

The Convexity Maven

A Commentary by Harley Bassman

May 11, 2021

"The Helicopter Defense"



"Apocalypse Now" – August 15, 1979

Ben Bernanke, the newly seated Federal Reserve Board (FED) governor offered in a November 21, 2002 speech:

"The U.S. government has a technology, called a printing press (or, today, its electronic equivalent), that allows it to produce as many U.S. dollars as it wishes at essentially no cost. By increasing the number of U.S. dollars in circulation, or even by credibly threatening to do so, the U.S. government can also reduce the value of a dollar in terms of goods and services, which is equivalent to raising the prices in dollars of those goods and services. We conclude that, under a paper-money system, a determined government can always generate higher spending and hence positive inflation."

He concluded that an "...anti-deflation policy could be significantly enhanced by cooperation between the monetary and fiscal authorities..." which could include the "...equivalent of Milton Friedman's famous 'helicopter drop' of money."

We have a massive debt problem in the US, both public and private; and there are only two paths out of such a situation, either default or inflate, where inflation is simply a slow-motion default.

Morally supported as COVID relief, intellectually under-pinned by Modern Monetary Theory (MMT), financially backed by the FED, and politically expedient for both the Democrats and Republicans, the helicopters have taken flight via twin unfunded Fiscal packages. Moreover, a third helicopter is preparing for take-off clothed in the sheepskin of critical Infra-Structure spending.

As a public policy measure, I support this action; but only because the FED missed the clearly marked off-ramp in 2013 when the bond market's tear-drenched (100bps) "taper tantrum" crumpled the FEDs resolve.

[Note to millennial parents, this is why you give those brats a time-out, rather than offer 'dessert as an appetizer' to soothe their wet eyes.]

Contrary to most pundits, **I believe the FED wants a steeper Yield Curve** as it not only resolves structural problems, but also it re-balances past mistakes.

A steeper Yield Curve supports the plumbing of our (over-levered) financial system. While increasing profits for Too Big To Fail (TBTF) banks will garner few cheers, increased revenues for the overall banking system builds a capital cushion to expand lending and reduce systemic risk.

Higher long-term interest rates improve the health of the pension system, both private and public. The recent rate rise helped close the "funding gap" for the 100 largest Corporate Defined Benefit plans by nearly 8 percentage points.

The FEDs policy of low interest rates has transferred money from savers (civilians) to borrowers (corporations). A steeper curve will rejigger this profile; and be especially helpful to the expanding retirement demographic. It is a public policy benefit for corporate borrowers to enhance retirement income via higher interest rates, and thus reduce the need for Government assistance.

Less constrained interest rates beyond the five-year point will communicate important "risk information" to investors and policy makers.

Notwithstanding the public policy benefits of a steeper Yield Curve via higher long-term interest rates, it is quite likely that even the most philanthropic owners of financial assets will be slightly chagrined at the depreciation of their portfolios; if only because they will have less to donate to worthy causes.

But let's be clear, there is a strong chance of significantly higher interest rates.

Introducing an Interest Rate Hedge Strategy

Until today, efficient interest rate hedging and speculating was effectively available only to professionals. While civilians (non-professionals) can trade listed futures, this requires funding a separate (and more regulated) account. Moreover, trading futures comes with the risk of unlimited losses...



While options on futures are available, they tend to have short-dated expiries of three to four months. Without exquisite timing, these options decay quickly.

Other inefficient methods of profiting if interest rates rise include:

- 1) Buying short-exposure bond ETFs, such as TBT; with the warning from the issuer against using this product as more than a short-term trading vehicle.
- 2) Shorting long-exposure bond ETFs, such as TLT; but this requires a margin account as well as complicated tax filings for the dividend payments.
- 3) Investment products that purchase correlated assets (such as TIPs – UST Inflation Protected Securities), but do not directly profit from higher rates.

To fill the void, one might consider an **Interest Rate Hedge Strategy**. Not only is its structure simple and transparent, but its (modeled) performance profile is well-correlated to interest rates.

