Corporate Bond - Methodology for computing fortnightly yield matrix

(Version January 2019)

1) **Construction of Yield Matrix**:
   For Yield Matrix construction the bonds are grouped into the following three major industry segments;
   - i)   PSU, FIs & Banks
   - ii)   NBFCs
   - iii)   Corporates

2) For each segment yields for the following ratings are polled / arrived at:
   Ratings: AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB and BBB-.

   - Where a security has two or more different ratings from different rating agencies, the lowest of the ratings shall be considered for valuation purposes.
   - A rating is considered as valid only if it is not more than 12 months old as on the date of valuation.

3) For each segment/rating the yields for the following maturities are polled / arrived at:
   Maturities: 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 15 years.

4) Yield matrix is constructed by using the polls received from FIMMDA's identified submitters on fortnightly basis.

5) **Procedure for obtaining polls**:
   a) Identification of submitters: The submitters are identified by FIMMDA based on their secondary market volume. It is ensured that different segments of the market are given due representation in the polling. At present there are 21 identified submitters consisting of PSU, Private and Foreign banks and Primary Dealers.

   b) Identification of representative issuers: On the last trading day of a month, FIMMDA will circulate the traded data of all bonds (excluding AT1 / Tax free) during the month (eg.31.07.2017 to 30.08.2017) to the identified submitters (Pollers) and ask them to identify a representative issuer in each segment and rating (AAA, AA+, AA and AA-). 'SO' rated bonds will not be selected as representative issuers. The list of identified issuers is discussed in the monthly valuation committee meeting and got approved with modifications, if any.
   Example:

Rating	Segments	Issuers
AAA	PSU/FI/Banks	NABARD and PGC
AAA	NBFCs	HDFC and LIC Housing Finance
AAA	Corporates	Reliance Industries

   c) One day prior to polling on each fortnight / month, FIMMDA will circulate the traded data of all bonds of the fortnight/month along with the names of the identified representative issuers which could, subject to the individual submitter's policy, be used as a reference issuer/bond for polling in that

segment and rating. If the representative issuer is not identified, then the submitters will continue to poll as per their expert judgment/internal policy.

d) Submissions from the identified submitters are web based (FIMMDA website) and the data are analyzed through Straight Through Processing (STP). Outliers in each segment/rating/tenor are removed using median and two standard deviation method. That is, any poll/s which is/are away from the median value by two standard deviation (2SD) is/are removed as outlier/s. After the removal of the outlier/s, the median is taken as the representative value.

e) Yield matrix is for 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 15 years. However, the submitters are required to poll only for the 1 yr., 3 yr., 5 yr. and 10 yr. tenors for NBFC & Corporate segments and 1 yr., 3 yr., 5 yr., 7 yr., 10 yr. and 15 yr. tenors for PSU/FI/ Banks segment. For 0.5 yr. tenor, the yields polled for 1 year tenor less 50 bps are used. For 15 yr. tenor in NBFC & Corporate segments the yield is arrived at by extrapolation method. For intermediate tenors, the yields are arrived at by linear interpolation.

f) Similarly, the submitters are required to poll only for AAA, AA+, AA, and AA- ratings. For ratings below AA-, a different methodology is used as explained elsewhere.

6) **Replacing the polled yields in the matrix by traded yields**:

Traded yields should be always given priority over polled yields.
   i.   All individual trades reported to the exchanges (NSE, BSE, MSE) are obtained from the Exchanges. Trades above Rs.5 Cr and trades in OTC market are only considered. Trades in odd lots and IST trades are ignored.
   ii. For all the traded ISINs, the volume weighted average yield and price (VWAY/VWAP) are calculated after identifying and removing the outlier trades, if any.
   iii. Outlier trades are those whose yields lie outside one standard deviation provided 1 standard deviation is 0.15 or more. If the standard deviation is less than 0.15 no outlier is removed.
   iv. The yields reported to the exchanges are cross checked by calculating yields afresh using the VWAP and cash flow details prepared for each ISIN.

The volume weighted average yields (VWAY) of bonds issued by representative issuers are considered.

