

# From Macro to Micro: The Implications of High Volatility for Interest Rate Relative Value

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- We examine the link between high interest rate market volatility and relative value pricing relationships.
- The current high macro volatility regime is having a greater than usual impact on micro relative value.
- Stress in micro interest rate relative value is at extreme levels, improving future opportunities in this segment of the market.

Global fixed income markets have experienced a massive correction this year. Aggressive central bank rate hikes, surging inflation and weaker global growth have driven double-digit losses for duration and credit heavy portfolios. In the wake of this repricing, many investors see the outlook improving alongside cheaper valuations. There are merits to this view, but also many reasons to remain cautious.

Interest rate Relative Value (RV) strategies avoid the duration and credit exposures that are the main drivers of the recent correction in conventional fixed income portfolios. Nonetheless, surging interest rate market volatility can spillover into interest rate RV. In this note, we outline the links between the current high volatility regime and RV. We show that RV pricing relationships are stretched to historically extreme and unsustainable levels. The current stress in interest rate markets improves the outlook for RV strategies.

## The relationship between macro market volatility and micro relative value

Interest rate RV strategies generate returns from government bonds and related derivative securities by taking both long and short positions in these markets to target relative pricing differentials. The resulting RV risk/return profile is idiosyncratic and generally exhibits low correlation with the direction of government bond yields and risk assets. RV strategies differ from conventional fixed income investments, where returns are driven by buying and holding securities for income and capital gain (see [here](#) for more detail on pure RV investing).

In a [recent note](#), we compared conventional fixed income and RV portfolio risks and performance across a range of market environments. Over the long run, some key drivers of the broader fixed income market generally do not have a material impact on pure RV strategies, including:

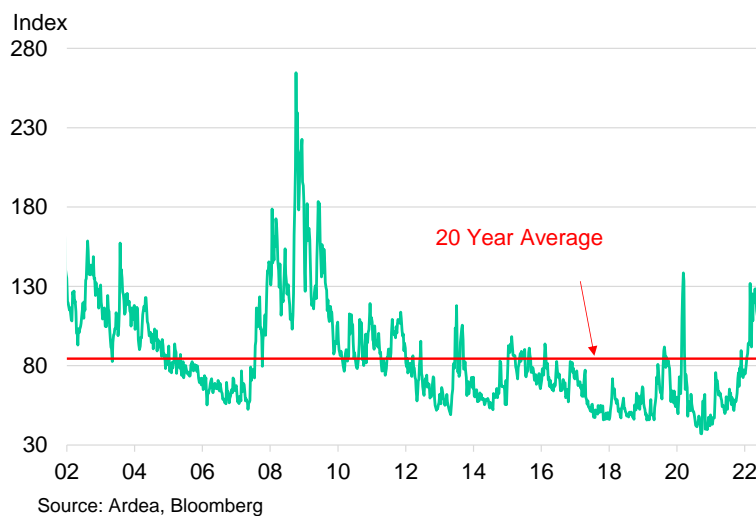
- The broad level and direction of interest rates.
- Risk asset performance.
- Macro variables such as growth and inflation.

Our previous note also concluded that, over the long run, there isn't a clear good or bad market for relative value strategies as there is for conventional government bond and credit strategies. However, we highlighted three links between the broader market environment and RV strategies:

- 1) Extreme low rates volatility (such as the Japan experience) is a negative.
- 2) Higher rates volatility is generally positive, but not in all situations.
- 3) RV alpha is structural, but the mix of opportunities changes with micro market factors such as supply/demand dynamics.

In the current market context, the relationship between rates volatility and RV is worth exploring further. As Chart 1 illustrates, US Treasury volatility recently hit the highest level since 2009, triple the late 2020 lows and the upper end of a 20-year range. Similar measures of EUR rates volatility have eclipsed 2008 highs. The current pace of central bank policy tightening is the most aggressive since the early 1990s.

Chart 1: US Treasury Market Implied Volatility (MOVE Index)



We discussed in our prior note that, since RV strategies can also make use of long interest rate volatility positions through options, higher market volatility is generally beneficial (see [this note](#) for a more detailed discussion on long volatility positions). However, periods of high rates volatility – whether in an environment of rising or falling rates – can also cause stress in many RV pricing relationships. Performance of RV strategies in high volatility periods can be thought of as the balance between the severity of underlying stress in rates RV relationships and the benefits of long volatility positions.

