

FX Spot+: Aide Memoire for API Users

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1. How to achieve better Fill Ratios

Despite the .1 pip price increment, price moves in Spot+ will most commonly be .5 pip or greater, driven by movements in the associated FX future which has .5 pip increment for most pairs. In the case of GBP this is 1 full pip, and for JPY and CAD the inversion of the futures price also results in a roughly 1 pip price increment. As such slippage should be set in .5 or 1 pip increments in order to be effective (depending on the pair).


Further, since FX futures are quoted in USD terms, all USD-base FX Spot+ currencies will see implied quantities for these pairs in non-rounded/“odd-lot” values as a result of the “de-inversion” the matching engine performs. Contrast the market data for GBPUSD and USDCAD below and note that all GBP quantities end in a zero and all CAD quantities aside from the native orders end in something other than a zero.


PRODUCT	TERM (SYMBOL)	MD	LAST PRICE/QUANTITY	IMP BID QTY	BID QTY	BID	ASK	ASK QTY	IMP ASK QTY
ANGE									
FXSPOT.GBP/USD	31 Dec50 (GBPUSDZ5031)		1.35183 / 500,000	1,500,000	2,000,000	1.35305	1.35325	7,687,500	7,187,500
				9,937,500	10,937,500	1.35304	1.35326	1,000,000	
					1,000,000	1.35303	1.35327	937,500	937,500
				1,562,500	1,562,500	1.35295	1.35335	9,375,000	9,375,000
FXSPOT.USD/CAD	31 Dec50 (USDCADZ5031)		1.36996 / 500,000	3,870,507	3,870,507	1.36933	1.36946	2,044,602	2,044,602
					1,000,000	1.36929	1.36947	219,063	219,063
				438,193	438,193	1.36926	1.36955	7,812,786	7,812,786
				7,960,621	7,960,621	1.36924			




For traders utilizing the Fill-and-Kill (“FAK”) order type, **it is recommended to not specify a minimum quantity on the order (tag 110 - MinQty) or to specify a value less than the order size, even when there is more quantity available on the book.** The reason for this is that each futures contract which is “de-inverted” will result in a non-rounded quantity placed on the FX Spot+ order book, and if a round order which does not allow for partial fills is sent on that odd-lot quantity, that order will be eliminated with high likelihood.


For example, if CAD futures and FX Link combine to form a USDCAD price of 1.36933 and there are 53 CAD futures contracts on the order book, this will result in a quantity of 3,870,507 USDCAD in FX Spot+.


- Sending an FAK order for 1mn USDCAD with minimum quantity of 1mn will cause the order to be eliminated by engine because there is no contract amount which implies precisely 1mn as each contract implies out 73,029 USDCAD.
- Therefore, sending the FAK with the minimum quantity either not set or set to a low value than the order size will allow for fills: an FAK order for 1mn USDCAD with no minimum would match for the value as close to 1mn without going over, which in this case would be 949,369.40 in GrossTradeAmt (tag 381), 949,370 in LastQty (tag 32), or 13 futures contract equivalent.

 CAD futures and FX Link combine to form a USD/CAD price of 1.36933, and the 53 CAD futures on the order book enable an available quantity of 3,870,507 USD/CAD in Spot+

 FAK order sent for 1mn USD/CAD with minimum quantity set at 1mn

 Order eliminated / misses because there is no contract amount which implies precisely 1mn notional as each contract implies out 73,029 of USD/CAD.  This value will fluctuate with the exchange rate. 

 If native order present, the 1mn would fill, but to interact with implied liquidity successfully, participants should have a zero minimum order quantity or at least a minimum quantity well below the order size

 A FAK order for 1mn USD/CAD with no minimum quantity would match for the value as close to 1mn without going over, which in this case would be 949,370 (underpinned by 13 contracts from the futures order book)

Note that FAK orders do not require a minimum quantity to be specified. Further, there are optional futures order types which are available to all FX Spot+ users. Of particular note is the [Market with Protection](#) order type. This is an optional order type which allows for immediate execution up to a pre-defined protection price whereby the engine matches the order at the best-available price level without exceeding the protection price limit. Whatever is left unfilled will rest as a limit order at the protection price. As this is an optional futures order type available for FXS+ customers utilizing EBS networks, it would require certification for those utilizing EBS Convenience Gateways.

