

Market electronification and FinTech

Building on a [previous article](#) on market electronification¹ and FinTech that was published in the Quarterly Review Issue 46 in Q3 2017, this ICMA paper seeks to explore further the key drivers behind electronification of investment-grade (IG) corporate bond markets and the impact on market structure, notably: (i) efficiency and straight-through-processing, (ii) liquidity sourcing, (iii) regulatory compliance, and (iv) data management. In line with ICMA's continued engagement, the focus of the paper is on primary, secondary and repo markets in Europe. Findings are based on research, ICMA publications, internal discussions and conversations with ICMA member firms.

(i) Efficiency and straight-through-processing

In secondary markets, the increasing electronification of markets has been a result of technological advances and “the drive for cost efficiencies”². Concurrently, Basel III's regulatory requirements have reduced broker-dealers' ability to hold bonds, as well as to finance and hedge trading positions, impacting market liquidity. In addition to this, “the upcoming implementation of Europe's new trading rules under MiFID II will accelerate the market structure transformation” as pointed out in the paper *Evolutionary Change, The future of electronic trading in European cash bonds*.³

According to the Bank for International Settlements (BIS), the share of electronically traded IG cash bonds has more than doubled between 2012 and 2015, reaching 40%.⁴ In a more recent report published by Greenwich Associates, it is estimated that approximately 60% of corporate bond volumes are traded electronically (including HY).⁵ Reducing marginal and average costs of trading is considered to be one of the main benefits of electronic trading platforms (ETPs). However, this is conditional on generating a sufficient level of economies of scale. From a sell-side perspective, electronic trading venues may significantly broaden access to potential customers.

The [ICMA mapping directory](#) of ETPs has grown in size and now lists over 30 trading platforms and information networks for corporate bonds since its inception in 2015. The proliferation of trading venues and diversity of products appears to confirm the trend towards further electronification. However, this evolution can also be interpreted as a sign of further fragmentation and generates costs in terms of

¹ Defined as “rising use of electronic trading technology”, BIS (2016). The scope of this paper extends beyond trading technology and includes post-trade technology.

² ICMA (2016), *Evolutionary Change. The future of electronic trading in European cash bonds*, p.3

³ Ibid.

⁴ BIS (2016), *Electronic trading in fixed income markets*, p.9

⁵ Greenwich Associates (2017), *Corporate Bond Liquidity Solutions Emerging*, p.3

connectivity and messaging standards.⁶ Whilst healthy competition is important for the good functioning of the market, it raises questions as to the sustainability of niche players in a competitive environment.

In contrast, primary markets have to date been less impacted by technology. As previously established, there are a number of solutions automating processes at different stages of the issuance cycle. For example, streamlining allocations is one of the areas that offers room for improvement. However, it appears unrealistic for this task to be executed entirely by algorithms as it requires a qualitative judgement. On the other hand, the input of client orders, which is often executed manually, would lend itself to further electrification and reduce the risk of human error.

The general view is that while the use of technology in specific areas will generate efficiency gains, human interaction will remain crucial. While the issuance process is likely to remain the same for the foreseeable future, the tools that are used will certainly evolve.

However, it is noteworthy that new initiatives continue to emerge, in particular based on distributed ledger technology (DLT). The challenge for this paper lies in striking a balance between a wide range of publicly available information and other initiatives which cannot be disclosed for confidentiality reasons. The following therefore only includes a snapshot from public sources in relation to fixed income, and is by no means exhaustive.

For example, the [FCA's regulatory sandbox](#) comprises two initiatives leveraging DLT for issuing bonds and private placements, BlockEx and Nivaura. A DLT platform for the issuance of euro-commercial papers has been developed by the [Corda](#) project, part of the R3 consortium, in collaboration with ABN AMRO, Commerzbank, ING and KBC. Another [DLT-based prototype](#) to issue bonds as smart contracts and automate coupon payments has been tested by SIX Securities Services in partnership with Digital Asset Holdings. The [Hyperledger](#) project, a non-profit organisation, in collaboration with stakeholders has developed a sector-agnostic DLT-platform. A [corporate issuer](#) has recently issued a bond on this basis. ICMA continues its engagement with technology providers and is planning to organise meetings with relevant ICMA committees in the forthcoming months.

Credit repo markets have to date been impacted far less by technological advance than secondary markets, while regulation has hampered trading activity. Indeed, it is considered a “highly manual, labour intensive market”⁷. For example, Bloomberg’s messaging functionality is used to aggregate trading interests and axe lists, which are copied and pasted manually to share them between counterparties. In addition, the process may involve returns, recalls and rerates, as well as monitoring and dealing with settlement fails.