The current high volatility environment is leading to much larger than normal levels of stress in RV for five main reasons:

- 1) **The scale of the increase in global rates volatility.** The surge in volatility over the last year has been prolonged and is impacting every major market, given the sheer scale of the global inflation shock. This environment is leading to much wider than usual trading ranges in RV pricing relationships.
- 2) **Extreme macro forecast uncertainty.** The scale of macro forecasting uncertainty is historically elevated as the highest inflation in decades is leading central banks to tighten policy amid a global growth slowdown. This backdrop is driving unusual movements in the shape of interest rate curves (explained in more detail in the following section).
- 3) **Increased interest rate derivative hedging flows.** An increase in hedging flows by a range of market participants to protect against higher rates and rising recession risks. These flows impact

the shapes of yield curves and the spreads between bonds and interest rate derivatives.

- 4) **Reduced risk appetite by many active market participants.** High macro and overall market volatility are reducing many rates market participants capacity to take active risk in RV. This lack of risk-taking is leading many RV pricing relationships to remain distorted for longer than usual.
- 5) **Large asset allocation flows within bond markets.** High volatility is giving rise to greater variation in bond buying and selling flows, as investors manage asset allocation rebalancing and the end of central bank QE. These flows are causing larger dislocations in normally tight pricing relationships across government bond curves.

In the following sections, we quantify the extent to which RV pricing relationships are stressed and discuss why this environment translates into a positive forward-looking opportunity set.

## Yield curve RV: separating the micro from the macro

Yield curves rarely make perfect parallel shifts up or down. The shape of the curve tends to steepen, flatten or become more concave or convex over time. These movements broadly describe changes in the size of the relative movements in one part of the curve versus another. Over the last year, the magnitude of changes in yield curve shape has been historically large.

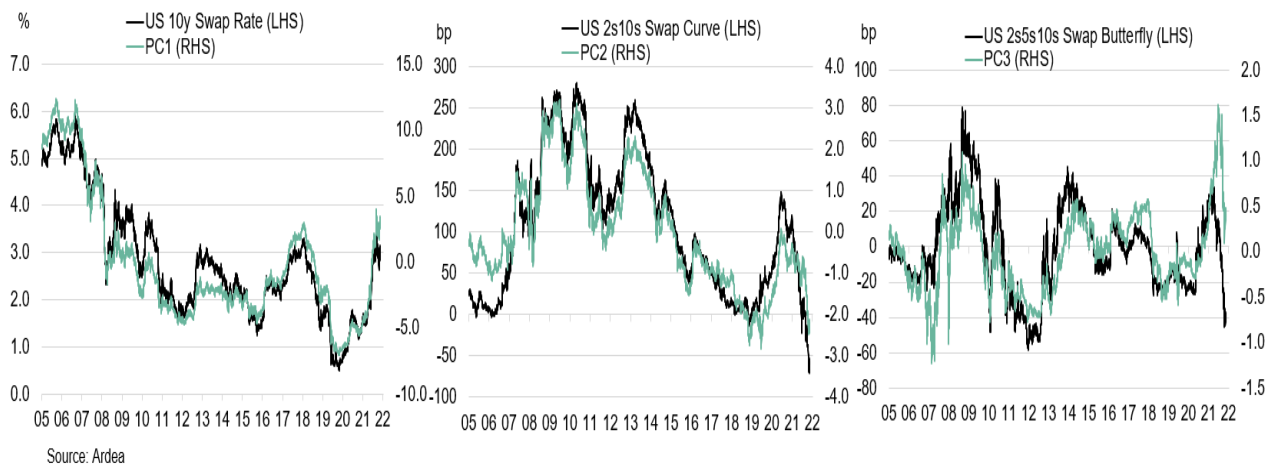
We have previously detailed how investors can construct and implement yield curve trading strategies and the distinction between macro and micro curve RV trades (see [RV Primer Part 1: Yield Curve Trading](#)). Yield curve shapes reflect substantial information content on the outlook for a wide range of variables, including: cash rates, QE, growth/recession risks, inflation, bond supply/demand dynamics and hedging flows.

RV strategies seek to minimize macro risk and isolate the micro influences on yield curves. A wide range of trading strategies can be employed to capture micro RV across bond and derivative markets that are distinct from macro curve strategies (see RV Primers [Part 2: Government Bonds](#) and [Part 3: Swaps](#)). Instead of discussing the many variations of trades, we use Principal Components Analysis (PCA) to show the overall dynamics of micro versus macro curve movements. PCA is a statistical technique to reduce the dimensions of a dataset into a smaller set of underlying components. Basically, we can use PCA to cut through the large information content in yield curves to separate the macro from the micro factors.

