

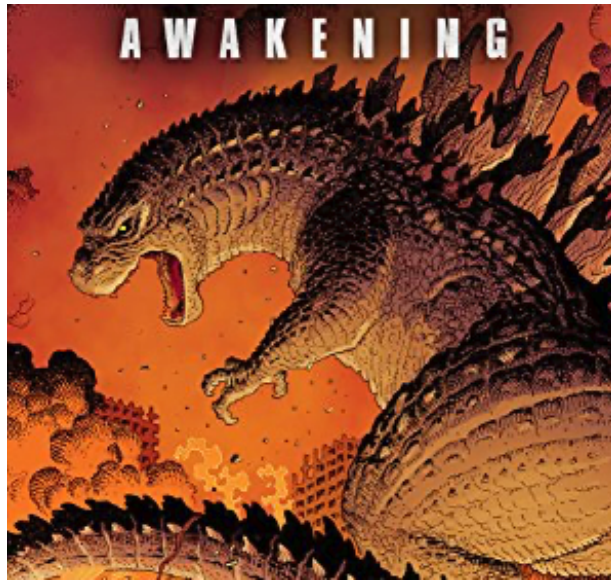
Convexity Maven

...it's always about character

A Commentary by Harley Bassman

May 20, 2026

"Awakening the MBS Convexity Beast"



Once upon a time, before the market's (and Fed's) focus was on the change in Core Personal Consumption Expenditures (PCE – prices paid by consumers for domestic goods and services, excluding food and energy), the most anticipated monthly event was the release of Fannie Mae's "Duration Gap". It often had a greater impact on interest rate trading than the unemployment number.

This is because the GSEs (Fannie and Freddie Mac) managed humongous Retained Investment Portfolios (presciently known as RIPs since these speculative funds contributed to their eventual demise) that had to be hedged via their (market moving) buying and selling interest rate Derivatives.

The GSE's desire to keep the "gap" between the Duration of their Mortgage-back Securities (MBS) assets and their liabilities narrow was challenged by the Negative Convexity of MBS, which forced them to buy bonds as prices went up, and sell bonds when prices went down which increased Interest Rate volatility.

Various Great Financial Crisis (GFC) remediations by the Fed quelled the negative Convexity of the MBS market; but today we explore how this dormant risk may soon be returning to the market.

By construction Mortgage-backed Securities are rather simple bonds since there is no risk of default as the Government-Sponsored Enterprises of Fannie, Freddie and Ginnie insure against loan losses. The only question is the maturity date.

An ordinary U.S. Treasury bond that matures in ten years pays interest every six months and returns the principal in a single payment at the end of year ten.

In contrast, an MBS level-pays the interest and some principal every month until all the loans within the MBS are paid off. This could take 30 years, or perhaps only a few months, since the homeowner (the borrower) has the option to pay off the loan early at no cost.

Constructing an MBS is conceptually simple: It is a pool of self-liquidating (amortizing) 30-year loans where the borrower owns a call option struck at 100 to pay off the loan at any time. But while we all agree the strike price is 100, the exercise price is somewhat murky since there are many factors that drive a borrower to prepay.

Estimating prepayments is the "magic of mortgages" because they can happen for a variety of reasons, many of which are non-economic. Clearly if one borrows money at 4% and rates then drop to 3%, one will refinance the loan to the lower rate. So, the old 4% loan is paid off early (prepaid), and a new 3.0% loan is created (issued).

On the contrary, if rates rise to 5%, the borrower has no incentive to refinance; so, they will keep the 4% loan for a long time. This is known as extension risk.

One should not dismiss such risks since it was a poorly managed MBS portfolio that drove Silicon Valley Bank into receivership in March 2023 and forced First Republic into a shotgun marriage with JPMorgan in May 2023.

Kluge modeling of an MBS captures the essence of their risk profile without the need for a PhD in Physics. An MBS can be constructed as:

- 1) Buying a ten-year U.S. Treasury bond at a price of 100
- 2) Selling a three-year expiry call option on that same bond; struck at 105

One can consider an MBS to be functionally similar to a standard buy-write strategy where the extra income one earns on the MBS over a UST ten-year is the value of the embedded call option.

