THE INVESTMENT ASSOCIATION

FIXED INCOME BEST EXECUTION: NOT JUST A NUMBER

HOW TO READ THE STORY OF A TRADE

November 2018

Produced in conjunction with

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INTRODUCTION

THE INVESTMENT ASSOCIATION IS THE TRADE BODY THAT REPRESENTS INVESTMENT MANAGERS, WHOSE 250 MEMBERS COLLECTIVELY MANAGE OVER GBP7.7 TRILLION ON BEHALF OF CLIENTS. THE UK IS THE SECOND LARGEST INVESTMENT MANAGEMENT CENTRE IN THE WORLD AND MANAGES 35% OF EUROPEAN ASSETS.

This paper was produced in conjunction with the IA Fixed Income Traders Committee, bond trading journal The DESK, and buy-side trading news platform TraderTV.net.

The IA Fixed Income Traders Committee membership comprises heads of fixed income trading from a broad selection of asset managers. This paper represents the collective views of the Committee, but not the views of any single member of the Committee.

Asset managers must determine how to provide best execution to their clients, and have a regulatory obligation to do so under the Markets in Financial Instruments Directive II (MiFID II) which came into effect on 3 January 2018[1]. The 2007 Directive (MiFID I) also had a concept of best execution, which was enhanced by its successor directive.

Whilst this paper is focused on fixed income best execution, the central concepts and factors apply across the board. The application and specific interaction of these factors will vary from asset class to asset class but the fundamentals remain the same.

The key factors for consideration before executing a trade are:

- Price
- Size
- Market impact
- Information leakage
- Likelihood of execution / liquidity
- Likelihood of settlement
- Speed
- Explicit costs
- Base Currency
- Opportunity cost / cost of delay
- Portfolio Manager's (PMs) instructions

A simplistic price-driven approach to best execution will not give a real understanding of how well a trade was executed. In order to provide coherent and transparent information to clients or for internal review, it's important to understand how the trade evolved over time – to read the story of the trade. The central concepts and factors of trade execution apply across assets. However the application and specific interaction of these factors will vary from one asset class to another.

It is often stated that fixed income markets are less liquid than equities, however there is a complete curve of instruments in the fixed income space, some of which exhibit very similar liquidity characteristics to equities e.g. US Treasuries. Trades in very liquid fixed income instruments, particularly in smaller size, will likely be executed in a low-touch electronic fashion. Examining the market impact of such trades and documenting best execution is a relatively straightforward and well understood task.

The more challenging area is in those instruments that are not so liquid and without continuous pricing. This paper seeks to unpack the approach to best execution as it applies to more illiquid fixed income markets.

In this paper we explain the advantages of taking a nuanced approach to best execution and the risks of misrepresenting execution outcomes. In doing so, we seek to encourage the evolution of best execution modelling and the use of appropriate disclosure.

Equity markets take a highly quantifiable approach to assessing execution quality. However, bonds have different characteristics to equities. They are invested in for different reasons and often traded in different ways. Consequently, the methods used for assessing equity execution quality may not be appropriate for bonds.

That does not mean bond execution cannot be quantified, but it does mean it must be calibrated in the right way.

[1] This is the case for the institutional market and as well as for funds. Commonly for funds, investment management companies subject to MiFID II will manage the asset portfolio under discretion. Even where a fund manager directly manages the assets UCITS and AIFMD impose analogous obligations. Given industry practice, MiFID II is used as the reference regulation.

ASSESSING BEST EXECUTION

MiFID II brought in two new requirements about best execution:

1. Firms must take 'All Sufficient Steps' to achieve best execution for their clients.

2. Asset managers are required to report on and disclose their top five execution venues on an annual basis.

These most recent regulatory developments in MiFID II have not changed the fundamental need to seek the best outcome for the client. This priority is baked in to the order handling policy of buyside trading desks.

To be the 'best' outcome it must support the investment objectives that the portfolio manager (PM) has for the fund or client, within the prevailing market conditions. The trader manages the PM's orders for buying and selling as efficiently as possible and seeks to minimise the market impact of carrying out the trade.

Several stakeholders may want to review the execution process:

- **The trading function** will assess its trader's performance at a trade-by-trade level to ensure the best execution process and order handling process is being adhered to;

- **Other internal functions, including compliance**, will need to review execution reports for patterns of non-compliant activity;

- **Regulators** must be able to see the process and check reporting at a granular level where necessary;

- **Investors** have access to aggregate reports that demonstrate how best execution is supporting investment outcomes on their behalf.[2]

Appropriate information about a firm's best execution policy must be provided to clients.

[2] See Annex 3: Best Execution – Understanding the Term – for further detail

BEST EXECUTION: WHAT GETS ASSESSED?

COMPARING THE EXECUTION OF SIMILAR INSTRUMENTS WHICH ARE BEING INVESTED IN FOR SIMILAR PURPOSES CAN BE DONE RELATIVELY STRAIGHTFORWARDLY, DEPENDING ON THE AMOUNT OF INFORMATION AVAILABLE TO DEMONSTRATE BEST EXECUTION, THROUGH BENCHMARKING.

