# Delta Bucket Projections for IMM FP

Inflation deltas are available for all buckets on the IM curve. For the purposes of IMM FP these need to be re-bucketed to specific key tenor points (2y, 5y, 10y, 20y, 30y and 50y).

IM Buckets that match the IMMFP pillars are allocated on a 1:1 basis.

For all points beyond 2Y that are not core pillar points, the risk will be bucketed into the two surrounding pillars (Zm and Zn where m<n). Subscript i is used to denote the date that needs re-bucketing. In this context, i, m and n can all be considered integers representing the year length of the point. For example, rebucketing of 7y risk to 5y and 10y pillars, i = 7, m = 5 and n = 10.

Chain rule is the basis for the re-allocation:

1

2

= the delta to bucket i, either from the backbook or directly input in Smart.

The curve construction interpolation chosen is log linear in CPI levels.

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This translates directly into par rate space in the case of the piecewise indices, and can be applied in the linear index cases with minimal error.

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Direct substitution of 4 into 3 (CPI0 all cancel out)

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Combining like terms gives

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Exponentiate

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Differentiate to obtain the two required formulae for 1 and 2

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These both simplify a little

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Bucketing from 1y to 2Y pillar follows a similar pattern but is complicated by the fact that there is no 0y rate, and the 1y point is interpolated from the last known level, which may not be CPI0.

Following is reasonable projection.

Define CPI0 as the CPI0 fixing for a piecewise trade.

Define CPIL as the **Last know CPI level**

Define L as the lag in **months** from CPI0 to CPIL (this may not be the trade lag).

This is more approximate in the linear cases, but still should be acceptable.

More generally, where it is required to move a delta to the initial IMMFP pillar, the following is required. **Note that here ALL times are in months (2y = 24)**

Corrected formula

Everything is in months

T = first IMMFP tenor = 24

*i* = the delta we want to move to 2y

L = the difference in months from the base index (C0 in standard quote) to the last published index. NOT the market lag

C0 is the market standard base for the instruments

CL is the last published index.