

Turning the Tables on Liquidity Provision

How the **Buy-Side** Becoming the Centre
of **Liquidity Formation** Is Re-shaping the
European Execution Landscape

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consulting

Turning The Tables

The financial industry in Europe is returning to the office post-Covid and there is an assumption this will mean a return to business-as-usual. However, the pandemic has rewritten the rulebook on trading, and **known norms on how equity and bond markets trade are at the point of a radical shake up.**



The ability of electronic liquidity providers (ELPs) to warehouse risk across a wider and more diverse pool of assets is increasing the inventory buy-side participants are able to engage with. This in turn is moving buy-side dealing desks away from being the passive recipients of sell-side liquidity.

Fixed Income was the last bastion of traditional sell-side liquidity provision. The buy-side's need for access to balance sheet risk capital shored up the banks' important role as intermediary between the wholesale interdealer market and asset managers. The loss of this balance sheet during the pandemic propelled the buy-side itself to the centre of liquidity formation.

As the sell-side reduced the level of balance sheet available to provide risk capital, alternative liquidity providers stepped up to fill the vacuum. The ability of electronic liquidity providers (ELPs) to warehouse risk across a wider and more diverse pool of assets is increasing the inventory buy-side participants are able to engage with. This in turn is moving buy-side dealing

desks away from being the passive recipients of sell-side liquidity. Instead, they are increasingly becoming active participants themselves in sourcing and building latent liquidity. All of which has the net effect of enhancing buy-side investment strategies to benefit their end-investors.

The increased capabilities for buy-side traders to utilise electronic means of sourcing liquidity are facilitating further innovation in trading. Initiatives such as automated indications-of-interest or targeted invitations enable the buy-side to uncover latent liquidity. By providing trading intentions in an electronic footprint, liquidity can be sourced even in harder to trade fixed income instruments without incurring information leakage.

Greater use of automated workflows among a wider group of trading counterparties is placing asset managers in the driving seat to select not only what liquidity is available to them and where - but also, what assets to trade and how. Hence, multilateral technology innovation is enabling the buy-side to move away from the traditional silo'ed approach to trading asset classes and take greater ownership of execution. This is not only reshaping whom the buy-side select as their liquidity providers but also the services they require. Rather than having to search for a price in a large single issuance of Peugeot for example, the buy-side are able either to trade multiple smaller tranches of Peugeot issuance across multiple years or even to search for bonds with similar attributes, such as in principle, an Investment Grade 5 year bond in the Autos sector with a 1% yield.

In the first paper of this series*, we looked at how technical expertise in sourcing liquidity and managing short term risk have become increasingly important factors in the successful execution of order flow for the buy-side. **In this second paper, based on new data, we look at the wider long-term impact these changes could have on the future market ecosystem in Europe and what further changes are needed to ensure asset managers will be able to access the necessary liquidity to trade the assets they need to benefit their end investors.**

* <https://wearemarketmakers.com/liquidity-in-the-time-of-covid-download-the-report/>

30 Global Heads of Trading at asset managers with **\$35.6trn** in assets were interviewed to find out how they are assessing what changes they must make to their future execution strategies. Of these, **57%** were based in the UK and **43%** in Europe; **40%** were based at firms with more than \$500bn AUM, a third had assets up to **\$100bn** and **27%** were between **\$100** and **\$500bn**.

Key Facts

87% of respondents are **looking to maximise future liquidity access by increasing their engagement with electronic liquidity providers (ELPs)** across all asset classes.

37% of respondents are **planning to increase direct engagement to alternative liquidity providers**

For **70%** of respondents, **data and technology continue to increase in importance** in deciding where and how to trade.

67% of respondents said **transparency over execution protocols and routing logic is a key factor in the selection process**

46% are looking at **new investment opportunities**, in particular in the ETF space across both equities and bonds.

While ELPs are very active in ETFs,

73% of respondents still **choose to trade OTC derivatives with banks due to the breadth of services they provide** as well as operational constraints.

55% of respondents **continue to rely on their ability to cross blocks in equity markets due to the size and type of their order flow.**

As liquidity formation continues to evolve in equity markets,

58% are looking at **innovative solutions for more efficient access to liquidity pooling at the close.**

48% of respondents are interested in **accessing available retail flow** but still struggle to interact with this increasingly valuable liquidity source.

