EODBABs Calculation Methodology

4th December 2017

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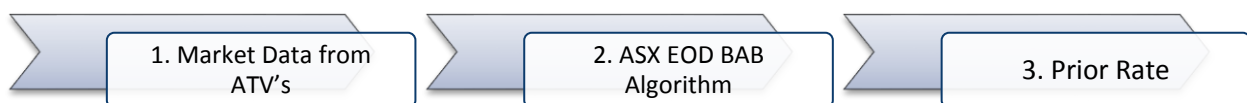
Executive Summary

Overview

End of Day Bank Accepted Bill rates are calculated using an NBBO (National Best Bid best Offer) and algorithmic waterfall approach. This approach uses bids and offers where available as the first component of the waterfall.

EODBAB Calculation Methodology

Overview of Calculation Waterfall

ASX will implement a waterfall approach to calculate EODBAB rates. The waterfall will consist of a three stage calculation process as follows:

| 1. Market Data from ATV's | 2. ASX EOD BAB Algorithm | 3. Prior Rate |

1. ASX will calculate EODBAB rates from bids and offers sourced from ATV screens at 4.30pm.
2. For tenors where no bids and offers are available, ASX will use an algorithm to calculate EODBAB rates for straight run maturities for all tenors.

3. In the event that no EODBAB Rate can be calculated by the algorithm, the prior day's rate will be published.

EODBAB rates will be published to 4 decimal places.

Calculation Waterfall

Component	Calculation Overview
Calculate EODBABs from On-screen prices	ASX will calculate EODBAB rates from Bids and Offers sourced from ATV screens at 4.30pm. **Calculation Steps:** 1. Market data will be collected from ATV's between 4.20 and 4.30pm. 2. Where sufficient data is present for a tenor, ASX will determine an EODBAB rate from the mid-point of the most competitive data collected. 3. Where only a one sided quote is present for a tenor, ASX will use this as the mid-point for that tenor. 4. Where an EODBAB rate can be formed from market information, this will be used as the official EODBAB rate for the Tenor.
Straight Run 1 to 6 Month EODBAB Algorithm	The ASX EODBAB algorithm calculates straight run EODBAB tenors 1-6 from the corresponding BBSW rates and the movement in the ASX 90 Day Bank Bill futures between 10am and 4:30pm. **Calculation Steps:** 1. Select the spot month 90 Day Bank Bill Futures contract. If the future's contract has less than five days before expiry select the second 90 Day Bank Bill Futures contract. 2. Calculate the 10:00 am price of the futures contract as the midpoint of the bid/offer spread at 10:00 am rounded up to the nearest tick. 3. Calculate the equivalent yields of the 10:00 am price and the current date's settlement price. Then calculate the shift in the yield curve through the following equation: $$CurveShift = Yield_{Settlement} - Yield_{10:00\ am}$$ 4. Calculate the straight run tenor rate using the following calculation: $$EOD\ BABs_{Tenor} = BBSW_{Tenor} + CurveShift$$
Straight run EODBAB rates for Tenors 9 and 12	A single straight run rate is published for the 9 and 12 month tenors. The respective rates are calculated by evaluating the fixed rate component of a quarterly swap priced at 4:30 pm. The floating rate values of the swap are estimated through linear interpolation between relevant points on an interest rate curve built from the 3M BBSW rate and the settlement prices of ASX's 90 Day Bank Bill Futures. **Calculation Steps:** 1. Identify quarterly payment dates based on a modified following date assumption.

2. Calculate the difference in days between the quarterly payment dates and the current date (P_n).

3. Identify the period between quarterly payments (T_n) based the differences in days between consecutive quarterly payment dates.

4. Calculate difference in days between the dates of points on the interest rate curve and the current date (D_n).

5. The first floating rate ($FloatingRate_1$) is specified as the 3M BBSW rate.

6. Additional floating rate values are calculated through the following equation.

$$FloatingRate_n = \frac{(CurveRate_n - CurveRate_{n-1}) * (P_n - D_{n-1})}{D_n - D_{n-1}} + CurveRate_{n-1}$$

*where CurveRate$_{n-1}$ is the yield of the first 90 Day Bank Bill Future with an expiry date less than the desired quarterly payment set date and CurveRate$_n$ is the yield of the first 90 Day Bank Bill Future with a and expiry date greater than or equal to the desired quarterly payment set date.

7. Calculate the relevant Tenor Rate through the following equation:

$$TenorRate = \frac{FloatingRate_1 * T_1 + FloatingRate_2 * T_2 + \cdots + FloatingRate_n * T_n}{T_1 + T_2 + \cdots + T_n}$$

*Note: For the 9m BABs Tenor there are three quarterly payment periods and for the 12M BABs Tenor there are four quarterly payment periods.

Document Control

Version History

This document has been revised according to the table below:

Version	Author	Comment	Date
V1.0	ASX Limited	-	18 May 2017
V2.0	ASX Limited	Details on Straight run dates added	19 June 2017
V3.0	ASX Limited	Details on decimal places and phase in of new methodology added	24 July 2017
V4.0	ASX Limited	Removal of early/late references, change to methodology	31 August 2017
V4.1	ASX Limited	Update summary page and format	17 July 2018

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