While credit repo markets appear to offer substantial efficiency gains from potential electrification, there are a number of obstacles, notably “the range of underlying bonds being borrowed and loaned, the different means of transacting, the range of counterparties, different haircut matrices, bespoke schedules for collateralising borrows, as well as the importance of counterparty relationships”⁸.

⁶ ICMA (2016), Remaking the corporate bond market, p. 29

⁷ ICMA (2017), A study into the state and evolution of the European credit repo market, p.28

⁸ Ibid.

However, a gradual adoption of technology has been observed in certain areas. For instance, “some agent lenders and investment funds have automated the locate process, whereby any requests that they receive via Bloomberg messages are automatically matched with their holdings and lending availability”⁹.

Notwithstanding the low adoption of technology in general, a number of electronic trading venues have emerged or expanded into the repo market space. BondLend and its “Next Generation Trading” (NGT) platform is deemed to be a leader in this segment. For example, the platform supports the automation of identifying and lending bonds between dealers and lenders. In addition, a functionality to negotiate specials between borrowers and lenders on NGT is being developed. Based on an initial mapping exercise, ICMA has found that there is a growing number of repo trading platforms.¹⁰

In the post-trade lifecycle of bonds, the use of technology is widespread, but at the same time remains fragmented. Whether for collateral management, corporate actions or reconciliations, a myriad of systems is available for interlinked, yet different processes. The [ICMA ERCC Ops FinTech working group](#) has conducted a mapping exercise of over 50 technology solutions which is being finalised and will be published in the near future. Perhaps unsurprisingly, the use of DLT in this area is considered to generate the greatest benefits in terms of efficiency gains and cost reduction.

While DLT-based initiatives have proliferated over the last two years, [regulators](#) have turned their attention on the potential benefits and risks of DLT specifically in the area of post-trade. A draft paper published by the European Central Bank’s DLT Task Force in June 2017 examines in depth the various scenarios of the adoption of DLT in light of “Target2-Securities” (T2S), the single platform for securities settlement in Europe, and its impact on market structure.

With respect to collateral management, it is noted that “the market is a long way from reaching a satisfactory level of automation and efficiency in the bilateral collateral management space”¹¹. Ensuring consistency and sharing information simultaneously is one of the key benefits of DLT. In particular, the application of DLT appears to be well-suited for cross-border transactions by lowering technical hurdles and replacing the need for connectivity between multiple parties by a single point of access.

(ii) Liquidity sourcing

Beyond efficiency considerations and cost savings, liquidity (or rather the lack thereof) remains a major concern in secondary markets. As a result, sourcing liquidity has been a key driver in the evolving landscape of electronic trading. A visible trend is the emergence of information networks which aggregate dealer inventories and aim to match up potential trading interests, rather than facilitate execution via the traditional RFQ-model.¹²

In light of the changing environment described previously, the buy-side has had to adapt and is arguably the “driving force behind the transformation of trading market structure in fixed income”¹³. The link

⁹ Ibid.

¹⁰ Ibid.

¹¹ ECB DLT Task Force (2017): The potential impact of DLTs on post trade and the wider EU financial market integration, p.82

¹² ICMA (2016), Remaking the corporate bond market, p. 29

¹³ ICMA (2016), Bond trading market structure and the buy side, p.1

between technology and liquidity becomes apparent in the initiatives that have been undertaken to address the liquidity challenge. The buy-side has taken an active role in shaping trading protocols, in collaboration with trading venues and data and software providers. To further complement the comprehensive overview of developments referenced in the ICMA report *Bond trading market structure and the buy-side*, published in Q4 2016, it is worth mentioning the following:

- Request-for-Spread: Based on the conventional request-for-quote protocol (RFQ), this model enables clients to trade bonds on a spread rather than a cash price.
- Auto-quoting for odd-lot sizes: Differences exist between liquidity providers' capabilities to respond to RFQs on electronic trading venues. Whilst some respond to RFQs manually, which may take up to 30 seconds, others have implemented algorithms to respond automatically to RFQs within (split) seconds based on defined parameters such as maturity, sector, fixed/floating rate bond type, or currency.
- RFQ-to-All: It is worth noting that ESMA, in a [Q&A update](#) released in July, paved the way for wider adoption of this model by stating that "a trading venue should not impose limits on the number of participants that a firm can request a quote from". That said, market participants are wary that liquidity will in fact deteriorate as a result of dealers' pricing more defensively and market impact.
- Internal crossings: Matching opposite trading interests of different funds on the basis of either internal pricing models or independently determined mid-prices enables buy-side firms to ease liquidity constraints, notably for small size tickets. Given bid-offer spreads can be wide in particular for less liquid bonds, this type of "internalised liquidity" allows buy-side firms to reduce transaction costs.