A band of +/- 0.50 year around the data point in the matrix is used for considering traded securities. For eg. Trades in securities with residual maturity from 0.76 year to 1.50 year will be considered as 1.00 year segment, 1.51 years to 2.50 years as 2 year segment, etc.

While replacing the polled yields with the traded yields, the traded yields fulfilling certain filter criteria only should be considered and not the outlier trades because that will distort the yield matrix.

A. Filter criteria for recognizing traded yields:
   a) Bonds having call / put options, though issued by the representative issuer will not be considered for replacement.
   b) The traded yields will be considered if the difference between the traded yield and polled yield is less than or equal to 15 bps.
   c) If the difference between the traded yield and polled yield is 16 to 24 bps, the same will be considered provided number of trades in the particular ISIN is at least 3 and the volume Rs. 50 Crs.
B. Outlier traded yields: - A traded yield will be considered as outlier if the difference between the traded yield and the polled yield is 25 bps or more.
C. In order to facilitate identification of outlier trades as mentioned above, the yield matrix will be first constructed using polled yields and interpolated yields for in between tenors for which polls are not taken and then the polled / interpolated yields will be replaced by the traded yields after fulfilling above criteria.
D. while replacing polled yields with traded yields in 0.5 yr. tenor, trades of securities with less than 3 months residual tenor are to be ignored and for other securities the traded yields are to replace polled ones even if the difference is more than 25 bps (for 0.5 yr. tenor only).
E. Identification of outlier trades and ignoring them is only for matrix construction. For valuing the traded ISIN, the traded price will be used as per RBI guidelines.

7) **Fixed spreads for bonds rated below AA-:**
   The spreads for ratings up to AA- are determined by the traded levels / polls. The spreads for ratings below AA- are determined based on the traded levels of these bonds during the last three months (excluding AT1 bonds, Tax free bonds and SO rated bonds), in the Valuation Committee meeting. These spreads are kept fixed for 3 months. FIMMDA will announce the fixed spreads to be applied for the next 3 months or period as may be determined in the Valuation Committee Meeting.

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Corporate Bond - Methodology for computing daily yield matrix

(Version January 2019)

FIMMDA is publishing the Yield matrix once in a fortnight. For publishing the yield matrix for in between days (between two polling days), the following methodology has been approved by the core committee for valuation of corporate bonds and FIMMDA board:-

1) Market yield change in respect of short (1-3 yrs.) / medium (3-7yrs.) / long tenor (more than 7 yrs.) bonds issued by the selected issuers (based on frequency of trading and homogeneity of yields during the past 6 month period) in PSU and NBFC segments is calculated by comparing the average traded yield as of that day with that of immediately preceding polling day. The difference (+/-) is considered as hardening/ softening of yield as of today as compared to the immediately preceding day.

2) But, before calculating the average traded yield, outliers, if any, are statistically identified and removed. Outlier traded ISINs are those whose yields lie outside one standard deviation provided 1 standard deviation is 0.15 or more. If the standard deviation is less than 0.15 no outlier is removed.

3) Yield matrix (Segment wise / Rating wise / Tenor wise) is prepared as of the immediately preceding polling day, using the polled yields. For non-polled tenors, yields are arrived at by interpolation/extrapolation. This table is named Polled yield matrix.

4) Market yield change as calculated in Point No.5 is added to the respective values in Polled Yield Matrix, viz. difference in Short term bonds in PSU segment is added to 0.5, 1, 2 and 3 year categories in PSU segment, and so on. For want of eligible issuer in "Corporate" segment, the market yield change in NBFC segment is used for corporate segment also. We call this table Proxy yield matrix.

5) Values in Proxy yield matrix are replaced by actual traded yields of bonds issued by the representative issuers. Here, the representative issuers are those identified each month by the valuation committee. We call this table the Daily Yield Matrix.

6) From the values in Daily Yield matrix, the respective G-sec par yields (annualised) are deducted to arrive at Spread Matrix for the day. For ratings below AA- the spreads over AA- as fixed by the valuation committee are added. This is the final Daily Spread Matrix which is published (Segment wise / Rating wise / Tenor wise).

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