

Pershing 2017 RTS 28 Report

Global Equities

Pershing Trading Services (PTS) provides agency execution services in global equities across the UK, EMEA, U.S. and APAC. We did not receive and transmit any orders to other brokers to work on PTS' behalf in 2017.

Equity Order Types

As RTS 28 requires, it is appropriate that a distinction be drawn between the different categories of order types executed and how that may have impacted both venue selection and execution tools/methods used to process those orders.

For order driven equities, PTS executed client orders on all leading primary exchanges, multi-lateral trading facilities (MTFs) and other complimentary broker dark pools of liquidity. We accessed these venues using smart order routing (SOR) and algorithmic trading tools (ALGOS).

In addition to our top five venues, our total venue list for electronic equities trading was in excess of 50 global venues in 2017; although this was concentrated heavily around common venues with the most liquidity.

The percentage split between passive and aggressive orders within the top five venues represents clients sending orders electronically to the market themselves via our systems and hence making their own execution decisions on when to be 'passive or aggressive' and also whereby PTS traders were making decisions whilst executing orders on a 'care' basis on whether to be passive or aggressive.

It should be noted that some algorithmic order types and client instructions received had varying levels of 'urgency' or 'aggression' than others. This also contributed towards the percentage split between passive/aggressive orders. Whilst a large aggressive instruction from a client on a parent order basis would generally create increased signalling risk hence compromising 'price' over the life of the order and ultimately increasing our aggressive trade count, a similarly large order of an absolute passive nature, would preserve impact, lessen risk and add to our passive trade count.

For quote driven equities (in particular the UK), PTS executed client orders with all leading UK market makers, both electronically and on a voice basis for negotiated trades. These trades had no significant bearing on the split between passive and aggressive order types as these orders were not entered onto any 'order book.' Further, for large-in-scale orders in quote driven UK stocks, we also accessed various block trading initiatives such as the new LIS dark MTFs from time to time where necessary. The latter were recorded for passive and aggressive as they took place on order books, although not featured in our 'top five.'

Equity Execution Venues: Summary of Analysis and Conclusions Drawn

PTS performed regular detailed analysis on all executed orders on behalf of clients in global equities. Analysis took place on a daily and weekly basis by our in house TCA services desk. All results and outliers were examined and discussed at our regular Best Execution Forum with participants attending from trading and other control departments across Pershing and BNY Mellon.

Regular reports were analysed for different types of order flow including: algorithmic orders, smart order routed orders, 'care orders' and orders in quote driven securities executed either electronically or on a voice basis by our trading desk. Analytical tools used on a regular basis include tools such as: live order book replay, intra-day stock volatility, slippage/improvement versus spread and spread capture analysis. PTS executed orders across a large list of venues, venue types and across numerous countries, with the majority of our equity order flow centred across UK, European and U.S. markets. We chose to execute orders on all major trading venues in those regions throughout the course of the year.

From our analysis, we are confident that in 2017, our methods of execution, the venues we traded upon, the analytical tools that we utilised and the frequency of our reporting (which we replayed back into future execution decision making) enabled us to obtain consistently the best possible result for our clients.

Equities—'Eight Statements'

- a) When assessing the quality of execution for equities, in most cases we prioritised "price" as the most important factor in our best execution analysis. This was largely due to a significant majority of our global equities order flow being across liquid equities, traded electronically using smart order routers (SOR) and algorithmic trading tools. "Likelihood of execution and settlement" took a lower priority, because we elected to only trade with reputable venues and brokers that had high levels of liquidity and settlement success rates. For larger orders in liquid equities and in particular for large orders in quote driven UK equities, PTS also provided 'care order' services. It was sometimes the case (in particular for very illiquid stocks) that "price" had a less significant level of importance in our best execution analysis. Although in these instances, price would always be of paramount importance, it was recognised that "likelihood of execution" for certain orders also ranked high as a factor in our analysis.



