

# Standard Chartered Execution Algorithms

The following algorithm descriptions should be read in conjunction with our Order Execution Policy – Additional Disclosures and the information in this document on ‘Operation & Usage’, ‘Kill Functionality’ and ‘Orders Entered Incorrectly by SCB’.

In particular, these provide information on our order routing and circumstances in which an order may be cancelled by us prior to its completion, even if completion would typically be guaranteed, and how we will manage errors on our part.

## TWAP

### Description

TWAP (Time Weighted Average Price) follows a linear schedule to execute an order evenly over a specified time period. It aims to minimise slippage / variance against a TWAP reference.

### Compulsory Parameters

- Strategy (TWAP)
- Instrument (Spot)
- Pair
- Direction
- Size
- Start / End Time (default: time of submission and end of day)
- Include Liquidity – choice of liquidity sources to access (SCB/External Only/All)

### Optional Parameters

- Limit Price
- Price Sensitivity – speed up execution market moves favourably and slow down if market moves away. (High/Medium/Low)
- Min Qty % - guaranteed percentage of order completion for slow down triggered by Price Sensitivity (assuming no other constraints, such as limit price) – default 0% if Price Sensitivity is activated
- I Would Price – price level at which to take profit by crossing the spread
- I Would % - maximum percentage of order on which to take profit by crossing the spread – default 100% if I Would Price is activated

### Characteristics

- Spreads order to reduce market impact
- Guarantees order completion (if no constraints, such as limit price, applied)
- Potentially crosses spread often if market activity is low
- Can complete earlier than planned or not fully filled if I Would or Price Sensitivity are configured
- Limit price can be applied to cap pushing of the market

## VWAP

### Description

VWAP (Volume Weighted Average Price) execute an order over a specified time period, following the historical volume profile to execute a larger portion of the order when the market is more liquid.

### Compulsory Parameters

- Strategy (VWAP)
- Instrument (Spot)
- Pair
- Direction
- Size
- Start / End Time (default: time of submission and end of day)
- Include Liquidity – choice of liquidity sources to access (SCB/External Only/All)

## Optional Parameters

- Limit Price
- Price Sensitivity – speed up execution market moves favourably and slow down if market moves away (High/Medium/Low)
- Min Qty % - guaranteed percentage of order completion for slow down triggered by Price Sensitivity (assuming no other constraints, such as limit price) - default 0% if Price Sensitivity is activated
- I Would Price – price level at which to take profit by crossing the spread
- I Would % - maximum percentage of order on which to take profit by crossing the spread default 100% if I Would Price is activated

## Characteristics

- Spreads order to reduce market impact
- Appropriate for currency pairs with stable volume profiles
- Guarantees order completion (if no constraints, such as limit price, applied)
- Attempts to execute larger portions of the order when the market is more liquid
- Potentially crosses spread often if market activity is low
- Can complete earlier than planned or not fully filled if I Would or Price Sensitivity are configured
- Limit price can be applied to cap pushing of the market

# Inline

## Description

Inline aims to execute a larger portion of an order when the market is more liquid. Unlike VWAP, it estimates the end time of the order based on historical volume profile and a specified participation rate.

## Compulsory Parameters

- Strategy (Inline)
- Instrument (Spot)
- Pair
- Direction
- Size
- Start Time (default: time of submission)
- End Time (minimum of expected End Time calculated by Target Volume% and the user specified End Time, default: EOD)
- Target Volume % - target participation rate
- Include Liquidity – choice of liquidity sources to access (SCB/External Only/All)

## Optional Parameters

- Limit Price
- I Would Price – price level at which to take profit by crossing the spread
- I Would % - maximum percentage of order on which to take profit by crossing the spread default 100% if I Would Price is activated

## Characteristics

- Spreads order to reduce market impact
- Appropriate for currency pairs with stable volume profiles
- Attempts to execute larger portions of the order when the market is more liquid
- Potentially crosses spread often if market activity is low
- Order completion is not guaranteed and any residuals will be cancelled back at End Time
- Target volume % may be exceeded if the I Would option is used
- Use of limit price is recommended

# Arrival

## Description

Arrival executes an order based on specified aggression level attempting to minimise slippage / variance against the arrival mid price.