Within fixed income markets there can be large differences between bonds' characteristics. There are also very variable levels of data available about trading of any given bond. This can vary from virtually none to second-by-second indicative pricing.

That may mean, for example, that in illiquid markets the highest priority for a trader is likelihood of execution over achieving a specific price, given that price discovery in illiquid markets is more challenging. In highly liquid markets, by contrast, where price formation is both fast and robust, price will often be the factor given highest priority.

Tracking variables consistently is critical in determining best execution. For example, a PM may have a trade idea to buy a bond at a specific price at the beginning of the day. The best execution analysis of that trade could look very different if the PM had submitted that trade to the buyside trading desk in the afternoon, or just submitted a limit order[3] to the trading desk at the beginning of the day, despite being fundamentally the same trade. Any analysis must be able to incorporate that.

The challenge of quantifying execution is apparent in some of the reports published under rules based upon the packaged retail and insurance based investment products (PRIIPs) and MiFID II regimes. These require quantifiable reports of where trading occurs and transaction costs for funds. As has been outlined by many others, the utility of such single number analysis is questionable. In some cases, they have produced negative transaction costs. The reports underplay the complexity of execution: showing an investor a single number will not prove best execution one way or another.

For markets rich in data, the evidence for best execution is easier to gather. For markets where less data is available, which would encompass many fixed income markets, the evidence will be more difficult to acquire. If data is absent, analysis at a granular level may require more qualitative support.

A trade's optimal execution reflects the intentions of the PM, the market circumstances, the limits of the investment mandate, the instrument's characteristics and the best execution policy itself. The absence of data in parts of the fixed income universe can make best execution difficult to frame.

The key factors[4] for consideration are:

- Price
- Size
- Market impact
- Information leakage
- Likelihood of execution / liquidity
- Likelihood of settlement
- Speed
- Explicit costs
- Base Currency
- Opportunity cost / cost of delay
- Portfolio Manager's (PMs) instructions

[3] A limit order is an order to buy or sell a security at a specific price or better. A buy limit order will only be executed at the limit price or lower. A sell-limit order will only be executed at the limit price or higher. If the limit price is not met then the order will not be executed. As such there is no guarantee of execution with a limit order.

[4] This is a non-exhaustive list. Further information can be found in RTS 27 of MiFID II.

BEST EXECUTION – MORE THAN JUST A NUMBER

Price is a key aspect of a trade, however best execution analysis cannot look at price alone. Price information based on historical trades is sparse in illiquid markets. Presently, what does exist can only be aggregated at considerable cost in the absence of a consolidated tape. That cost often precludes its use by smaller firms, and in any event the resulting data set may still be limited. Some data providers offer prices built up using non-trading data, such as quotes or information scraped from trading messages, but that does not always reflect actual market activity or achievable execution levels. Consequently, price formation is challenging in certain fixed income markets.

Best execution must serve the client's and the fund's investment objectives. If a PM determines that a fund should be sold out of a position entirely before close, then the trader's role is to achieve that objective if at all possible – if the trader treats the trade as if it could be worked over multiple days to achieve a slightly better price and ends up only fulfilling half the order by close, then this would not be 'best execution'. The role of the buyside trader is to execute the trade at the best prices possible within the constraints of the instructions set by the PM, i.e. in this case, sell out by the end of the day.

The timeline of a trade can vary significantly; orders may be filled within a day or worked over several weeks. That can lead to very different market conditions during parts of the execution process, as well as to changes in the trade instructions from the PM during execution, to better reflect investment priorities.

To get the full story, execution has to be understood in context of the investment process. If this context is absent in the analysis, it will simply not make sense, like trying to make sense of a story based only on the last page.

The table below gives some examples of trades and what the priorities might look like:

PURPOSE OF TRADE	PRIORITIES TO MANAGE IN EXECUTION
Exiting a position in high yield credit	Speed / Information leakage
Rebalancing passive fund	Price / Speed
Building a large position in investment grade corporate bonds	Size / Market impact
Reducing a position in Emerging Market rates	Size/Information Leakage

[5] See Annex 4: Investment Strategy – for more detail.

A.
THE TRADER'S DECISION TREE – GETTING THE FULL STORY

1. TRADING STRATEGIES

At a macro level, the investment strategy that has been determined by the client (for segregated investment), or the fund (for public investment), will broadly affect the size and type of orders that the buyside trading desk receives from the PM. Whether a fund is active or passive[5] will affect the level of discretion PMs have in determining trades, and thus the types of orders that the PM passes to the trader.

2. PORTFOLIO MANAGER'S INSTRUCTIONS AND TIME SENSITIVITY

A more specific influence will be the instructions that PMs give to the trader within an order they have built. The level of specificity and detail can vary considerably, which will reflect the needs of the PM and their opinion as to what is suitable for the portfolio.

For example, a PM might ask the trader to find a bond based on certain characteristics, such as its tenor, yield and issue size, rather than naming a specific bond. Allowing the traders a broader range will make it more likely that the trader can find a match quickly at a good price.

Alternatively, it may be optimal to buy a specific bond regardless of the market impact caused by other factors, such as speed and market liquidity.

