

NORTHERN TRUST CAPITAL MARKETS: TRANSITION MANAGEMENT

For the period 1 January 2022 to 31 December 2022

Information on the identity of execution venues and on the quality of execution under Commission Delegated Regulation (EU) 2017/576 of 8 June 2016 ('RTS 28')

a) Overview of execution arrangements in 2022

Northern Trust Capital Markets offers transition management services through Northern Trust Global Services SE ('NTGS') in the UK, EU and EEA, Northern Trust Investor Services Limited ('NTISL') in the UK and The Northern Trust Company, London Branch ('TNTC-LB') in the UK and rest of EMEA. Northern Trust Capital Markets is the trading name for these entities in EMEA.

The Northern Trust Capital Markets' Transition Management team in EMEA, through NTGS, NTISL and TNTC-LB (herein 'NT-TM'), provide risk mitigation, project management and order handling and execution services to institutional clients implementing changes to their investment portfolios. NT-TM provides the MiFID investment service of reception and transmission of orders in relation to one or more financial instruments. NT-TM only provides investment services to Professional clients and Eligible counterparties and does not provide any services to Retail clients.

During 2022, NT-TM transmitted global orders in Equity and Debt instruments to its UK-based broker-dealer affiliate, Northern Trust Securities LLP ('NTS LLP')¹. NTS LLP therefore acts as executing broker, and in so doing applied its own order execution policy² and its own execution arrangements to the NT-TM client orders it received. Typically this would involve the onward transmission of the order to an external broker who would execute the order in placements, devised and typically managed at all times by NTS LLP's traders, on one or more organised trading venues (e.g. regulated market, multilateral trading facility or third country equivalent) in accordance with that broker's own order execution policy and arrangements. NT-TM provide NTS LLP with detailed instructions across the portfolio order and the NT-TM team are able to continuously monitor and update those instructions with NTS LLP's traders in real-time throughout the duration of an order. NTS LLP may also cross NT-TM client orders with orders from its own clients and with market makers and other liquidity providers. For more information on NTS LLP's order execution policy and for information on the identity of execution venues and on the quality of execution please refer to: <https://www.northerntrust.com/united-kingdom/what-we-do/asset-servicing/capital-markets/institutional-brokerage>

NT-TM transmitted client orders received for Equity and Debt instruments in the Americas region directly to its U.S.-based broker-dealer affiliate, Northern Trust Securities, Inc. ('NTSI') who will then, subject to the financial instrument to which the order relates, either execute the order on one or more organised trading venues in the United States, or route the order for execution by either, its UK-based broker affiliate, NTS LLP, or one or more external brokers (the executing brokers'), who will then execute the NT-TM orders they receive on one or more organised trading venues (e.g. regulated market, multilateral trading facility or third country equivalent) in accordance with both the instructions provided by the NT-TM team to NTSI, and the executing broker's own order execution arrangements.

¹ Northern Trust Securities LLP ('NTS LLP') is authorised and regulated by the Financial Conduct Authority and a member of the London Stock Exchange. NTS LLP provides trading and execution services in EMEA and APAC, and is a wholly-owned indirect subsidiary of Northern Trust Corporation.

² See further: <https://www.northerntrust.com/documents/legal/mifid/nt-order-execution-policy.pdf>

NTS LLP and NTSI were selected, and subsequently monitored, by NT-TM in accordance with the principles described in section 6 of NT EMEA Order Execution Policy³. NTS LLP and NTSI were selected by NT-TM as the sole order transmission destinations for Equity and Debt instruments in 2022 in order to ensure that the NT-TM team were able to focus their attention at a portfolio level, rather than on the individual orders and program trades, and also because NTS LLP and NTSI, provide Northern Trust Capital Markets' brokerage services globally and provide the NT-EM team with a greater ability to closely monitor and update the instructions on the client orders it transmits in essentially real-time.

Client orders in Equity Derivatives and Currency Derivatives, and also in spot Foreign Exchange contracts, are not executed by NT-TM or its affiliated broker-dealer entities. Instead, client orders are transmitted to a relevant executing broker with whom they have a separate and pre-existing relationship. NT-TM therefore provides the investment service of reception and transmission of orders, and its responsibility is to ensure the accurate and timely transmission of all such orders and associated instructions given by the client to the executing broker the client has chosen and it is therefore the executing broker who is responsible for taking all sufficient steps to achieve the best possible result.

As NT-TM does not directly execute client orders we provide the following information on execution venues and order transmission destinations for each class of financial instrument, and where necessary sub-class of financial instrument, for those client orders received and transmitted in 2022:

- (a) The identity of the top five receiving firms (i.e. external brokers) to which client orders were transmitted in 2022; as required by Article 65(6) Commission Delegated Regulation (EU) 2017/565.

