

Index Yield to Maturity (IRR)

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The index yield to maturity (YTM) can be calculated either by weighting the average yield of the constituents by value weights or by duration weights. The yield to maturity is equivalent to the internal rate of return (IRR) more commonly used in unlisted equity. It is a forward looking measure of *expected* returns amongst the index constituents. It can be computed as a simple weighted average of the constituents' yield to maturities or weighted by both value and duration.

Value-weighted

The value-weighted YTM of the index gives a fair indicator of overall interest rates prevailing in the market at any point of time. The calculation takes the weighted average of individual constituents' yield to maturity with the weight of each constituent's fair value.

$$\text{Index YTM}_t = \frac{\sum_{i=1}^n (V_{i,t} \times Y_{i,t})}{\sum_{i=1}^n V_{i,t}}$$

where:

$V_{i,t}$ denotes constituent i 's estimate of fair value at time t .

$Y_{i,t}$ denotes the [Yield-to-Maturity \(IRR\)](#) for the constituent i at time t

Duration-weighted

The duration-weighted YTM of the index gives a better approximation of the true yield of the index if the durations of the individual index constituents are very different from one another.

$$\text{Index YTM}_t = \frac{\sum_{i=1}^n (V_{i,t} \times Y_{i,t} \times MD_{i,t})}{\sum_{i=1}^n (V_{i,t} \times MD_{i,t})}$$

where:

$MD_{i,t}$ denotes the modified duration of the constituent i at time t .

$V_{i,t}$ denotes constituent i 's estimate of fair value at time t .

$Y_{i,t}$ denotes the yield to maturity for the constituent i at time t .