# Cboe FX Credit Workflow

Cboe FX

## Credit Overview

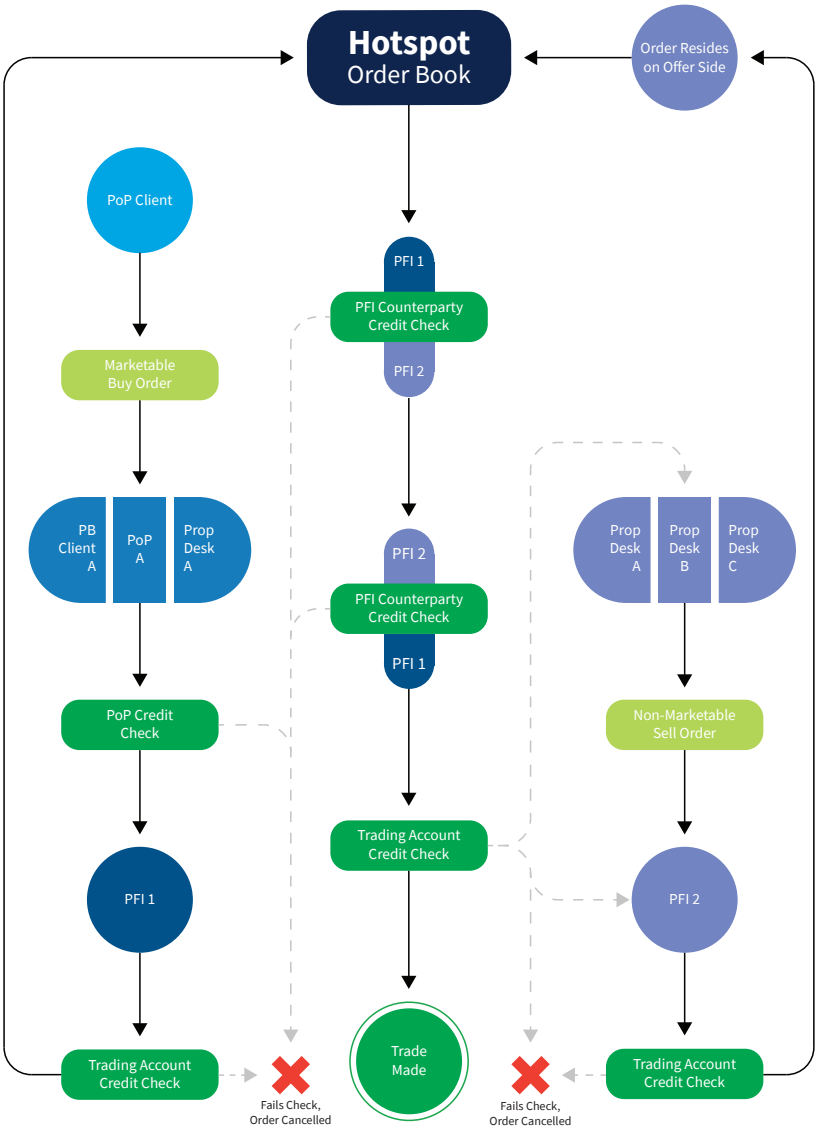
Cboe FX provides a multilateral credit system that enables Participating Financial Institutions (PFIs), our network of leading FX dealers and clearing banks, to dynamically manage credit allocations for trading activity, and monitor exposure to clearing counterparties. All PFIs can create tiered account structures to support any combination of proprietary trading activity or client trading activity via prime brokerage (PB) and prime of prime brokerage (PoP, i.e. reseller of credit) businesses.

Every order submitted to Cboe FX is subject to a minimum of two pre-trade credit checks: (1) PFI-to-trading account (proprietary or that of a PB client), and (2) a PFI-to-PFI (i.e. between clearing counterparties). The first check is internal to the PFI, ensuring no individual trading account, whether proprietary or that of a PB client, exceeds the credit limit assigned by the PFI. The second check certifies that an executed trade would not result in either PFI exceeding its predetermined credit limit with its PFI (clearing) counterparty. This check is performed instantly for marketable (aggressive) orders. Non-marketable orders will sit on the order book and undergo a check before being matched with another order. If two trading accounts clear through the same clearing counterparty (e.g. a bank's prop desk versus a PB client), then the PFI-to-PFI check is not performed. In a prime of prime scenario, an additional credit check takes place prior to the two above, ensuring that the end user (PoP trading client) does not breach the credit limit defined by its PoP broker. If a credit limit is breached during any of the pre-trade credit checks, the order will be rejected by the Cboe FX system.

