Electronic Trading FAQs

Aligned with AFME TIA Due Diligence Questionnaire
Equities Electronic Trading, EMEA

August 2022

The Investment Association
Association for Financial Markets in Europe

Electronic Trading Equities Questionnaire
Working Group
EEA Equities Electronic Order Handling Questionnaire

Preamble:

- This Equities Electronic Order Handling Questionnaire ('Questionnaire') has been created through the collaborative effort of the members of The Investment Association (IA) and the Association for Financial Markets in Europe (AFME) ('Associations').

- The purpose of the Questionnaire is to establish a common, non-exhaustive, framework for the request for information from clients to their electronic trading service providers.

- The scope of the Questionnaire is limited to equity/equity-like European Economic Area ('EEA') securities which are traded through a firm based in the EEA that is a regulated firm under the Markets in Financial Instruments Directive 2014/65 EU (MiFID) and associated national laws, unless otherwise specified.

- The responses refer to the securities mentioned above which are traded through electronic trading systems only.

- The information provided in response to this questionnaire is strictly confidential and for the benefit of the recipient firm and its affiliates only.

- The responses to these questions are valid for professional clients, unless otherwise specified in the specific response.

- The information is valid at the point in time when it is provided.

- The liability regime for the Questionnaire is established by the Disclaimer included in Annex II, which is provided by the responding electronic trading service provider. Neither Association makes any representation or warranty, express or implied, in relation to the Questionnaire, including without limitation as to its suitability, completeness or fitness for purpose. Under no circumstances shall either of the Associations be liable for any loss or damage, whether direct or indirect, arising out of or in connection with the use of this Questionnaire.

AFME: represents a broad array of European and global participants in the wholesale financial markets. Its members comprise pan-EU and global banks as well as key regional banks, brokers,

law firms, investors and other financial market participants. We advocate stable, competitive, sustainable European financial markets that support economic growth and benefit society.

AFME is the European member of the Global Financial Markets Association (GFMA) a global alliance with the Securities Industry and Financial Markets Association (SIFMA) in the US, and the Asia Securities Industry and Financial Markets Association (ASIFMA) in Asia.
AFME is listed on the EU Register of Interest Representatives, registration number: 65110063986-76.

The Investment Association: represents investment managers. It has over 240 members who manage more than GBP 6.9 trillion for clients around the world, helping them to achieve their financial goals. Its aim is to make investment better for clients, companies and the economy so that everyone prospers.

The Investment Association is listed on the EU Register of Interest Representatives, registration number: 5437826103-53.

QUESTIONNAIRE:

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This document relates to the Barclays EMEA Electronic Trading platform, including trades executed via our Dynamic Router, Algorithms and Barclays' Systematic Internaliser services. This document does not include references to the Quantitative Prime Services platform or functionality[1].

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[1] Please note that as part of our broader electronic offering, Barclays also offers Quantitative Prime Services (QPS), providing clients with one tool for trade execution, financing and reporting, with built-in risk management.

A. General:

1. Please list all countries that are covered by the responses to the Questionnaire.

This questionnaire covers Electronic trading with Barclays Capital Securities Limited and Barclays Bank Ireland PLC ('Barclays'), our UK and EU regulated entities for trading cash equity and cash equity-like securities listed on a venue in the following countries:

Austria

Belgium

Czech Republic

Denmark

Finland

France

Germany

Greece

Hungary

Ireland

Israel

Italy

Netherlands

Norway

Poland

Portugal

Russia

Saudi Arabia

South Africa

Spain

Sweden

Switzerland

Turkey

United Kingdom

2. Are client orders advertised on the day of trading? (Y/N)

No, client orders sent to Barclays Electronic Trading are not sent out or advertised with Indications of Interest (IOIs). Please refer to Q.71 of section C in relation to the use of Conditional Orders.

3. If client orders are advertised on the day of trading, please explain the procedures around this?

Not applicable

4. In relation to how the firm's orders are advertised please answer Q.1 of Annex 1

5. Are client trades advertised on the day of trading? (Y/N)

Yes, we advertise our executed electronic volumes in near real-time via Bloomberg IOIA.

6. If client trades are advertised on the day of trading, please explain the procedures around this?

Symbol and aggregated executed volume data is advertised via Bloomberg IOIA and is available for Bloomberg users utilising this function. Advertising is delayed by 15 minutes and does not include the executed volume of clients who have opted out. Users may not view Barclays SI volume separate from Barclays' electronic volumes submitted via Bloomberg IOIA.

7. In relation to how the firm's trades are advertised, please answer Q.2, Annex 1

8. Do you operate tiering in determining which clients see which IOIs? (Y/N)

No

9. If you operate tiering in determining which clients see which IOIs, please answer Q.3 of Annex 1.

Not applicable

B.   Best Execution and Venue Selection:

10. Please provide a summary of your best execution policy and any further detail about how you deliver best execution.

A summary of our best execution policy, as well as reports published under RTS27 and RTS28 of MiFID II regulations can be found on our centralised disclosure website:

https://www.investmentbank.barclays.com/disclosures.html

11. Do you have an in-house algorithmic trading solution, or do you utilise (white label) third-party products?

Our firm primarily uses Barclays' own proprietary algorithms. In back-up situations we also use algorithms from a vendor.

12. If you utilise third party products, please describe which ones, and how they are used
In back-up situations, we can utilise a suite of algorithms and the smart order routing offered by third-party vendors.

13. Is your Smart Order Router (SOR) developed in-house? (Y/N)
Yes. We refer to it as the "Dynamic Router".

14. If your SOR is not developed in-house, please explain what customisation you have over its behaviour logic?
Not applicable

15. Please provide a categorised list of all execution venues (RMs, MTFs, SIs, market makers, other liquidity providers) that your algorithmic strategies and/or SOR currently access.
For details of existing and planned connectivity, please contact your Barclays sales representative for our latest ET Venue Access document.

16. List all the execution venues you access where you are not a member and access via a third party or via affiliates.
For details of existing and planned connectivity, please contact your Barclays sales representative for our latest ET Venue Access document.