## Compulsory Parameters

- Strategy (Arrival)

- Instrument (Spot)
- Pair
- Direction
- Size
- Start Time (default: time of submission)
- End Time (minimum of expected End Time calculated by Aggression level and the user specified End Time, default: EOD)
- Aggression (High/Medium/Low)
- Include Liquidity – choice of liquidity sources to access (SCB/External Only/All)

#### Optional Parameters

- Limit Price
- I Would Price – price level at which to take profit by crossing the spread
- I Would % - maximum percentage of order on which to take profit by crossing the spread default 100% if I Would Price is activated

#### Characteristics

- Targets arrival mid price
- Speeds up / slows down execution depending on market level
- Order completion is not guaranteed and any residuals will be cancelled back at End Time

## Float

#### Description

Float is a passive execution algorithm that slices an order and posts passively up to the mid price, re-pegging with market movements.

#### Compulsory Parameters

- Strategy (Float)
- Instrument (Spot)
- Pair
- Direction
- Size
- Start/End Time (default: time of submission/EOD)
- Aggression (High/Medium/Low)
- Price Aggression Level (High/Medium/Low)
- Include Liquidity – choice of liquidity sources to access (SCB/External Only/All)

#### Optional Parameters

- Limit Price
- Max Display Size – maximum size to show in the market
- I Would Price – price level at which to take profit by crossing the spread
- I Would % - maximum percentage of order on which to take profit by crossing the spread default 100% if I Would Price is activated

#### Characteristics

- Executes completely passively to reduce market impact
- Tracks market movement
- Order completion is not guaranteed and any residuals will be cancelled back at End Time

## Adaptive Take

#### Description

Adaptive Take is an opportunistic algorithm for execution of larger orders with specified aggression level. It executes aggressively in a controlled way without sweeping through the book whilst also posting passively to source liquidity intelligently. Its urgency level increase when there is unfavourable price movement.

#### Compulsory Parameters

- Strategy (Adaptive Take)
- Instrument (Spot)

- Pair
- Direction
- Size
- Start/End Time (default: time of submission/EOD)
- Aggression (High/Medium/Low)
- Include Liquidity – choice of liquidity sources to access (SCB/External Only/All)

#### Optional Parameters

- Limit Price
- Stop Loss Threshold (if exceeded, sweep the remaining quantity to complete the order)

#### Characteristics

- Consolidates market liquidity across venues
- Executes aggressively
- Order attempts to complete subject to available liquidity
- Increases urgency as market prices become less favourable

## Adaptive Sweep

#### Description

Adaptive Sweep is a liquidity seeking algorithm that uses our smart order routing logic to attempt to source liquidity aggressively but efficiently up to the specified limit price.

#### Compulsory Parameters

- Strategy (Adaptive Sweep)
- Instrument (Spot)
- Pair
- Direction
- Size
- Start/End Time (default: time of submission/EOD)
- Include Liquidity – choice of liquidity sources to access (SCB/External Only/All)

#### Optional Parameters

- Limit Price

#### Characteristics

- Consolidates market liquidity across SCB and external venues
- Executes aggressively
- Order completion is not guaranteed and any residuals will be cancelled back at End Time

## FIX

#### Description

FIX executes orders in a TWAP style within a 5-minute window around the 4pm London WM Fixing Window, with the ability to dynamically front or back load the schedule based on initial executions.