The time-sensitive or price-sensitive nature of instructions will determine which trading protocol is most appropriate to use.[6]

If the PM sets a price limit on an order, the trading desk has to assess if that can be achieved at present, or how to work the order over time (e.g. via a broker) to try and achieve that price.

The trading desk can provide feedback to the PM on delivering best execution, based on its insights into current market conditions, including likelihood of execution and suggestions for enhancing the quality and probability of filling the order. This can take place during the trade's construction and whilst when orders are placed.

3. INSTRUMENT LIQUIDITY

The liquidity profile of a bond, along with the order size, will affect the strategies, protocols or counterparties that are appropriate to use, based on the PM's instructions.

Illiquid bonds that have to be bought or sold quickly will likely need a direct connection to a counterparty. This may be via a non-competitive (non-comp) trade in which only one broker is approached and the whole order traded through a voice/ Request For Quote (RFQ), or by approaching a small selection of counterparties. If time sensitivity is less of an issue, the trader may prioritise anonymity when trading (for example by placing the order in a dark pool) to minimise information leakage.

A trader must minimise the risk of information on their order leaking to the market, or the price is likely to move against them as other traders take advantage of their need to buy or sell. Non-comp trades, where only one broker is approached, can be used to minimise information leakage. Whilst brokers are not in competition for such a trade, this can still represent best execution if the potential market impact of information leakage is high.

Liquid bonds can be traded with less market impact and so trading via electronic multilateral platforms is more viable, in order to get best price. The level of time sensitivity is again a factor. For large-in-size liquid orders the trader may prefer to trade off-platform and instead ask multiple counterparties for a two-way quote or a liquidity tree – indicating access to liquidity based on order characteristics – before revealing the size and direction of the trade.

[5] See Annex 4: Investment Strategy – for more detail.
[6] See annex 1: An Explanation of the Fixed Income Universe – for more detail

Similarly a trader may use a block trading platform to minimise information leakage, but in order to be a successful strategy this requires that the other side of the trade is present on the platform at the same time (or within the time period that the trade can economically be executed).

EXAMPLE TRADING PROTOCOLS AND IMPACT ON EXECUTION:

		Bond type							
		Government bond (developed market)	**IG Credit**	**HY Credit**	**Muni**	**Emerging Market Credit**	**EM Rates**	**Risk of information leakage**	**Pre-trade price transparency**
Protocol	**Central Limit Order Book**	Highly liquid only	N/A	N/A	N/A	Range of liquidity levels	Range of liquidity levels	High, order exposed to market	Firm pre-trade price
	Autoquote from broker	Only odd lots	Only odd lots	N/A	N/A	N/A	N/A	Dependent on number of brokers contacted	Firm price on request
	RFQ – electronic	Range of liquidity levels	Range of liquidity levels	Range of liquidity levels	Range of liquidity levels	Range of liquidity levels	Range of liquidity levels	Dependent on number of brokers contacted	Indicative pre-trade price on request
	RFQ – voice	Range of liquidity levels	Range of liquidity levels	Range of liquidity levels	Range of liquidity levels	Range of liquidity levels	Range of liquidity levels	Dependent on number of brokers contacted	Indicative pre-trade price on request
	Negotiated block trading venue	Only large in size	Only large in size	Only large in size	Only large in size	Only large in size	Only large in size	Low	Pre-trade price match, then negotiated
	Secondary market auction	Odd lots / blocks	Odd lots / blocks	Odd lots / blocks	Odd lots / blocks	Odd lots / blocks	Odd lots / blocks	Low	Low
	Internal Crossing	Depends on matching internal orders	Depends on matching internal orders	Depends on matching internal orders	Depends on matching internal orders	Depends on matching internal orders	Depends on matching internal orders	Nil	Requires 3rd party/ market price

4. ORDER SIZE

The size of an order affects how easy the trade is to get done. Large orders (compared to normal tradeable amounts) are generally going to be harder to fill. If a very large buy or sell order is placed directly into the market it can be expected to move the price. If the price moves significantly against the trader halfway through filling an order, that will would negatively impact execution. This therefore affects the viability of certain trading protocols. For example, a large-in-size order pushed onto a transparent central limit order book, where it can be seen before it is traded, would likely cause a sudden movement in price against the investor's interests.

Traders can minimise this market impact by masking the order in several ways. Working up the size of a smaller trade[7], with a single counterparty, allows them fill the order without revealing it to the market in its entirety. Trading on an anonymous platform with negotiated size, can also help.

If an opportunity arises to fill the whole order at once (e.g. on a block trading platform), that may be prioritised over waiting to try and find a better price, and risk not filling the order.

5. MARKET CONDITIONS

Market conditions will determine if and when it is possible to trade at the levels requested by the PM.

PMs following similar strategies at different asset managers will compete for the same instruments, making the trading strategy more critical (e.g. passive index managers). Buying or selling at the same time as everyone else (e.g. at the close[8]) clearly makes it harder to find a counterparty who will take the other side of the trade at the desired price.

Trading volumes affect price formation. Infrequent trading creates fewer reference prices. On the other hand, high trading volumes can reflect greater liquidity, but in volatile markets they can make it harder to trade, as market makers are less keen to take on the risk of holding volatile assets.

