

## FX Futures Daily and Final Settlement Procedures

### 1. Daily Settlement Price Procedures:

#### Normal daily settlements up until “rollover date:”

- **Tier 1:** For the actively-traded, nearby futures contract month, volume-weighted average price (VWAP) which utilizes CME Globex® “sales,” that is, “traded volumes at price” information, is calculated over a 30-second interval (1:59:30 to 1:59:59), which ends at 2:00 p.m. Central Time. Tier 1 applies if 3 or more “sales” occur in the 30-second interval. This VWAP is used as the settlement price for the nearby futures contract month.
- **Tier 2:** If less than 3 sales (either zero, one or two sales) occur in the 30-second closing range, then no VWAP is used to determine settlement prices (as described under “Tier 1”). In such case, the nearby contract month settlement price is determined by the average (midpoint) of the CME Globex bid and ask prices over the 30-second closing range (“Tier 2”).
- **Tier 3:** If no CME Globex bid and offer midpoint is available, then CME Group Operations staff uses quote vendor spot rates and forward points to IMM dates to determine the nearby contract synthetic daily settlements.
- For all deferred contract months, CME Group Operations staff settles these contract months based on traded/quoted spread relationships, if available. If these traded/quoted spread relationships are unavailable, then deferred contract months are settled on spot market information taking into account the forward rate.
- For the less liquid foreign exchange futures contracts (minor FX futures contracts), daily settlement prices are based upon spot market or other relevant information taking into account the forward rate.

#### Normal daily settlements from “rollover date” up to Termination of Trading Day (usually a five-day interval):

- Tiers 1 through 3 as described above apply, except that instead of using the now less-liquid nearby contract month as the reference for prices, the more liquid first deferred contract month (next contract month in expiration cycle from the nearby) is used in either the VWAP Tier 1 or bid and ask Tier 2 calculation. Then forward points to the nearby contract month IMM date are applied to determine the nearby daily settlement prices.
- For all other deferred contract months, CME Group Operations staff settles these contract months based on traded/quoted spread relationships, if available. If these traded/quoted spread relationships are unavailable, then deferred contract months are settled on spot market information taking into account the forward rate.

### 2. Last Day of Trading Settlement Price Procedures (Termination of Trading Day)

The settlement price on the last day of trading of the expiring contract is determined at 9:16 a.m. Central Time. An expiring contract settlement price is derived from the more actively traded, next deferred contract month by applying the “appropriate spread differential” between the first and the second expiring contracts to the VWAP of sales in the next deferred contract month during the closing range (defined as between 9:15:30 to 9:15:59 a.m. CT).

To determine the “appropriate spread differential” at termination of trading for the nearby FX futures contract month, CME Group Operations staff looks first at the CME Globex prices (sales or bids and offers) for both contract months during the time period before the 9:16 AM Central Time expiration (for example, between 8:30 AM and 9:15 AM CT) and calculates the typical spread differential between the two contract months as the “appropriate spread differential.” If there are no CME Globex prices available, then for the major seven currency pairs, CME uses the differential from the previous day’s settlement prices for the two contract months to determine an appropriate spread differential.

### **FX Options Daily Settlement Procedures**

Implied volatility skews are constructed for listed expirations based on midpoints of bid/ask spreads of the ATM and OTM strikes observed on Globex in the American style options between 13:30:00 and 14:00:00 CT (adjustments may be made to incorporate relevant “floor” data). CMEG exchange staff identifies the most liquid and actively quoted strikes to derive the implied volatility skew. The implied volatility skew is adjusted to the underlying settlement price to generate the OTM and ATM settlement prices calculated by the appropriate option pricing model, and the ITM options are settled automatically using the method described below. For longer dated options and/or options not actively quoted on Globex, market participants are polled to provide data. Other available sources of market information may also be considered. Settlement prices for European style options are copied from the corresponding American style options and adjusted to reflect their exercise characteristics.

### **In-the-Money Options Put-Call Parity Equation**

In-the-money options are settled automatically by the Exchange in accordance with the put-call parity equation, taking into account the appropriate cost of carry.

**In-the-money options settlement = (Out-of-the-money settlement + Intrinsic Value) – Cost of Carry**

**Cost of carry =  $\frac{\text{Intrinsic Value} \times \text{Interest Rate} \times \text{Days to Expiration}}{360}$  – Risk of Early Exercise**

The cost of carry is rounded to the nearest minimum increment of the underlying futures contract.

The interest rate used is the average of the Broker Loan Rate and the Fed Fund Target Rate.