

## Information on Top 5 Routing Venues and Quality of Execution for 2018

**Table 1 - Piper Jaffray Ltd.**

<b>Class of Instrument</b>	Equities - Professional Clients			
<b>Notification if &lt; 1 average trade per day in the previous year</b>	No			
<b>Top Five Execution Venues Ranked in Terms of Trading Volumes (descending order)</b>	<b>Proportion of Volume Traded as a % of Total in that Class</b>	<b>Proportion of Orders Executed as a % of Total in that Class</b>	<b>% of Passive Orders</b>	<b>% of Aggressive Orders</b>
Goldman Sachs & Co. (LEI = FOR8UP27PHTHYVLBNG30)	48.3%	63.0%	32.2%	67.5%
CIBC World Markets Inc. (LEI = 549300TDJKVQJ41VN031)	13.8%	1.8%	78.8%	7.4%
Clearpool Execution Services, LLC (LEI = 549300U614BWU622VY96)	13.3%	18.9%	63.1%	31.7%
Piper Jaffray & Co. (LEI = 549300GRQCWQ3XGH0H10)	12.0%	0.1%	0.0%	0.0%
NASDAQ (LEI = 549300L8X1Q78ERXFD06)	3.6%	4.4%	37.2%	30.0%

### **Relevant Notes to Routing Venue Table:**

- Piper Jaffray Ltd.'s orders are directed to Piper Jaffray & Co. (US affiliate) and subsequently sent to stated market venues for execution.
- Piper Jaffray Ltd. did not receive any directed orders in 2018.
- Piper Jaffray Ltd. currently does not provide any Securities Financing Transactions to its clients.

## Information on Top 5 Routing Venues and Quality of Execution for 2018

**Table 2 - Piper Jaffray Ltd.**

<b>Class of Instrument</b>	ETF (Exchange Traded Funds) - Professional Clients			
<b>Notification if &lt; 1 average trade per day in the previous year</b>	No			
<b>Top Five Execution Venues Ranked in Terms of Trading Volumes (descending order)</b>	<b>Proportion of Volume Traded as a % of Total in that Class</b>	<b>Proportion of Orders Executed as a % of Total in that Class</b>	<b>% of Passive Orders</b>	<b>% of Aggressive Orders</b>
Goldman Sachs & Co. (LEI = FOR8UP27PHTHYVLBNG30)	35.4%	58.0%	43.9%	54.9%
Clearpool Execution Services, LLC (LEI = 549300U614BWU622VY96)	23.4%	23.5%	45.8%	36.4%
NASDAQ (LEI = 549300L8X1Q78ERXFD06)	23.0%	10.2%	10.0%	43.4%
J.P. Morgan Securities LLC (LEI = ZBUT11V806EZRVWT807)	7.9%	3.6%	19.6%	77.1%
NYSE Arca (MIC = ARCX)	4.5%	3.2%	0.0%	0.7%

### **Relevant Notes to Routing Venue Table:**

- Piper Jaffray Ltd.'s orders are directed to Piper Jaffray & Co. (US affiliate) and subsequently sent to stated market venues for execution.
- Piper Jaffray Ltd. did not receive any directed orders in 2018.
- Piper Jaffray Ltd. currently does not provide any Securities Financing Transactions to its clients.

## Information on Top 5 Routing Venues and Quality of Execution for 2018

**Table 3 - Piper Jaffray Ltd.**

Please note that Piper Jaffray Ltd. does not provide trading services to retail clients at this time.

<b>Class of Instrument</b>	Equities - Retail Clients			
<b>Notification if &lt; 1 average trade per day in the previous year</b>	Yes			
<b>Top Five Execution Venues Ranked in Terms of Trading Volumes (descending order)</b>	<b>Proportion of Volume Traded as a % of Total in that Class</b>	<b>Proportion of Orders Executed as a % of Total in that Class</b>	<b>% of Passive Orders</b>	<b>% of Aggressive Orders</b>

**Relevant Notes to Routing Venue Table:**

- Piper Jaffray Ltd.'s orders are directed to Piper Jaffray & Co. (US affiliate) and subsequently sent to stated market venues for execution.
- Piper Jaffray Ltd. did not receive any directed orders in 2018.
- Piper Jaffray Ltd. currently does not provide any Securities Financing Transactions to its clients.

## Information on Top 5 Routing Venues and Quality of Execution for 2018

**Table 4 - Piper Jaffray Ltd.**

**Please note that Piper Jaffray Ltd. does not provide trading services to retail clients at this time.**

<b>Class of Instrument</b>	ETF (Exchange Traded Funds) - Retail Clients			
<b>Notification if &lt; 1 average trade per day in the previous year</b>	Yes			
<b>Top Five Execution Venues Ranked in Terms of Trading Volumes (descending order)</b>	<b>Proportion of Volume Traded as a % of Total in that Class</b>	<b>Proportion of Orders Executed as a % of Total in that Class</b>	<b>% of Passive Orders</b>	<b>% of Aggressive Orders</b>

**Relevant Notes to Routing Venue Table:**

- Piper Jaffray Ltd.'s orders are directed to Piper Jaffray & Co. (US affiliate) and subsequently sent to stated market venues for execution.
- Piper Jaffray Ltd. did not receive any directed orders in 2018.
- Piper Jaffray Ltd. currently does not provide any Securities Financing Transactions to its clients.