New Trading Places

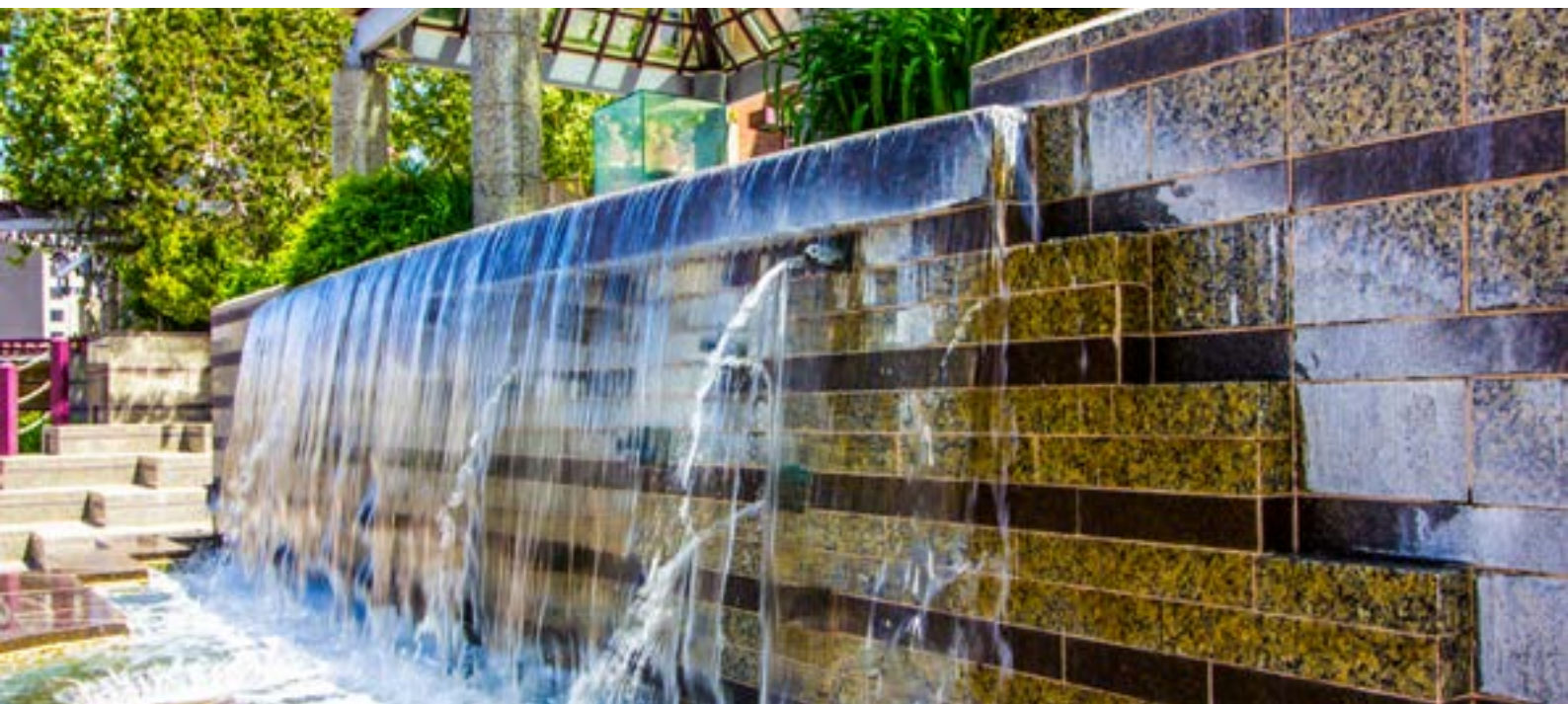
Covid-19 ripped up the rulebook of how trading took place in Europe as buy and sell-side dealing desks were rapidly relocated to working from home. As the industry ramps up the return to the office, some changes look set to stay – nearly 90% of respondents now recognize electronic liquidity providers (ELPs) as future strategic liquidity partners (see Exhibit 1).

As buy-side traders increasingly turn to automation to find the means to benefit from technological efficiencies, some are choosing to engage with ELPs directly to optimise their access to ELP inventory and ability to warehouse risk for longer periods. Others prefer to utilize broker relationships to ensure access to liquidity while maintaining a buffer to protect the direction of order flow (see Exhibit 2).

Developments in technological innovation are facilitating better management of short-term risk across multiple liquidity streams increasing the depth and breadth of options to trade. Previously traditional providers of risk capital typically acted as the intermediary between wholesale markets and institutional sized order flow to ensure asset managers could buy and sell when they wanted. The depth of ELP inventory available to the buy-side is providing alternative means of execution, shifting how assets are being bought and sold, but also which assets are traded.

“Oversized liquidity, whether it be an equity block, reverse inquiry, or crossing network, that’s where the cost savings lie. The banks only play in liquid blocks of sort of \$20-50 million, which leaves a nasty semi-illiquid 200% ADV \$50 million-plus block that’s tricky to trade – that’s the next level of tech integration.”

Head of Trading, Large UK Asset Manager



“We now automate wherever possible. On our trader decision tree of where to trade, the high touch desk is far down the waterfall – sourcing liquidity there happens very infrequently now.”