2. Passive trading - make the spread in a CLOB

Every participant can place resting orders in Spot+, and every resting order can be aggressed upon either “natively” by other Spot+ participants or by any of the 95,000+ traders in the FX futures ecosystem via implied matching. **Approximately 20% of the volume in FX Spot+ has come from orders resting in the FX Spot+ CLOB being aggressed upon via implication by aggressing orders in the futures market.** Native orders always have queue priority over implied orders at the same price level (no time priority for implied orders).

The screenshot below shows 23 of the 138 total contracts on the bid side of GBP futures as implied; i.e.: from resting GBPUSD FX Spot+ bids. **When these implied futures quantities are aggressed upon by other futures traders, the FX Spot+ order will be passively filled; the settlement mechanics are completely the same as any other FX Spot+ trade¹.**

¹ We are offering an incentive program which pays participants a per-million credit against their total EBS brokerage for passive executions, without any two-sided making obligations required. Please inquire if interested.

CC	Net Change %	Product	Description	Status	+	Imp	Qty	Bid	Ofr	Qty	Imp
G5 Futures											
6B	-0.36%	GBP/USD Future	Jun25	Open	+ -	23	138	1.3532	1.3534	168	3
						26	186	1.3531	1.3535	214	53

3. Execution report and STP tag considerations - ensuring uniqueness

Multiple fills with the same time stamp, same rate, and same OrderEventExecID (tag 1797 on the execution report) are possible. Utilize the ExecID (tag 17) in combination with tag 1797 to ensure all fills are captured and booked as tag 17 provides a unique identifier for every individual fill.

- Tag 1797 on the execution report corresponds to *TradeID* (tag 1003) in STP. Tag 17 on the execution report corresponds to ExecID (tag 17) in STP.
- To distinguish between EBS and FX Spot+ trades in STP, SecurityExchange (tag 207) is populated with 'FXS' for FX Spot+ trades and 'EBS' for EBS trades.

4. Order, Fill, and Settlement Reconciliation

In all cases, GrossTradeAmt (tag 381) should always be used for settlement reconciliation purposes. To reconcile filled quantity against open orders, use LastQty (tag 32). This is the quantity value utilized by the engine for matching and will ensure there is no mismatch when tracked against order quantity.

- GrossTradeAmt is an unrounded field and has two decimal points and is the value sent to prime brokers and the FX Spot+ CCP.
- Using LastQty (tag 32) will result in differences for the “inverted” pairs due to rounding which occurs during the matching process.
- To see the terms currency fill amount, one should use CalculatedCcyLastQty (tag 1056) in the execution report. [Example here.](#)

5. Small Partial Fills on “Inverted” Currency Pairs - Inverted Currency Corner Case 1

Small fills in the “inverted” currency pairs are possible. In certain cases, CME Globex will aggregate quantities in the FX Spot+ order book across multiple price levels in order to fill an incoming aggressive FX futures or FX Link order on implied liquidity. This process exists to fill as much quantity as possible at the best available prices before having the quantity rest or be automatically cancelled. This will occur when native orders spanning multiple price levels can be combined to represent an implied order at a single price level. In these cases, CME Globex will use the full amount of spot quantity from the first price level, then match the residual quantity needed using spot quantity in subsequent price levels. This residual quantity may result in small (sub-100k) fills.

For a detailed example, please see the Appendix.

6. Order, Fill, and Settlement Reconciliation - Inverted Currency Corner Case 2

In cases where an FX Spot+ order interacts with a combination of implied and native orders in the same match event, the engine will match on the rounded LastQty (tag 32), causing the summation of the GrossTradeAmt (tag 381) to be under-filled relative to the order. If using tag 32 to track fills against orders, this will reconcile. An example:

Assume the following resting bid side order book in USDJPY FX Spot+:

Order	Quantity	Price
Implied Bid	1,997,541	143.927
Native Bid	2,000,000	143.923

Since the implied bid is at a better price, it receives priority over the native order. When an aggressor sell order comes for 2,000,000 @ 143.923, it trades with

- resting implied for 1,997,541 @ 143.927, leaving LeavesQty (tag 151) with 2,459 remaining on the order, which is used for the next fill
- remaining with resting real order for 2,459 @ 143.923

The result is that summing tag 32 results in 2,000,000 filled and summing 381, which is what goes to settlement, results in 1,999,999.42. Below is a summary of traded quantity, remaining quantity, and settlement quantity:

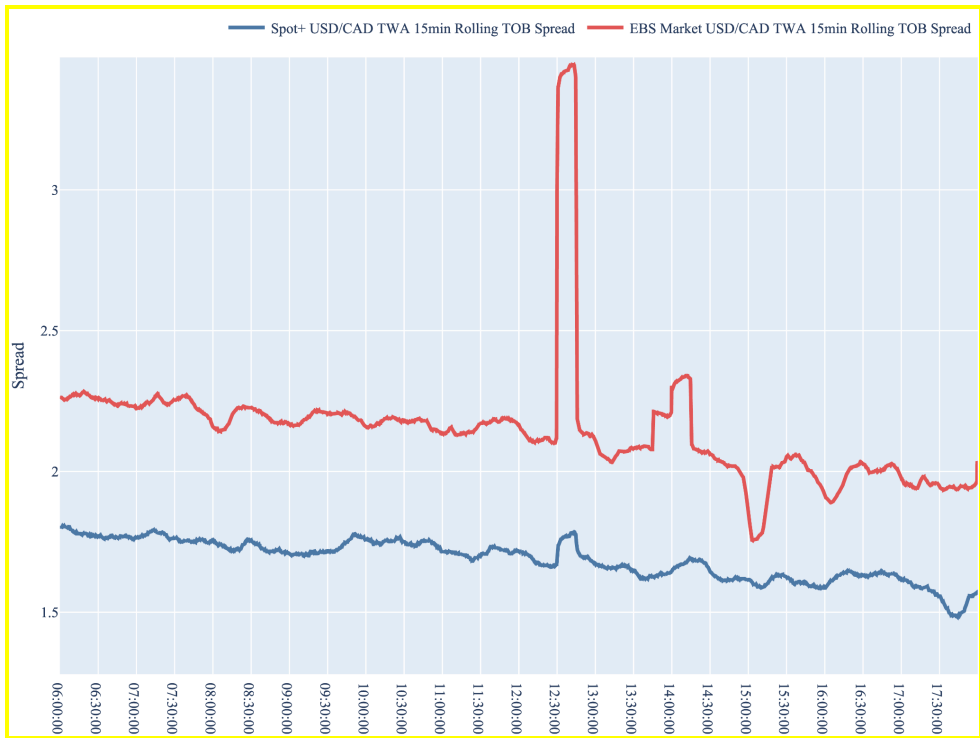
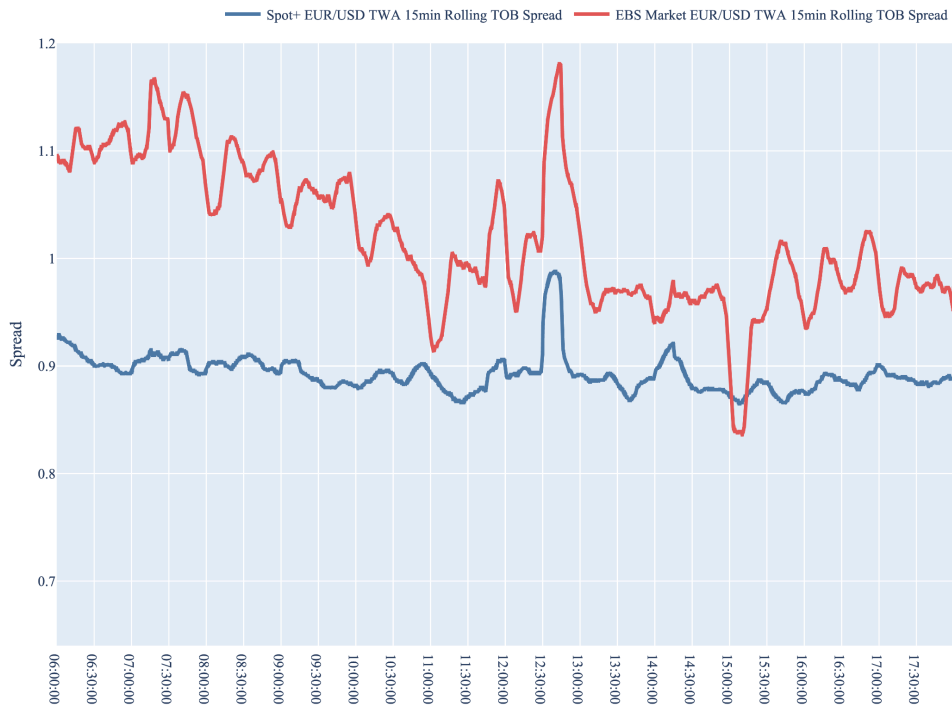
	Fill qty (Tag 32)	Fill price(Tag 31)	Remaining qty (Tag 151)	Gross trade (Tag 381)	CcyLastQty (Tag 1056)
Fill with resting implied	1,997,541	143.927	2,459	1,997,540.42	287,500,000
Fill with real order	2,459	143.923	0	2,459	353,906.66