PCA analysis generally shows three principal components have the most explanatory power over movements in interest rates and yield curves (PC1 the highest, PC3 the lowest). PC1-3 are reflective of the macro influences on the curve. Specifically, based on analysis of US swap data since 2005, the components show the following (Chart 2):

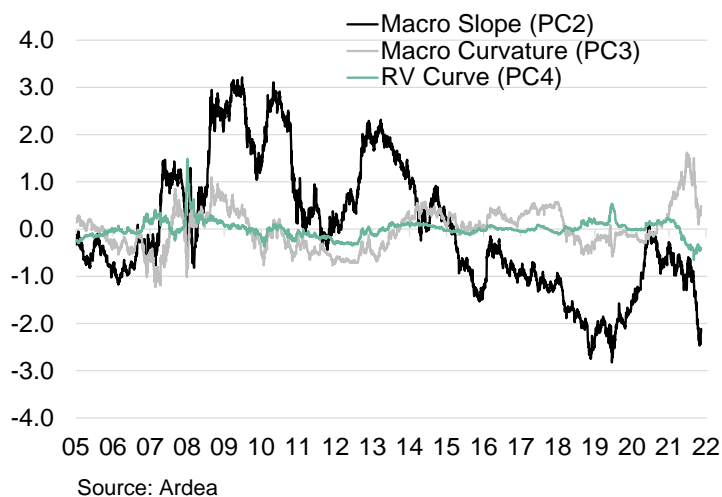
- PC1: the level of rates – correlated with the 10y rate.
- PC2: the slope of the yield curve – correlated with the 2/10y curve.
- PC3: curvature – correlated with the 2y/5y/10y [butterfly spread](#).

Chart 2: PC1-3 vs yield level and macro curve spreads



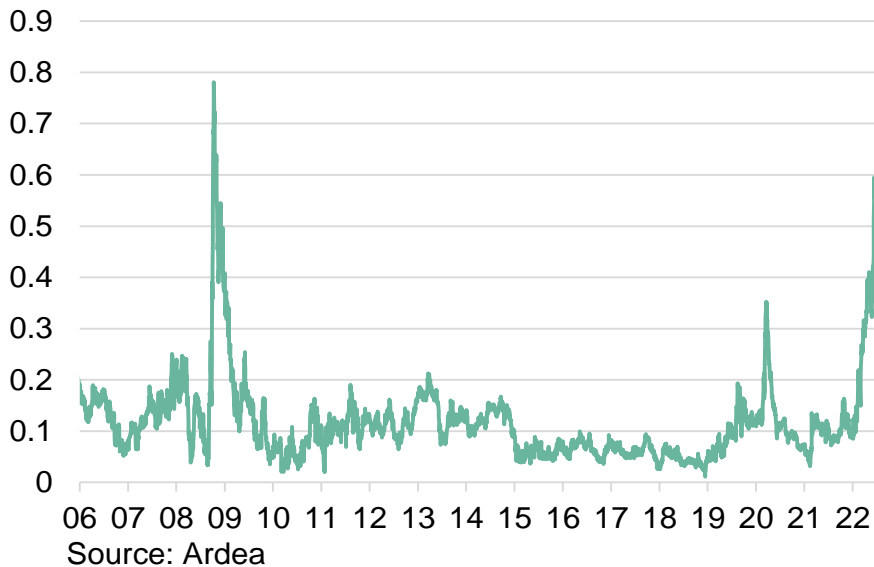
The PC4 and higher order components are uncorrelated with macro yield curve movements and are reflective of the large number of micro yield curve movements targeted by relative value strategies. As such, there isn't a reliable long term positive correlation with a single curve spread. Chart 3 compares movement in the macro and micro curve factors - PC2-4 over the long run. The level of the factors (positive or negative) is less important than how much the factors are moving around. The micro RV yield curve factor (PC4) is more stable than the macro curve (PC2 and PC3) factors, which is consistent with the more constrained nature of RV investing and lower long run performance variability compared with macro strategies (as discussed in a previous [note](#)). However, over the last year, the RV factor has seen large movements compared with its own history, implying RV distortions at a level consistent with crisis periods.

Chart 3: Macro and micro yield curve variation - based on US swap curve PCA



The US market is not alone in experiencing historically large volatility in yield curve RV over the last year. Applying the same PCA analysis across global swap curves, we created a global RV curve stress index, which similarly excludes the macro and isolates the micro yield curve movements that are relevant for RV (Chart 4). A higher index level indicates a greater magnitude of RV distortions. In recent months RV curve relationships have reached extreme levels of around 3-6 standard deviations from average. The stress in RV curve relationships is of a magnitude greater than the peak of the Covid crisis in March 2020 and last experienced at the height of the global financial crisis in 2008.