17. Please explain how your SOR controls the timing of child orders when sending orders to multiple venues.
Child orders are issued in waves. In order to minimise information leakage, child orders are sequenced to manage the latency caused by geographical distances between venues in a given wave.

18. Describe how you monitor that your SOR delivers best execution.
Performance evaluation of our algorithms is a continuous process. Barclays has tools that help to monitor electronic trading and algorithms on a real-time basis, in order to identify any issues that may impact Barclays' ability to deliver best execution.
In addition, Barclays reviews the performance of its Dynamic Router and the performance of executions versus their relevant benchmarks, which include, but are not limited to, average slippage from the relevant benchmark (e.g., VWAP and arrival price).

Performance is also evaluated against other factors such as market capitalisations, spreads, durations and order sizes. These performance metrics are assessed on an aggregate basis across

client orders by the EMEA Equities Best Execution Forum ("the Forum"). The Forum meets regularly to examine execution data/analysis and market data/developments for the purpose of assessing whether Barclays has met its best execution obligations and determine whether changes in the handling and routing of Client Orders are warranted.

19. Please describe some of the factors you consider when evaluating the likelihood of execution on a venue when choosing which venue to route orders to

Please refer to the answer provided for Q.21.

20. Please describe how your SOR routes orders (including but not limited to timing, sequencing and price reversion).

Barclays' Dynamic Router is the firm's primary vehicle by which Barclays' electronic orders are placed in the market for execution. When an order is marketable, the Dynamic Router will sweep and source liquidity across enabled displayed and non-displayed Trading Venues and for clients of BCSL, LX Principal, with the general objective of maximising fill rates and minimising information leakage.

Where a child order is eligible for Child CapComm™, orders from the algo which are intended to be filled at the far touch are automatically facilitated by Barclays SI at the prevailing EBBO (or Barclays SI quote for orders below Standard Market Size). Please see Annexe II – Section 10 for further details on Child CapComm.

When an order is not marketable, the Dynamic Router will post the order on displayed venues to maximise spread capture. The Dynamic Router can also be used to route directed orders to specific venues. Certain routing customisations are available on request (for example, venue selections that give a greater consideration to factors such as execution cost).

21. Specify how your SOR accesses internal and external sources of liquidity, and if you preference any source.

i. Posting to displayed Trading Venues and LX Principal:

When attempting to capture the spread, the Dynamic Router considers factors including trade rates and queue depths. For orders that have originated from a Barclays algorithm (including the Dynamic Router), default routing options are limited to displayed Trading Venues and LX Principal. It should be noted that scheduled intraday auctions are considered for displayed posting. Displayed periodic auctions can optionally be included for routing consideration.

ii. Posting at midpoint:

The Midpoint Liquidity Accessor ("MLA") is a separate smart router which is used for posting to non-displayed venues, displayed periodic auctions and LX Principal. By default, the MLA is used when intending to execute at midpoint, though can be configured to target the near or far touch. The MLA can utilise sweeping in its interaction with Systematic Internalisers (Please refer to Section B21 iii).

When posting to multiple Trading Venues and LX Principal, the MLA takes into consideration symbol specific, historical and real-time executions to determine the fill probability, and based on that, determines the quantity to allocate to each venue. Intraday and historical executions are updated on an ongoing basis and are each assigned progressively less importance in the allocation decision as time elapses.

The Dynamic Router and MLA can place and interact with conditional orders. The MLA has Dynamic Minimum Quantity (DMQ) logic designed to detect corresponding impact on displayed Trading Venues and LX Principal following an execution in a non-displayed Trading Venue or LX Principal. This logic may lead the MLA to dynamically adjust the minimum size it uses to place subsequent orders at a certain Trading Venue or LX Principal to mitigate information leakage.

In reference to RTS 3 and Double Volume Caps, routing to any or all non-displayed Trading Venues, where a reference price waiver is employed, will be disabled for orders below Large in Scale once notification has been received that either of the 4% individual or the 8% market-wide thresholds have been breached.

For algorithms that utilise the MLA, various settings can be customised to achieve different trading objectives which include, but are not limited to, the following:

- Disabling posting to a particular Trading Venue or LX Principal;

- Specifying a minimum execution size (quantity or value) for a non-displayed or periodic auction venue (e.g., "Do not execute for less than 500 shares at this destination);

- Determining the order in which conditional orders are placed. The default setting will sequence to LX Principal and then other venues. Subject to the applicable STO on an order, EU venues will be prioritised ahead of UK venues for EEA shares.

For a full list of customisation options or more details on Barclays' algorithms, please access SPECS or contact your Barclays sales representative.

iii. Sweeping to all Trading Venues, LX Principal and CapComm:

When intending to cross the spread, the Dynamic Router considers displayed, non-displayed venues, Electronic Liquidity Providers (ELP SIs) and LX Principal (not currently available for BBI clients). When determining which displayed venues to route to, price is the overriding factor. When sweeping, the Dynamic Router can also consider non-displayed Trading Venues based on configuration settings that are enabled and the relevant current Double Volume Cap status.

A routing decision will be made based on an estimate of available liquidity. In the event that the same price is available across multiple venues when assessing the routing decision, the dynamic router will take into account the probability of fill, by looking at the historic market share for the instrument and the quantity available on the venue order book, and the cost of execution. If the price available in LX Principal is equal to other displayed Trading Venues or ELP SIs, the Dynamic Router will send the total unexecuted order quantity to take the liquidity available in LX Principal. If a client has Child CapComm enabled on an algo, and the order is eligible, we will access Child CapComm after LX Principal if it has the best price.

Access to ELP SI liquidity is enabled in the Dynamic Router and MLA subject to factors including Client's venue preferences and product type. Different product types e.g. Low latency BSOR, Standard BSOR, Aggressive Algos (e.g. Rapid), Passive Algos (e.g. VWAP) may have access to different set of ELP SI feeds based on their relative urgency. Lower urgency flow may have access to additional set of ELP SI Feeds.

The Dynamic Router can consider eligible ELP SI quotes and take liquidity if it represents a comparable or improved opportunity (e.g. price improvement, probability of fill) vs displayed Primary or MTF venues. Where the Dynamic Router finds equal pricing across ELP SI destinations, it will use ranking based on historic mark-out profiles of the ELP SIs to assign the weighting to each one and make the routing decision with some weighted randomisation.

