

MIFID RTS28: annual 2022 report

Top 5 venue and qualitative review
Cardano Risk Management BV



cardano

Contents

1. General Remarks	3
Scope of financial instruments	3
Close links, conflicts of interest or common ownership with execution venues	3
Execution Monitoring	3
Assessment of the quality of execution	4
2. Top five execution venues.....	5
A: Equity – Shares & Depositary Receipts	5
B: Debt instruments	6
C: Interest rates derivatives.....	7
D: Credit derivatives	9
E: Currency derivatives	10
F: Structured finance instruments	12
G: Equity Derivatives	12
H: Securitized Derivatives	14
I: Commodities derivatives and emission allowances Derivatives .	14
J: Contracts for difference	15
K: Exchange traded products (exchange traded funds, exchange traded notes and exchange traded commodities).....	15
L: Emission allowances	15
M: Other instruments.....	16

1. General Remarks

This document sets out, for each class of financial instrument, information on the top five execution venues where Cardano Risk Management BV ('Cardano') executed or placed client orders in 2022. The document also highlights a summary of the analysis and conclusions we took from monitoring best execution. The following commentary applies to all our trading for each class of financial instrument.

Scope of financial instruments

The scope of instruments is provided in Annex 1 of RTS 28.

Client categorization

All Cardano clients are classified as Professional Clients. Cardano does not service Retail Clients.

Close links, conflicts of interest or common ownership with execution venues

Cardano does not have any close links or common ownership or arrangements concerning rebates with respect to any execution venue used to execute orders. Therefore, there are no conflicts of interest with any venue we currently use for execution. In addition, Cardano's "*Inducements, Non-Monetary Benefits & Research Policy*" covers all potential conflicts that may arise between Cardano (or its personnel) and any of the venues/counterparties it engages with.

Execution Monitoring

For monitoring the effectiveness of our execution, Cardano has a 2-tier process in place. The first step covers the pre-trade process of identifying the best possible trade routing:

- Cardano Trading ('CT') is responsible for determining the execution strategy best fit to a trade instruction. The strategy differs per instrument class, factors in any restrictions that may apply (e.g. counterparty restrictions per client) and is targeted towards meeting the clients' objectives in the best possible manner.
- In order to challenge the fairness of pricing at the point of execution, CT must have access to a mid-market reference pricing:
 - To the extent available, we use independent benchmark data for this purpose;
 - For some of the more bespoke OTC instruments we transact in, we use in-house models to construe mid-market reference prices. Independent benchmark data feeds into the models. Supported with other relevant information (e.g. ISDA terms, counterparty intelligence), this determines our mid-market position;
 - Cardano's Model Approval Committee is responsible for making sure our models are reflective of the latest developments in valuing OTC derivatives and challenges any inputs used. The committee meets monthly. All relevant internal stakeholders have a seat in the committee (e.g. Quant team, Trading, Valuation team)
- CT employs a skilled team of traders, knowledgeable in the instruments they transact in.
- CT is at the forefront of new regulations
- regulatory developments which may influence pricing of the instruments we transact in (e.g. Basel-III, EMIR);

Our second step covers post-trade analysis. On a quarterly basis and per product type, CT ranks the performance of all OTC counterparties based upon a wide set of criteria. CT uses transaction-based information (e.g. volumes, hit ratio's and transaction cost analytics from the platforms we use) and includes other criteria we deem relevant in assessing counterparties (e.g. pre- and post-trade service levels, coverage, speed and flexibility in contract negotiations). The results feed into continuous dialogues we have with counterparties. If need be, any pressing or noteworthy matters we run into whilst trading, will be discussed in any of the weekly CT team meetings and escalated to our senior sales relations at the banks.

Post-trade information also assists us to identify possible factors to improve execution. Where deemed appropriate, we use independent third-party transaction costs analysis for this purpose.

To the extent we use electronic trading venues, we closely monitor the competitive landscape (e.g. new entrants or new services that have become available) and review our choice of venues to determine if they still offer the best possible conditions for the product suite we use the venues for.