If market circumstances make meeting PM instructions very challenging (e.g. a price cannot be reached or a specific bond cannot be bought/sold) then the trading desk may provide feedback on the investment decision to the PM, who may wish to alter their instructions.

6. COUNTERPARTIES

The choice of counterparty is affected by the instrument traded. A broker who has a specific bond in January may not have them in February. It may be quicker to trade an emerging market bond on an electronic platform than it is to get contracts agreed to trade directly with a local broker.

Assessing who to approach and how to approach them is a decision the trader makes based on their own knowledge and information available from pre-trade analysis tools they have available.

Until a counterparty has made a firm offer in size, then all pricing and size information is indicative. This includes prices offered directly to clients when requesting a quote, which can be altered between a quote being given and a confirmation being made. Post-trade settlement of trades is also a factor, as trades will fail if counterparties cannot ultimately provide the securities/cash on the settlement date, leading to error costs.

The long term reliability of a counterparty can be assessed by the trader through both qualitative and quantitative means, depending on the frequency with which they interact and the leverage their relationship may carry.

7. POST-TRADE ANALYSIS

Once an order has been filled, the trading desk will review trades and assess how each one performed in the context of the PM's investment approach, market conditions, and the characteristics of the instrument being traded. For example in highly liquid instruments a benchmark price can be used to assess the quality of the price at the time of execution. More detail on this is outlined in the section below.

[7] Starting with a small trade and then adding further subsequent trades to create a bigger final executed order.
[8] The end of a trading day, when the markets close. A significant portion of daily trading happens at the close.

B.
THE MECHANICS OF ASSESSMENT

1. TRANSACTION COST ANALYSIS – ITS USE IN EQUITY AND FIXED INCOME MARKETS

OPPORTUNITY COSTS
Gains or losses arise in a number of ways through the investment process. Some are straightforward: a gain/loss as measured over a period of days, weeks, months or years as a security rises or falls in value. Others are more complex and could be described under the umbrella of 'opportunity cost': the actual outcome against 'what might have been'. Opportunity costs occur in every walk of life as a result of decisions delayed, postponed or not taken at all. They can occur in both actual investment decisions and the trades made to execute those decisions. Within the trading process specifically, opportunity costs may arise as a result of delays to trades being executed.

Such costs in the trading system matter, and are subject to a variety of measurement processes, known as transaction cost analysis (TCA), to help firms understand, manage and optimise them. They are closely connected to the concept of best execution, which is defined not just in terms of cost of trades, but factors such as the likely impact on the market, speed and likelihood of execution. The critical point here is that there is no one-size-fits-all approach to the measurement of transaction costs or best execution.

Different techniques are used for different objectives. Slippage for example is based on trying to look at the difference in cost between a realised outcome and one that may have been targeted. In advanced form, it is part of a suite of tools that help firms assess the quality of their trade execution.

In markets with good data quality and availability where trades are relatively small and placed with the goal of immediate execution, the time gap between the arrival price[9] and the execution price may be extremely short and measurement of best execution using the slippage approach can give a reliable analysis. In reality, the investment world is much more complex than this and there are a number of trading strategies that necessarily widen the time gap and thereby increase the significance of market movements in the measurement of slippage.

TRANSACTION COST ANALYSIS
TCA, which attempts to determine whether a trade was executed at favourable price, is common in equity markets, where capital gains is a principal source of asset value and price information tends to be readily available thanks to the use of central exchanges.

In liquid markets TCA may support best execution analysis. However if markets are illiquid, there will not be sufficient data to determine a market price, against which the traded price can be compared. Meeting regulatory requirements does not necessitate the use of third-party TCA tools; however firms will wish to consider some form of analysis of the costs of transactions when appropriate. Review of best execution is a far broader analysis that can use elements of TCA, where data is available.

Illiquidity tends to affect a broader swathe of fixed income markets than it does equity markets.[10] While there are over 145,000 active corporate bonds outstanding, according to Bloomberg, the European Commission (EC) recently found that just 220 of government and corporate bonds in Europe are 'liquid' e.g. easily bought or sold in size without significant market impact (movement in price).

There are many reasons for this. Equities issued at different times by the same company will almost always be fungible. Two bonds issued at different times by the same company are not generally fungible. The characteristics of two different fixed income instruments may vary widely. One bond may have a different maturity date, interest rate or covenants[11] to another, for example. As a result, equity issues are usually homogenous, and bond issues more differentiated. Finding a buyer or seller for a specific bond issue is therefore harder.

[9] The time at which the order is passed from the buyside trading desk to a market counterparty.
[10] See Annex 1: An Explanation of the Fixed Income Universe – for further detail on the factors affecting fixed income liquidity.
[11] Specific legal obligations that the issuer owes to the bond holder.

Most fixed income instruments are not readily tradeable on an exchange, which would provide a central point for publishing trade data, reducing the data available for analysis. For example, intraday data is not available for many fixed income instruments. Where data is available, it is often provided only at significant cost, adding to the difficulties in accessing it – this can be a particular issue for smaller firms.