## PIPER JAFFRAY LTD. ORDER TRANSMISSION POLICY

### Introduction

1. Under the EU Markets in Financial Instruments Directive ("MiFID") and the FCA Rules which implement the directive, we are required to put in place an order transmission policy and to take all sufficient steps to obtain the best possible result for our clients when receiving and transmitting orders for execution where such Orders relate to securities which are 'financial instruments' for the purpose of MiFID. We are also required to provide appropriate information to our clients on our order transmission policy.

### Scope

2. Our order transmission policy applies whenever we receive an Order from a client for transmission to a third party for execution.

### Definition of Order

3. "Order" means an instruction to buy or sell a financial instrument which is accepted by us for transmission to a third party and which gives rise to contractual or agency obligations to you. Implicit in the instruction received will be the understanding that you are relying on us to protect your interests in relation to the pricing or other aspects of the transaction that may be affected by how the entity to which we transmit the Order, executes the Order. This includes where a trade is not immediately executable, where we are given discretion as to the manner of execution and exact terms of the transaction and where the trade can be executed and booked to your account without the need for further reference to you or where the executing party executes an Order as agent or riskless principal on your behalf.

### Achievement of Best Results for Clients

4. When receiving and transmitting Orders in relation to financial instruments on your behalf we will take all sufficient steps to achieve best execution. This means that we will have in place a policy and procedures which are designed to obtain on a consistent basis the best possible result for transmission of your Orders, subject to and taking into account the nature of your Orders, the priorities you place upon us in filling those Orders and the nature of relevant markets.
5. In taking all sufficient steps, we will endeavour to achieve the best balance across a range of sometimes conflicting factors. This does not mean achieving the best price for every client Order, but rather the best possible result that we can reasonably be expected to achieve with the resources available to us.
6. Our commitment to arrange for you to be provided with best execution does not mean that we owe you any fiduciary or other duties over and above the specific regulatory obligations placed upon us or as may be otherwise contracted between us.

### Order Execution

7. When determining the strategy for execution of your Orders we will require the executing party to take into consideration certain factors as appropriate, in the context of the terms of your Orders. Factors they may consider will be price, the need for timely execution, the liquidity or illiquidity of the market, the size of the Order, the costs of the transaction and the nature of the transaction including whether it is executed on a Trading Venue or over-the-counter.
8. In the absence of specific instructions from you, we and the executing party will exercise our own judgement, skill and experience having regard to available market information, when determining the factors that we need to take into account for the purpose of providing you with best execution.
9. The diversity in markets for different financial instruments and the types of Orders that you may place with us mean that different factors could be applicable in each case when we and the executing party consider our execution strategy for each Order received from you. For example there is no formalized market or settlement infrastructure for some over-the-counter transactions, in some markets price volatility may mean that the timeliness of execution is a priority, whereas in an illiquid market the fact of execution may in itself constitute best execution.
10. In extreme volume and volatility situations, exchange system constraints require automated trading solutions to be switched off and/or electronic routing to be suspended in favour of manual execution. Such events lead to further execution delays and increased market volatility. Clients should be aware of the following risks associated with volatile markets, especially at or near the close of the standard trading session:

- an Order may be executed at a substantially different price from the quoted bid or offer, or the last reported sale price at the time of Order entry, or an Order may be only partially executed or may be executed in several transactions at different prices; and
  - opening prices may differ significantly from the previous day's close.
11. When executing your Orders, as well as the factors relevant to the Order the executing party will take into account the following:
- Characteristics of their client (you);
  - Characteristics of the client Orders;
  - Characteristics of the securities that are the subject of the Orders; and
  - Characteristics of the possible execution venues to which the Orders can be directed.
12. Orders may be executed on your behalf outside a regulated market, MTF or OTF where we reasonably believe this is necessary to achieve best execution. You consent to us executing an order outside a regulated market, MTF or OTF where we reasonably believe it is in your best interests to do so.
13. Where the executing party is itself the execution venue (where they take an Order and trade with you as principal) they will review the quality of their own execution in the same way as they would for any other venue.
14. In circumstances where the executing party executes trades with you but does not execute an Order on your behalf, it will not owe you a duty of best execution. This will include, but may not be limited to, circumstances where they are providing you with quotes at your request on the basis of which you decide to transact and circumstances where you provide quotes to them at our request and they decide to transact on the basis of those quotes.