The MLA can respond to eligible ELP SI quotes and access liquidity if it represents an equal or improved opportunity (e.g. Mid or better) when evaluated against posting to non-displayed trading venues and LX Principal. The MLA applies a size based criteria if more than one SI is quoting the same price.

Please contact your Barclays sales representative for more information.

22. Do you delegate any routing decisions to third parties?

Barclays maintains full control of order routing decisions and does not delegate routing decisions to third parties. However, in back-up situations we also use algorithms from a vendor.

23. Do you route orders to Systematic Internalisers (SIs) and will this be house or client flow?

LX Principal and CapComm are both services which provide principal liquidity via Barclays SI. Please note, LX Principal is not currently available for BBI clients.

By default, orders are also routed to ELP SIs where connectivity is established unless disabled through the client's routing preferences.

For details of existing and planned connectivity, please contact your Barclays sales representative for our latest ET Venue Access document. For further details on Barclays SI Services, please see Annex II.

24. If you intend to connect to SIs, under what circumstances might orders be routed to external SI liquidity?

Please see Question 43 for venue selection criteria. By default, external SIs are enabled for clients unless opted out. Routing to external SIs will only be possible when the Dynamic Router & MLA intends to take liquidity. Price remains the overriding factor when determining routing to external SIs. The Dynamic Router employs randomisation as well as logic-driven criteria (See Q21 iii for more details) when more than one external SI can fulfil a given order. The MLA applies a size based criteria if more than one SI is quoting the same price.

25. Do you intend to connect to SIs, which you do not currently route to, by end of the current calendar year?

Clients can choose which SIs to interact with by speaking to their Barclays sales representative. For details of existing and planned connectivity, please contact your Barclays sales representative for our latest Venue Access document.

26. To what extent will clients be able to control onward routing to SIs by both your algo and SOR?

Once connectivity has been established, routing to Barclays own SI or external SIs can be enabled or disabled at the client's discretion. This can be requested via SPECS or through a Sales representative. SPECS is an online portal designed to provide clients with visibility into their order handling, risk and venue settings, so that they can verify them or request modifications as needed. Please contact your Barclays sales representative for any additional information.

27. Does your firm internally match two cash orders?

There is no systematic matched principal activity within Barclays SI using low touch channels. Traditional high touch client crosses remain possible.

28. Do you provide industry standard values for tag 29, 30 and 851 for each child order execution, and if not please explain why? (Y/N)

Yes

29. If not, please explain why not?

Not applicable

30. Post the implementation of MiFID II, which new FIX tags will you offer or require from your clients and please confirm which ones are currently sent back to our Firm?

Please contact your Barclays sales representative for our latest FIX Rules of Engagement document.

31. If you trade with another firm's SI do you provide that MIC Code in Tag 30 rather than the generic XOFF?

Once connectivity has been established, we will look to provide the officially registered MIC.

32. If you do not use MIC codes please explain why and provide a list of codes used.

Not applicable

33. Which of the venues that you access aggregate orders to fulfil minimum quantity?

The venues that Barclays' Equities Electronic Trading business in EMEA access that aggregate orders to fulfil minimum quantity requirements are:

Cboe BXE

Cboe CXE

Cboe DXE

UBS MTF

Sigma X MTF

Please note that the answer above applies to both UK and EU venues where they exist.

34. If you access venues which may aggregate competing orders to fulfil minimum quantity, what impact might this have on your order routing decisions?

The functionality of aggregation does not impact Barclays routing.

35. Do clients have the option to opt out of the functionality described in Q. 33, or to opt-out of the firm aggregating their orders to fulfil minimum quantity?

No

36. If clients have the option of opting out of the functionality of aggregating orders to fulfil minimum quantity, please answer Q.4 of Annex relating to how the firm is treated.

N/A

37. Does any venue you access receive or transmit order information to other destinations or participants via liquidity indications or IOIs?

Barclays' algorithms use conditional orders to access LX Principal and other conditional venues. This process involves the outbound transmission of IOIs to these venues with the aim of a corresponding invitation to firm-up where contra liquidity is identified.

For details of existing conditional venues supported, please contact your Barclays sales representative for our latest Venue Access document. Please note, Barclays does not transmit or receive liquidity indications or IOIs from electronic market makers.

38. Please describe your minimum fill size criteria – is there a default?

When trading in non-displayed liquidity sources the MLA (Midpoint Liquidity Accessor) will by default include minimum fill size on orders, which is set dynamically. Clients are able to request their own value to be set across all destinations, or can have destination specific limits. The limits set can be driven off either quantity or notional values.

The MLA also has Dynamic Minimum Quantity (DMQ) logic designed to detect corresponding impact on displayed trading venues and LX Principal following an execution in a non-displayed trading venue or LX Principal. This logic may lead the MLA to dynamically adjust the minimum size it uses to place subsequent orders at a certain trading venue, or LX Principal to mitigate information leakage. For further information, please contact your Barclays Sales representative.

39. Are your minimum fill size criteria dynamic per venue?

Yes

40. Are minimum fill size criteria customisable per client request?

Yes

41. If minimum fill size criteria are customisable per client request, please answer Q.5 of Annex 1 in relation to how our firm is treated.

42. Are there venues you connect to but where your firm either do not post or do not take liquidity?
No

43. Please explain the process for enabling or disabling connectivity to a venue.
The venues we access by default are subject to regular review at the periodic Equities Best Execution Forum, where market structure related developments are considered and all available European venues assessed to ensure that the accessible venues remain appropriate.

When considering whether to connect to an additional venue, a number of factors may be considered including, but not limited to, market share. The venues we access via our algorithms or Dynamic Router can also be configured and customised as per client's requests.

44. Please explain how frequently connectivity to venues is enabled or disabled from the list of venues your firm trades on.
The frequency of enabling or disabling connectivity venues is ad-hoc and dependent on assessing the materiality of any market structure changes and the outcome of the process outlined in Q43.