#### Compulsory Parameters

- Strategy (FIX)
- Instrument (Spot)
- Pair
- Direction
- Size
- Start /End Time (default: 15:57:30/16:02:30)
- Include Liquidity – choice of liquidity sources to access (SCB/External Only/All)

#### Optional Parameters

- Limit Price
- Skew – strength with which to front or back load the schedule based on market direction in the first minute (None/Low/Medium/High)

## Characteristics

- Attempts to minimise slippage / variance against the WM Fix
- Attempts to predict market direction based on early activity
- Guarantees order completion (if no constraints, such as limit price, applied)
- Trades from 15:57:30 to 16:02:30 London time
- A larger skew attempts to reduce slippage against the WM Fixing price but may increase variance.

## Platforms

SCB offers its algorithms on a number of platforms.

Certain platforms standardise parameter names in between providers. In particular 'I Would' and 'IWIC (I Would If I Could)' or 'Price' and 'Px' may be used interchangeably.

SCB makes no assertion that its own algorithms / parameters will behave similarly to those of other providers, even when similarly named.

## Liquidity

SCB algos may be configured to execute against a mix of SCB and external liquidity or either independently.

Selecting SCB as the sole liquidity source may significantly reduce or remove any passive component to execution.

If external liquidity is selected then the clean-up of any small non-marketable residual at the end of the execution may still be done against SCB liquidity. Execution during the order may also be against SCB liquidity on a purely incidental arms-length basis.

## Commission

Execution via SCB algos is subject to a commission charged at a pre-agreed rate in USD per million USD executed.

The commission is applied as a markup to the traded price post-execution. Specifically this means that any limit / stop loss applied by the algo is against the clean price, pre-markup. As such, you may buy at up to any limit price plus the markup, or sell down to any limit price minus the markup.

We will make available to you the execution prices pre- and post-markup.

## Operation and Usage

SCB algorithms trade against a number of execution venues, both internal and external. External matches will be executed on a matched principal basis, internal matches may execute against both matched principal and principal liquidity. You may choose to exclude your order from interacting with internal venues. In any case, your order may match SCB provided liquidity in an incidental fashion at arms' length on an external venue.

SCB selects external venues for its algorithms and relative preference between them based on factors including, but not limited to, fill probability, market impact, general availability of liquidity and implicit / explicit costs for SCB. At time of execution, routing is primarily performed based on best price with preference being a secondary consideration.

SCB will treat parameters of the algorithm accessible by you as explicit instruction in relation to the aspects of order execution that it controls.

Algorithmic execution of an order may typically result in many child executions. It is possible that child executions may occur that in the reasonable opinion of yourself, SCB, or the market counterparty, deviate significantly from the prevailing market price or otherwise merit consideration of amendment or cancellation. Variations may be in your favour or against you. In either case, SCB may declare the relevant child executions not binding on the Bank and yourself, and may reprocess or replace at a mutually agreed rate, applying the commensurate adjustment to the overall rate at which your order is filled.

Algorithmic orders are executed independently of each other. Concurrent orders in the same currency pair and direction may compete for liquidity. Concurrent orders in the same currency pair and opposite directions may or may not match against each other according to the exact parameters of their execution.

## Information Barriers

Visibility of the details of algorithmic orders is systematically restricted to the groups that SCB deem necessary to support such orders. Traders actively managing principal risk are by default prevented from viewing the details of active orders.

In some circumstances, to safely manage your order, it may become necessary to give a member / members of the Electronic Trading Desk, who is actively managing principal risk, visibility on your order details. We have procedures in place to manage conflicts of interest in such circumstances. Furthermore, we maintain an audit history of traders being given visibility of order details and their principal risk management actions.

## Kill Functionality

In line with regulatory requirements, SCB maintains various risk mitigants including manual and automated circuit breakers & kill-switch controls. In various scenarios, including market disruption and / or systems failure these controls may result in us cancelling your order early in a non-fully filled state.

In certain circumstances it may be necessary for SCB to terminate the algorithm or algorithmic order in order to protect customers from abnormal adverse market conditions or other factors that may lead to inappropriate execution for the customer.