The absence of exchanges increases the reliance on bilateral trading between broker-dealers and asset managers. However, capital adequacy rules[12] have increased the costs for brokers to hold onto bonds while finding another client to buy them. As a result, they are less likely to hold an inventory of bonds for future trading. This not only reduces liquidity in the market, it impacts on price formation and reduces the number of possible counterparties. It is worth noting that the mandatory buy in process being brought in by the Central Securities Depositories Regulation (CSDR) will exacerbate this issue.

Equity TCA will often be used to assess metrics such as 'Implementation Shortfall' or 'Slippage', which is the difference in price between the time an order is first placed (the 'arrival price') and when it is filled. This is easier to monitor in markets where there is firm, continuous liquidity and pricing. However if limited data is available, as is often the case in many fixed income markets, benchmarking the price at these points in time is likely to reflect gaps in data as much as actual price movement, making the report largely meaningless. For example, one firm noted that according to its analysis 28% of notional traded corporate bonds were not covered by their streaming price source.[13]

What's more the time gap between the arrival price and the execution price may be quite significant, and as a result, while TCA may show significant slippage and give an impression of poor execution while not taking into account all relevant factors.

In short, in highly liquid markets where data is available and capital gains is a principal source of asset value, as in the equity market, measuring price is key for the investment process and achieving best execution. However, it is less practical and less relevant where data is sparse and capital gains is not the primary investment objective.

Regulatory requirements around best execution are high-level and do not differentiate between the equity and fixed income markets despite the major differences in available data between those markets, and as a result there have in some cases been efforts to apply an equity TCA model across the fixed income space.

It is important to make clear that TCA methodology can have some value in fixed income best execution analysis. For highly-liquid bond markets, assessing slippage is both possible and valuable, with TCA providing an additional level of transparency for investors, and helping asset managers to assess their counterparties and performance. It can also be used to support a wider evaluation of execution, as long as pricing data is reliable enough.

As trading becomes increasingly electronic, information in the bond markets will be more easily aggregated, particularly in the event that a consolidated tape is developed for fixed income markets. Market tools have been developed that are enabling asset managers to better quantify execution quality and more effectively incorporate the less empirical elements.

Despite these welcome improvements however, there remain significant complexities surrounding the use of TCA in fixed income markets. Regulators should be wary of applying an overly simplistic TCA-style methodology to fixed income best execution reporting. TCA providers should also ensure that any fixed income solutions they create take into account these complexities, and should not look to simply apply equity TCA methods to fixed income markets.

[12] The Capital Requirements Regulation (CRR)
[13] See IA response to 'FCA Call for Input: PRIIPS Regulation – initial experiences with the new requirements'

2. CONSISTENCY OF INFORMATION

To generate standard analytics on a trade, it is important to focus on exactly what is being measured. In particular it's important to understand that an order may change throughout its lifecycle.

For example, if an order to buy 10 million of a particular bond is raised by a PM, this could subsequently be released in four 'clips' of 2.5 million each, if the benchmark used to price the bond moves four times in the time it takes to fill the order. Depending on the perspective, the overall 10 million trade could be viewed as a single order, or it could be viewed as four orders of 2.5m each. Likewise, a trader's order could contain orders from a number of PMs rolled in together. As a result, the market impact, duration and implementation style would be reflective of a larger order. In both cases, consistency in how these order types are analysed is key.

Likewise orders may be filled within a day or take several weeks to fully execute. The instructions that accompany an order from the PM may change over time. Asset managers are tasked with capturing this information in such a way that it can be analysed in a coherent manner.

Regulation requires traders to capture all the relevant information on trades to support their actions. Quantitative information on market conditions as well as qualitative instructions from the PM must all be captured in order to provide a full picture for later review of best execution.

The availability of continuous prices falls sharply outside developed markets, emerging market bonds can have very sporadic pricing information. This can result in arbitrary rather than meaningful cost assessment under an arrival price methodology.

3. APPROPRIATE ANALYSIS

The granularity of analysis needed by stakeholders varies. A simple mechanical assessment on a trade-by-trade basis may be useful for a head of desk as part of appraising an individual trader's performance, but cannot be meaningfully used to assess patterns of behaviour on its own or the aggregate impact of trading on the value of investments.

In many cases, a more appropriate measure can be to review the effectiveness of rebalancing the fund's position as a whole. Depending upon the frequency of review, this might be done on a daily to a quarterly basis. Within that analysis, non-standard and non-metric information must be presented as such, and not forced into a standard metric framework.

C.
KEY POINTS TO UNDERSTAND WHEN BEST EXECUTION IS BEING DEMONSTRATED

When reviewing best execution in fixed income markets, the following questions should be considered:

- **What were the investment objectives during the trading process?**: The PM's objectives at the outset of the trade must be considered, and any changes to those objectives during the trade lifecycle.

- **Which instruments were being traded and at what size?**: Understanding the characteristics of the order and bond(s) being traded determines several aspects including liquidity profile, potential counterparties and trading protocols available.

- **How were market conditions?**: The level and direction of trading by the wider market during the time period the trade as being executed.