45. At what point would your client be notified of a venue being switched on or off? In relation to how the firm is notified, please answer Q.6 of Annex 1.
To the extent Barclays makes any changes which we determine are material, we will communicate those changes to clients as appropriate.

46. Can venues be switched on or off per individual client request?
Yes

47. If you neither add nor remove venues, please explain why.
Not applicable

48. Is your SOR contingent on primary market availability?
Barclays will continue routing to other venues if it loses its market connection to the primary exchange. If market data for the primary exchange is not available, either due to an exchange issue or a Barclays issue, the Dynamic Router will cease trading as the result of an 'unknown market state' for the symbols impacted.

49. Have you ceased trading on a venue for a period of greater than 1 month in response to execution quality concerns in the last 5 years?

Yes, we stopped routing to Xetra MidPoint.

50. If you have ceased trading on a venue on a temporary or permanent basis in response to execution quality concerns in the last 5 years, please explain why.

We stopped routing to Xetra MidPoint after discovering its decision to publish IOIs to Liquidnet. Our decision was based on our concern that Xetra MidPoint's publishing functionality would expose pre-trade order information, contrary to our desire to restrict publishing such information.

51. Do you in any way preference one venue over another?

Please refer to Q.21 in section B.

52. If you in any way preference one venue over another, please explain why.

Please refer to Q.21 in section B for an explanation of how routing decisions are made.

53. Do you have any ownership stakes or interests in trading venues which may cause a conflict with your routing practices and decisions.

Our routing practices and decisions are not influenced by any ownership stakes or interests in trading venues. Please refer to our Conflicts of Interest Policy Summary: https://www.investmentbank.barclays.com/disclosures/N2FcdRWQo4/conflicts-of-interest-policy-summary.html

54. How do you monitor latency of order routing and market data connectivity to exchanges?

Barclays has proprietary, real-time tools that are used to monitor all clients and exchange connectivity. Real-time alerts are generated by these tools to allow the teams to respond appropriately.

For market data, if vendor alerting is not provided by a market data provider, then Barclays will also run internal monitoring on the market data feed. Where Barclays has multiple data sources for a market, Barclays Equities Electronic Trading EMEA runs a monitoring tool to compare market data feeds against each other.

55. Please explain how latency of order routing and market data connectivity to exchanges impact routing?

From our monitoring outlined in Q.54 of Section B, if an issue is detected then Barclays has the ability to remove a venue from the Dynamic Router, or to change how Barclays routes to market which may include using a broker connection.

If latency is detected on orders from an internal component, then, depending on where the issue is detected, Barclays can route orders to additional algorithmic and Dynamic Router instances.

If market data issues are detected for major markets, Barclays has the ability to switch to a different market data source for Barclays Algorithms and the Dynamic Router.

56. How do you ensure prompt processing of incoming electronically transmitted orders received by your desks?

Barclays looks to operate so that its systems have headroom capacity from previously seen maximums, thereby minimising the risk of order processing delays. To help prevent a single client impacting the system, Barclays employs throttling, which restricts the maximum number or orders a client can send within a given time period.

57. Please describe how you regularly maintain analysis of client "tiers" and how often changes are made.

Barclays does not tier participants in its order routing decisions.

58. Do you place any restrictions or caps on the percentage of your client flow that is eligible for routing to a particular venue?

No

59. If you place any restrictions or caps on the percentage of your client flow that is eligible for routing to a particular venue, what are the determining factors for those restrictions or caps?

Not applicable

C. Algorithmic Trading:

60. List all the algorithmic strategies currently available to the client, including material drivers, and briefly describe their purpose. Please attach brochure/provide link.

Please contact your Barclays sales representative for our latest EMEA Algorithmic Trading Strategies guide.

61. Do your algorithmic strategies reference primary or consolidated volume data?

Barclays' algorithms reference the consolidated European Best Bid Offer (EBBO) volume data by default, accounting for eligible venues, as determined by the applicable Share Trading Obligation (STO) and client instructions. Clients can specify a preference to reference primary volume only. To change your setting, please contact your Barclays Sales representative.

62. How do you calculate consolidated volume data? What do you include and exclude?

Where possible, we consolidate the fungible, on-exchange and electronically accessible displayed volume for each stock, across the primary market of listing and the main displayed MTFs (Aquis MTF, Cboe Europe, Turquoise) based upon the eligible venues as determined by the applicable Share Trading Obligation (STO) and client instructions. We exclude from our volume tracking transactions which we classify as "block transactions" based on our internal calculations.

63. Do you offer trading algorithm customisation? (Y/N)

Yes, please contact your Barclays Sales representative for further customisation details.

64. Do high-touch traders use the same trading algorithms listed under Q. 60 when executing client orders? (Y/N)

Yes. Barclays high-touch traders who execute customer orders utilise the same suite of algorithms as those made available to clients. When enhancements or new functionality are introduced, these are first piloted and validated by high-touch traders on internal flow before rollout to our wider client base.

65. If your high-touch traders do not use the same trading algorithms listed under Question 60 when executing client orders, please elaborate the differences.

Not applicable

66. Without client customisation request, do any of your algorithms in any way behave differently based on commission rates or the client? (Y/N)

No

67. Within algorithmic trading do you offer different speeds to market depending on the client type, commission paid or volume traded? (Y/N)
No

68. If yes, please explain.
Not applicable

69. Please describe the inbuilt controls that would protect the client from external negative events (flash crash, fat-fingers by 3rd parties etc.) and how these differ between strategies/material drivers (internal negative events covered in risk & controls)
Barclays employs various techniques and controls, which in combination help to optimise algorithm performance and also which help to protect a client from negative external events.

Barclays continues to enhance its electronic controls on an ongoing basis. Some examples of existing algorithmic controls and/or techniques are:

- Dynamic scheduling and volume forecasting in the form of intraday real-time volume adjustments to react to deviation from typical volume profile.

- Posting control which evaluates top-of-book order depth against issued child order quantity, to prevent relatively oversized passive orders and potential signalling to the market.

- "Chase protection" in the form of block exclusion logic for all participation tracking and symbol-specific price information which prevent algorithms from immediately chasing new price levels.