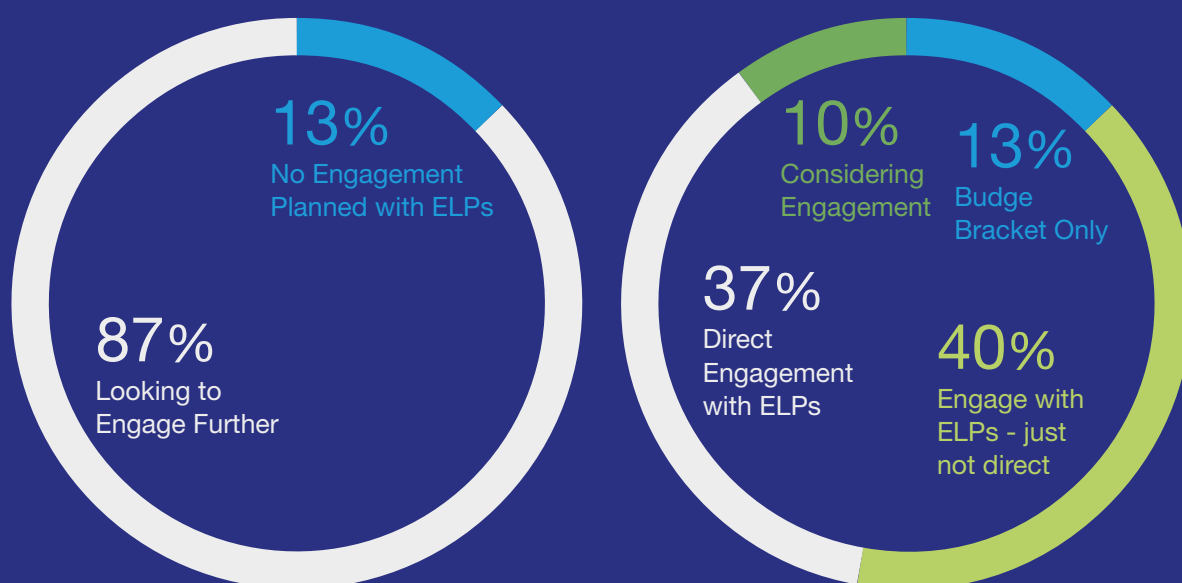
Head of Trading, Large UK Asset Manager

“Given ELPs’ market share today, we cannot afford to be cut off from this source of liquidity, but it is an education process on how to engage”

Head of Trading, Global Asset Manager

Exhibits 1 and 2

Do you see market making firms as strategic partners going forward or will your relationships remain with traditional providers of risk only?



Source: Redlap Consulting

Equity Liquidity Shifts

Trading in blocks remains an important factor in equity execution but as a greater proportion of equity trading centres around three key liquidity points during the day (the EU Market open, the US open and the close), real intraday liquidity is shrinking along with individual order sizes. This requires a shift in approach for the buy-side to automate wherever possible to capture liquidity when it is available alongside block activity (see Exhibit 3). Just 10% of respondents now see voice trading in equities as the means in which to source liquidity.

The shift to greater automation of order flow together with the rise in index benchmark trading and assets requiring a closing price for net asset value (NAV) to establish sufficient liquidity in funds, continues to tilt liquidity towards the close, causing 58% to look at innovative solutions to access this liquidity more efficiently (see Exhibit 4). The greater the level of automation to establish when and how to trade necessitates either direct investment in technology or partnering with others to benefit from the innovation available, emphasizing the shift towards technology partners rather than traditional broker relationships.

“Over 50% of one bulge bracket’s volume goes through at less than 5% of average daily volume to hide information leakage and unnecessary signalling – that makes an attempt to trade intraday almost impossible, so you find yourself having to wait for the close.”

Head of Trading, Large UK Asset Manager



“When you look at our top 5 brokers, there’s now just one bulge bracket broker. The other four are specialist electronic firms. In fixed income and derivatives, the larger firms still have it their way but that’s changing. Electronic firms will start taking market share because they’ve got the technology, they understand market structure better and can innovate quicker.”

Head of Trading, Large UK Asset Manager

Exhibits 3 and 4

Methods of Sourcing Equity Liquidity / How successfully are you able to access and engage with closing auctions?

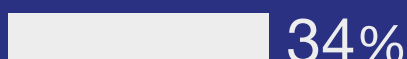
Specialist Execution Capability



Automating Where Possible



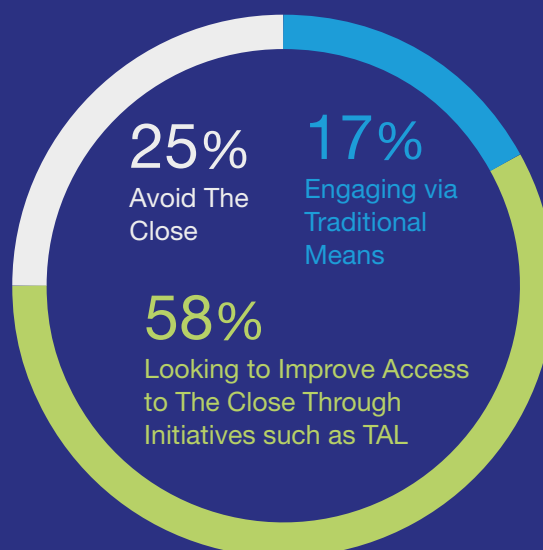
Voice and IOI Networks



Sis



Traditional Voice Trading



Source: Redlap Consulting

From Equities Automation to Bonds



The move to equity automation that began during the Global Financial Crisis of 2007-08, was replicated during the pandemic in fixed income markets. Reduced risk provision during the early days of volatility in March 2020 forced many buy-side traders to find alternative means of execution. Greater use of technology provided increased visibility of pricing to establish a fair spread or price, enabling the buy-side to move away from the traditional dependence on bilateral risk engagement with only a handful of trusted counterparts. This new-found technological acumen is, in turn, reducing historic buy-side concerns over trading intentions being exposed to the marketplace ahead of order executions. For certain instruments it can now be more beneficial to discreetly trade in smaller order sizes over a longer period of time - not only for equities but also for fixed income.