- b) PTS does not have any ownership or holdings in any of the equity execution venues that we traded upon in 2017.
- c) We do not have any specific arrangements with any execution venues regarding payments made or received, discounts, rebates, or non-monetary benefits received.
- d) Aside from the changes made by some of the Broker-Crossing Networks with which we traded where they decided to become Systematic Internalisers (SIs) ahead of MIFID II and the advent of new 'Large in Scale' offerings on some venues, there were no significant changes to our list of equity execution venues over the course of the year.
- e) All of our direct clients are categorised as Professional Clients. We did not require different or augmented approaches in the way we executed orders between 'different client types.'
- f) PTS does not classify any of its direct client firms as 'retail clients.' Therefore any analysis explanations around criteria weighing for orders from these clients is not applicable.
- g) PTS uses LiquidMetrix as our primary tool for analysing our global equity executions. In addition, we used Bloomberg as an accompanying tool, as well as settlement data provided by in house teams. In this RTS 28 report, RTS 27 data is not yet available for the market to consume for comparison purposes.
- h) As at the time of writing (April 2018), there is no official Consolidated Tape Provider (CTP) for equities. We consume multi-venue data from exchange and MTF ticker plants from Liquid Metrix. We also source multi-venue data from Bloomberg for secondary checks if needed.

Exchange-Traded Funds

Similar to our equities trading geographical reach, Pershing Trading Services (PTS) executed orders in an agency capacity in Exchange-Traded Funds (ETFs) across the UK, EMEA, U.S. and APAC. Primary exchanges, MTFs, UK market makers and European specialist ETF market makers, all featured regularly as different venue types we used to access liquidity. We did not 'receive and transmit' any ETF orders to other brokers to work on our behalf.

ETF Order Types

Different order types, sizes and client instructions had varying effects upon which execution venues we selected to source liquidity from. Clients traded liquid ETFs electronically into our systems via FIX, where we used SORs to help access multiple pools of liquidity across order driven lit and dark markets. This channel was used mainly for smaller orders in the UK and Europe whereby clients wanted to make execution decisions themselves. For larger ETF orders, clients used PTS for 'care order' services. Depending on the order type and the goals of the client, larger orders with impact sensitivity were executed via algorithmic tools on volume participation or rules-based instructions. Similarly for other large orders of a more aggressive nature, we interacted with our network of specialist ETF market makers. We mainly interacted with ETF market makers over Bloomberg MTF ("Multi-lateral Trading Facility (BMTF)") on a request for quote (RFQ) basis. For smaller orders particularly in UK listed ETFs, PTS traded from time to time with retail market makers on an RFQ basis also.

Each of the aforementioned order types, order sizes and associated client instructions (with regard to different levels of urgency) had direct effects upon the 'top five' venues that PTS executed business upon and also the way in which liquidity access was split between 'passive' and 'aggressive' order types.

ETF Execution Venues: Summary of Analysis and Conclusions Drawn

Due to the fact that ETFs trade in a very similar way to equities, we adopted the same approach to Best Execution and Transaction Costs Analysis (TCA). The vast majority of ETFs that PTS executed were in liquid well known issues across the UK and Europe. The methods of execution employed for ETF trading, which included smart order routing, use of algorithmic trading tools and RFQ trading, were the same toolsets we used for equities. Analysis took place on a daily and weekly basis by our in house TCA services desk. All results and outliers were examined and discussed at our regular Best Execution Forum.

Regular scripted reports were analysed for different types of order flow including: algorithmic orders, smart order routed orders, 'care orders' and RFQ orders. These reports were produced systematically and studied on a weekly basis. Analytical tools used on a regular basis to assist with our detailed analysis included the same tools used in our assessment of our global equity executions—as set out in the equity section above—being LiquidMetrix. As a result of our detailed analysis for ETF executions over 2017 we are confident that our methods of execution, the venues we traded upon, the analytical tools that we utilised and the frequency of our reporting enabled us to consistently obtain the best possible result for our clients.

Exchange Trade Funds—'Eight Statements'

- a) When assessing the quality of execution for ETFs, in most cases we prioritised "price" as the most important factor in our analysis. This is due to the fact that many ETF orders we executed were done so in liquid markets, where the target benchmark

was executed price. This was the case for both small and large in scale orders. Due to the vast array of venue choices and access to risk prices, it was often the case that irrespective of the liquidity profile of the ETF in question, the likelihood of execution as a factor did not warrant exceeding price in our priority weightings.

