

LEARNING CURVE®

Tradeable Credit Fixings

Tradeable Credit Fixings are a widely supported reference and settlement rate for the credit derivatives market, akin to the British Bankers Association LIBOR fixing in the interest rate swap market. The Credit Fixings provide a robust foundation for the development of second generation credit derivatives products, including constant-maturity credit-default swaps and range accruals. This Learning Curve describes the Credit Fixings methodology, which has been designed with tradability as the critical component.

Fixings levels are calculated in Europe on Fridays at 11am GMT and on quarterly roll dates at 4pm GMT. The Fixings observe a modified following business day convention in the event that a fixing falls on a bank holiday. The following credits started being fixed from last week: iTraxx Europe, HiVol and Crossover five year Series 3. There are currently 19 official dealer contributors to the Credit Fixings.

The Credit Fixings process begins a few minutes prior to the calculation time. The contributions of each individual dealer are not disclosed. Dealers are not obligated to contribute prices to any credit being fixed, however, if a dealer chooses to contribute prices, the contribution must be a two-way market (both a bid and an offer) and the contribution must be tradeable, meaning it may result in an automatic trade if the bid crosses another dealer's offer or vice versa. No restriction is placed on the bid/offer spread except that choice markets and inverted markets are not allowed. Contributions are for a standard size contract: EUR25 million for iTraxx Europe and HiVol and EUR10 million for iTraxx Crossover.

At the close of the contribution period, the following methodology is used to calculate a mid fixing, bid fixing and offer fixing for each credit being fixed.

Mid Fixing Calculation

For the purpose of outlining the methodology, consider the specific case of the March 21 5yr iTraxx Series 3 Crossover fixing. In this instance, 10 dealers submitted the following two way markets, consisting of bids B_i and offers A_i , where $i = 1$ to 10 and corresponds to the identity of the contributing dealer:

$$\begin{aligned} B_1 &= 242, & A_1 &= 250 \\ B_2 &= 245, & A_2 &= 265 \\ B_3 &= 240, & A_3 &= 260 \\ B_4 &= 242, & A_4 &= 247 \end{aligned}$$

$$\begin{aligned} B_5 &= 245, & A_5 &= 255 \\ B_6 &= 247, & A_6 &= 253 \\ B_7 &= 244, & A_7 &= 254 \\ B_8 &= 243, & A_8 &= 253 \\ B_9 &= 247, & A_9 &= 252 \\ B_{10} &= 245, & A_{10} &= 250 \end{aligned}$$

To start, bids and offers are sorted independently, with the bids sorted in descending order and the offers sorted in ascending order. The best bid is then paired with the best offer, the second-best bid paired with the second-best offer and so on to create 10 sorted markets. For the present example this results in:

$$\begin{aligned} B_6^1 &= 247, & A_4^1 &= 247 \\ B_9^2 &= 247, & A_1^2 &= 250 \\ B_2^3 &= 245, & A_{10}^3 &= 250 \\ B_5^4 &= 245, & A_9^4 &= 252 \\ B_{10}^5 &= 245, & A_6^5 &= 253 \\ B_7^6 &= 244, & A_8^6 &= 253 \\ B_8^7 &= 243, & A_7^7 &= 254 \\ B_1^8 &= 242, & A_5^8 &= 255 \\ B_4^9 &= 242, & A_3^9 &= 260 \\ B_3^{10} &= 240, & A_2^{10} &= 265 \end{aligned}$$

where B_i^j is the j th best bid put in by dealer i and A_i^j is the j th best offer put in by dealer i .

The second step is to eliminate all prices that are tradeable (i.e., the bid is equal to or greater than the corresponding offer). In this case the first market is eliminated because the bid equals the offer.

The best half of the remaining nine markets is then averaged to give the fixing, which is expressed in basis points and rounded to two decimal places. In this case the fixing is 248.40. Because there are an odd number of markets remaining, the convention is to round up the number of markets included in the calculation, in this case to five.