It has to be noted that this is not yet the case for all products nor all issuances. But it does represent a challenge to the assumption that the only means by which to trade bonds in significant size is by bilateral access to traditional sell-side balance sheet.

Data from alternative liquidity providers illustrates that during the pandemic there was a significant increase in electronic all-to-all trading activity (see Exhibit 5). Some observers have argued that this increase was temporary due to increased market volatility, but as trading conditions have become more benign, ELPs appear to be retaining the increase in market share.

From Equities Automation to Bonds

Exhibit 5

Successful RFQ transactions on All to All Trading Models – Pre versus Post Covid

| Liquidity Provider | Pre Covid | After Covid | % Change |
|--------------------|-----------|-------------|----------|
| ELP | 1015 | 1737 | +71% |
| Bulge Bracket | 599 | 473 | -21% |
| ELP Market Share | 63% | 79% | +25% |

Source: Redlap Consulting

“Before, you’d be looking for a risk price in 30m but those days are gone. Now it’s easier to trade in clips of half a million to 3m, and you have greater knowledge of where the market is at. You’re no longer just blindly having to take the price you are given in an RFQ – now you can challenge it.”

Head of Trading, UK Medium Sized Asset Manager

“ETF providers are proving to be a different ballgame - it makes sense if you are a buy-side to really start looking at what some of the top players are doing in terms of technology and aggregating and sourcing data.”

Head of Trading, Large Global Asset Manager

Impact of Increasing Optionality

For buy-side firms, one of the initial reasons for the switch to greater engagement with ELPs in equity was the increase in lit activity during the Covid crisis, together with the need for immediacy and certainty of execution. While paying the spread was historically seen as lowering execution performance, equity spreads have become so tight that the loss in performance can become negligible once the trader understands what liquidity to interact with on lit markets, when and how. This execution outcome may not be the case for every order, but it does increase a trader's optionality of how orders can be executed, thereby improving fund performance. Equally, the combination of better visibility in how to trade, combined with the reduced availability

of risk capital in bond markets at the peak of the crisis makes it is easy to see why the move to ELPs is gathering pace in fixed income products (see Exhibit 6).

Interestingly, for buy-side firms the second most important criterion in selecting trading partners is not price but continuity of service – a factor which undoubtedly became more prevalent as a response to the pandemic (see Exhibit 7). This may also be a consequence of greater and more widespread adoption of technology since MiFID II – not just automated trading but improved internal risk management and automated workflows.



Impact of Increasing Optionality

“Our execution interaction is far easier to identify, monitor, and evaluate than it was in the pre-MiFID BCN world. We value that enormously, maybe more importantly, it’s double-digit percentage of alternative risk transference on behalf of our clients, and the mark outs are the quality of execution remains super strong.”

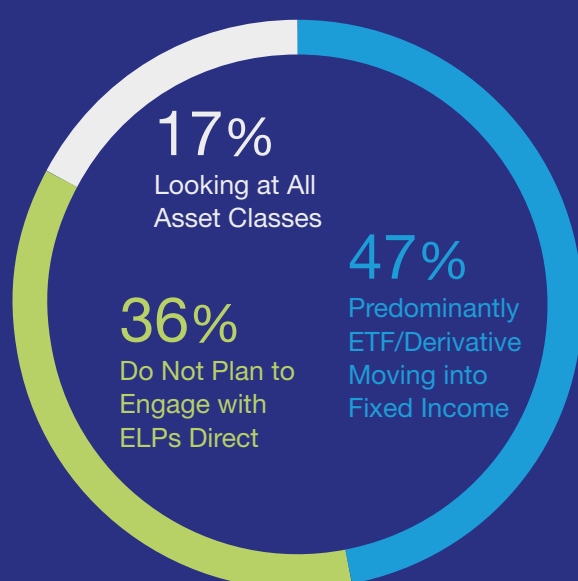
Head of Trading, Mid-sized UK Asset Manager

“Those buy-side firms that are getting shut out of the market aren’t getting risk capital and aren’t getting primary issuance – so they are starting to have to build different relationships, to look for liquidity outside the traditional hub. Whoever can price more accurately and efficiently in a fixed income market is going to become king.”

Head of Trading, Large UK Asset Manager

Exhibits 6 and 7

Are you looking to trade with ELPs across all asset classes? / By which criteria do you now select your liquidity providers? (What other factors matter other than price?)



Specialist Execution Capability



Continuity of Service



Breadth of Product Offering



Execution Transparency



Source: Redlap Consulting

Smarter Position Management

As trading has become more automated, the use of data has soared. This both increases the level of further data which can be incorporated to adapt trading strategies and increases the ability to blend the asset classes to benefit from arbitrage opportunities. For 70% of respondents, data and technology are now essential in understanding where and how to trade (see Exhibit 8).