- b) PTS does not have any ownerships or stakes in any of the ETF execution venues that we traded ETF orders upon in 2017. In addition, we have no close links with any ETF market makers.
- c) We do not have any specific arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.
- d) There were no significant changes to our list of ETF execution venues over the course of the year. We did however add BMTF to our ETF venue list in 2017.
- e) All of our direct clients are categorised as professional clients. We did not require different or augmented approaches in the way we executed orders between 'different client types.'
- f) PTS does not classify any of its direct client firms as 'retail clients.' Therefore any analysis around best execution criteria weighting for orders from these clients is not applicable.
- g) We used LiquidMetrix as our central tool for analysing our ETF executions, across both electronic trades (SOR/RSP/ALGO) and negotiated trades with ETF market makers.
- h) At the time of writing (April 2018), there is no official Consolidated Tape Provider (CTP) for ETFs.

Fixed Income

Pershing Trading Services (PTS) executed orders on an agency basis for our clients across both rates and credit markets on a global basis in 2017. All trades were booked as agent on a gross price basis. We did not mark up any bond prices. PTS traders executed orders themselves in line with client instructions/consultation. PTS did not 'transmit' orders or 'place' orders with any bond brokers for execution.

Fixed Income Order Types

In line with RTS 28 we are required to describe how different order types determine the methods of execution we employ and decide the venues that we select to source liquidity for our clients. The majority of our fixed income orders were immediately marketable but with limit or guide limit prices. Depending on the bond in question, its country of issue and its maturity, PTS traders exercised discretion in accessing liquidity on both fixed income MTFs and through matched principle brokers. These brokers are detailed in our 'top five' fixed income table in this RTS 28 publication. Our bond broker panel (sometimes known as 'other liquidity providers') were often sourced for a selection of prices. They were used particularly in larger orders. For retail sized orders, in UK government paper, our venue of choice would commonly be a UK gilt market maker on an RFQ basis.

Fixed Income Execution Venues: Summary of Analysis and Conclusions Drawn

PTS utilised the LiquidMetrix TCA platform to analyse our fixed income executions in 2017. The level of analysis on execution process and venue selection differed to that of equities and ETFs. Owing to the levels of pre and post trade transparency that are exclusive to the fixed income market, the availability or meaningful (and tradeable) benchmark quotes and other datasets to aid TCA data analytics remained in short supply.

The LiquidMetrix TCA solution benchmarked our fixed income executions against an array of data supplied by TRAX into the platform. This included, TRAX quotations (updated every 5 seconds if prices are available), Trax EOD quotes and Trax high/low. In addition to using LiquidMetrix, our TCA Services desk also utilised Bloomberg to record all indicative prices received from brokers and subsequent prices of executed orders.

In summary, we were satisfied with the level of liquidity access and choice of venues for our fixed income executions in 2017. Our level of TCA gave us enough meaningful insight to justify our venue selections over the course of the year.

Fixed Income—'Eight Statements'

- a) We normally regarded price as the most important factor in delivering the best possible result for clients in 2017. However, in certain circumstances where price transparency or liquidity was adversely affected, as is so often the case in bond markets, we gave likelihood of execution an elevated weighting. It is often the case that likelihood of execution takes a high priority particularly around some higher yielding and less liquid corporate bonds as opposed to government issues. For Fixed Income we generally did not attach a high weighting to 'speed.'

- b) PTS does not have any ownerships or stakes in any of the Fixed Income venues we trade on. We also have no ownerships in any principle bond brokers. We do from time to time trade with BNY Mellon Capital Markets in both the UK and in the U.S. for fixed income. These relationships are treated at arms length and are not automatically favoured in our choice of execution venues.
- c) We do not have any specific arrangements with any execution venues regarding payments made or received, discounts, rebates or non-monetary benefits received.
- d) We added BMTF, MarketAxess MTF and UBS Bondport to our list of liquidity points in 2017.
- e) All of our direct clients are categorised as professional clients. We did not require different or augmented approaches in the way we executed orders between 'different client types.'
- f) Pershing does not classify any of its direct client firms as 'retail clients.' Therefore any analysis around best execution criteria weighting for orders from these clients is not applicable.
- g) We used LiquidMetrix as our central tool for analysing our Fixed Income executions. This was later replaced in January 2018 by Bloomberg Fixed Income BTCA.
- h) At the time of writing (April 2018) there is no official Consolidated Tape Provider (CTP) for fixed income.

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