- Randomisation in terms of the release time of passive and aggressive child order placement, and in terms of child order sizes.

- Rolling impact windows; where trailing stock prices over a time horizon are used by the algorithms to limit aggressive participation in the market when there are large intermittent price dislocations.

- Active limit price calculation, setting a limit price on orders from the MLA using a number of factors and considering the urgency of an order to prevent execution at sub-optimal prices.

- Maximum Percentage of Volume, preventing the algorithms from being more than a certain percentage of the market.

- Dynamically calculated price collars prevent participation in adverse price movements.

- Additionally, we implement real-time daily financial, trading and, where relevant, position limits. These include, but are not limited to, gross and net notional, gross and net quantity

(shares) as well as a number of real-time metrics to monitor client behaviour e.g., orders to executions, repetitive orders.

70. Does your firm support inbound and outbound conditional order types? (Y/N)
Barclays' algorithms do not accept inbound and outbound conditional order types directly from clients. However, inbound and outbound conditional order types across selected Trading Venues (including LX Principal) are supported within the suite of algorithmic tools. Please see Question 71 for further details.

71. If your firm supports inbound and outbound conditional order types, in what circumstances are they used?
The Dynamic Router and MLA can place and interact with conditional orders. Barclays' algorithms place and interact with conditional orders across a selection of Trading Venues which support this feature and LX Principal.

- To optimise liquidity capture, the placement of conditional orders across multiple Trading Venues is sequenced. The default setting will sequence to LX Principal and then other venues. Subject to the applicable STO on an order, EU venues will be prioritised ahead of UK venues for EEA shares.

- The sequence in which conditional orders are routed to Trading Venues and LX Principal can either be set by the client, randomised on an equal weight basis or randomised weighted according to market share.

72. Explain the process for maintaining and improving an algorithmic strategy or SOR's performance, including how regularly you make changes to the variables/factors driving the algorithmic strategy?
Algorithmic performance is evaluated against several benchmarks which include, but are not limited to, average slippage from the relevant benchmark (e.g., VWAP and arrival price). Performance is also evaluated against other factors such as market capitalisations, spreads, durations and order sizes.

For actively traded stocks, our algorithms use stock-specific analytics in the form of volume profiles, average spreads, quote depth and volatility estimates. This data is based on a historical rolling average. On days when exceptional volumes are expected (e.g. stock-specific calendar or index events), customised stock-specific volume profile adjustments may optionally be configured in the algorithms. For further information, please contact your Barclays Sales representative.

The Dynamic Router performance is evaluated against its benchmarks which include, but are not limited to, the ability to achieve expected price, liquidity capture and hit rate.

Algorithmic and Dynamic Router logic changes relating to performance enhancements, client customisations and market structure related developments are implemented on an ongoing basis as appropriate.

In addition, in the interests of enhancing execution performance for clients, Barclays may undertake randomised performance testing of specific algorithmic strategies or features periodically, to ensure that they are functioning appropriately. The application of certain features and algorithms may vary while subject to such performance testing.

Please note that, save as stated above, the application of any testing period will not otherwise affect each client's selections, in respect of its algo and venue settings.

73. Explain the process for communicating material changes of variables / factors driving the algorithmic strategy / SOR to clients. In which circumstances would you communicate changes?
We review ongoing developments to our algorithms and Dynamic Router and will communicate any changes which we determine are material to our clients. Communication can be through email communications and/or client meetings.

D. Liquidity Sources:

74. Do you operate an MTF? (Y/N) (If not, please go to Q. 83)
No

75. How does your MTF measure the best bid/offer and any other reference price or benchmark?
Not Applicable

76. Please describe the governance framework for monitoring your MTF.
Not Applicable

77. Can your clients collocate close to your MTF?
Not Applicable

78. If a client can collocate close to your MTF, what are the advantages?

Not Applicable

79. Please list all order types used on your MTF?

Not Applicable

80. How does your MTF's minimum order size functionality work?

Not Applicable

81. Are you able to apply restrictions to the trading of a participant in your MTF as a result of execution quality concerns? (Y/N)

Not Applicable

82. If yes, please explain how?

Not Applicable

For firms registered as/connecting to SIs (other firms please move to Section E):

83. What is your SI's quoting policy for price and size?

Please refer to our MiFID II Commercial Policy Disclosure for Published Quotes.
https://www.investmentbank.barclays.com/disclosures/N2FcdRWQo4/mifid-II-commercial-policy.html

84. If you operate an SI, how do you manage any conflicts of interest in relation to your SI?

Please refer to our Conflicts of Interest Policy Summary which encompasses the operation of the SI.
https://www.investmentbank.barclays.com/disclosures/N2FcdRWQo4/conflicts-of-interest-policy-summary.html

85. What information (e.g., including but not limited to client name, side, size, price, instrument, limit) do you disclose to your SI?

Intraday LX Principal and CapComm facilitation fills are only visible to Barclays Equities Electronic Trading EMEA front office staff. Additionally, certain Equities senior management employees may be permitted to view LX Principal or CapComm facilitation fills in accordance with the firm's internal controls and approvals process.

The Barclays Central Risk Desk has no real-time visibility of client order details. As part of ongoing risk management activity, Barclays Central Risk Desk may review anonymised order type and execution data related to CapComm on T+1 or later. Additionally, once a client parent order

enabled for CapComm is complete, the facilitation position is automatically transferred to the Central Risk Book after the parent order is completed (or 16:59 London time in the event of incomplete orders).

Intraday aggregate gross and net exposure at the sector level related to CapComm may be used by the Central Risk Desk to aid hedging activities and total net executed notional may be used for the purposes of internal risk. Trade execution data stored in relation to IOIs may also be used for the same purpose. Please contact your Barclays sales representative for more information.

86. Is this information made available to clients? (Y/N)
Not explicitly, however Barclays SI transactions are trade reported to TRADEcho (a pan-European, multi-asset class UK and EU MiFID II compliant trade and quote publication service for financial firms).