The constant search for efficiency is set to continue with rising consolidation in asset management likely going to create future super-managers whose order size and breadth of invested assets is set to bifurcate the industry further still between those asset managers who can demand service from their sell-side counterparts, and those who are left behind.

More complex order flow and order sizes ill-suited to the decline in traditional use of balance sheet are together driving the greater use of outsourcing “no-touch” order flow to algo wheels and smart order routers. This justifies a greater level of buy-side investment in technology which fragments liquidity further, requiring yet more technology to analyse the type of engagement with a broader spectrum of liquidity providers to understand what is traded where and by whom (see Exhibit 9).



“Between 60-70% of our flow was done on a bilateral basis historically. In the last 6 months that ratio has flipped. We are changing how we trade – and who we partner with as a result.”

Head of Trading, Mid-sized EU Asset Manager

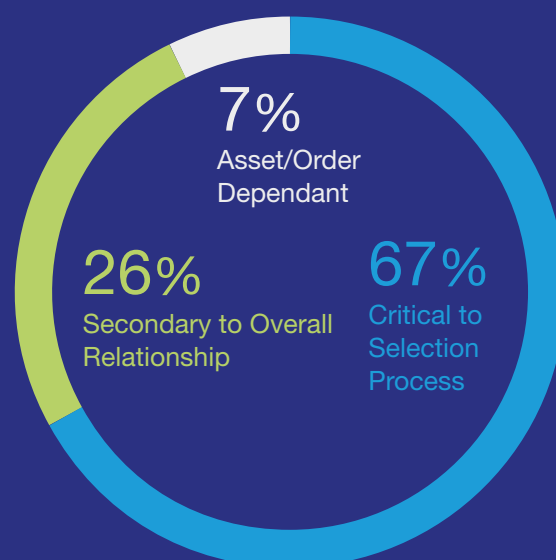
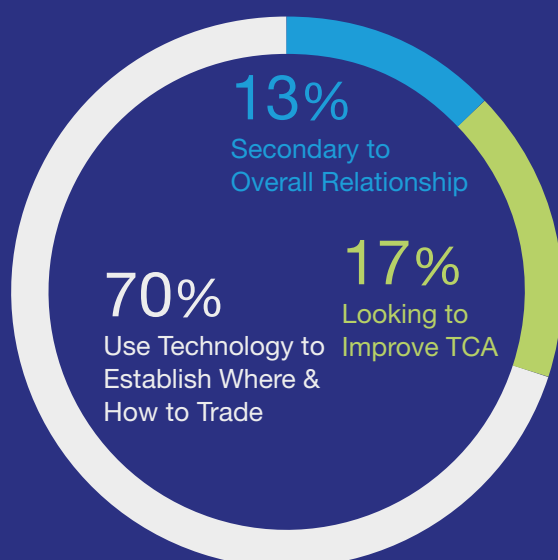
“Rather than look for a price in a particular issuance, the means of access to liquidity we now have via tech means we are going back to the PMs to suggest alternatives. You don’t have to trade just the 27 issuances, maybe there’s better liquidity in the longer duration of 2032 – that’s where we can add real value in the investment process.”

Head of Trading, Medium Sized EU-based Asset Manager

Smarter Position Management

Exhibits 8 and 9

How are you now using data and technology to aid your provision of liquidity?/How important is post-trade transparency to your execution process?



Source: Redlap Consulting

Data Detail

The buy-side's first priority is transparency of accurate post-trade data, and central to that effort is the future provision of a consolidated tape in Europe. In the interim, standardised Financial Information Exchange tags 29, 30 and 851¹ provide valuable information for the buy-side in understanding how their order flow has been managed in the marketplace by their trading counterparties. Whilst this information has been available for the last decade in the equities markets, the buy-side are starting to push for this level of post-trade transparency for all asset classes – particularly in fixed income where the lack of a consolidated tape is felt more keenly. Secondly, the information that is available is being heavily scrutinised for accuracy and completeness in terms of the level of transparency brokers provide around their execution process.

Two areas of concern are emerging – Firstly, the inability for brokers to establish whether individual slices of an order fill (“child” fills) were the result of the provision,

or rather the taking of liquidity in fast moving markets, and particularly if the order instruction was cancelled, amended, updated or subject to conditional order instructions, such as providing a firm order commitment prior to execution.

Secondly, as electronification moves across the asset classes, Tags such as 851 are difficult to complete if the venue in question is more reliant on voice activity and may use native, non-normalised liquidity venue indicators².

The availability of this information matters. Through increasing transparency about their business model, ELPs have made significant progress in engaging with buy-side respondents on how and when to trade. Given the current opacity of the credit markets this has not gone unnoticed and buy-side participants approve of the potential increased transparency resulting from greater interaction with ELPs (see Exhibit 11).