With respect to exchange traded instruments (futures & options), we monitor our brokers and keep track of the algorithms they offer for trading and review their pricing schedules.

Assessment of the quality of execution

The Compliance and Execution Committee (consisting of senior compliance, senior trading and senior business staff) reviewed transaction costs. The overall conclusion was that realized transaction costs are in line with expectations given our execution policy. We are comfortable in stating we've achieved good trading outcomes for and on behalf of our clients over 2022. We remain cautious and continue to monitor our trading strategies, counterparties, electronic trading venues and new developments to continue delivering best execution.

The remainder of this document sets out the top-5 venues per class of financial instrument and details some instrument observations drawn from monitoring best execution.

2. Top five execution venues

Please find below our top five execution venues, split per class of financial instrument.

A: Equity – Shares & Depositary Receipts

Cardano did not execute orders in these classes of instrument in the reporting period.

Class of Instrument	Shares & Depositary Receipts: Tick size liquidity bands 5 & 6 (from 2000 trades per day)				
Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

Class of Instrument	Shares & Depositary Receipts: Tick size liquidity bands 3 & 4 (from 80 to 1999 trades per day)				
Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

Class of Instrument	Shares & Depositary Receipts: Tick size liquidity bands 1 & 2 (from 1 to 79 trades per day)				
Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

B: Debt instruments

Bonds

Notification if < 1 average trade per business day in the previous year	No				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Tradeweb Europe Ltd (2138001WXZQPMPA3D50)	88%	87%	NA	NA	0%
ABN AMRO BANK N.V. (BFXS5XCH7NOY05NIXW11)	4%	2%	0%	100%	0%
Citigroup Global Markets Europe AG (6TJCK1B7E7UTXP528Y04)	1%	1%	0%	100%	0%
Commerzbank Aktiengesellschaft (851WYGNLUQLFZBSYGB56)	1%	1%	0%	100%	0%
Goldman Sachs Bank Europe SE (8IBZUGJ7JPLH368JE346)	1%	1%	0%	100%	0%

Class of Instrument	Bonds: information on the top five counterparties on Tradeweb				
Notification if < 1 average trade per business day in the previous year	No				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
CREDIT AGRICOLE SA (969500TJ5KRTCJQWXH05)	14%	27%	N/A	N/A	0%
Nomura Financial Products Europe GmbH (5493002XYZZOCGQ6CB58)	12%	10%	N/A	N/A	0%
DEUTSCHE BANK AKTIENGESELLSCHAFT (7LTWFZYICNSX8D621K86)	10%	9%	N/A	N/A	0%
Goldman Sachs Bank Europe SE (8IBZUGJ7JPLH368JE346)	10%	8%	N/A	N/A	0%
BARCLAYS BANK IRELAND PUBLIC LIMITED COMPANY (2G5BKIC2CB69PRJH1W31)	7%	8%	N/A	N/A	0%

Notes drawn from monitoring the quality of execution:

Item	Analysis and conclusions
Relative importance given to price, costs, speed, likelihood of execution or other considerations.	When trading bonds, highest priority is given to achieving best price / lowest costs. Speed and likelihood of execution are important if the client gave a specific timeframe to an order.
Arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.	Cardano pays standard license fees set by the venues. Cardano does not have other fee arrangements with the venues used. No discounts, rebates or non-monetary benefits were received.
Explanation of how the investment firm has used any data or tools relating to the quality of execution.	Trade execution reports are used to analyse transaction costs in terms of achieved price relative to mid-market levels. Mid-market levels are determined by price information from different platforms, typically Tradeweb and Bloomberg for the instruments we transact in. Cardano uses Tradeweb to execute the majority of the bond transactions. Alternatively, it is also possible to transact via voice of Bloomberg chat. We performed a review to substantiate our choice for Tradeweb. Having regard to the product suite we transact in, Bloomberg and MarketAxess /