This Strategy will be constructed with only two assets, each initially about 50%:

A seven-year (May 2028) expiration interest rate (put) option on roughly a \$1000 twenty-year bond with a strike of 4.25%. This type of option has typically ONLY been available to professionals (with an ISDA contract).

A portfolio of US Treasuries with roughly a seven-year maturity.

Unique Advantages

This Strategy is simple and transparent since it is composed of only a pair of underlying assets that can be modeled and monitored.

The Strategy is totally unique as it pierces the "ISDA curtain" to effectively allow civilians access to an ultra-long-dated (seven-year) option.

Significant positive leverage (Convexity) via the use of a "professional-style" (ISDA) option – superior to the linear return profile of listed futures.

This Strategy is designed for long horizon protection - a seven-year expiry option is slow to decay and not path dependent; compare it to the "TBT" security.

This Strategy will not be 'actively managed', thus investors can more readily model their risk exposure; compare to other "Volatility" securities.

A management fees of only 50bps and a stable structure reduces slippage.

Can be traded or held in standard investment accounts; point and click trading.

A Modeled Performance Profile

The table below is a "snapshot" profile of how such a strategy could perform, contingent upon a few important assumptions (*), as rates vary. **This is not a prediction**, but rather a modeled pricing projection using a \$50 initial price and a stable notional option ratio versus the CME listed "US" futures contract.

The **-aero line-** is the newly issued Strategy as rates vary and Implied Volatility is held constant

The **-ajax line-** is the value of an unlevered short position in the CME 20yr future contract

The **-salmon line-** is the Strategy, two years hence, with Implied Volatility held constant

The **-folly line-** is the value of the CME future, two years hence (rolled quarterly)

The **-yahoo line-** is the Strategy, two years hence, with modeled (rising) Implied Volatility

The **-munsell line-** is a three times levered CME future, two years hence

	<u>-50bp</u>	<u>Unchanged</u>	<u>+50bp</u>	<u>+100bp</u>	<u>+150bp</u>	<u>+200bp</u>	<u>+250bp</u>	<u>+300bp</u>
	\$41.84	\$50.00	\$61.36	\$76.19	\$94.37	\$115.42	\$138.53	\$162.65
	\$46.89	\$50.00	\$52.89	\$55.58	\$58.08	\$60.40	\$62.56	\$64.58
Px Difference	-\$5.04	\$0.00	\$8.47	\$20.61	\$36.29	\$55.02	\$75.96	\$98.07
	\$36.76	\$44.08	\$55.14	\$70.55	\$90.48	\$114.58	\$141.96	\$171.33
	\$45.08	\$48.20	\$51.09	\$53.77	\$56.27	\$58.60	\$60.76	\$62.78
Px Difference	-\$8.32	-\$4.12	\$4.05	\$16.78	\$34.21	\$55.98	\$81.20	\$108.55
	\$36.76	\$44.08	\$55.14	\$70.55	\$96.01	\$125.09	\$155.86	\$186.65
	\$35.26	\$44.60	\$53.27	\$61.33	\$68.83	\$75.80	\$82.29	\$88.33
Px Difference	\$1.50	-\$0.52	\$1.87	\$9.22	\$27.18	\$49.30	\$73.57	\$98.32

The table above is designed to profile both the modeled Interest Rate sensitivity as well as the Convexity provided by this Strategy. I propose the third set as the best apples-to-apples comparison that captures its relative leverage as well as the cost of holding the position.

The Strategy's "cost" is the decay (theta) of the option; for the CME futures contract, it is the negative interest rate (carry) paid when the contract is rolled quarterly. Take special notice of the narrow difference to hold the Strategy for two years versus a levered futures position, yet the Strategy offers substantially better upside with similar downside.