87. Do you monitor and disclose fill, firm up and/or hit rates internally and/or externally?
Portfolio WebBench® is a proprietary Barclays web application with pre and post-trade analytics. It is possible to produce detailed post-trade reporting of order routing and execution performance with descriptive statistics to capture fill rates, slippage, trade duration, and volume participation.

Many of these benchmarks are aggregated and anonymised for use in our Best Execution governance procedures, the ongoing review and enhancement of Barclays algorithms/SOR and client facing marketing materials which are provided to prospect and existing clients to demonstrate performance of our proprietary platform.

88. If you do monitor and disclose fill, firm up and/or hit rates internally and/or externally, please answer Q.7 of Annex 1.

89. Do you provide customised tags alongside the MIC code in Tag 30 to identify the type of liquidity our client orders have interacted with?
Barclays can, following agreement on a client by client basis, populate various FIX tags related to execution and venue transparency, e.g., Last Market (Tag 30), Liquidity Capacity (Tag 29), Last Liquidity Indicator (851), and Barclays SI Service (20004) can be populated by Barclays on execution messages back to clients.

E. Transaction Cost Analysis/Post-trade Analysis:

90. Do you have capability to offer TCA? (Y/N)

Yes, Barclays offers clients a comprehensive TCA suite of products called Portfolio WebBench®.

- Portfolio WebBench is a proprietary Barclays web application with pre and post-trade analytics.

- Observe estimated market impact costs and optimise trade scheduling, monitor trades executed with Barclays in near real-time and track performance against multiple benchmarks.

- Produce detailed post-trade reporting of order routing and execution performance with descriptive statistics to capture slippage, trade duration, and volume participation.

91. Can TCA be provided in real time? (Y/N)

Yes

92. Do you provide post-trade analysis detailing the venues you have traded with? (Y/N)

Yes

93. If you do not provide post-trade analysis detailing the venues you have traded with, please explain why not?

Not applicable

F. Client Confidentiality:

94. Which part of the firm is tasked with monitoring the electronic order flow?

Barclays Equities Electronic Trading EMEA front office sales and trading staff are responsible for monitoring the electronic order flow. BBI and BCSL staff are responsible for servicing BBI and BCSL client activity respectively.

95. Do you execute orders with any affiliates? If yes, what additional controls do you have in place to ensure conflicts are managed?

Barclays Capital Securities Limited (BCSL) and Barclays Bank Ireland PLC (BBI) may use affiliate entities to execute in jurisdictions inside and outside of the UK and EEA e.g., Barclays Capital Inc. (for US markets). Such activity is subject to best-execution governance and review by the Best Execution Forum and information barriers that apply to Barclays Electronic Trading.

96. What information (e.g., including, but not limited to, client name, side, size, price, instrument, limit) do you disclose to external SIs?

At an order level, only those details which are required for them to execute the order will be sent (e.g. side, size, price, instrument, limit prices).

97. Please describe what controls, processes and procedures are in place to ensure client anonymity?
Please refer to the answer provided for Q.98.

98. Which departments of your firm have the ability to see orders (and related execution information) traded via the electronic trading channel?
Departments and or trading desks that have the ability to see client electronic order information are:

- Electronic Trading Team - The Electronic Trading Team includes Product, Sales, Sales Trading and Electronic Service Desk. The Electronic Trading Team will not disclose client specific electronic order information with other Barclays Sales Trading Teams e.g., High Touch sales traders, without express consent from that client.
- Barclays' global team of algorithmic and quantitative developers – Statistical Modelling & Development – have the ability to view all clients' global electronic trading flow globally, on a post-trade basis. This team works on the development of the algorithms for our global offering, model research and calibration and the analysis of orders and execution details, both for clients and the firm's trading desks.
- Additionally, certain Equities senior management employees are able to view client electronic trading venue and electronic order information, in accordance with the firm's internal controls and approval processes.
- The Central Risk Desk for the purposes of providing CapComm can see historical anonymised order level data.
- Our control and operational partners (Operations, Technology, Compliance, Audit, Risk, Markets Risk & Control and Legal staff) can view order information on a post-trade basis for surveillance and monitoring purposes. They also may request real-time order and revenue information on an as needed basis.

99. Can any other desks see client execution order flow which is not routed to that desk for execution? (Y/N)
No, other desks cannot see client execution order flow which is not routed to that desk for execution. For further details, please refer to Q.98 of section F. Barclays has a control framework process for each desk to certify compliance with order flow visibility rules.

100. If other desks see client execution order flow which is not routed to that desk for execution, what can they see and what is the rationale?

Not applicable

101. Are there any controls in place to restrict cash traders acting/trading on client order flow? (Y/N)

Yes

102. If there are no controls in place to restrict cash traders acting/trading on client order flow, how is this policed?

Not applicable

103. How is permission monitored to ensure that when an employee changes their role within your firm, their privileges are reviewed as well?

A process is in place so that when an individual moves teams their access privileges are reviewed and then revoked where appropriate.

104. If someone leaves the department are all their system permissions automatically removed? (Y/N)

Yes

105. Are Client IDs internally abbreviated or coded for anonymity? (Y/N)

Yes. Client names are internally abbreviated to a Client Acronym; this can be coded for anonymity purposes where requested by a client.

106. If Client IDs are internally abbreviated or coded for anonymity, please answer Q.8 of Annex 1.

107. Is any of your clients' information accessible to parts of your operations based outside the EEA?

Yes, clients' information is accessible to Barclays' group operations based outside of the UK/EEA. Barclays has global policies in place relating to confidential information, information barriers and Information Risk Management.

108. What is your firm's approach to communicating internally and/or externally, aggregated information about client electronic orders and trading activity intra-day, whether via reports or via data feeds?

Symbol and aggregated executed volume data is advertised via Bloomberg IOIA and is available for Bloomberg users utilising this function. Advertising is delayed by 15 minutes and does not include the executed volume of clients who have opted out. Users may not view Barclays SI volume separate from Barclays' electronic volumes submitted via Bloomberg IOIA.

Aggregated and stale data is used internally in order to assist with the ongoing review of our electronic products and services, including for Best Execution analysis and Cost of Income processes. It may also be used to highlight performance outcomes in client facing marketing materials e.g., clustering analysis, VWAP performance enhancements, SOR fill rates. Clients can opt-up from their data being included in this analysis at any time.