Chart 4: Global RV Curve Stress Index\*



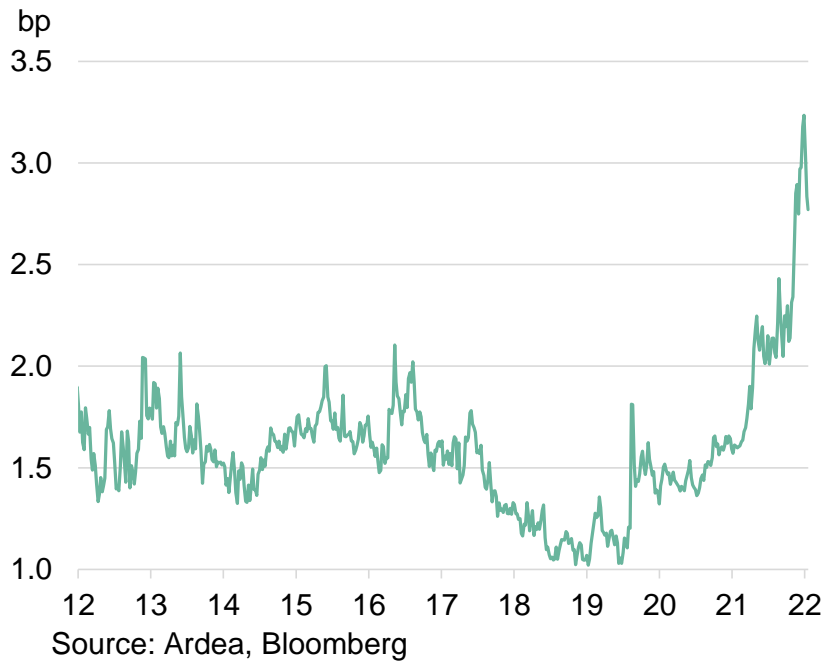
\*Index is unitless, reflects average PC4 across USD, EUR, GBP, CAD and AUD markets.

### Government bond RV – a break from the normal constrained pricing relationship

RV strategies take advantage of pricing distortions in government bonds by implementing long and short positions across different maturities to capture relatively cheap and expensive bonds. These strategies often involve the use of derivatives, such as futures and swaps to offset interest rate risk (see [here](#) for background). To identify a bond RV trade, quantitative and qualitative analysis is undertaken to determine the magnitude of “richness” or “cheapness” of bonds and some reasons why the distortion exists. Techniques vary, but typically involve adjusting for macro risks to isolate RV that exists for more micro supply/demand reasons.

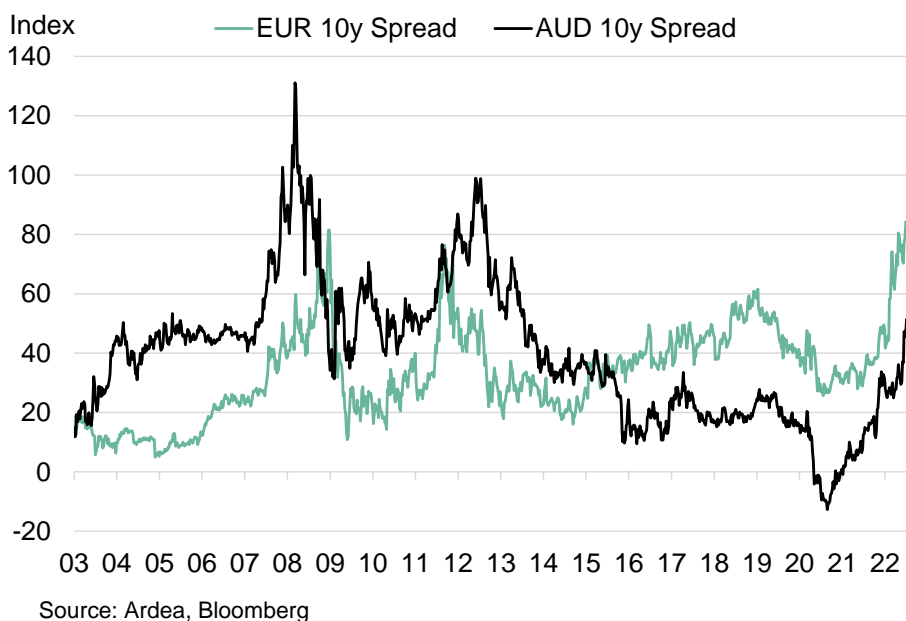
Chart 5 illustrates a global government bond RV index, based on the Bloomberg bond liquidity indices. These indices capture average deviations between actual bond yields and yields from a curve fitting model (average model “error”). This model is constructed to be highly constrained (to produce very low index numbers) and effectively filters out macro drivers of yields to show relative value or liquidity premia. The chart shows output averaged across multiple markets: the US, Germany, France, UK, Canada and Japan. This global index recently reached decade highs, implying the level of RV mispricing in global government bonds has doubled relative to its 2012-2021 average.