	<p>Bondvison were identified as the most prominent competitors. We have no indications that pricing and/or liquidity are better as compared to Tradeweb. Therefore, we are comfortable to continue using Tradeweb, but will continue monitoring competing venues to ensure we continue to achieve the best possible result for clients.</p> <p>RTS 28 information and transaction costs analysis information are available on Tradeweb. We use this information to identify possible factors to improve execution. The information is of help to identify parties that consistently under / outperform in certain instruments which feeds into our continuous dialogue we have with the counterparties we have available for trading</p>
--	--

C: Interest rates derivatives

Futures and options admitted to trading on a venue (brokers used)

Notification if < 1 average trade per business day in the previous year	YES				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
J.P. Morgan AG (549300ZK53CNGEEI6A29)	100%	100%	81%	19%	0%

Notes drawn from monitoring the quality of execution:

Item	Analysis and conclusions
Relative importance given to price, costs, speed, likelihood of execution or other considerations.	When trading interest rate futures, best price / lowest costs and likelihood of execution are equally important. Speed of execution is important if the client gave a specific timeframe to an order.
Arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.	Cardano has fixed fee arrangements in place per transaction (clearing and exchange fees)
Explanation of how the investment firm has used any data or tools relating to the quality of execution.	<p>Cardano checks the depth of the central limit order book and determines speed of execution during execution. Furthermore, we check the (potential) impact on prevailing market prices when executing via direct market access or algorithms. Amongst others, we check execution performance and slippage costs based on the transaction costs information received from our brokers and on proprietary analysis based on information from the relevant exchange.</p> <p>We have a continuous dialogue with our future brokers in terms of pricing and their capacities (e.g. execution algorithms available for trading). On the latter, we investigate the suitability of each and determine as to whether they could be of use to us and our clients.</p>

Swaps, forwards and other interest rate derivatives

Notification if < 1 average trade per business day in the previous year	No				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Tradeweb Europe Ltd (2138001WXZQOPMPA3D50)	25%	33%	0%	100%	0%
Morgan Stanley Europe SE (54930056FHWP7GIWYY08)	20%	12%	0%	100%	0%
J.P. Morgan AG (549300ZK53CNGEEI6A29)	14%	16%	0%	100%	0%
Citigroup Global Markets Europe AG (6TJCK1B7E7UTXP528Y04)	10%	5%	0%	100%	0%
Bofa Securities Europe SA (549300FH0WJAPEHTIQ77)	8%	4%	0%	100%	0%

Swaptions are included as "other interest rate derivatives"

Class of Instrument	Swaps: information on the top five counterparties on Tradeweb				
Notification if < 1 average trade per business day in the previous year	No				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Morgan Stanley Europe SE (54930056FHWP7GIWYY08)	25%	18%	0%	100%	0%
J.P. Morgan AG (549300ZK53CNGEEI6A29)	15%	12%	0%	100%	0%
BNP PARIBAS (ROMUWSFPU8MPRO8K5P83)	7%	6%	0%	100%	0%
Citigroup Global Markets Europe AG (6TJCK1B7E7UTXP528Y04)	8%	14%	0%	100%	0%
Nomura Financial Products Europe GmbH (5493002XYZZOCGQ6CB58)	8%	7%	0%	100%	0%

Notes drawn from monitoring the quality of execution:

Item	Analysis and conclusions
Relative importance given to price, costs, speed, likelihood of execution or other considerations.	When trading interest rate swaps, forwards and other interest rate derivatives, best price / lowest costs and likelihood of execution are equally important. Speed of execution is important if the client gave a specific timeframe to an order.
Arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.	Cardano pays standard license fees set by the venues. Cardano does not have other fee arrangements with the venues used. No discounts, rebates or non-monetary benefits were received.
Explanation of how the investment firm has used any data or tools relating to the quality of execution.	<p>On a quarterly basis the potential counterparties to interest rate derivatives are evaluated based on a wide set of criteria including hit ratio, pre- and post-trade service levels, speed and flexibility in contract negotiation.</p> <p>Pre-trade, traders assess prices relative to a mid-market reference price. This includes the determination whether cleared or non-cleared transactions will lead to the best overall outcome.</p> <p>Independent reference data is used to the extent available: this includes, but is not limited to, liquidity in terms of bid or offered volumes and pricing (interest rates). Supported with other information relevant to a trade, e.g. intelligence from counterparties and specific agreements in ISDAs between</p>