109. How does your firm determine which subset of clients or internal desks/individuals receive this data?

Information made available via Bloomberg trade adverts is available to all Bloomberg users. With respect to general aggregate data visibility for orders via electronic trading channels, please see Q.98 for more information

G. Risks and Controls:

All the controls, alerts and checks outlined in this questionnaire are for our benefit only and are subject to change by us at any time without notice to you. You should ensure that you have your own systems and controls in place to comply with any limits that you may be subject to or which we may notify to you from time to time and you should not rely on our limits, controls, alerts and checks.

110. Please describe the team structure for electronic trading including roles and responsibilities.

The Electronic Trading Team is split into two functions. Electronic Sales Trading is primarily responsible for the servicing of client flow, communicating with clients and handling of interventions required on orders. Electronic Trading Product owns front office day-to-day management of electronic trading, looking after the algorithms, providing surveillance, handling any issues or risk and rolling out strategies upgrades or new products.

111. Please specify who is our firm's primary contact for algorithmic trading should we need to contact them (name, phone number and email address).

Your Barclays Sales representative will be your primary contact.

112. What standard hard reject checks do you carry out on client orders?

Examples of hard reject checks carried out for orders sent to the Algorithms or Dynamic Router can include, but are not limited to:

- Maximum notional per order

- Maximum quantity (shares) per order

- Maximum / Minimum limit price (connectivity layers)

- Maximum impact price (applicable to SOR orders in continuous trading only)

- Restricted stocks

- Maximum orders per time period

- Repetitive Orders (maximum number of orders with identical parameters per second per client)

- Aggressive and passive price tolerance checks

- Throttling (maximum number of messages or orders per second set per client)

- Market order prevention during continuous trading

- Short sell prevention

113. What standard soft hold checks do you carry out on client orders?

Examples of soft checks carried out for orders sent to the algorithms can be as follows, but not limited to:

- Maximum notional per order;
- Maximum ADV per order;
- Maximum orders per time period;
- Aggressive and passive price tolerance checks.

114. If any standard soft hold checks are carried out on client orders, please answer Q.9 of Annex 1.

115. Please describe the fair value mechanics built into your algorithmic strategies/SOR?

Yes, Barclays has the following fair value mechanics:

- Liquidity seeking algos will change their participation based on the current market price of the stock.

- For the MLA (Midpoint Liquidity Accessor): an active limit price calculation is used, setting a limit price on orders from the MLA using a number of factors and considering the urgency of an order to prevent execution at suboptimal prices.

- For LX Principal: Barclays employs a number of controls to ensure that all executions in LX Principal are within the spread for the relevant security based on the EBBO for that security at the time of execution. This includes validation logic that, on every market data tick, considers the Best Bid, Best Offer, Spread, Average Trade Size and Last Trade price.

  Barclays determines appropriate tolerances for these checks and if they are outside of these tolerances then LX Principal will not allow executions until the market data falls within the tolerances again.

ANNEXES

ANNEX I – Client Specific Questions

The information included in this Annex is related to the trading activity of the specific client

1. Further to Q.4, Section A, please explain how our firm's orders are advertised on the day of trading.

Not applicable

2. Further to Q.7, Section A, please explain how our firm's trades are advertised on the day of trading.

Your firm's trades are advertised in line with Q.6 of section A unless you have explicitly requested to opt out.

3. Further to Q.9 of Section A, if you operate tiering in determining which clients see which IOI's, please confirm which tier is our firm currently residing in?

Not applicable

4. Further to Q.36 of Section B, if clients have the option of opting out of functionality of aggregating orders to fulfil minimum quantity, please confirm how our firm is treated.

Not applicable

5. Further to Q.41 of Section B, if minimum fill size criteria are customisable per client request, please confirm how our firm is set up.

For further information, please contact your Barclays Sales representative.

6. Further to Q.45 of Section B, if your firm switches off an existing venue or starts routing to a new one, how will our firm be informed?

Where relevant, notifications can be via email, instant messaging or telephone depending on the circumstances.

7. Further to Q.86 of Section D, if your firm operates an SI and monitors, fill, firm-up and/or hit ratios, please confirm whether this information is provided to our firm, how and at what frequency.

Clients can be enabled for access to Portfolio WebBench® and process reports on their flow to their discretion.

8. Further to Q.104 of Section F, if Client ID's are internally abbreviated or coded for anonymity, please confirm how our firm's name appears in your systems?

For further information, please contact your Barclays Sales representative.

9. Further to Q. 114 of Section F, please list any soft hold checks you have applied to our order flow.

For further information, please contact your Barclays Sales representative.

ANNEX II – Barclays Systematic Internaliser

Barclays Capital Securities Limited and Barclays Bank Ireland PLC (Barclays) have opted-up to be a Systematic Internaliser in all Equity & Equity-like instruments, ETFs & other exchange traded products and Convertible Bonds that are Traded on a Trading Venue (ToTV) in the UK or EEA. As SIs, both Barclays' entities will have the responsibility for post-trade reporting all eligible trades to an Approved Publication Arrangement (APA). Barclays will report to TRADEcho APA for Cash Equities. Barclays SI Services will be identified by our registered Market Identifier Codes (MIC):

BCSL:

- Operating MIC: BCSL

- Segment MIC: BCSI

BBI:

- Operating MIC: BBIE

- Segment MIC: BBIS

1.   Barclays SI Services
Barclays SI includes a number of services which are available via Electronic and High Touch trading channels. This section focuses on the Electronic services.

Please refer to 'MiFID II Commercial Policy Disclosure for Published Quotes' for further information, which will be made available on our website and will include, but is not limited to, the quoting policy for price and size.

2.   Electronic trading channel
Barclays SI is accessible electronically through the following services:

- LX Principal (BCSL only)

- Parent CapComm

- Child CapComm

3.   LX Principal –

LX Principal is a source of principal liquidity accessible through Barclays' Electronic Trading Platform. Client orders may be executed within LX Principal as a result of the client using a Barclays algorithm. While LX Principal is defaulted on, clients always have the option to disable the interaction of its orders with LX Principal.