I will state for the record that there is no credit risk in Fannie Mae, Freddie Mac and Ginnie Mae MBS; if you think otherwise, I recommend the purchase of gold, guns and cans of tuna.

All the market risk in an MBS can be captured in the Delta, Gamma and Vega of this embedded prepayment option.

There are many factors that drive prepayment risk. These include Gross Domestic Product growth, loan size and tax policies. But the predominant factor is the prevailing mortgage interest rate level relative to the coupon rate of the loan. Prepayments increase rapidly once a borrower can refinance into a new loan at least 50 basis points lower than their current rate.

Pulling back the focus to standard option risk management, while Delta and Vega are important to managing a portfolio, the most challenging risk is Gamma (Convexity). And Gamma risk is at its greatest when an option is near its strike price. As such, an MBS is most Negatively Convex when its price slightly exceeds par (100), as this is where the prepayment risk is most uncertain.

As such, an MBS trading near 80 has almost no prepayment risk since its embedded option is more than 20 points out-the-money. And an MBS trading above 105 is also a lower risk security since any sentient homeowner will soon refinance (prepay).

[For more on MBS, see "[A Deep Dive into Mortgage Bonds](#)" - November 3, 2022]

I will not debate the merits of Quantitative Easing (QE), but from the COVID-19 panic of early 2020 to the surge of inflation in late 2021, the Federal Reserve drove the par MBS rate under 2% allowing most homeowners to refinance. This ended when the twin cannons of Monetary and Fiscal money printing ignited inflation and surged interest rates to over 5%.

By October 2023, the 10-year rate was kissing 5% and the 30-year MBS universe was pushed to an average **-shay column-** price of **78.94** with a **-khamr column-** coupon of **3.13%**.

October 20, 2023

CPR	30yr MBS Coupon	Current Balance	\$ Price	Duration	Distribution Yield	Yield to Maturity
4cpr	2.00%	\$1,866	73.27	9.68	2.73%	5.68%
4cpr	2.50%	\$1,576	76.48	8.45	3.27%	5.71%
4cpr	3.00%	\$951	79.73	8.03	3.76%	5.74%
4cpr	3.50%	\$674	82.88	7.47	4.22%	5.80%
4cpr	4.00%	\$504	85.92	6.87	4.66%	5.88%
5cpr	4.50%	\$374	88.78	6.38	5.07%	6.08%
5cpr	5.00%	\$356	91.58	5.95	5.46%	6.19%
6cpr	5.50%	\$309	94.23	5.43	5.84%	6.38%
8cpr	6.00%	\$205	96.70	4.85	6.20%	6.57%
10cpr	6.50%	\$95	98.92	4.15	6.57%	6.71%

MBS Index Coupon	SMM Outstanding	MBS Index Price	MBS Index Duration	MBS Index Distribution	MBS Index YTM
3.13%	\$7,124	78.94	7.84	3.97%	5.80%
UST 10yr Coupon		UST 10yr Price	UST Dur	UST 10yr Distribution	UST 10yr YTM
3.875%		91.98	7.92	4.21%	4.91%

Ignoring the compelling relative value of newly-issued MBS trading 175 basis points cheap to the UST ten-year, the real story was that the MBS index was Positively Convex because the embedded option was so far from strike (100).

As a result, managing the risk of an investment in the MBS Index was rather easy as it had a modeled positive convexity +0.28, close to that of UST five-year. The duration was relatively stable and most of the risk was in the yield curve.

Three years later a lot has changed. **The proportion of the 30yr MBS Index with a coupon of 5% or above has risen from 13% to 34%.** Aside from the normal growth of new (higher coupon) mortgages, there has also been much non-financial refinancing as homeowners with low coupon mortgages pay off their loans early to move to a larger home or a better job.

The MBS index presently has an average **-dum column-** coupon of **3.87%** with a **-alhashish column-** price of **89.88**. This price increase is due to MBS issuance, lower UST rates, and a massive spread tightening from 175bp to nearly 100bps.