- **What was the process of counterparty selection?**: This should include the factors considered when selecting the counterparty and the protocol selected for price formation, information leakage, likelihood of execution etc.

- **How is best execution demonstrated against the policy?**: The best execution policy and trade reports will to be available to review. These should be considered during any analysis, alongside any available liquidity trees that were available to traders at that point in time.

SPECIFIC CALLS TO ACTION

The IA is an advocate of greater market transparency, and supports efforts to enhance the understanding of best execution analysis in fixed income markets. This will ultimately deliver better returns for end investors.

Buyside traders strive for best execution and welcome greater transparency. We consider that using an equities derived quantitative methodology in illiquid fixed income markets is a blunt instrument without the data to support it. The challenge for firms is to acquire the necessary real time data to drive their order handling and best execution.

We believe that as the bond market evolves and becomes increasingly electronic it will be able to move towards a more quantifiable model of assessing best execution. The advent of machine learning technologies that are able to visualise enormous data sets, bodes well for the future as does the promise of a consolidated tape of bond market data.

That evolution is taking place slowly and unevenly. Authorities must consider that pace of change in order to help investors understand how the best execution methodology is applied.

The IA's Fixed Income Traders Committee therefore notes the following specific calls to action to aid investors in demonstrating best execution:

1. Development of a consolidated tape for fixed income markets.
2. Regulatory efforts to reduce excessive market data costs.
3. Limited easing of capital requirements on brokers so they are able to hold more inventory and enhance market liquidity.

ANNEX 1:
AN EXPLANATION OF THE FIXED INCOME UNIVERSE

BONDS

Bonds are a form of debt instrument that are issued by companies, governments or state-backed entities and municipalities for a fixed period (the 'tenor' of the bond). The dividend or yield they pay is usually fixed – although floating rate bonds do exist – and when bonds mature at the end of the tenor, they are redeemed for the initial capital invested.

A bond's price reflects its tenor and yield relative to other assets, including newly issued bonds. If interest rates go up and new bonds are issued with a yield reflecting this rate, the relative value of existing bonds falls, as they now offer a lower return compared with newly-issued bonds at the higher rate. The liquidity of the existing bond can also be affected as investors want to switch out of the old bonds in to the newly issued bonds. If the bond issuer's credit rating changes, that affects the credit risk investors are exposed to, and will also affect the price and liquidity particularly if it results in the bond dropping out of a benchmark index. Funds tracking that index will then be required to sell out of that bond.

PRIMARY MARKET ISSUANCE

The primary market is where companies and governments issue new bonds to obtain financing. Investing in either corporate or government bonds as they are issued into the primary market is a useful way of accessing the market.

Asset managers must determine the value of any new corporate bond issues and place orders with the brokers running the book, to try and win an allocation of the newly issued bonds. If allocations do not fulfil asset managers the demand firms may then use the secondary market to acquire a greater share.

Depending on the country, government bond auctions are carried out in different ways (competitive/Dutch/single price). For example, the UK Government issues bills every Friday in 'competitive' style auctions. The trader may determine the yield they are prepared to pay by assessing demand in the market at the time. The order is placed by a certain time with a chosen counterparty and the bills are allocated on a pro-rata basis to the highest bidders.

SPREAD

Spread is a measure of the difference between the price to buy and the price to sell at a given point in time. It measures the implicit cost of transacting and can be added to the explicit costs (brokerage commissions and transaction taxes) to give total transaction costs. Typically half the spread is assigned to purchases and half to sales.

In commercial terms, spread constitutes a transfer of value to those institutions who act as market makers, measurable in the difference between a price to buy and a price to sell at a given moment in time. Typically, the less liquid an instrument, the wider the spread.

LIQUIDITY

Liquidity is a measure of how easily a bond can be bought and sold without affecting its price. In particular the size of transaction that can be executed in a short period of time without materially impacting the price.

A detailed analysis of the nature of liquidity is beyond the scope of this paper, however it is sufficient to outline that multiple factors affect a bond's liquidity at a given point in time. Looking at the bid / offer spread on an instrument can provide a quick assessment of the bond's liquidity; the wider the spread typically means the less liquid the instrument.

Factors affecting a bond's liquidity are outlined below.

NUMBER OF SECURITIES

Bonds are issued in order to borrow money as the issuer needs it which means there are many more bonds issued than equities. As a rule, the more separate issues there are for each issuer, the harder it is to find a buyer/seller for a specific one at a given point in time.

At the end of 2017 over 11,000 bonds were active for the S&P 500 firms (22x number of equities), over 13,000 by the Russell 1,000 firms (13x number of equities), over 5,500 active bonds had been issued by the 30 firms in the Deutsche Börse Equity Index (183x number of equities) and over 8,000 by the Euro Stoxx 50 companies (160x number of equities), according to Bloomberg data.

ISSUE SIZE

At a basic level, the greater the issuance size, the more likely it is some can be placed/found with a buyer/seller. More fundamentally, some funds will only engage in trading bonds above a certain issue size, creating a benchmark for increased liquidity.

Minimum increments for trading can also affect liquidity; generally deals that can trade in lots of 1,000 are popular with retail funds and trade frequently in small size, while those with a minimum size of 200,000 will attract more institutional investors.