For a full list of customisation options related to liquidity preferences, please access SPECS or contact your Barclays sales representative. LX Principal is operated under the BCSL entity. Please note we do not currently provide access to LX Principal for our BBI EU clients.

4.   Execution priority in LX Principal

The execution priority for orders in LX Principal is based on price and then time. For conditional orders; once cancelled and firmed-up, subsequent orders are subject to the aforementioned factors for execution priority. Please see question 71 for more details on conditional orders.

5.   Market data

Barclays SI and all underlying services including LX Principal primarily use direct market data feeds for the major UK and European markets.

6.   Monitoring market data accuracy

Barclays has proprietary, real-time tools that are used to monitor connectivity, capacity and latency for LX Principal. Real-time alerts are generated by these tools to allow the teams to respond appropriately.

A surveillance tool is also run to compare the executions which have taken place within LX Principal against the exchange published quotes derived from a different market data source to the market data source used to determine the prices within LX Principal.

7.   No bunching of fills

LX Principal does not "bunch" fill orders to satisfy any minimum quantity criteria. Each fill from LX Principal will be of a quantity equal to, or greater than, the minimum quantity specified on the order.

Please note, if the number of remaining open shares falls below the minimum quantity, LX Principal's default behaviour will treat that number as the new minimum quantity for the order and will then treat the order as an "All or None", i.e., it will only execute if it can fill the entire remainder of the order.

8. Execution price in LX Principal

Where an order is less than or equal to the Standard Market Size (SMS), executions can occur either at the Barclays SI Quote or, in justified cases, at a better price than the Barclays SI quote, provided that the price falls within a public range close to market conditions. For orders greater than SMS, executions can occur at, or within, the European Best Bid Offer (EBBO).

Executions in LX Principal should always take place within the spread for the relevant security based on the EBBO for that security at the time of execution. The EBBO is inclusive of the primary market of listing and the main displayed MTFs across the EU and UK (Aquis MTF, Cboe Europe, Turquoise).

9. LX Principal controls

Barclays employs a number of controls to ensure that all executions in LX Principal are within the spread for the relevant security based on the EBBO for that security at the time of execution. This includes validation logic that, on every market data tick, considers the European Best Bid, Best Offer, Spread, Average Trade Size and Last Trade price.

Barclays determines appropriate tolerances for these checks and if they are outside of these tolerances then LX Principal will not allow executions until the market data falls within the tolerances again.

10. Capital commitment (CapComm)

CapComm is a means to access principal liquidity offered by Barclays' Central Risk Desk anonymously through the Electronic Trading Platform. CapComm is automated capital commitment available through select Barclays' algorithmic trading strategies. There are two distinct offerings, available through BCSL and BBI:

- *Parent CapComm*

When enabled for Parent CapComm, after a pre-determined percentage of an order has been filled through the algo (the Facilitation Threshold), the balance of the order is automatically facilitated in a single fill by Barclays SI. Where the balance is below, or equal to the Standard Market Size (SMS), it is executed at the SI Quote; above the SMS, at the EBBO Far Touch.

- *Child CapComm*

After a pre-determined percentage of the order has been filled through the algo (the Facilitation Threshold), the subsequent child orders from the algo which are intended to be filled at the far touch are automatically facilitated by Barclays SI at the prevailing Barclays SI quote for orders below the Standard Market Size (SMS) and the EBBO Far Touch for orders above the Standard Market Size (SMS).

Please note: Child CapComm is a default setting for the following Barclays algos: VWAP, Hydra, With Volume, TWAP, IS. Clients have the opportunity to opt-out of Child CapComm.

Please refer to the CapComm material available in SPECS or contact your Barclays representative for additional information.

ANNEX III – Barclays Auto-Aggregation

Auto-Aggregation may occur based on a variety of criteria, including but not limited to: side, price, strategy, product type (e.g. Cash / CFD). Clients may request that all or part of their order flow be eligible for electronic Auto-Aggregation e.g., all flow sent to Barclays, or a subset of that flow.

Categories to which Auto Aggregation may be applied may include, by way of example, (i) VWAP only, (ii) specific product types (e.g. cash trading only) or (iii) specific product listings (e.g. Swiss only). If requested, Barclays can aggregate relevant orders across several client affiliates and/or across Barclays' execution products (e.g. CFD and cash trading) in accordance with the client's instructions.

Aggregation criteria will be updated to consider STO eligibility. Orders with different STO status will not be aggregated. Should clients decide to send the Share Trading Instruction using FIX Tag 8015 on orders, the instruction may prevent aggregation with other orders subject to a different STO.

Please be advised, if you opt-in for Auto-Aggregation, you/your individual affiliate(s) may not necessarily achieve the same execution outcome than if you/your affiliate(s) had executed on a non-aggregated basis (which may or may not be advantageous). If an Auto-Aggregated order is partially executed, trades will be allocated in accordance with our order allocation policy.

If you have any questions about the way in which Barclays Auto-Aggregation operates, please contact your Barclays representative.

ANNEX IV – Disclaimer

Unless expressly stated otherwise, any views and/or commentary contained in this communication are of the Barclays Trading and/or Distribution desks, have not been produced by Barclays' Research Department and are not Investment Research or Investment Recommendations. This communication does not contain a personal recommendation. Where an Investment Recommendation is given by Barclays Trading and/or Distribution desk, it is a marketing communication for the purposes of the relevant conduct of business requirements applicable to the communication. For important disclosures relating to this communication, please see our full Sales and Trading Disclaimer.

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ANNEX V – Abbreviations

Abbreviation	Explanation
AFME	The Association for Financial Markets in Europe
EEA	European Economic Area
FIX	Financial Information eXchange Protocol
IA	The Investment Association
IOI	Indication of Interest
MIC Code	Market Identifier Code
MiFID II	Markets in Financial Instruments Directive II
MTF	Multi-Lateral Trading Facility
RM	Regulated Market
SI	Systematic Internaliser
SOR	Smart Order Router
TCA	Transaction Cost Analysis
XOFF	Venue identification code used to indicate a transaction is made off venue