May 15, 2026	30yr MBS Coupon	Current Balance	\$ Price	Duration	Distributon Yield	Yield to Maturity
4cpr	2.00%	\$1,563	78.86	9.14	2.54%	4.92%
5cpr	2.50%	\$1,290	82.56	8.88	3.03%	5.05%
6cpr	3.00%	\$763	86.19	8.27	3.48%	5.11%
6cpr	3.50%	\$554	89.69	6.91	3.90%	5.05%
6cpr	4.00%	\$432	92.39	5.65	4.33%	5.08%
6cpr	4.50%	\$422	94.91	5.29	4.74%	5.21%
6cpr	5.00%	\$746	97.41	4.94	5.13%	5.36%
10cpr	5.50%	\$887	99.72	4.23	5.52%	5.53%
20cpr	6.00%	\$691	101.63	3.89	5.90%	5.35%
35cpr	6.50%	\$284	103.67	3.86	6.27%	4.60%

MBS Index Coupon	SMM Outstanding	MBS Index Price	MBS Index Duration	MBS Index Distributic	MBS Index YTM
3.87%	\$7,632	89.88	6.45	4.30%	5.15%

UST 10yr Coupon	UST 10yr Price	UST Dur	UST 10yr Distributio	UST 10yr YTM
4.375%	98.24	8	4.45%	4.60%

No matter the reason, the embedded option for the MBS index is now 11 points (89.88 versus 78.94) closer to the strike price (100), and with this entails a significant change in its convexity profile from (a modeled) +0.28 to -1.06, almost halfway to the negative convexity of a typical par MBS of about -2.42.

As the MBS index becomes more negatively convex, this will impact the overall bond market as investors who are over- or under-weighted the MBS Index will need to constantly rebalance. This functionally means buying higher prices and selling lower prices, which tends to extend the trading range.

Aside from the normal course of newly-issued MBS increasing the average price (and Convexity) of the Index, the **Federal Reserve is quietly feeding MBS risk back into the market** as it redirects MBS paydowns to UST purchases.

This effectively moves the Negative Convexity of MBS from the Fed's balance sheet back to the market.

Another uncertainty is the Federal Housing Finance Agency (FHFA) active consideration of policies to increase mortgage availability which could lead to increased prepayment risk as well as a greater issuance of higher-coupon MBS, which functionally means a more Negatively Convex MBS Index.

Finally, the big kahuna is the possible resurrection of the GSE's retained investment portfolios. This is because they may desire to again manage their Convexity exposure via active derivative trading, which could whip the market in either direction.

To the extent the GSEs start to build their portfolios and actively hedge an ever more negatively convex market, this could push both implied and realized volatility higher.

The last time the MBS Convexity tail wagged the bond market dog was in the early 2000s when the mortgage machine was spinning out new MBS at a record clip and a re-finance could occur with barely a 25bps incentive.

This is when I described the "[Convexity Vortex](#)" - January 11, 2008. While the MBS market has not reached that level of Convexity, it is becoming more negatively convex, and with that comes much greater interest rate volatility.

Macro-economic Comments

For quite a while I have insisted the "fair value" of the UST 10yr is 4.35%. That is 147bps (the 35-year average) above a long-term Fed Funds rate of 2.88%.

I have not been too far off since the market has been cycling between 4.0% and 4.5% since late 2023. But if I have to "blink", it will be for higher rates if this range is broken.

As some point Team Transitory (you know who I mean) must capitulate that inflation is not going back to 2.0% anytime soon. They can cry about Owners Equivalent Rent (OER) being many months behind, or a convoluted birth/death model. Or maybe that the price of Oil will be a recessionary precursor.

But the bottom line is **we are running a ~6% Fiscal Deficit** when the U.S. is neither in a Recession nor at War (notwithstanding our Iranian "love tap").

Such a Fiscal deficit is pure money printing, and both parties are vested in a continuation to keep the economy "running hot".

As per stocks, they are fine so long as the unemployment rate is below a 5%-handle since Passive Index money will continue to flow no matter the data and valuations (see Michael Green).

What's the wrong price ? The **-eushb line-** MOVE Index of Interest Rate Implied Volatility which is near the lows since the Fed started hiking rates.



I suggest a lower risk profile as IG, HY and Muni spreads are at the tighter end of their range, and MBS is barely fair. Fancy hedge fund traders might create multi-strike option portfolios that target the inflection points of increasing or decreasing prepayment (convexity) risk.

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

Harley S. Bassman
May 20, 2026

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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 good friend, Michael Green, aka, [@profplum99](#).

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

<https://www.convexitymaven.com/classroom/>

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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