	<p>client and counterparty, this data is used by Cardano to establish a mid-market reference price for each transaction. The spread to mid-market is mirrored against other best execution factors such as liquidity and client objectives/restrictions to determine the attractiveness of the price offered by a counterparty</p> <p>Analysis of realized transaction costs for all trades in 2022 showed a consistent pattern. No notable exceptions, without any rationale to it, have been identified demonstrating our consistent pre-trade approach to best execution.</p>
--	--

D: Credit derivatives

Futures and options admitted to trading on a trading venue

Cardano did not execute orders in this class of instrument in the reporting period.

Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

Other credit derivatives

Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

E: Currency derivatives

Futures and options admitted to trading on a trading venue

Cardano did not execute orders in this class of instrument in the reporting period.

Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

Notes drawn from monitoring the quality of execution:

Item	Analysis and conclusions
Relative importance given to price, costs, speed, likelihood of execution or other considerations.	When trading currency futures, best price / lowest costs and likelihood of execution are equally important. Speed of execution is important if the client gave a specific timeframe to an order.
Arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.	Cardano has fixed fee arrangements in place per transaction (clearing and exchange fees)
Explanation of how the investment firm has used any data or tools relating to the quality of execution.	We have a continuous dialogue with our future brokers in terms of pricing and their capacities (e.g. execution algorithms available for trading). On the latter, we investigate the suitability of each and determine as to whether they could be of use to us and our clients.

Swaps, forwards and other currency derivatives

Notification if < 1 average trade per business day in the previous year	No				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
FXall, operated by Financial & Risk Transaction Services Ireland Limited, (635400MQZIPRPDDZK76)	100%	100%	N/A	N/A	0%

Class of Instrument	Swaps, forwards and other currency derivatives: information on the top five counterparties on FXall				
Notification if < 1 average trade per business day in the previous year	No				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
J.P. Morgan AG (549300ZK53CNGEEI6A29)	21%	22%	N/A	N/A	0%
Zürcher Kantonalbank (165GRDQ39W63PHVONY02)	12%	3%	N/A	N/A	0%
UBS AG (BFM8T61CT2L1QCCEMIK50)	10%	9%	N/A	N/A	0%
COOPERATIEVE CENTRALE RAIFFEISEN-BOERENLEENBANK B.A. (DG3RU1DBUFHT4ZF9WN62)	9%	5%	N/A	N/A	0%
Morgan Stanley Europe SE (54930056FHWP7GIWYY08)	8%	7%	N/A	N/A	0%

FX spot transactions are included as "other currency derivatives"

Notes drawn from monitoring the quality of execution:

Item	Analysis and conclusions
Relative importance given to price, costs, speed, likelihood of execution or other considerations.	When trading currency derivatives, best price / lowest costs and likelihood of execution are equally important. Speed of execution is important if the client gave a specific timeframe to an order.
Arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.	Cardano has no fee arrangements with the venue used. No discounts, rebates or non-monetary benefits were received.
Explanation of how the investment firm has used any data or tools relating to the quality of execution.	<p>On a quarterly basis the potential counterparties to currency derivatives are evaluated based on a wide set of criteria including but not limited to hit ratio, pre- and post-trade service levels, speed and flexibility in contract negotiation.</p> <p>Cardano uses FXall to execute FX-spot, FX-forward and FX- swap transactions. We performed a review to substantiate this choice. Given the product suite we transact in, Bloomberg, FXConnect and 360T have been identified as prominent competitors. We have no indications that pricing and/or liquidity on these venues is better than FXall. We are comfortable to continue using FXall as part of our process to achieve best execution on behalf of our clients and we will continue to monitor the market landscape.</p> <p>In order to cater for the RTS 28 and transaction costs analysis we make use of an independent third party TCA provider. Using, amongst others, hit ratios per currency pair and tenor, market impact and other relevant execution factors we evaluate and improve our execution on an ongoing basis. It also assists in identifying parties that consistently under / outperform and feeds into our continuous dialogue we have with the counterparties we have available for trading.</p> <p>We completed a review of the transaction costs incurred over 2022. Results show a consistent pattern for the different instruments in the currencies traded. Based upon both high-level results and monitoring of exceptions / worst performing trades we have confirmed our consistent approach to best execution.</p>