Exhibit 10

Identification of FIX Tags

| Fix Tag | 851 | 30 | 29 |
|-------------|--|--|---|
| Title | Last Liquidity Indicator | Last Market Field | Broker Capacity |
| Description | Identification of whether an order fill was a result of a liquidity provider providing or liquidity taker taking the liquidity | Identification of the venue at which an equity trade is executed | Identification of the capacity in which a broker was acting as principal or agent |

Source: Redlap Consulting

¹ <https://www.fixtrading.org/>

² Such as FIXTag 9882 (SupplementalLiqCode or BTRReportInst)

Data Detail

“We need clearer identification of who’s trading. If an ELP is identified as a bulge bracket sponsored access – that’s unhelpful in understanding who really has the liquidity, or the true market share.”

Head of Trading, Large Global Asset Manager

“FIX Tag 851 is VERY important to us – we want to understand how brokers are engaging with our flow, how orders are executed in the market, who is really providing the liquidity and the impact as a result.”

Head of Trading, Large Global Asset Manager

Exhibit 11

Do Liquidity Providers form a valuable function within the market?

Increase Transparency/Optionality in Credit Markets



Improve Liquidity Aggregation (Equity)



Do Not See a Direct Role



Increase Fill Size



Source: Redlap Consulting

Changing the Rules of Execution

ELPs have benefited from an increase in diversification by the buy-side towards ETF flows due to their technological expertise which enables them to arbitrage short term risk and provide tighter pricing than siloed traditional bank business models. This will rewrite the manual on how asset classes are traded.

As buy-side firms use technology to become better able at aggregating liquidity across asset classes, they are able to incorporate direct feeds from banks, ELPs and venues to have a holistic view across the market regardless of asset class. This opens up multiple options not only of where to trade but also what to trade. As workflow models become more automated, the buy-side desire to separate workflows between liquid and illiquid instruments to look for further efficiencies is increasing. The more automated the trading, the greater the ability to arbitrage between positions – at least, where fund mandates allow.

The challenge here is that the rise in ETF volumes is still often mostly bilateral, pre-arranged, off-exchange activity being placed on venue rather than fully automated trading. Although ETFs appear attractive as an investment vehicle, there is still the requirement to trade the underlying where liquidity may not be available. For those who are looking to hedge assets such as fixed income, this limits their ability to fully arbitrage across other asset classes.

As arbitrage trading becomes more mainstream, technology will enable more complex models to be run to understand the risk held in a portfolio and how it can be more efficiently managed. For example, whether it is more efficient to hold multiple issuances of a corporate bond, or whether to hedge against a strip of bid/ask spreads, basis points and yield to achieve the same exposure but at a more efficient price over time.

“In Fixed Income the question the trader always asked was how low can I bid but still win the trade without disclosing my hand to the street. If you talk to a single name trader who can do 50 million here and 25 there, the only way he looks at that is his triple B bucket is full, or his double B bucket is full. Portfolio trading is a much more efficient and agile means of managing your risk. When you have ETF providers who are capable of executing equities and fixed income – it becomes a different ballgame in the way you look at your investment and the options available to you in how to trade”

Head of Trading, Large Global Asset Manager

Changing the Rules of Execution

At the heart of the issue remains the need to manage access to liquidity for the flow at-hand. Asset managers with fundamental larger positions held over a longer period of time have less need for constant adjustment to manage order flows. However, for those with monthly, bi-weekly or weekly inflows and outflows, increasing access to ETF flows facilitates their ability to meet demand regardless of asset class or market conditions.

“Where ELPs could offer very interesting opportunities in the credit ETF space - we could hedge the beta out if we were able to access more instruments to manage fixed income volatility in a way that we could benefit from ELPs cross hedging with other asset classes – there’s no ISDA agreement, no CCP settlement and plumbing issues.”

Head of Trading, Large Global Asset Manager

While the opportunity to diversify into alternative assets is available for some asset managers, others are strictly limited due to fund mandate restrictions (see Exhibit 12). In theory being a Direct Clearing Member of a Central counterparty (CCP) enables trading to take place where it is best to execute, which is an obligation under MiFID II. However, in practice there are still operational hurdles to overcome. There are currently so many restrictions with custodian relationships (from legal paperwork to the operational set up), that it is often easier to retain OTC trading with (clearing) banks (see Exhibit 13). The unbundling of equity trading with CCP interoperability has yet to occur in fixed income which results in the execution of a trade being dependent on settlement as opposed to price. As more assets move onto electronic order books, liquidity providers are able to utilise technology to offer more competitive pricing, leading to a clear shift in who is winning the order flow in exchange traded derivatives and ETFs for example.

“We are increasing access to portfolio ETF liquidity which is broadening out the type of liquidity you are tapping into, mixing with some very tech savvy liquidity providers. Whereas before they supplied prices on different trading venues, now they’re capable of pricing an entire portfolio for you. That’s more opportunity as well as more liquidity”

Head of Trading, Medium-sized EU Asset Manager

“We have a CCP which should be liberating but my fixed income team still trade where it suits our custodian relationship – the reality is there are just still too many restrictions which prevent us from trading where we want.”