The allocation of credit limits for each trading account and PFI counterparty is currently managed by bank/prime staff via the Cboe FX PB Admin credit portal. Cboe FX automatically monitors credit utilization in real-time, and sends email alerts to its customers as utilization crosses 75%, 90%, and 95% on any credit line. A PFI may then opt to increase a credit line or cease trading activity. If a line reaches 90% and has not been addressed, the Cboe FX liquidity desk will contact the PFI directly to ask for instructions. If instructed by the PFI, the Cboe FX liquidity desk can increase the credit line on its behalf.

Figure 1 details the workflow of a PoP trading client's marketable buy order matching with a prop desk's non-marketable sell order to produce a trade. The various credit checks throughout the orders' lifecycles are noted, and the orders can only continue on if the checks are passed.

Figure 1 Credit Workflow of a Sample Trade



## Multiple Marketplaces (London & New York)

In early September 2015, Cboe FX opened trading on its London matching engine. Cboe FX's London marketplace represents a distinct liquidity pool and operates independently of its NY market. There is no routing of liquidity between London and NY, and all trading participants in the London marketplace are issued new trading account IDs.

As noted above, the maintenance of a PFI's total credit limit for each PFI counterparty is currently administered by bank/prime brokerage staff via the Cboe FX PB Admin credit portal. PFIs will continue to manage one limit applied across both the London and New York matching engines for each of their clearing counterparties. The allocation of this credit limit between the two venues is determined by trading volumes in each location and is monitored by the Cboe FX liquidity desk. Bank / prime brokerage staff have visibility within PB Admin into how the split is allocated.

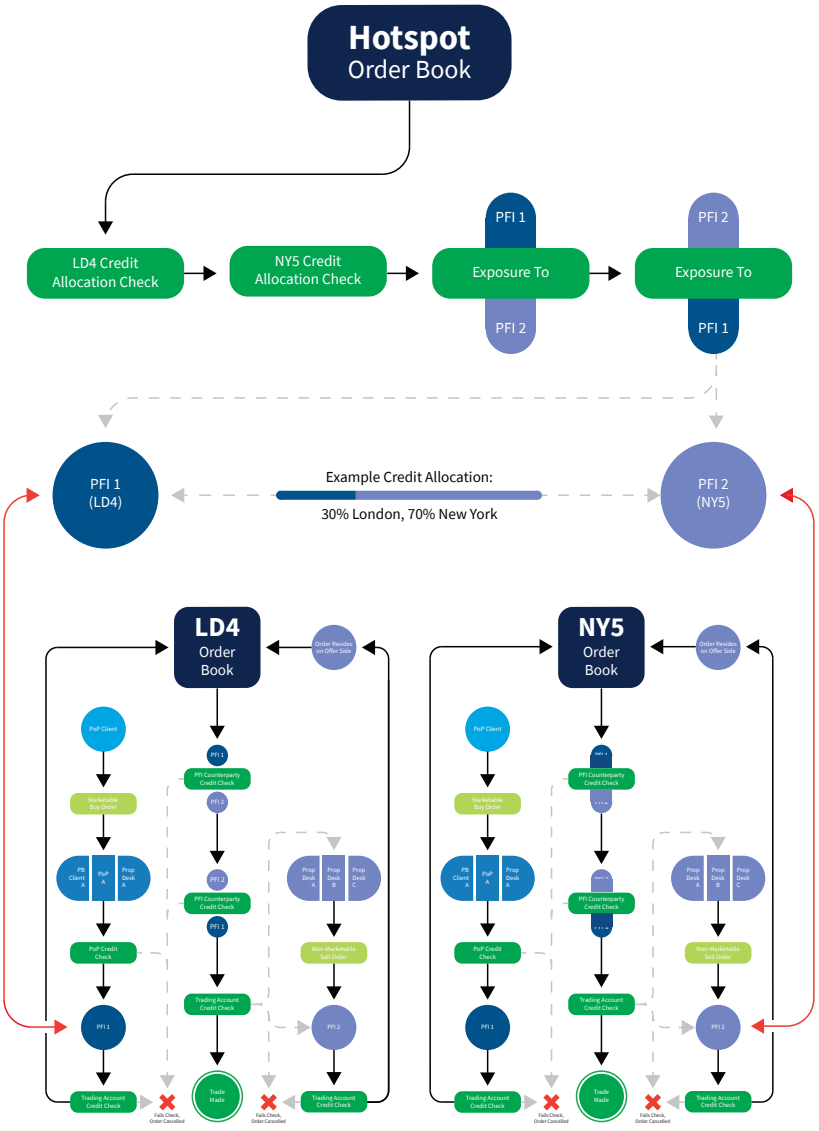
For any PFI that trades on both the New York and London platforms, Cboe FX will manage the existing credit lines between the New York and London venues by assigning a portion of credit to each location (e.g. New York: 70%, London: 30%). Intraday, Cboe FX automatically rebalances the credit lines between London and New York as necessary, subject to availability.