F: Structured finance instruments

Cardano did not execute orders in this class of instrument in the reporting period.

Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

G: Equity Derivatives

Options and Futures admitted to trading on a trading venue (broker used)

Notification if < 1 average trade per business day in the previous year	Yes				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Société Générale SA (O2RNE8IBXP4R0TD8PU41)	67%	50%	67%	33%	0%
J.P. MORGAN SECURITIES PLC (K6QQW1PS1L1O4IQL9C32)	33%	50%	50%	50%	0%

Notes drawn from monitoring the quality of execution:

Item	Analysis and conclusions
Relative importance given to price, costs, speed, likelihood of execution or other considerations.	When trading equity option and futures, best price / lowest costs and likelihood of execution are equally important. Speed of execution is important if the client gave a specific timeframe to an order.
Arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.	Cardano has fixed fee arrangements in place per transaction (clearing and exchange fees)
Explanation of how the investment firm has used any data or tools relating to the quality of execution.	<p>Cardano checks the depth of the central limit order book and determines speed of execution during execution. Furthermore, we check the (potential) impact on prevailing market prices when executing via direct market access or algorithms. Amongst others, we check execution performance and slippage costs based on the transaction costs information received from our brokers and on proprietary analysis based on information from the relevant exchange.</p> <p>We have a continuous dialogue with our future brokers in terms of pricing and their capacities (e.g. execution algorithms available for trading). On the latter, we investigate the suitability of each and determine as to whether they could be of use to us and our clients.</p>

Swaps and other equity derivatives

Notification if < 1 average trade per business day in the previous year	Yes				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Morgan Stanley Europe SE (54930056FHW7GIWY08)	25%	21%	N/A	N/A	N/A
UBS AG (BFM8T61CT2L1QCCEMIK50)	17%	21%	N/A	N/A	N/A
BNP PARIBAS (ROMUWSFPU8MPRO8K5P83)	14%	11%	N/A	N/A	N/A
Citigroup Global Markets Europe AG (6TJCK1B7E7UTXP528Y04)	11%	14%	N/A	N/A	N/A
J.P. Morgan AG (549300ZK53CNGEEI6A29)	10%	7%	N/A	N/A	N/A

Notes drawn from monitoring the quality of execution:

Item	Analysis and conclusions
Relative importance given to price, costs, speed, likelihood of execution or other considerations.	When trading equity option and swaps, best price / lowest costs and likelihood of execution are equally important. Speed of execution is important if the client gave a specific timeframe to an order.
Arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.	Cardano has no fee arrangements with the venues used. No discounts, rebates or non-monetary benefits were received.
Explanation of how the investment firm has used any data or tools relating to the quality of execution.	<p>On a quarterly basis the potential counterparties to equity derivatives are evaluated based on a wide set of criteria including hit ratio, pre- and post-trade service levels, speed and flexibility in contract negotiation.</p> <p>At the point of execution, traders assess prices relative to a mid-market reference price. Independent reference data is used to the extent available: this includes, but is not limited to dividends, volatility skews and correlations received from a contracted data vendor. Supported with other information relevant to a trade (e.g. intelligence from counterparties), this data is used by Cardano to establish a mid-market reference price for each transaction. The spread to mid-market is mirrored against other best execution factors such as liquidity and client objectives/restrictions to determine the attractiveness of the price offered by a counterparty.</p> <p>We analysed realized transaction costs for 2022 and found a consistent pattern in terms of transaction cost. No notable exceptions, without any rationale to it, have been identified demonstrating our consistent pre-trade approach to best execution.</p>

H: Securitized Derivatives

Cardano did not execute orders in these classes of instrument in the reporting period.