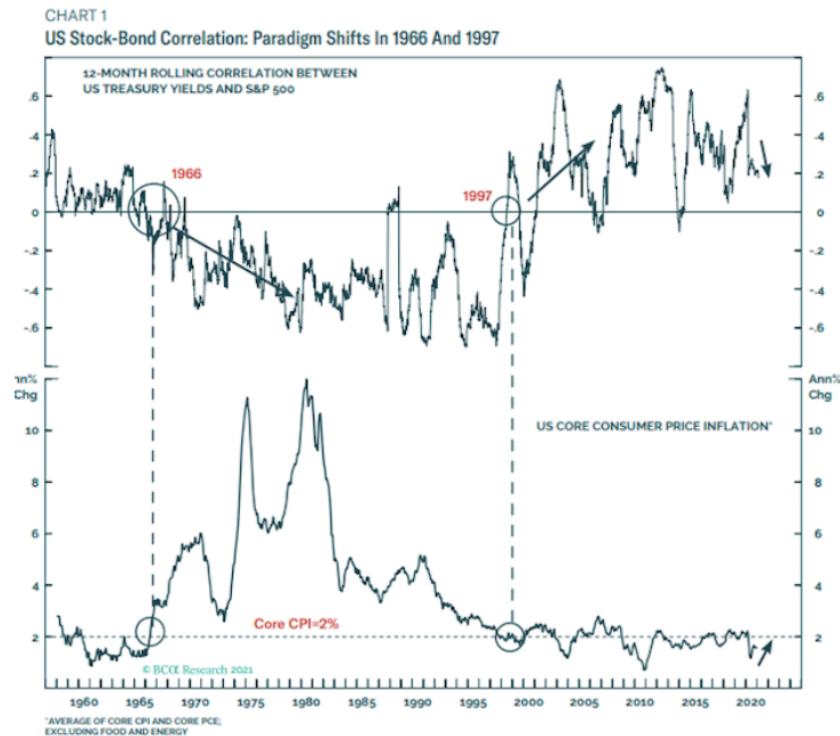
Hedging Macro-economic risk

There are a handful of products available for day-traders or those seeking to profit from sharp short-term (days/weeks) rate shifts; but this Strategy can offer longer-term risk management for those who will be harmed from higher rates.

Options expiring past five-years can philosophically be considered "investments" for diversification and risk management, not speculative trading vehicles.

The Strategy has advantages for portfolios heavily weighted in bonds, as well as real estate borrowers (residential and commercial) with loan repricing risk.

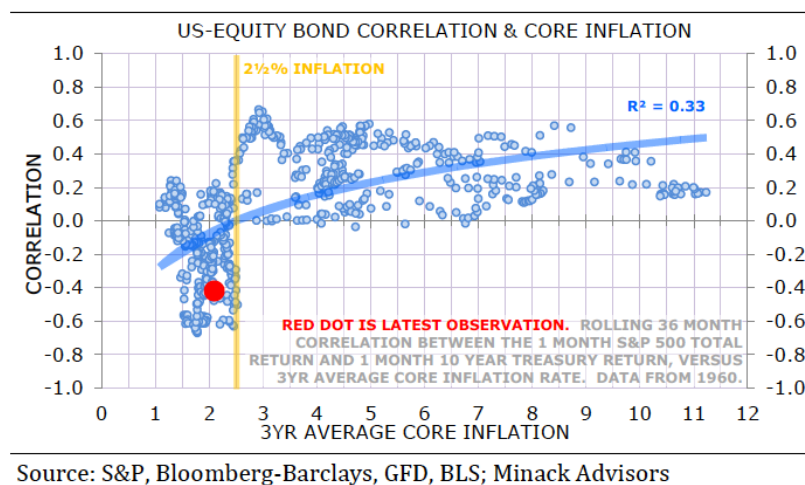
But perhaps its greatest value is hedging the risk of [-bayern line-](#) correlation.



As detailed in "Where is the Folder" – May 5, 2020, by far the greatest Macro-risk to financial markets would be the reversal of the Stock vs Bond correlation. Over the past two decades, equities and interest rates have moved in the same direction, the result being that stock and bond prices move in opposite directions. Thus, they effectively hedge each other – when one loses money in stocks, some of those losses are offset by gains in bonds (and vice versa).