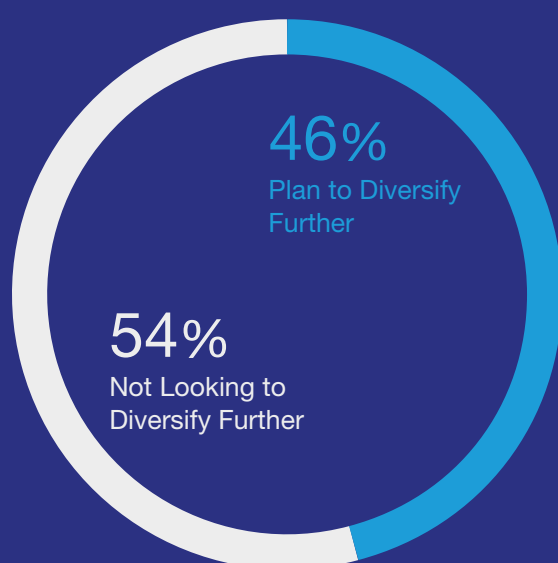
Head of Trading, Large UK Asset Manager

“The biggest book of business we have in OTC derivatives is all with the banks due to paperwork etc. But for exchange traded derivatives and ETFs, I don’t think banks are getting any flow in that space, none of the banks can stand up to the ELP pricing.”

Head of Trading, Large UK Asset Manager

Exhibits 12 & 13

Are you changing your mix of assets to include more derivative products?/ For derivatives (listed and OTC) how is your liquidity sourced?



Banks/Clearing Counterparty



Brokers



Market Makers Directly



Source: Redlap Consulting

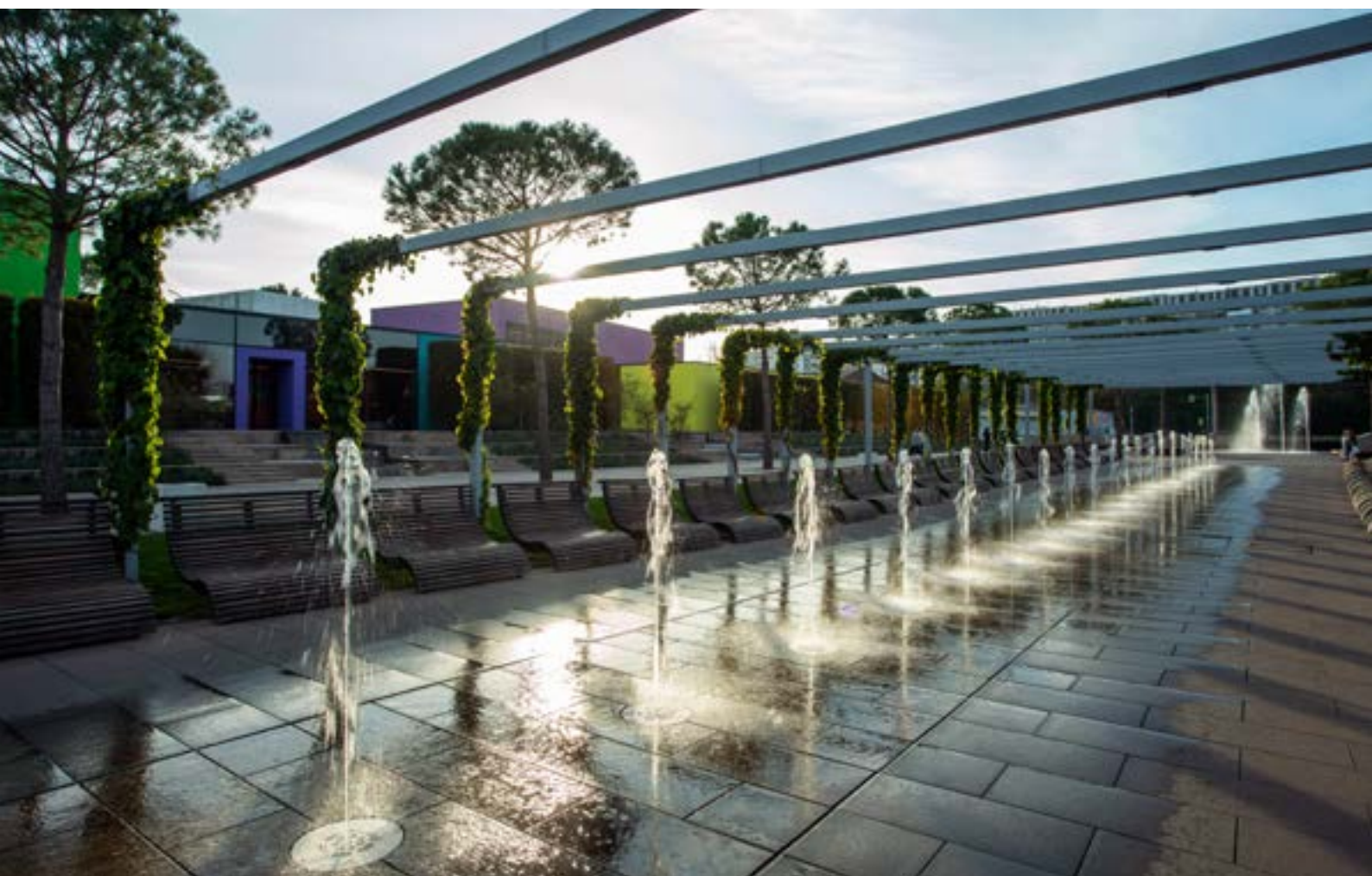
Looking Ahead

The lessons from Covid-19 continue to reform the European execution landscape. While on the surface, trading conditions appear to be heading back to normal, **clear markers in known norms have been shattered, breaking open the execution status quo**. The inexorable rise of automation is moving from equities to fixed income, leading the buy-side to focus on ensuring broader access to execution from a variety of new sources, reshaping relationships that were previously silo'd in wholesale, institutional and retail capital markets.