TIME FROM ISSUANCE

Liquidity changes over a bond's lifetime. Bonds are traded more frequently when first issued, with liquidity typically at its best within the first two weeks of issue. Bonds are classed as 'on-the-run' when first issued, and as they become older and new bonds are issued their trading activity reduces making them less liquid and are reclassified as 'off-the-run' bonds.

Events that might trigger trading activity of a bond during its tenor include interest rate changes and issuer credit rating changes, company specific news and new issues. As bonds can become more illiquid over time, any incremental gain from an increase in market prices can be difficult to realise as trading costs can eat up a material proportion of those gains.

CREDIT RATING

The level of credit risk associated with a bond will have an impact on liquidity. The underlying issuer and the bond itself will often be rated by credit rating agencies. A bond may have a higher rating than the issuer depending on the covenants incorporated into it. In very simple terms the lower the rating of the bond the less liquid it is likely to be. However this will be effected by a multiple other factors discussed in this section.

For example distressed names (high yield) can attract a lot of market makers as the bid/offer spread is wider so the risk/reward is great and some can therefore trade more actively than an investment grade bond that everyone wants to buy and hold.

NUMBER AND TYPE OF COUNTERPARTIES

Market-makers are firms such as broker-dealers, investment banks and sometimes high-frequency traders (HFT), that make prices to investment managers, to buy and sell bonds.

The number of counterparties competing for business is one factor that has a positive correlation with liquidity. This often reflects the size of a market's value e.g. the number of brokers working the US government bond market is higher than in the European government bond market, which in turn is higher than in the UK government bond market.

In some markets all-to-all trading allows buyside firms to trade with each other as counterparties using anonymous electronic platforms, a growing form of engagement.

TRADING PROTOCOLS

The advance of technology is enabling new models to develop which can increase liquidity.

Trading in the bond market mainly takes place bilaterally, between two counterparties. Such trading is over-the-counter (OTC) which means that firms must do the work that the exchange would otherwise do and more. As bonds are not issued via a central exchange, there is no central mechanism for matching buyers and sellers, or for price discovery. Traders will use their networks to match buyers and sellers but also to provide an important form of price discovery in a market where there is not significant trading data, particularly for high yield / emerging market bonds. The price discovery aspect of fixed income is a key role of the trader.

The protocols available often reflect the underlying liquidity of the market, for example in US government bonds, electronic trading venues have arisen to support direct matching of orders. As the frequency of trading was already high in this market, it was viable for market makers to continually provide prices to each side. If the same platform were used for illiquid bonds, no trading could occur for days and the value of connecting to it would be undermined.

STANDARD PROTOCOLS FOUND IN THE BOND UNIVERSE:

Voice
Manually phoning one or more brokers for a price, and then once a price is fixed - agreeing a trade. This can also be completed via instant messaging such as Bloomberg or a similar platform. It gives the buyside trader control over the range of counterparts that see their position, and provides the opportunity to get additional market colour from the counterparty.

Request For Quote (RFQ)
The buyside trader sends an electronic request to one or more counterparties asking for an indicative price. This will include information on bond name, but may also include size and direction of the trade. Using an RFQ to multiple brokers will create more information leakage than approaching a single broker by voice.

This largely mirrors the model of phoning a number of brokers for a price, but occurs electronically. It allows better data capture and some level of trade automation, it also gives control over the range of counterparts that might see a trader's position.

Auctions and Central Limit Order Books (CLOBs)
A CLOB is used by an exchange to automatically match buy and sell orders usually based on arrival time of the order. Along with auctions, these reach many participants quickly, but may require that buyers and sellers are in the market at the same time, depending upon the time taken to complete.

Trading platforms may operate dealer-to-dealer (sell-side to sell-side), dealer-to-client (sell-side to buyside), or all-to-all. The options available affect a trader's ability to find prices, limit information leakage about their own position and execute trades.

Counterparty selection is often determined by the broker specialising in the specific geography or sector.

ANNEX 2:
AN EXPLANATION OF BUYSIDE BOND TRADING

Trading, in the context of this paper, refers to buying and selling on behalf of asset managers collectively known as the 'buyside'; trading cannot be viewed on its own. Assessments of a trade's outcomes are tied to a fund's investment strategy; traders are guided by the investment manager's intentions and are limited by market circumstances.

ROLE OF THE TRADING DESK

A buyside trading desk receives orders from the firm's PMs to buy or sell the assets needed to create cash flows. By centralising trading, multiple orders can be balanced out, so if several funds need the same instrument, they do not each go out and try to find the right price and counterparty to trade with. Instead the trader who specialises in that instrument handles that for them all. The streamlines trading and removes conflicts of interest.

If funds within an asset manager have opposite views of an asset, a centralised trading desk can match up those orders internally and cross them over, using a neutral or mid-market price, to reduce the cost of trading and therefore investment. For example, a high-risk fund might see opportunity in buying the bond of a company whose credit rating has fallen, where a low-risk fund does not want the risk exposure and is a seller.

By handling the trades efficiently, the trading desk lowers the cost of trading and in some cases provides information that enables an investment strategy to outperform, delivering value for the underlying investors.

