simplicity).



Sources – Unless noted, all charts are Credit Suisse LOCUS

Consider a fully margined investor (Hedge Fund) with no cash. They want to buy \$10,000 of 2yr bonds currently offered at 4.45%. (A 4.45% coupon bond trading at a price of 100.) Since they have no cash, they must borrow all of it at the 5.00% one-year rate.

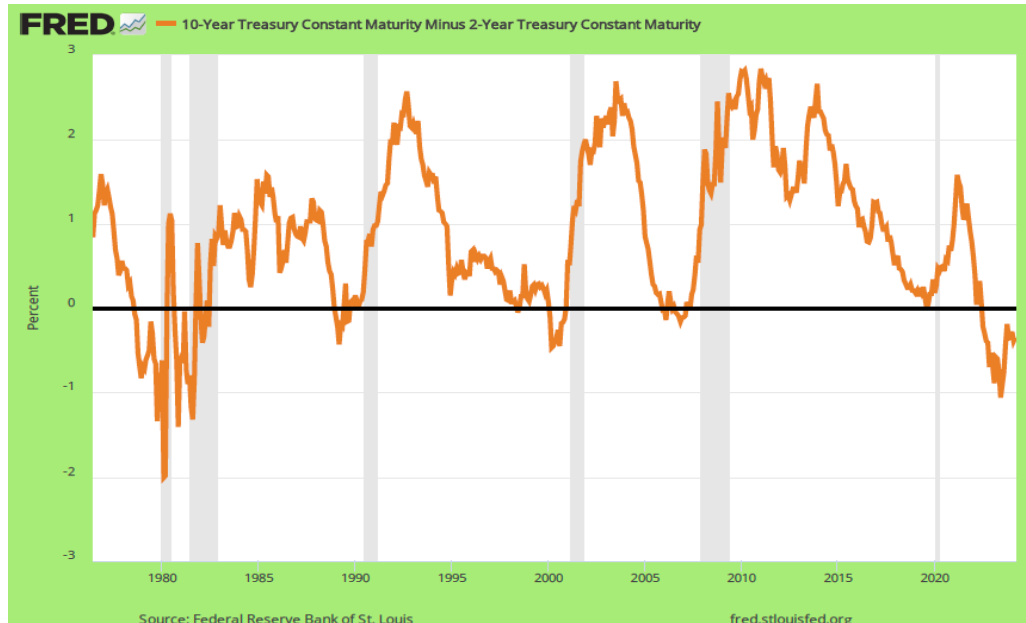
Over the next year, they pay the 5.00% borrowing cost and earn the 4.45% coupon for a net loss of 0.55%. As the calendar turns one year hence, they will now own a one-year bond, and to break even, they need this one-year bond to be trading at a price of 100.55. And at that price, it will have a yield of 3.90%.

Pencil to paper, they earned \$445 of coupon income (4.45% times \$10,000) and paid \$500 in borrowing cost interest (5.00% times \$10,000) for a net loss of \$55. To break even, they need to sell this (now one year bond) at a price of at least 100.55 (\$10,055); and at that price this bond yields 3.90%.

This is the underlying math of how forward yields are calculated. As noted, this is not intuitive to civilians since they make money if they buy the one-year at 5.00% or the two-year at 4.45%. So, for an unlevered investor this difference is simply the opportunity cost of picking the wrong bond.

This same math can be used to calculate the breakeven for any financial asset over a set period of time.

Surely the most popular “trade” advertised by the punditry is the so-called steepening of the **-damasco line-** Yield Curve, here offered as the difference between the rate on the UST 10yr vs the UST 2yr. Presently this spread is negative as the 2yr rate is above the 10yr rate - an “inverted” Yield Curve.



Of special note for Yield Curve inversions is that:

- 1) They tend to presage **-cinza bar-** recessions;
- 2) They tend not to last that long.

Economists and investors are befuddled since the current inversion is the deepest and longest lasting since the early 1980s. This has likely contributed to the rebound in Dupont stock as there is a backlog of orders for body bags to carry away all the speculators who bet on a quick reversal.

Recently, the UST 2yr closed at 4.53% while the UST 10yr closed at 4.18%, an inversion of negative 35bps (4.18% minus 4.53%).

The math for a two-security analysis is tricky since the sizes must be weighted for differing bond durations (price sensitivity to rate changes). To isolate only the Yield Curve, one must buy \$430 of 2yr bonds versus selling \$100 of 10yr bonds. Trust me on the math, the Yield Curve needs to steepen by 58bps to a positive 23bps to break even one year from now.