Bid & Offer Fixing Methodology

In order to have a fair representation of the liquidity of the market, the methodology also calculates a bid fixing and offer fixing. The procedure begins by calculating the spreads between the bids and offers of the contributed markets:

$$S_1 = A_1 - B_1$$

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$$S_2 = A_2 - B_2$$

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$$S_{10} = A_{10} - B_{10}$$

In this case, the spreads are:

- $S_1 = 8$
- $S_2 = 20$
- $S_3 = 20$
- $S_4 = 5$
- $S_5 = 10$
- $S_6 = 6$
- $S_7 = 10$
- $S_8 = 10$
- $S_9 = 5$
- $S_{10} = 5$

These are then sorted in ascending order and the narrowest half of the spreads used (in this case, the top four) to calculate an average spread:

$$\text{AveSpread} = (S_4 + S_9 + S_{10} + S_6 + S_1) / 5 = 5.8$$

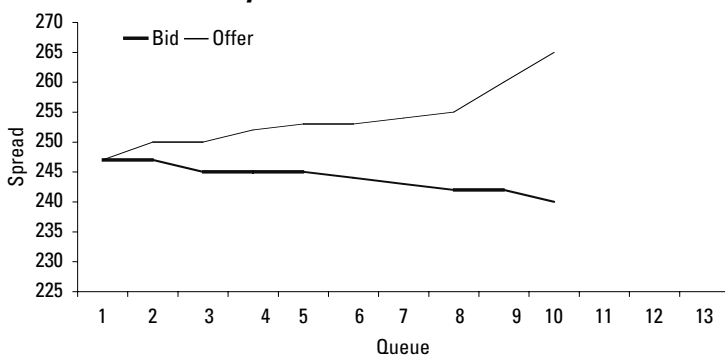
Then half of this spread is subtracted from (in the case of the Bid Fixing) or added to (in the case of the Offer Fixing) the Mid Fixing. Specifically:

$$\text{BidFixing} = \text{MidFixing} - \text{AveSpread} / 2 = 245.50$$

$$\text{OfferFixing} = \text{MidFixing} + \text{AveSpread} / 2 = 251.30$$

It should be noted that the average spread is rounded to two decimal places prior to completing these calculations. Also, in the event that there are an odd number of markets contributed, the number of markets is rounded up when taking the top half.

5yr iTraxx Crossover Series 3



Trades Resulting From The Fixing

In the case under consideration, there will be one trade that results from the establishment of the fixing. Specifically, Dealer6 pays 247 to buy the instrument from Dealer4.

If there are multiple tradeable markets, an additional nuance is introduced. Consider the hypothetical example for which the best three markets are tradeable and are:

- $B_8^1 = 233, \quad A_6^1 = 229$
- $B_1^2 = 232, \quad A_3^2 = 230$
- $B_5^3 = 231, \quad A_7^3 = 231$

Rather than being matched as the markets sit, the offers are inverted with respect to the bids, so the 233 bid trades with the 231 offer. The trade is completed at the midpoint (in this case 232). In summary, Dealer 8 buys from Dealer 7 at 232, Dealer 1 buys from Dealer 3 at 231 and Dealer 5 buys from Dealer 6 at 230.

The inversion is done to ensure that aggressive prices that trade will do so at levels closer to the contributed price, rather than giving those dealers the benefit of other aggressive countervailing prices. In this way, the penalty for trying to skew the market with an overly aggressive price is maximized.

The Tradeable Credit Fixings methodology was developed by **Creditex**, **Markit**, and a panel of dealers including **ABN AMRO**, **BNP Paribas**, **Citigroup**, **Deutsche Bank**, **Goldman Sachs**, **JPMorgan** and **Morgan Stanley**. The methodology has been tested in a live trading environment over the course of six months during which refinements were made based on results and trader feedback.

This week's Learning Curve was written by Scott Hassal at Creditex. For questions regarding the methodology, please contact Mazy Dar, head of electronic platforms at Creditex, or Tom McNerney, head of analytics at Markit.

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