Warrants and Certificate Derivatives

Class of Instrument	Warrants and Certificate Derivatives				
Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

Other securitized derivatives

Class of Instrument	Other securitized derivatives				
Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

I: Commodities derivatives and emission allowances Derivatives

Options and Futures admitted to trading on a trading venue

Cardano did not execute orders in this class of instrument in the reporting period.

Class of Instrument	Options and Futures admitted to trading on a trading venue				
Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

Other commodities derivatives and emission allowances derivatives

Class of Instrument	Other commodities derivatives and emission allowances derivatives				
Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

J: Contracts for difference

Cardano did not execute orders in this class of instrument in the reporting period.

Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

K: Exchange traded products (exchange traded funds, exchange traded notes and exchange traded commodities)

Cardano did not execute orders in this class of instrument in the reporting period.

Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

L: Emission allowances

Cardano did not execute orders in this class of instrument in the reporting period.

Notification if < 1 average trade per business day in the previous year	NA				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
Not Applicable					

M: Other instruments

Inflation Linked Swaps

Notification if < 1 average trade per business day in the previous year	yes				
Top five execution venues ranked in terms of trading volumes (descending order)	Proportion of volume traded as a % of total in that class	Proportion of orders executed as a % of total in that class	% of passive orders	% of aggressive orders	% of directed orders
J.P. Morgan AG (549300ZK53CNGEEI6A29)	43%	13%	NA	NA	NA
Goldman Sachs Bank Europe SE (8IBZUGJ7JPLH368JE346)	37%	43%	NA	NA	NA
BNP PARIBAS (ROMUWSFPU8MPRO8K5P83)	15%	26%	NA	NA	NA
Morgan Stanley Europe SE (54930056FHWP7GIWYY08)	1%	4%	NA	NA	NA
Société Générale SA (O2RNE8IBXP4ROTD8PU41)	1%	4%	NA	NA	NA

Notes drawn from monitoring the quality of execution:

Item	Analysis and conclusions
Relative importance given to price, costs, speed, likelihood of execution or other considerations.	When trading Inflation Linked Swaps, best price / lowest costs and likelihood of execution are equally important. Speed of execution is important if the client gave a specific timeframe to an order.
Arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.	Cardano has no fee arrangements with the venues used. No discounts, rebates or non-monetary benefits were received.
Explanation of how the investment firm has used any data or tools relating to the quality of execution.	<p>On a quarterly basis the potential counterparties to Inflation Linked Swaps are evaluated based on a wide set of criteria including hit ratio, pre- and post-trade service levels, speed and flexibility in contract negotiation.</p> <p>At the point of execution, traders assess prices relative to a mid-market reference price. This includes the determination whether cleared or non-cleared transactions will lead to the best overall outcome. Independent reference data is used to the extent available: this includes, but is not limited to break-even rates, seasonalities and interest rates. Supported with other information relevant to a trade (e.g. from counterparties and specific agreements in the ISDAs between clients and counterparties) relevant to a trade, this data is used by Cardano to establish a mid-market reference price for each transaction. The spread to mid-market is mirrored against other best execution factors such as liquidity and client objectives/restrictions to determine the attractiveness of the price offered by a counterparty</p> <p>We have analysed realized transaction costs for 2022 and found a consistent pattern in terms of transaction cost. No notable exceptions, without any rationale to it, have been identified demonstrating our consistent pre-trade approach to best execution.</p>

cardano

Cardano | Weena 690, 21e etage, Postbus 19293, 3001 BG Rotterdam The Netherlands
T: +31 (0)10 2061300 | E: info@cardano.com | W: cardano.com

Cardano Risk Management B.V. is onderdeel van de Cardano Group en statutair gevestigd te Amsterdam -
KvK-nummer: 24308915.