7. Value of Spot+ and EBS Market together

The liquidity on Spot+ is fundamentally different and complementary to that on EBS Market. The futures market is very liquid and heavily traded across all pairs - having firm, CLOB liquidity especially in GBPUSD, AUDUSD, USDCAD, NZDUSD, USDMXN makes it highly additive to EBS Market.

For the core EBS Market currency pairs (EUR, JPY and CHF), the Spot + pricing is also complementary - offering a potentially better price depending on the time of day and size you wish to transact.

- Blue line = Spot+ TOB spread. Red line = EBSM TOB spread.
- First Chart is looking at EUR/USD and the second is USD/CAD
- Both charts use time weighted average TOB spreads between 1st May - 23rd May



Appendix

Inverted Currency Corner Case 1 Detail

Assume the following resting order books in USDJPY FX Spot+ and USDJPY FX Link:

FXS+ Order	Quantity	Price
Native Ask 1	500,000	146.625
Native Ask 2	500,000	146.626

FX Link Order	Quantity	Price
Native Ask 1	50	-11.1

The FX Spot+ and FX Link orders combine to imply a single FX futures implied price level, spanning two FX Spot+ price levels².

FX Futures	Quantity	Price
Implied Bid	10	.0068250

When an aggressing futures sell order for 6 lots comes in, it will match with the full amount of Native Ask 1 and part of Native Ask 2 as follows

- Futures aggressor fill: 5 @ .0068250
- FX Spot+ Native Ask 1 Fill Quantity: 426,258 @ 146.625; Gross Trade Amt 426,257.46
 - Calculated as $5 * 12,500,000 / 146.625$; Fill/LastQty is rounded up
 - This leaves, $500,000 - 426,258 = 73,742$ remaining for Native Ask 1
 - The engine also tracking Gross Trade Amt: $500,000 - 426,257.46 = 73,742.54$

Still 1 remaining futures lot to fill but not enough remaining on Native Ask 1 to satisfy, but enough when combining the remaining of Native Ask 1 and a portion of Native Ask 2.

- Futures aggressor fill: 1 @ .0068250
- FX Spot+ Native Ask 1 Fill Quantity: 73,742 @ 146.625; Gross Trade Amt 73,742.54.
- FX Spot+ Native Ask 2 Fill Quantity: 11,510 @ 146.626; Gross Trade Amt 11,508.87.
 - Solved by taking $(73,742 * 146.625) + (x * 146.626) = 12,500,000$ and rounding up.
 - GrossTradeAmt is solved after CalculatedCcyLastQty, which must equate 12,500,000 JPY to satisfy the whole futures contract amount. See table.

² Notice that $1/(146.625 + -0.111)$ and $1/(146.626 + -0.111)$, when rounded down to the nearest futures tick of 0.0000005, both result in an implied order resting on the same price level. Quantity is determined by dividing the product of the FXS+ price and quantity by the futures contract size and rounding down to the nearest whole contract. In this case, the two native FXS+ orders round down from ~5.9 to 5 contracts.

FX Spot+	Fill Qty (tag32)	Fill Price (tag31)	Gross Trade (tag 381)	CalculatedCcy (tag 1056)
<i>Implied Fill 1</i>				
Native Ask 1 Fill	426,258	146.625	426,257.46	62,500,000
<i>Implied Fill 2</i>				
Native Ask 1 Fill	73,742	146.625	73,742.54 (500k - 426,257.46)	10,812,499.93 (Gross Trade * Fill Price)
Native Ask 2 Fill	11,510	146.626	11,508.87 (CalculatedCcy / Fill Price → 1,687,500.07 / 146.26, rounded to 2 decimals)	1,687,500.07 (12,500,000 - prior CalculatedCcy, rounded to 2 decimals)