Best execution as a regulatory framework was first applied to European markets in 2007 under MiFID I, and since 3 January 2018 is required to be evidenced and reported on under MiFID II. It singles out the execution of a trade, as part of the investment process. The intention is to provide investors with the optimal outcome for trades conducted by asset managers on their behalf.

A best execution policy helps ensure traders within investment managers are working methodically. A strong best execution process will allow the asset management firm to get better investment outcomes for its clients.

There are many different types of bonds and different ways to invest in them. Investment in bonds typically creates a cash flow that lasts the length of time for which the bond has been issued (its 'tenor'). That makes bonds very useful where a specific return is needed to match fairly predictable cash flows, e.g. liability driven investment - such as pension or insurance fund pay-outs. As such, bonds are often bought and held, meaning they are traded frequently soon after issuance, then trading activity tails off. Other bond investment models must take account of this liquidity profile.

Trading in bonds is different to trading stocks or currencies in part because there are many more bonds than equities; there are approximately 10,000 listed companies in Europe with a corresponding number of equities, however there are over 145,000 active corporate bonds outstanding, according to Bloomberg. The European Commission (EC) recently found that just 220 government and corporate bonds in Europe are 'liquid' e.g. easily bought or sold at a desired price.

The number of bonds issued makes it less likely a buyer and seller for a specific bond will be in the market at the same time. Brokers used to buy and hold bonds for short periods of time between investors buying and selling them, carrying the risk for that period. However capital adequacy rules have reduced their willingness to carry such risk. That has reduced liquidity and impacted on prices being offered.

Bond covenants determine the holder's rights in certain circumstances, such as an issuer's takeover or default. They are a very important part of the investment decision and affect the price. As a result two bonds may look almost identical in credit rating, size, currency, maturity, and issuer, but may be priced very differently based on the strength of the covenants.

There are also many protocols used for trading bonds. The most common is for buyers and sellers to connect directly via phone or electronic platform, which allows them to negotiate a deal. However, the wide range of bond types determines which protocols are possible. Some very liquid bonds – such as US government bonds – can have trades matched electronically similarly to equities. Very illiquid bonds, such as high yield corporate bonds, largely only trade by voice. Our members have seen rapid evolution in the number of bond trading platforms available, this has created additional complexity in reviewing the best execution process.

Investment strategies and approaches can determine which variables in a trade are given greater weight. These include the urgency, the current and expected market conditions, the size of an order, and the availability of a price, in addition to the specific price.

ANNEX 3:
BEST EXECUTION – UNDERSTANDING THE TERM

An investment management firm invests money on behalf of its clients. For funds that allow investment in bonds in the prospectus, bonds are bought and sold according to the investment strategy, as determined on a day to day basis by the portfolio manager (PM).

The buyside trading desk who manage this dealing process receive orders from PMs on behalf of many clients and funds, in aggregate.

From the 3 January 2018, in the European Union (EU) and in trades subject to EU rules, buyside trading desks must comply with Article 27 of the Markets in Financial Instruments Directive, entitled 'Obligation to execute orders on terms most favourable to the client' which states:

"Member States shall require that investment firms take all sufficient steps to obtain, when executing orders, the best possible result for their clients taking into account price, costs, speed, likelihood of execution and settlement, size, nature or any other consideration relevant to the execution of the order. Nevertheless, where there is a specific instruction from the client the investment firm shall execute the order following the specific instruction."

In order to establish that a trading desk is complying with that directive, investment firms need a process in place to assess trade execution, so that decision making can be reviewed in context. This is the 'best execution' process.

Achieving best execution for a client has always been the role of a buyside trader; MiFID II now demands that firms evidence that process in a very structured manner; an order execution policy is mandated by MiFID II, as is public disclosure of the top five trading venues which were used for traded instruments.

On top of these documents, the rules also state that:

"Member States shall require investment firms to be able to demonstrate to their clients, at their request, that they have executed their orders in accordance with the investment firm's execution policy and to demonstrate to the competent authority, at its request, their compliance with this Article."

ANNEX 4:
INVESTMENT STRATEGY

The investment strategy broadly affects the size and type of orders that the trading desk receives:

Active asset managers have a wide range of investment strategies that are specified in a fund's mandate at the point it launches. These range from buy-and-hold funds, which generate returns over the lifetime of the asset, to absolute return funds, which take advantage of short-term price movements and discrepancies to generate alpha .

Within these strategies, PMs have varying levels of discretion in order to drive returns for their clients, which will be reflected in way that traders receive the orders that they take to market. As a result the instruments, sizes of orders, and timing of orders, can all be very different.

Passive asset managers generate value by tracking an index which determines the proportion of specific instruments that make up a portfolio. The returns for investors are generated by the performance of those assets. Indexes can range from representations of the largest firms in a market to more complex smart beta models which offer selections of securities based on a range of possible criteria, such as growth.

Passively-managed funds rebalance their portfolios to maintain the desired level of asset allocation according to the index's make-up. As a result they will typically see high volumes of small trades at the end of the month, when this rebalancing takes place.

[14] Return on a fund as measured against a stated benchmark.

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