A non-exhaustive list of scenarios in which we may cancel your order include, but are not limited to:

- If the remaining quantity of your order is, in our view, too large to execute to completion within the remaining time.
- If the market has moved excessively against your order since being placed (market moves up for buy orders, down for sell orders).
- If in our view it is no longer possible to safely execute your order or operate the wider algorithmic execution platform.
- If an unexpected technical issue (e.g. network failure) could be reasonably expected to prevent the algorithm from executing in line with expectations or remove your control / visibility of the order.

## Orders Entered Incorrectly by SCB

As part of its algorithmic execution facility, SCB may choose to offer you the ability to leave algorithmic orders on an agreed realtime recorded medium and have SCB enter them into the execution platform on your behalf. As with any manual execution, there is a risk that such an order may be entered incorrectly and not reflect your instruction. Such errors may include, but are not limited to, incorrect currency pair, direction, size, duration, algorithm or limit price.

Given the nature of algorithmic execution, this kind of entry error may have significant risk implications for the Bank, and while the Bank will take reasonable steps to ensure the accuracy of this manual entry process by our Sales staff, we must also take reasonable steps to ensure that the resulting risk is effectively managed, should such errors occur.

In the event of a material entry error impacting an order entered by SCB on your behalf, SCB will arrange for the immediate unwind of any principal risk position generated by the error. We will inform you of the situation and give you the opportunity for re-execution or cancellation of the order.

## Disclaimer

SCB'S ALGORITHMIC EXECUTION FACILITY AND ANY SCB PROPRIETARY PLATFORMS ("SCB SERVICES", AND EACH, A "SCB SERVICE") ARE PROVIDED ON AN "AS IS" AND "AS AVAILABLE" BASIS. UNLESS OTHERWISE AGREED IN ANY USER TERMS ENTERED INTO BETWEEN YOU AND SCB (IN WHICH CASE THOSE USER TERMS PREVAIL IN THE EVENT OF INCONSISTENCY), (1) SCB MAKES NO WARRANTY, PROMISE, REPRESENTATION OR GUARANTEE, EXPRESS OR IMPLIED, AS TO (A) SCB SERVICES BEING OF SATISFACTORY QUALITY OR FIT FOR A PARTICULAR PURPOSE; (B) THE RESULTS TO BE ATTAINED BY YOU OR ANYONE ELSE FROM THE USE OF SCB SERVICES; (C) THE SECURITY, RELIABILITY, PERFORMANCE, TIMELINESS AND AVAILABILITY OF ANY SCB SERVICE; OR (D) THE CORRECTNESS, ACCURACY OR COMPLETENESS OF THE CONTENT PROVIDED WITHIN OR VIA ANY SCB SERVICE; (2) ALL WARRANTIES, REPRESENTATIONS OR OTHER ASSURANCE, WHETHER EXPRESS OR IMPLIED, REGARDING THE SCB SERVICES ARE EXPRESSLY EXCLUDED TO THE FULLEST EXTENT PERMISSIBLE BY LAW; AND (3) SCB WILL NOT BE RESPONSIBLE TO ANY PARTY FOR ANY ERRORS, DELAYS OR INTERRUPTIONS IN YOUR USE OF, AND SCB'S PROVISION OF, THE SCB SERVICE. IN NO EVENT WILL SCB BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL LOSSES, LOSS OF PROFITS WHICH YOU MAY INCUR IN CONNECTION WITH ANY SCB SERVICE ARISING FROM TORT (INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATING TO THE USE OR INABILITY TO USE ANY SCB

SERVICE. SCB DOES NOT OWE YOU, YOUR DIRECTORS, EMPLOYEES, OFFICERS, AGENTS AND CONTRACTORS ANY DUTY OF CARE WITH RESPECT TO THE ALGORITHMIC EXECUTION FACILITY AND ANY SCB SERVICE.