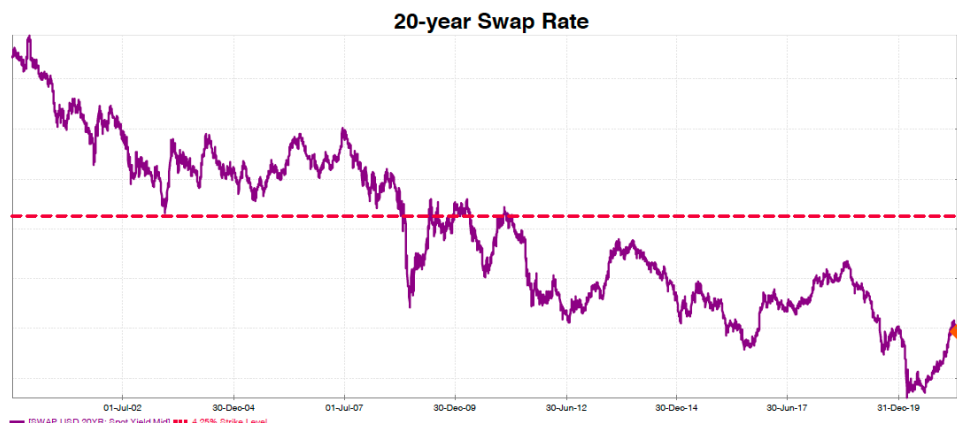
This correlation underpins the success of the 60%/40% portfolio, and its leveraged cousin known as Risk Parity.

However, extensive research shows that this -alice dot- correlation is well-linked to -school bus line- inflation, which of course is a key driver of interest rates.



While there is no hard rule, the largest Wall Street banks have opined that this correlation may reverse if interest rates rise above 3.5% to 5.0%. This is why we have located the strike price of the Strategy's embedded ISDA option at 4.25%.