#### **Specific Instructions**

15. To the extent that you provide us with specific instructions in relation to your Order or any part of it (including selection of execution venue) we and the executing party will act on your instructions and, in doing so, we will have complied with our obligations to provide the best possible result to the extent that those instructions are followed. If you require your Order to be executed in a particular manner you must clearly state your desired method of execution when you place your Order. To the extent that your specific instructions are not comprehensive, we will determine any unspecified aspects in accordance with this policy.
16. Where we receive an Order for execution via a trading algorithm (including VWAP, TWAP, and contingent trades) that we offer, we will treat the Order as a specific instruction as to all aspects of the Order.
17. Where we receive an equities order from you, to ensure correct identification of the security and related clearing counterparty we will ask for specific instructions as to the venue on which the equity is listed.

#### **Execution Venues**

18. Subject to any specific instructions from you, the executing party may use one or more of the following venues to enable us to obtain the best possible result on a consistent basis when executing an Order on your behalf:
- Trading Venues;
  - Internal sources of liquidity (matching client Orders);
  - Piper Jaffray & Co. and its affiliated companies trading desks' (proprietary positions, or where acting as a liquidity provider or market maker);
  - Third party investment firms and brokers (or non EU entities performing similar functions) which also may trade proprietary positions, act as market makers and as liquidity providers.
19. Nothing in this summary of our policy should be taken to imply that we will act as either a systematic internaliser or a multilateral trading facility.
20. Our choice of venue may be constrained by the fact that there may be only one market or platform where an Order can be executed because of the nature of your Order or your requirements.

21. One or other of our affiliates will be used as the execution venue where we believe that they can trade to your advantage or at no disadvantage to you in accordance with this policy. Where one of our affiliates is the execution venue we will consider all sources of reasonably available information to obtain the best possible result for the Order.

#### **Execution Factors**

22. Subject to any specific instructions from you and having regard to the matters discussed at paragraphs 7 to 9 above, we and the executing party will take into account the following factors, as appropriate, to determine the manner in which your Orders will be executed:
- Price;
  - Speed;
  - Likelihood of execution or settlement;
  - Size of the Order;
  - Costs;
  - Nature of the Order; and
  - Any other consideration relevant to the efficient execution of the Order.
23. Usually price will be considered the most important factor in obtaining the best possible result for your Orders. However, in certain circumstances, for some client Orders, financial instruments or markets, the executing party may decide, in its absolute discretion, that other factors noted above may be more important than price in determining the best possible result in accordance with this policy.

#### **Receiving and Transmitting Orders**

24. When determining the strategy for obtaining the best result for your Orders, in the absence of specific instructions, we will consider if it is reasonable to simply transmit the Order to another entity or whether it is necessary to exercise additional control when instructing the other entity in relation to your Order.
25. Where an affiliate of ours is the entity to which we transmit your Order for execution we will review the quality of its execution in the same way as we would for any other entity.

#### **Entities to which Client Orders may be Transmitted**

26. We may transmit your Order to one of the following entities for execution in order to obtain the best possible result for you on a consistent basis:
- any of our affiliates in the US;
  - third party investment firms or brokers Via our affiliates in the US
27. As well as having regard to an entity's access to markets and execution venues, when choosing entities for inclusion in our policy we assesses each entity's ability to obtain the best result for you on a consistent basis, having regard to the factors set out at paragraph 22 which we understand to be most important to you (usually price, costs and speed).
28. For some markets we have selected one entity to which we transmit Orders and that entity is considered able to obtain results for clients at least as good as we could expect from alternative firms.
29. Please note that the entities to which we may transmit your Order for execution may also transmit client Orders received by them to us for execution where we have access to relevant markets or execution venues.

#### **Limit Order Publication (if unexecuted)**

30. If you give us limit orders (which are below normal market size) in relation to shares admitted to trading on an EEA regulated market, the executing party is required to make public such limit orders to the extent they are not immediately executed under prevailing market conditions unless you consent to them exercising their discretion as to whether to make them public or you have expressly instructed us not to make the unexecuted order, or any part of it, public.

### **Monitoring and Review**

31. We will monitor the effectiveness of our order transmission policy and arrangements to identify and, where appropriate, correct any deficiencies.
32. We will assess whether the execution venues included in our order transmission policy, in respect of any products that we trade, enable us on a consistent basis to provide the best possible result for your Orders and whether we need to make changes to our execution arrangements.
33. We will assess whether the entities to which we transmit client Orders for execution provide the best result for clients on a consistent basis. To the extent that we exercise additional control when transmitting Orders to entities for execution we will include a review of our performance in this regard when monitoring.

We will carry out the reviews and assessments above relating to our order transmission policies and arrangements at least annually or whenever a material change occurs that affects our ability to obtain the best result for the execution of your Orders on a consistent basis using the venues and entities included in our order transmission policy. We will notify you of any material changes to our order transmission policy and