Chart 5: Global government bond relative value index



The relationship between bonds and interest rate derivatives is also under abnormally high stress in some markets. While the theme is less consistent globally than bond only distortions, many markets have experienced large movements in swap-bond spreads and shifts in swap-bond spread curves. Swap-bond spreads and swap spread curves are key measures of relative value in bonds and provide hedging and spread trading opportunities. As Chart 6 illustrates, both AUD and EUR bond markets have experienced massive movements in swap-bond spreads. In the case of EUR, spreads reached the widest levels since the start of the single currency. In other markets, there is less obvious stress in the absolute level of swap spreads, but higher stress in certain sectors such as shorter maturities because of supply/demand pressures in bonds.

Chart 6: AUD and EUR 10y swap-bond spreads



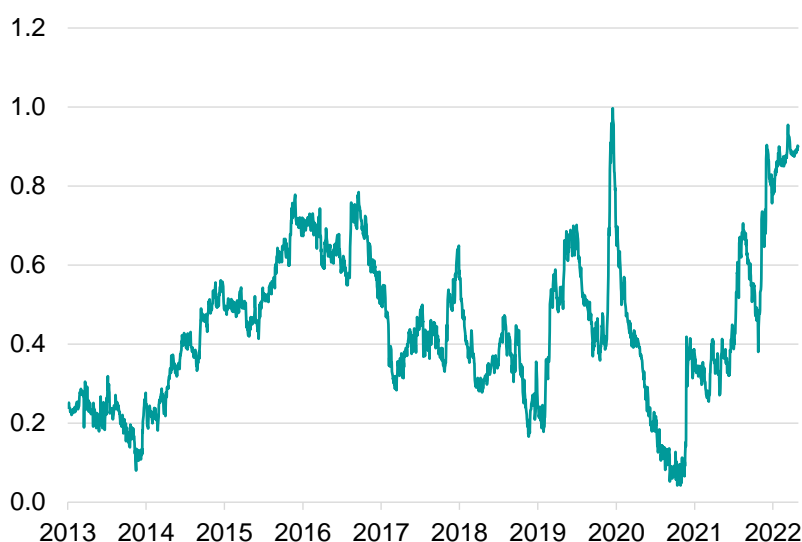
## An aggregated measure of stress in rates RV

We have discussed the unusually large level of stress in RV-specific pricing relationships across yield curves and government bonds. We combine these and other factors that have historically indicated stress in rates RV into a single index:

- Bond RV mis-pricings (errors vs a fitted curve).
- Micro Curve RV distortions from PCA analysis.
- A swap-bond spread measure (swap spreads curve between 2y, 10y and 30y).
- Funding stress – proxied by money market spreads.
- Option implied rates volatility.

We aggregate these factors into an equal-weighted single index based on a rolling 5y percentile rank. Chart 7 shows this rates RV stress index for the US market is currently running around the 90<sup>th</sup> percentile and near the extreme levels reached at the height of the March 2020 Covid crisis.

Chart 7: US rates RV stress index



## High levels of market stress improve the future RV opportunity set

We have outlined how the surge in macro market volatility over the last year has flowed through to unusually high levels of stress in interest rate RV. Measures of stress in micro yield curve and bond RV relationships are 2-4 times normal levels.

For RV-focused investment strategies, the current high level of stress in RV pricing relationships represents an attractive opportunity set. The underlying pricing relationships between groups of interest rate securities with similar or the same risk characteristics is unlikely to remain this disconnected indefinitely. In this sense, highly distorted global rates RV measures are similar to credit markets overshooting fundamental valuations in extreme periods.

As always, estimating the timing for a normalization in stressed markets is tricky. The many micro RV pricing relationships that are currently stretched will probably not all revert to fair value at once. Broadly, the catalysts for an easing of the current extreme stress in RV is likely to be some combination of the

following:

- an easing in the extreme level and breadth of volatility across rates markets; and
- improvement in active risk appetite among global rates market participants, as the shock of high macro regime change fades and they adapt to the new world of higher inflation and lower QE.

Importantly, unlike credit or duration focused strategies, investors can manage through stressed markets in relative value with [lower performance volatility](#) for two key reasons:

- RV does not employ a buy and hold strategy that requires yields to fall or credit spreads to compress to generate alpha.
- RV strategies can make use of interest rate options - particularly [long volatility strategies](#) - to balance overall portfolio risk in extreme periods.

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