To benefit from the increased breadth of liquidity provision, the buy-side will need to better understand their counterparties' trading workflows. Transparency over routing logic is of paramount importance to understand where liquidity is coming from. As asset managers continue to grow in size, this is becoming increasingly complex and the clear delineation between

market participants is blurring. The size of order flows and assets under management for the largest managers mean they are increasingly themselves becoming the source of liquidity. However, transitioning from one investment holding to another still requires the ability to source interim liquidity in order to trade when required. **Rather than this being only with traditional sell-side banks, the need to better manage short term risk and warehouse inventory more efficiently is expanding the breadth of liquidity providers the buy-side can engage with.**

The differentiator for any liquidity provider of the future will be their ability to adapt and absorb new technology initiatives. Future innovative and agile technology will not only seek out latent liquidity but, more importantly, build liquidity. For example, the use of electronic footprints to find a trading counterparty who currently is not showing interest but may have interest to trade



Looking Ahead

(targeted invitations) brings the benefits of traditional voice trading into automated workflows. Expanding this electronic footprint increases the breadth and variety of possible trading counterparties maximising the opportunity to trade, rather than relying on a handful of trusted counterparts to retain this knowledge manually. Technology can also help in the creation of portfolio managers watch lists which generate an order when the alternative side of the trade has expressed interest.

Electronic access and automated workflows facilitate the ease and speed at which this can be managed, but also provides the opportunity for greater quantitative interrogation of where improvements can be made.

As technology is increasingly incorporated into buy-side workflows to decide where, when and how to trade, new opportunities are also arising into deciding what assets to trade. While fund mandate restrictions currently prevent further diversification of products, an investment in any asset is becoming increasingly contingent on the ability to access liquidity. The successful growth of ETFs

across the asset classes illustrates the synergies when investors have the ability to source necessary liquidity.

Liquidity formation will continue to evolve due to market changes, from the Global Financial Crisis to MiFID II and Covid, and asset managers will continue to rely on execution partners to navigate a more complex and fragmented landscape. As likely divergence between EU and UK is on the horizon, the ability to arbitrage between the two jurisdictions as well as between the different asset classes will be vital for an industry looking for efficiencies. Continued industry consolidation is adding to an increasingly competitive landscape with firms looking for any means in which to limit unnecessary operational costs. **As the industry looks to its future as employees return to the office, few firms can afford the luxury of operating anything less than an optimal execution business to support their investment strategies.** While the pandemic may appear to be drawing to a close, its longer-term impact on the future trading landscape in Europe may only now be beginning.



About the report

This study has been produced by independent financial services research group Redlap Consulting. It was commissioned by the FIA European Principal Traders Association (FIA EPTA), which represents Europe's leading Principal Trading Firms. Its 30 members are independent market makers and providers of liquidity and risk transfer for end-investors across Europe. It works constructively with policymakers, regulators and other market stakeholders to ensure efficient, resilient, high-quality financial markets. To find out more visit www.fia.org/epta

About Redlap Consulting

Redlap consists of a group of experienced industry professionals who have a deep knowledge of Capital Markets. Using this as the basis of research this enables us to provide detailed and thought-provoking research on the impact of evolving market structure globally.

About the Authors

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Rebecca is a leading industry voice on market structure, regulatory reform, and financial services technology. Writing research since 2011, Rebecca has authored a plethora of qualitative reports and commentaries covering the impact of market regulation on all asset classes, the impact of the rise of fintech in capital markets, as well as the impact of the move to ESG and sustainability in asset management; focusing on how technology can help address current challenges, improving capital markets both for participants and investors.

Rebecca is the Co-chair for FIX EMEA and a member of ESMA's Secondary Markets Standing Committee. In relation to ESG, Rebecca is Co-Chair of the FIX Working Group on ESG; Convenor for the ISO/TC 68 Sustainable Finance Advisory Group; a member of ISO TC 68 Strategic Leadership Group and serves on the ISO Technical Management Board committees of Climate Change Coordination Committee (CCCC) and ISO Positioning and Consultation Responses (CCCC-TG 4).

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Charlotte is the Co-chair of the FIX France Subcommittee. In relation to ESG, Charlotte is the Secretary for the ISO/TC 68 Sustainable Finance Advisory Group and serves on the ISO Technical Management Board committees of Climate Change Coordination Committee (CCCC) and ISO Positioning and Consultation Responses (CCCC-TG 4).

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All presented data may be subject to slight variations.

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