Directly linked to secondary corporate bond market liquidity is the credit repo market. It appears that the scope for technological innovation is greater in the dealer-to-client space rather than the inter-dealer market. "At least one MTF is looking to expand their existing dealer-to-client repo platform to include credit repo. The functionality is intended not only for dealers and clients to manage and negotiate RFQs, but also to provide bilateral straight-through-processing for settlement."¹⁴

Auto-hedging for new issues: While the concept of liquidity is specific to secondary markets, technological innovation in the form of automatic hedging of new issues may bring primary and secondary markets closer together. Innovative protocols that would enable buy-side firms to hedge automatically when purchasing new issues could generate significant efficiency gains, notably for block size trades.

(iii) Regulatory compliance

Fixed income markets have been subject to greater regulatory scrutiny as a result of G20 commitments that were made in the aftermath of the financial crisis 2007/08. Increasing market transparency, efficiency and safety are key objectives of financial sector regulation. In Europe, the Markets in Financial Instruments Directive (MIFID) II, Markets in Financial Instruments Regulation (MiFIR), and Securities Financing Transactions Regulation (SFTR) impose far-reaching reporting and order record keeping requirements on market participants.

¹⁴ ICMA (2017), A study into the state and evolution of the European credit repo market, p.29

MiFID II/R extend pre- and post-trade transparency requirements to bond markets and are set to take effect on 3 January 2018. SFTR is aimed at short-term markets and entered into force on 12 January 2016. However, the SFTR reporting requirements were adopted on 31 March 2017 and will only apply once the technical standards are in place. The reporting obligation is expected to take effect at the earliest from Q1 2019 in a phased approach. A common aspect of all three legislative texts is the requirement to collect and process large volumes of trading data that are either made available to the public, or reported to regulatory authorities or trade repositories.

Real-time reporting: Under MiFID II/R pre-trade transparency rules set out in RTS 2, trading venues¹⁵ are required to publish current bid and offer prices and depth of trading interest at those prices in electronic form and in real-time. This obligation can be waived if the trade size is above determined thresholds or the instrument is deemed illiquid.¹⁶

Near-real time reporting: Post-trade transparency rules under MiFID II/R (RTS 2) prescribe that details of executed trades have to be made public within 15 minutes, which will be reduced to five minutes from 2021, by the trading venue or via an Approved Publication Arrangement (APA). Publication can be deferred depending on determined volume thresholds and for financial instruments considered to be illiquid.

T+1 reporting: Under MiFIR transaction reporting rules, investment firms are required to report executed trades directly to regulatory authorities by 19:00 the following business day via an Approved Reporting Mechanism (ARM). The level of granularity exceeds the data required under transparency rules and includes over 60 data points, such as passport number and date of birth of the executing trader. SFTR also generally imposes reporting on a T+1 basis, with even greater granularity.

Periodic reporting: MiFID II puts emphasis on evidencing best execution in bond markets. Investment firms and trading venues should take all “reasonable steps” to ensure best execution for their clients. Details about price, costs, speed, and likelihood of execution for individual financial instruments have to be made public by investment firms on an annual basis, and by trading venues every quarter. RTS 28 and RTS 27 respectively set out the precise data points and templates, which have to be in a machine-readable electronic format. While SFTs are not subject to best execution requirements in RTS 27, they are in scope of RTS 28.

Record keeping: In primary markets, MiFID II sets out allocation record keeping requirements including a justification for the final allocation made to each investment client.¹⁷ “MiFID firms providing a MiFID placing service to issuers will need to keep a (non-public) written record of a justification for each investor allocation made (which are relevant in the context of over-subscription). However, this does not seemingly need to be literally split out as a separate written rationale for each allocation – for example a collective justification could apply to several allocations.”¹⁸

Fuelled by regulatory requirements, technology solutions designed to help market participants comply with regulation, referred to as “RegTech”, are becoming more and more important. While the use of technology is not new, the data-driven approach adopted by regulators is one of the key drivers of

¹⁵ ie Regulated markets, multilateral trading facilities, and the new category of organised trading facilities.

¹⁶ ie above size specific to the instrument (SSTI) or Large in Scale (LIS) ie block size.

¹⁷ Further information can be found on the dedicated MiFID II / R section on the ICMA [website](#).

¹⁸ ICMA (2017), Quarterly Review Q3 [Issue 46](#), p.24

electronification. [ESMA](#) considers “RegTech” an important tool for firms to “adapt to regulation in an effective, cost efficient manner”.