³ See further: <https://www.northerntrust.com/documents/legal/mifid/nt-order-execution-policy.pdf>

b) Top Five Order Transmission Destinations in 2022

The following data tables have been prepared in accordance with the requirements of Article 65(6) of Commission Delegated Regulation (EU) 2017/565 (the 'MiFID Org Regulation') in order to be consistent with the technical standards under Article 3(1) of RTS 28 and show the top five order transmission destinations (i.e. brokers) to which client orders were transmitted for execution in 2022 by NT-TM for each class of financial instrument.

Class of instrument		(a) Equities - Shares and Depository Receipts: All Tick Size Bands						
Notification if < 1 average trade per business day in year		No						
Rank	Broker Code	Broker LEI	Broker Name	% of VOLUME traded in class	% of ORDERS executed in class	% of PASSIVE orders*	% of AGGRESSIVE orders*	% of DIRECTED orders
1	NTSL	549300EF8AZLRG0UC208	Northern Trust Securities LLP	67.85%	76.41%	n/a	n/a	0.00%
2	NTRC	3CHSO99JSPHD9HGNYJ46	Northern Trust Securities, Inc.	32.15%	23.59%	n/a	n/a	0.00%
3	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
4	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
5	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
~	Remaining brokers			0.00%	0.00%	n/a	n/a	0.00%
Total				100%	100%	n/a	n/a	0%

Class of instrument		(b) Debt Instruments: (i) Bonds						
Notification if < 1 average trade per business day in year		No						
Rank	Broker Code	Broker LEI	Broker Name	% of VOLUME traded in class	% of ORDERS executed in class	% of PASSIVE orders*	% of AGGRESSIVE orders*	% of DIRECTED orders
1	NTRC	3CHSO99JSPHD9HGNYJ46	Northern Trust Securities, Inc.	80.30%	53.97%	n/a	n/a	0.00%
2	NTSL	549300EF8AZLRG0UC208	Northern Trust Securities LLP	19.70%	46.03%	n/a	n/a	0.00%
3	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
4	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
5	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
~	Remaining brokers			0.00%	0.00%	n/a	n/a	0.00%
Total				100%	100%	n/a	n/a	0%

Class of instrument		(c) Currency Derivatives: (ii) Swaps, forwards and other currency derivatives						
Notification if < 1 average trade per business day in year		No						
Rank	Broker Code	Broker LEI	Broker Name	% of VOLUME traded in class	% of ORDERS executed in class	% of PASSIVE orders*	% of AGGRESSIVE orders*	% of DIRECTED orders
1	TDFX	PT3QB789TSUIDF371261	Toronto Dominion Bank	49.35%	16.67%	n/a	n/a	100.00%
2	SSFX	571474TGEMMWANRLN572	State Street Bank & Trust Co	38.49%	64.90%	n/a	n/a	100.00%
3	NTCC	6PTKHJ8HDUF78PFWH30	The Northern Trust Company	12.15%	18.43%	n/a	n/a	100.00%
4	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	100.00%
5	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	100.00%
~	Remaining brokers			0.00%	0.00%	n/a	n/a	100.00%
Total				100%	100%	n/a	n/a	100%

Class of instrument		(d) Equity Derivatives : (i) Options and Futures admitted to trading on a trading venue						
Notification if < 1 average trade per business day in year		No						
Rank	Broker Code	Broker LEI	Broker Name	% of VOLUME traded in class	% of ORDERS executed in class	% of PASSIVE orders*	% of AGGRESSIVE orders*	% of DIRECTED orders
1	MLSB	GGDZP1UYGU9STUHRDP48	Merrill Lynch International	100.00%	100.00%	n/a	n/a	100.00%
2	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
3	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
4	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
5	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
~	Remaining brokers			0.00%	0.00%	n/a	n/a	0.00%
Total				100%	100%	n/a	n/a	100%



Class of instrument			(h) Securitized Derivatives: (i) Warrants and Certificate Derivatives					
Notification if < 1 average trade per business day in year			No					
Rank	Broker Code	Broker LEI	Broker Name	% of VOLUME traded in class	% of ORDERS executed in class	% of PASSIVE orders*	% of AGGRESSIVE orders*	% of DIRECTED orders
1	MLSB	GGDZP1UYGU9STUHRDP48	Merrill Lynch International	100.00%	100.00%	n/a	n/a	100.00%
2	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
3	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
4	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
5	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
~	Remaining brokers			0.00%	0.00%	n/a	n/a	0.00%
Total				100%	100%	n/a	n/a	100%

Class of instrument			(k) Exchange Traded Products (Exchange Traded Funds, Exchange Traded Notes and Exchange Traded Commodities)					
Notification if < 1 average trade per business day in year			No					
Rank	Broker Code	Broker LEI	Broker Name	% of VOLUME traded in class	% of ORDERS executed in class	% of PASSIVE orders*	% of AGGRESSIVE orders*	% of DIRECTED orders
1	NTRC	3CHSO99JSPHD9HGNYP46	Northern Trust Securities, Inc.	100.00%	100.00%	n/a	n/a	0.00%
2	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
3	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
4	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
5	N/A	N/A	N/A	0.00%	0.00%	n/a	n/a	0.00%
~	Remaining brokers			0.00%	0.00%	n/a	n/a	0.00%
Total				100%	100%	n/a	n/a	0%

c) Information on the quality of execution

The following information is provided in accordance with the requirements of Article 3(3) of RTS 28 and summarises the analysis and conclusions drawn from the monitoring of the quality of execution obtained on the execution venues and through the brokers used by NT-TM in 2022, unless otherwise stated the information covers all classes of financial instrument.

