

ATTRIBUTION TO ACTIONABLE: FIXED INCOME PORTFOLIOS

Fixed Income attribution and analytics has been discussed in many forums owing to various pertinent challenges including attribution methodology, liquidity issues, availability of index data and achieving actionable outputs. In this paper, we will discuss the fixed income portfolio attribution analysis that can lead to actionable.

We would use the Successive Spread Methodology in the examples. SSM is quite useful in analyzing fixed income portfolios since it maps the portfolio performance to the logical fund management decisions.

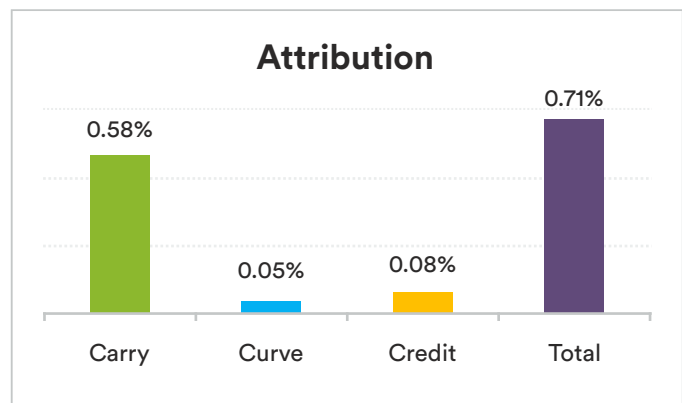
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SUCCESSIVE SPREAD METHODOLOGY (SSM)

Fixed income fund managers have their views on the treasury curve and rating spreads, and accordingly they position their portfolios with exposures to various curves. SSM involves re-pricing assets at all the curves they are exposed to, successively. This effectively segregates the return of the asset into the returns generated by movement of individual curves and hence logically maps to the fund management decisions. SSM is scalable and can be adopted for multiple currency exposures easily.

Example

The returns of the sample portfolio, over a period, are segregated into Carry, Curve and Credit effects using SSM. The Carry effect captures the roll-down and accrued interest component, the curve effect is due to the movement of treasury curve and the credit is due to the movement of respective spreads.



FLEXIBILITY IS THE KEY

A fixed income portfolio has many more dimensions as compared to an equity portfolio which have a defined hierarchy of Fund->Sector->Stocks (assuming a single currency portfolio). A portfolio manager might wish to slice the portfolio by rating class, maturity buckets, asset type, issuer, group, sector etc. individually or together in order to get a holistic performance overview. An on-the-fly analysis capability is required to further dissect the portfolio and deduce actionable.

Asset Class	Weight*	Carry	Curve	Credit	Total
Bonds	31.78%	0.20%	-0.05%	0.07%	0.22%
CD	25.40%	0.13%	0.02%	0.00%	0.15%
GSEC	12.58%	0.08%	0.09%	0.00%	0.17%
Benchmark Instr.	9.98%	0.05%	0.01%	-0.01%	0.04%

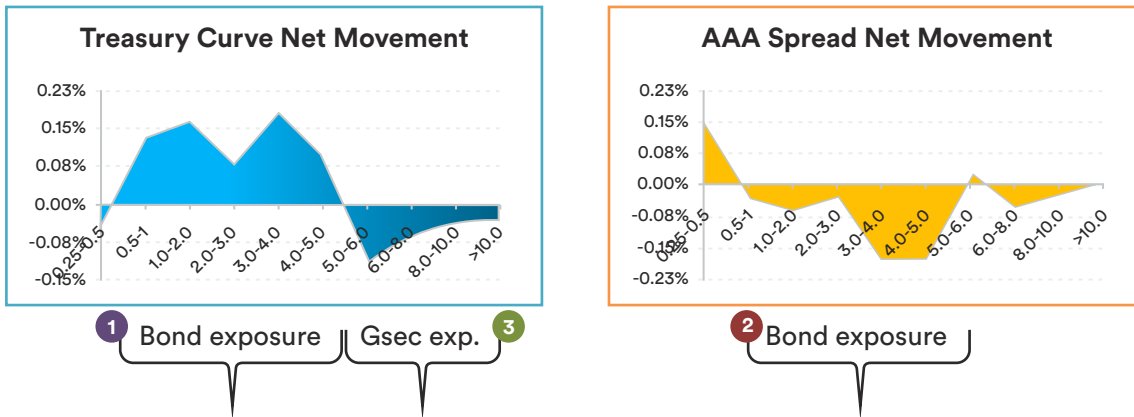
* partial portfolio

A first cut by asset class shows that most of the exposure and return are from Bonds, CD and GSECs.

The table above shows that Bonds, CDs and GSECs concentrate around 65% of the portfolio and a good chunk of return. Understandably, the bonds are exposed to both the Treasury and Spread curves while the GSECs are only exposed to the Treasury curve and hence the Credit effect is zero.

We further delve into the returns encircled and relate it to the market movements and understand the What, Where and Whys.

Dissecting the asset classes by maturity buckets and observing the curve movements in exposure zones answers many questions.



ATTRIBUTION: WHAT. WHY. WHERE.

① & ② : Corporate bonds are concentrated in the 0.5-5 years maturity where the treasury curve has moved up depicted in the negative Curve effect. On the contrary, the AAA spread went down in 0.5-5 years maturity and hence the positive Credit effect.

③ : GSecs are concentrated in the 5+ years maturity where the Treasury curve has moved down and hence the high positive Curve effect. GSecs are not exposed to spreads.

GETTING TO ACTIONABLE

Having understood the past performance we will extend the same framework to prune the portfolio from a futuristic viewpoint.

1. Define Scenarios

Define a target date and scenarios on all the curves to which the portfolio is exposed. Rather than visualizing a simple 50 bps parallel-shift, the detailed views should define the values of all key rates for each curve and hence presenting a plausible future scenario.

2. What. Why. Where.

Re-do the attribution as on scenario date, with scenario market data, assuming a buy-and-hold strategy. Attribution analysis would clearly show the impact of exposures at asset class and holding level. Portfolio can be accordingly pruned to minimize the impact of adverse curve movements.

3. Optimize

A closed loop optimization structure can be set-up with constraints at various hierarchical levels on duration, weights, target return, risk, attribution factors etc. With a precisely defined scenario and constraints as per mandates, a portfolio with the best risk-adjusted returns can be created.

With the above, a scalable SSM based fixed income attribution can be extended to a powerful portfolio management process that can encompass all kinds of risk and return constraints.

CHALLENGING THE CHALLENGES

Illiquidity in debt markets can lead to a market situation where the price from market and yield curves does not match. Emerging markets witness this frequently where all parts of the curve are not traded daily. An attribution factor for Pricing can be created to capture the difference. Alternatively, the yield differential can be attributed to illiquidity bps and an attribution factor viz. Liquidity can be introduced.

Fixed income indices with data at constituent level are not as readily available as the equity indices. It becomes all the more difficult to have an index appropriate to the portfolio. In such cases, the scenario and optimization methodology can be used to create an index every month/quarter (or at a desired frequency) against which an actively managed portfolio can be benchmarked. This reduces reliance on third party data providers and solves the purpose with an apt index for the portfolio.

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