**DTS Selection and Allocation Effects**

Duration Times Spread (DTS) effects allow you to evaluate the risk of DTS through weighting decisions at the sector/security level. DTS can generate a better estimate of excess return volatility than spread duration. This is based off of the assumption that spreads change on a relative basis instead of absolute basis-- larger spreads widen at a rate faster than that of tighter spreads. Evaluating DTS Allocation and DTS Selection is helpful when managing the risk of DTS through weighting decisions at the sector/security level.

DTS Allocation: -((Pwt \* PDTS) - (Bwt \* BDTS)) \* B%OASchng

DTS Selection: -(P%OASchng - B%OASchng) \* (Pwt \* PDTS)

**where:**

* Pwt = Portfolio Weight
* PDTS = Portfolio DTS Value
* Bwt = Benchmark Weight
* BDTS = Benchmark DTS Value
* B%OASchng = Benchmark Percent Change in OAS
* P%OASchng= Portfolio Percent Change in OAS

### Spread Return

The spread component explains the portion of total return that can be attributed to changes in option adjusted spread (OAS). The spread return is calculated by multiplying the bond's negative spread duration by the change in OAS.

-1 \* Spread Duration \* Change in OAS

**DTS & Spread Return**

A few things to note for the above calculations:

1. We floor the DTS input at 1, with the feedback that DTS is not a valuable metric at such near-zero levels. The Beginning DTS (not floored) column existed before this project, the Floored DTS Beta column was added with DTS Attribution because it is the input used for returns/attribution.

Another difference is that not all asset types use the DTS model.  For those that do not, such as structured products, “Floored DTS Beta” will actually use the absolute spread duration value.  Similarly % Change in OAS will just return an absolute Change in OAS for non-DTS Attribution asset types (full list below)

1. DTS Return (local) is just -1\*FlooredDTSBETA\*%ChangeinOAS.  You are correct it is not used for the effect calculations, only for what is removed from residual.
2. You are correct there is no DTS allocation for off-benchmark bets, those are all shown as selection decisions.  It’s important to remember that DTS allocation/selection is a decomposition of Spread Effect, so it’s important that the values foot.

Spread Return & DTS Return should always equal except for floored securities:

Spread Duration x ChangeOAS = (Spread Duration x OAS ) x (Change in OAS/OAS)

DTS Allocation + Selection is a way to decompose Spread Effect to understand DTS decisions.

Spread Effect of Off Benchmark Bets = (Pw x PSpreadRet) – (Bw\*BSpreadRet) or just (Pw x PSpreadRet)

Therefore for off benchmark bets DTS Allocation + DTS Selection = Pw x PSpreadRet or

–(Pw x PSpread Duration x P%ChangeOAS)

For Off benchmark Securities:

DTS Allocation = -((Pw x PDTS) – (Bw x BDTS)) x B%ChangeOAS which will be 0 making the equation 0

DTS Selection = -(P%ChangeOAS – B%ChangeOAS) x (Pw x PDTS) which resolves to

- P%ChangeOAS x Pwt x PDTS which is (Pw x PDTSReturn)

**DTS vs. Spread Return Asset Types:**

+[Cash] – N/A  
+Equity- N/A  
+Derivatives  
                +Forwards n/a

                +Futures n/a  
                +Options n/a  
                +Swaps

**-CDS -DTS**

                                -Equity Return for Floating Swap  n/a

                                -Equity Return for Fixed Swap – n/a

                                -Exchange Rate Swap – n/a

                                -Inflation Rate Swap – n/a

                                -Interest Rate Swap n/a

                                -TRS n/a

                                -Swaptions n/a

+Funds- N/A

+Fixed Income

**-Government Related –- DTS**

**+Corporate- DTS**

**-Municipal- DTS**

**+Securitized –Spread Return**

**-Soverign- Spread Return**

                -**Inflation Linked Bonds- Spread Return**

-Other

                -Commodity – N/A

                -Contract for Difference – N/A

                -Currency Spot – N/A