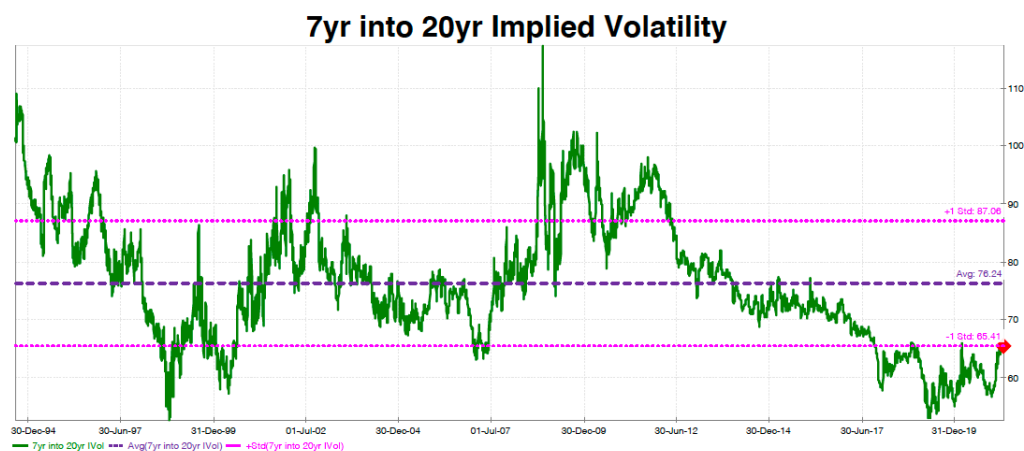
Exquisite Timing



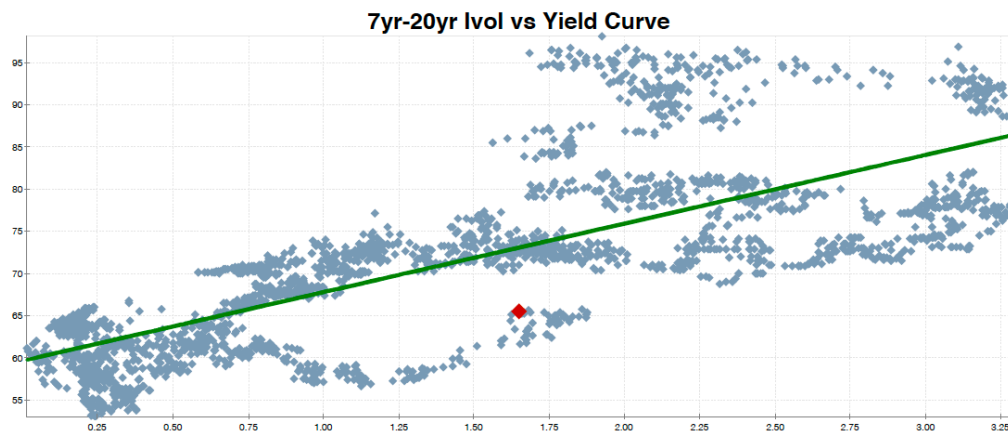
Notwithstanding that this Strategy offers a unique risk profile via effective ownership of an ISDA option, the timing for its introduction could not be better.

The **-hallmark line-** above charts the level of the 20-year Swap rate which undergirds the Strategy, and the **-carmine line-** location of the 4.25% strike level.

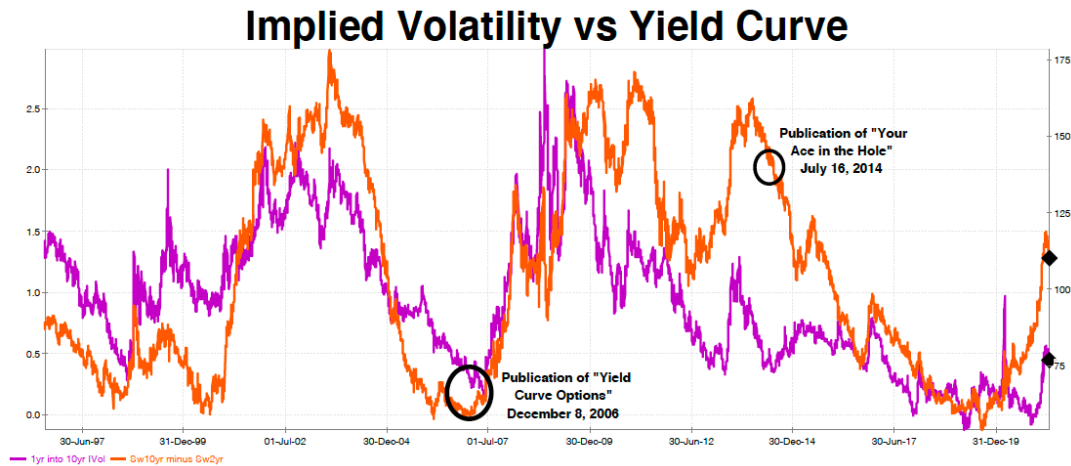
The **-android line-** below charts the Implied Volatility of an at-the-money seven-year option on the 20-year Swap rate. While this Strategy holds an out-of-the-money option that sports a slightly higher Implied Volatility (skew), this level is still below the long-term average.



I have often noted (*"Your Ace in the Hole"*– July 16, 2014) that the shape of the Yield Curve offers the best correlation to Implied Volatility. Thus, notice below the **-arsenal dot-** is about 10% below the **-Carlsberg line-** best fit average. By this measure, the Strategy is about \$7 cheap to its historical "fair value".



An update of my favorite chart confirms that the level of **-roku line-** Implied Volatility is too low relative to the **-fulvous line-** 2yr vs 10yr Yield Curve. This gap will close, and most likely by an increase in Implied Volatility.



Since interest rates peaked in the early 1980s, the value of Financial Assets has increased **-Duke line-** relative to Real Assets. Much of this is due to the mathematical discounting of cash flows at a lower interest rate. (Remember, bond prices rise as rates fall.) A significant rise in rates will almost certainly reduce both the absolute and the relative value of financial assets.