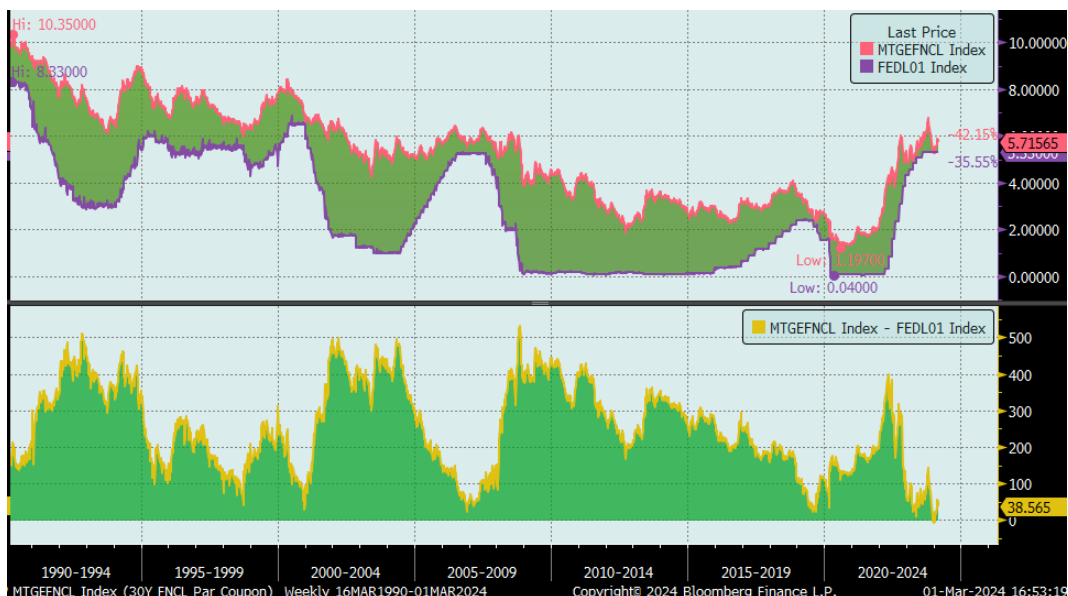
To offer some scale, a “gentleman’s size” \$100mm Yield Curve trade would cost about \$390,000 per month to hold. Presently the market is pricing a “coin flip” for a rate cut at the FED’s June 12 meeting. So, a Hedge Fund trader would have to pay nearly \$1.3mm to hold this position until then.

## Newly issued MBS: Still the Best Bonds in Town

What is flummoxing investment managers is that any UST with a maturity longer than three-months T-Bills is “negative carry”. Since civilians do not typically use margin, buying a 2yr at 4.53% when they could be earning 5.35% in a money market account does not technically “cost” them. But as noted, there is a large opportunity cost of accepting a lower yield.

This is not the case with newly issued MBS (available as a listed ETF strategy).

These **-chiclete line-** newly issued MBS bonds continue to yield more than the **-uva line-** FED Funds rate, as denoted by their **-amarela line-** spread.



To be clear, this is NOT the case with MBS Index investment vehicles (ETFs and Funds) because 72% of MBS bonds were issued during the FED’s Quantitative Easing (QE) from 2020 to 2022 and sport coupons between 2.0% and 3.5%.

These older (mostly 3.0%) MBS bonds trade near a price of 86, and thus offer a yield to maturity of about 4.80% with a distribution income (current yield) of about 3.50%. Older MBS (Index) bonds are a noxious combination negative Convexity and negative Carry.

This compares to newly issued MBS with a coupon of 5.50% that trade near 99 that yield and distribute about 5.60%, well above the FED Funds rate of 5.35%. Newly issued MBS also have a duration near 4 years versus 7 years for older MBS; a feature not a bug.

## Strangely colored pictures are more fun...

MBS are challenging for civilian investors since generally only professionals have experience with them. Most financial institutions will not allow civilians to trade single pool MBS; and even if available, I would advise against their purchase.

This why civilians invest in MBS via Mutual Funds or ETFs; but because they track the (older) MBS Index they are sub-optimal.

Newly issued **-sanguine line-** MBS offer tremendous value with a yield of nearly 100bps more than **-videira line-** Investment Grade (IG) Credit bonds.

### MBS Spread vs IG Credit Sperad



Wall Street quants use models to strip out the “tricky stuff” to create an Option Adjusted Spread **-ceu line-** (OAS). Even after accounting for the inverted Yield Curve and elevated Implied Volatility, newly issued MBS are one standard deviation cheap (wide) to their long-term average.

### CMM MBS OAS (Option Adjusted Spread)





## Concluding Thoughts

The Yield Curve is “inverted” because investors think the FED will soon cut interest rates sharply, and they want to profit from bond prices jumping higher.

This is not crazy. However, the timing is critical since it is expensive to hold such positions, either directly via negative carry or indirectly via an opportunity cost.

Fundamentally, owning long-duration bonds is no different than buying an option and hoping the market will move your way faster than the time decay (theta).

As previously stated, I do not think the FED will cut rates as quickly as the market is pricing; and in fact, I can make the case they do not cut at all this year. That said, I do expect the Yield Curve to steepen over time, given:

- 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 +100bp, or 4.00%

As detailed on pages 6 to 7 in “*Sharp Curve Ahead*” – January 25, 2024, newly issued MBS have significant exposure to the shape of the Yield Curve. As such, owning them allows investors to profit from a steeper curve without sacrificing current income.

**Newly issued MBS** are the only “safe bonds” (not Junk) that yield more than the FED Funds rate - they **are positive Carry**.

You know I cannot mention listed tickers here, but with a bit of sniffing you can find my new **NYSE Listed ETF** that invests in only newly issued MBS bonds.

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

Harley S. Bassman  
March 5, 2024

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Your comments are always welcome at: [harley@bassman.net](mailto: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](https://twitter.com/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.

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