However, digitalisation of regulatory compliance also poses a number of risks. Digital security is one of them and is of particular importance for financial services. The collection of data in centralised infrastructures exposes market participants to greater risks of cyberattacks, theft or fraud. Furthermore, ESMA points out that adapting to the new digital infrastructure will be critical, and how well market participants will do so could “separate winners from losers in the coming years”.

Given the key role of technology to comply with regulatory requirements, the reliance, connectivity and interoperability of technology solutions will be crucial. For example, under MiFIR post-trade reporting rules buy-side firms can choose to sign up to an APA and report OTC trades directly. Alternatively, they can opt for “assisted reporting” whereby the sell-side reports OTC trades to an APA on the buy-side’s behalf. While the former requires a direct connection, for instance via a FIX application programming interface (API), “assisted reporting” removes the need to connect directly to a given APA. However, challenges remain, in terms of routing trades to clients’ desired APAs.

(iv) Data management

In secondary markets, post-trade transparency under MiFID II/R will generate an unprecedented level of publicly available data across fixed income markets. Even though a majority of corporate bonds are expected to be deemed illiquid, and will therefore benefit from deferred publication, pricing of bonds will eventually be published.

The twofold challenge market participants are facing is, on the one hand, to capture an array of internal data to comply with regulatory requirements. On the other, technological capabilities to source and aggregate trading data in the absence of a centralised provider (such as TRACE in the US) will be key. Indeed, making use of the newly available data, and feeding these into internal risk and pricing systems will be critical to both the buy-side and the sell-side.

From a buy-side perspective, order management systems (OMS) will play an increasingly important role: not only to aggregate pricing information and identify trading interests and market depth across the various trading venues and information networks, but also to identify which liquidity providers will act as “systematic internalisers” (SI) for specific issuers in the absence of a centralised database. Determining the reporting obligations to ensure compliance will be a key feature.¹⁹ It is expected that transaction cost analysis (TCA) will equally benefit from the availability of public data to measure performance more accurately.

In primary markets, the availability of data on secondary market activity is expected to have less of an impact. Indeed, each bank that is part of a syndicate draws on internal databases and systems for pricing new issues. Additional data sources are therefore unlikely to significantly improve or change existing practice. However, innovations are perhaps more likely to be introduced by new entrants, for example to price bond offerings based on algorithms or artificial intelligence.

¹⁹ Further information on the SI regime can be found on the ICMA website.

In credit repo markets and post-trade processing, capturing data will become equally important and probably more challenging since trades are predominantly executed over-the-counter. While a number of technology solutions have emerged to address the reporting challenges under SFTR and MiFID II/R, the process is likely to involve more manual intervention at the initial implementation stage. Whilst reconciliation is an integral part in the post-trade lifecycle, even greater emphasis is placed on this process under MiFIR (RTS 22).²⁰

Conclusion

Market electronification varies significantly between IG corporate bond primary, secondary, and repo markets. While all three are interrelated from a market perspective, there is a clear divide when it comes to the adoption of technology.

Efficiency considerations and regulatory compliance are key drivers for the adoption of technology in all three areas to some degree, whilst liquidity sourcing and data management are of particular relevance for secondary bond markets; however, electronification in one area has not necessarily spilled over into other areas.

DLT initiatives have gained further traction in recent months, notably in niche sectors such as private placements and the area of post-trade. It is expected that DLT solutions will be rolled out to the market within the next six to twelve months. While it is too early to gauge the take-up and impact on market structure, there is a sense of inevitability that DLT will be adopted sooner or later.

Reporting requirements under MiFID II/R and SFTR will enter into force on 3 January 2018 and in 2019 respectively. This will drive further electronification and the adoption of RegTech solutions in secondary and repo markets.

Notwithstanding the trend towards electronification, fixed income markets are underpinned by trust and human relationships. It is therefore worth pointing out that the adoption of technology solutions will not replace, but rather complement human interaction. Indeed, it will remain vital, and technology can help make more efficient use of time and focus on nurturing relationships.

It will be interesting to see how market electronification will evolve in light of the proliferation of new FinTech initiatives, the new regulatory landscape under MiFID II and SFTR and increased transparency in bond markets from January 2018. What is clear, however, is that technology will become more important than ever before.

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²⁰ RTS 22, Article 15 (3): Investment firms shall have arrangements in place to ensure that their transaction reports are complete and accurate. Those arrangements shall include testing of their reporting process and regular reconciliation of their front-office trading records against data samples provided to them by their competent authorities to that effect.