Real assets (Commodities, Real Estate, Collectibles) vs. Financial Assets (Large Cap Stocks, Long-term Govt Bonds) since 1925



Source: BofA Global Investment Strategy, Global Financial Data, Bloomberg, USDA, Savills, Shiller, ONS, Spaenjers, Historic Auto Group. Note: Real Assets (Commodities, Real Estate, Collectibles) vs. Financial Assets (Large Cap Stocks, Long-term Govt. Bonds)

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Comments and Conclusions...

Don Rumsfeld noted known-knows, known-unknowns, and unknown-unknowns.

We know that Interest Rates are still near all-time lows; we also know that the price for uncertainty (Implied Volatility) is also near a forever low. We know there has been massive Monetary expansion from the FED; and we know that there has been a Fiscal impetus funded by deficit spending only rivaled by the battle for Western Civilization (World War 2). Finally, we know that the FED does not want deflation, and we are fairly sure they would like a higher inflation rate.

It is unknown if inflation will occur, despite fleets of helicopters overhead; and even if inflation does take flight, it is unknown if it will lead to higher interest rates as the FED may respond with 1950s-style Yield Curve Control (YCC).

The United States has arrived at the intersection of a demographic inflection point and a more engaged Federal Government; I will not opine if this is good or bad, but only that the scope and magnitude of the result is totally unknown.

The grand anomaly is insurance protecting against a bad outcome is grossly mispriced in almost every financial asset class (Equity, Bond, and Currency).

Regular readers know I am not some pundit 'squawking' for your eyeballs; rather I am a 35-year Wall Street veteran who is not too easily amazed. I will tell you that a version of the ISDA option described here is my largest line item, and it's because insurance against such mammoth uncertainty is crazy cheap.

It is unknown if interest rates will increase, but I do know that if they do rise much past 4.25% there will be a series of bad financial outcomes.

While I suppose one could "trade" this Strategy, it is designed to be held for a longer horizon. Via its significant Convexity, its gains can exceed its limited loss, but **it will be quite volatile** as it is super sensitive to interest rates.

Despite my convictions, I (quietly) hope the option never crosses its strike; since the reality is **when one buys life insurance, you don't win when you die**.

Harley S. Bassman
May 11, 2021

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(*) Assumptions for a MODELED Performance Profile

Any (modeled) projected performance profile requires a few assumptions, and there is myriad more for long-dated options. As a 35-year Wall Street professional, I am well aware of how to slant a profile with “tricks”; but I believe the assumptions used here are both reasonable and conservative.

- 1) I assume the initial portfolio ratio is fixed, with no adjustments.
- 2) I use Wall Street standard (Bloomberg) instant “parallel shifts”; this is conservative since long-term rates will likely rise more than FED controlled short-term rates.
- 3) All prices calculated on Bloomberg SWPM or BC1.
- 4) I assume no “roll down” for USTs or cheapest to deliver.
- 5) I use mid-market pricing for all risk vectors.
- 6) Excluded are all fees, commissions, and transaction costs.
- 7) Excluded is the interest income of the UST allocation.
- 8) I assume the spread between USTreasuries constant versus Swap rates.
- 9) I hold Implied Volatility flat in the base case at 73nv
- 10) I assume Implied Volatility does not rise until rates increase by 150bps in the rising Vol profile, and then by 5nv per 50bp shift.
- 11) Implied Volatility for the “2yr hence” case rides the current term surface, presently 5yr options are about 5nv higher than 7yr options.
- 12) I assume the cost of rolling the US futures contract is unchanged for all eight rolls.
- 13) I assume there is no delivery shift in the futures contract.
- 14) I assume no slippage in managing the Strategy over time.
- 15) I assume a “buy and hold” from issuance.



“I’m looking for a hedge against my hedge funds.”

Robert Mankoff – The New Yorker

Your comments are always welcome at: harley@bassman.net

If you would like to be added to my distribution, just ping me.
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>

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