(a) An explanation of the relative importance the firm gave to the execution factors of price, costs, speed, likelihood of execution or any other consideration including qualitative factors when assessing the quality of execution;

NT-TM when transmitting client orders to its executing broker provides detailed instructions which prioritise the clients preferred implementation strategy, along with the primary execution benchmark – Implementation Shortfall (IS), Market on Close, Strike etc. NT-TM may also provide clear guidance to the trading counterpart as to how the trading should be conducted, i.e. holding back liquid sells in Asia to overlap, as close as possible, with purchases into Europe, mitigating for potential intraday exposure skews. NT-TM conduct independent pre and post trade analytics for all client orders passed through to NTS for execution, with each execution compared to a range of benchmarks including Open, Close, High, Low and VWAP. Other soft factors considered as part of the execution evaluation include failing trades, settlement rates and STP processing.

(b) A description of any close links, conflicts of interests, and common ownerships with respect to any execution venues used to execute orders;

NTISL, TNTC-LB and NTGS SE are affiliated with the brokers, Northern Trust Securities, Inc. ('NTSI') and Northern Trust Securities LLP ('NTS LLP') through the common ownership of The Northern Trust Company.

TNTC-LB may also act as counterparty to certain clients for transactions in Currency derivatives and spot Foreign Exchange contracts where it acts as that client's executing broker. This relationship is separate to the NT-TM relationship and pre-existing. For the avoidance of doubt, NT-TM's contractual arrangements address the distinction between the two services and separation of contractual and execution arrangements.

NTISL, TNTC-LB and NTGS SE do not have any other close links, conflicts of interests or common ownerships with any other broker through which a client order was executed by NTS LLP or NTSI in 2022.

(c) A description of any specific arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received;

NTISL, TNTC-LB or NTGS SE, as appropriate, pay commissions to NTS LLP and/or NTSI in compensation for the provision of the execution services they provide to the NT-TM desk. Such commissions are pre-disclosed and agreed with each client prior to the provision of the NT-TM services.

(d) An explanation of the factors that led to a change in the list of execution venues listed in the firm's execution policy, if such a change occurred;

NT-TM rely upon the execution venues accessed by its brokerage affiliates NTSI and NTS LLP, and the specific execution venues used will vary from client to client depending upon their particular portfolio and strategy requirements.

(e) An explanation of how order execution differs according to client categorisation, where the firm treats categories of clients differently and where it may affect the order execution arrangements;

NT-TM does not differentiate between categories of clients when executing their orders and furthermore orders from different clients are not aggregated because of the need to manage executions at a portfolio or program trade level and are therefore never comparable.

(f) An explanation of whether other criteria were given precedence over immediate price and cost when executing retail client orders and how these other criteria were instrumental in delivering the best possible result in terms of the total consideration to the client;

Not applicable, Northern Trust Capital Markets does not provide investment services to Retail clients.

(g) An explanation of how the investment firm has used any data or tools relating to the quality of execution, including any data published under Delegated Regulation (EU) 2017/575;

NT-TM measures the quality of execution at a portfolio or program trade level. The standard performance measurement used by our clients is Implementation Shortfall (IS / T-1), Strike or T Close. NT-TM conduct independent pre-trade and post-trade analytics for all client orders passed through to NTS for execution, with each execution compared to a range of benchmarks including Open, Close, High, Low and VWAP.

NT-TM did make use of any data published under Delegated Regulation (EU) 2017/575 ('RTS 27') by execution venues and continued to rely upon its execution performance and transaction cost analysis tools.

(h) Where applicable, an explanation of how the investment firm has used output of a consolidated tape provider established under Article 65 of Directive 2014/65/EU.

NT-TM did not use a consolidated tape provider established under Article 65 of Directive 2014/65/EU in 2022.

The Northern Trust Company, incorporated with limited liability in the U.S. as an Illinois banking corporation under number 2016; registered office: 50 South LaSalle Street, Chicago Illinois 60603, USA; UK establishment number: BR001960 and UK office at 50 Bank Street, Canary Wharf, London E14 5NT. Authorised and regulated by the Federal Reserve Board; authorised by the Prudential Regulation Authority; subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority.

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