A credit reallocation from 70/30 to 60/40 first requires a check of open exposure at the remote market (New York in this example). To ensure that credit limits are not breached, rebalancing is done by first debiting credit from the remote market, before crediting the local market. While the values that trigger a rebalance event can be changed, initially a rebalance check occurs every minute and a rebalance event occurs if exposure exceeds 90% of its limit. At end of day (5pm ET for both New York and London), values reset to their start of day values.

The allocation values and rebalance thresholds above are configurable by Cboe FX, and are set to the most appropriate values based on observations of trading patterns.

A sample workflow is provided in Figure 2. For reference, detail of the NY5 and LD4 locations is the same as Figure 1 above.

Figure 2 Credit Workflow between London and New York



## CLS and Non-CLS Pairs

PFIs can elect to include/exclude different currency pairs/products from the credit lines they extend to clearing counterparties in any combination of the following groups:

- CLS pairs (http://www.cls-¬group.com/ABOUT/Pages/Currencies.aspx)
- Non-CLS pairs
- Metals (Gold, Silver, Platinum and Palladium)
- Forwards

Each PFI can maintain only one limit against each counterparty PFI, and can choose among the currency/product groups above. It is not currently possible to manage four discrete limits for each currency pair/product categories in parallel.

Note that there is no change to the credit structure/management process for Forwards trades.

## Exposure Calculation

Cboe FX calculates currency exposure trading by breaking down positions in different pairs into individual currencies to arrive at the net position per currency. Cboe FX then uses the sum of the USD equivalent of all short positions, including the USD position if it is short, to determine exposure. Cboe FX uses the current midpoint rate in the Cboe FX marketplace in all calculations. Examples below:

| # | Currency | Currency Amount | Rate | Counter Currency | Counter Amount |
|---|---|---|---|---|---|
| 1 | EUR | (6,455,244.50) | 1.549128 | USD | 10,000,000.00 |
| 2 | USD | (10,000,000.00) | 96.867461 | JPY | 968,674,610.00 |

In this example the net positions are:

- EUR (6,455,244.50)
- JPY 968,674,610.00
- USD flat

Exposure = SUM (USD equivalent of short positions) =
(USD rate * EUR 6,455,244.50) = USD 10,000,000.00

| # | Currency | Currency Amount | Rate | Counter Currency | Counter Amount |
|---|---|---|---|---|---|
| 1 | EUR | 10,000,000.00 | 1.510423 | CHF | (15,104,230.00) |
| 2 | USD | (12,500,000.00) | 0.996382 | CHF | 12,454,775.00 |
| 3 | EUR | (10,000,000.00) | 134.195165 | JPY | 1,341,951,650.00 |
| 4 | USD | 12,500,000.00 | 96.867461 | JPY | (1,210,843,262.50) |

In this example the net positions are:

- EUR flat
- USD flat
- CHF ( 2,649,455)
- JPY 131,108,387.50

Exposure = SUM (USD equivalent of short positions) =
(USD rate * CHF 2,649,455) = USD 2,639,869.27

**Americas**
+1.212.209.1420

**Europe**
+44 (0)20 7131 3450

**Asia**
+65 6911 6688

**Email**
FXTradeDesk@cboe.com

**Web**
FX.Cboe.com